FUSS & O'NEILL

Haddam Jail
Final Report Summary

Saybrook Road and Jail Hill Road
Haddam, Connecticut

Submitted to
Town of Haddam, Connecticut

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JAIL HOUSE

Fuss & O'Neill was retained by the Town of Haddam Buildings Committee through a State of Connecticut Department of Economic and Community Development (DECD) Historic Brownfields Revitalization Grant to provide professional services associated with the former Haddam/Middlesex County Jail, located at the intersection of Saybrook Road and Jail Hill Road in Haddam, Connecticut. The objective of the study was to complete an engineering and reuse assessment of the site to assist the Town with identification of potential reuse options as well as develop an order-of-magnitude opinion of development cost. The components evaluated for the assessment consisted of: environmental site assessment (Phase I & Phase II), structural, mechanical & electrical assessment of the jail building, a hazardous material survey of select buildings, traffic assessment, wastewater and water supply assessment, architectural assessment, market study, reuse planning, financial feasibility and pro forma analysis, analysis of funding gaps, and public outreach meetings.

The team comprised of Crosskey Architects, Camoin Associates, Fuss & O'Neill EnviroScience, and Fuss & O'Neill, Inc. focused on two primary objectives. The first objective was to provide the Town with building and site rehabilitation data to inform interested parties and provide a description of potential funding sources as to the physical, market and financial issues facing any redevelopment of the property.

The second objective, though public outreach and in collaboration with the Town, was to determine a potential highest and best use of the jail building to provide guidance on managing the likely financial gap expected as part of the redevelopment and financing process. A number of market based and physical factors have been analyzed in order to determine the extent to which the building could be rehabilitated under various reuse scenarios generated by the market assessment and vetted against guiding principles established by the Town. The results of this study indicate probable difficulty in the redevelopment of the property under the selected highest and best use of the property as a restaurant/brew pub type facility. Although the restaurant facility appears to be financially self-sustaining from an operations standpoint, the cost of redevelopment creates a substantive financial gap. This gap must be filled in order to achieve a viable reuse as described. It should be noted that the selected desired alternative has characteristics which may not be shared by other uses. These characteristics will impact both the cost and revenue components of the pro forma. With the exception of the kitchen equipment, building and site renovation costs might be expected to be about the same for other uses requiring building renovations and could vary somewhat depending on the level of interior renovations and fit and finishes.

The collective results of this study lead to the following observations:

1. The building and site are small. Therefore, this site and use would not generate substantive tax revenue or job creation often required to substantiate significant state economic development assistance.

JAILHOUSE

2. The jail building envelope was renovated in 2008 and is generally intact. The main structural system of the jail building is in good condition. The other smaller structures on the site vary widely, but all have some structural deficiencies and concerns. As plans for reuse of the buildings are developed, any buildings contemplated for reuse should have damaged interior finishes removed to permit full visual inspection of the structures to further identify repairs and upgrades.

3. Environmental site assessment of the property revealed an out-of-use 2,000 gallon fuel oil underground storage tank (UST) exists at the jail. There is no evidence a significant release of petroleum from the UST had occurred. The UST will need to be removed in accordance with state closure guidance. Lead impacted soil in the vicinity of the well pump house should be managed separately from other soil excavated at the site as part of redevelopment activities.

4. A hazardous building material survey for the jail building identified the presence of asbestos-containing materials in a variety of materials. Abatement of this material will be necessary for redevelopment.

5. The mechanical and electrical infrastructure for the jail is in poor condition and will need to be replaced. The existing water supply wells can be reused. However, with the exception of the Annex building well, the pumps and piping apparatus will need to be replaced.

6. The concrete septic tank for the site is in generally good condition. The septic leaching field is located over 700 feet from the jail on a separate parcel. There are blockages in the pipe from the tank to the leaching field. The septic leaching field and pipe will need to be replaced.

7. Based on the limitations of the waste disposal systems as described in this report, the substantial infrastructure needs associated with the preferred alternative, and the general inefficiencies of the existing historic layout, much of the building becomes underutilized and therefore inefficient and non-revenue producing (for the preferred use). As a result of this condition, revenue generated by the facility to the degree accommodated by the waste disposal system must absorb the rehabilitation costs of the entire building whereas only portions will be actively used by the revenue generating components.

8. The cost of kitchen equipment is substantive and is a redevelopment cost unique to this type of preferred use.

9. Based on a detailed existing conditions and environmental analysis the building rehabilitation costs are significant and include:

    a. Environmental cleanup
    b. New wastewater disposal (off site) and water supply systems
    c. General historic rehabilitation in accordance with state and federal standards (for tax credit purposes)
    d. Interior renovations commensurate with a higher end restaurant facility

The building and site must remain in Town ownership in accordance with the transfer agreements with the state. This creates a unique situation with respect to the Town's ability to collect taxes on a reuse of the facility. This ownership model may preclude the use of Tax Incremental Financing opportunities often associated with such reuses. It may also impact the ability to receive historic tax credits although these tax credits have been funneled through other entities in similar situations. Consultation with a tax attorney familiar with such matters is advised.

The financial gap required to be filled as well as the construction costs and revenue generating estimates in this report are intended as a guide to potential redevelopment entities. Each entity fitting the Town's guiding principles for redevelopment will likely have financial models specific to their particular proposals. This report however highlights a substantive financial gap that must be addressed during the initial repurposing and reprograming of the property.

1 Introduction

Fuss & O'Neill was retained by the Town of Haddam Buildings Committee through a State of Connecticut Department of Economic and Community Development (DECD) Historic Brownfields Revitalization Grant to provide professional services associated with the former Haddam/Middlesex County Jail, located at the intersection of Saybrook Road and Jail Hill Road in Haddam, Connecticut. The objective was to complete an engineering and reuse assessment of the site to assist the Town with identification of potential reuse options as well as develop an order-of-magnitude opinion of development cost.
The assessment components consisted of:

a. Environmental Site Assessments (Phase I & Limited Phase II)
b. Structural, Mechanical & Electrical Assessment of the jail building
c. Hazardous Building Material Survey
d. Traffic Assessment
e. Wastewater & Water Supply Assessment
f. Jail Building Architectural Assessment
g. Market Study & Analysis
h. Reuse Planning
i. Financial Feasibility & ProForma Analysis
j. Public Outreach (meetings)
k. Analysis of Funding Data Gaps

The team included:

- Crosskey Architects
- Camoin Associates
- Fuss & O'Neill Inc.
- Fuss & O'Neill EnviroScience LLC

The primary objectives were to assess the existing conditions of the site, identify the challenges associated with redeveloping the site, develop potential reuse options, and determine the financial feasibility of the reuse. The work occurred through a collaborative process with the Town Building Committee according to a set of criteria established by the Committee as further defined in *Section 9*.

SITE BUILDINGS

The land use and development options contained herein are a result of a highly interactive design and planning process which included numerous stakeholder meetings, interactive workshops and presentations.

The results of our findings are documented herein.

2 Site Information

2.1 Site Description

The entire former jail property consisted of approximately 51 acres of land, which has since been divided into separate parcels. This report has been completed for a portion of the property consisting of two parcels totaling 6.5 acres of land, located south of Saybrook Road and intersected by Jail Hill Road in a residential zone of Haddam, CT (Middlesex County). A portion of a United States Geological Survey (USGS) topographic map showing the Site location is provided as *Figure 1*.

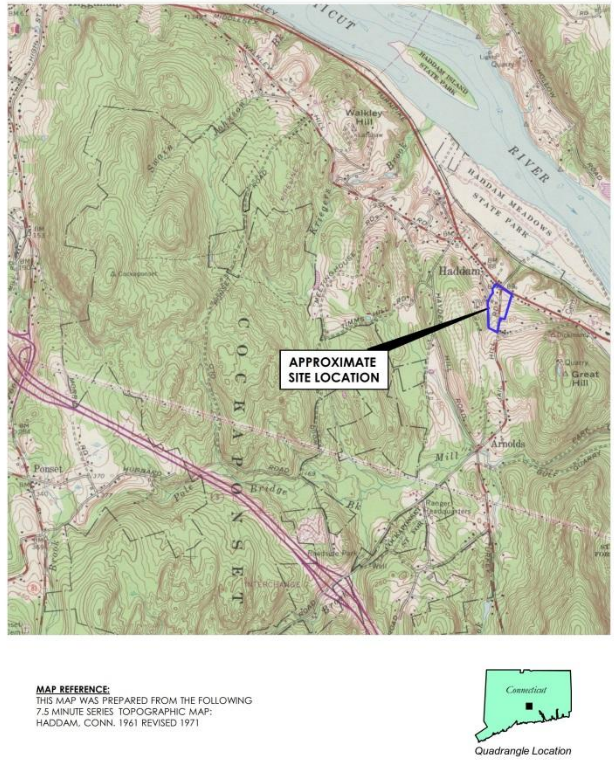


FIGURE 1: SITE LOCATION MAP

The parcel, on which the jail building is located, identified by Town records as Block 51, Lot 2, is located at 945 Saybrook Road and is improved with the historic jailhouse and several outbuildings. Specific details pertaining to the Site buildings are provided in *Section 2.3* below. The adjacent 2.3-acre parcel (11 Jail Hill Road) is identified in Town records as Block 51, Lot 3 and is improved with a small paved parking area along the north portion of the property. There are currently no buildings on this parcel and the remaining portions include vegetated and wooded land. Refer to *Figure 2* for a parcel map, obtained from the Town of Haddam GIS database, showing the approximate boundaries of the entire 51-acre Old Haddam Jail property, including the two parcels which comprise the Site.

FIGURE 2: GIS PARCEL MAP

The Site parcels have been owned by the Town of Haddam since approximately 2006; prior to which they were owned by the State of Connecticut. The Site has been primarily out of use and vacant since the 1980s with the exception of the "Annex" building which operates as the Haddam Public Health office and a Town meeting space. A Site plan depicting the Site layout and pertinent features is provided as *Figure 3*.

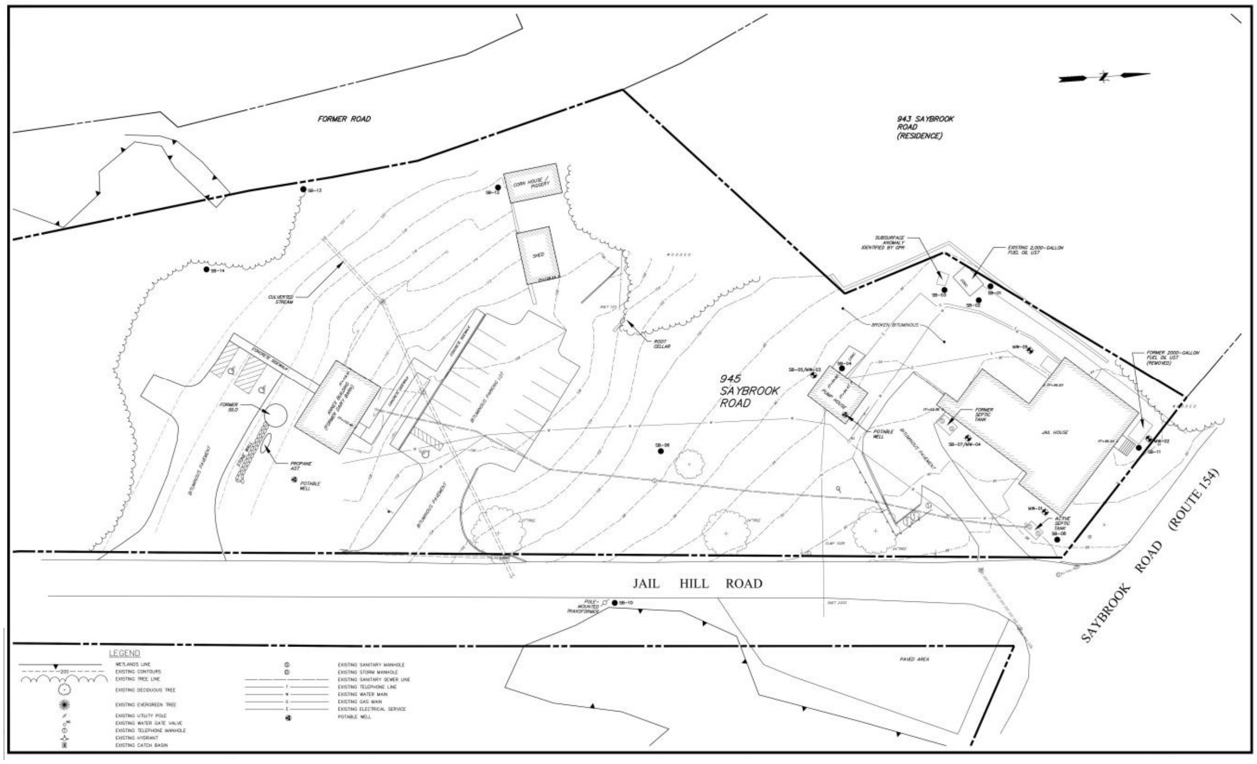
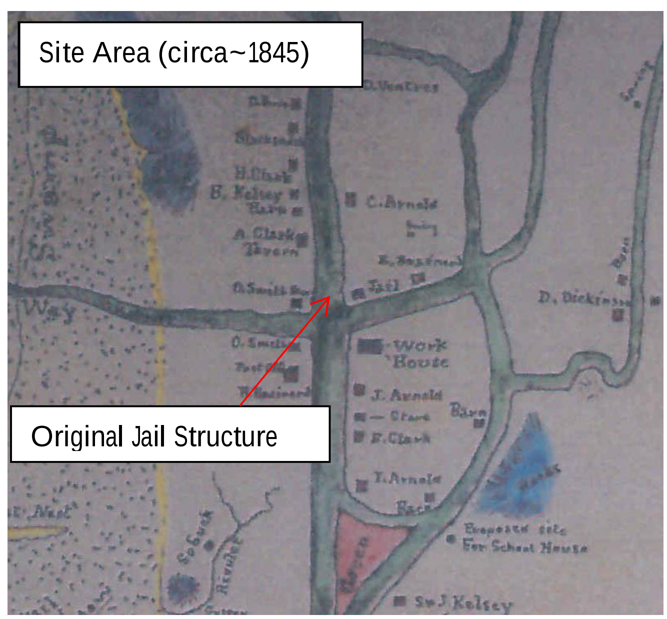


FIGURE 3: SITE COMPILATION PLAN

2.2 Background & Site History

Early Site History



The Site appears to have been used for agricultural purposes prior to its development as the county jail in the late 18th or early 19th century. The first Haddam "Gaol" (jail) was a small wooden structure constructed on the eastern side of intersection of "the road to the woods" (currently Jail Hill Road) and Middlesex Turnpike (currently Saybrook Road). The exact construction date of the original jail is unknown.

In 1845 a portion of the current stone cellblock building was built west of Jail Hill Road along the northern property boundary of 945 Saybrook Road as a "work house". In addition to the cellblock, the "keepers mansion" was also constructed at this time which housed the sheriff, his family and women prisoners. In 1855, a wooden workhouse and barn were also built on the jail property south of the jailhouse. Later, in 1878, a second empire-style granite addition was added to the cellblock as housing for the women prisoners and the jailer's family as well as administrative spaces. Several additions and renovations were made to the Haddam jail between the years 1899 and 1939 including mechanical plumbing and heating.

The jail had established its own dairy and farm, which provided prisoners with full time employment growing vegetables and raising pigs, cows and chickens. The Haddam Jail farm and dairy provided food for the prison, a local children's temporary home, and to sell. In 1914, feldspar was identified on the jail property and prisoners also worked quarrying the stone.

According to Town directories, the Site was owned by the Town of Haddam until 1960 when ownership was transferred to the State of Connecticut. The jail remained active until 1969 when the inmates from all Connecticut county jails were moved to the State prison.

Recent Site History

Following the closure of the jail, the Site became the Correctional Academy and was used as a training facility for prison guards in the 1970s and 1980s. Later renamed the "Connecticut Justice Academy" the State used the Site for simulated lockup experiences for prison guards. Rooms formerly used by the jailer for his office and living space were converted into a lounge, classrooms and library while the barn was also transformed into additional classrooms.

In 2007 the Town of Haddam acquired once more the jailhouse and the surrounding 51 acres from the State. Shortly thereafter, the former dairy barn/classroom building was renovated as a Town Annex building which currently houses the Town Public Health Department on the first floor and a meeting space on the second floor. The jailhouse building has remained vacant since the Town acquired the property.

AERIAL IMAGE OF THE JAIL PROPERTY

2.3 Site Buildings

The jailhouse parcel (945 Saybrook Road) is improved with several structures. The Site buildings, approximate construction dates and former/current operations are summarized in the table below and are depicted on *Figures 2 and 3*.

Building Name	Construction Date	Historical Use	Recent/Current Use
Jailhouse	1845 With additions in 1878 - 1899	Haddam County Jail & Jailers "Mansion"	Formerly Connecticut Justice Academy (Training facility for correctional officers) Currently vacant
Town "Annex" Building	~late 1800s Renovated as classrooms in 1973-1974 Renovated for "Annex" use in ~2001	Dairy/Cow barn	Formerly classrooms for CT Justice Academy Currently a meeting space & the Town of Haddam Health Department Office
Pump House	~early 1900s	Garage & Pump house	Storage Garage & Pump house
Barn	~1855	Corn house & Piggery	Currently storage space
Shed	~1855	Farm shed/storage	Currently storage space

Other historical structures and barns were once present on the property. A review of historical references indicated that former foundations were identified east of the Town "Annex" building and along the tree line southwest of the "Annex" building. The exact sizes, construction/demolition dates and former uses of these buildings are unknown.

2.4 Utilities

A general overview of the current and former Site utilities is provided in this Section. A complete, detailed evaluation of the Site utilities as they pertain to possible Site re-use alternatives was also conducted, the results of which are summarized in *Section 5.0*.

2.4.1 Water Supply

Historically, a cistern and water collection system located to the south of the Site at the top of the hill supplied the former jail with potable water (*Figure 2*). The system consists of an approximately 100,000-gallon concrete holding tank, supplied by an adjacent drilled 191 feet deep water supply well. A memorandum from Nathan L. Jacobson & Associates, Inc. to the Town Public Works Director references a 36-hour pump test (conducted in 1987) which indicated a well yield rate of 30 gallons per minute.

CISTERN

Currently, the cistern and water collection system provide fire protection to two fire hydrants located on Site, as well as irrigation to the adjacent, off-site, recreational park and sports fields located to the south of the Site.

A well completion report identified in Town files indicates a potable supply well was installed adjacent to the "Annex" building in December 1999. This well was completed at a depth of approximately 360 feet below grade and provides potable water to the "Annex" building.

A summary of the potable wells associated with the Site and entire Jail property are summarized further in *Section 5.2*.

ANNEX BUILDING SUPPLY WELL

2.4.2 Septic System

The Site was historically served by a septic tank, which still exists on the property identified by two large concrete manhole covers off the southeast corner of the jailhouse building. This tank was disconnected, abandoned and filled with concrete, presumably when the Site was connected to a more modern septic tank, which is currently in use. Although the exact size of the current septic tank is unknown, it is located off the northeast corner of the jailhouse building and has been in place for at least 45 years (likely longer).

SEPTIC TANK LOCATION DEPICTED IN BACKGROUND

The septic system piping extends off-site, crossing Saybrook Road and follows Station Hill Road approximately 750 feet north of the Site; ultimately discharging to a leach field located along the southern side of the railroad tracks, east of Station Hill Road (*Figure 2*). The property was formerly owned by the State of Connecticut. In 2017 the Town of Haddam went through a conveyance process with the state legislature to acquire the parcel from the state. The Town's purpose for acquiring the land was to secure the future right to construct a new septic leaching field on the property as further described in *Section 5.1*.

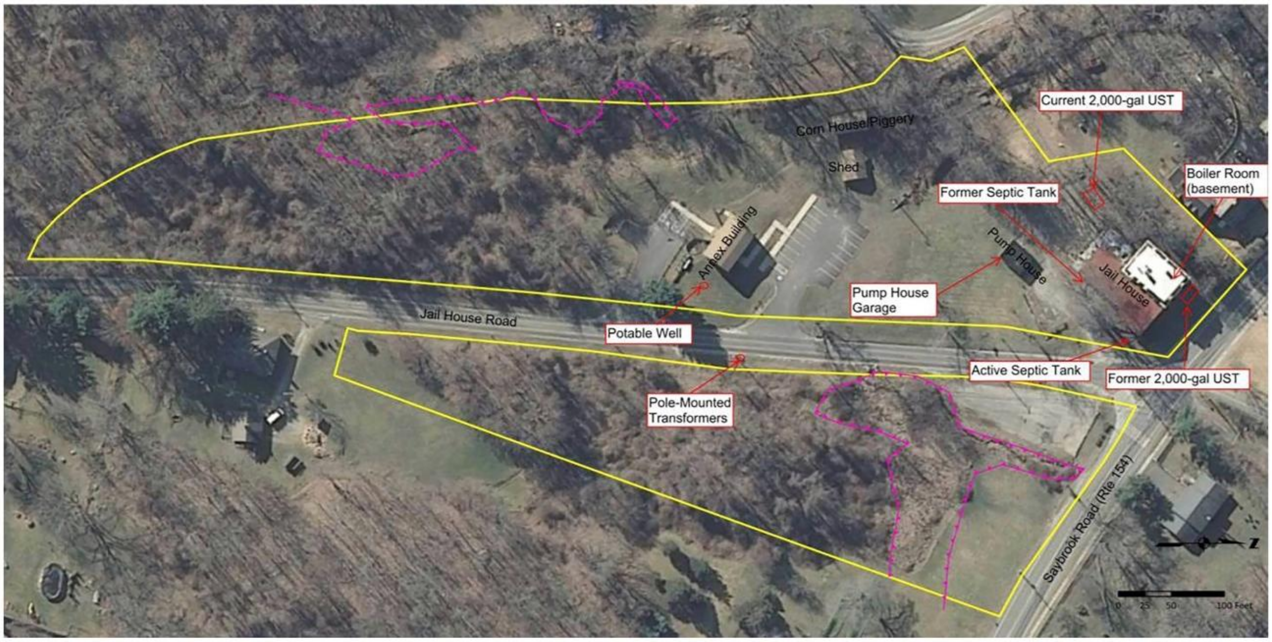
2.4.3 Heat

The main jailhouse building was formerly heated by an oil-fired boiler, supplied by a 2,000-gallon underground storage tank (UST), formerly located off the northwest portion of the building. This UST was reportedly removed in 1998 and was replaced by another approximately 2,000-gallon heating oil UST located behind the southwest corner of the jailhouse building. Additional information regarding the removal of the original UST is provided in *Section 3*.

The "Annex" building is currently heated by a propane-fired boiler, supplied by an above-ground propane storage tank located to the east of the building.

2.4.4 Other Utilities

Electrical services to the "Annex" building enter the Site via overhead wires located along Jail Hill Road, provided by Eversource.



SITE MAP

2.5 Environmental Setting

2.5.1 Topography & Geology

The topography of the Site generally slopes north towards Saybrook Road (USGS, 1971). The regional topography also slopes north/northeast towards the Connecticut River. Surficial material at the Site is mapped as layered sand and gravel (Stone, Schafer, London, and Thompson, 1992) over fine sand and thin glacial till. Such surficial material has a high permeability and any releases that were to occur would be expected to migrate downward to the layer of fines, then migrate laterally.

Bedrock beneath the Site is mapped as primarily Collins Hill Brimfield Schist with volcanic Middletown Formation in the upper member found in the southwest corner of the Site (Rodgers, 1985). It is noted that bedrock outcrops were observed along the southern portion of the jailhouse parcel. Soil borings advanced during the August 2016 Phase II ESA encountered bedrock at depths ranging from approximately 9 to 19 feet below grade (fbg), with depth to bedrock increasing towards the northern portion of the Site. A monitoring well was installed in front of the jailhouse (along Saybrook Road) to a depth of 25 feet without encountering bedrock.

2.5.2 Hydrology & Hydrogeology

Groundwater

The quality of groundwater beneath the Site is classified by the Connecticut Department of Energy and Environmental Protection (DEEP) as GA (DEEP, 2016). GA groundwater is presumed to be used for existing private and potential public or private supplies of water suitable for drinking without treatment.

The direction of groundwater flow within the surficial geological unit is influenced by a number of factors, including the physical characteristics of the geological unit (such as particle size), the local topography, the presence of surface water bodies, the depth to bedrock, and the type of aquifer. For an unconsolidated, unconfined aquifer, groundwater generally flows in the direction of the greatest topographic gradient. Based on USGS mapping and field observations of the local topography and surface water hydrology, the inferred groundwater flow direction is to the north towards the CT River.

Previous investigations conducted in approximately 1998 confirmed that groundwater elevations indicated groundwater flow was to the north. Depth to groundwater during the August 2016 Phase II Investigation ranged from approximately 9 to 16 feet below grade.

Surface Water

The nearest mapped surface water body, the Connecticut River, is located approximately 1,500 feet north of the Site (USGS, 1971). The Connecticut River is inferred to be downgradient of the Site. The Connecticut River is classified by the State of Connecticut as SB (DEEP, 2015). Designated uses of such coastal and marine surface waters are for marine fish, shellfish and wildlife habitat, shellfish harvesting for transfer to approved areas for purification prior to human consumption, recreation, industrial and other legitimate uses including navigation (DEEP, 2011).

Additionally, a small unnamed tributary to the Connecticut River is located on the southern, wooded portion of the Site. This stream appears to be culverted across the Site and daylights across Jail Hill Road on the additional Site parcel. The approximate location of this culverted stream is identified on *Figure 3*.

2.5.3 Wetlands

Wetlands are located on the southwestern portion of the jailhouse parcel and along the northern portion of the 11 Jail Hill Road parcel. Several wetlands and 100-year and 500-year flood zones are mapped within a one mile radius of the Site.

WETLANDS AREA ADJACENT TO JAIL HILL ROAD

In July 2016, a Fuss & O'Neill certified soil scientist completed a wetland delineation survey for the Site. This survey identified approximately 1,240 square feet of wetlands along the southwestern portion of the 945 Saybrook Road parcel as well as approximately 17,758 square feet (0.4 acres) of wetlands along the northern portion of the 11 Jail Hill Road parcel. The wetlands were flagged on the Site and are depicted on the Site Plan provided as *Figure 3*.

3 Environmental Assessments

The following sections summarize environmental assessments that have been conducted at the Site.

3.1 Historical Environmental Investigations

In January 1998, the 2,000-gallon heating oil UST was removed as part of a Connecticut Department of Public Works Statewide Underground Storage Tank Program. A total of 150 cubic yards of petroleum-impacted soil was also excavated at the time the UST was removed. Analytical results from confirmation soil samples collected from the sidewalls and bottom of the excavation area indicated that the petroleum-impacted soil was removed. One round of post remediation groundwater sample were collected which indicated VOCs and TPH were not identified in groundwater.

3.2 2016 Phase I ESA

In August 2016, Fuss & O'Neill completed a Phase I ESA for the Site in conformance with Standard Practice E 1527-13 for Environmental Site Assessments published by ASTM International. The findings of the Phase I ESA identified the following 7 recognized environmental conditions (RECs) associated with the Site:

- REC-1: Former 2,000-gallon Fuel Oil UST

  A 2,000-gallon heating oil UST was formerly located off the northwest corner of the historic Jail building. This tank was reportedly removed from the ground in January 1998. Approximately 150 cubic yards of petroleum impacted soil was also removed at this time.

PAD FOR UNDERGROUND STORAGE TANK

- REC-2: Existing 2,000-gallon Fuel Oil UST

  To replace the former 2,000-gallon heating oil UST, a reportedly 2,000-gallon fuel oil UST was installed behind the jailhouse building in approximately 1998. This tank is reportedly still in place and contains residual petroleum product.

- REC-3: Two On-Site septic tanks – one historical (inactive) and one active

  The jail building was historically served by a septic tank (of unknown size). Two large concrete manhole covers indicate the location of this former tank off of the southeast corner of the jailhouse building. The tank was filled with concrete and soil when the new septic tank was installed.

  The active septic tank is located off the northeast corner of the jail building (in line with the former tank). Although the exact date of installation is unknown, information obtained from Town personnel indicated the tank is at least more than 45 years old. This septic tank currently serves the Town "Annex" building located south of the old jailhouse.

- REC-4: Basement Boiler Room & Sump

  A sump was identified in the boiler room located in the basement of the jailhouse building. The sump is a potential receptor of fuel oil leaking from the feed and return piping to the boiler.

- REC-5: Pump House Garage

  A garage bay is located adjacent to the well pump house. The potential exists that it may have formerly been used as storage or an operations area for petroleum hydrocarbons or other potentially hazardous substances for farming and/or maintenance equipment.

PUMP HOUSE

- REC-6: Former Farming & Agricultural Operations

  Historical documentation indicates the property has an extensive history of farming and agricultural activities potentially involving pesticides associated with the former jail.

- REC-7: Pole mounted transformers

Four pole-mounted transformers were observed on the 11 Jail Hill Road parcel on two utility poles. Non-polychlorinated biphenyl (PCB) labels were observed on three of the four transformers, a label regarding the PCB-content was not visible on the fourth.

Refer to *Table 1* for a complete description of the RECs, potential release mechanisms and constituents of concern.

3.3 2016 Phase II ESA

Based on the findings of the Phase I ESA, Fuss & O'Neill developed a Phase II ESA scope of work which included the following activities:

- GPR Survey – A ground penetrating radar survey was conducted within 20 feet of the jail building to identify subsurface infrastructure, limits of storage tanks and any previously unknown subsurface features.

- Soil Boring Advancement & Soil Sampling – Soil borings were advanced at RECs identified during the Phase I ESA to evaluate the potential that releases of petroleum or other hazardous substances may have occurred.

- Concrete Chip Sampling – Concrete chip samples were collected from the jailhouse basement floor to evaluate the potential that releases of petroleum or other hazardous substances may have occurred within the basement of the jailhouse.

- Monitoring Well Installation & Groundwater Sampling – Five (5) monitoring wells were installed at RECs identified during the Phase I ESA to evaluate the potential that releases of petroleum or other hazardous substances may have impacted Site groundwater.

- Potable Well Sampling – Two on-Site potable supply wells (one serving the "Annex" building and one located in the pump house) were identified. A water sample was collected from the Annex building well to evaluate the potential that releases of hazardous substances may have impacted the deeper bedrock aquifer. A sample could not be collected from the pump house well because it is inaccessible.

- Sample On Site Septic Tank – A liquid sample was collected from the septic tank located off the northeast corner of the jailhouse building to assess the environmental quality of the material in the system.

A summary of the findings from the Phase II investigation is provided in the subsections below and on *Tables 2 through 4.* Borings logs and monitoring well completion reports are included as *Appendix A* and laboratory analytical reports are provided in *Appendix B.*

3.3.1 Phase II Soil Results

A total of 21 soil borings were advanced across the Site and 24 soil samples were collected and submitted for laboratory analysis of varying site constituents of concern including one or more of the following:

- Resource Conservation Recovery Act (RCRA) 8 Metals

- Synthetic Precipitation Leaching Procedure (SPLP) Metals
- Extractable Total Petroleum Hydrocarbons (ETPH)
- Polychlorinated Biphenyls (PCBs)
- Volatile Organic Compounds (VOCs)
- Polynuclear Aromatic Hydrocarbons (PAHs)
- Pesticides
- SPLP Pesticides

Sampling locations are depicted on *Figure 3*. Analytical results indicated that relatively low concentrations of pesticides (4, 4-DDD, 4-4-DDE) are present in surficial soil at a few locations across the property. The land has been cultivated and tilled extensively in the past for agriculture. The concentrations of pesticides that have been detected are randomly distributed in a pattern indicating the origin is from agricultural application. There is no evidence to indicate a release of pesticides has occurred from pesticide storage or mixing area.

SITE GROUNDS

Soil samples from 2 borings (SB-05/MW-03, SB-13) advanced near the well pump house had concentrations of lead that were slightly higher than the other samples collected at the Site. The samples were collected at the ground surface and the concentrations are attributed to lead-containing paint that has flaked off of the exterior concrete block pump house to the ground.

The investigation status for each of the RECs identified in the Phase I ESA is further described in *Table 1*. Residual petroleum product remains within the UST located off the southwest side of the jailhouse building.

Refer to *Table 2* for a summary of soil analytical results and to *Appendix A* for the soil boring logs.

3.3.2 Phase II Groundwater Results

To evaluate groundwater quality in the unconsolidated deposits aquifer, five (5) monitoring wells were installed (MW-01 through MW-05) to depths ranging from 9.5 to 25 feet below grade when refusal on bedrock was encountered. Copies of the monitoring well completion reports are included in *Appendix A.*

A groundwater sample from the unconsolidated deposits aquifer was only collected from one monitoring well (MW-01), due to insufficient volume as the water table was below the unconsolidated deposits in the bedrock aquifer. This sample was submitted for laboratory analysis of: RCRA 8 Metals, VOCs, PAHs, PCBs, and pesticides.

Analytical results indicated metals (including arsenic, barium, chromium and lead) and select PAHs were identified in groundwater at concentrations that were below state cleanup criteria. Pesticides and VOCs were not detected above laboratory reporting limits.

A water sample was also collected from the potable well within the bedrock aquifer that serves the Town "Annex" building. The sample was submitted for laboratory analysis of pesticides and VOCs. Neither pesticides nor VOCs were detected above laboratory reporting limits.

Additionally, a liquid sample was collected from the on-site septic tank to evaluate if a potential release of petroleum hydrocarbons or other hazardous substances to the septic system had occurred. This sample was submitted for laboratory analysis of the groundwater parameters listed above. Analytical results indicated a low level concentration of barium reported within the sample. All other parameters were not detected above laboratory reporting limits.

Refer to *Table 3* for a summary of the groundwater and water analytical results.

3.3.3 Phase II Concrete Chip Results

As part of the Phase II ESA, 3 concrete chip samples were collected from within the jailhouse basement and were submitted for laboratory analysis of one or more of the following: ETPH, PCBs, VOCs, and PAHs.

JAILHOUSE BASEMENT SUMP

Analytical results indicated a low level concentration (110 mg/kg) of ETPH was detected in one concrete chip sample (CC-02). The detection is representative of an incidental limited minor release of petroleum to the floor associated with normal operation of the boiler. All other constituents of concern were not detected above laboratory reporting limits in any of the samples analyzed.

Refer to *Table 4* for a summary of the concrete chip analytical results.

3.4 Recommendations

Based on the results from the Phase I and Phase II ESA, we recommend the following:

- Remove the 2,000-gallon UST and perform soil sampling to close out the tank grave in accordance with Connecticut's UST Closure Guidance Document
- Manage soil excavated near the well pump house building separately from other excavated soil. Collect samples from the stockpile for analysis of lead to determine if the soil needs to be managed separately from other soil excavated at the site.
- Collect samples of groundwater from the on-site bedrock supply wells for analysis of parameters required by the Connecticut Department of Public Health for well permitting for the selected reuse option.

4 Hazardous Building Materials Survey

Fuss & O'Neill EnviroScience, LLC (EnviroScience) conducted a supplemental hazardous building material survey for asbestos-containing materials (ACM), lead-based paint (LBP), and PCB-containing building materials within the buildings (excluding the Annex building).

The scope of services was developed based on review of the results from a 2010 EnviroScience investigation and 2011 abatement project on the main jailhouse building.

4.1 Historical Hazardous Building Materials Surveys

In December 2011 Fuss & O'Neill EnviroScience provided project specifications and bid documents for asbestos abatement and remediation of PCB-containing building materials in preparation for the demolition of a rear portion of the jail house building.

FORMER REAR ADDITION OF JAILHOUSE BUILDING

The asbestos abatement activities commenced May 2012 and included the removal and disposal of asbestos-containing materials from the following areas of the portion of the building to be demolished: tile from the kitchen storage, fire escape and bathrooms, caulking and transite from the original jailhouse door systems, and flashing from the roof. PCB-containing building materials were also remediated between May and June 2012 which included the removal of exterior window and door caulking compounds and PCB-impacted exterior brick sills, brick and window/door framing.

Following completion of the hazardous building materials abatement, the rear addition of the jailhouse building (which reportedly consisted primarily of a kitchen area and cafeteria) was demolished.

4.2 2016 Hazardous Building Materials Survey

4.2.1 Asbestos Inspection

A property Owner must ensure that a thorough asbestos-containing material (ACM) inspection is performed prior to possible disturbance of suspect ACM during renovation or demolition activities. This is a requirement of the Environmental Protection Agency (EPA) National Emission Standards for Hazardous Air Pollutants (NESHAP) regulation located at Title 40 CFR, Part 61, Subpart M.

In July 2016 EnviroScience conducted the inspection by visually inspecting for suspect ACM. The suspect materials were categorized into three EPA NESHAP groups: friable and non-friable Category I and Category II type ACM. The suspect ACM were also categorized into their applications including Thermal System Insulation (TSI), Surfacing ACM (S), and Miscellaneous ACM (M).

The EPA recommends collecting suspect ACM samples in a manner sufficient to determine asbestos content and to segregate each suspect type of homogenous (similar in color, texture, and date of application) materials. The EPA NESHAP regulation does not specifically identify a minimum number of samples to be collected for each homogeneous material, but the NESHAP regulation does recommend the use of sampling protocols included in Title 40 CFR, Part 763, Subpart E: Asbestos Hazard Emergency Response Act (AHERA).

EnviroScience licensed asbestos inspectors collected samples of those suspect ACM anticipated to be disturbed by proposed renovation activities, and prepared proper chain-of-custody forms for transmission of the samples to EMSL Analytical Inc. for analysis. EMSL is a Connecticut-licensed and American Industrial Hygiene Association (AIHA)-accredited asbestos laboratory. Initial asbestos sample analysis was conducted using the EPA Interim Method for the Determination of Asbestos in Bulk Building Materials (EPA/600/R-93/116) via Polarized Light Microscopy with Dispersion Staining (PLM/DS).

Additionally, the EPA has suggested that materials that are non-friable organically bound (NOB) materials (e.g., asphaltic-based materials, adhesives, etc.) are recommended for further confirmatory analysis utilizing Transmission Electron Microscopy (TEM). Several collected samples were recommended to be analyzed by TEM.

Based on visual observations, sample collection, and laboratory analysis, ACM are present at the Site. Identified ACM includes the following:

- Floor linoleum and associated adhesive;
- Cove base molding adhesive;
- Textured ceiling finish;
- Boiler components;
- Smooth coat associated with wall plaster;
- Window caulking compounds;
- Roof leader flashing caulking compound;

- Remnants of flashing at west elevation (assumed asphalt tar left from previous building demolition);
- Sheetrock joint compound;
- Asphalt paper associated with fiberglass insulation;
- Black asphalt rolled roofing and cement.

ROOM IN UPPER FLOOR OF JAILHOUSE

4.2.2 Lead-Based Paint Determination

In July 2016 EnviroScience performed a lead-based paint (LBP) determination associated with coated building components at the Site that may be disturbed during renovation activities. An X-ray fluorescence (XRF) analyzer was used to perform the LBP determination. The determination was conducted in accordance with generally-accepted industry standards for non-residential (i.e., not child-occupied) buildings.

For the purpose of this LBP determination, representative building components were tested as part of this pre-renovation study. Individual repainting efforts are not discoverable in such a limited program. LBP issues involving properties that are not residential are regulated to a limited degree for worker protection relating to paint-disturbing work activities and waste disposal.

Worker protection is regulated by OSHA regulations, as well as CTDPH regulations. These regulations involve air monitoring of workers to determine exposure levels when disturbing lead-containing paint. An LBP determination cannot determine a safe level of lead, but is intended to provide guidance for implementing industry standards for lead in paint at identified locations. Contractors may then better determine exposure of workers to airborne lead by understanding the different concentrations of LBP activities that disturb paint on representative surfaces.

The LBP determination indicated consistent painting trends associated with representative building components that may be impacted by renovation work. The following building components were determined to contain levels of lead (greater than 1.0 mg/cm^2):

- Metal wall panels;
- Metal cell doors;
- Porcelain sinks and toilets;
- Metal tables;
- Metal bed frames;
- Brick wall paint;
- Metal and wood door components;
- Stair treads, risers, stringer and other components;

- Wood baseboards;
- Metal and wood window components;
- Painted plaster walls;
- Ceramic wall tiles;
- Painted wood floor;
- Painted wood siding, trim, windows (corn crib/piggery);
- Root cellar door components.

CELL DOOR

4.2.3 PCBs in Building Materials

Sampling of building materials for PCBs is presently not mandated by the EPA. However, significant liability risk exists for improperly disposing of PCB- containing waste materials. Recent knowledge and awareness of PCBs within matrices such as caulking, glazing compounds, paints, adhesives and ceiling tiles has become more prevalent, especially amongst remediation contractors, waste haulers, and disposal facilities.

Many property owners have become subject to large changes in schedule, scope, and costs as a result of failure to identify these possible contaminants prior to renovation or demolition. We recommended this testing as part of the work. This information will serve as useful to significant impact and potential requirements for planning required by the EPA which must be implemented if PCBs are identified at a project site.

The EPA requirements apply and require removal of PCBs once identified, regardless of project intent as an unauthorized use of PCBs. Therefore, if buildings are to remain for re-use and PCBs are identified, the EPA still requires PCB material removal once it is determined that PCBs are present. In addition to identification of source materials containing PCBs, if PCBs are present at certain concentrations, additional sampling and analysis of adjacent surfaces in contact with PCB sources, or which may have been contaminated from a source of PCBs (e.g. soil), must also be performed or remediated.

EPA requirements apply only if PCBs are present in concentrations above a specified level. Presently, PCB-containing materials at concentrations equal to or greater than (≥) 50 ppm, or equivalent units of milligrams per kilogram (mg/kg) are regulated. Note materials containing less than (<) 50 ppm may also be regulated unless proven to be an “Excluded PCB Product”. The definition of an Excluded PCB Product includes those products or source of the products containing <50 ppm concentration PCBs that were legally manufactured, processed, distributed in commerce, or used before October 1, 1984.

In July 2016, EnviroScience collected 63 bulk samples for PCB analysis. Samples that were collected were not submitted for PCB analysis based on Client direction due to the unknown renovation scope and timing for renovation at the Site. The samples were frozen pending analysis based on reuse plan. The sample holding time for laboratory analysis of one year from the time the samples are frozen expired on July 22, 2017 and the Client directed EnviroScience to dispose of the samples.

5 Utility Assessment

The findings of the utility analysis are provided in the subsequent sections below.

5.1 Septic System

5.1.1 Camera Study

The jail existing sewer pipelines were inspected on March 21, 2017 by A&C Connection Inspection and Fuss & O'Neill. The inspection was performed using a camera that recorded the inspection to a DVD. The results indicated that the existing concrete block septic tank was in generally good condition. However, the influent and effluent piping constructed of cast iron were in poor condition and severely corroded under the Saybrook Road crossing to Station Hill Road. The influent piping changes from cast iron to tile (observed to be in generally good condition approximately 18 feet from the tank. Tree roots were encountered in the influent piping approximately 50 feet from the septic tank.

TILE INFLUENT PIPE TO EXISTING LEACHING FIELD

On Station Hill Road the manhole at the bottom has holes through it allowing stormwater into the pipe. The tile influent and effluent piping to the leaching field were in generally good condition although blockages of sediment were identified in the pipe.

5.1.2 Alternative Leaching Field Evaluation

Alternative locations for a new septic leaching field for the jail were evaluated in December 2016 through the excavation of test pits at the following three locations:

- 79 Jail Hill Road (the recreational field),
- 945 Saybrook Road (the jailhouse property), and
- Station Hill Road Property (the Railroad property where the existing system is located).

Three test pits were excavated at each site identified above and a percolation test was conducted (or attempted) at one test pit location from each site. Percolation rates were not obtained from 79 Jail Hill Road or 945 Saybrook Road due to fill and/or shallow depths to bedrock that would require septic systems in these locations to be installed in engineered fill. Standpipes were installed in test pits where percolation tests were performed.

STATION HILL ROAD PARCEL TEST PIT

Based on the results from the test pits and percolation test, the Station Hill Road property (where the current leach field is located as show on *Figure 4*) was determined to be the best location for a new septic leaching field to support reuse of the jail property.

The test pit and percolation test logs for each site as well as the corresponding figures depicting the locations of the test pits and percolation holes are included as *Appendix C*.

5.1.3 Septic Leaching Field Concept Design

The site of the existing leaching field system for the jail house across Route 154 at the end of Station Hill Road was examined for a new State Health Department regulated septic system. The analysis involved preparation of a septic leaching field concept design to support reuse of the jail property as identified in *Figure 4*. The concept design analysis indicated that the site is adequate for 4,980 gallons per day leaching system.

Exceptions will be required from the Commissioner of Public Health for using a septic system not located on the same lot as the building served and for a leaching field serving multiple buildings; otherwise the system becomes DEEP regulated. Given that the existing septic system is located on the parcel used for this concept design, acquiring these exceptions is not anticipated to be an issue.

On-site soil testing determined fast soil percolation rates with high hydraulic capacity and depth to water at about 18 feet below the ground surface. To determine seasonal variability of the depth to groundwater, Fuss & O'Neill installed monitoring wells and performed groundwater table monitoring in the area of the Station Hill Road leach field for a period of approximately six months. During this period depth to groundwater ranged from 16 to 18 feet below the ground surface.

The concept design leaching field would have 12 inches of cover, a cross sectional height of 48 inches, and a total depth of 60 inches. The limiting factor for this site is the Minimum Leaching System Spread (MLSS) requirement which is not required when the groundwater depth is more than 72 inches below the bottom of the leaching field. Therefore the groundwater depth would have to be at 11 feet (60 inches + 72 inches) to make the MLSS a requirement. Groundwater was last measured on April 6th to be 18.6 feet deep.

Based on the results of the camera study, replacement piping from the jail building to the leaching field will likely be required. The existing septic tank effluent piping is cast iron in poor condition. Blockage in the septic tank effluent pipeline prevented the closed circuit television (CCTV) camera from being extended under Route 145, Saybrook Road. The nearest downhill manhole identified is approximately 670 feet away from the existing septic tank. This manhole has influent piping of clay in good condition; however, the camera could not reach under the roadway from the downhill manhole.

A technical memo including a complete discussion of the septic leaching field concept design is included as *Appendix D*.

FIGURE 4: SEPTIC LEACHING FIELD CONCEPT DESIGN

5.2 Water Supply

The Site historically was supplied with potable water from the 100,000-gallon cistern. Currently this system is only used to provide fire protection via 6" asbestos pipe to two fire hydrants located on Site. The cistern system also provides irrigation to the adjacent off-site recreational park and sports fields located south of the Site.

Due to contamination from rodents, the cistern is considered unsuitable as a source of potable water and the only potential use for this system would be for fire protection or irrigation. The structural integrity of the cistern concrete, adequacy of the connection piping and the condition and productivity of the well were not assessed. Although there are some questions about the long-term reliability of this system, initial indications are that this gravity-based system could meet current fire safety codes provided that sufficient pressures and flows were available at the points of use. The system would have to be tested in order to quantify these parameters.

CISTERN WELL

A well completion report indicates a potable supply well was installed adjacent to the "Annex" building in December 1999. This well was completed at a depth of approximately 360 feet below grade and provides potable water to the "Annex" building.

A summary of the potable wells associated with the Site and entire Jail property are summarized in the table below. Approximate locations of each well are identified on *Figure 2*.

Potable Well	Installation Date	Diameter	Depth (fbg)	Yield (gpm)	Current Use
Cistern Well	Unknown (Pre-1982)	8"	~191 fbg	30 gpm	Supplies the 100,000-gallon cistern to provide water to fire hydrants on Site & irrigation sprinklers for recreational fields south of the Site
Annex Well	12/1999	6"	360 fbg	22 gpm	Provides potable water for Town Annex building located on Site
JailHouse Well	Unknown	6"	Unknown	Unknown	Not in Use. This well was discontinued approximately circa 1980s.

Notes:

gpm – gallons per minute

fbg – feet below grade

6 Building Condition Assessment

A Property Condition Analysis (PCA) was prepared for the Site including the former jail and adjoining storage and agricultural buildings (*Appendix E*). The purpose of the PCA was to assess the structure, building envelope, and mechanical systems for conditions that present immediate concern of risk, hazard, or safety to the Town of Haddam and the building's future occupants. The PCA inspections were performed on July 21 and 25, 2016. The site survey work for the mechanical and electrical systems was done on August 1, 2016.

The PCA included a visual walk-though survey in which the following building components and building systems were reviewed where possible: basement walls, floor structures, roof structures, exterior and interior bearing walls, the building envelope, mechanical, plumbing and electrical systems. Access to roofing conditions and roof structures were limited, but observations were made where possible and are reported herein.

A prior investigation of all the buildings on site was performed in December, 2005 by Fellner Associates Architects, LLC. Results of this study were compiled in a report which was available for the current team's use. A subsequent study of the jail building was performed by Architectural Workshop in October 2008, which was also available for use. It is our understanding that the jail building was used as such until the late 1960's, and then was used through the 70's and 80's as a criminal justice educational facility. It has been abandoned since that time.

The jail building has fallen into a state of disrepair due to neglect over a long period of time, but the current building envelope appears to have been renovated subsequent to the 2008 report and is generally intact. Overall, the main structural system of the building is generally in good condition. The other, smaller structures on the site vary widely, but all have some structural deficiencies and concerns. As plans for reuse of the buildings on site are developed, any buildings that are contemplated for reuse should have all damaged interior finishes removed to permit full visual inspection of structures in order to better identify costs to bring the buildings up to the required capacity for the proposed use. Repairs and upgrades must be made as needed to prepare the buildings for marketing and reuse.


JAIL BUILDING ROOF

The condition of the mechanical and electrical equipment examined in this report is generally very poor. This equipment has no potential for re-use, with two possible exceptions, namely: the Pump House well and Annex Building well for potable water use, and the cistern with its associated well and piping for fire-protection use.

Limiting conditions and details of the PCA are described in the complete Property Conditions Report included in *Appendix E.*

7 Traffic Assessment

A traffic assessment was conducted to identify preliminary concerns related to traffic engineering and permitting for new potential uses at the jail property. This section discusses concerns related to the unique transportation related characteristics of the site and the local roadway network, including parking and safety concerns, as well as local and state traffic permitting requirements and a brief discussion of how they may vary based on the size and type of development selected for the parcel.

INTERSECTION OF JAILHOUSE RD AND SAYBROOK RD

7.1 Site Considerations

The site is located on a stretch of State owned roadway. Based on the relatively thickly settled, neighborhood feel with a sidewalk and crosswalks across Saybrook Road at the Jail Hill Road and School House Lane intersections, the roadway has the potential to be used as a local, neighborhood type street. However, based on the 45 mile per hour posted speed limit and simple geometry, this stretch of roadway operates more as a high

SAYBROOK RD LOOKING NORTH

speed rural throughway. There are currently few visual or geometric cues to the driver to encourage lower travel speeds in the site vicinity.

The Connecticut Department of Transportation (CTDOT) Functional Classification map also provides some ambiguity on the issue of roadway type, with this part of town being located exactly on the border or what is classified as a rural or urban area, with the land to the west classified mostly as urban and to the east mostly as rural. In the urban area, Saybrook Road is classified as a collector roadway, while in the rural area it is classified as a major collector, and Jail Hill Road is classified as a minor collector.

These characteristics and classifications are important to take into account when considering a development strategy that could include aspects such as on-street parking. Locating on-street parking on the State roadway in an area like this, especially combined with curb extensions and a lowering of the posted speed limit, could help to promote this area as having the feel of a small village, consistent with the adjacent local land uses such as the plant nursery/farm stand and post office located just southeast of the proposed site.

A survey of the site will need to be conducted to determine how much right of way is provided on both sides of the roadway and how much space would be required in order to install either parallel or angled on-street park on either side of the roadway.

The enhanced definition of this stretch of roadway as more of a neighborhood street could also benefit from a realignment of the Jail Hill Road intersection to provide a more traditional, right angle connection with Saybrook Road. The existing intersection provides a forked connection, requiring vehicles on Jail Hill Road turning west onto Saybrook to stay left of a small island, while vehicles turning east stay to the right. This creates a confusing condition for drivers turning left from Saybrook Road westbound onto Jail Hill Road, as it is unclear which side of the island to navigate.

An investigation into the crash history in the vicinity of this intersection shows less than one crash per year recorded in recent history, however it is important to note that in June 2016 a fatal crash occurred involving a bicyclist and motor vehicle. A more complete analysis of the crash is required; however it is possible that a realignment of the intersection could have discouraged the behavior that led to the crash.

7.2 Local & State Traffic Permitting

In accordance with Town of Haddam and CTDOT standards, a traffic impact study will need to be prepared that will review a number of attributes related to the location of the site, its points of access, and the local roadway network. Given the Average Daily Traffic experienced on Saybrook Road (approximately 4,500 vehicles per day) and on Jail Hill Road (approximately 900 vehicles per day), it is expected that traffic capacity and delay concerns will not be a governing factor for the development, however it is important that the design meets all CTDOT traffic safety standards.

An additional permitting concern is an Administrative Decision Review by the Office of the State Traffic Administration (OSTA), a process which typically requires approximately 90 days to transpire. This review is required for any development of 100,000 square feet or more of gross floor area or 200 or more parking spaces. It is not expected that this development will meet these thresholds, but should the development package change this application may be required.

Lastly, any work conducted within the State right of way will require the contractor to procure an Encroachment Permit from the CTDOT District 2 office. This work could include, but is not limited to, any utility connections required, the construction of on-street parking, or any roadway/intersection realignment efforts.

8 Architectural Assessment

On July 21, 2016, Crosskey Architects conducted a visual inspection of all the buildings on the Site (with the exception of the Town "Annex" building) to assess the existing conditions and measured each building to develop "as-built" plans to document existing conditions and, eventually, determine reuse options. A general summary of the findings of the inspection is summarized below.

8.1 Jailhouse & Administrative Building

The jailhouse and administrative buildings are located in the northern portion of the Site along Saybrook Road. The jailhouse, built circa 1843, has a front facing gable and is two stories in scale, although the building contains three levels. The attached administrative building, built circa 1878, is a three-story structure designed in the Second Empire style with the third floor occurring within a mansard roof. Both buildings have been vacant for several years.

The jailhouse and administrative building exterior walls consist of thick brick faced walls with a granite veneer set in a random pattern. In general, the exterior masonry was found to be in good condition.

8.1.1 Jailhouse

There are two sections within the jailhouse interior; the front section contains three levels while the rear section only has two levels. The basement level contained 18 cells – 8 in the front wing and 10 in the rear wing. A two-story "bullpen" area is located in the rear wing which may have served as a dining hall. Two stairwells connect the three floors and are open riser steel stairs with a mix of metal guard rails and jail bar walls.

The first floor level contained 15 jail cells, with a story space along the windows of the front wall. The rear wing has jail cells organized along one side of a central corridor. The opposite side is walled with prison bars and is open to the bullpen below. This is the only level within the jailhouse that connects to the administrative building.

The second story of the jailhouse is located in the front wing and contains two larger holding areas with free standing bunk beds and tables. This floor level does not line up or connect with the second floor of the administrative building.


JAILHOUSE

The jailhouse floors are built with reinforced concrete slabs with integral cove base at each of the prison cells. The floor slabs are in good condition. However, the paint throughout the interior is in poor condition, and the ceiling heights are not code compliant with current building codes.

The jailhouse roof consists of a red standing seam metal roof which appears to be relatively new and in good condition.

8.1.2 Administrative Building

The interior of the administrative building contains three floors and a basement. The basement is accessed by a single stair located off the kitchen and was used to house the mechanical equipment and was not used as occupied space.


ADMINISTRATIVE BUILDING

The first floor contains several small office rooms along the front and north sides of the building with a central staircase which connects to the upper floors. The kitchen and walk-in freezer are located along the rear of the first floor. A wood framed, load bearing wall runs down the center of the building and the ceilings are 10’-6” high. The existing interior conditions are poor.

The second floor contains several small offices organized around a central corridor with the central staircase leading into the corridor. This floor has 9'-6" high ceilings. Similar to the first floor, the interior finishes contain a mix of different materials from plaster walls to wood paneling and the finishes are in poor condition. The third floor layout is similar to the second floor; however conditions of the floor are much worse.

The administrative building roof consists of mansard roof covered with asphalt roof shingles that appear to be relatively new and in good condition. The upper or low-sloped potion of the roof is covered with white membrane roofing which also appears to be newer and in good condition.

8.2 Pump house

The pump house building is a small, one story concrete block building located adjacent to the rear parking lot of the jailhouse. The building measures 20'-7" by 25'-7" with two doors along the north wall which enter into two separate rooms.

The mechanical room is accessed from the left door and contains the pumps and electrical equipment. A pump pit is located along the far wall, across from the door. Double doors on the right lead to a storage room.

PUMP HOUSE

The pump house has three double hung wood windows; two on the west wall of the storage room and one on the south wall of the pump room; all of which are in fair to poor condition and need to be placed or restored. The exterior walls and doors are also in need of repainting.

8.3 Root Cellar

The root cellar is a one story stone structure building into the sloped hillside behind the jailhouse. The structure is completely overgrown with vegetation; therefore a full assessment of the building was not possible at the time of the


ROOT CELLAR

inspection. The building is divided into several rooms, by fieldstone retaining walls, which are accessed by wood doors on the exposed wall of the structure. A reinforced concrete slab forms the ceiling and roof. The concrete floor appears to be in good condition.

8.4 Shed

The existing shed is a one story structure (measuring 28'-8" long by 18' wide) with a stone foundation and retaining wall, built into the side of the hill. The upper portion of the building is wood framed with an off-center ridge giving it a saltbox shade. The roof has a large overhang that runs the length of the building over the bar access doors. The gable ends are sided with wood and have no windows.

The stone foundation and exterior walls appear to be in good condition. The roofing appears to be relatively new and is in good condition.

8.5 Barn / Piggery

The barn/piggery is a two-story structure measuring 16' wide by 30' deep, built into the hillside located adjacent to the corn crib. The upper story of the barn has grade access from the high side of the hill, while the lower level has grade access from the rear. The lower level is constructed with stone foundation walls similar to the corncrib, while the upper story and roof are constructed of post and beam. The exterior wood siding is painted and in good condition. The roof is also in good condition and appears to be same vintage as the corncrib. Access to the interior of the bar was not provided at the time of the inspection.

BARN / PIGGERY

Refer to *Appendix F* for the complete *Haddam Jail Revitalization & Reuse Study* report prepared by Crosskey Architects.

9 Market Analysis

9.1 Market Observations

A complete market analysis for the Site was performed by Camoin Associates in October 2016. The study included data research and analysis, one-on-one interviews conducted with real estate professionals, business owners and local leaders. The following market observations are described below.

Socioeconomic Characteristics

While the region is not shedding residents, it is not growing substantially which means demand for new services or housing may be limited in the local market. The town's population appears bi-modally distributed with two large market segments: later career (45 to 59 years) and school age children (5 to 19 years) with a notable lack of young adults (20 to 34 years). Additionally, while Connecticut is the 7th oldest state in the Nation, Haddam is 5-years older than the state in terms of median age (and getting older).

Residential

After 2010, the number of new housing units dropped substantially (less than 1% growth). Haddam is not currently at the top of developer's lists primarily due to a high mill rate and lack of a downtown area. There is also a striking lack of diversity in the local housing market in terms of price points and unit type. The older housing stock is dominated by expensive single-family homes with very few rentals or affordable options.

Retail & Services

Existing residents earn more on average compared to the county and state, which equates to strong local spending power capable of supporting growth. However, there is an underserved retail market with few local retailers and services. Residents and visitors travel to other communities to make most purchases and to dine.

Overall, the market analysis found little diversity and not a lot of movement in the market. Immediate opportunities are about recapture instead of capitalizing on emerging trends or growing markets. Quality will be important and tying in re-use to Haddam's history and telling a compelling story will be critical.

9.2 Reuse Opportunities

Based on the market observations outlined above, the following uses have been identified as the greatest market-based opportunities for the Haddam Jail property. The ultimate reuse of the structure and the site may include one or a mix of the uses identified below. The market analysis provides a framework for informed decision-making; as a publically owned property, it will ultimately be up to the Haddam community to decide on a final reuse plan in accordance with the guiding principles established by the town.

High Quality Restaurant

According to the retail gap analysis of the local retail trade area, the categories with the greatest opportunity in the local trade area include full and limited service restaurants. This means that local residents are leaving Haddam to dine elsewhere in the region and a new restaurant designed to meet preferences of local market demand could re-capture some of this spending. The need for a quality eating establishments locally echoed throughout the interviews – nearly everyone interviewed for the market analysis suggested this use. With the close proximity to Goodspeed, strong traffic counts, and unique character of the site itself, the Haddam Jail offers a good location for a high-quality restaurant.

Quality Office Space

With few options for commercial space in Haddam, a tightening in the regional office market, and modest growth in the types of industry sectors that occupy office space regionally, there may be an opportunity for re-development of the Haddam Jail to capture some of this growth with new, quality office space. The Jail building offers a unique "cool factor" that would be attractive to many professional service firms such as architect and engineering businesses.

Market Rate Rentals or Condo's

On the whole, the population of Middlesex County is very slow-growing. However, while overall growth is sluggish, demographic shifts within the population present market opportunities for specific housing types that are currently in short supply. Essentially all projected household growth can be attributed to 65+ age cohorts. People in this range are typically retirees with grown children and many are seeking to downsize from large single-family homes. They may not yet be ready for a senior community (such as The Saybrook at Haddam), but would like a smaller, lower-maintenance home that is close to shopping and other amenities. Middlesex County is projected to gain over 2,500 households in the 65+ range over the next five years, and with relatively few options for these seniors to downsize, this presents an opportunity for Haddam to capture a portion of these households.

Young adults are another key market for multifamily housing that are critically underserved in the Haddam area. We learned through interviews that there is a significant number of young adults who would like to return to Haddam after college but are unable to find suitable rental housing. Moreover, over 11,000 young adults in Middlesex County between the ages of 18 and 34 live with their parents, or about 41%.[1] A good portion of these young adults would likely move out of their parents' homes and form their own households if they could find affordable housing options.

Historic Interpretation

Haddam has a rich, deep history and the Jail property is an important page in Haddam's story. Many of the individuals interviewed, as well as several members of the Buildings Committee, expressed an interest in retaining at least a portion of the building and/or property for historic interpretation. This could mean a portion of the building is dedicated to displaying cultural artifacts in a gallery-style setting or portions of the property are used for interpretation. For example, much of the property used to be agricultural, and those

[1] American Community Survey. Table B09091. 2015 5-year estimates.

serving time at the Jail would work in the fields. There may be an opportunity for some small-scale farming on the property, which would tie in well with a quality restaurant on-site. Mixing historic interpretation with modern experiences is driving many new trends in tourism and consumer spending such as the farm-to-table movement and experiential tourism. The Jail property offers Haddam an opportunity to be a part of these trends and any use considered for the site should include elements of this story.

Design-Create-Sell Space

Haddam, particularly the Tylerville area of Haddam, is home to a number of "maker" businesses, pointing to an entrepreneurial spirit within the community. Among these businesses are Whole Harmony Apothecary, a maker and seller of artisan teas and herbs; Creative Cakes by Donna, a cake designer and seller; and Steady Habit Brewing Company, a microbrewery. These businesses and others in the area are small-scale operations that produce high-quality products and sell to a large geographical area. Customers are drawn from well beyond Haddam and the immediate region to patronize these unique businesses.

This cluster of innovative businesses, and associated network of local entrepreneurs working together and supporting each other, is a unique asset within Haddam that many communities would be lucky to have. Adaptive reuse of the Haddam Jail property could include space to support new businesses and entrepreneurs. This could range from simply providing very low cost space to new businesses that meet a pre-defined criteria or creating new non-traditional spaces such as shared office space, co-working space, maker-space, or design-create-sell space. Should the town want to explore this direction further, additional steps must be taken to fully understand the needs of the local and regional entrepreneur community. This can be done through formation or informal surveys, attending startup events, digital media engagement, or other methods of engaging small business owners.

Refer to *Appendix G* for the complete Market Analysis Report completed by Camoin Associates.

10 Reuse Planning

A preferred reuse alternative for the site was developed based on the Town Building Committee's guiding principles, existing conditions, market suitability, and public outreach. The reuse planning and evaluation process is summarized below.

10.1 Reuse Criteria

The established criteria provided by the Town for the redevelopment of the site consisted of:

- Public access
- Historic character compatibility
- Sites physical capacity
- Sanitary flow limitations
- Financially self-sustaining
- Market ready

Public Access

A vital driving principle in the redevelopment of the site was allowing public access to the historic Haddam Jail. As such, a number of uses were precluded from consideration although the facility may contain components of such limited access uses so long as substantive portions of the facility are generally publically accessible.

Historic Character Compatibility

Maintaining the historic character is imperative to preserve the history of Haddam Jail and provide opportunities for financial assistance through the application of historic tax credits at the state and federal levels. It is anticipated that these revenue sources will be critical in creating a financially sustainable redevelopment of the property.

Site Physical Capacity

The preferred redevelopment option takes into consideration the environmental and physical setting of the site. As discussed previously in the Site Information and Environmental Assessments sections, the site has redevelopment limitations. These include parcel configuration confines, steep slopes, wetlands, shallow depth to bedrock, and environmental remediation action items.

Sanitary Flow Limitations

Presently, municipal wastewater disposal is not available to serve the Jail site therefore requiring the use of a septic system. Currently, the Jail House and Admin Building connect to an existing septic leaching field located off-site. This septic field and parcel is located across Saybrook Road (Route 154) at the end of Station Hill Road (*Figure 5*).

Given the sites physical limitations of bedrock, parcel confines, and wetlands; on-site septic is not feasible without incurring excessive project costs. In order to accommodate the septic requirements of any redevelopment option, the off-site location provides the optimal leaching field area.

Due to the size and configuration of the Station Hill parcel, the new septic system also has its limitations. This site will allow for a State Health Department septic design of 4,999 gallons per day maximum. In turn, any potential redevelopment scenario must adhere to that maximum flow capacity.

FIGURE 5: PROPOSED SEPTIC LEACHING FIELD ON THE STATION HILL PARCEL

Financially Self-Sustaining

The preferred reuse development option should be financially self-sustaining needing no public assistance from the town.

Market Ready

The market analysis suggests the viability of a suite of standard uses that might be supported at the site. This analysis does not include an analysis of specialized, or niche uses that may also, and should be considered pending conformance with the Town's redevelopment guiding principles.

10.2 Commonalities & Existing Conditions

A number of common physical site elements and preservation goals were identified during the reuse planning process. These commonalties are shown throughout each of the reuse alternative diagrams and include:

- Steep topography
- Wetlands
- Existing vegetation to remain
- Preserving the agricultural campus
- Resurrecting historic agricultural paths
- Minimizing on-site parking
- Restoring historic buildings

Physically the site is contained within two parcels that are bisected by Jail Hill Road. Both parcels contain wooded vegetation, steep topography, and wetlands. The northern jail property contains a number of existing historic buildings to be restored. A large portion of this parcel to the west is primarily undevelopable land comprised of wetlands, steep slopes, and vegetation. Similarly, the southern jail property is comprised of the same restrictions such as wetlands, steep topography, and vegetation. Additionally, the southern parcel contains a stream that daylights from under Jail Hill Road.

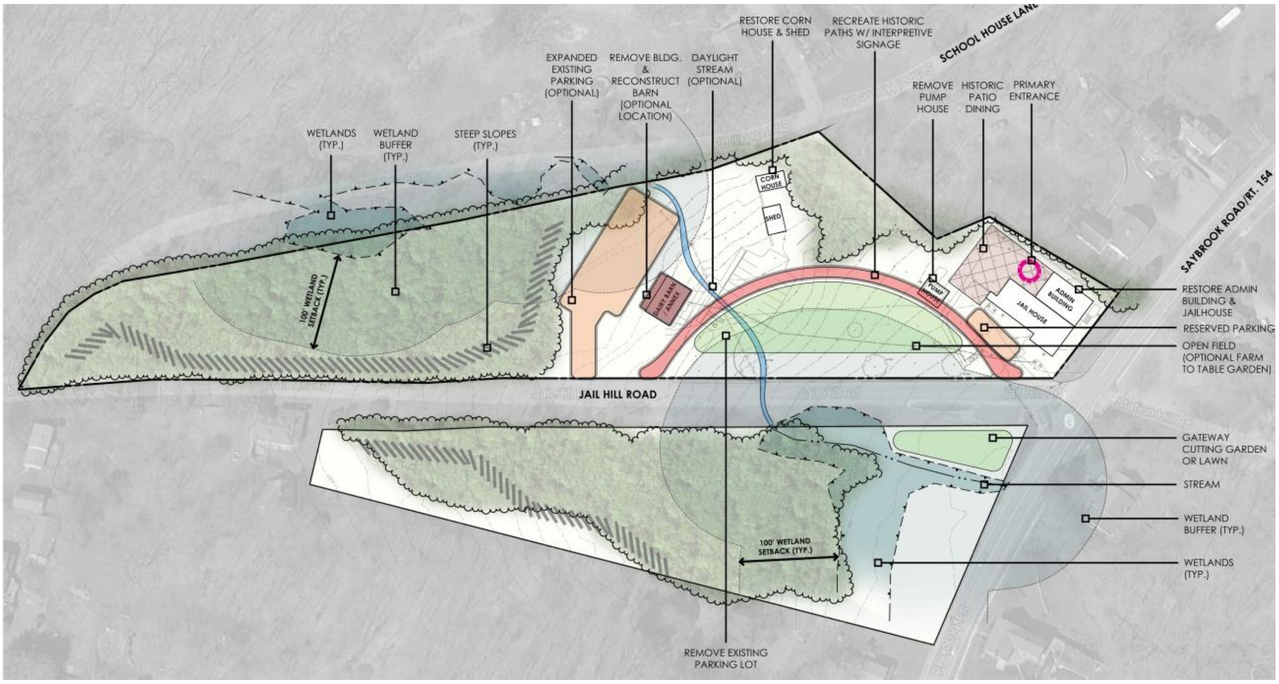


FIGURE 6: COMMONALITIES

Historically the jail site was self-sufficient by which the prisoners grew their own food and raised livestock (*Figure 7*). The agricultural element of the Haddam jail site is a unique historical feature to the Town of Haddam. Resurrecting the agricultural campus by limiting on-site parking, protecting existing tree lines, and providing green space is shown as a potential reuse commonality throughout each of the reuse diagrams.

FIGURE 7: BIRD'S EYE VIEW OF THE JAIL PROPERTY MID-20TH CENTURY

10.3 Parking Considerations

The jail site is located in a non-downtown environment and requires proximate parking facilities to adequately meet the needs of proposed uses. Site parking areas were developed under guidelines of the reuse criteria and industry standard ratios. Additionally, parking areas were established by evaluating the site individually as well as in broader context.

Parking will be a significant component of the redevelopment. To remain historically compatible, the parking options aim to preserve the agricultural campus by minimizing on-site paved parking and using potential off-site parking areas. A potential off-site parking area entails shared parking with the Town Library. As shown on *Figure 8*, the Town Library is located within 700' of the Jail site and is considered to be within a 1/4 mile walkable neighborhood. Other off-site parking considerations include on street parking on both Jail Hill and Saybrook Road (*Figure 9*). The surfacing of on-site parking lots shall be carefully considered. In many cases, alternative "soft pavement" options may be preferable. Parking options locations are preferred in areas which least impact the site's wetlands, vegetation, slopes, and historic character.

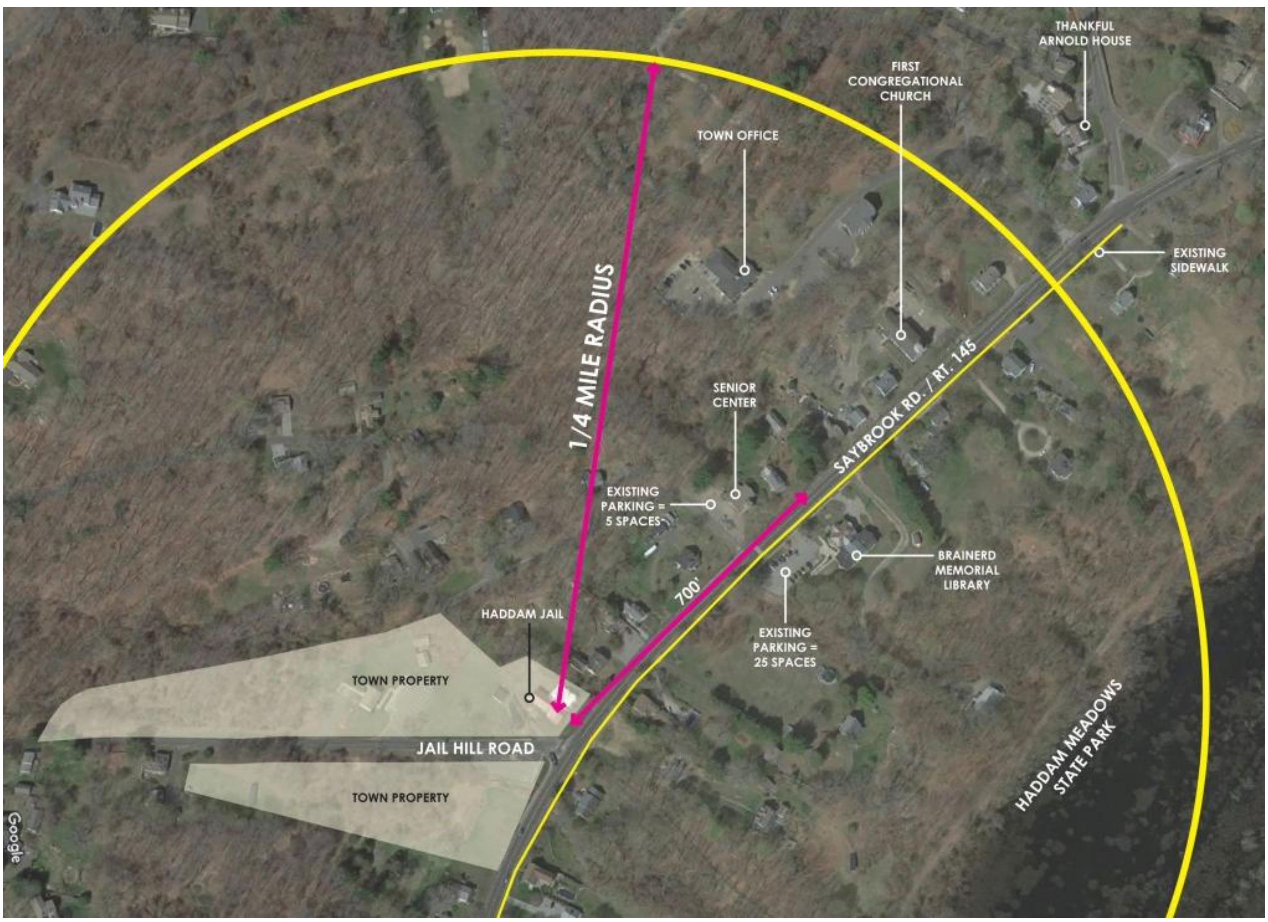


FIGURE 8: SITE CONTEXT WITHIN A ¼ MILE

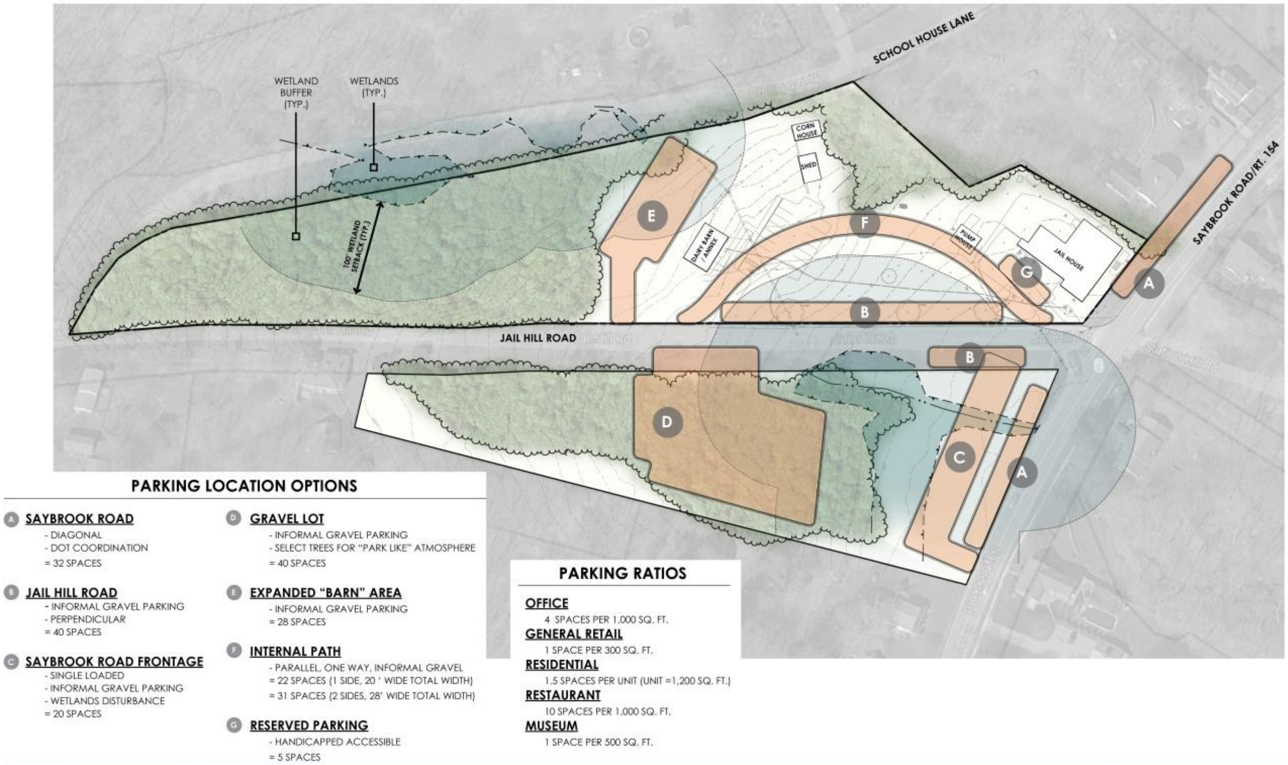


FIGURE 9: PARKING CONSIDERATIONS

10.4 Preliminary Reuse Alternatives

As a starting point in the reuse planning process, preliminary reuse alternatives were developed from the results of the market analysis, established reuse criteria, parking criteria, and existing condition assessments. Early on Crosskey Architects provided a Revitalization & Reuse study (*Appendix H*) outlining potential repurposing scenarios. Below are three preliminary reuse options and their associated conceptual site and floor plan graphics. The options conform to all of the reuse criteria, studies, and input received from the Building Committee.

Alternative # 1: Restaurant

The primary use depicted in Alternative # 1 is a restaurant facility housed in the Jail House and Admin Building. The architect's Revitalization & Reuse study illustrates such possible uses as a winery, Brew House and Tap Room, or Restaurant.

Due to septic limitations, the restaurant could provide a maximum of 145 seats in a one meal sitting. This may include a variety of seating time configurations such as a facility that contains 70 seats and serves lunch and dinner or other varieties that equal a total of 145 seats for all servings. The restaurant in this alternative would consist of a historic interpretive lobby on the ground floor satisfying the public access criteria. The potential secondary uses are possible combinations of office space or residential units on the 2nd and 3rd floors. The preliminary diagrams for Alternative #1 below (*Figures 10-12*) display parking requirements, potential parking areas, and potential architectural floor plans.

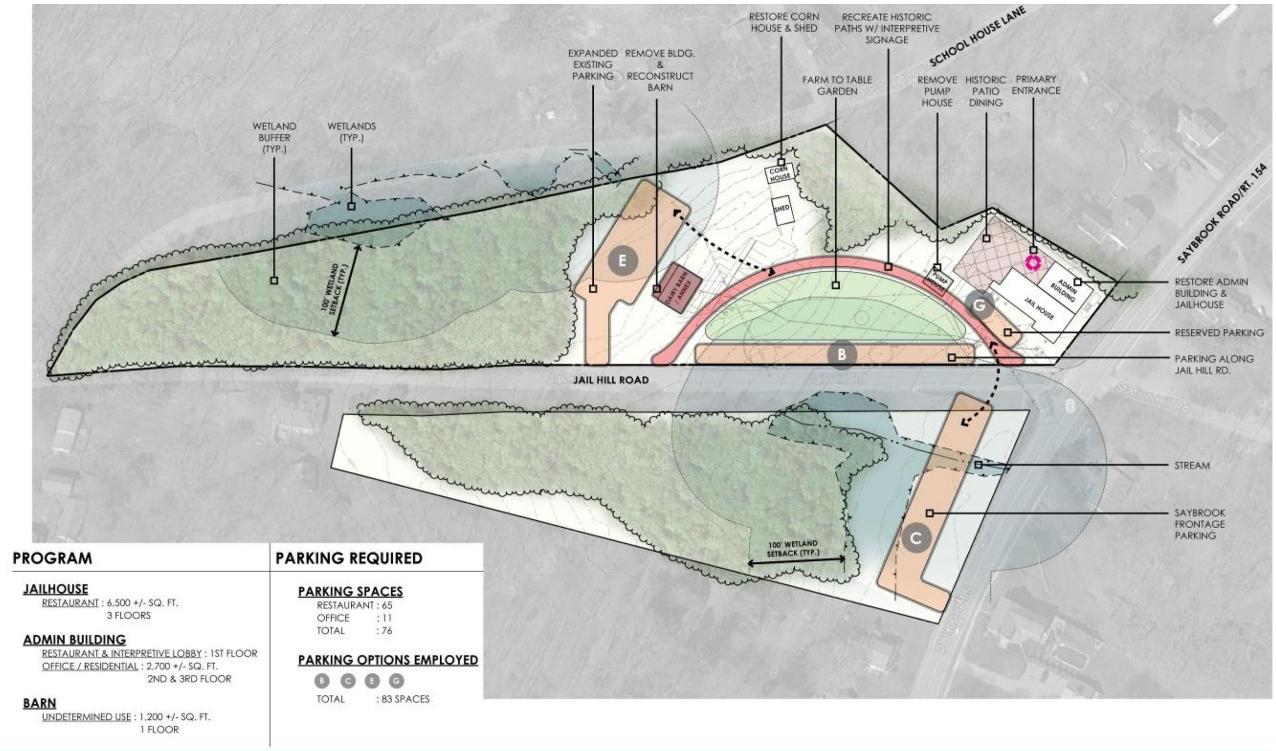


FIGURE 10: PRELIMINARY ALTERNATIVE #1 RESTAURANT SITE DIAGRAM

FIGURE 11: PRELIMINARY ALTERNATIVE #1A RESTAURANT FLOOR PLAN DIAGRAM

FIGURE 12: PRELIMINARY ALTERNATIVE #1B RESTAURANT FLOOR PLAN DIAGRAM

Alternative # 2: Museum

The primary use depicted in Alternative # 2 is non-profit, privately owned museum in the Jail House and Admin Building. Predicated on the established reuse criteria, such a facility must be financially self-sustaining without the need for continued municipal financial or operational assistance. The architect's Revitalization & Reuse study illustrates such uses as a museum of local history and farmers market.

The Museum reuse option fully satisfies the public access redevelopment guideline. Preservation of the historic campus is maximized here with minimal site impacts due to the reduced number of parking required for a museum. The potential secondary uses may be combinations of office space or residential units on the 2nd and 3rd floors. The preliminary diagrams for Alternative #2 below (*Figures 13-14*) display parking requirements, parking areas, and potential floor layout plans.

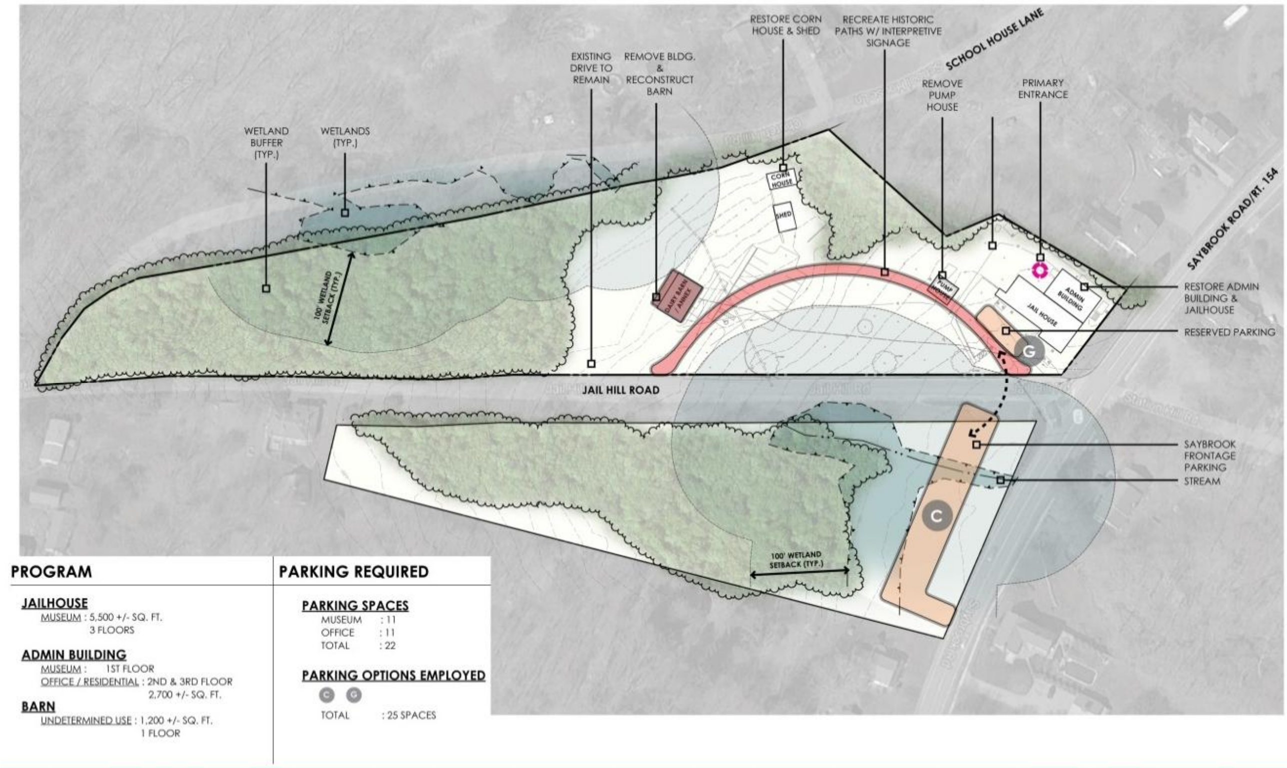


FIGURE 13: PRELIMINARY ALTERNATIVE #2 MUSEUM SITE DIAGRAM

GROSS BUILDING SQ. FT.	JAIL HOUSE	ADMIN HOUSE	TOTAL
BASEMENT LEVEL	2,695 SQ. FT.	-	2,695 SQ. FT.
GROUND FLOOR	2,200 SQ. FT.	1,670 SQ. FT.	3,870 SQ. FT.
SECOND FLOOR	889 SQ. FT.	1,670 SQ. FT.	2,559 SQ. FT.
THIRD FLOOR	-	1,670 SQ. FT.	1,670 SQ. FT.
TOTAL	5,784 SQ. FT.	5,010 SQ. FT.	10,794 SQ. FT.

FIGURE 14: PRELIMINARY ALTERNATIVE #2 MUSEUM FLOOR PLAN DIAGRAM

Alternative # 3: Retail

The primary use depicted in Alternative # 3 is a retail component in the Jail House and Admin Building accompanied by additional residential units. The architect's Revitalization & Reuse study illustrates such uses as residential similarly compatible with the market analysis proposing retail and services.

The retail component in this alternative allows the public to access the jail through the retail marketplace. The potential secondary uses may be combinations of office space or residential units on the 2nd and 3rd floors. Due to limiting septic capacity, a maxiumum of 16 additional residential units could be located on site. The preliminary diagrams for Alternative #3 below (*Figures 15-16*) display parking requirements and locations, potential residential unit locations, and potential floor layout plans for the Jail House and Admin Buidling.

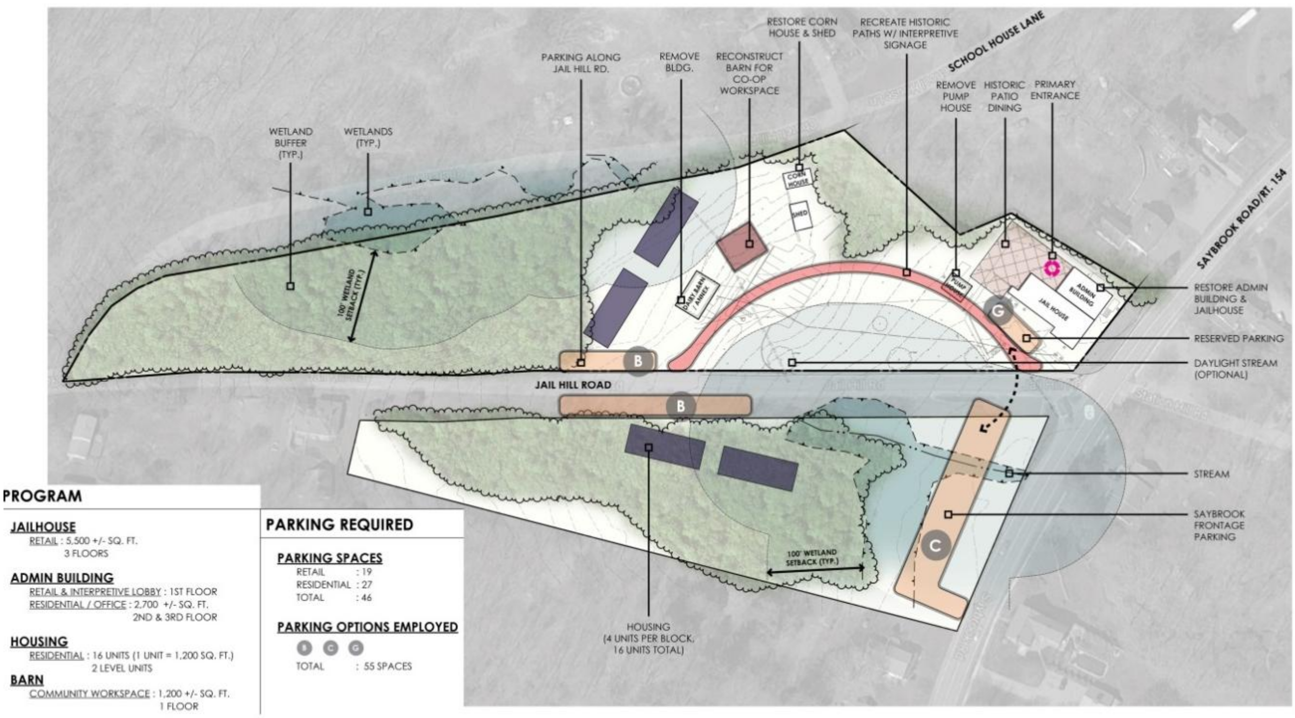


FIGURE 15: PRELIMINARY ALTERNATIVE #3 RETAIL SITE DIAGRAM

FIGURE 16: PRELIMINARY ALTERNATIVE #3 RETAIL FLOOR PLAN DIAGRAM

10.5 Public Outreach

August 31, 2016 Public Presentation

An overview of the information gathered was presented to the Town and public at an August 31, 2016 meeting. This included providing summaries of the existing condition assessments and reuse options.

June 29, 2017 Public Presentation

As part of the Town of Haddam's reuse planning process, the preliminary reuse options and data gathered were presented to the public. The Town of Haddam residents expressed a shared reuse vision compatible with the reuse planning objectives established and illustrated above.

The preliminary reuse option presentation at the June 29, 2017 public meeting included the following:

- Overview of market analysis
- Overview of existing conditions
- Town reuse criteria
- Historic character
- Parking considerations
- Preliminary reuse alternative diagrams as depicted above

10.6 Preferred Redevelopment Alternative

A desired redevelopment alternative for the site was identified during the preliminary reuse planning process. The preferred reuse option was established from a culmination of analysis, development of numerous alternatives, establishment of desired municipal guiding principles, and the aforementioned public outreach process. The preferred redevelopment alternative is a flexible and conceptual plan that envisions a primary use of a restaurant with a combination of museum and flexible space. The preferred redevelopment diagram serves as the basis of project costing and the development of a financial pro forma.

The concept plan (*Figure 17*) identifies overall site planning and building renovation goals, site work, parking considerations, and agricultural campus paths. In addition to illustrating the feasibility of such a reuse of the property, the recommendations contained herein may also be utilized by the Town of Haddam to assist during the site plan review and permit processes. The concept diagram serves to iterate the Towns redevelopment guidelines and it is understood that the selected development entity will be responsible for the submission of a fully compatible site plan.

Based on the preferred redevelopment alternative, Crosskey Architects developed a conceptual view and floor plan of a conceivable restaurant interior (*Figures 18-19*). The architectural floor plans provide a potential layout for a maximum 145 seats in a one meal sitting due to the septic limitations previously discussed. The concept rendering of the building's interior space portrays the appearance of a potential jail themed restaurant. Additionally included in *Appendix I*, Crosskey prepared a model of the Jailhouse and Admin building exterior. With the use of 3D modeling software, the architect's model illustrates a possible patio option for outdoor dining.

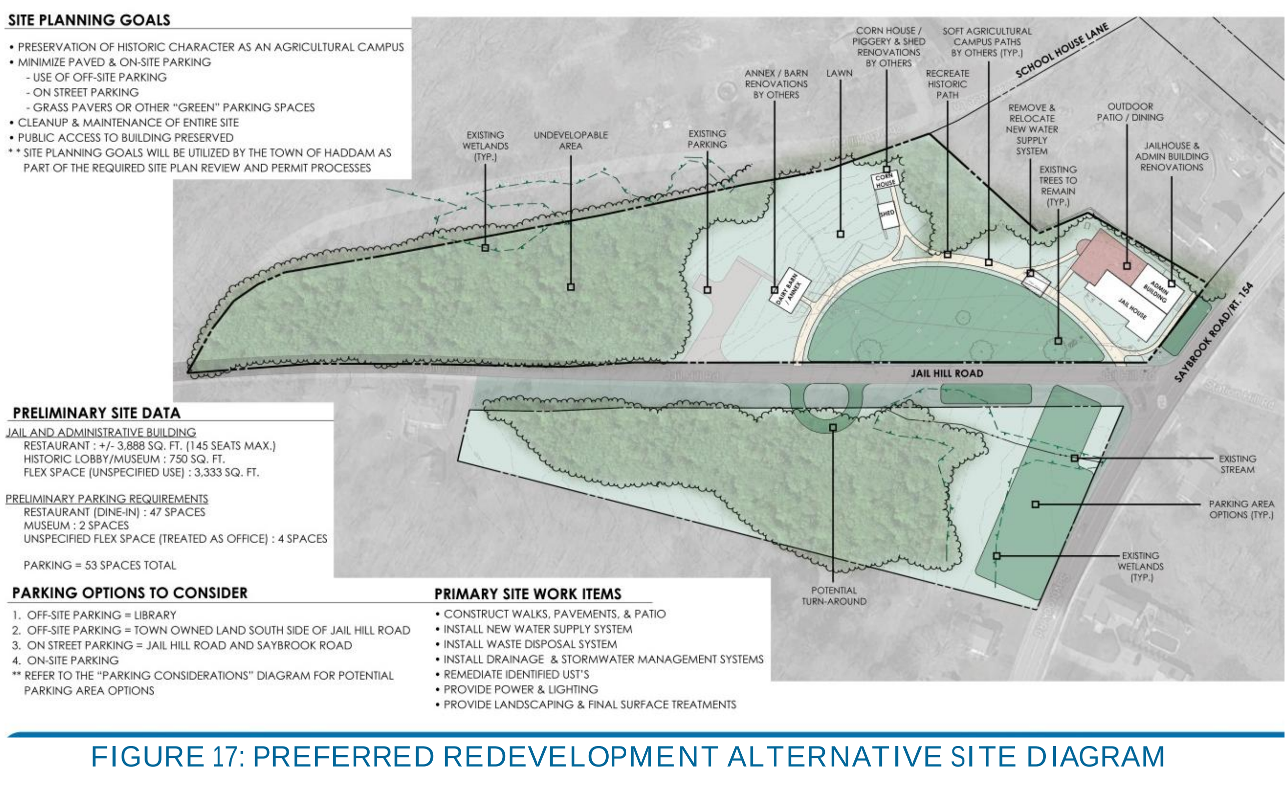


FIGURE 17: PREFERRED REDEVELOPMENT ALTERNATIVE SITE DIAGRAM

PLAN COLOR KEY - NET SQ. FT.	GROSS BUILDING SQ. FT.	JAIL HOUSE	ADMIN HOUSE	TOTAL
UNSPECIFIED - 3,333 SQ. FT.	BASEMENT LEVEL	2,695 SQ. FT.	-	2,695 SQ. FT.
BAR - 260 SQ. FT.	GROUND FLOOR	2,200 SQ. FT.	1,670 SQ. FT.	3,870 SQ. FT.
DINING - 2,720 SQ. FT.*	SECOND FLOOR	889 SQ. FT.	1,670 SQ. FT.	2,559 SQ. FT.
MUSEUM - 750 SQ. FT	THIRD FLOOR	-	1,670 SQ. FT.	1,670 SQ. FT.
KITCHEN - 555 SQ. FT.	TOTAL	5,784 SQ. FT.	5,010 SQ. FT.	10,794 SQ. FT.
STAIR - 97 SQ. FT.				
WAITING/GALLERY- 353 SQ. FT.				

* TOTAL SEAT COUNT =147 SEATS (MAX. CAPACITY)
125 SEATS PROVIDED

FIGURE 18: PREFERRED REDEVELOPMENT ALTERNATIVE FLOOR PLAN DIAGRAM

FIGURE 19: PREFERRED REDEVELOPMENT ALTERNATIVE CONCEPTUAL VIEW OF RESTAURANT INTERIOR

11 Pro Forma Analysis

11.1 Key Findings

This section lays out the results of the financial feasibility model performed by Camoin Associates for rehabilitating the former Haddam Jail. The purpose of the analysis is to determine the amount of the funding gap that would have to be filled by external sources in order for a successful project to occur in accordance with the preferred redevelopment alternative. The key findings of the analysis are as follows:

- Solely from an operational standpoint, a restaurant would likely be successful in the Haddam Jail. Based on the market analysis conducted for the Jail, a 141-seat restaurant should be able to achieve the minimum sales required for profitability.
- Under a scenario wherein the Jail building contains both a restaurant and leasable office space, the income generated by the property would attract developer investment of $1.36 million, or about 25% of the total cost of the project. In other words, in order for a developer to achieve minimum acceptable return, other funding sources would be needed to close a funding gap equivalent to approximately 75% of total project rehabilitation costs, or about $4.13 million.
- Under a scenario wherein the restaurant is the only income-generating component of the project, the funding gap increases to $4.61 million, or 84% of project costs.
- The large funding gap in both scenarios is driven by very high project costs and a low proportion of leasable space within the building.
- Historic tax credits are one mechanism that can be used to close the funding gap. Under Scenario 1, the remaining funding gap after applying historic tax credits would be about $3.0 million (54% of project cost), and under Scenario 2, the gap would equal $3.5 million (63% of project cost).
- Creating a Tax Increment Financing (TIF) district in the area of the Haddam Jail may be a source of additional revenue for closing the funding gap although the Town may need to consider transfer of ownership of the property to a tax paying entity.

11.2 Development Assumptions

The concept to be modeled includes the renovation of the Haddam Jail building into a restaurant, museum, and other currently unspecified uses, assumed to be usable as office space. The net square footage[2] of these uses is broken down as follows:

Uses by Square Footage	
Restaurant	3,888
Dining Area	2,720
Bar	260
Waiting Area	353
Kitchen	555
Office Space	3,333
Museum*	750

*Non-revenue generating

Source: Fuss and O'Neill

The 750 square feet of museum space is assumed to be non-revenue-generating.

Because the Town must retain ownership of the land and building, the Town will either directly or indirectly act as the building landlord. A restauranteur interested in operating in the space will not be able to acquire an ownership interest in the building, which therefore significantly limits the level of investment s/he would be willing to make in order to make the building acceptable for occupancy. Again, the Town may want to consider strategies to transfer ownership. Investment on the part of the restauranteur would likely be limited to that which is typical for a leased restaurant space, i.e. kitchen equipment, furnishings, and decorations. The restauranteur is unlikely to fund substantial structural, environmental, or site work under the current ownership model.

11.3 Order of Magnitude Opinion of Cost for Preferred Redevelopment Option

Fuss and O'Neill and Crosskey Associates estimate the total cost of the renovation—including environmental, site development, building renovation/architectural, kitchen equipment, septic leaching field, well, and soft costs—to range between $5,500,000 and $5,890,000. This is equivalent to between $509.26 and $545.37 per square foot.[3]

[2] Net square footage excludes mechanical, stairwells, and other non-usable areas of the building.
[3] For reference, total development costs for a similarly sized, new-build high-end restaurant on a development-ready site are about $270 per square foot, including contractor and architect fees, and excluding any site development costs. (Source: RS Means)

Estimated Project Costs		
	Low	High
Engineering Design, Permitting, Construction Documents	$ 409,000	$ 613,500
Engineering Field Oversight, Construction Management	$ 81,800	$ 204,500
General Overhead	$ 53,000	$ 53,000
Hazardous Material Abatement	$ 299,085	$ 299,085
Site Development	$ 1,310,000	$ 1,310,000
Building Renovation/Architectural	$ 1,634,000	$ 1,634,000
Kitchen Equipment	$ 400,000	$ 400,000
Septic Leaching Field	$ 166,000	$ 166,000
Well	$ 225,000	$ 225,000
Subtotal	$ 4,580,800	$ 4,908,000
20% Contingency	$ 916,160	$ 981,600
Total	$ 5,500,000	$ 5,890,000
Cost per Square Foot	$ 509.26	$ 545.37

Source: Fuss and O'Neill

11.4 Operation Assumptions

Restaurant (Preferred Use)

Sales per square foot is the most reliable indicator of a restaurant's profit potential. To break even, a full-service restaurant should generate a minimum of about $150-$250 in sales per interior square foot (including kitchen, dining, storage, and restrooms). A comfortably profitable restaurant (profits equal to 5% of sales) should have sales of around $300/SF.[4] Note that this break-even point refers only to the operational success of the restaurant itself and is not an evaluation of the financial feasibility of rehabilitating the Jail. (*See Financial Feasibility Analysis section below.*)

Due to septic system constraints, the capacity of a restaurant in the Haddam Jail is limited to 145 seats for a restaurant serving one meal per day, or approximately72 seats for a restaurant serving two meals per day. Using $300/SF as the operational profitability threshold, a restaurant at the Haddam Jail should have annual sales of at least $1.2 million per year. Assuming an average check of $35 per customer,[5] 6 nights per week of operations, and 52 weeks per year, a dinner-only restaurant would need to attract at least 107 customers per night, on average. The number of customers would vary significantly between mid-week and weekend nights, and seasonally.

The retail market analysis conducted for this project identified restaurant spending leakage in the Haddam trade area[6] of $9.8 million annually, indicating that spending by trade area residents significantly exceeds sales

[4] Baker Tilly. "Restaurant Benchmarks."
[5] Based on national average for restaurant dinner spending per person, from Zagat 2016 National Dining Trends Survey. A high-end restaurant is likely to have higher per-guest sales.
[6] The retail trade area is roughly defined as a 10-to-20-minute drive time from downtown Haddam, encompassing the majority of the Town of Haddam (excluding the Haddam Neck area on the east side of the Connecticut River) and the western portion of the Town of East Haddam (including downtown East Haddam and Moodus), and extends into

at trade area restaurants. In order for a restaurant in the Haddam Jail to reach $1.2 million in sales annually, it would need to capture about 12% of this leakage. This appears to be an achievable threshold and indicates a strong probability of success from a revenue generation standpoint.

A restaurant tenant is typically willing to spend approximately 8-10% of revenues on occupancy costs, including rent and any common area maintenance (CAM), taxes, and insurance. 10% is generally viewed to be the point at which occupancy cost starts to become excessive and begins to seriously impair a restaurant's ability to generate an adequate profit.[7] Rent itself is typically about 6% of sales; though a tenant would be willing to pay more in rent if other occupancy costs are lower than average. We assume that there would be no property taxes associated with this property since it will remain Town-owned.

Assuming sales of $300/SF, the absolute maximum acceptable occupancy cost for the restauranteur is $30/SF, to include rent and any other expenses associated with occupying the space. Other restaurant spaces currently listed in nearby Chester are in the $18-$20/SF range, NNN.[8] With "nets," this comes out to about $24-$27/SF. $30/SF is certainly on the high end, but potentially achievable due to the uniqueness of the space, potential to attract diners from existing local destinations such as the Goodspeed Opera House and local bed and breakfasts, and significant residential market demand as identified in the market analysis.

Office Space

Assuming the Town is able to rent out the undesignated space as office space, rents of about $15/SF may be achievable. This is somewhat higher than the going rates nearby, but the uniqueness and relatively small size of the space is likely to command higher rents on a square-foot basis.

11.5 Financial Feasibility Analysis

Camoin Associates modeled the feasibility of the project from the perspective of a potential developer. It is assumed that the Town would engage a private developer to undertake the rehabilitation of the property. The developer would then operate the property, leasing the space to a restauranteur and potential office user(s). At the end of 10 years, the model assumes that the developer would sell the ability to operate the building to a new investor, who would inherit the outstanding loan balance.

The discounted cash flow model determines the level of subsidy from the Town or other source that a developer would require in order to undertake the project and achieve an acceptable rate of return on his/her equity investment. Developer rates of return for recent restaurant development projects nationally have ranged from 11% to 20%, with an average return of about 15%.[9] The project was modeled under two scenarios:

(1) Restaurant space leased to restauranteur and undesignated space leased as office space
(2) Only restaurant space is leased

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northern Chester, southern Middletown, and northeastern Killingworth. See Haddam Jail Market Analysis for additional detail.

[7] Baker Tilly. "Restaurant Benchmarks."

[8] A "NNN" lease, or "triple net lease," excludes taxes, insurance, and common area maintenance. These expenses are paid by the tenant in addition to the base rent.

[9] Realty Rates Investor Survey Q3 2017

The following assumptions were made to model the cash flows under each scenario, based on the current real estate market in the Haddam region:

- Restaurant lease rate of $24/SF (excludes common area maintenance and insurance)
- Office space lease rate of $15/SF (excludes common area maintenance and insurance)
- Annual rent increase of 2%
- Vacancy and collection loss of 5% of gross income
- Operating expenses of 10% of effective gross income
- "High case" total redevelopment cost of $5,490,000, which deducts $400,000 in kitchen equipment costs to be incurred by the restauranteur (and not the developer)
- Developer equity contribution of 30% of development cost (after any subsidy)
- Permanent loan interest rate of 7.0% amortized over 30 years[10]
- The developer sells the right to operate the building to another investor at the end of 10 years. The value of the right to operate is estimated as the building's net operating income (NOI) in year 10 divided by a capitalization rate of 11%.[11] The value of the right to operate would be approximately $1.3 million under Scenario 1 and $867,000 under Scenario 2, and assumes that an agreement would be in place with the Town that allows the investor to operate the building for a long-term period. The new building operator would likely inherit the outstanding debt on the project and pay the difference as proceeds to the original developer.

Scenario 1

Under the first scenario (both restaurant and office space leased out beginning in year 1 of operations), the project generates a net operating income (NOI) of $122,527 in the first year. The income generated by the property would attract developer investment of $1.36 million, or about 25% of the total cost of the project. In other words, in order for a developer to achieve a minimum acceptable return of 11%, the other funding sources would be needed to close a funding gap equivalent to approximately 75% of total project rehabilitation costs, or about $4.13 million.

From the perspective of a bank providing project financing, the project is not "bankable" without a subsidy. Typically, banks require a debt service coverage ratio (DSCR) of at least 1.25 (calculated as the ratio of net operating income to debt service payments). Without a development cost subsidy, income generated by the project would not cover the debt service payments of nearly $336,000 per year.[12] With the subsidy described above, the DSCR rises above the 1.25 threshold (assumes the loan covers 70% of the after-subsidy development costs).

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[10] Based on typical financing terms for restaurant properties, as reported by Realty Rates Investor Survey Q3 2017.

[11] Average capitalization rate for restaurant properties, as reported by Realty Rates Investor Survey Q3 2017. Capitalization rates (or "cap rates") are commonly used for valuing income-generating property in a real estate appraisal. Capitalization rates are often used to reflect the risk of an individual investment from a market standpoint. The lower the cap rate, the lower the perceived risk of a particular investment, and thus the higher the cost of the asset. We note that in the current market environment nationally, cap rates for restaurant properties are somewhat higher than they are for other property types, indicating that investors perceive restaurant investments to be higher risk.

[12] Assumes a loan-to-value ratio of 70%, financed at 7.0% and amortized over 30 years.

Scenario 2

Under the second scenario, wherein the restaurant is the only income-generating component of the project, the funding gap increases to $4.61 million, or 84% of project costs. With this level of subsidy, the DSCR rises above the 1.25 threshold.

11.6 Financial Gap

We note that the large funding gap is the result of two principal issues:

(1) Very high project costs. On a square foot basis, the project cost far exceeds what is typical for a restaurant development project. The Haddam Jail redevelopment cost of over $500 per square foot is more than double that of a typical new-build high-end restaurant on a development-ready site.

(2) Low level of rentable space. Due to the high waste disposal requirements of this particular use, of the total building area of 10,800 SF, 3,888 SF is rentable as restaurant space, or about 36% of gross square footage. The 3,333 SF of undesignated space, if rented, brings the total rentable building area up to 67%. Rentable area for a commercial building is typically much higher (at least 80-85%).

Crosskey Architects has provided an opinion that if a proper rehabilitation plan, one that complies with the Secretary of the Interior's Standards for Rehabilitation, is put forth, this project will qualify for both state and federal historic tax credits.

The 25% state credit can be applied toward eligible expenses, or Qualified Rehabilitation Expenditures, which include only the hard costs related to the repair or improvement of structural and architectural features to the Certified Historic Structure[13]. Qualified rehabilitation expenditures means any costs incurred for the physical construction involved in the rehabilitation of a certified historic structure, excluding: (A) The owner's personal labor, (B) the cost of a new addition, except as required to comply with any provision of the State Building Code or the Fire Safety Code, and (C) any non-construction costs such as architectural fees, legal fees, financing fees and permits.

The 20% federal credit can be applied toward federal qualifying expenses. In general, qualifying expenses include those costs that are directly related to the repair or improvement of structural and architectural features. However, there are "soft costs" that also qualify, which includes construction period interest and taxes, architect fees, engineering fees, construction management costs, reasonable developer fees, and any other fees paid that would normally be charges to a capital account.

We estimate qualifying expenses on this project to be $2,546,585, including the following items as provided in the cost estimate by Fuss & O'Neill:

- Engineering Design, Permitting, Construction Documents - $613,500

[13] "Certified historic structure" means any property that: (A) is listed on the National Register of Historic Places, or (B) is located in a district listed on the National or State Register of Historic Places and has been certified by the officer as contributing to the historic character of such a district.

- Hazardous Material Abatement - $299,085
- Building Renovation/Architectural - $1,634,000

Note that this is based on a limited understanding of the scope of required rehabilitation work. We recommend that potentially qualifying expenses be examined in greater detail predicated on actual reuse proposals. Assuming these expenses qualify for both the 20% federal credit and 25% state credit, the project funding gap would be reduced by $1,145,963. Under Scenario 1, the remaining funding gap after applying historic tax credits would be about $3.0 million (54% of project cost), and under Scenario 2, the gap would equal $3.5 million (63% of project cost).

Short of a transfer of ownership to a taxable entity, creating a Tax Increment Financing (TIF) district in the area of the Haddam Jail may be another source of additional revenue for closing the funding gap. While the Jail property itself is Town-owned and therefore does not generate property tax revenue, the Town may wish to create a TIF district in the vicinity of the Jail, under the assumption that rehabilitating the Jail would spur additional investment in the area. Some or all of the tax revenue generated from any future incremental assessed value in the district could be allocated to funding the Jail project. Although a normally creative solution given the current ownership model it may or may not work in this instance. The district that would be defined would be primarily comprised of single family homes and municipal properties which generate low, or no taxes. TIF will only be acceptable if it can be shown that the incremental increases in taxes over a period of time substantiates, in this case, a sizeable investment. Establishing a TIF district would require the creation of a TIF Policy and approval by the Town.

12 Potential Funding Mechanisms to Address Financial Funding Gap

As expected, the total cost to renovate the building and site outweighs the ability for a restaurant operator to achieve a financially acceptable and sustainable business model. Initiatives and mechanisms must be included which address the disparity between redevelopment costs and profitable operations. This will likely include public assistance in potentially numerous forms, some of which are listed below. The Town stands committed to assist in this redevelopment effort by participating in the acquisition of such state and federal grant and loan programs.

Potential funding mechanisms to address the financial funding gap are described below.

12.1 CT Historic Tax Credit Program

The Haddam Jailhouse and Administrative Buildings are listed in the National Register of Historic Places as a contributing resource to the Haddam Center Historic District. This level of designation qualifies the property to receive federal and state historic tax credits; however, the proposed rehabilitation plan must meet the Secretary of the Interior Standards for Rehabilitation and receive the State Historic Preservation Officers (SHPO) approval first. Once the project moves beyond the idea and vision stage, we believe, if a proper rehabilitation plan is put forth, that this project will qualify for both state and federal historic tax credits, which can reduce the cost of rehabilitation—by 25% to 45%.

The CT Historic Rehabilitation Tax Credit Program (C.G.S. §10-416c) establishes a 25% tax credit on the Qualified Rehabilitation Expenditures associated with the rehabilitation of a Certified Historic Structure for either 1) residential use of five units or more, 2) mixed residential and nonresidential use or 3) nonresidential use consistent with the historic character of such property or the district in which such property is located. An additional 5% credit is available for projects that have an affordable housing component.

12.2 Federal Historic Preservation Tax Incentive Program

The National Park Service (NPS) administers the Federal Historic Preservation Tax Incentives program with the Internal Revenue Service (IRS) and in partnership with State Historic Preservation Offices. The tax incentives promote the rehabilitation of income-producing historic structures. Through this program, underutilized or vacant schools, warehouses, factories, retail stores, apartments, hotels, houses, offices and other buildings throughout the country have been returned to useful life in a manner that maintains their historic character. A 20% income tax is available for the “certified rehabilitation” of a “certified historic structure.”

12.3 Historic Restoration Fund Grant

The Historic Restoration Fund Grant is administered by the State Historic Preservation Office (SHPO). The matching, reimbursement Historic Restoration Fund Grants is offered to Connecticut municipalities and 501(c)3 and 501(c)13 nonprofits to be used for the restoration, rehabilitation, stabilization or archaeological investigation of Connecticut’s historic resources which are listed in the State or National Registers of Historic Places.

12.4 CT Trust Making Places Grant

The Connecticut Trust for Historic Preservation offers Making Places Grants, which provides financial assistant for applications for tax credits for certified historic rehabilitation, a Revolving Loan Fund and a Matching Grant from the 1772 Foundation. The Revolving Loan Fund helps to finance and transform underutilized historic buildings and assets that contribute to community character and have the potential to serve as catalysts for economic development. The Revolving Fund focuses on development and investment in neighborhoods and communities that are distinctive and inspiring.

12.5 Loan Programs

Short-term construction loans are available to assist with the repair and rehabilitation of historic buildings listed on the State or National Register of Historic Places.

Short-term pre-construction loans can be used to support project planning including feasibility studies, preservation consultant fees, architectural and engineering services, and nomination to the State or National Register of Historic Places.

12.6 1772 Foundation Grant

The 1772 Foundation has announced that funding in the form of 1:1 matching grants of up to $15,000 will be made available for the following historic preservation projects: exterior painting; finishes and surface restoration; installation or upgrade of fire detection, lightning protection and security systems; porch, roof and window repair/restoration; structural foundation and sill repair/replacement; and chimney and masonry repointing.

12.7 CT Office of Brownfield Remediation and Development

The Connecticut Office of Brownfield Remediation and Development (OBRD) was established to provide a "one stop" state resource for information on the programs and services available for brownfield redevelopment in Connecticut. OBRD is a part of the Connecticut Department of Economic and Community Development (DECD) and the staff is comprised of engineers, real estate development professionals, and financial professionals. OBRD's purpose is to provide financial and technical services to municipalities, economic development agencies, brownfield owners, and developers to foster the redevelopment and reuse of brownfields.

Specific services provided by OBRD include the following:

- Serve as a single point of contact to coordinate the various components of brownfield redevelopment projects.
- Coordinate with state and federal regulatory entities on permitting to facilitate timely and effective review.
- Provides direct case management to help clients navigate the complexities of brownfield redevelopment.
- Assist with project support.
- Serve as an active partner through the planning, design, and execution phases of brownfield redevelopment projects.
- Provide direct financial assistance in the form of loans and grants to facilitate redevelopment projects.

The sections below expand on the description of OBRD's grant and loan programs that could be used to address the project financial gap.

12.7.1 OBRD Municipal Grant Program

The Municipal Grant Program (http://www.ct.gov/ctbrownfields/cwp/view.asp?a=2620&q=416724) provides grants of up to $4 million to municipalities and economic development agencies. The eligible uses of the funds which are applicable to the jail project consist of hazardous material abatement, removal and closeout of the underground storage tank, building and structural issues, and attorney's fees.

The grants under this program are made periodically by DECD on a competitive basis through an application process. The application components include providing a description of the proposed project, a description of the environmental condition of the brownfield, including potential redevelopment uses and an explanation of the expected benefits of the project. The application also requires information concerning the financial and technical capacity of the applicant to execute the proposed project. A project budget including additional non-State sources of funds that will be contributed to the project is required.

The criteria for awarding the funds are as follows:

- The economic development impact of the project and the projected tax revenues associated with returning a brownfield to productive use.
- The public health and environmental benefits of the project.
- Consistency with Connecticut's State Plan of Conservation and Development
- Relative need of the project for financial assistance
- Relative economic condition of the municipality in which the brownfield is located
- Length of time the brownfield has been abandoned or underutilized.

12.7.2 Targeted Brownfield Loan Program

The Targeted Brownfield Loan Program (http://www.ct.gov/ctbrownfields/cwp/view.asp?a=2620&q=467064) provides loans of up to $4 million to potential brownfield purchasers and current brownfield owners. This includes municipalities and economic development agencies provided the current owner did not contribute to any existing environmental conditions. The loans are low interest with flexible and deferred interest options and principal payment schedules. The maximum term of a loan is 20 years. The DECD Commissioner has the discretion to make all or portions of the principal or interest due under the loan program forgivable, when such forgiveness is deemed to be in the best interest of the State.

The loan program is made on a rolling basis through an application process. To be considered for funding, applications must earn at least 60 points on the Targeted Brownfields Development loan ranking and review grid. Applications are batched and reviewed with a goal of making $3 to $4 million of loans per quarter. At the discretion of the Commissioner, applications will be considered for funding outside of this schedule.

The eligible uses of the loan and criteria for fund award are similar to the components that were previously described for the Municipal Grant Program above.

12.7.3 STEAP Grant Funding

DECD's Small Town Economic Assistance Program (STEAP) (http://www.ct.gov/opm/cwp/view.asp?Q=382970) funds economic development, community conservation and quality-of-life capital projects for small town localities. This program is managed by the Office of Policy and Management (OPM) and the grants are administered by various state agencies. STEAP is a competitive program operated on a rolling basis. Upon receipt, OPM will review the application with the appropriate state agency to determine proposed project eligibility, readiness, and consistency with the State Plan of Conservation and Development. STEAP funds are issued by the State Bond Commission and can only be used for capital projects if it is new construction, expansion, renovation, or replacement of an existing facility.

For the jail project STEAP funding would be eligible for engineering, architectural planning and contract services needed to complete the project. Desirable components of the project include historic preservation and redevelopment that leverages private funding as well as economic and community development.

12.7.4 Low Income Tax Credit (LITC)Funding

Applies only to affordable housing components or proposals.

13 Potential Next Steps

Potential next steps that the Town might take are briefly described below.

- Contact the state to solicit comments and potential early commitments on I gap financing funding mechanisms.

- Contact a professional to evaluate the feasibility of creating a Tax Increment Financing district.

- Prepare marketing materials and develop a marketing campaign strategy to promote the jail.

- Investigate actions required to transfer ownership of the facility. Will improve construction lending opportunities and provide the ability to potentially implement other sources of gap financing (TIF)

14 References

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Figures

Tables

Table 1: REC Summary

Table 2: Soil Results

Table 3: Water Results

Table 4: Concrete Chip Results

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Table 1
Summary of Recognized Environmental Conditions
Phase I & II ESA

Haddam Jail
Haddam, Connecticut

Recognized Environmental Condition (REC)	Description	Potential Release Mechanism	Constituents of Concern	Phase II Investigation Activities	Phase II Investigation Findings
REC – 1 Former 2,000-gallon Fuel Oil UST	A 2,000-gallon heating oil UST was formerly located off the northwest corner of the historic Jail building. This tank was reportedly removed from the ground in January 1998. Approximately 150 cubic yards of petroleum impacted soil was also removed at this time. Three groundwater monitoring wells were installed in the vicinity of the former UST to evaluate groundwater conditions. Analytical results from groundwater samples collected in August, September and October 1997 indicated that TPH was identified in one monitoring well during the August sampling event, however TPH was not detected in the subsequent monitoring events. It was noted that toluene (a volatile organic compound [VOC]) was identified at a trace concentration in one well during the August 1997 sampling; however toluene was also detected in the trip blank during this event. Therefore, it was concluded that toluene did not appear to be a groundwater concern at the Site.	Petroleum releases that occurred from the UST would have directly impacted surrounding soil and, potentially, Site groundwater.	VOCs ETPH PAHs	SB-11 MW-02	No Release
REC – 2 Existing Fuel Oil UST (2,000-gallons)	To replace the former 2,000-gallon heating oil UST, a reportedly 2,000-gallon fuel oil UST was installed behind the jailhouse building in approximately 1998. This tank is reportedly still in place and contains residual petroleum product.	Petroleum releases that occurred from the UST would have directly impacted surrounding soil and, potentially, Site groundwater.	VOCs ETPH PAHs	SB-01 SB-02 SB-03 MW-05	No COCs reported. No Release.
REC – 3 2 On-Site Septic Tanks – one historical (inactive), one active	The Old Haddam Jail was historically served by a septic tank (of unknown size). Two large concrete manhole covers indicate the location of this former tank, off the southeast corner of the jailhouse building. Upon inspection, the tank appears to have been filled with concrete and soil/sediment, presumably abandoned when the new septic tank was installed. The active septic tank is located off the northeast corner of the Jail parcel (in line with the former tank). Although the exact date of installation is unknown, information obtained from Town personnel indicated the tank is at least more than 45 years old. This septic tank currently serves the Town "Annex" building located south of the old jailhouse.	Releases of materials to interior sinks or plumbing infrastructures could have occurred which would have discharged to the septic system and ultimately to the subsurface via cracks or leaks in the tank, associated piping or the leaching field.	VOCs ETPH PAHs RCRA 8 Metals PCBs	SB-07/MW-04 MW-01 SB-08	No Release
REC – 4 Basement Boiler Room & Sump	A sump was identified in the boiler room located in the basement of the jailhouse building. Based on the presence of fuel oil USTs, the boiler is oil-fired.	Potential releases from the oil-fired boiler or other basement apparatus could have impacted the subsurface materials via the sump and/or cracks in the concrete slab floor.	VOCs ETPH PAHs PCBs	CC-01 CC-02 CC-03	Low level detection of ETPH in CC-02. No Significant Release.
REC – 5 Pump House Garage	A garage bay is located adjacent to the well pump house. Although this bay is currently used as storage for a large trailer, the potential exists that it may have formerly been used as storage for farming and/or maintenance equipment.	Potential releases may have occurred from equipment or materials that may have been formerly stored in this area.	VOCs ETPH PAHs RCRA 8 Metals PCBs	SB-04 SB-05/MW-03	Paint from the pump house containing lead has flaked off to the ground surface.

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Table 1
Summary of Recognized Environmental Conditions
Phase I & II ESA

Haddam Jail
Haddam, Connecticut

Recognized Environmental Condition (REC)	Description	Potential Release Mechanism	Constituents of Concern	Phase II Investigation Activities	Phase II Investigation Findings
REC – 6 Former Farming & Agricultural Operations	Historical documentation indicates the property has an extensive history of farming and/or agricultural activities associated with the former jail.	Historical applications of pesticides and herbicides during the property's use as agricultural and farm land could have left residual impacts to the shallow soils.	Pesticides Arsenic Lead	SB-06	4,4 DDE & 4,4 DDT detected in shallow soil samples.
REC – 7 Pole-mounted Transformers	Four pole-mounted transformers were observed on the 11 Jail Hill Road parcel on two utility poles. While labels indicating non-PCB containing oil were visible on three of the transformers, a label regarding the PCB-content was not visible on the fourth.	Releases from the transformers could have impacted the surficial soil beneath.	PCBs ETPH	SB-10	No release
Off Site Concerns					
Off-Site Septic Leaching Field	Information obtained indicated the leachfield associated with the on-Site septic tank crosses Saybrook Road (CT RT 154) and follows Station Hill Road. The leaching field reportedly terminates adjacent to the RailRoad tracks on a property that is currently owned by the State of Connecticut.	Releases of materials to interior sinks or plumbing infrastructures could have occurred which would have discharged to the septic system and ultimately to the subsurface via cracks or leaks in the tank, associated piping or the leaching field.	VOCs ETPH PAHs RCRA 8 Metals PCBs	None	---

Notes:

Constituents of Concern
VOCs = volatile organic compounds
ETPH = extractable total petroleum hydrocarbons
PAHs = polycyclic aromatic hydrocarbons
PCBs = polychlorinated biphenyls
RCRA 8 Metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver)

Table 2
2016 Phase II ESA - Soil Analytical Results

Haddam Jail
945 Saybrook Road, Haddam, Connecticut

			Location On Site	Current UST Area				Pump House			Lawn		Septic Tanks		
			Sample ID	SB-01	SB-02	SB-03	MW-05	SB-04	SB-05/MW-03		SB-06		SB-07/ MW-04	MW-01	SB-08
			Sample Depth (ft)	10-12	10-12	8-10	11-13	3.5-6.5	0-0.5	0.5-1	0.1-0.5	0.5-1	7.5-10.5	7-10.5	7.5-10.5
			Sample Date	7/28/2016	7/28/2016	7/28/2016	7/29/2016	7/28/2016	7/28/2016	7/28/2016	7/28/2016	7/28/2016	7/28/2016	7/28/2016	7/28/2016
			Lab Sample Id	BN82376	BN82377	BN82378	BN83488	BN82381	BN82382	BN82383	BN82385	BN82386	BN82387	BN82388	BN82389
			Client Id	1305160728-01	1305160728-02	1305160728-03	1305160729-33	1305160728-06	1305160728-07	1305160728-08	1305160728-10	1305160728-11	1305160728-13	1305160728-14	1305160728-15
			Matrix	Solid	Solid	Solid	Soil	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid
CONSTITUENT	Res DEC	I/C DEC	GA PMC												
Metals, Total (mg/Kg)			*(20xGAPMC)*												
Arsenic	10	10	1	---	---	---	---	**2.05**	**22.1**	**12.1**	**6.83**	**5.39**	**5.23**	**2.53**	**2.95**
Barium	4,700	140,000	20	---	---	---	---	**60.9**	---	---	---	---	**31.1**	**23.4**	**33.1**
Cadmium	34	1,000	0.1	---	---	---	---	< 0.38	---	---	---	---	< 0.35	< 0.35	< 0.37
Chromium	100	100	0.2	---	---	---	---	**15.1**	---	---	---	---	**16.2**	**12.5**	**12**
Lead	400	1,000	0.3	---	---	---	---	**13.3**	**349**	**147**	**130**	**42.2**	**4.98**	**6.05**	**6.87**
Mercury	20	610	0.04	---	---	---	---	< 0.03	---	---	---	---	**0.06**	**0.07**	< 0.03
Selenium	340	10,000	1	---	---	---	---	< 1.5	---	---	---	---	< 1.4	< 1.4	< 1.5
Silver	340	10,000	0.72	---	---	---	---	< 0.38	---	---	---	---	< 0.35	< 0.35	< 0.37
Metals, SPLP (mg/L)															
SPLP Arsenic	NA	NA	0.05	---	---	---	---	---	0.009	---	< 0.004	---	---	---	---
SPLP Lead	NA	NA	0.015	---	---	---	---	---	**0.063**	---	**0.028**	---	---	---	---
CTETPH (mg/Kg)															
ETPH	500	2500	500	< 51	< 50	< 58	< 53	< 63	---	---	---	---	< 54	< 52	< 54
PCBs (mg/Kg)															
Total PCBs	1	10	0.0005**	---	---	---	---	< 0.420	---	---	---	---	< 0.360	< 0.350	< 0.360
VOCs (ug/Kg)															
VOCs	Varies	Varies	Varies	BDL	BDL	---	BDL	BDL	---	---	---	---	BDL	BDL	BDL
PAHs (ug/Kg)															
PAHs	Varies	Varies	Varies	BDL	BDL	BDL	BDL	BDL	---	---	---	---	BDL	BDL	BDL
Pesticides, Total (ug/Kg)															
4,4' -DDD	[1,800]	[17,000]	[3]	---	---	---	---	---	< 6.9	< 7.1	< 6.8	< 7.2	---	---	---
4,4' -DDE	[1,800]	[17,000]	[3]	---	---	---	---	---	**25**	< 7.1	**59**	**11**	---	---	---
4,4' -DDT	[1,800]	[17,000]	[3]	---	---	---	---	---	**19**	< 7.1	**25**	**4.6**	---	---	---
a-BHC	NE	NE	NE	---	---	---	---	---	< 6.9	< 7.1	< 6.8	< 7.2	---	---	---
Alachlor	7,700	72,000	230	---	---	---	---	---	< 6.9	< 7.1	< 6.8	< 7.2	---	---	---
Aldrin	[40]	[340]	[2]	---	---	---	---	---	< 3.5	< 3.6	< 3.4	< 3.6	---	---	---
b-BHC	NE	NE	NE	---	---	---	---	---	< 6.9	< 7.1	< 6.8	< 7.2	---	---	---
Chlordane	490	2,200	66	---	---	---	---	---	< 35	< 36	< 34	< 36	---	---	---
d-BHC	NE	NE	NE	---	---	---	---	---	< 6.9	< 7.1	< 6.8	< 7.2	---	---	---
Dieldrin	38	360	7	---	---	---	---	---	< 3.5	< 3.6	< 3.4	< 3.6	---	---	---
Endosulfan I	[41,000]	[1,000,000]	[84]	---	---	---	---	---	< 6.9	< 7.1	< 6.8	< 7.2	---	---	---
Endosulfan II	[41,000]	[1,000,000]	[84]	---	---	---	---	---	< 6.9	< 7.1	< 6.8	< 7.2	---	---	---
Endosulfan sulfate	[41,000]	[1,000,000]	[84]	---	---	---	---	---	< 6.9	< 7.1	< 6.8	< 7.2	---	---	---
Endrin	20,000	610,000	[40]	---	---	---	---	---	< 6.9	< 7.1	< 6.8	< 7.2	---	---	---
Endrin aldehyde	20,000	610,000	[40]	---	---	---	---	---	< 6.9	< 7.1	< 6.8	< 7.2	---	---	---
Endrin ketone	20,000	610,000	[40]	---	---	---	---	---	< 6.9	< 7.1	< 6.8	< 7.2	---	---	---
g-BHC	[340]	[3,200]	20	---	---	---	---	---	< 1.4	< 7.1	< 1.4	< 7.2	---	---	---
Heptachlor	140	1,300	13	---	---	---	---	---	< 6.9	< 7.1	< 6.8	< 7.2	---	---	---
Heptachlor epoxide	67	630	20	---	---	---	---	---	< 6.9	< 7.1	< 6.8	< 7.2	---	---	---
Methoxychlor	340,000	10,000,000	800	---	---	---	---	---	< 35	< 36	< 34	< 36	---	---	---
Toxaphene	560	5,200	330	---	---	---	---	---	< 140	< 140	< 140	< 140	---	---	---
Pesticides, SPLP (ug/L)			*(GWPC)*												
SPLP 4,4' -DDD	NA	NA	[0.1]	---	---	---	---	---	---	---	---	---	---	---	---
SPLP 4,4' -DDE	NA	NA	[0.1]	---	---	---	---	---	---	---	---	---	---	---	---
SPLP 4,4' -DDT	NA	NA	[0.1]	---	---	---	---	---	---	---	---	---	---	---	---

Location On Site	Boiler Room	Transformer	Former UST Area		Barn	South of "Annex"			Wooded Areas			
Sample ID	SB-09	SB-10[DUP]	SB-11	MW-02	SB-12	SB-13		SB-14	SB-15[DUP]	SB-16	SB-17	SB-18
Sample Depth (ft)	0.5-1	0-0.25	10-12.2	10-12.3	0-0.25	0-0.25	0.5-1	0-0.25	0-0.25	0-0.25	0-0.25	0-0.25
Sample Date	7/29/2016	7/29/2016	7/29/2016	7/29/2016	7/29/2016	7/29/2016	7/29/2016	7/29/2016	8/2/2016	8/2/2016	8/2/2016	8/2/2016
Lab Sample Id	BN83475	BN83478	BN83480	BN83481	BN83482	BN83484	BN83485	BN83486	BN84860	BN84863	BN84865	BN84867
Client Id	1305160729-19	1305160729-22	1305160729-24	1305160729-25	1305160729-27	1305160729-29	1305160729-30	1305160729-31	1305160802-37	1305160802-41	1305160802-43	1305160802-45
Matrix	Soil	Soil	Soil	Soil	Soil	Soil		Soil	Soil	Soil	Soil	Soil
CONSTITUENT												
Metals, Total (mg/Kg)												
Arsenic	---	---	---	---	**5.88**	**4.69**	**5.91**	**3.23**	**4.4**	**5.24**	**6.25**	**3.61**
Barium	---	---	---	---	---	---	---	---	---	---	---	---
Cadmium	---	---	---	---	---	---	---	---	---	---	---	---
Chromium	---	---	---	---	---	---	---	---	---	---	---	---
Lead	---	---	---	---	**147**	**361**	**211**	**23.1**	**61.8**	**26.8**	**63.1**	**27**
Mercury	---	---	---	---	---	---	---	---	---	---	---	---
Selenium	---	---	---	---	---	---	---	---	---	---	---	---
Silver	---	---	---	---	---	---	---	---	---	---	---	---
Metals, SPLP (mg/L)												
SPLP Arsenic	---	---	---	---	< 0.004	< 0.004	---	---	---	---	---	---
SPLP Lead	---	---	---	---	**0.012**	**0.015**	---	---	---	---	---	---
CTETPH (mg/Kg)												
ETPH	< 51	**470**	< 53	< 53	---	---	---	---	---	---	---	---
PCBs (mg/Kg)												
Total PCBs	< 0.340	< 0.620	---	---	---	---	---	---	---	---	---	---
VOCs (ug/Kg)												
VOCs	BDL	---	BDL	BDL	---	---	---	---	---	---	---	---
PAHs (ug/Kg)												
PAHs	BDL	---	BDL	BDL	---	---	---	---	---	---	---	---
Pesticides, Total (ug/Kg)												
4,4' -DDD	---	---	---	---	< 7.9	< 8.0	< 7.3	< 7.8	< 11	< 8.7	< 8.6	< 7.8
4,4' -DDE	---	---	---	---	**3.1**	**320**	< 37	< 7.8	< 11	< 8.7	< 8.6	< 7.8
4,4' -DDT	---	---	---	---	**10**	**290**	**130**	< 7.8	< 11	**9.3**	< 8.6	< 7.8
a-BHC	---	---	---	---	< 7.9	< 8.0	< 7.3	< 7.8	< 11	< 8.7	< 8.6	< 7.8
Alachlor	---	---	---	---	< 7.9	< 8.0	< 7.3	< 7.8	< 11	< 8.7	< 8.6	< 7.8
Aldrin	---	---	---	---	< 3.9	< 4.0	< 3.7	< 3.9	< 5.7	< 4.3	< 4.3	< 3.9
b-BHC	---	---	---	---	< 7.9	< 8.0	< 7.3	< 7.8	< 11	< 8.7	< 8.6	< 7.8
Chlordane	---	---	---	---	< 39	< 40	< 37	< 39	< 57	< 43	< 43	< 39
d-BHC	---	---	---	---	< 7.9	< 8.0	< 7.3	< 7.8	< 11	< 8.7	< 8.6	< 7.8
Dieldrin	---	---	---	---	< 3.9	< 4.0	< 3.7	< 3.9	< 5.7	< 4.3	< 4.3	< 3.9
Endosulfan I	---	---	---	---	< 7.9	< 8.0	< 7.3	< 7.8	< 11	< 8.7	< 8.6	< 7.8
Endosulfan II	---	---	---	---	< 7.9	< 8.0	< 7.3	< 7.8	< 11	< 8.7	< 8.6	< 7.8
Endosulfan sulfate	---	---	---	---	< 7.9	< 8.0	< 7.3	< 7.8	< 11	< 8.7	< 8.6	< 7.8
Endrin	---	---	---	---	< 7.9	< 8.0	< 7.3	< 7.8	< 11	< 8.7	< 8.6	< 7.8
Endrin aldehyde	---	---	---	---	< 7.9	< 8.0	< 7.3	< 7.8	< 11	< 8.7	< 8.6	< 7.8
Endrin ketone	---	---	---	---	< 7.9	< 8.0	< 7.3	< 7.8	< 11	< 8.7	< 8.6	< 7.8
g-BHC	---	---	---	---	< 1.6	< 1.6	< 7.3	< 1.6	< 2.3	< 1.7	< 1.7	< 1.6
Heptachlor	---	---	---	---	< 7.9	< 8.0	< 7.3	< 7.8	< 11	< 8.7	< 8.6	< 7.8
Heptachlor epoxide	---	---	---	---	< 7.9	< 8.0	< 7.3	< 7.8	< 11	< 8.7	< 8.6	< 7.8
Methoxychlor	---	---	---	---	< 39	< 40	< 37	< 39	< 57	< 43	< 43	< 39
Toxaphene	---	---	---	---	< 160	< 160	< 150	< 160	< 230	< 170	< 170	< 160
Pesticides, SPLP (ug/L)												
SPLP 4,4' -DDD	---	---	---	---	---	< 0.005	---	---	---	---	---	---
SPLP 4,4' -DDE	---	---	---	---	---	**0.019**	---	---	---	---	---	---
SPLP 4,4' -DDT	---	---	---	---	---	**0.009**	---	---	---	---	---	---

Notes:
Bold values indicates a detection
Bold and shaded cells indicate an excedance of one or more of the listed criteria
GA PMC = GA Pollutant Mobility Criteria
** Pollutant Mobility Criteria units for PCBs are mg/L
I/C DEC = Industrial/Comercial Direct Exposure Criteria
Res. DEC = Residential Direct Exposure Criteria
[Green Text] = DEEP fast-track approveable additional polluting substances; DEEP approval required
---- = Constituent not analyzed
< # = constituent not detected above given laboratory reporting limit
DUP = indicates a duplicate sample was collected. The highest result from both sample is reported.
NA = not applicable
NE = no established criteria
ug/l = micrograms per liter
ug/kg = micrograms per kilogram
mg/kg = miligrams per kilogram

FUSS & O'NEILL

Table 3
2016 Phase II ESA - Water Analytical Results

Haddam Jail
945 Saybrook Road, Haddam, Connecticut

			Sample ID	Potable Well	MW-01	Septic Tank
			Sample Date	8/2/2016	8/2/2016	8/3/2016
			Lab Sample Id	BN84857	BN84858	BN86092
			Client Id	1305160802-36	1305160802-39	1256160803-01
			Matrix	Potable Water	Groundwater	Waste Water
CONSTITUENT	Res VC	GWPC	SWPC			
Metals, Total (mg/L)						
Arsenic	NE	0.05	0.004	---	0.0012	< 0.004
Barium	NE	1	[2.2]	---	0.039	0.017
Cadmium	NE	0.005	0.006	---	< 0.001	< 0.001
Chromium	NE	{0.01}	0.11	---	0.007	< 0.001
Lead	NE	0.015	0.013	---	0.007	<0.002
Mercury	NE	0.002	0.0004	---	< 0.0002	<0.0002
Selenium	NE	0.05	0.05	---	< 0.001	<0.010
Silver	NE	0.036	0.012	---	< 0.001	< 0.001
VOCs (ug/L)						
VOCs	Varies	Varies	Varies	BDL	BDL	BDL
PAHs (ug/L)						
Fluoranthene	NE	280	3,700	---	0.06	< 0.06
Pyrene	NE	200	110,000	---	0.05	<0.06
PCBs, Total (ug/L)	0.5	0.5	0.5	---	---	< 0.30
Pesticides, Total (ug/L)	Varies	Varies	Varies	BDL	BDL	---

Notes:
Bold and shaded cells indicate an excedance of one or more of the listed criteria
GWPC = Groundwater Protectio Criteria
SWPC = Surface Water Protection Criteria
Res. VC = Residential Volatilization Criteria
[Green Text] = DEEP fast-track approveable additional polluting substances; DEEP approval required
---- = Constituent not analyzed
< # = constituent not detected above given laboratory reporting limit
NA = not applicable
NE = no established criteria
ug/l = micrograms per liter

Table 4
Phase II ESA - Concrete Chip Analytical Results

Haddam Jail
945 Saybrook Road, Haddam, Connecticut

			Sample ID	CC-01	CC-02	CC-03
			Sample Date	7/29/2016	7/29/2016	7/29/2016
			Lab Sample Id	BN83474	BN83476	BN83477
			Client Id	1305160729-18	1305160729-20	1305160729-21
			Matrix	Concrete	Concrete	Concrete
CONSTITUENT	Res DEC	I/C DEC	GA PMC			
CTETPH (mg/Kg)						
ETPH	500	2500	500	< 50	110	< 50
PCBs (mg/Kg)						
Total PCBs	1	10	0.0005**	< 0.330	< 0.350	< 0.330
VOCs (ug/Kg)						
VOCs	Varies	Varies	Varies	BDL	BDL	BDL
PAHs (ug/Kg)						
2-Methylnaphthalene	[270,000]	[1,000,000]	[560]	< 230	---	---
Acenaphthene	[1,000,000]	[2,500,000]	[8,400]	< 230	---	---
Acenaphthylene	1,000,000	2,500,000	8,400	< 230	---	---
Anthracene	1,000,000	2,500,000	40,000	< 230	---	---
Benz(a)anthracene	1,000	7,800	1,000	< 230	---	---
Benzo(a)pyrene	1,000	1,000	1,000	< 230	---	---
Benzo(b)fluoranthene	1,000	7,800	1,000	< 230	---	---
Benzo(ghi)perylene	[8,400]	[78,000]	[1,000]	< 230	---	---
Benzo(k)fluoranthene	8,400	78,000	1,000	< 230	---	---
Chrysene	[84]	[780,000]	[1,000]	< 230	---	---
Dibenz(a,h)anthracene	[1,000]	[1,000]	[1,000]	< 230	---	---
Fluoranthene	1,000,000	2,500,000	5,600	< 230	---	---
Fluorene	1,000,000	2,500,000	5,600	< 230	---	---
Indeno(1,2,3-cd)pyrene	[1,000]	[7,800]	[1,000]	< 230	---	---
Naphthalene	1,000,000	2,500,000	5,600	< 230	---	---
Phenanthrene	1,000,000	2,500,000	4,000	< 230	---	---
Pyrene	1,000,000	2,500,000	4,000	< 230	---	---

Notes:
Bold and shaded cells indicate an excedance of 2013 criteria
[Criteria] represent 2008 proposed criteria for which no criteria were listed in 2013 standards
---- = Constituent not analyzed
NA = not applicable
ug/l = micrograms per liter
ug/kg = micrograms per kilogram
mg/kg = miligrams per kilogram
GA PMC = GA Pollutant Mobility Criteria
I/C DEC = Industrial/Comercial Direct Exposure Criteria
Res. DEC = Residential Direct Exposure Criteria

[Green Text] = DEEP fast-track approveable additional polluting substances; DEEP approval required
[[Blue Text]] = DEEP-recommended additional polluting substance values not included on the fast-track form; DEEP approval required
{Red text} = draft proposed 2008 criteria for which no other recommendations have been made; DEEP approval required
NE = no established criteria

Appendix A

2016 Phase II Soil Boring Logs & Monitoring Well Completion Reports

FUSS & O'NEILL

BORING LOG

PROJECT: Old Haddam Jail

LOCATION: Haddam, CT

SITE ID: SB-01
SHEET: 1 of 1
PROJECT NO: 20160311.A10
WEATHER: 80s, sunny

CONTRACTOR: F+O
OPERATOR: ~~DLP~~ DPL
F&O REPRESENTATIVE: BSC
DRILLING METHOD: Geoprobe
SAMPLING METHOD: ~~Terra core~~ ↓
HAMMER WT: — HAMMER FALL (IN) —

BORING LOCATION: SB-01 off NW corner of existing ~~[illegible]~~ UST pad
DATE STARTED: 7/28/16
DATE & TIME COMPLETED: 7/28/16 0940
DEPTH TO SATURATED ZONE: —

SAMPLE PREFIX: 1305160728-01

DRILLING DETAILS			MATERIAL DESCRIPTION				ANALYTICAL SAMPLES		
START DEPTH (FT)	BLOWS 6"	REC/PEN (IN)	DEPTH RANGE (FT)	DESCRIPTION	PID	LITHO-LOGIC CODE	SAMPLE NO. & TIME	DEPTH INTERVAL (FT)	JARS & PRESERV.
0		3.3/5 (39/60)	0-0.5	Topsoil, sand f-c, tr gravel, tr roots, loose, dry, brown	ND	TS			
			0.5-3.3	Sand f-c, loose, dry, reddish brown	ND				
			3.3-5	no recovery					
5		3.9/5 (46/60)	5-6	Sand f-c, loose, dry, reddish brown	ND				
			6-7.5	Sand f-c, loose, dry, dark brown	ND				
			7.5-8.0	fine sand some silt, loose, dry, brown, no odor	ND				
			8.0-8.5	Sand f-c, loose, dry, brown, no odor	ND				
			8.5-8.9	Same as 8-8.5, loose, dry, yellow-br. no odor	ND				
			8.9-10	no recovery					
10		2/3 (24/36)	10-11	Sand f-c, ltl gravel, loose, dry, brown, no odor	ND		-01 0930	10-12	3x VOA 1x 8oz G
			11-11.7	Same as above, some gravel	ND				
			11.7-12	fragmented bedrock					
			12-13	no recovery					
				REFUSAL @ 13'					

BORING DIAMETER	BORING METHOD	BORING DEPTH
2.5"	geoprobe	13'

REMARKS
Field Instrument = PID/OVM

If refusal is encountered, describe all efforts used to confirm.

Field Decon: Yes / No / Dedicated Device

PROPORTIONS USED:

Trace (tr)	0 to 10%	Some (sm)	20 to 35%
Little (ltl)	10 to 20%	And	35 to 50%

EXAMPLE DESCRIPTION:
SAND, F-M; sm F angular gravel; ltl silt; tr clay; (10R 5/4), wet at 7 ft. Loose. No odor.

Reviewed by Staff:

BACKFILL

Asphalt / Concrete		To
Bentonite Grout/Chips		To
Cuttings/Native Material	0	To 13'
Other		To

See Monitoring Well Completion Report

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FUSS & O'NEILL

BORING LOG

PROJECT: Old Haddam Jail

LOCATION: Haddam, CT

SITE ID: SB-02
SHEET: 1 of 1
PROJECT NO: 20160311.A10
WEATHER: 80s sunny

CONTRACTOR: F+O
OPERATOR: ~~DLP~~ DPL
F&O REPRESENTATIVE: BSC
DRILLING METHOD: Geoprobe
SAMPLING METHOD: Terracore
HAMMER WT: — HAMMER FALL (IN) —

BORING LOCATION: SB-02 Off of NE corner of UST pad
DATE STARTED: 7/28/16
DATE & TIME COMPLETED: 7/28/16 1020
DEPTH TO SATURATED ZONE: —
SAMPLE PREFIX: 13051607~~28~~-02

DRILLING DETAILS			MATERIAL DESCRIPTION				ANALYTICAL SAMPLES		
START DEPTH (FT)	BLOWS 6"	REC/ PEN (IN)	DEPTH RANGE (FT)	DESCRIPTION	PID	LITHO-LOGIC CODE	SAMPLE NO. & TIME	DEPTH INTERVAL (FT)	JARS & PRESERV.
0		3/5 (30/60)	0-0.5	Topsoil, sand f-c, tr gravel, tr roots loose, dry, brown, no odor	ND	TS			
			0.5-1	asphalt	ND				
			1-1.3	Sand f-c, loose, dry, reddish brown, no odor	ND				
			1.3-1.7	Sand f-c, some gravel, loose, dry, grey, no odor	ND				
			1.7-3	sand f-c, loose, dry, no odor, reddish br	ND				
			3-5	no recovery					
5		(38/60)	5-5.3	Sand f-c, tr gravel, loose, dry, grey, no odor	ND				
			5.3-7	Same as 1-1.3	ND				
			7-8	same as 1-1.3, some silt, tr roots	ND				
			8-8.3	same as 1-1.3	ND				
		42/42	8.3-10	no recovery					
10			10-11	Sand f-c, some gravel, loose, dry, greyish brown, no odor	ND		-02 1015	10-12	3x VOA 1x G8oz
			11-12	Same as 10-11, reddish brown	ND				
			12-12.8	Same as 11-12, tr gravel	ND				
			12.8-13.5	Sand f-c, some gravel, dark brown, loose, dry, no odor	ND				
				REFUSAL @ 13.5 feet					

BORING DIAMETER	BORING METHOD	BORING DEPTH
2.5 in	Geoprobe	13.5

REMARKS
Field Instrument = PID/OVM
If refusal is encountered, describe all efforts used to confirm.

Field Decon: Yes / No / Dedicated Device

PROPORTIONS USED:

Trace (tr)	0 to 10%	Some (sm)	20 to 35%
Little (ltl)	10 to 20%	And	35 to 50%

EXAMPLE DESCRIPTION:
SAND, F-M; sm F angular gravel; ltl silt; tr clay; (10R 5/4), wet at 7 ft. Loose. No odor.

Reviewed by Staff:

BACKFILL

Asphalt / Concrete		To	See Monitoring Well
Bentonite Grout/Chips		To	Completion Report
Cuttings/Native Material	0	To 13.5'	
Other		To	

FUSS & O'NEILL

BORING LOG

PROJECT: Old Haddam Jail

LOCATION: Haddam, CT

SITE ID: SB-03
SHEET: 1 of 1
PROJECT NO: 20160311.A10
WEATHER:

CONTRACTOR: F+O
OPERATOR: ~~DEF~~ DPL
F&O REPRESENTATIVE: BSC
DRILLING METHOD: Geoprobe
SAMPLING METHOD: ~~Terra core~~
HAMMER WT: — HAMMER FALL (IN) —

BORING LOCATION: SB-03 Off of SE corner of UST pad
DATE STARTED: 7/28/16
DATE & TIME COMPLETED: 7/28/16 1030
DEPTH TO SATURATED ZONE: —
SAMPLE PREFIX: 130516072 8-03

DRILLING DETAILS			MATERIAL DESCRIPTION				ANALYTICAL SAMPLES		
START DEPTH (FT)	BLOWS 6"	REC/ PEN (IN)	DEPTH RANGE (FT)	DESCRIPTION	PID	LITHO-LOGIC CODE	SAMPLE NO. & TIME	DEPTH INTERVAL (FT)	JARS & PRESERV.
0		39/60	0-0.3	Topsoil. Sand f-c, tr root, tr gravel, loose, dry, greyish brown, no odor	ND	TS			
			0.3-1	Sand f-c, loose, dry, light brown, no odor	ND				
			1-3.3	Same as 0.3-1, reddish brown	ND				
			3.3-5	no recovery					
5		39/60	5-7.5	Same as 1-3.3	ND				
			7.5-8.1	Sand f-c, some silt, loose, dry, reddish brown no odor	ND				
			8.1-8.3	sand f-c, some gravel, loose, dry no odor dark brown	ND		-03 1045	8-10	3x VOA 1x 8oz
			8.3-10	no ~~refusal~~ recovery					
10		~~60/60~~ 6/6	10-10.5	Sand f-c, loose, dry, reddish brown, no odor	ND				
				REFUSAL @ 10.5 ft					

BORING DIAMETER	BORING METHOD	BORING DEPTH
2.5"	Geoprobe	10.5'

REMARKS
~~Field~~ Instrument = PID/OVM
If refusal is encountered, describe all efforts used to confirm.

Field Decon: Yes / No / Dedicated Device

PROPORTIONS USED:

Trace (tr)	0 to 10%	Some (sm)	20 to 35%
Little (ltl)	10 to 20%	And	35 to 50%

EXAMPLE DESCRIPTION:
SAND, F-M; sm F angular gravel; ltl silt; tr clay; (10R 5/4), wet at 7 ft. Loose. No odor.

Reviewed by Staff:

BACKFILL

Asphalt / Concrete		To	See Monitoring Well Completion Report
Bentonite Grout/Chips		To	
Cuttings/Native Material	0	To 10.5	
Other		To	

FUSS & O'NEILL

BORING LOG

PROJECT: Old Haddam Jail

LOCATION: Haddam, CT

SITE ID: SB-04
SHEET: 1 of 1
PROJECT NO: 20160311.A10
WEATHER: 80s sunny

CONTRACTOR: F+O
OPERATOR: ~~DLP~~ DPL
F&O REPRESENTATIVE: BSC
DRILLING METHOD: Geoprobe
SAMPLING METHOD:
HAMMER WT: — HAMMER FALL (IN) —

BORING LOCATION: SB-04 N of Pump House
DATE STARTED: 7/28
DATE & TIME COMPLETED: 7/28 1130
DEPTH TO SATURATED ZONE: —
SAMPLE PREFIX: 13051607 ~~08~~ 04/05/06

DRILLING DETAILS			MATERIAL DESCRIPTION				ANALYTICAL SAMPLES		
START DEPTH (FT)	BLOWS 6"	REC/ PEN (IN)	DEPTH RANGE (FT)	DESCRIPTION	PID	LITHO-LOGIC CODE	SAMPLE NO. & TIME	DEPTH INTERVAL (FT)	JARS & PRESERV.
0		45/60	0-0.9	Concrete	ND		-04	0.9-1.3	1xG8oz
			0.9-1.3	Sand and gravel, loose, dry, greyish brown no odor	ND		1115		
			1.3-3.8	Sand med-fine, some silt, loose, dry, dark brown, no odor	ND		-05	1.3-1.8	1xG8oz
			3.8-5	no recovery			1120		
5		33/48	5-5.5	Sand f-c, tr silt, loose, dry, brown, no odor	ND		-06	3.5-6.5	3x VOA
			5.5-6.5	Same as 5-5.5, moist	ND		1125		2 x 8oz
			6.5-7.8	Sand f-c, some gravel, loose, dry, no odor, greyish brown	ND				
			7.8-9	no recovery					
				REFUSAL @ 9 ft					

BORING DIAMETER	BORING METHOD	BORING DEPTH
2.5"	Geoprobe	9

REMARKS
Field Instrument = PID/OVM
If refusal is encountered, describe all efforts used to confirm.

Field Decon: Yes / No / Dedicated Device

PROPORTIONS USED:
Trace (tr) 0 to 10% Some (sm) 20 to 35%
Little (ltl) 10 to 20% And 35 to 50%

EXAMPLE DESCRIPTION:
SAND, F-M; sm F angular gravel; ltl silt; tr clay; (10R 5/4), wet at 7 ft. Loose. No odor.

Reviewed by Staff:

BACKFILL

Asphalt / Concrete		To	
Bentonite Grout/Chips		To	
Cuttings/Native Material	0	To	9
Other		To	

See Monitoring Well Completion Report

FUSS & O'NEILL

BORING LOG

PROJECT: Old Haddam Jail
LOCATION: Haddam, CT

SITE ID: SB-05
SHEET: 1 of 1
PROJECT NO: 20160311.A10
WEATHER: 80s sunny

CONTRACTOR: F+O
OPERATOR: ~~DLP~~ DDL
F&O REPRESENTATIVE: BSC
DRILLING METHOD: Geoprobe
SAMPLING METHOD: ↓
HAMMER WT: — HAMMER FALL (IN) —

BORING LOCATION: SB-05 S of pumphouse
DATE STARTED: 7/28
DATE & TIME COMPLETED: 7/29 1420
DEPTH TO SATURATED ZONE: 8.5
SAMPLE PREFIX: 130516078~~8~~-07/08/09

DRILLING DETAILS			MATERIAL DESCRIPTION				ANALYTICAL SAMPLES		
START DEPTH (FT)	BLOWS 6"	REC/ PEN (IN)	DEPTH RANGE (FT)	DESCRIPTION	PID	LITHO-LOGIC CODE	SAMPLE NO. & TIME	DEPTH INTERVAL (FT)	JARS & PRESERV.
0		44/60	0-0.5	Topsoil, sand f-c, tr roots	ND		-07 1140	0-0.5	1x G8oz
			0.5-1	Sand fine-med, loose, dry, brown, no odor	2.2		-08 1150	0.5-1	1x G8oz
			1-3.3	sand f-c, loose, dry, brown, no odor	ND				
			3.3-3.7	Same as 1-3.3, moist	ND				
			3.7-5	no recovery			-09 1200	3.5-6.5	3x VOA 2x G8oz
5		38/54	5-7.5	Same as 3.3-3.7	ND				
			7.5-8	same as 3.3-3.7, some gravel,	ND				
			8-8.2	same as 3.3-3.7, dark yellowish brown	ND				
			8.2-9.5	no recovery Refusal at 9.5 ft					

BORING DIAMETER	BORING METHOD	BORING DEPTH
2.5"	Geoprobe	9.5

REMARKS
Field Instrument = PID/OVM

If refusal is encountered, describe all efforts used to confirm.

Field Decon: Yes / No / Dedicated Device

PROPORTIONS USED:

Trace (tr)	0 to 10%	Some (sm)	20 to 35%
Little (ltl)	10 to 20%	And	35 to 50%

EXAMPLE DESCRIPTION:
SAND, F-M; sm F angular gravel; ltl silt; tr clay; (10R 5/4), wet at 7 ft. Loose. No odor.

Reviewed by Staff:

BACKFILL

Asphalt / Concrete		To
Bentonite Grout/Chips		To
Cuttings/Native Material		To
Other		To

See Monitoring Well Completion Report for MW-03

FUSS & O'NEILL

BORING LOG

PROJECT: Old Haddam Jail

LOCATION: Haddam, CT

SITE ID: SB-06
SHEET: 1 of 1
PROJECT NO: 20160311.A10
WEATHER: 80s sunny

CONTRACTOR: F+O
OPERATOR: ~~DLF~~ DPL
F&O REPRESENTATIVE: BSC
DRILLING METHOD: Geoprobe
SAMPLING METHOD: ↓
HAMMER WT: — HAMMER FALL (IN) —

BORING LOCATION: SB06 S of pumphouse N of public health bldg
DATE STARTED: 7/28
DATE & TIME COMPLETED: 7/28 1230
DEPTH TO SATURATED ZONE: 7
SAMPLE PREFIX: 1305160728- 10/11

DRILLING DETAILS			MATERIAL DESCRIPTION				ANALYTICAL SAMPLES		
START DEPTH (FT)	BLOWS 6"	REC/ PEN (IN)	DEPTH RANGE (FT)	DESCRIPTION	PID	LITHO-LOGIC CODE	SAMPLE NO. & TIME	DEPTH INTERVAL (FT)	JARS & PRESERV.
0		36/60	0-0.4	Topsoil, f-c sand, tr roots, loose, dry, brown, no odor	ND	TS	-10 1210	0.1-0.5	1xG8oz
			0.4-1.5	Sand f-c, loose, dry, brown, no odor	ND				
			1.5-3	same as 0.4-1.5, reddish brown	ND		-11 1215	0.5-1.5	1xG8oz
			3-5	no recovery					
5		36/48	5-7	Same as 1.5-3	ND		~~-12 1220~~	~~6.5-1.5~~	~~1xG8oz~~
			7-8	Same as 1.5-3, moist	ND				
			8-9	no recovery REFUSAL @ 9ft					

BORING DIAMETER	BORING METHOD	BORING DEPTH
2.5"	Geoprobe	9

REMARKS
Field Instrument = PID/OVM
If refusal is encountered, describe all efforts used to confirm.

Field Decon: Yes / No / Dedicated Device

PROPORTIONS USED:
Trace (tr) 0 to 10% Some (sm) 20 to 35%
Little (ltl) 10 to 20% And 35 to 50%

EXAMPLE DESCRIPTION:
SAND, F-M; sm F angular gravel; ltl silt; tr clay; (10R 5/4), wet at 7 ft. Loose. No odor.

Reviewed by Staff:

BACKFILL

Asphalt / Concrete		To	
Bentonite Grout/Chips		To	
Cuttings/Native Material	0	To	9'
Other		To	

See Monitoring Well Completion Report

FUSS & O'NEILL

BORING LOG

PROJECT: Old Haddam Jail

LOCATION: Haddam, CT

SITE ID: SB-07
SHEET: 1 of 1
PROJECT NO: 20160311.A10
WEATHER: 90s sunny

CONTRACTOR: F+O
OPERATOR: ~~DEP~~ DPL
F&O REPRESENTATIVE: BSC
DRILLING METHOD: Geoprobe
SAMPLING METHOD: ↓
HAMMER WT: HAMMER FALL (IN)

BORING LOCATION: SB-07 W of old septic tank
DATE STARTED: 7/28/16
DATE & TIME COMPLETED: 7/29/16 1800
DEPTH TO SATURATED ZONE: 7.5
SAMPLE PREFIX: 13051607~~28~~-13

DRILLING DETAILS			MATERIAL DESCRIPTION				ANALYTICAL SAMPLES		
START DEPTH (FT)	BLOWS 6"	REC/ PEN (IN)	DEPTH RANGE (FT)	DESCRIPTION	PID	LITHO-LOGIC CODE	SAMPLE NO. & TIME	DEPTH INTERVAL (FT)	JARS & PRESERV.
0	[illegible]	33/60	0-0.3	Topsoil, sand f-c, loose, dry, brown, no odor tr roots	ND				
			0.3-0.6	Sand f-c loose dry, light brown, tr gravel, tr roots, no odor	ND				
			0.6-2.9	Sand f-c tr gravel, tr roots, loose, dry, reddish brown, no odor	ND				
			2.9-5	no recovery					
5		44/60	5-7.5	Same as 0.6-2.9	ND				
			7.5-8.7	Same as 0.6-2.9, some gravel, moist	ND				
			8.7-10	no recovery			-13 1330	~~8~~ 7.5-10.5	3x VOA 2x 4/8oz
10		6/6 ~~[illegible]~~	10-10.5	Same as 7.5-8.7 REFUSAL @ 10.5 ft	ND				

BORING DIAMETER	BORING METHOD	BORING DEPTH
2.5"	Geoprobe	10.5

REMARKS
Field Instrument = PID/OVM
If refusal is encountered, describe all efforts used to confirm.

Field Decon: Yes / No / Dedicated Device

PROPORTIONS USED:
Trace (tr) 0 to 10% — Some (sm) 20 to 35%
Little (ltl) 10 to 20% — And 35 to 50%

EXAMPLE DESCRIPTION:
SAND, F-M; sm F angular gravel; ltl silt; tr clay; (10R 5/4), wet at 7 ft. Loose. No odor.

Reviewed by Staff:

BACKFILL
Asphalt / Concrete ______ To ______
Bentonite Grout/Chips ______ To ______
Cuttings/Native Material ______ To ______
Other ______ ______ To ______

See Monitoring Well Completion Report for MW-04

FUSS & O'NEILL

BORING LOG

PROJECT: Old Haddam Jail

LOCATION: Haddam, CT

SITE ID: MW-01
SHEET: 1 of 1
PROJECT NO: 20160311.A10
WEATHER: 80s Sunny

CONTRACTOR: F+O
OPERATOR: ~~DLP~~ DPL
F&O REPRESENTATIVE: BSC
DRILLING METHOD: Geoprobe
SAMPLING METHOD: ↓
HAMMER WT: — HAMMER FALL (IN) —

BORING LOCATION: MW-01 Off NE corner of jail bldg
DATE STARTED: 07/28
DATE & TIME COMPLETED: 07/29 0845
DEPTH TO SATURATED ZONE: 16
SAMPLE PREFIX: 1305160728- 14

DRILLING DETAILS			MATERIAL DESCRIPTION				ANALYTICAL SAMPLES		
START DEPTH (FT)	BLOWS 6"	REC/ PEN (IN)	DEPTH RANGE (FT)	DESCRIPTION	PID	LITHO-LOGIC CODE	SAMPLE NO. & TIME	DEPTH INTERVAL (FT)	JARS & PRESERV.
0		33/60	0-0.3	Topsoil, sand f-c, loose, dry - light brown no odor, tr roots	ND				
			0.3-1.5	Sand f-c, loose, dry, light brown, no odor	ND				
			1.5-2.2	Same as 0.3-1.5, reddish brown	ND				
			2.2-2.9	Same as 1.5-2.2, some silt	ND				
			2.9-5	no recovery					
5		39/60	5-7	Same as 1.5-2.2	ND				3xVOA
			7-8.3	Same as 1.5-2.2, some gravel	ND		-14 1440	7-10.5	2x 8oz
			8.3-10	no recovery					
10		42/60	10-10.5	Same as 7-8.3, ltl gravel	ND				
			10.5-10.7	Sand f-c, loose, dry light brown, no odor	ND				
			10.7-11.2	sand f-c and gravel, loose, dry, dark greyish brown, no odor	ND				
			11.2-11.8	Sand fine-med, some silt, loose, dry reddish brown, no odor	ND				
			11.8-13.2	Same as 10.7-11.2, dark brown	ND				
			13.2-13.5	Sand f-c, loose, dry, no odor, reddish br	ND				
			13.5-15	no recovery					
15		42/48	15-16.1	Same as 13.2-13.5	ND				
			16.1-17.6	Same as 13.2-13.5, tr gravel, wet	ND				
			17.6-18.5	sand med-coars, wet, loose, reddish brown, no odor REFUSAL @ 19'	ND				

BORING DIAMETER	BORING METHOD	BORING DEPTH
2.5"	Geoprobe	19

REMARKS
Field Instrument = PID/OVM

If refusal is encountered, describe all efforts used to confirm.

Field Decon: Yes / No / Dedicated Device

PROPORTIONS USED:

Trace (tr)	0 to 10%	Some (sm)	20 to 35%
Little (ltl)	10 to 20%	And	35 to 50%

EXAMPLE DESCRIPTION:
SAND, F-M; sm F angular gravel; ltl silt; tr clay; (10R 5/4), wet at 7 ft. Loose. No odor.

Reviewed by Staff:

BACKFILL

Asphalt / Concrete ______ To ______
Bentonite Grout/Chips ______ To ______
Cuttings/Native Material ______ To ______
Other ______ ______ To ______

See Monitoring Well Completion Report For MW-01

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FUSS & O'NEILL

BORING LOG

PROJECT: Old Haddam Jail

LOCATION: Haddam, CT

SITE ID: SB-08
SHEET: 1 of 1
PROJECT NO: 20160311.A10
WEATHER: 80s Sunny

CONTRACTOR: F+O
OPERATOR: ~~DLP~~ DPL
F&O REPRESENTATIVE: BSC
DRILLING METHOD: Geoprobe
SAMPLING METHOD: —
HAMMER WT: HAMMER FALL (IN) —

BORING LOCATION: SB-08
DATE STARTED: 7/28
DATE & TIME COMPLETED: 7/28 1510
DEPTH TO SATURATED ZONE: —
SAMPLE PREFIX: 1305160788-15

DRILLING DETAILS			MATERIAL DESCRIPTION				ANALYTICAL SAMPLES		
START DEPTH (FT)	BLOWS 6"	REC/ PEN (IN)	DEPTH RANGE (FT)	DESCRIPTION	PID	LITHO-LOGIC CODE	SAMPLE NO. & TIME	DEPTH INTERVAL (FT)	JARS & PRESERV.
0		38/60	0-0.3	Topsoil, sand f-c, tr roots, loose, dry light brown, no odor	ND				
			0.3-1.7	Sand f-c, loose, dry, light br, no odor	ND				
			1.7-2	same as 0.3-1.7, reddish brown	ND				
			2-2.3	same as 1.7-2, tr silt	ND				
			2.3-2.6	Sand f-c and gravel, loose, dry, dark br, no odor	ND				
			2.6-3.2	same as 2-2.3	ND				
			3.2-5	no recovery					
5		40/60	5-5.4	same as 2-2.3	ND				
			5.4-6	same as 10-10.4, no silt	ND				
			6-8.4	sand f-c, some gravel, loose, dry, dark br, no odor	ND				
			8.4-10	no recovery			-15 1500	7.5-10.5	2xG802
10		42/57	10-10.2	same as 6-8.4	ND				
			10.2-10.5	same as 6-8.4, ltl silt	ND				
			10.5-11.2	sand f-c, some silt, moist, compact, reddish brown, no odor	ND				
			11.2-12.8	sand and gravel, loose, dry, brown, no odor	ND				
			12.8-13.5	Same as 11.2-11.8, tr gravel	ND				
			13.5-14.75	no recovery					
				REFUSAL @ 14.75					

BORING DIAMETER	BORING METHOD	BORING DEPTH
2.5"	Geoprobe	14.75

REMARKS
Field Instrument = PID/OVM
If refusal is encountered, describe all efforts used to confirm.

Field Decon: Yes / No / Dedicated Device

PROPORTIONS USED:

Trace (tr)	0 to 10%	Some (sm)	20 to 35%
Little (ltl)	10 to 20%	And	35 to 50%

EXAMPLE DESCRIPTION:
SAND, F-M; sm F angular gravel; ltl silt; tr clay; (10R 5/4), wet at 7 ft. Loose. No odor.

Reviewed by Staff:

BACKFILL

Asphalt / Concrete		To	See Monitoring Well Completion Report
Bentonite Grout/Chips		To	
Cuttings/Native Material	0	To 14.75	
Other		To	

FUSS & O'NEILL

BORING LOG

PROJECT: Old Haddam Jail

LOCATION: Haddam, CT

SITE ID: SB11
SHEET: 1 of 1
PROJECT NO: 20160311.A10
WEATHER: 70s rainy

CONTRACTOR: F&O
OPERATOR: ~~DLP~~ DPL
F&O REPRESENTATIVE: BSC
DRILLING METHOD: Geoprobe
SAMPLING METHOD: ↓
HAMMER WT: — HAMMER FALL (IN) —

BORING LOCATION: SB11 Front of jail, off corner of steps
DATE STARTED: 7/29
DATE & TIME COMPLETED: 7/29 1100
DEPTH TO SATURATED ZONE: —
SAMPLE PREFIX: 1305160729-24

DRILLING DETAILS			MATERIAL DESCRIPTION				ANALYTICAL SAMPLES		
START DEPTH (FT)	BLOWS 6"	REC/PEN (IN)	DEPTH RANGE (FT)	DESCRIPTION	PID	LITHO-LOGIC CODE	SAMPLE NO. & TIME	DEPTH INTERVAL (FT)	JARS & PRESERV.
0		40/60	0-0.2	TS, sand f-c, tr roots, tr gravel, loose, dry, dark brown, no odor	ND				
			0.3-0.7	Sand f-c, tr gravel, loose, dry, brown, no odor	ND				
			0.7-3.3	Sand fine-med, loose, dry, brown, no odor	ND				
			3.3-5	no recovery					
5		29/60	5-5.6	same as 0.7-3.3	ND				
			5.6-7.4	same as 0.7-3.3, reddish brown	ND				
10		40/60	10-10.4	same as 0.7-3.3	ND				
			10.4-10.7	same as 5.6-7.4	ND		-24 1050	10-12.2	3xVOA 1xG8oz
			10.7-11.7	same as 5.6-7.4, some gravel	ND				
			11.7-12.2	Sand f-c, ltl gravel, dark yellowish brown, loose, dry, no odor	ND				
			12.2-12.5	same as 5.6-7.4 ltl gravel	ND				
			12.5-13.1	0.7-3.3 (same as)	ND				
			13.1-13.3	fragmented rock	ND				
			13.3-15	no recovery					

BORING DIAMETER	BORING METHOD	BORING DEPTH
2.5"	Geoprobe	15'

REMARKS
Field Instrument = PID/OVM
If refusal is encountered, describe all efforts used to confirm.

Field Decon: Yes / No / Dedicated Device

PROPORTIONS USED:
Trace (tr) 0 to 10% Some (sm) 20 to 35%
Little (ltl) 10 to 20% And 35 to 50%

EXAMPLE DESCRIPTION:
SAND, F-M; sm F angular gravel; ltl silt; tr clay; (10R 5/4), wet at 7 ft. Loose. No odor.

Reviewed by Staff:

BACKFILL
Asphalt / Concrete ______ To ______
Bentonite Grout/Chips ______ To ______
Cuttings/Native Material 0 To 15
Other ______ To ______
See Monitoring Well Completion Report

FUSS & O'NEILL

BORING LOG

PROJECT: Old Haddam Jail

LOCATION: Haddam, CT

SITE ID: MW-02
SHEET: 1 of 1
PROJECT NO: 20160311.A10
WEATHER: 70s rainy

CONTRACTOR: F+O
OPERATOR: ~~DLP~~ DPL
F&O REPRESENTATIVE: BSC
DRILLING METHOD: Geoprobe
SAMPLING METHOD: ↓
HAMMER WT: — HAMMER FALL (IN) —

BORING LOCATION: MW-02 Front of jail between steps + bldg corner
DATE STARTED: 7/29
DATE & TIME COMPLETED: 7/29 1200
DEPTH TO SATURATED ZONE: 22.3
SAMPLE PREFIX: 130516072~~9~~9 - 25

DRILLING DETAILS			MATERIAL DESCRIPTION				ANALYTICAL SAMPLES		
START DEPTH (FT)	BLOWS 6"	REC/ PEN (IN)	DEPTH RANGE (FT)	DESCRIPTION	PID	LITHO-LOGIC CODE	SAMPLE NO. & TIME	DEPTH INTERVAL (FT)	JARS & PRESERV.
0		39/60	0-0.2	Topsoil, sand f-c tr roots, tr gravel, loose, dry, no odor, dark brown	ND				
			0.2-0.7	sand f-c, tr gravel, loose, dry, brown. no odor	ND				
			0.7-3.2	sand med-fine loose, dry, no odor, brown	ND				
			3.2-5	no recovery					
5		29/60	5-5.2	Same as 0.7-3.2, dark brown	ND				
			5.2-5.5	same as 0.7-3.2	ND				
			5.5-7.4	same as 0.7-3.2, tr gravel, reddish brown	ND				
			7.4-10	no recovery					
10		40/60	10-11.3	Same as 5.5-7.4	ND		-25	10-	3x VOA
			11.3-12.1	Sand f-c and gravel, loose, dry, reddish brown, no odor	ND		1145	12.3	1 x 4 oz
			12.1-12.3	same as 11.3-12.1, dark yellowish brown	ND				
			12.3-13.2	same as 11.3-12.1, some gravel	ND				
			13.2-13.3	Same as 12.3-13.2, ltl gravel, dark brown	ND				
			13.3-15	no recovery					
15		36/60	15-15.6	~~Same as 12.3-13.2~~ sand f-c, tr gravel, loose, dry, reddish brown, no odor	ND				
			15.6-18	sand f-c and gravel, loose, dry, reddish brown no odor	ND				
			18-20	no recovery					
20		37/60	20-21.7	Same as 15.6-18	ND				
			21.7-22	sand f-c, loose, dry, light brown, no odor	ND				
			22-22.3	Same as 15.6-18	ND				
			22.3-23.1	sand f-c, some silt tr gravel, compact, moist, brown, no odor	ND				
			23.1-25	no recovery					

BORING DIAMETER	BORING METHOD	BORING DEPTH
2.5"	Geoprobe	25'

REMARKS
Field Instrument = PID/OVM
If refusal is encountered, describe all efforts used to confirm.

Field Decon: Yes / No / Dedicated Device

PROPORTIONS USED:

Trace (tr)	0 to 10%	Some (sm)	20 to 35%
Little (ltl)	10 to 20%	And	35 to 50%

EXAMPLE DESCRIPTION:
SAND, F-M; sm F angular gravel; ltl silt; tr clay; (10R 5/4), wet at 7 ft. Loose. No odor.

Reviewed by Staff:

BACKFILL

Asphalt / Concrete	______	To ______
Bentonite Grout/Chips	______	To ______
Cuttings/Native Material	______	To ______
Other ______	______	To ______

See Monitoring Well Completion Report

FUSS & O'NEILL

BORING LOG

PROJECT: Old Haddam Jail

LOCATION: Haddam, CT

SITE ID: MW-05
SHEET: 1 of 1
PROJECT NO: 20160311.A10
WEATHER: 70s sunny

CONTRACTOR: F+O
OPERATOR: ~~DLP~~ DDL
F&O REPRESENTATIVE: BSC
DRILLING METHOD: Geoprobe
SAMPLING METHOD: ~~Terra Core~~
HAMMER WT: — HAMMER FALL (IN) —

BORING LOCATION: MW-05 In back of jail
DATE STARTED: 7/29
DATE & TIME COMPLETED: 7/29 1600
DEPTH TO SATURATED ZONE: 15.4'
SAMPLE PREFIX: 130516072[9]- 33

DRILLING DETAILS			MATERIAL DESCRIPTION				ANALYTICAL SAMPLES		
START DEPTH (FT)	BLOWS 6"	REC/ PEN (IN)	DEPTH RANGE (FT)	DESCRIPTION	PID	LITHO-LOGIC CODE	SAMPLE NO. & TIME	DEPTH INTERVAL (FT)	JARS & PRESERV.
0	36/60		0-0.6	Cobbles / loose stone	ND				
			0.6-1.7	Sand f-c, ltl gravel, loose, dry, dark reddish brown, no odor	ND				
			1.7-3	Sand f-c, tr coal, loose, dry reddish brown, no odor	ND				
			3-5	no recovery					
5	34/36		5-7.8	same as 1.7-3, no coal	ND				
			7.8-10	no recovery					
10	42/60		10-12.4	Same as 5-7.8, tr gravel	ND				
			12.4-12.6	Same as 10-12.4, ltl silt	ND		-33 1555	11-13 ft	3xVOA 1xG8oz
			12.6-13.~~7~~	sand f-c and gravel, loose, dry, reddish brown, no odor (maybe tr ash/coal)	ND				
			13.~~7~~-15	no recovery					
15	25/36		15-15.4	coarse sand, loose, dry, reddish brown no odor	ND				
			15.4-16	Sand fine-med, some silt, compact, moist, reddish brown no odor	ND				
			16-16.4	Sand med-coarse, ltl gravel, loose, moist reddish brown, no odor	ND				
			16.4-17.1	Sand f-c, ltl gravel, ltl silt, compact, moist, reddish brown, no odor	ND				
			17.1-18	no recovery					
				REFUSAL @ 18'					

BORING DIAMETER	BORING METHOD	BORING DEPTH
2.5"	Geoprobe	18

REMARKS
Field Instrument = PID/OVM
If refusal is encountered, describe all efforts used to confirm.

Field Decon: Yes / No / Dedicated Device

PROPORTIONS USED:
Trace (tr) 0 to 10%
Little (ltl) 10 to 20%
Some (sm) 20 to 35%
And 35 to 50%

EXAMPLE DESCRIPTION:
SAND, F-M; sm F angular gravel; ltl silt; tr clay; (10R 5/4), wet at 7 ft. Loose. No odor.

Reviewed by Staff:

BACKFILL
Asphalt / Concrete ____ To ____
Bentonite Grout/Chips ____ To ____
Cuttings/Native Material ____ To ____
Other ____ ____ To ____

See Monitoring Well Completion Report

FUSS & O'NEILL

MONITORING WELL COMPLETION REPORT

GENERAL INFORMATION

Project Name: Old Haddam Jail

Site ID (Boring/Well ID): MW-01

Project Location: Haddam, CT

Project No.: 20160311.A10

F&O Engineer/Geologist: DPL / BSC

Ground Surface Elevation:

Date of Completion: 7/29/16

Permit #:

Boring Location: Off NE corner of bldg by new septic tanks

E1 Top of Steel Casing:

Drilling Contractor/Name: Fuss & O'Neill / [redacted] DPL

E1 Top of PVC Casing:

Drilling Method: Geoprobe

Measuring Point: TPS / PVC

Well Cover (see codes):

WELL CONSTRUCTION

WELL CASING/RISER

Diameter: 1.5 in.

Type: PVC

Stick-up: 0 ft.

SUMP (below screen)

Diameter: 1.5 in.

Type: PVC

Length: 2.5 in.

PROTECTIVE CASING

Diameter: 5 in.

Type: Road Box / Stand Pipe

Stick-up: 0 ft

Depth to Bottom: 0.75 ft

Seal Material: Concrete

SCREEN INTERVALS

Screen Interval: ~~10~~ 19-9 ft

Diameter: 1.5 in.

Slot Size: 0.01

Description: PVC / Other:

Type: Perforated / Slotted / Wire-Wrap / Pre-Pack / Other:

BOREHOLE

Diameter: 3.5 in.

Total Boring Depth: 19 ft.

Refusal: y / n

Depth: 19 ft.

ANNULAR FILL

SURFACE SEAL (Approximate volumes if available)

Interval: 0.75-0 ft. Tremied: Y / N Volume: 0.5 bags Description: Concrete / Other:

BACKFILL

Interval: 5-0.75 ft. Tremied: Y / N Volume: bags Description: Bentonite Grout / Cuttings / Sand / Native Material
Other:

LOWER SEAL

Interval: 7.5-5 ft. Tremied: Y / N Volume: 0.5 bags Description: Bentonite Pellets / Bentonite Chips / Other:

FILTER

Interval: 19-7.5 ft. Tremied: Y / N Volume: 2.5 bags Description: Sand Filter (type: #0) / Other:

LOWER BACKFILL

Interval: ft. Tremied: Y / N Volume: bags Description: Bentonite Grout / Cuttings / Sand / Native Material
Other:

MONITORING WELL DEVELOPMENT*

Development Method: Surge Block / Submersible Pump / Peristaltic Pump / Waterra / Bailer / Other

Date:

*See Monitoring Well Development Data Sheet for details

FUSS & O'NEILL

MONITORING WELL COMPLETION REPORT

GENERAL INFORMATION

Project Name: Old Haddam Jail

Site ID (Boring/Well ID): MW-02

Project Location: Haddam, CT

Project No.: 20160311.A10

F&O Engineer/Geologist: DPL / BSC

Ground Surface Elevation: ____

Date of Completion: 7/29/16

Permit #: ____

Boring Location: Front of jail between steps + bldg corner

E1 Top of Steel Casing: ____

Drilling Contractor/Name: Fuss & O'Neill / ~~DEP~~ DPL

E1 Top of PVC Casing: ____

Drilling Method: Geoprobe

Measuring Point: TPS / PVC
Well Cover (see codes): ____

WELL CONSTRUCTION

WELL CASING/RISER

Diameter: 1.5 in.

Type: PVC

Stick-up: 0 ft.

SUMP (below screen)

Diameter: 1.5 in.

Type: Pvc

Length: 2.5 in.

PROTECTIVE CASING

Diameter: 5 in.

Type: Road Box / Stand Pipe

Stick-up: 0 ft

Depth to Bottom: 0.75 ft

Seal Material: Concrete

SCREEN INTERVALS

Screen Interval: 21-11 ~~10~~ ft

Diameter: 1.5 in.

Slot Size: 0.01

Description: PVC / Other: ____

Type: Perforated / Slotted / Wire-Wrap / Pre-Pack / Other: ____

BOREHOLE

Diameter: 3.5 in.

Total Boring Depth: 25 ft.

Refusal: y / n Depth: ____ ft.

ANNULAR FILL

SURFACE SEAL (Approximate volumes if available)

Interval: 0.75-0 ft. Tremied: Y / N Volume: 0.5 bags Description: Concrete / Other: ____

BACKFILL

Interval: 7-0.75 ft. Tremied: Y / N Volume: ____ bags Description: Bentonite Grout / Cuttings / Sand / Native Material
Other: ____

LOWER SEAL

Interval: 9.5-7 ft. Tremied: Y / N Volume: 0.5 bags Description: Bentonite Pellets / Bentonite Chips / Other: ____

FILTER

Interval: 21-9.5 ft. Tremied: Y / N Volume: 0.5 bags Description: Sand Filter (type:) #0 / Other: ____

LOWER BACKFILL

Interval: 25-21 ft. Tremied: Y / N Volume: ____ bags Description: Bentonite Grout / Cuttings / Sand / Native Material
Other: ____

MONITORING WELL DEVELOPMENT*

Development Method: Surge Block / Submersible Pump / Peristaltic Pump / Waterra / Bailer / Other____

Date:____

*See Monitoring Well Development Data Sheet for details

FUSS & O'NEILL

MONITORING WELL COMPLETION REPORT

GENERAL INFORMATION

Project Name: Old Haddam Jail

Site ID (Boring/Well ID): MW-03

Project Location: Haddam, CT

Project No.: 20160311.A10

F&O Engineer/Geologist: B Church / DDL

Ground Surface Elevation:

Date of Completion: 7/29/16

Permit #:

Boring Location: Off SE corner of pump house

E1 Top of Steel Casing:

Drilling Contractor/Name: Fuss & O'Neill / ~~DEP~~ DPL

E1 Top of PVC Casing:

Drilling Method: Geoprobe

Measuring Point: TPS / PVC
Well Cover (see codes):

WELL CONSTRUCTION

WELL CASING/RISER

Diameter: 1.5 in.
Type: PVC
Stick-up: 0 ft.

SUMP (below screen)

Diameter: 1.5 in.
Type: PVC
Length: 2.5 in.

PROTECTIVE CASING

Diameter: 5 in.
Type: Road Box / Stand Pipe
Stick-up: ft
Depth to Bottom: 0.75 ft
Seal Material:

SCREEN INTERVALS

Screen Interval: 9.5 - 4.5 ft
Diameter: 1.5 in.
Slot Size: 0.01

Description: PVC / Other:

Type: Perforated / Slotted / Wire-Wrap / Pre-Pack / Other:

BOREHOLE

Diameter: 3.5 in.
Total Boring Depth: 9.5 ft.
Refusal: y / n
Depth: 9.5 ft.

ANNULAR FILL

(Approximate volumes if available)

SURFACE SEAL

Interval: 0.75 - 0 ft. Tremied: Y / N Volume: 0.5 bags Description: Concrete / Other:

BACKFILL

Interval: 1.5-0.75 ft. Tremied: Y / N Volume: ~~0~~ bags Description: Bentonite Grout / Cuttings / Sand / ~~Native Material~~
Other:

LOWER SEAL

Interval: 3.0 - 1.5 ft. Tremied: Y / N Volume: 0.5 bags Description: Bentonite Pellets / Bentonite Chips / Other:

FILTER

Interval: 9.5 - 3.0 ft. Tremied: Y / N Volume: 0.25 bags Description: Sand Filter (type:) #0 / Other:

LOWER BACKFILL

Interval: ft. Tremied: Y / N Volume: bags Description: Bentonite Grout / Cuttings / Sand / Native Material
Other:

MONITORING WELL DEVELOPMENT*

Development Method: Surge Block / Submersible Pump / Peristaltic Pump / Waterra / Bailer / Other

Date:

*See Monitoring Well Development Data Sheet for details

FUSS & O'NEILL

MONITORING WELL COMPLETION REPORT

GENERAL INFORMATION

Project Name: Old Haddam Jail

Site ID (Boring/Well ID): MW-04

Project Location: Haddam, CT

Project No.: 20160311.A10

F&O Engineer/Geologist: BSC / DPL

Ground Surface Elevation: ______

Date of Completion: 7/29/16

Permit #: ______

Boring Location: SE corner of bldg by old septic tanks

E1 Top of Steel Casing: ______

Drilling Contractor/Name: Fuss & O'Neill / ~~DLP~~ DPL

E1 Top of PVC Casing: ______

Drilling Method: Geoprobe

Measuring Point: TPS / PVC

Well Cover (see codes): ______

WELL CONSTRUCTION

WELL CASING/RISER

Diameter: 1.5 in.

Type: PVC

Stick-up: 0 ft.

SUMP (below screen)

Diameter: 1.5 in.

Type: PVC

Length: 2.5 in.

PROTECTIVE CASING

Diameter: 5 in.

Type: Road Box / Stand Pipe

Stick-up: 0 ft

Depth to Bottom: 0.75 ft

Seal Material: Concrete

SCREEN INTERVALS

Screen Interval: 10-5 ft Diameter: 1.5 in. Slot Size: 0.01

Description: PVC / Other: ______

Type: Perforated / Slotted / Wire-Wrap / Pre-Pack / Other: ______

BOREHOLE

Diameter: 3.5 in. Total Boring Depth: 10.5 ft. Refusal: y / n Depth: 10.5 ft.

ANNULAR FILL

SURFACE SEAL (Approximate volumes if available)

Interval: 0.75-0 ft. Tremied: Y / N Volume: 0.5 bags Description: Concrete / Other: ______

BACKFILL

Interval: 2.0-0.75 ft. Tremied: Y / N Volume: ______ bags Description: Bentonite Grout / Cuttings / Sand / Native Material
Other: ______

LOWER SEAL

Interval: 3.5-2.0 ft. Tremied: Y / N Volume: 0.5 bags Description: Bentonite Pellets / Bentonite Chips / Other: ______

FILTER

Interval: 10-3.5 ft. Tremied: Y / N Volume: 0.5 bags Description: Sand Filter (type:) #0 / Other: ______

LOWER BACKFILL

Interval: 10.5-10 ft. Tremied: Y / N Volume: ______ bags Description: Bentonite Grout / Cuttings / Sand / Native Material
Other: ______

MONITORING WELL DEVELOPMENT*

Development Method: Surge Block / Submersible Pump / Peristaltic Pump / Waterra / Bailer / Other______

Date: ______

*See Monitoring Well Development Data Sheet for details

FUSS & O'NEILL

MONITORING WELL COMPLETION REPORT

GENERAL INFORMATION

Project Name: Old Haddam Jail

Site ID (Boring/Well ID): MW-05

Project Location: Haddam, CT

Project No.: 20160311.A10

F&O Engineer/Geologist: BSC

Ground Surface Elevation: ______

Date of Completion: 7/29

Permit #: ______

Boring Location: MW-05, Behind main jail bldg

E1 Top of Steel Casing: ______

Drilling Contractor/Name: Fuss & O'Neill / ~~DLP~~ DPL

E1 Top of PVC Casing: ______

Drilling Method: Geoprobe

Measuring Point: TPS / PVC

Well Cover (see codes): ______

WELL CONSTRUCTION

WELL CASING/RISER

Diameter: 1.5 in.

Type: PVC

Stick-up: 0 ft.

SUMP (below screen)

Diameter: 1.5 in.

Type: PVC

Length: 2.5 in.

PROTECTIVE CASING

Diameter: 5 in.

Type: Road Box / Stand Pipe

Stick-up: 0 ft

Depth to Bottom: 0.75 ft

Seal Material: Concrete

SCREEN INTERVALS

Screen Interval: 17.5-7.5 ft   Diameter: 1.5 in.   Slot Size: 0.01

Description: PVC / Other: ______

Type: Perforated / Slotted / Wire-Wrap / Pre-Pack / Other: ______

BOREHOLE

Diameter: 3.5 in.   Total Boring Depth: 17.5 ft.   Refusal: y / n   Depth: 17.5 ft.

ANNULAR FILL

SURFACE SEAL (Approximate volumes if available)

Interval: 0.75-0 ft.   Tremied: Y / N   Volume: 0.5 bags   Description: Concrete / Other: ______

BACKFILL

Interval: 4.5-0.75 ft.   Tremied: Y / N   Volume: ______ bags   Description: Bentonite Grout / Cuttings / Sand / Native Material
Other: ______

LOWER SEAL

Interval: 6-4.5 ft.   Tremied: Y / N   Volume: 0.5 bags   Description: Bentonite Pellets / Bentonite Chips / Other: ______

FILTER

Interval: 17.5-6 ft.   Tremied: Y / N   Volume: 0.5 bags   Description: Sand Filter (type:) #0 / Other: ______

LOWER BACKFILL

Interval: ______ ft.   Tremied: Y / N   Volume: ______ bags   Description: Bentonite Grout / Cuttings / Sand / Native Material
Other: ______

MONITORING WELL DEVELOPMENT*

Development Method: Surge Block / Submersible Pump / Peristaltic Pump / Waterra / Bailer / Other ______

Date: ______

*See Monitoring Well Development Data Sheet for details

Appendix B
2016 Phase II ESA Laboratory Analytical Reports

PHOENIX
Environmental Laboratories, Inc.

Friday, August 12, 2016

Attn: Stephanie Wierszchalek
Fuss & O'Neill, Inc.
146 Hartford Road
Manchester, CT 06040

Project ID: OLD HADDAM JAIL
Sample ID#s: BN82376 - BN82378, BN82381 - BN82383, BN82385 - BN82391

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

Enclosed are revised Analysis Report pages. Please replace and discard the original pages. If you have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext. 200.

Sincerely yours,

Phyllis Shiller

Phyllis Shiller
Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #MA-CT-007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B

NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

August 12, 2016

FOR: Attn: Stephanie Wierszchalek
Fuss & O'Neill, Inc.
146 Hartford Road
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	SOLID	Collected by:	DL	07/28/16	9:30
Location Code:	F&O	Received by:	SW	07/28/16	16:53
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	20160311A10				

Laboratory Data

SDG ID: GBN82376
Phoenix ID: BN82376

Project ID: OLD HADDAM JAIL
Client ID: 1305160728-01

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Percent Solid	97		%		07/28/16	W	SW846-%Solid
Soil Extraction SVOA PAH	Completed				07/28/16	NB/CKV	SW3545A
Extraction of CT ETPH	Completed				08/01/16	BC/CK	SW3545A
Field Extraction	Completed				07/28/16		SW5035A
TPH by GC (Extractable Products)							
Ext. Petroleum HC	ND	51	mg/Kg	1	08/03/16	JRB	CTETPH 8015D
Identification	ND		mg/Kg	1	08/03/16	JRB	CTETPH 8015D
QA/QC Surrogates							
% n-Pentacosane	69		%	1	08/03/16	JRB	50 - 150 %
Volatiles							
1,1,1,2-Tetrachloroethane	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
1,1,1-Trichloroethane	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
1,1,2,2-Tetrachloroethane	ND	3.2	ug/Kg	1	07/31/16	JLI	SW8260
1,1,2-Trichloroethane	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
1,1-Dichloroethane	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
1,1-Dichloroethene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
1,1-Dichloropropene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
1,2,3-Trichlorobenzene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
1,2,3-Trichloropropane	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
1,2,4-Trichlorobenzene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
1,2,4-Trimethylbenzene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
1,2-Dibromo-3-chloropropane	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
1,2-Dibromoethane	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
1,2-Dichlorobenzene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
1,2-Dichloroethane	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
1,2-Dichloropropane	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260

Project ID: OLD HADDAM JAIL
Client ID: 1305160728-01

Phoenix I.D.: BN82376

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
1,3,5-Trimethylbenzene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
1,3-Dichlorobenzene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
1,3-Dichloropropane	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
1,4-Dichlorobenzene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
2,2-Dichloropropane	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
2-Chlorotoluene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
2-Hexanone	ND	26	ug/Kg	1	07/31/16	JLI	SW8260
2-Isopropyltoluene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
4-Chlorotoluene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
4-Methyl-2-pentanone	ND	26	ug/Kg	1	07/31/16	JLI	SW8260
Acetone	ND	260	ug/Kg	1	07/31/16	JLI	SW8260
Acrylonitrile	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Benzene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Bromobenzene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Bromochloromethane	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Bromodichloromethane	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Bromoform	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Bromomethane	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Carbon Disulfide	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Carbon tetrachloride	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Chlorobenzene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Chloroethane	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Chloroform	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Chloromethane	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
cis-1,2-Dichloroethene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
cis-1,3-Dichloropropene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Dibromochloromethane	ND	3.2	ug/Kg	1	07/31/16	JLI	SW8260
Dibromomethane	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Dichlorodifluoromethane	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Ethylbenzene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Hexachlorobutadiene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Isopropylbenzene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
m&p-Xylene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Methyl Ethyl Ketone	ND	32	ug/Kg	1	07/31/16	JLI	SW8260
Methyl t-butyl ether (MTBE)	ND	11	ug/Kg	1	07/31/16	JLI	SW8260
Methylene chloride	ND	11	ug/Kg	1	07/31/16	JLI	SW8260
Naphthalene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
n-Butylbenzene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
n-Propylbenzene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
o-Xylene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
p-Isopropyltoluene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
sec-Butylbenzene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Styrene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
tert-Butylbenzene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Tetrachloroethene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Tetrahydrofuran (THF)	ND	11	ug/Kg	1	07/31/16	JLI	SW8260
Toluene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Total Xylenes	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
trans-1,2-Dichloroethene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
trans-1,3-Dichloropropene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
trans-1,4-dichloro-2-butene	ND	11	ug/Kg	1	07/31/16	JLI	SW8260
Trichloroethene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Trichlorofluoromethane	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Trichlorotrifluoroethane	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Vinyl chloride	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	96		%	1	07/31/16	JLI	70 - 130 %
% Bromofluorobenzene	97		%	1	07/31/16	JLI	70 - 130 %
% Dibromofluoromethane	97		%	1	07/31/16	JLI	70 - 130 %
% Toluene-d8	97		%	1	07/31/16	JLI	70 - 130 %
Polynuclear Aromatic HC							
2-Methylnaphthalene	ND	240	ug/Kg	1	07/29/16	DD	SW8270D
Acenaphthene	ND	240	ug/Kg	1	07/29/16	DD	SW8270D
Acenaphthylene	ND	240	ug/Kg	1	07/29/16	DD	SW8270D
Anthracene	ND	240	ug/Kg	1	07/29/16	DD	SW8270D
Benz(a)anthracene	ND	240	ug/Kg	1	07/29/16	DD	SW8270D
Benzo(a)pyrene	ND	240	ug/Kg	1	07/29/16	DD	SW8270D
Benzo(b)fluoranthene	ND	240	ug/Kg	1	07/29/16	DD	SW8270D
Benzo(ghi)perylene	ND	240	ug/Kg	1	07/29/16	DD	SW8270D
Benzo(k)fluoranthene	ND	240	ug/Kg	1	07/29/16	DD	SW8270D
Chrysene	ND	240	ug/Kg	1	07/29/16	DD	SW8270D
Dibenz(a,h)anthracene	ND	240	ug/Kg	1	07/29/16	DD	SW8270D
Fluoranthene	ND	240	ug/Kg	1	07/29/16	DD	SW8270D
Fluorene	ND	240	ug/Kg	1	07/29/16	DD	SW8270D
Indeno(1,2,3-cd)pyrene	ND	240	ug/Kg	1	07/29/16	DD	SW8270D
Naphthalene	ND	240	ug/Kg	1	07/29/16	DD	SW8270D
Phenanthrene	ND	240	ug/Kg	1	07/29/16	DD	SW8270D
Pyrene	ND	240	ug/Kg	1	07/29/16	DD	SW8270D
QA/QC Surrogates							
% 2-Fluorobiphenyl	50		%	1	07/29/16	DD	30 - 130 %
% Nitrobenzene-d5	45		%	1	07/29/16	DD	30 - 130 %
% Terphenyl-d14	65		%	1	07/29/16	DD	30 - 130 %

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
This report must not be reproduced except in full as defined by the attached chain of custody.

Phyllis Shiller, Laboratory Director
August 12, 2016
Reviewed and Released by: Ethan Lee, Project Manager

PHOENIX

Environmental Laboratories, Inc.

587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

August 12, 2016

FOR: Attn: Stephanie Wierszchalek
Fuss & O'Neill, Inc.
146 Hartford Road
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	SOLID	Collected by:	DL	07/28/16	10:15
Location Code:	F&O	Received by:	SW	07/28/16	16:53
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	20160311A10				

Laboratory Data

SDG ID: GBN82376
Phoenix ID: BN82377

Project ID: OLD HADDAM JAIL
Client ID: 1305160728-02

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Percent Solid	98		%		07/28/16	W	SW846-%Solid
Soil Extraction SVOA PAH	Completed				07/28/16	NB/CKV	SW3545A
Extraction of CT ETPH	Completed				07/28/16	NC/CK	SW3545A
Field Extraction	Completed				07/28/16		SW5035A
TPH by GC (Extractable Products)							
Ext. Petroleum HC	ND	50	mg/Kg	1	07/29/16	JRB	CTETPH 8015D
Identification	ND		mg/Kg	1	07/29/16	JRB	CTETPH 8015D
QA/QC Surrogates							
% n-Pentacosane	70		%	1	07/29/16	JRB	50 - 150 %
Volatiles							
1,1,1,2-Tetrachloroethane	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
1,1,1-Trichloroethane	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
1,1,2,2-Tetrachloroethane	ND	3.2	ug/Kg	1	07/31/16	JLI	SW8260
1,1,2-Trichloroethane	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
1,1-Dichloroethane	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
1,1-Dichloroethene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
1,1-Dichloropropene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
1,2,3-Trichlorobenzene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
1,2,3-Trichloropropane	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
1,2,4-Trichlorobenzene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
1,2,4-Trimethylbenzene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
1,2-Dibromo-3-chloropropane	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
1,2-Dibromoethane	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
1,2-Dichlorobenzene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
1,2-Dichloroethane	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
1,2-Dichloropropane	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260

Project ID: OLD HADDAM JAIL
Client ID: 1305160728-02

Phoenix I.D.: BN82377

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
1,3,5-Trimethylbenzene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
1,3-Dichlorobenzene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
1,3-Dichloropropane	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
1,4-Dichlorobenzene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
2,2-Dichloropropane	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
2-Chlorotoluene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
2-Hexanone	ND	27	ug/Kg	1	07/31/16	JLI	SW8260
2-Isopropyltoluene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
4-Chlorotoluene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
4-Methyl-2-pentanone	ND	27	ug/Kg	1	07/31/16	JLI	SW8260
Acetone	ND	270	ug/Kg	1	07/31/16	JLI	SW8260
Acrylonitrile	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Benzene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Bromobenzene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Bromochloromethane	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Bromodichloromethane	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Bromoform	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Bromomethane	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Carbon Disulfide	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Carbon tetrachloride	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Chlorobenzene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Chloroethane	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Chloroform	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Chloromethane	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
cis-1,2-Dichloroethene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
cis-1,3-Dichloropropene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Dibromochloromethane	ND	3.2	ug/Kg	1	07/31/16	JLI	SW8260
Dibromomethane	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Dichlorodifluoromethane	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Ethylbenzene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Hexachlorobutadiene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Isopropylbenzene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
m&p-Xylene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Methyl Ethyl Ketone	ND	32	ug/Kg	1	07/31/16	JLI	SW8260
Methyl t-butyl ether (MTBE)	ND	11	ug/Kg	1	07/31/16	JLI	SW8260
Methylene chloride	ND	11	ug/Kg	1	07/31/16	JLI	SW8260
Naphthalene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
n-Butylbenzene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
n-Propylbenzene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
o-Xylene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
p-Isopropyltoluene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
sec-Butylbenzene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Styrene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
tert-Butylbenzene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Tetrachloroethene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Tetrahydrofuran (THF)	ND	11	ug/Kg	1	07/31/16	JLI	SW8260
Toluene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Total Xylenes	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
trans-1,2-Dichloroethene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
trans-1,3-Dichloropropene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
trans-1,4-dichloro-2-butene	ND	11	ug/Kg	1	07/31/16	JLI	SW8260
Trichloroethene	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Trichlorofluoromethane	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Trichlorotrifluoroethane	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
Vinyl chloride	ND	5.3	ug/Kg	1	07/31/16	JLI	SW8260
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	98		%	1	07/31/16	JLI	70 - 130 %
% Bromofluorobenzene	98		%	1	07/31/16	JLI	70 - 130 %
% Dibromofluoromethane	96		%	1	07/31/16	JLI	70 - 130 %
% Toluene-d8	98		%	1	07/31/16	JLI	70 - 130 %

Polynuclear Aromatic HC

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
2-Methylnaphthalene	ND	230	ug/Kg	1	07/29/16	DD	SW8270D
Acenaphthene	ND	230	ug/Kg	1	07/29/16	DD	SW8270D
Acenaphthylene	ND	230	ug/Kg	1	07/29/16	DD	SW8270D
Anthracene	ND	230	ug/Kg	1	07/29/16	DD	SW8270D
Benz(a)anthracene	ND	230	ug/Kg	1	07/29/16	DD	SW8270D
Benzo(a)pyrene	ND	230	ug/Kg	1	07/29/16	DD	SW8270D
Benzo(b)fluoranthene	ND	230	ug/Kg	1	07/29/16	DD	SW8270D
Benzo(ghi)perylene	ND	230	ug/Kg	1	07/29/16	DD	SW8270D
Benzo(k)fluoranthene	ND	230	ug/Kg	1	07/29/16	DD	SW8270D
Chrysene	ND	230	ug/Kg	1	07/29/16	DD	SW8270D
Dibenz(a,h)anthracene	ND	230	ug/Kg	1	07/29/16	DD	SW8270D
Fluoranthene	ND	230	ug/Kg	1	07/29/16	DD	SW8270D
Fluorene	ND	230	ug/Kg	1	07/29/16	DD	SW8270D
Indeno(1,2,3-cd)pyrene	ND	230	ug/Kg	1	07/29/16	DD	SW8270D
Naphthalene	ND	230	ug/Kg	1	07/29/16	DD	SW8270D
Phenanthrene	ND	230	ug/Kg	1	07/29/16	DD	SW8270D
Pyrene	ND	230	ug/Kg	1	07/29/16	DD	SW8270D
QA/QC Surrogates							
% 2-Fluorobiphenyl	49		%	1	07/29/16	DD	30 - 130 %
% Nitrobenzene-d5	49		%	1	07/29/16	DD	30 - 130 %
% Terphenyl-d14	48		%	1	07/29/16	DD	30 - 130 %

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

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Phyllis Shiller, Laboratory Director
August 12, 2016
Reviewed and Released by: Ethan Lee, Project Manager

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

August 12, 2016

FOR: Attn: Stephanie Wierszchalek
Fuss & O'Neill, Inc.
146 Hartford Road
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	SOLID	Collected by:	DL	07/28/16	10:45
Location Code:	F&O	Received by:	SW	07/28/16	16:53
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	20160311A10				

Laboratory Data

SDG ID: GBN82376
Phoenix ID: BN82378

Project ID: OLD HADDAM JAIL
Client ID: 1305160728-03

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Percent Solid	86		%		07/28/16	W	SW846-%Solid
Soil Extraction SVOA PAH	Completed				07/28/16	NB/CKV	SW3545A
Extraction of CT ETPH	Completed				07/28/16	NB/CK	SW3545A
TPH by GC (Extractable Products)							
Ext. Petroleum HC	ND	58	mg/Kg	1	07/29/16	KCA	CTETPH 8015D
Identification	ND		mg/Kg	1	07/29/16	KCA	CTETPH 8015D
QA/QC Surrogates							
% n-Pentacosane	63		%	1	07/29/16	KCA	50 - 150 %
Polynuclear Aromatic HC							
2-Methylnaphthalene	ND	270	ug/Kg	1	07/29/16	DD	SW8270D
Acenaphthene	ND	270	ug/Kg	1	07/29/16	DD	SW8270D
Acenaphthylene	ND	270	ug/Kg	1	07/29/16	DD	SW8270D
Anthracene	ND	270	ug/Kg	1	07/29/16	DD	SW8270D
Benz(a)anthracene	ND	270	ug/Kg	1	07/29/16	DD	SW8270D
Benzo(a)pyrene	ND	270	ug/Kg	1	07/29/16	DD	SW8270D
Benzo(b)fluoranthene	ND	270	ug/Kg	1	07/29/16	DD	SW8270D
Benzo(ghi)perylene	ND	270	ug/Kg	1	07/29/16	DD	SW8270D
Benzo(k)fluoranthene	ND	270	ug/Kg	1	07/29/16	DD	SW8270D
Chrysene	ND	270	ug/Kg	1	07/29/16	DD	SW8270D
Dibenz(a,h)anthracene	ND	270	ug/Kg	1	07/29/16	DD	SW8270D
Fluoranthene	ND	270	ug/Kg	1	07/29/16	DD	SW8270D
Fluorene	ND	270	ug/Kg	1	07/29/16	DD	SW8270D
Indeno(1,2,3-cd)pyrene	ND	270	ug/Kg	1	07/29/16	DD	SW8270D
Naphthalene	ND	270	ug/Kg	1	07/29/16	DD	SW8270D
Phenanthrene	ND	270	ug/Kg	1	07/29/16	DD	SW8270D
Pyrene	ND	270	ug/Kg	1	07/29/16	DD	SW8270D

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
QA/QC Surrogates							
% 2-Fluorobiphenyl	59		%	1	07/29/16	DD	30 - 130 %
% Nitrobenzene-d5	58		%	1	07/29/16	DD	30 - 130 %
% Terphenyl-d14	62		%	1	07/29/16	DD	30 - 130 %

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

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Phyllis Shiller

Phyllis Shiller, Laboratory Director
August 12, 2016
Reviewed and Released by: Ethan Lee, Project Manager

Environmental Laboratories, Inc.

587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

August 12, 2016

FOR: Attn: Stephanie Wierszchalek
Fuss & O'Neill, Inc.
146 Hartford Road
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	SOLID	Collected by:	DL	07/28/16	11:25
Location Code:	F&O	Received by:	SW	07/28/16	16:53
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	20160311A10				

Laboratory Data

SDG ID: GBN82376
Phoenix ID: BN82381

Project ID: OLD HADDAM JAIL
Client ID: 1305160728-06

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Silver	< 0.38	0.38	mg/Kg	1	08/01/16	LK	SW6010C
Arsenic	2.05	0.75	mg/Kg	1	08/01/16	LK	SW6010C
Barium	60.9	0.38	mg/Kg	1	08/01/16	LK	SW6010C
Cadmium	< 0.38	0.38	mg/Kg	1	08/01/16	LK	SW6010C
Chromium	15.1	0.38	mg/Kg	1	08/01/16	LK	SW6010C
Mercury	< 0.03	0.03	mg/Kg	1	08/01/16	RS	SW7471B
Lead	13.3	0.38	mg/Kg	1	08/01/16	LK	SW6010C
Selenium	< 1.5	1.5	mg/Kg	1	08/01/16	LK	SW6010C
Percent Solid	79		%		07/28/16	W	SW846-%Solid
Soil Extraction for PCB	Completed				07/28/16	NC/V	SW3545A
Soil Extraction SVOA PAH	Completed				07/28/16	NB/CKV	SW3545A
Extraction of CT ETPH	Completed				07/28/16	NB/CK	SW3545A
Mercury Digestion	Completed				08/01/16	I/I	SW7471B
Total Metals Digest	Completed				07/28/16	X/AG	SW3050B
Field Extraction	Completed				07/28/16		SW5035A
TPH by GC (Extractable Products)							
Ext. Petroleum HC	ND	63	mg/Kg	1	07/29/16	KCA	CTETPH 8015D
Identification	ND		mg/Kg	1	07/29/16	KCA	CTETPH 8015D
QA/QC Surrogates							
% n-Pentacosane	58		%	1	07/29/16	KCA	50 - 150 %
Polychlorinated Biphenyls							
PCB-1016	ND	420	ug/Kg	10	07/29/16	AW	SW8082A
PCB-1221	ND	420	ug/Kg	10	07/29/16	AW	SW8082A
PCB-1232	ND	420	ug/Kg	10	07/29/16	AW	SW8082A
PCB-1242	ND	420	ug/Kg	10	07/29/16	AW	SW8082A
PCB-1248	ND	420	ug/Kg	10	07/29/16	AW	SW8082A

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
PCB-1254	ND	420	ug/Kg	10	07/29/16	AW	SW8082A
PCB-1260	ND	420	ug/Kg	10	07/29/16	AW	SW8082A
PCB-1262	ND	420	ug/Kg	10	07/29/16	AW	SW8082A
PCB-1268	ND	420	ug/Kg	10	07/29/16	AW	SW8082A
QA/QC Surrogates							
% DCBP	70		%	10	07/29/16	AW	30 - 150 %
% TCMX	70		%	10	07/29/16	AW	30 - 150 %
Volatiles							
1,1,1,2-Tetrachloroethane	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
1,1,1-Trichloroethane	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
1,1,2,2-Tetrachloroethane	ND	3.3	ug/Kg	1	07/31/16	JLI	SW8260
1,1,2-Trichloroethane	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
1,1-Dichloroethane	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
1,1-Dichloroethene	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
1,1-Dichloropropene	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
1,2,3-Trichlorobenzene	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
1,2,3-Trichloropropane	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
1,2,4-Trichlorobenzene	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
1,2,4-Trimethylbenzene	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
1,2-Dibromo-3-chloropropane	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
1,2-Dibromoethane	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
1,2-Dichlorobenzene	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
1,2-Dichloroethane	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
1,2-Dichloropropane	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
1,3,5-Trimethylbenzene	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
1,3-Dichlorobenzene	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
1,3-Dichloropropane	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
1,4-Dichlorobenzene	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
2,2-Dichloropropane	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
2-Chlorotoluene	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
2-Hexanone	ND	27	ug/Kg	1	07/31/16	JLI	SW8260
2-Isopropyltoluene	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
4-Chlorotoluene	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
4-Methyl-2-pentanone	ND	27	ug/Kg	1	07/31/16	JLI	SW8260
Acetone	ND	270	ug/Kg	1	07/31/16	JLI	SW8260
Acrylonitrile	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
Benzene	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
Bromobenzene	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
Bromochloromethane	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
Bromodichloromethane	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
Bromoform	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
Bromomethane	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
Carbon Disulfide	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
Carbon tetrachloride	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
Chlorobenzene	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
Chloroethane	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
Chloroform	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
Chloromethane	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
cis-1,2-Dichloroethene	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
cis-1,3-Dichloropropene	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
Dibromochloromethane	ND	3.3	ug/Kg	1	07/31/16	JLI	SW8260
Dibromomethane	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
Dichlorodifluoromethane	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
Ethylbenzene	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
Hexachlorobutadiene	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
Isopropylbenzene	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
m&p-Xylene	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
Methyl Ethyl Ketone	ND	33	ug/Kg	1	07/31/16	JLI	SW8260
Methyl t-butyl ether (MTBE)	ND	11	ug/Kg	1	07/31/16	JLI	SW8260
Methylene chloride	ND	11	ug/Kg	1	07/31/16	JLI	SW8260
Naphthalene	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
n-Butylbenzene	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
n-Propylbenzene	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
o-Xylene	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
p-Isopropyltoluene	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
sec-Butylbenzene	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
Styrene	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
tert-Butylbenzene	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
Tetrachloroethene	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
Tetrahydrofuran (THF)	ND	11	ug/Kg	1	07/31/16	JLI	SW8260
Toluene	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
Total Xylenes	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
trans-1,2-Dichloroethene	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
trans-1,3-Dichloropropene	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
trans-1,4-dichloro-2-butene	ND	11	ug/Kg	1	07/31/16	JLI	SW8260
Trichloroethene	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
Trichlorofluoromethane	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
Trichlorotrifluoroethane	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
Vinyl chloride	ND	5.4	ug/Kg	1	07/31/16	JLI	SW8260
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	94		%	1	07/31/16	JLI	70 - 130 %
% Bromofluorobenzene	93		%	1	07/31/16	JLI	70 - 130 %
% Dibromofluoromethane	98		%	1	07/31/16	JLI	70 - 130 %
% Toluene-d8	95		%	1	07/31/16	JLI	70 - 130 %

Polynuclear Aromatic HC

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
2-Methylnaphthalene	ND	290	ug/Kg	1	07/29/16	DD	SW8270D
Acenaphthene	ND	290	ug/Kg	1	07/29/16	DD	SW8270D
Acenaphthylene	ND	290	ug/Kg	1	07/29/16	DD	SW8270D
Anthracene	ND	290	ug/Kg	1	07/29/16	DD	SW8270D
Benz(a)anthracene	ND	290	ug/Kg	1	07/29/16	DD	SW8270D
Benzo(a)pyrene	ND	290	ug/Kg	1	07/29/16	DD	SW8270D
Benzo(b)fluoranthene	ND	290	ug/Kg	1	07/29/16	DD	SW8270D
Benzo(ghi)perylene	ND	290	ug/Kg	1	07/29/16	DD	SW8270D
Benzo(k)fluoranthene	ND	290	ug/Kg	1	07/29/16	DD	SW8270D
Chrysene	ND	290	ug/Kg	1	07/29/16	DD	SW8270D
Dibenz(a,h)anthracene	ND	290	ug/Kg	1	07/29/16	DD	SW8270D
Fluoranthene	ND	290	ug/Kg	1	07/29/16	DD	SW8270D
Fluorene	ND	290	ug/Kg	1	07/29/16	DD	SW8270D

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Indeno(1,2,3-cd)pyrene	ND	290	ug/Kg	1	07/29/16	DD	SW8270D
Naphthalene	ND	290	ug/Kg	1	07/29/16	DD	SW8270D
Phenanthrene	ND	290	ug/Kg	1	07/29/16	DD	SW8270D
Pyrene	ND	290	ug/Kg	1	07/29/16	DD	SW8270D
QA/QC Surrogates							
% 2-Fluorobiphenyl	53		%	1	07/29/16	DD	30 - 130 %
% Nitrobenzene-d5	55		%	1	07/29/16	DD	30 - 130 %
% Terphenyl-d14	62		%	1	07/29/16	DD	30 - 130 %

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
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Phyllis Shiller

Phyllis Shiller, Laboratory Director
August 12, 2016
Reviewed and Released by: Ethan Lee, Project Manager

PHOENIX

Environmental Laboratories, Inc.

587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045

Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

August 12, 2016

FOR: Attn: Stephanie Wierszchalek
Fuss & O'Neill, Inc.
146 Hartford Road
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	SOLID	Collected by:	DL	07/28/16	11:40
Location Code:	F&O	Received by:	SW	07/28/16	16:53
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	20160311A10				

Laboratory Data

SDG ID: GBN82376
Phoenix ID: BN82382

Project ID: OLD HADDAM JAIL
Client ID: 1305160728-07

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Arsenic	22.1	0.68	mg/Kg	1	07/30/16	LK	SW6010C
Lead	349	3.4	mg/Kg	10	08/01/16	LK	SW6010C
SPLP Arsenic	0.009	0.004	mg/L	1	08/10/16	LK	SW6010C
SPLP Lead	0.063	0.010	mg/L	1	08/10/16	LK	SW6010C
SPLP Metals Digestion	Completed				08/10/16	W/W	SW3005A
Percent Solid	96		%		07/28/16	W	SW846-%Solid
Soil Extraction for Pesticide	Completed				07/28/16	NC/V	SW3545A
SPLP Extraction for Metals	Completed				08/09/16	W	SW1312
Total Metals Digest	Completed				07/28/16	X/AG	SW3050B
Pesticides							
4,4' -DDD	ND	6.9	ug/Kg	2	07/30/16	CE	SW8081B
4,4' -DDE	25	6.9	ug/Kg	2	07/30/16	CE	SW8081B
4,4' -DDT	19	6.9	ug/Kg	2	07/30/16	CE	SW8081B
a-BHC	ND	6.9	ug/Kg	2	07/30/16	CE	SW8081B
Alachlor	ND	6.9	ug/Kg	2	07/30/16	CE	SW8081B
Aldrin	ND	3.5	ug/Kg	2	07/30/16	CE	SW8081B
b-BHC	ND	6.9	ug/Kg	2	07/30/16	CE	SW8081B
Chlordane	ND	35	ug/Kg	2	07/30/16	CE	SW8081B
d-BHC	ND	6.9	ug/Kg	2	07/30/16	CE	SW8081B
Dieldrin	ND	3.5	ug/Kg	2	07/30/16	CE	SW8081B
Endosulfan I	ND	6.9	ug/Kg	2	07/30/16	CE	SW8081B
Endosulfan II	ND	6.9	ug/Kg	2	07/30/16	CE	SW8081B
Endosulfan sulfate	ND	6.9	ug/Kg	2	07/30/16	CE	SW8081B
Endrin	ND	6.9	ug/Kg	2	07/30/16	CE	SW8081B
Endrin aldehyde	ND	6.9	ug/Kg	2	07/30/16	CE	SW8081B
Endrin ketone	ND	6.9	ug/Kg	2	07/30/16	CE	SW8081B
g-BHC	ND	1.4	ug/Kg	2	07/30/16	CE	SW8081B

Project ID: OLD HADDAM JAIL
Client ID: 1305160728-07

Phoenix I.D.: BN82382

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Heptachlor	ND	6.9	ug/Kg	2	07/30/16	CE	SW8081B
Heptachlor epoxide	ND	6.9	ug/Kg	2	07/30/16	CE	SW8081B
Methoxychlor	ND	35	ug/Kg	2	07/30/16	CE	SW8081B
Toxaphene	ND	140	ug/Kg	2	07/30/16	CE	SW8081B
QA/QC Surrogates							
% DCBP	81		%	2	07/30/16	CE	30 - 150 %
% TCMX	45		%	2	07/30/16	CE	30 - 150 %

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

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Phyllis Shiller

Phyllis Shiller, Laboratory Director
August 12, 2016
Reviewed and Released by: Ethan Lee, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

August 12, 2016

FOR: Attn: Stephanie Wierszchalek
Fuss & O'Neill, Inc.
146 Hartford Road
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	SOLID	Collected by:	DL	07/28/16	11:50
Location Code:	F&O	Received by:	SW	07/28/16	16:53
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	20160311A10				

Laboratory Data

SDG ID: GBN82376
Phoenix ID: BN82383

Project ID: OLD HADDAM JAIL
Client ID: 1305160728-08

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Arsenic	12.1	0.76	mg/Kg	1	08/10/16	LK	SW6010C
Lead	147	0.38	mg/Kg	1	08/10/16	LK	SW6010C
Percent Solid	93		%		08/09/16	W	SW846-%Solid
Soil Extraction for Pesticide	Completed				08/09/16	BJ/V	SW3545A
Total Metals Digest	Completed				08/09/16	X/AG	SW3050B
Pesticides							
4,4' -DDD	ND	7.1	ug/Kg	2	08/10/16	CE	SW8081B
4,4' -DDE	ND	7.1	ug/Kg	2	08/10/16	CE	SW8081B
4,4' -DDT	ND	7.1	ug/Kg	2	08/10/16	CE	SW8081B
a-BHC	ND	7.1	ug/Kg	2	08/10/16	CE	SW8081B
Alachlor	ND	7.1	ug/Kg	2	08/10/16	CE	SW8081B
Aldrin	ND	3.6	ug/Kg	2	08/10/16	CE	SW8081B
b-BHC	ND	7.1	ug/Kg	2	08/10/16	CE	SW8081B
Chlordane	ND	36	ug/Kg	2	08/10/16	CE	SW8081B
d-BHC	ND	7.1	ug/Kg	2	08/10/16	CE	SW8081B
Dieldrin	ND	3.6	ug/Kg	2	08/10/16	CE	SW8081B
Endosulfan I	ND	7.1	ug/Kg	2	08/10/16	CE	SW8081B
Endosulfan II	ND	7.1	ug/Kg	2	08/10/16	CE	SW8081B
Endosulfan sulfate	ND	7.1	ug/Kg	2	08/10/16	CE	SW8081B
Endrin	ND	7.1	ug/Kg	2	08/10/16	CE	SW8081B
Endrin aldehyde	ND	7.1	ug/Kg	2	08/10/16	CE	SW8081B
Endrin ketone	ND	7.1	ug/Kg	2	08/10/16	CE	SW8081B
g-BHC	ND	1.4	ug/Kg	2	08/10/16	CE	SW8081B
Heptachlor	ND	7.1	ug/Kg	2	08/10/16	CE	SW8081B
Heptachlor epoxide	ND	7.1	ug/Kg	2	08/10/16	CE	SW8081B
Methoxychlor	ND	36	ug/Kg	2	08/10/16	CE	SW8081B
Toxaphene	ND	140	ug/Kg	2	08/10/16	CE	SW8081B

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
QA/QC Surrogates							
% DCBP	74		%	2	08/10/16	CE	30 - 150 %
% TCMX	57		%	2	08/10/16	CE	30 - 150 %

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

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Phyllis Shiller, Laboratory Director
August 12, 2016
Reviewed and Released by: Ethan Lee, Project Manager

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

August 12, 2016

FOR: Attn: Stephanie Wierszchalek
Fuss & O'Neill, Inc.
146 Hartford Road
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	SOLID	Collected by:	DL	07/28/16	12:10
Location Code:	F&O	Received by:	SW	07/28/16	16:53
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	20160311A10				

Laboratory Data

SDG ID: GBN82376
Phoenix ID: BN82385

Project ID: OLD HADDAM JAIL
Client ID: 1305160728-10

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Arsenic	6.83	0.66	mg/Kg	1	07/30/16	LK	SW6010C
Lead	130	3.3	mg/Kg	10	08/01/16	LK	SW6010C
SPLP Arsenic	< 0.004	0.004	mg/L	1	08/10/16	LK	SW6010C
SPLP Lead	0.028	0.010	mg/L	1	08/10/16	LK	SW6010C
SPLP Metals Digestion	Completed				08/10/16	W/W	SW3005A
Percent Solid	97		%		07/28/16	W	SW846-%Solid
Soil Extraction for Pesticide	Completed				07/28/16	NC/V	SW3545A
SPLP Extraction for Metals	Completed				08/09/16	W	SW1312
Total Metals Digest	Completed				07/28/16	X/AG	SW3050B
Pesticides							
4,4' -DDD	ND	6.8	ug/Kg	2	08/02/16	CE	SW8081B
4,4' -DDE	59	6.8	ug/Kg	2	08/02/16	CE	SW8081B
4,4' -DDT	25	6.8	ug/Kg	2	08/02/16	CE	SW8081B
a-BHC	ND	6.8	ug/Kg	2	08/02/16	CE	SW8081B
Alachlor	ND	6.8	ug/Kg	2	08/02/16	CE	SW8081B
Aldrin	ND	3.4	ug/Kg	2	08/02/16	CE	SW8081B
b-BHC	ND	6.8	ug/Kg	2	08/02/16	CE	SW8081B
Chlordane	ND	34	ug/Kg	2	08/02/16	CE	SW8081B
d-BHC	ND	6.8	ug/Kg	2	08/02/16	CE	SW8081B
Dieldrin	ND	3.4	ug/Kg	2	08/02/16	CE	SW8081B
Endosulfan I	ND	6.8	ug/Kg	2	08/02/16	CE	SW8081B
Endosulfan II	ND	6.8	ug/Kg	2	08/02/16	CE	SW8081B
Endosulfan sulfate	ND	6.8	ug/Kg	2	08/02/16	CE	SW8081B
Endrin	ND	6.8	ug/Kg	2	08/02/16	CE	SW8081B
Endrin aldehyde	ND	6.8	ug/Kg	2	08/02/16	CE	SW8081B
Endrin ketone	ND	6.8	ug/Kg	2	08/02/16	CE	SW8081B
g-BHC	ND	1.4	ug/Kg	2	08/02/16	CE	SW8081B

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Heptachlor	ND	6.8	ug/Kg	2	08/02/16	CE	SW8081B
Heptachlor epoxide	ND	6.8	ug/Kg	2	08/02/16	CE	SW8081B
Methoxychlor	ND	34	ug/Kg	2	08/02/16	CE	SW8081B
Toxaphene	ND	140	ug/Kg	2	08/02/16	CE	SW8081B
QA/QC Surrogates							
% DCBP	102		%	2	08/02/16	CE	30 - 150 %
% TCMX	62		%	2	08/02/16	CE	30 - 150 %

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

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Phyllis Shiller

Phyllis Shiller, Laboratory Director
August 12, 2016
Reviewed and Released by: Ethan Lee, Project Manager

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

August 12, 2016

FOR: Attn: Stephanie Wierszchalek
Fuss & O'Neill, Inc.
146 Hartford Road
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	SOLID	Collected by:	DL	07/28/16	12:15
Location Code:	F&O	Received by:	SW	07/28/16	16:53
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	20160311A10				

Laboratory Data

SDG ID: GBN82376
Phoenix ID: BN82386

Project ID: OLD HADDAM JAIL
Client ID: 1305160728-11

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Arsenic	5.39	0.76	mg/Kg	1	08/10/16	LK	SW6010C
Lead	42.2	0.38	mg/Kg	1	08/10/16	LK	SW6010C
Percent Solid	91		%		08/09/16	W	SW846-%Solid
Soil Extraction for Pesticide	Completed				08/09/16	BJ/V	SW3545A
Total Metals Digest	Completed				08/09/16	X/AG	SW3050B
Pesticides							
4,4' -DDD	ND	7.2	ug/Kg	2	08/10/16	CE	SW8081B
4,4' -DDE	11	7.2	ug/Kg	2	08/10/16	CE	SW8081B
4,4' -DDT	4.6	2.9	ug/Kg	2	08/10/16	CE	SW8081B
a-BHC	ND	7.2	ug/Kg	2	08/10/16	CE	SW8081B
Alachlor	ND	7.2	ug/Kg	2	08/10/16	CE	SW8081B
Aldrin	ND	3.6	ug/Kg	2	08/10/16	CE	SW8081B
b-BHC	ND	7.2	ug/Kg	2	08/10/16	CE	SW8081B
Chlordane	ND	36	ug/Kg	2	08/10/16	CE	SW8081B
d-BHC	ND	7.2	ug/Kg	2	08/10/16	CE	SW8081B
Dieldrin	ND	3.6	ug/Kg	2	08/10/16	CE	SW8081B
Endosulfan I	ND	7.2	ug/Kg	2	08/10/16	CE	SW8081B
Endosulfan II	ND	7.2	ug/Kg	2	08/10/16	CE	SW8081B
Endosulfan sulfate	ND	7.2	ug/Kg	2	08/10/16	CE	SW8081B
Endrin	ND	7.2	ug/Kg	2	08/10/16	CE	SW8081B
Endrin aldehyde	ND	7.2	ug/Kg	2	08/10/16	CE	SW8081B
Endrin ketone	ND	7.2	ug/Kg	2	08/10/16	CE	SW8081B
g-BHC	ND	1.4	ug/Kg	2	08/10/16	CE	SW8081B
Heptachlor	ND	7.2	ug/Kg	2	08/10/16	CE	SW8081B
Heptachlor epoxide	ND	7.2	ug/Kg	2	08/10/16	CE	SW8081B
Methoxychlor	ND	36	ug/Kg	2	08/10/16	CE	SW8081B
Toxaphene	ND	140	ug/Kg	2	08/10/16	CE	SW8081B

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
QA/QC Surrogates							
% DCBP	65		%	2	08/10/16	CE	30 - 150 %
% TCMX	46		%	2	08/10/16	CE	30 - 150 %

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August 12, 2016
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PHOENIX

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Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

August 12, 2016

FOR: Attn: Stephanie Wierszchalek
Fuss & O'Neill, Inc.
146 Hartford Road
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	SOLID	Collected by:	DL	07/28/16	13:30
Location Code:	F&O	Received by:	SW	07/28/16	16:53
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	20160311A10				

Laboratory Data

SDG ID: GBN82376
Phoenix ID: BN82387

Project ID: OLD HADDAM JAIL
Client ID: 1305160728-13

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Silver	< 0.35	0.35	mg/Kg	1	07/30/16	LK	SW6010C
Arsenic	5.23	0.70	mg/Kg	1	07/30/16	LK	SW6010C
Barium	31.1	0.35	mg/Kg	1	07/30/16	LK	SW6010C
Cadmium	< 0.35	0.35	mg/Kg	1	07/30/16	LK	SW6010C
Chromium	16.2	0.35	mg/Kg	1	07/30/16	LK	SW6010C
Mercury	0.06	0.03	mg/Kg	1	08/01/16	RS	SW7471B
Lead	4.98	0.35	mg/Kg	1	07/30/16	LK	SW6010C
Selenium	< 1.4	1.4	mg/Kg	1	07/30/16	LK	SW6010C
Percent Solid	92		%		07/28/16	W	SW846-%Solid
Soil Extraction for PCB	Completed				07/28/16	NC/V	SW3545A
Soil Extraction SVOA PAH	Completed				07/28/16	NB/CKV	SW3545A
Extraction of CT ETPH	Completed				07/28/16	NB/CK	SW3545A
Mercury Digestion	Completed				08/01/16	I/I	SW7471B
Total Metals Digest	Completed				07/28/16	X/AG	SW3050B
Field Extraction	Completed				07/28/16		SW5035A
TPH by GC (Extractable Products)							
Ext. Petroleum HC	ND	54	mg/Kg	1	07/29/16	KCA	CTETPH 8015D
Identification	ND		mg/Kg	1	07/29/16	KCA	CTETPH 8015D
QA/QC Surrogates							
% n-Pentacosane	62		%	1	07/29/16	KCA	50 - 150 %
Polychlorinated Biphenyls							
PCB-1016	ND	360	ug/Kg	10	07/29/16	AW	SW8082A
PCB-1221	ND	360	ug/Kg	10	07/29/16	AW	SW8082A
PCB-1232	ND	360	ug/Kg	10	07/29/16	AW	SW8082A
PCB-1242	ND	360	ug/Kg	10	07/29/16	AW	SW8082A
PCB-1248	ND	360	ug/Kg	10	07/29/16	AW	SW8082A

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
PCB-1254	ND	360	ug/Kg	10	07/29/16	AW	SW8082A
PCB-1260	ND	360	ug/Kg	10	07/29/16	AW	SW8082A
PCB-1262	ND	360	ug/Kg	10	07/29/16	AW	SW8082A
PCB-1268	ND	360	ug/Kg	10	07/29/16	AW	SW8082A
QA/QC Surrogates							
% DCBP	86		%	10	07/29/16	AW	30 - 150 %
% TCMX	83		%	10	07/29/16	AW	30 - 150 %

Volatiles

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
1,1,1,2-Tetrachloroethane	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
1,1,1-Trichloroethane	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
1,1,2,2-Tetrachloroethane	ND	2.9	ug/Kg	1	07/31/16	JLI	SW8260
1,1,2-Trichloroethane	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
1,1-Dichloroethane	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
1,1-Dichloroethene	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
1,1-Dichloropropene	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
1,2,3-Trichlorobenzene	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
1,2,3-Trichloropropane	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
1,2,4-Trichlorobenzene	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
1,2,4-Trimethylbenzene	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
1,2-Dibromo-3-chloropropane	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
1,2-Dibromoethane	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
1,2-Dichlorobenzene	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
1,2-Dichloroethane	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
1,2-Dichloropropane	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
1,3,5-Trimethylbenzene	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
1,3-Dichlorobenzene	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
1,3-Dichloropropane	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
1,4-Dichlorobenzene	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
2,2-Dichloropropane	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
2-Chlorotoluene	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
2-Hexanone	ND	24	ug/Kg	1	07/31/16	JLI	SW8260
2-Isopropyltoluene	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
4-Chlorotoluene	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
4-Methyl-2-pentanone	ND	24	ug/Kg	1	07/31/16	JLI	SW8260
Acetone	ND	240	ug/Kg	1	07/31/16	JLI	SW8260
Acrylonitrile	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
Benzene	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
Bromobenzene	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
Bromochloromethane	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
Bromodichloromethane	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
Bromoform	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
Bromomethane	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
Carbon Disulfide	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
Carbon tetrachloride	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
Chlorobenzene	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
Chloroethane	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
Chloroform	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
Chloromethane	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
cis-1,2-Dichloroethene	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
cis-1,3-Dichloropropene	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
Dibromochloromethane	ND	2.9	ug/Kg	1	07/31/16	JLI	SW8260
Dibromomethane	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
Dichlorodifluoromethane	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
Ethylbenzene	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
Hexachlorobutadiene	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
Isopropylbenzene	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
m&p-Xylene	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
Methyl Ethyl Ketone	ND	29	ug/Kg	1	07/31/16	JLI	SW8260
Methyl t-butyl ether (MTBE)	ND	9.6	ug/Kg	1	07/31/16	JLI	SW8260
Methylene chloride	ND	9.6	ug/Kg	1	07/31/16	JLI	SW8260
Naphthalene	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
n-Butylbenzene	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
n-Propylbenzene	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
o-Xylene	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
p-Isopropyltoluene	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
sec-Butylbenzene	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
Styrene	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
tert-Butylbenzene	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
Tetrachloroethene	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
Tetrahydrofuran (THF)	ND	9.6	ug/Kg	1	07/31/16	JLI	SW8260
Toluene	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
Total Xylenes	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
trans-1,2-Dichloroethene	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
trans-1,3-Dichloropropene	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
trans-1,4-dichloro-2-butene	ND	9.6	ug/Kg	1	07/31/16	JLI	SW8260
Trichloroethene	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
Trichlorofluoromethane	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
Trichlorotrifluoroethane	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
Vinyl chloride	ND	4.8	ug/Kg	1	07/31/16	JLI	SW8260
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	98		%	1	07/31/16	JLI	70 - 130 %
% Bromofluorobenzene	99		%	1	07/31/16	JLI	70 - 130 %
% Dibromofluoromethane	99		%	1	07/31/16	JLI	70 - 130 %
% Toluene-d8	96		%	1	07/31/16	JLI	70 - 130 %

Polynuclear Aromatic HC

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
2-Methylnaphthalene	ND	250	ug/Kg	1	07/29/16	DD	SW8270D
Acenaphthene	ND	250	ug/Kg	1	07/29/16	DD	SW8270D
Acenaphthylene	ND	250	ug/Kg	1	07/29/16	DD	SW8270D
Anthracene	ND	250	ug/Kg	1	07/29/16	DD	SW8270D
Benz(a)anthracene	ND	250	ug/Kg	1	07/29/16	DD	SW8270D
Benzo(a)pyrene	ND	250	ug/Kg	1	07/29/16	DD	SW8270D
Benzo(b)fluoranthene	ND	250	ug/Kg	1	07/29/16	DD	SW8270D
Benzo(ghi)perylene	ND	250	ug/Kg	1	07/29/16	DD	SW8270D
Benzo(k)fluoranthene	ND	250	ug/Kg	1	07/29/16	DD	SW8270D
Chrysene	ND	250	ug/Kg	1	07/29/16	DD	SW8270D
Dibenz(a,h)anthracene	ND	250	ug/Kg	1	07/29/16	DD	SW8270D
Fluoranthene	ND	250	ug/Kg	1	07/29/16	DD	SW8270D
Fluorene	ND	250	ug/Kg	1	07/29/16	DD	SW8270D

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Indeno(1,2,3-cd)pyrene	ND	250	ug/Kg	1	07/29/16	DD	SW8270D
Naphthalene	ND	250	ug/Kg	1	07/29/16	DD	SW8270D
Phenanthrene	ND	250	ug/Kg	1	07/29/16	DD	SW8270D
Pyrene	ND	250	ug/Kg	1	07/29/16	DD	SW8270D
QA/QC Surrogates							
% 2-Fluorobiphenyl	64		%	1	07/29/16	DD	30 - 130 %
% Nitrobenzene-d5	61		%	1	07/29/16	DD	30 - 130 %
% Terphenyl-d14	71		%	1	07/29/16	DD	30 - 130 %

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
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Phyllis Shiller

Phyllis Shiller, Laboratory Director
August 12, 2016
Reviewed and Released by: Ethan Lee, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

August 12, 2016

FOR: Attn: Stephanie Wierszchalek
Fuss & O'Neill, Inc.
146 Hartford Road
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	SOLID	Collected by:	DL	07/28/16	14:40
Location Code:	F&O	Received by:	SW	07/28/16	16:53
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	20160311A10				

Laboratory Data

SDG ID: GBN82376
Phoenix ID: BN82388

Project ID: OLD HADDAM JAIL
Client ID: 1305160728-14

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference	
Silver	< 0.35	0.35	mg/Kg	1	07/30/16	LK	SW6010C	
Arsenic	2.53	0.69	mg/Kg	1	07/30/16	LK	SW6010C	
Barium	23.4	0.35	mg/Kg	1	07/30/16	LK	SW6010C	
Cadmium	< 0.35	0.35	mg/Kg	1	07/30/16	LK	SW6010C	
Chromium	12.5	0.35	mg/Kg	1	07/30/16	LK	SW6010C	
Mercury	0.07	0.03	mg/Kg	1	08/01/16	RS	SW7471B	
Lead	6.05	0.35	mg/Kg	1	07/30/16	LK	SW6010C	
Selenium	< 1.4	1.4	mg/Kg	1	07/30/16	LK	SW6010C	
Percent Solid	95		%		07/28/16	W	SW846-%Solid	
Soil Extraction for PCB	Completed				07/28/16	NC/V	SW3545A	
Soil Extraction SVOA PAH	Completed				07/28/16	NB/CKV	SW3545A	
Extraction of CT ETPH	Completed				07/29/16	NB/CK	SW3545A	
Mercury Digestion	Completed				08/01/16	I/I	SW7471B	
Total Metals Digest	Completed				07/28/16	X/AG	SW3050B	
Field Extraction	Completed				07/28/16		SW5035A	
TPH by GC (Extractable Products)								
Ext. Petroleum HC	ND	52	mg/Kg	1	07/30/16	JRB	CTETPH 8015D	
Identification	ND		mg/Kg	1	07/30/16	JRB	CTETPH 8015D	
QA/QC Surrogates								
% n-Pentacosane	26		%	1	07/30/16	JRB	50 - 150 %	3
Polychlorinated Biphenyls								
PCB-1016	ND	350	ug/Kg	10	07/29/16	AW	SW8082A	
PCB-1221	ND	350	ug/Kg	10	07/29/16	AW	SW8082A	
PCB-1232	ND	350	ug/Kg	10	07/29/16	AW	SW8082A	
PCB-1242	ND	350	ug/Kg	10	07/29/16	AW	SW8082A	
PCB-1248	ND	350	ug/Kg	10	07/29/16	AW	SW8082A	

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
PCB-1254	ND	350	ug/Kg	10	07/29/16	AW	SW8082A
PCB-1260	ND	350	ug/Kg	10	07/29/16	AW	SW8082A
PCB-1262	ND	350	ug/Kg	10	07/29/16	AW	SW8082A
PCB-1268	ND	350	ug/Kg	10	07/29/16	AW	SW8082A
QA/QC Surrogates							
% DCBP	90		%	10	07/29/16	AW	30 - 150 %
% TCMX	84		%	10	07/29/16	AW	30 - 150 %

Volatiles

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
1,1,1,2-Tetrachloroethane	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
1,1,1-Trichloroethane	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
1,1,2,2-Tetrachloroethane	ND	3.0	ug/Kg	1	07/31/16	JLI	SW8260
1,1,2-Trichloroethane	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
1,1-Dichloroethane	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
1,1-Dichloroethene	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
1,1-Dichloropropene	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
1,2,3-Trichlorobenzene	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
1,2,3-Trichloropropane	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
1,2,4-Trichlorobenzene	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
1,2,4-Trimethylbenzene	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
1,2-Dibromo-3-chloropropane	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
1,2-Dibromoethane	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
1,2-Dichlorobenzene	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
1,2-Dichloroethane	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
1,2-Dichloropropane	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
1,3,5-Trimethylbenzene	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
1,3-Dichlorobenzene	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
1,3-Dichloropropane	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
1,4-Dichlorobenzene	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
2,2-Dichloropropane	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
2-Chlorotoluene	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
2-Hexanone	ND	25	ug/Kg	1	07/31/16	JLI	SW8260
2-Isopropyltoluene	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
4-Chlorotoluene	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
4-Methyl-2-pentanone	ND	25	ug/Kg	1	07/31/16	JLI	SW8260
Acetone	ND	250	ug/Kg	1	07/31/16	JLI	SW8260
Acrylonitrile	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
Benzene	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
Bromobenzene	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
Bromochloromethane	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
Bromodichloromethane	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
Bromoform	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
Bromomethane	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
Carbon Disulfide	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
Carbon tetrachloride	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
Chlorobenzene	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
Chloroethane	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
Chloroform	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
Chloromethane	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
cis-1,2-Dichloroethene	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
cis-1,3-Dichloropropene	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
Dibromochloromethane	ND	3.0	ug/Kg	1	07/31/16	JLI	SW8260
Dibromomethane	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
Dichlorodifluoromethane	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
Ethylbenzene	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
Hexachlorobutadiene	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
Isopropylbenzene	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
m&p-Xylene	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
Methyl Ethyl Ketone	ND	30	ug/Kg	1	07/31/16	JLI	SW8260
Methyl t-butyl ether (MTBE)	ND	9.9	ug/Kg	1	07/31/16	JLI	SW8260
Methylene chloride	ND	9.9	ug/Kg	1	07/31/16	JLI	SW8260
Naphthalene	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
n-Butylbenzene	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
n-Propylbenzene	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
o-Xylene	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
p-Isopropyltoluene	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
sec-Butylbenzene	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
Styrene	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
tert-Butylbenzene	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
Tetrachloroethene	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
Tetrahydrofuran (THF)	ND	9.9	ug/Kg	1	07/31/16	JLI	SW8260
Toluene	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
Total Xylenes	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
trans-1,2-Dichloroethene	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
trans-1,3-Dichloropropene	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
trans-1,4-dichloro-2-butene	ND	9.9	ug/Kg	1	07/31/16	JLI	SW8260
Trichloroethene	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
Trichlorofluoromethane	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
Trichlorotrifluoroethane	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
Vinyl chloride	ND	4.9	ug/Kg	1	07/31/16	JLI	SW8260
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	99		%	1	07/31/16	JLI	70 - 130 %
% Bromofluorobenzene	97		%	1	07/31/16	JLI	70 - 130 %
% Dibromofluoromethane	98		%	1	07/31/16	JLI	70 - 130 %
% Toluene-d8	96		%	1	07/31/16	JLI	70 - 130 %

Polynuclear Aromatic HC

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
2-Methylnaphthalene	ND	240	ug/Kg	1	07/29/16	DD	SW8270D
Acenaphthene	ND	240	ug/Kg	1	07/29/16	DD	SW8270D
Acenaphthylene	ND	240	ug/Kg	1	07/29/16	DD	SW8270D
Anthracene	ND	240	ug/Kg	1	07/29/16	DD	SW8270D
Benz(a)anthracene	ND	240	ug/Kg	1	07/29/16	DD	SW8270D
Benzo(a)pyrene	ND	240	ug/Kg	1	07/29/16	DD	SW8270D
Benzo(b)fluoranthene	ND	240	ug/Kg	1	07/29/16	DD	SW8270D
Benzo(ghi)perylene	ND	240	ug/Kg	1	07/29/16	DD	SW8270D
Benzo(k)fluoranthene	ND	240	ug/Kg	1	07/29/16	DD	SW8270D
Chrysene	ND	240	ug/Kg	1	07/29/16	DD	SW8270D
Dibenz(a,h)anthracene	ND	240	ug/Kg	1	07/29/16	DD	SW8270D
Fluoranthene	ND	240	ug/Kg	1	07/29/16	DD	SW8270D
Fluorene	ND	240	ug/Kg	1	07/29/16	DD	SW8270D

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Indeno(1,2,3-cd)pyrene	ND	240	ug/Kg	1	07/29/16	DD	SW8270D
Naphthalene	ND	240	ug/Kg	1	07/29/16	DD	SW8270D
Phenanthrene	ND	240	ug/Kg	1	07/29/16	DD	SW8270D
Pyrene	ND	240	ug/Kg	1	07/29/16	DD	SW8270D
QA/QC Surrogates							
% 2-Fluorobiphenyl	67		%	1	07/29/16	DD	30 - 130 %
% Nitrobenzene-d5	69		%	1	07/29/16	DD	30 - 130 %
% Terphenyl-d14	74		%	1	07/29/16	DD	30 - 130 %

3 = This parameter exceeds laboratory specified limits.

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

TPH Comment:
Low surrogate reported. Sample was re-extracted with similar results.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
This report must not be reproduced except in full as defined by the attached chain of custody.

Phyllis Shiller, Laboratory Director
August 12, 2016
Reviewed and Released by: Ethan Lee, Project Manager

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

August 12, 2016

FOR: Attn: Stephanie Wierszchalek
Fuss & O'Neill, Inc.
146 Hartford Road
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	SOLID	Collected by:	DL	07/28/16	15:00
Location Code:	F&O	Received by:	SW	07/28/16	16:53
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	20160311A10				

Laboratory Data

SDG ID: GBN82376
Phoenix ID: BN82389

Project ID: OLD HADDAM JAIL
Client ID: 1305160728-15

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Silver	< 0.37	0.37	mg/Kg	1	07/30/16	LK	SW6010C
Arsenic	2.95	0.74	mg/Kg	1	07/30/16	LK	SW6010C
Barium	33.1	0.37	mg/Kg	1	07/30/16	LK	SW6010C
Cadmium	< 0.37	0.37	mg/Kg	1	07/30/16	LK	SW6010C
Chromium	12.0	0.37	mg/Kg	1	07/30/16	LK	SW6010C
Mercury	< 0.03	0.03	mg/Kg	1	08/01/16	RS	SW7471B
Lead	6.87	0.37	mg/Kg	1	07/30/16	LK	SW6010C
Selenium	< 1.5	1.5	mg/Kg	1	07/30/16	LK	SW6010C
Percent Solid	93		%		07/28/16	W	SW846-%Solid
Soil Extraction for PCB	Completed				07/28/16	NC/V	SW3545A
Soil Extraction SVOA PAH	Completed				07/28/16	NB/CKV	SW3545A
Extraction of CT ETPH	Completed				07/28/16	NB/CK	SW3545A
Mercury Digestion	Completed				08/01/16	I/I	SW7471B
Total Metals Digest	Completed				07/28/16	X/AG	SW3050B
Field Extraction	Completed				07/28/16		SW5035A
TPH by GC (Extractable Products)							
Ext. Petroleum HC	ND	54	mg/Kg	1	07/29/16	KCA	CTETPH 8015D
Identification	ND		mg/Kg	1	07/29/16	KCA	CTETPH 8015D
QA/QC Surrogates							
% n-Pentacosane	60		%	1	07/29/16	KCA	50 - 150 %
Polychlorinated Biphenyls							
PCB-1016	ND	360	ug/Kg	10	07/29/16	AW	SW8082A
PCB-1221	ND	360	ug/Kg	10	07/29/16	AW	SW8082A
PCB-1232	ND	360	ug/Kg	10	07/29/16	AW	SW8082A
PCB-1242	ND	360	ug/Kg	10	07/29/16	AW	SW8082A
PCB-1248	ND	360	ug/Kg	10	07/29/16	AW	SW8082A

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
PCB-1254	ND	360	ug/Kg	10	07/29/16	AW	SW8082A
PCB-1260	ND	360	ug/Kg	10	07/29/16	AW	SW8082A
PCB-1262	ND	360	ug/Kg	10	07/29/16	AW	SW8082A
PCB-1268	ND	360	ug/Kg	10	07/29/16	AW	SW8082A
QA/QC Surrogates							
% DCBP	74		%	10	07/29/16	AW	30 - 150 %
% TCMX	69		%	10	07/29/16	AW	30 - 150 %

Volatiles

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
1,1,1,2-Tetrachloroethane	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
1,1,1-Trichloroethane	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
1,1,2,2-Tetrachloroethane	ND	3.0	ug/Kg	1	07/31/16	JLI	SW8260
1,1,2-Trichloroethane	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
1,1-Dichloroethane	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
1,1-Dichloroethene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
1,1-Dichloropropene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
1,2,3-Trichlorobenzene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
1,2,3-Trichloropropane	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
1,2,4-Trichlorobenzene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
1,2,4-Trimethylbenzene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
1,2-Dibromo-3-chloropropane	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
1,2-Dibromoethane	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
1,2-Dichlorobenzene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
1,2-Dichloroethane	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
1,2-Dichloropropane	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
1,3,5-Trimethylbenzene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
1,3-Dichlorobenzene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
1,3-Dichloropropane	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
1,4-Dichlorobenzene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
2,2-Dichloropropane	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
2-Chlorotoluene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
2-Hexanone	ND	25	ug/Kg	1	07/31/16	JLI	SW8260
2-Isopropyltoluene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
4-Chlorotoluene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
4-Methyl-2-pentanone	ND	25	ug/Kg	1	07/31/16	JLI	SW8260
Acetone	ND	250	ug/Kg	1	07/31/16	JLI	SW8260
Acrylonitrile	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Benzene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Bromobenzene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Bromochloromethane	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Bromodichloromethane	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Bromoform	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Bromomethane	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Carbon Disulfide	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Carbon tetrachloride	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Chlorobenzene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Chloroethane	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Chloroform	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Chloromethane	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
cis-1,2-Dichloroethene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
cis-1,3-Dichloropropene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Dibromochloromethane	ND	3.0	ug/Kg	1	07/31/16	JLI	SW8260
Dibromomethane	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Dichlorodifluoromethane	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Ethylbenzene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Hexachlorobutadiene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Isopropylbenzene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
m&p-Xylene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Methyl Ethyl Ketone	ND	30	ug/Kg	1	07/31/16	JLI	SW8260
Methyl t-butyl ether (MTBE)	ND	10	ug/Kg	1	07/31/16	JLI	SW8260
Methylene chloride	ND	10	ug/Kg	1	07/31/16	JLI	SW8260
Naphthalene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
n-Butylbenzene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
n-Propylbenzene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
o-Xylene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
p-Isopropyltoluene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
sec-Butylbenzene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Styrene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
tert-Butylbenzene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Tetrachloroethene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Tetrahydrofuran (THF)	ND	10	ug/Kg	1	07/31/16	JLI	SW8260
Toluene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Total Xylenes	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
trans-1,2-Dichloroethene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
trans-1,3-Dichloropropene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
trans-1,4-dichloro-2-butene	ND	10	ug/Kg	1	07/31/16	JLI	SW8260
Trichloroethene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Trichlorofluoromethane	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Trichlorotrifluoroethane	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Vinyl chloride	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	97		%	1	07/31/16	JLI	70 - 130 %
% Bromofluorobenzene	98		%	1	07/31/16	JLI	70 - 130 %
% Dibromofluoromethane	100		%	1	07/31/16	JLI	70 - 130 %
% Toluene-d8	96		%	1	07/31/16	JLI	70 - 130 %

Polynuclear Aromatic HC

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
2-Methylnaphthalene	ND	250	ug/Kg	1	07/29/16	DD	SW8270D
Acenaphthene	ND	250	ug/Kg	1	07/29/16	DD	SW8270D
Acenaphthylene	ND	250	ug/Kg	1	07/29/16	DD	SW8270D
Anthracene	ND	250	ug/Kg	1	07/29/16	DD	SW8270D
Benz(a)anthracene	ND	250	ug/Kg	1	07/29/16	DD	SW8270D
Benzo(a)pyrene	ND	250	ug/Kg	1	07/29/16	DD	SW8270D
Benzo(b)fluoranthene	ND	250	ug/Kg	1	07/29/16	DD	SW8270D
Benzo(ghi)perylene	ND	250	ug/Kg	1	07/29/16	DD	SW8270D
Benzo(k)fluoranthene	ND	250	ug/Kg	1	07/29/16	DD	SW8270D
Chrysene	ND	250	ug/Kg	1	07/29/16	DD	SW8270D
Dibenz(a,h)anthracene	ND	250	ug/Kg	1	07/29/16	DD	SW8270D
Fluoranthene	ND	250	ug/Kg	1	07/29/16	DD	SW8270D
Fluorene	ND	250	ug/Kg	1	07/29/16	DD	SW8270D

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Indeno(1,2,3-cd)pyrene	ND	250	ug/Kg	1	07/29/16	DD	SW8270D
Naphthalene	ND	250	ug/Kg	1	07/29/16	DD	SW8270D
Phenanthrene	ND	250	ug/Kg	1	07/29/16	DD	SW8270D
Pyrene	ND	250	ug/Kg	1	07/29/16	DD	SW8270D
QA/QC Surrogates							
% 2-Fluorobiphenyl	60		%	1	07/29/16	DD	30 - 130 %
% Nitrobenzene-d5	58		%	1	07/29/16	DD	30 - 130 %
% Terphenyl-d14	61		%	1	07/29/16	DD	30 - 130 %

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
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Phyllis Shiller

Phyllis Shiller, Laboratory Director
August 12, 2016
Reviewed and Released by: Ethan Lee, Project Manager

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

August 12, 2016

FOR: Attn: Stephanie Wierszchalek
Fuss & O'Neill, Inc.
146 Hartford Road
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	SOLID	Collected by:	DL	07/28/16	15:02
Location Code:	F&O	Received by:	SW	07/28/16	16:53
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	20160311A10				

Laboratory Data

SDG ID: GBN82376
Phoenix ID: BN82390

Project ID: OLD HADDAM JAIL
Client ID: 1305160728-16

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Field Extraction	Completed				07/28/16		SW5035A
Volatiles							
1,1,1,2-Tetrachloroethane	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
1,1,1-Trichloroethane	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
1,1,2,2-Tetrachloroethane	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
1,1,2-Trichloroethane	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
1,1-Dichloroethane	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
1,1-Dichloroethene	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
1,1-Dichloropropene	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
1,2,3-Trichlorobenzene	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
1,2,3-Trichloropropane	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
1,2,4-Trichlorobenzene	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
1,2,4-Trimethylbenzene	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
1,2-Dibromo-3-chloropropane	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
1,2-Dibromoethane	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
1,2-Dichlorobenzene	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
1,2-Dichloroethane	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
1,2-Dichloropropane	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
1,3,5-Trimethylbenzene	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
1,3-Dichlorobenzene	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
1,3-Dichloropropane	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
1,4-Dichlorobenzene	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
2,2-Dichloropropane	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
2-Chlorotoluene	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
2-Hexanone	ND	1300	ug/Kg	50	07/31/16	JLI	SW8260
2-Isopropyltoluene	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
4-Chlorotoluene	ND	250	ug/Kg	50	07/31/16	JLI	SW8260

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
4-Methyl-2-pentanone	ND	1300	ug/Kg	50	07/31/16	JLI	SW8260
Acetone	ND	5000	ug/Kg	50	07/31/16	JLI	SW8260
Acrylonitrile	ND	500	ug/Kg	50	07/31/16	JLI	SW8260
Benzene	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
Bromobenzene	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
Bromochloromethane	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
Bromodichloromethane	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
Bromoform	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
Bromomethane	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
Carbon Disulfide	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
Carbon tetrachloride	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
Chlorobenzene	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
Chloroethane	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
Chloroform	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
Chloromethane	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
cis-1,2-Dichloroethene	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
cis-1,3-Dichloropropene	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
Dibromochloromethane	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
Dibromomethane	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
Dichlorodifluoromethane	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
Ethylbenzene	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
Hexachlorobutadiene	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
Isopropylbenzene	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
m&p-Xylene	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
Methyl Ethyl Ketone	ND	3000	ug/Kg	50	07/31/16	JLI	SW8260
Methyl t-butyl ether (MTBE)	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
Methylene chloride	ND	500	ug/Kg	50	07/31/16	JLI	SW8260
Naphthalene	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
n-Butylbenzene	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
n-Propylbenzene	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
o-Xylene	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
p-Isopropyltoluene	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
sec-Butylbenzene	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
Styrene	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
tert-Butylbenzene	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
Tetrachloroethene	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
Tetrahydrofuran (THF)	ND	500	ug/Kg	50	07/31/16	JLI	SW8260
Toluene	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
Total Xylenes	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
trans-1,2-Dichloroethene	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
trans-1,3-Dichloropropene	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
trans-1,4-dichloro-2-butene	ND	500	ug/Kg	50	07/31/16	JLI	SW8260
Trichloroethene	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
Trichlorofluoromethane	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
Trichlorotrifluoroethane	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
Vinyl chloride	ND	250	ug/Kg	50	07/31/16	JLI	SW8260
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	95		%	50	07/31/16	JLI	70 - 130 %
% Bromofluorobenzene	96		%	50	07/31/16	JLI	70 - 130 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
% Dibromofluoromethane	91		%	50	07/31/16	JLI	70 - 130 %
% Toluene-d8	97		%	50	07/31/16	JLI	70 - 130 %

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight., TRIP BLANK INCLUDED.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
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Phyllis Shiller, Laboratory Director
August 12, 2016
Reviewed and Released by: Ethan Lee, Project Manager

Environmental Laboratories, Inc.

587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

August 12, 2016

FOR: Attn: Stephanie Wierszchalek
Fuss & O'Neill, Inc.
146 Hartford Road
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	SOLID	Collected by:	DL	07/28/16	15:03
Location Code:	F&O	Received by:	SW	07/28/16	16:53
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	20160311A10				

Laboratory Data

SDG ID: GBN82376
Phoenix ID: BN82391

Project ID: OLD HADDAM JAIL
Client ID: 1305160728-17

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Field Extraction	Completed				07/28/16		SW5035A
Volatiles							
1,1,1,2-Tetrachloroethane	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
1,1,1-Trichloroethane	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
1,1,2,2-Tetrachloroethane	ND	3.0	ug/Kg	1	07/31/16	JLI	SW8260
1,1,2-Trichloroethane	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
1,1-Dichloroethane	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
1,1-Dichloroethene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
1,1-Dichloropropene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
1,2,3-Trichlorobenzene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
1,2,3-Trichloropropane	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
1,2,4-Trichlorobenzene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
1,2,4-Trimethylbenzene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
1,2-Dibromo-3-chloropropane	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
1,2-Dibromoethane	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
1,2-Dichlorobenzene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
1,2-Dichloroethane	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
1,2-Dichloropropane	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
1,3,5-Trimethylbenzene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
1,3-Dichlorobenzene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
1,3-Dichloropropane	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
1,4-Dichlorobenzene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
2,2-Dichloropropane	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
2-Chlorotoluene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
2-Hexanone	ND	25	ug/Kg	1	07/31/16	JLI	SW8260
2-Isopropyltoluene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
4-Chlorotoluene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
4-Methyl-2-pentanone	ND	25	ug/Kg	1	07/31/16	JLI	SW8260
Acetone	ND	250	ug/Kg	1	07/31/16	JLI	SW8260
Acrylonitrile	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Benzene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Bromobenzene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Bromochloromethane	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Bromodichloromethane	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Bromoform	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Bromomethane	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Carbon Disulfide	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Carbon tetrachloride	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Chlorobenzene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Chloroethane	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Chloroform	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Chloromethane	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
cis-1,2-Dichloroethene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
cis-1,3-Dichloropropene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Dibromochloromethane	ND	3.0	ug/Kg	1	07/31/16	JLI	SW8260
Dibromomethane	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Dichlorodifluoromethane	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Ethylbenzene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Hexachlorobutadiene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Isopropylbenzene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
m&p-Xylene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Methyl Ethyl Ketone	ND	30	ug/Kg	1	07/31/16	JLI	SW8260
Methyl t-butyl ether (MTBE)	ND	10	ug/Kg	1	07/31/16	JLI	SW8260
Methylene chloride	ND	10	ug/Kg	1	07/31/16	JLI	SW8260
Naphthalene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
n-Butylbenzene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
n-Propylbenzene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
o-Xylene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
p-Isopropyltoluene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
sec-Butylbenzene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Styrene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
tert-Butylbenzene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Tetrachloroethene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Tetrahydrofuran (THF)	ND	10	ug/Kg	1	07/31/16	JLI	SW8260
Toluene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Total Xylenes	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
trans-1,2-Dichloroethene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
trans-1,3-Dichloropropene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
trans-1,4-dichloro-2-butene	ND	10	ug/Kg	1	07/31/16	JLI	SW8260
Trichloroethene	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Trichlorofluoromethane	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Trichlorotrifluoroethane	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
Vinyl chloride	ND	5.0	ug/Kg	1	07/31/16	JLI	SW8260
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	96		%	1	07/31/16	JLI	70 - 130 %
% Bromofluorobenzene	99		%	1	07/31/16	JLI	70 - 130 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
% Dibromofluoromethane	101		%	1	07/31/16	JLI	70 - 130 %
% Toluene-d8	96		%	1	07/31/16	JLI	70 - 130 %

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected   BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight., TRIP BLANK INCLUDED.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
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Phyllis Shiller

Phyllis Shiller, Laboratory Director
August 12, 2016
Reviewed and Released by: Ethan Lee, Project Manager

PHOENIX

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QA/QC Report

August 12, 2016

QA/QC Data

SDG I.D.: GBN82376

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
QA/QC Batch 354155 (mg/kg), QC Sample No: BN78132 (BN82381, BN82387)														
Mercury - Soil	BRL	0.03	0.87	1.26	36.6	82.4	89.6	8.4	151			70 - 130	30	m,r
Comment:														
Additional Mercury criteria: LCS acceptance range for waters is 80-120% and for soils is 70-130%.														
QA/QC Batch 353867 (mg/kg), QC Sample No: BN81822 (BN82381)														
ICP Metals - Soil														
Arsenic	BRL	0.67	2.65	2.84	NC	97.6			93.3			75 - 125	30	
Barium	BRL	0.33	71.5	70.4	1.60	99.5			106			75 - 125	30	
Cadmium	BRL	0.33	<0.33	<0.34	NC	92.7			91.6			75 - 125	30	
Chromium	BRL	0.33	9.90	10.1	2.00	103			101			75 - 125	30	
Lead	BRL	0.33	12.3	12.1	1.60	106			94.9			75 - 125	30	
Selenium	BRL	1.3	<1.3	<1.4	NC	90.3			86.3			75 - 125	30	
Silver	BRL	0.33	<0.33	<0.34	NC	101			99.6			75 - 125	30	
QA/QC Batch 355105 (mg/kg), QC Sample No: BN82383 (BN82383, BN82386)														
ICP Metals - Soil														
Arsenic	BRL	0.67	12.1	11.9	1.70	101			94.7			75 - 125	30	
Lead	BRL	0.33	147	141	4.20	95.9			98.3			75 - 125	30	
QA/QC Batch 354156 (mg/kg), QC Sample No: BN82388 (BN82388)														
Mercury - Soil	BRL	0.03	0.07	0.08	NC	99.8	70.1	35.0	58.8			70 - 130	30	m,r
Comment:														
Additional Mercury criteria: LCS acceptance range for waters is 80-120% and for soils is 70-130%.														
QA/QC Batch 354157 (mg/kg), QC Sample No: BN82389 (BN82389)														
Mercury - Soil	BRL	0.03	<0.03	0.09	NC	85.3	87.4	2.4	93.5			70 - 130	30	
Comment:														
Additional Mercury criteria: LCS acceptance range for waters is 80-120% and for soils is 70-130%.														
QA/QC Batch 353891 (mg/kg), QC Sample No: BN82483 (BN82382, BN82385, BN82387, BN82388, BN82389)														
ICP Metals - Soil														
Arsenic	BRL	0.67	3.76	3.53	NC	98.2			92.8			75 - 125	30	
Barium	BRL	0.33	64.5	62.2	3.60	92.8			109			75 - 125	30	
Cadmium	BRL	0.33	<0.38	0.25	NC	91.1			94.1			75 - 125	30	
Chromium	BRL	0.33	29.2	30.9	5.70	102			106			75 - 125	30	
Lead	BRL	0.33	10.4	10.7	2.80	94.1			95.1			75 - 125	30	
Selenium	BRL	1.3	<1.5	<1.5	NC	84.8			84.4			75 - 125	30	
Silver	BRL	0.33	<0.38	<0.37	NC	96.5			98.0			75 - 125	30	
QA/QC Batch 355167 (mg/L), QC Sample No: BN83482 (BN82382, BN82385)														
ICP Metals - SPLP Extraction														
Arsenic	BRL	0.004	<0.004	<0.004	NC	104			104			75 - 125	20	
Lead	BRL	0.010	0.012	0.013	NC	105			103			75 - 125	20	

m = This parameter is outside laboratory MS/MSD specified recovery limits.
r = This parameter is outside laboratory RPD specified recovery limits.

PHOENIX

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QA/QC Report

August 12, 2016

QA/QC Data

SDG I.D.: GBN82376

QA/QC Batch 353852 (ug/Kg), QC Sample No: BN80133 2X (BN82382, BN82385)

Pesticides - Solid

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
4,4' -DDD	ND	1.7	110	112	1.8	72	58	21.5	40 - 140	30	
4,4' -DDE	ND	1.7	98	100	2.0	58	52	10.9	40 - 140	30	
4,4' -DDT	ND	1.7	109	110	0.9	61	37	49.0	40 - 140	30	r
a-BHC	ND	1.0	90	95	5.4	70	60	15.4	40 - 140	30	
a-Chlordane	ND	3.3	96	99	3.1	76	70	8.2	40 - 140	30	
Alachlor	ND	3.3	NA	NA	NC	NA	NA	NC	40 - 140	30	
Aldrin	ND	1.0	92	95	3.2	69	62	10.7	40 - 140	30	
b-BHC	ND	1.0	88	91	3.4	54	72	28.6	40 - 140	30	
Chlordane	ND	33	96	98	2.1	69	67	2.9	40 - 140	30	
d-BHC	ND	3.3	80	83	3.7	55	47	15.7	40 - 140	30	
Dieldrin	ND	1.0	102	103	1.0	71	64	10.4	40 - 140	30	
Endosulfan I	ND	3.3	104	107	2.8	65	57	13.1	40 - 140	30	
Endosulfan II	ND	3.3	122	124	1.6	78	69	12.2	40 - 140	30	
Endosulfan sulfate	ND	3.3	108	110	1.8	69	59	15.6	40 - 140	30	
Endrin	ND	3.3	98	100	2.0	70	62	12.1	40 - 140	30	
Endrin aldehyde	ND	3.3	93	93	0.0	60	51	16.2	40 - 140	30	
Endrin ketone	ND	3.3	115	116	0.9	77	65	16.9	40 - 140	30	
g-BHC	ND	1.0	90	94	4.3	64	58	9.8	40 - 140	30	
g-Chlordane	ND	3.3	96	98	2.1	69	67	2.9	40 - 140	30	
Heptachlor	ND	3.3	94	97	3.1	79	66	17.9	40 - 140	30	
Heptachlor epoxide	ND	3.3	95	96	1.0	70	65	7.4	40 - 140	30	
Methoxychlor	ND	3.3	100	103	3.0	76	65	15.6	40 - 140	30	
Toxaphene	ND	130	NA	NA	NC	NA	NA	NC	40 - 140	30	
% DCBP	79	%	105	104	1.0	75	61	20.6	30 - 150	30	
% TCMX	75	%	84	89	5.8	67	65	3.0	30 - 150	30	

Comment:

Alpha and gamma chlordane were spiked and analyzed instead of technical chlordane. Gamma chlordane recovery is reported as chlordane in the LCS, LCSD, MS and MSD.

QA/QC Batch 353718 (ug/Kg), QC Sample No: BN81478 2X (BN82381)

Polychlorinated Biphenyls - Solid

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
PCB-1016	ND	33	77	75	2.6	67	68	1.5	40 - 140	30
PCB-1221	ND	33							40 - 140	30
PCB-1232	ND	33							40 - 140	30
PCB-1242	ND	33							40 - 140	30
PCB-1248	ND	33							40 - 140	30
PCB-1254	ND	33							40 - 140	30
PCB-1260	ND	33	67	67	0.0	63	65	3.1	40 - 140	30
PCB-1262	ND	33							40 - 140	30
PCB-1268	ND	33							40 - 140	30
% DCBP (Surrogate Rec)	80	%	79	87	9.6	74	72	2.7	30 - 150	30
% TCMX (Surrogate Rec)	75	%	86	88	2.3	76	75	1.3	30 - 150	30

QA/QC Batch 353870 (ug/kg), QC Sample No: BN82240 (BN82376, BN82377, BN82378, BN82381, BN82387)

Polynuclear Aromatic HC - Solid

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
2-Methylnaphthalene	ND	230	65	60	8.0	NC	NC	NC	30 - 130	30
Acenaphthene	ND	230	74	72	2.7	70	90	25.0	30 - 130	30
Acenaphthylene	ND	230	72	70	2.8	59	68	14.2	30 - 130	30

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
Anthracene	ND	230	78	74	5.3	64	75	15.8	30 - 130	30	
Benz(a)anthracene	ND	230	74	74	0.0	75	106	34.3	30 - 130	30	r
Benzo(a)pyrene	ND	230	72	71	1.4	69	82	17.2	30 - 130	30	
Benzo(b)fluoranthene	ND	230	79	73	7.9	86	94	8.9	30 - 130	30	
Benzo(ghi)perylene	ND	230	76	75	1.3	52	59	12.6	30 - 130	30	
Benzo(k)fluoranthene	ND	230	72	75	4.1	68	59	14.2	30 - 130	30	
Chrysene	ND	230	80	79	1.3	66	91	31.8	30 - 130	30	r
Dibenz(a,h)anthracene	ND	230	76	75	1.3	59	65	9.7	30 - 130	30	
Fluoranthene	ND	230	75	73	2.7	74	82	10.3	30 - 130	30	
Fluorene	ND	230	73	72	1.4	67	95	34.6	30 - 130	30	r
Indeno(1,2,3-cd)pyrene	ND	230	74	73	1.4	53	72	30.4	30 - 130	30	
Naphthalene	ND	230	67	60	11.0	NC	NC	NC	30 - 130	30	
Phenanthrene	ND	230	77	74	4.0	NC	NC	NC	30 - 130	30	
Pyrene	ND	230	78	75	3.9	NC	NC	NC	30 - 130	30	
% 2-Fluorobiphenyl	63	%	68	67	1.5	58	51	12.8	30 - 130	30	
% Nitrobenzene-d5	60	%	67	64	4.6	78	83	6.2	30 - 130	30	
% Terphenyl-d14	75	%	72	72	0.0	86	76	12.3	30 - 130	30	

QA/QC Batch 353858 (mg/Kg), QC Sample No: BN82303 (BN82376, BN82377)

TPH by GC (Extractable Products) - Solid

Ext. Petroleum H.C.	ND	50	62	56	10.2	67	66	1.5	60 - 120	30	l
% n-Pentacosane	46	%	63	58	8.3	70	69	1.4	50 - 150	30	s

Comment:

Additional criteria: LCS acceptance range is 60-120% MS acceptance range 50-150%.

QA/QC Batch 353884 (ug/Kg), QC Sample No: BN82388 2X (BN82387, BN82388, BN82389)

Polychlorinated Biphenyls - Solid

PCB-1016	ND	33	79	78	1.3	69	75	8.3	40 - 140	30
PCB-1221	ND	33							40 - 140	30
PCB-1232	ND	33							40 - 140	30
PCB-1242	ND	33							40 - 140	30
PCB-1248	ND	33							40 - 140	30
PCB-1254	ND	33							40 - 140	30
PCB-1260	ND	33	79	77	2.6	73	84	14.0	40 - 140	30
PCB-1262	ND	33							40 - 140	30
PCB-1268	ND	33							40 - 140	30
% DCBP (Surrogate Rec)	95	%	94	91	3.2	85	101	17.2	30 - 150	30
% TCMX (Surrogate Rec)	80	%	87	84	3.5	74	78	5.3	30 - 150	30

QA/QC Batch 353883 (ug/kg), QC Sample No: BN82388 (BN82388, BN82389)

Polynuclear Aromatic HC - Solid

2-Methylnaphthalene	ND	230	71	70	1.4	75	72	4.1	30 - 130	30
Acenaphthene	ND	230	75	81	7.7	74	80	7.8	30 - 130	30
Acenaphthylene	ND	230	73	80	9.2	72	76	5.4	30 - 130	30
Anthracene	ND	230	77	81	5.1	77	85	9.9	30 - 130	30
Benz(a)anthracene	ND	230	75	77	2.6	74	80	7.8	30 - 130	30
Benzo(a)pyrene	ND	230	74	77	4.0	72	77	6.7	30 - 130	30
Benzo(b)fluoranthene	ND	230	76	79	3.9	74	81	9.0	30 - 130	30
Benzo(ghi)perylene	ND	230	77	81	5.1	76	82	7.6	30 - 130	30
Benzo(k)fluoranthene	ND	230	76	80	5.1	77	80	3.8	30 - 130	30
Chrysene	ND	230	80	82	2.5	78	85	8.6	30 - 130	30
Dibenz(a,h)anthracene	ND	230	79	79	0.0	79	85	7.3	30 - 130	30
Fluoranthene	ND	230	73	76	4.0	76	83	8.8	30 - 130	30
Fluorene	ND	230	75	81	7.7	69	67	2.9	30 - 130	30
Indeno(1,2,3-cd)pyrene	ND	230	76	80	5.1	78	82	5.0	30 - 130	30
Naphthalene	ND	230	68	69	1.5	70	73	4.2	30 - 130	30
Phenanthrene	ND	230	76	81	6.4	78	82	5.0	30 - 130	30
Pyrene	ND	230	76	79	3.9	78	86	9.8	30 - 130	30
% 2-Fluorobiphenyl	70	%	70	76	8.2	64	73	13.1	30 - 130	30
% Nitrobenzene-d5	66	%	74	73	1.4	71	75	5.5	30 - 130	30

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
% Terphenyl-d14	75	%	73	74	1.4	72	79	9.3	30 - 130	30	

Comment:

Additional 8270 criteria: 20% of compounds can be outside of acceptance criteria as long as recovery is at least 10%. (Acid surrogates acceptance range for aqueous samples: 15-110%, for soils 30-130%)

QA/QC Batch 353885 (mg/Kg), QC Sample No: BN82484 (BN82378, BN82381, BN82387, BN82388, BN82389)

TPH by GC (Extractable Products) - Solid

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
Ext. Petroleum H.C.	ND	50	57	50	13.1	68	61	10.9	60 - 120	30	l
% n-Pentacosane	50	%	58	50	14.8	72	67	7.2	50 - 150	30	

Comment:

Additional criteria: LCS acceptance range is 60-120% MS acceptance range 50-150%.

QA/QC Batch 354206 (ug/kg), QC Sample No: BN83110 (BN82376, BN82377, BN82381, BN82387, BN82388, BN82389, BN82390 (50X) , BN82391)

Volatiles - Solid

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
1,1,1,2-Tetrachloroethane	ND	5.0	89	98	9.6	92	76	19.0	70 - 130	30	
1,1,1-Trichloroethane	ND	5.0	86	93	7.8	95	75	23.5	70 - 130	30	
1,1,2,2-Tetrachloroethane	ND	3.0	86	95	9.9	92	77	17.8	70 - 130	30	
1,1,2-Trichloroethane	ND	5.0	84	92	9.1	90	73	20.9	70 - 130	30	
1,1-Dichloroethane	ND	5.0	84	90	6.9	94	76	21.2	70 - 130	30	
1,1-Dichloroethene	ND	5.0	84	91	8.0	96	74	25.9	70 - 130	30	
1,1-Dichloropropene	ND	5.0	85	92	7.9	99	76	26.3	70 - 130	30	
1,2,3-Trichlorobenzene	ND	5.0	76	84	10.0	66	53	21.8	70 - 130	30	m
1,2,3-Trichloropropane	ND	5.0	85	94	10.1	90	77	15.6	70 - 130	30	
1,2,4-Trichlorobenzene	ND	5.0	77	82	6.3	68	54	23.0	70 - 130	30	m
1,2,4-Trimethylbenzene	ND	1.0	81	87	7.1	91	73	22.0	70 - 130	30	
1,2-Dibromo-3-chloropropane	ND	5.0	82	93	12.6	77	68	12.4	70 - 130	30	m
1,2-Dibromoethane	ND	5.0	84	94	11.2	90	76	16.9	70 - 130	30	
1,2-Dichlorobenzene	ND	5.0	80	87	8.4	84	68	21.1	70 - 130	30	m
1,2-Dichloroethane	ND	5.0	83	91	9.2	90	73	20.9	70 - 130	30	
1,2-Dichloropropane	ND	5.0	84	92	9.1	96	76	23.3	70 - 130	30	
1,3,5-Trimethylbenzene	ND	1.0	82	88	7.1	94	75	22.5	70 - 130	30	
1,3-Dichlorobenzene	ND	5.0	81	87	7.1	84	68	21.1	70 - 130	30	m
1,3-Dichloropropane	ND	5.0	84	92	9.1	91	75	19.3	70 - 130	30	
1,4-Dichlorobenzene	ND	5.0	80	86	7.2	83	67	21.3	70 - 130	30	m
2,2-Dichloropropane	ND	5.0	85	91	6.8	90	71	23.6	70 - 130	30	
2-Chlorotoluene	ND	5.0	83	90	8.1	94	76	21.2	70 - 130	30	
2-Hexanone	ND	25	79	87	9.6	76	66	14.1	70 - 130	30	m
2-Isopropyltoluene	ND	5.0	84	91	8.0	97	77	23.0	70 - 130	30	
4-Chlorotoluene	ND	5.0	80	87	8.4	88	71	21.4	70 - 130	30	
4-Methyl-2-pentanone	ND	25	84	94	11.2	85	72	16.6	70 - 130	30	
Acetone	ND	10	72	78	8.0	113	101	11.2	70 - 130	30	
Acrylonitrile	ND	5.0	90	97	7.5	87	73	17.5	70 - 130	30	
Benzene	ND	1.0	84	91	8.0	95	75	23.5	70 - 130	30	
Bromobenzene	ND	5.0	83	90	8.1	90	74	19.5	70 - 130	30	
Bromochloromethane	ND	5.0	83	90	8.1	91	73	22.0	70 - 130	30	
Bromodichloromethane	ND	5.0	89	97	8.6	93	75	21.4	70 - 130	30	
Bromoform	ND	5.0	92	102	10.3	82	70	15.8	70 - 130	30	
Bromomethane	ND	5.0	79	84	6.1	91	71	24.7	70 - 130	30	
Carbon Disulfide	ND	5.0	89	95	6.5	102	79	25.4	70 - 130	30	
Carbon tetrachloride	ND	5.0	88	95	7.7	92	74	21.7	70 - 130	30	
Chlorobenzene	ND	5.0	81	88	8.3	89	71	22.5	70 - 130	30	
Chloroethane	ND	5.0	83	89	7.0	97	77	23.0	70 - 130	30	
Chloroform	ND	5.0	79	87	9.6	86	69	21.9	70 - 130	30	m
Chloromethane	ND	5.0	79	84	6.1	94	72	26.5	70 - 130	30	
cis-1,2-Dichloroethene	ND	5.0	83	93	11.4	92	76	19.0	70 - 130	30	
cis-1,3-Dichloropropene	ND	5.0	84	92	9.1	87	70	21.7	70 - 130	30	
Dibromochloromethane	ND	3.0	92	104	12.2	91	78	15.4	70 - 130	30	
Dibromomethane	ND	5.0	85	95	11.1	92	74	21.7	70 - 130	30	
Dichlorodifluoromethane	ND	5.0	68	72	5.7	87	66	27.5	70 - 130	30	l,m

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
Ethylbenzene	ND	1.0	82	90	9.3	94	74	23.8	70 - 130	30	
Hexachlorobutadiene	ND	5.0	83	88	5.8	84	67	22.5	70 - 130	30	m
Isopropylbenzene	ND	1.0	83	90	8.1	97	77	23.0	70 - 130	30	
m&p-Xylene	ND	2.0	81	87	7.1	91	73	22.0	70 - 130	30	
Methyl ethyl ketone	ND	5.0	79	87	9.6	78	69	12.2	70 - 130	30	m
Methyl t-butyl ether (MTBE)	ND	1.0	74	83	11.5	79	65	19.4	70 - 130	30	m
Methylene chloride	ND	5.0	70	76	8.2	84	68	21.1	70 - 130	30	m
Naphthalene	ND	5.0	80	89	10.7	68	57	17.6	70 - 130	30	m
n-Butylbenzene	ND	1.0	82	87	5.9	90	72	22.2	70 - 130	30	
n-Propylbenzene	ND	1.0	80	86	7.2	94	74	23.8	70 - 130	30	
o-Xylene	ND	2.0	83	91	9.2	94	74	23.8	70 - 130	30	
p-Isopropyltoluene	ND	1.0	84	90	6.9	95	75	23.5	70 - 130	30	
sec-Butylbenzene	ND	1.0	84	91	8.0	97	77	23.0	70 - 130	30	
Styrene	ND	5.0	83	91	9.2	89	72	21.1	70 - 130	30	
tert-Butylbenzene	ND	1.0	82	89	8.2	95	76	22.2	70 - 130	30	
Tetrachloroethene	ND	5.0	86	91	5.6	97	76	24.3	70 - 130	30	
Tetrahydrofuran (THF)	ND	5.0	83	93	11.4	88	73	18.6	70 - 130	30	
Toluene	ND	1.0	84	91	8.0	94	74	23.8	70 - 130	30	
trans-1,2-Dichloroethene	ND	5.0	84	92	9.1	94	75	22.5	70 - 130	30	
trans-1,3-Dichloropropene	ND	5.0	86	94	8.9	85	70	19.4	70 - 130	30	
trans-1,4-dichloro-2-butene	ND	5.0	94	106	12.0	84	72	15.4	70 - 130	30	
Trichloroethene	ND	5.0	84	91	8.0	96	75	24.6	70 - 130	30	
Trichlorofluoromethane	ND	5.0	81	86	6.0	95	73	26.2	70 - 130	30	
Trichlorotrifluoroethane	ND	5.0	86	90	4.5	100	77	26.0	70 - 130	30	
Vinyl chloride	ND	5.0	81	88	8.3	96	74	25.9	70 - 130	30	
% 1,2-dichlorobenzene-d4	99	%	100	99	1.0	99	98	1.0	70 - 130	30	
% Bromofluorobenzene	98	%	100	101	1.0	97	98	1.0	70 - 130	30	
% Dibromofluoromethane	99	%	101	100	1.0	102	100	2.0	70 - 130	30	
% Toluene-d8	96	%	102	102	0.0	102	101	1.0	70 - 130	30	

Comment:

Additional 8260 criteria: 10% of LCS/LCSD compounds can be outside of acceptance criteria as long as recovery is 40-160%.

QA/QC Batch 355000 (ug/Kg), QC Sample No: BN88318 2X (BN82383)

Pesticides - Solid

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
4,4' -DDD	ND	1.7	86	75	13.7	92	76	19.0	40 - 140	30
4,4' -DDE	ND	1.7	83	73	12.8	85	70	19.4	40 - 140	30
4,4' -DDT	ND	1.7	84	74	12.7	89	74	18.4	40 - 140	30
a-BHC	ND	1.0	85	75	12.5	82	69	17.2	40 - 140	30
a-Chlordane	ND	3.3	87	78	10.9	86	72	17.7	40 - 140	30
Alachlor	ND	3.3	NA	NA	NC	NA	NA	NC	40 - 140	30
Aldrin	ND	1.0	80	71	11.9	79	64	21.0	40 - 140	30
b-BHC	ND	1.0	77	76	1.3	85	75	12.5	40 - 140	30
Chlordane	ND	33	86	74	15.0	72	64	11.8	40 - 140	30
d-BHC	ND	3.3	88	78	12.0	105	86	19.9	40 - 140	30
Dieldrin	ND	1.0	84	74	12.7	84	70	18.2	40 - 140	30
Endosulfan I	ND	3.3	88	76	14.6	86	71	19.1	40 - 140	30
Endosulfan II	ND	3.3	89	77	14.5	94	78	18.6	40 - 140	30
Endosulfan sulfate	ND	3.3	86	75	13.7	93	78	17.5	40 - 140	30
Endrin	ND	3.3	84	74	12.7	85	69	20.8	40 - 140	30
Endrin aldehyde	ND	3.3	73	64	13.1	80	67	17.7	40 - 140	30
Endrin ketone	ND	3.3	88	77	13.3	95	79	18.4	40 - 140	30
g-BHC	ND	1.0	82	72	13.0	78	66	16.7	40 - 140	30
g-Chlordane	ND	3.3	86	74	15.0	72	64	11.8	40 - 140	30
Heptachlor	ND	3.3	87	79	9.6	100	83	18.6	40 - 140	30
Heptachlor epoxide	ND	3.3	86	73	16.4	85	68	22.2	40 - 140	30
Methoxychlor	ND	3.3	85	73	15.2	92	77	17.8	40 - 140	30
Toxaphene	ND	130	NA	NA	NC	NA	NA	NC	40 - 140	30
% DCBP	79	%	86	75	13.7	91	78	15.4	30 - 150	30
% TCMX	80	%	82	71	14.4	76	63	18.7	30 - 150	30

QA/QC Data

SDG I.D.: GBN82376

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits

Comment:

Alpha and gamma chlordane were spiked and analyzed instead of technical chlordane. Gamma chlordane recovery is reported as chlordane in the LCS, LCSD, MS and MSD.

QA/QC Batch 355104 (ug/Kg), QC Sample No: BN88523 2X (BN82386)

Pesticides - Solid

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
4,4' -DDD	ND	1.7	81	82	1.2	86	83	3.6	40 - 140	30
4,4' -DDE	ND	1.7	80	80	0.0	78	78	0.0	40 - 140	30
4,4' -DDT	ND	1.7	83	83	0.0	99	95	4.1	40 - 140	30
a-BHC	ND	1.0	82	82	0.0	79	75	5.2	40 - 140	30
a-Chlordane	ND	3.3	78	78	0.0	73	72	1.4	40 - 140	30
Alachlor	ND	3.3	NA	NA	NC	NA	NA	NC	40 - 140	30
Aldrin	ND	1.0	98	90	8.5	87	92	5.6	40 - 140	30
b-BHC	ND	1.0	69	77	11.0	64	75	15.8	40 - 140	30
Chlordane	ND	33	74	73	1.4	67	67	0.0	40 - 140	30
d-BHC	ND	3.3	78	78	0.0	82	76	7.6	40 - 140	30
Dieldrin	ND	1.0	88	88	0.0	85	84	1.2	40 - 140	30
Endosulfan I	ND	3.3	86	86	0.0	83	82	1.2	40 - 140	30
Endosulfan II	ND	3.3	94	95	1.1	97	94	3.1	40 - 140	30
Endosulfan sulfate	ND	3.3	80	82	2.5	85	81	4.8	40 - 140	30
Endrin	ND	3.3	85	85	0.0	85	83	2.4	40 - 140	30
Endrin aldehyde	ND	3.3	72	72	0.0	78	74	5.3	40 - 140	30
Endrin ketone	ND	3.3	81	81	0.0	82	77	6.3	40 - 140	30
g-BHC	ND	1.0	76	77	1.3	70	69	1.4	40 - 140	30
g-Chlordane	ND	3.3	74	73	1.4	67	67	0.0	40 - 140	30
Heptachlor	ND	3.3	75	74	1.3	73	64	13.1	40 - 140	30
Heptachlor epoxide	ND	3.3	80	79	1.3	75	73	2.7	40 - 140	30
Methoxychlor	ND	3.3	79	64	21.0	70	60	15.4	40 - 140	30
Toxaphene	ND	130	NA	NA	NC	NA	NA	NC	40 - 140	30
% DCBP	85	%	84	85	1.2	89	85	4.6	30 - 150	30
% TCMX	72	%	75	74	1.3	71	68	4.3	30 - 150	30

Comment:

Alpha and gamma chlordane were spiked and analyzed instead of technical chlordane. Gamma chlordane recovery is reported as chlordane in the LCS, LCSD, MS and MSD.

l = This parameter is outside laboratory LCS/LCSD specified recovery limits.
m = This parameter is outside laboratory MS/MSD specified recovery limits.
r = This parameter is outside laboratory RPD specified recovery limits.
s = This parameter is outside laboratory Blank Surrogate specified recovery limits.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference
LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample Duplicate
MS - Matrix Spike
MS Dup - Matrix Spike Duplicate
NC - No Criteria
Intf - Interference

Phyllis Shiller, Laboratory Director
August 12, 2016

Friday, August 12, 2016

Criteria: CT: GAM

State: CT

Sample Criteria Exceedences Report

GBN82376 - FO

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units
BN82382	SPLP-PB	SPLP Lead	CT / INORGANIC SUBSTANCES / GA/GAA PMC (mg/l)**	0.063	0.010	0.015	0.015	mg/L
BN82385	SPLP-PB	SPLP Lead	CT / INORGANIC SUBSTANCES / GA/GAA PMC (mg/l)**	0.028	0.010	0.015	0.015	mg/L

REASONABLE CONFIDENCE PROTOCOL
LABORATORY ANALYSIS QA/QC CERTIFICATION FORM

Laboratory Name: Phoenix Environmental Labs, Inc. ***Client:*** Fuss & O'Neill, Inc.

Project Location: OLD HADDAM JAIL ***Project Number:***

Laboratory Sample ID(s): BN82376-BN82378, BN82381-BN82383, BN82385-BN82391 ***Sampling Date(s):*** 7/28/2016

List RCP Methods Used (e.g., 8260, 8270, et cetera) 1311/1312, 6010, 7470/7471, 8081, 8082, 8260, 8270, ETPH

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 CT DEP method-specific Reasonable Confidence Protocol documents?**	☑ Yes ☐ No
1A	**Were the method specified preservation and holding time requirements met?**	☑ Yes ☐ No
1B	***<u>VPH and EPH methods only:</u>*** **Was the VPH or EPH method conducted without significant modifications (see section 11.3 of respective RCP methods)**	☐ Yes ☐ No ☑ NA
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 ☐ NA
4	**Were all QA/QC performance criteria specified in the Reasonable Confidence Protocol documents acheived? See Sections: ETPH Narration, Mercury Narration, VOA Narration.**	☐ Yes ☑ No
5	**a) Were reporting limits specified or referenced on the chain-of-custody?** **b) Were these reporting limits met?**	☑ Yes ☐ No ☑ Yes ☐ No
6	**For each analytical method referenced in this laboratory report package, were results reported for all constituents 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 in the 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: Ethan Lee **Position:** Project Manager

Printed Name: Ethan Lee **Date:** Friday, August 12, 2016

Name of Laboratory Phoenix Environmental Labs, Inc.

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

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

NY # 11301

RCP Certification Report

August 12, 2016

SDG I.D.: GBN82376

SDG Comments

Metals Analysis (BN82382, BN82383, BN82385, BN82386):
The client requested a shorter list of elements than the 6010 RCP list. Only Arsenic and Lead are reported as requested on the chain of custody.

Metals Analysis (BN82381, BN82387, BN82388, BN82389):
The client requested a shorter list of elements than the 6010 RCP list. Only the RCRA 8 Metals are reported as requested on the chain of custody.

8270 Semi-volatile Organics:
The client requested a short list for 8270 RCP Semivolatile. Only the PAH constituents are reported as requested on the chain-of-custody.

ETPH Narration

Were all QA/QC performance criteria specified in the Reasonable Confidence Protocol documents achieved? No.

BN82388 - The surrogate recovery is below criteria for %n-Pentacosane. The sample was re-extracted with similar results. A low bias is possible.

QC Batch 353858 (Samples: BN82376, BN82377): -----

The LCS and/or the LCSD recovery is below the method criteria. All of the other QC is acceptable, therefore no significant bias is suspected. (Ext. Petroleum H.C.)

The blank surrogate recovery below criteria for %n-Pentacosane. A low bias is possible.

QC Batch 353885 (Samples: BN82378, BN82381, BN82387, BN82388, BN82389): -----

One or more analytes is below the method criteria. A low bias for these analytes is possible. (Ext. Petroleum H.C.)

Instrument:

AU-FID1 07/29/16-2 Jeff Bucko, Chemist 07/29/16

BN82377

The initial calibration (ETPH621I) RSD for the compound list was less than 30% except for the following compounds: None.
The continuing calibration %D for the compound list was less than 30% except for the following compounds:
Samples: BN82377
Preceding CC 729A018 - Pentacosane 36%H (30%)
Succeeding CC 729A030 - None.

AUFID-D1 07/28/16-1 Keith Aloisa, Chemist 07/28/16

BN82378, BN82381, BN82387, BN82389

The initial calibration (ETPH720I) RSD for the compound list was less than 30% except for the following compounds: None.
The continuing calibration %D for the compound list was less than 30% except for the following compounds:None.

AU-XL2 07/29/16-1 Jeff Bucko, Chemist 07/29/16

BN82388

The initial calibration (ETPH722I) RSD for the compound list was less than 30% except for the following compounds: None.
As per section 7.2.3, a discrimination check standard was run and contained the following outliers: C36 45.4%L (20%)
The continuing calibration %D for the compound list was less than 30% except for the following compounds:None.

AU-XL2 08/03/16-1 Jeff Bucko, Chemist 08/03/16

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NY # 11301

RCP Certification Report

August 12, 2016

SDG I.D.: GBN82376

ETPH Narration

BN82376

The initial calibration (ETPH722I) RSD for the compound list was less than 30% except for the following compounds: None.
The continuing calibration %D for the compound list was less than 30% except for the following compounds:None.

QC (Batch Specific):

Batch 353858 (BN82303)

BN82376, BN82377

All LCS recoveries were within 60 - 120 with the following exceptions: None.
All LCSD recoveries were within 60 - 120 with the following exceptions: Ext. Petroleum H.C.(56%)
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.

Batch 353885 (BN82484)

BN82378, BN82381, BN82387, BN82388, BN82389

All LCS recoveries were within 60 - 120 with the following exceptions: Ext. Petroleum H.C.(57%)
All LCSD recoveries were within 60 - 120 with the following exceptions: Ext. Petroleum H.C.(50%)
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.

Mercury Narration

Were all QA/QC performance criteria specified in the analytical method achieved? No.

QC Batch 354156 (Samples: BN82388): -----

The LCS/LCSD RPD exceeds the method criteria for one or more analytes, therefore there may be variability in the reported result. (Mercury)

Instrument:

MERLIN 08/01/16 08:57 Rick Schweitzer, Chemist 08/01/16

BN82381, BN82384, BN82387, BN82388, BN82389

The method preparation blank contains all of the acids and reagents as the samples; the instrument blanks do not.
The initial calibration met all criteria including a standard run at or below the reporting level.
All calibration verification standards (ICV, CCV) met criteria.
All calibration blank verification standards (ICB, CCB) met criteria.
The matrix spike sample is used to identify spectral interference for each batch of samples, if within 85-115%, no interference is observed and no further action is taken.
The following Initial Calibration Verification (ICV) compounds did not meet criteria: None.
The following Continuing Calibration Verification (CCV) compounds did not meet criteria: None.

QC (Batch Specific):

Batch 354155 (BN78132)

BN82381, BN82387

All LCS recoveries were within 70 - 130 with the following exceptions: None.
All LCSD recoveries were within 70 - 130 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.
Additional Mercury criteria: LCS acceptance range for waters is 80-120% and for soils is 70-130%.

Batch 354156 (BN82388)

Mercury Narration

BN82388

All LCS recoveries were within 70 - 130 with the following exceptions: None.
All LCSD recoveries were within 70 - 130 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: Mercury(35.0%)
Additional Mercury criteria: LCS acceptance range for waters is 80-120% and for soils is 70-130%.

Batch 354157 (BN82389)

BN82389

All LCS recoveries were within 70 - 130 with the following exceptions: None.
All LCSD recoveries were within 70 - 130 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.
Additional Mercury criteria: LCS acceptance range for waters is 80-120% and for soils is 70-130%.

ICP Metals Narration

Were all QA/QC performance criteria specified in the analytical method achieved? Yes.

Instrument:

ARCOS 07/28/16 21:24 Laura Kinnin, Chemist 07/28/16

BN82379

The linear range is defined daily by the calibration range.
The following Initial Calibration Verification (ICV) compounds did not meet criteria: None.
The following Continuing Calibration Verification (CCV) compounds did not meet criteria: None.
The following ICP Interference Check (ICSAB) compounds did not meet criteria: None.

ARCOS 07/29/16 18:03 Laura Kinnin, Chemist 07/29/16

BN82382, BN82384, BN82385, BN82387, BN82388, BN82389

The linear range is defined daily by the calibration range.
The following Initial Calibration Verification (ICV) compounds did not meet criteria: None.
The following Continuing Calibration Verification (CCV) compounds did not meet criteria: None.
The following ICP Interference Check (ICSAB) compounds did not meet criteria: None.

ARCOS 08/01/16 06:08 Laura Kinnin, Chemist 08/01/16

BN82381, BN82382, BN82385

The linear range is defined daily by the calibration range.
The following Initial Calibration Verification (ICV) compounds did not meet criteria: None.
The following Continuing Calibration Verification (CCV) compounds did not meet criteria: None.
The following ICP Interference Check (ICSAB) compounds did not meet criteria: None.

ARCOS 08/10/16 05:59 Laura Kinnin, Chemist 08/10/16

BN82382, BN82383, BN82385, BN82386

The linear range is defined daily by the calibration range.
The following Initial Calibration Verification (ICV) compounds did not meet criteria: None.
The following Continuing Calibration Verification (CCV) compounds did not meet criteria: None.
The following ICP Interference Check (ICSAB) compounds did not meet criteria: None.

QC (Batch Specific):

Batch 353867 (BN81822)

ICP Metals Narration

BN82381

All LCS recoveries were within 75 - 125 with the following exceptions: None.

Batch 353891 (BN82483)

BN82382, BN82385, BN82387, BN82388, BN82389

All LCS recoveries were within 75 - 125 with the following exceptions: None.

Batch 355105 (BN82383)

BN82383, BN82386

All LCS recoveries were within 75 - 125 with the following exceptions: None.

Batch 355167 (BN83482)

BN82382, BN82385

All LCS recoveries were within 75 - 125 with the following exceptions: None.

PCB Narration

Were all QA/QC performance criteria specified in the Reasonable Confidence Protocol documents achieved? Yes.

Instrument:

AU-ECD24 07/29/16-1 Adam Werner, Chemist 07/29/16

BN82381, BN82387, BN82388, BN82389

The initial calibration (PC0728AI) RSD for the compound list was less than 20% except for the following compounds: None.
The initial calibration (PC0728BI) RSD for the compound list was less than 20% except for the following compounds: None.
The continuing calibration %D for the compound list was less than 15% except for the following compounds:None.

QC (Batch Specific):

Batch 353718 (BN81478)

BN82381

All LCS recoveries were within 40 - 140 with the following exceptions: None.
All LCSD recoveries were within 40 - 140 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.

Batch 353884 (BN82388)

BN82387, BN82388, BN82389

All LCS recoveries were within 40 - 140 with the following exceptions: None.
All LCSD recoveries were within 40 - 140 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.

PEST Narration

Were all QA/QC performance criteria specified in the Reasonable Confidence Protocol documents achieved? Yes.

Instrument:

AU-ECD13 08/02/16-1 Carol Eddy, Chemist 08/02/16

BN82385

PEST Narration

8081 Narration:
Endrin and DDT breakdown was evaluated and does not exceed 15%.

The initial calibration (PS725AI) RSD for the compound list was less than 20% except for the following compounds: None.
The initial calibration (PS725BI) RSD for the compound list was less than 20% except for the following compounds: None.
The continuing calibration %D for the compound list was less than 15% except for the following compounds:None.

AU-ECD13 08/10/16-1 Carol Eddy, Chemist 08/10/16

BN82383, BN82386

8081 Narration:
Endrin and DDT breakdown was evaluated and does not exceed 15%.

The initial calibration (PS725AI) RSD for the compound list was less than 20% except for the following compounds: None.
The initial calibration (PS725BI) RSD for the compound list was less than 20% except for the following compounds: None.
The continuing calibration %D for the compound list was less than 15% except for the following compounds:None.

AU-ECD35 07/29/16-1 Carol Eddy, Chemist 07/29/16

BN82382

8081 Narration:
Endrin and DDT breakdown was evaluated and does not exceed 15%.

The initial calibration (PS722AI) RSD for the compound list was less than 20% except for the following compounds: None.
The initial calibration (PS722BI) RSD for the compound list was less than 20% except for the following compounds: None.
The continuing calibration %D for the compound list was less than 15% except for the following compounds:
Samples: BN82382
  Preceding CC 729A072 - Endrin -22%L (15%)
  Succeeding CC 729A081 - Endrin -24%L (15%)
A low "1A" standard was run after the samples to demonstrate capability to detect any compounds outside of the CC acceptance criteria. All reported samples were ND for the affected compounds.

QC (Batch Specific):

Batch 353852 (BN80133)

BN82382, BN82385

All LCS recoveries were within 40 - 140 with the following exceptions: None.
All LCSD recoveries were within 40 - 140 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.
Alpha and gamma chlordane were spiked and analyzed instead of technical chlordane. Gamma chlordane recovery is reported as chlordane in the LCS, LCSD, MS and MSD.

Batch 355000 (BN88318)

BN82383

All LCS recoveries were within 40 - 140 with the following exceptions: None.
All LCSD recoveries were within 40 - 140 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.
Alpha and gamma chlordane were spiked and analyzed instead of technical chlordane. Gamma chlordane recovery is reported as chlordane in the LCS, LCSD, MS and MSD.

Batch 355104 (BN88523)

BN82386

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NY # 11301

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PEST Narration

All LCS recoveries were within 40 - 140 with the following exceptions: None.
All LCSD recoveries were within 40 - 140 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.
Alpha and gamma chlordane were spiked and analyzed instead of technical chlordane. Gamma chlordane recovery is reported as chlordane in the LCS, LCSD, MS and MSD.

PAH Narration

Were all QA/QC performance criteria specified in the Reasonable Confidence Protocol documents achieved? Yes.

Instrument:

CHEM05 07/28/16-1 Damien Drobinski, Chemist 07/28/16

Initial Calibration Verification (CHEM05/BN_0728):
100% of target compounds met criteria.
The following compounds had %RSDs >20%: None.
The following compounds did not meet recommended response factors: None.
The following compounds did not meet a minimum response factors: None.

Continuing Calibration Verification (CHEM05/0728_12A-BN_0728):
Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.
100% of target compounds met criteria.
The following compounds did not meet % deviation criteria: None.
The following compounds did not meet maximum % deviations: None.
The following compounds did not meet recommended response factors: None.
The following compounds did not meet minimum response factors: None.

CHEM12 07/28/16-1 Damien Drobinski, Chemist 07/28/16

BN82376, BN82377, BN82378, BN82381, BN82388, BN82389

The DDT breakdown and pentachlorophenol & benzidine peak tailing were evaluated in the DFTPP tune and were found to be in control.

Initial Calibration Verification (CHEM12/SV_0727):
100% of target compounds met criteria.
The following compounds had %RSDs >20%: None.
The following compounds did not meet recommended response factors: None.
The following compounds did not meet a minimum response factors: None.

Continuing Calibration Verification (CHEM12/0728_04-SV_0727):
Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.
100% of target compounds met criteria.
The following compounds did not meet % deviation criteria: None.
The following compounds did not meet maximum % deviations: None.
The following compounds did not meet recommended response factors: None.
The following compounds did not meet minimum response factors: None.

QC (Batch Specific):

Batch 353883 (BN82388)

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

RCP Certification Report

August 12, 2016

SDG I.D.: GBN82376

PAH Narration

BN82388, BN82389

All LCS recoveries were within 30 - 130 with the following exceptions: None.
All LCSD recoveries were within 30 - 130 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.

VOA Narration

Were all QA/QC performance criteria specified in the Reasonable Confidence Protocol documents achieved? No.

QC Batch 354206 (Samples: BN82376, BN82377, BN82381, BN82387, BN82388, BN82389, BN82390, BN82391): -----

The QC recoveries for one or more analytes are below method criteria. A low bias is possible. (Dichlorodifluoromethane)

Instrument:

CHEM14 07/31/16-2 Jane Li, Chemist 07/31/16

BN82376, BN82377, BN82381, BN82387, BN82388, BN82389, BN82390, BN82391

Initial Calibration Verification (CHEM14/VT-0731):
95% of target compounds met criteria.
The following compounds had %RSDs >20%: 1,2,3-Trichlorobenzene 30% (20%), 1,2,4-Trichlorobenzene 26% (20%), Methylene chloride 28% (20%), Naphthalene 29% (20%)
The following compounds did not meet recommended response factors: None.
The following compounds did not meet a minimum response factors: None.

Continuing Calibration Verification (CHEM14/0731_13-VT-0731):
Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.
100% of target compounds met criteria.
The following compounds did not meet % deviation criteria: None.
The following compounds did not meet maximum % deviations: None.
The following compounds did not meet recommended response factors: None.
The following compounds did not meet minimum response factors: None.

QC (Batch Specific):

Batch 354206 (BN83110)

BN82376, BN82377, BN82381, BN82387, BN82388, BN82389, BN82390, BN82391

All LCS recoveries were within 70 - 130 with the following exceptions: Dichlorodifluoromethane(68%)
All LCSD recoveries were within 70 - 130 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.
Additional 8260 criteria: 10% of LCS/LCSD compounds can be outside of acceptance criteria as long as recovery is 40-160%.

Temperature Narration

The samples were received at 6C with cooling initiated.
(Note acceptance criteria is above freezing up to 6°C)

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☐ 80 Washington Street, Suite 301, Poughkeepsie, NY
☐ Other

6owCHP

CHAIN-OF-CUSTODY RECORD 36414

Turnaround
☐ 24-Hour* ☐ 72-Hour* ☐ Other ______ (days)
☐ 48-Hour* ☒ Standard (5 days) *Surcharge Applies

PROJECT NAME: Old Haddam Jail
PROJECT LOCATION: Haddam, CT
PROJECT NUMBER: 20160311.410 ~~20162904~~
LABORATORY: Phoenix

REPORT TO: Stephanie Wierszchalek (F+O)
INVOICE TO: ↓
P.O. NO.:

Sampler's Signature: [signature] Date: 7/28/16

Source Codes:
MW=Monitoring Well PW=Potable Water T=Treatment Facility S=Soil B=Sediment
SW=Surface Water ST=Stormwater W=Waste A=Air C=Concrete
X=Other

Analysis Request / Containers

Item No.	Transfer Check 1	2	3	4	Sample Number	Source Code	Date Sampled	Time Sampled	VOCs	ETPH	PAHs	Metals	PCBs	Pesticides	Arsenic + lead		Soil VOA Vial, ☒ methanol	Soil VOA Vial, ☒ water ☐ Na(SO4)2	Glass Soil Container (8) oz	Other:	Other:	Water VOA Vial, ☐ As is ☐ HCl	Glass Amber ( ) ml, ☐ As is ☐ H2SO4	Plastic - As is, ☐ 250 ml ☐ 500 ☐ 1000 ml	Plastic - H2SO4, ☐ 250 ml ☐ 500 ml	Plastic - HNO3, 250 ml ☐ Filtered ☐ 0.45μ ☐ 10μ	Plastic - NaOH, 250 ml	Comments
01	\				1305160728-01	S	7/28/16	0930	X	X	X						1	2	1									82376
02	\				-02	↓	↓	1015	X	X	X						1	2	1									82377
03	\				-03			1045	X	X	X						1	2	1									82378
04	\				-04			1115						X	X				1									82379
05	\				-05			1120						X	X				1									82380 HOLD
06	\				-06			1125	X	X	X	X	X				1	2	2									82381
07	\				-07			1140						X	X				1									82382
08	\				-08			1150						X	X				1									82383 HOLD
09	\				-09			1200	X	X	X	X	X				1	2	2									82384
10	\				-10	↓	↓	1210						X	X				1									82385

Transfer Number	Relinquished By	Accepted By	Date	Time
1	[signature]	[signature]	7/28/16	16:53
2				
3				
4				

Charge Exceptions: ☐ CT Tax Exempt ☐ QA/QC ☐ Other ______
____ Duplicates ____ Blanks (Item Nos:)

Reporting and Detection Limit Requirements: ☐ RCP Deliverables ☐ MCP CAM Cert.
GA reporting + detection limits

Additional Comments:
HOLD samples -05 + -08

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☐ 80 Washington Street, Suite 301, Poughkeepsie, NY
☐ Other

6ourITP

CHAIN-OF-CUSTODY RECORD 36415

Turnaround
☐ 24-Hour* ☐ 72-Hour* ☐ Other ____ (days)
☐ 48-Hour* ☒ Standard (5 days) *Surcharge Applies

PROJECT NAME: Old Haddam Jail
PROJECT LOCATION: Haddam, CT
PROJECT NUMBER: 20160311.A10
LABORATORY: Phoenix

REPORT TO: Stephanie Wierszchalek (fro)
INVOICE TO: ↓
P.O. NO.:
Sampler's Signature: [signature] Date: 7/28/16

Source Codes:
MW=Monitoring Well PW=Potable Water T=Treatment Facility S=Soil B=Sediment
SW=Surface Water ST=Stormwater W=Waste A=Air C=Concrete
X=Other trip

Analysis Request / Containers

Item No.	Transfer Check 1	2	3	4	Sample Number	Source Code	Date Sampled	Time Sampled	VOCs	ETPH	PAHs	Metals	PCBs	Pesticides	Arsenic + Lead		Soil VOA Vial, ☒ methanol	Soil VOA Vial, ☒ water ☐ Na(SO4)2	Glass Soil Container (8) oz	Other:	Other:	Water VOA Vial, ☐ As is ☐ HCl	Glass Amber ( ) ml, ☐ As is ☐ H2SO4	Plastic - As is, ☐ 250 ml ☐ 500 ☐ 1000 ml	Plastic - H2SO4, ☐ 250 ml ☐ 500 ml	Plastic - HNO3, 250 ml ☐ Filtered ☐ 0.45μ ☐ 10μ	Plastic - NaOH, 250 ml	Comments
11	✓				1365160728-11	S	7/28/16	1215						X	X				1									82386 HOLD
12	✓				-13	↓	↓	1330	X	X	X	X	X				1	2	2									82387
13	✓				-14	↓	↓	1440	X	X	X	X	X				1	2	2									82388
14	✓				-15	↓	↓	1500	X	X	X	X	X				1	2	2									82389
15	✓				-16	X	↓	1502	X								1	2										82390 trip high
16	✓				-17	X	↓	1503	X									2										82391 trip low

Transfer Number	Relinquished By	Accepted By	Date	Time
1	[signature]	[signature]	7/28/16	16:53
2				
3				
4				

Charge Exceptions: ☐ CT Tax Exempt ☐ QA/QC ☐ Other ____
____ Duplicates ____ Blanks (Item Nos:)

Reporting and Detection Limit Requirements: ☐ RCP Deliverables ☐ MCP CAM Cert.
GA limits

Additional Comments:
HOLD sample #-11 NO sample #12

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☐ 80 Washington Street, Suite 301, Poughkeepsie, NY
☐ Other ______

6owCHIP

CHAIN-OF-CUSTODY RECORD 36414

Turnaround
☐ 24-Hour* ☐ 72-Hour* ☐ Other ______ (days)
☐ 48-Hour* ☒ Standard (5 days) *Surcharge Applies

PROJECT NAME: Old Haddam Jail
PROJECT LOCATION: Haddam, CT
PROJECT NUMBER: ~~20162904~~ 20160311.A10
LABORATORY: Phoenix

REPORT TO: Stephanie Wierszchalek (F+O)
INVOICE TO:
P.O. NO.:
Sampler's Signature: [signature] Date: 7/28/16

Source Codes:
MW=Monitoring Well PW=Potable Water T=Treatment Facility S=Soil B=Sediment
SW=Surface Water ST=Stormwater W=Waste A=Air C=Concrete
X=Other ______

Analysis Request / Containers

Item No.	Transfer Check 1	2	3	4	Sample Number	Source Code	Date Sampled	Time Sampled	VOCs	ETPH	PAHs	Metals	PCBs	Pesticides	Arsenic + lead	Soil VOA Vial, ~~methanol~~	Soil VOA Vial, ~~water~~	Glass Soil Container (8) oz	Other:	Other:	Water VOA Vial, ☐ As is ☐ HCl	Glass Amber ( ) ml, ☐ As is ☐ H2SO4	Plastic - As is, ☐ 250 ml ☐ 500 ☐ 1000 ml	Plastic - H_2SO_4, 250 ml ☐ 500 ml	Plastic - HNO_3, 250 ml ☐ Filtered ☐ 0.45µ ☐ 10µ	Plastic - NaOH, 250 ml	Comments
01	\				1305160728-01	S	7/28/16	0930	X	X	X					1	2	1									82376
02	\				-02			1015	X	X	X					1	2	1									82377
03	\				-03			1045	X	X	X					1	2	1									82378
04	\				-04			1115						X	X			1									82379
05	\				-05			1120						X	X			1									82380 HOLD
06	\				-06			1125	X	X	X	X	X			1	2	2									82381
07	\				-07			1140						X	X			1									82382
08	\				-08			1150						X	X			1									82383 HOLD
09	\				-09			1200	X	X	X	X	X			1	2	2									82384
10	\				-10			1210						X	X			1									82385

Transfer Number	Relinquished By	Accepted By	Date	Time
1	[signature]	[signature]	7/28/16	16:53
2				
3				
4				

Charge Exceptions: ☐ CT Tax Exempt ☐ QA/QC ☐ Other ______
____ Duplicates ____ Blanks (Item Nos:)

Reporting and Detection Limit Requirements: ☐ RCP Deliverables ☐ MCP CAM Cert.
GA reporting + detection limits

Additional Comments:
HOLD samples -05 + -08

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☐ 80 Washington Street, Suite 301, Poughkeepsie, NY
☐ Other

6ourtTP

CHAIN-OF-CUSTODY RECORD 36415

Turnaround
☐ 24-Hour* ☐ 72-Hour* ☐ Other ______ (days)
☐ 48-Hour* ☒ Standard (5 days) *Surcharge Applies

PROJECT NAME: Old Haddam Jail
PROJECT LOCATION: Haddam, CT
PROJECT NUMBER: 20160311.A10
LABORATORY: Phoenix

REPORT TO: Stephanie Wierszchalek (fro)
INVOICE TO: ↓
P.O. NO.:
Sampler's Signature: [signature] Date: 7/28/16

Source Codes:
MW=Monitoring Well PW=Potable Water T=Treatment Facility S=Soil B=Sediment
SW=Surface Water ST=Stormwater W=Waste A=Air C=Concrete
X=Other trip

Analysis Request / Containers

Item No.	Transfer Check 1	2	3	4	Sample Number	Source Code	Date Sampled	Time Sampled	VOCs	ETPH	PAHs	Metals	PCBs	Pesticides	Arsenic + Lead		Soil VOA Vial, ☒ methanol	Soil VOA Vial, ☒ water	Glass Soil Container (8) oz ☐ Na(SO4)2	Other:	Other:	Water VOA Vial, ☐ As is ☐ HCl	Glass Amber ( ) ml, ☐ As is ☐ H2SO4	Plastic - As is, ☐ 250 ml ☐ 500 ☐ 1000 ml	Plastic - H2SO4, ☐ 250 ml ☐ 500 ml	Plastic - HNO3, 250 ml ☐ Filtered ☐ 0.45µ ☐ 10µ	Plastic - NaOH, 250 ml	Comments
11	✓				1365160728-11	S	7/28/16	1215						X	X				1									82386 HOLD
12	✓				-13	↓	↓	1330	X	X	X	X	X				1	2	2									82387
13	✓				-14	↓	↓	1440	X	X	X	X	X				1	2	2									82388
14	✓				-15	↓	↓	1500	X	X	X	X	X				1	2	2									82389
15	✓				-16	X	↓	1502	X								1	~~2~~										823910 trip high
16	✓				-17	X	↓	1503	X									2										823911 trip low

Transfer Number	Relinquished By	Accepted By	Date	Time
1	[signature]	[signature]	7/28/16	16:53
2				
3				
4				

Charge Exceptions: ☐ CT Tax Exempt ☐ QA/QC ☐ Other ______
____ Duplicates ____ Blanks (Item Nos:)

Reporting and Detection Limit Requirements: ☐ RCP Deliverables ☐ MCP CAM Cert.
GA limits

Additional Comments:
HOLD sample #-11 NO sample #-12

PHOENIX
Environmental Laboratories, Inc.

Friday, August 05, 2016

Attn: Ms. Stephanie Wierszchalek
Fuss & O'Neill EnviroScience, LLC
145 Hartford Road
Manchester, CT 06040

Project ID: OLD HADDAM JAIL
Sample ID#s: BN83474 - BN83482, BN83484, BN83486, BN83488 - BN83490

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext. 200.

Sincerely yours,

Phyllis Shiller
Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #MA-CT-007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B

NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301

PHOENIX

Environmental Laboratories, Inc.

587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

August 05, 2016

FOR: Attn: Ms. Stephanie Wierszchalek
Fuss & O'Neill EnviroScience, LLC
145 Hartford Road
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	CONCRETE	Collected by:		07/29/16	7:55
Location Code:	F&O	Received by:	LB	07/29/16	18:13
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	20160311.A10				

Laboratory Data

SDG ID: GBN83474
Phoenix ID: BN83474

Project ID: OLD HADDAM JAIL
Client ID: 1305160729-18

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Percent Solid	99		%		07/29/16	I	SW846-%Solid
Soil Extraction for PCB	Completed				08/01/16	CC/V	SW3545A
Soil Extraction SVOA PAH	Completed				07/29/16	NB/CKV	SW3545A
Extraction of CT ETPH	Completed				07/29/16	NC/CK	SW3545A
Extraction for PCB	Completed					QQ/IR	SW3540C
Field Extraction	Completed				07/29/16		SW5035A
TPH by GC (Extractable Products)							
Ext. Petroleum HC	ND	50	mg/Kg	1	07/30/16	JRB	CTETPH 8015D
Identification	ND		mg/Kg	1	07/30/16	JRB	CTETPH 8015D
QA/QC Surrogates							
% n-Pentacosane	69		%	1	07/30/16	JRB	50 - 150 %
Polychlorinated Biphenyls							
PCB-1016	ND	330	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1221	ND	330	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1232	ND	330	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1242	ND	330	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1248	ND	330	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1254	ND	330	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1260	ND	330	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1262	ND	330	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1268	ND	330	ug/Kg	10	08/02/16	AW	SW8082A
QA/QC Surrogates							
% DCBP	121		%	10	08/02/16	AW	30 - 150 %
% TCMX	82		%	10	08/02/16	AW	30 - 150 %

Project ID: OLD HADDAM JAIL
Client ID: 1305160729-18

Phoenix I.D.: BN83474

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Volatiles							
1,1,1,2-Tetrachloroethane	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
1,1,1-Trichloroethane	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
1,1,2,2-Tetrachloroethane	ND	2.6	ug/Kg	1	08/01/16	JLI	SW8260
1,1,2-Trichloroethane	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
1,1-Dichloroethane	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
1,1-Dichloroethene	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
1,1-Dichloropropene	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
1,2,3-Trichlorobenzene	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
1,2,3-Trichloropropane	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
1,2,4-Trichlorobenzene	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
1,2,4-Trimethylbenzene	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
1,2-Dibromo-3-chloropropane	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
1,2-Dibromoethane	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
1,2-Dichlorobenzene	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
1,2-Dichloroethane	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
1,2-Dichloropropane	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
1,3,5-Trimethylbenzene	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
1,3-Dichlorobenzene	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
1,3-Dichloropropane	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
1,4-Dichlorobenzene	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
2,2-Dichloropropane	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
2-Chlorotoluene	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
2-Hexanone	ND	22	ug/Kg	1	08/01/16	JLI	SW8260
2-Isopropyltoluene	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
4-Chlorotoluene	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
4-Methyl-2-pentanone	ND	22	ug/Kg	1	08/01/16	JLI	SW8260
Acetone	ND	220	ug/Kg	1	08/01/16	JLI	SW8260
Acrylonitrile	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
Benzene	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
Bromobenzene	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
Bromochloromethane	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
Bromodichloromethane	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
Bromoform	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
Bromomethane	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
Carbon Disulfide	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
Carbon tetrachloride	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
Chlorobenzene	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
Chloroethane	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
Chloroform	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
Chloromethane	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
cis-1,2-Dichloroethene	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
cis-1,3-Dichloropropene	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
Dibromochloromethane	ND	2.6	ug/Kg	1	08/01/16	JLI	SW8260
Dibromomethane	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
Dichlorodifluoromethane	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
Ethylbenzene	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
Hexachlorobutadiene	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
Isopropylbenzene	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
m&p-Xylene	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
Methyl Ethyl Ketone	ND	26	ug/Kg	1	08/01/16	JLI	SW8260
Methyl t-butyl ether (MTBE)	ND	8.8	ug/Kg	1	08/01/16	JLI	SW8260
Methylene chloride	ND	8.8	ug/Kg	1	08/01/16	JLI	SW8260
Naphthalene	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
n-Butylbenzene	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
n-Propylbenzene	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
o-Xylene	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
p-Isopropyltoluene	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
sec-Butylbenzene	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
Styrene	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
tert-Butylbenzene	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
Tetrachloroethene	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
Tetrahydrofuran (THF)	ND	8.8	ug/Kg	1	08/01/16	JLI	SW8260
Toluene	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
Total Xylenes	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
trans-1,2-Dichloroethene	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
trans-1,3-Dichloropropene	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
trans-1,4-dichloro-2-butene	ND	8.8	ug/Kg	1	08/01/16	JLI	SW8260
Trichloroethene	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
Trichlorofluoromethane	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
Trichlorotrifluoroethane	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
Vinyl chloride	ND	4.4	ug/Kg	1	08/01/16	JLI	SW8260
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	100		%	1	08/01/16	JLI	70 - 130 %
% Bromofluorobenzene	95		%	1	08/01/16	JLI	70 - 130 %
% Dibromofluoromethane	102		%	1	08/01/16	JLI	70 - 130 %
% Toluene-d8	99		%	1	08/01/16	JLI	70 - 130 %

Polynuclear Aromatic HC

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
2-Methylnaphthalene	ND	230	ug/Kg	1	07/30/16	DD	SW8270D
Acenaphthene	ND	230	ug/Kg	1	07/30/16	DD	SW8270D
Acenaphthylene	ND	230	ug/Kg	1	07/30/16	DD	SW8270D
Anthracene	ND	230	ug/Kg	1	07/30/16	DD	SW8270D
Benz(a)anthracene	ND	230	ug/Kg	1	07/30/16	DD	SW8270D
Benzo(a)pyrene	ND	230	ug/Kg	1	07/30/16	DD	SW8270D
Benzo(b)fluoranthene	ND	230	ug/Kg	1	07/30/16	DD	SW8270D
Benzo(ghi)perylene	ND	230	ug/Kg	1	07/30/16	DD	SW8270D
Benzo(k)fluoranthene	ND	230	ug/Kg	1	07/30/16	DD	SW8270D
Chrysene	ND	230	ug/Kg	1	07/30/16	DD	SW8270D
Dibenz(a,h)anthracene	ND	230	ug/Kg	1	07/30/16	DD	SW8270D
Fluoranthene	ND	230	ug/Kg	1	07/30/16	DD	SW8270D
Fluorene	ND	230	ug/Kg	1	07/30/16	DD	SW8270D
Indeno(1,2,3-cd)pyrene	ND	230	ug/Kg	1	07/30/16	DD	SW8270D
Naphthalene	ND	230	ug/Kg	1	07/30/16	DD	SW8270D
Phenanthrene	ND	230	ug/Kg	1	07/30/16	DD	SW8270D
Pyrene	ND	230	ug/Kg	1	07/30/16	DD	SW8270D
QA/QC Surrogates							
% 2-Fluorobiphenyl	61		%	1	07/30/16	DD	30 - 130 %
% Nitrobenzene-d5	63		%	1	07/30/16	DD	30 - 130 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
% Terphenyl-d14	59		%	1	07/30/16	DD	30 - 130 %

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
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Phyllis Shiller

Phyllis Shiller, Laboratory Director
August 05, 2016
Reviewed and Released by: Ethan Lee, Project Manager

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

August 05, 2016

FOR: Attn: Ms. Stephanie Wierszchalek
Fuss & O'Neill EnviroScience, LLC
145 Hartford Road
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		07/29/16	8:05
Location Code:	F&O	Received by:	LB	07/29/16	18:13
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	20160311.A10				

Laboratory Data

SDG ID: GBN83474
Phoenix ID: BN83475

Project ID: OLD HADDAM JAIL
Client ID: 1305160729-19

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Percent Solid	96		%		07/29/16	I	SW846-%Solid
Soil Extraction for PCB	Completed				08/01/16	CC/V	SW3545A
Soil Extraction SVOA PAH	Completed				07/29/16	NB/CKV	SW3545A
Extraction of CT ETPH	Completed				07/29/16	NC/CK	SW3545A
Extraction for PCB	Completed					QQ/IR	SW3540C
Field Extraction	Completed				07/29/16		SW5035A
TPH by GC (Extractable Products)							
Ext. Petroleum HC	ND	51	mg/Kg	1	07/30/16	JRB	CTETPH 8015D
Identification	ND		mg/Kg	1	07/30/16	JRB	CTETPH 8015D
QA/QC Surrogates							
% n-Pentacosane	62		%	1	07/30/16	JRB	50 - 150 %
Polychlorinated Biphenyls							
PCB-1016	ND	340	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1221	ND	340	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1232	ND	340	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1242	ND	340	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1248	ND	340	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1254	ND	340	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1260	ND	340	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1262	ND	340	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1268	ND	340	ug/Kg	10	08/02/16	AW	SW8082A
QA/QC Surrogates							
% DCBP	95		%	10	08/02/16	AW	30 - 150 %
% TCMX	70		%	10	08/02/16	AW	30 - 150 %

Project ID: OLD HADDAM JAIL
Client ID: 1305160729-19

Phoenix I.D.: BN83475

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Volatiles							
1,1,1,2-Tetrachloroethane	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
1,1,1-Trichloroethane	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
1,1,2,2-Tetrachloroethane	ND	2.5	ug/Kg	1	08/01/16	JLI	SW8260
1,1,2-Trichloroethane	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
1,1-Dichloroethane	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
1,1-Dichloroethene	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
1,1-Dichloropropene	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
1,2,3-Trichlorobenzene	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
1,2,3-Trichloropropane	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
1,2,4-Trichlorobenzene	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
1,2,4-Trimethylbenzene	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
1,2-Dibromo-3-chloropropane	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
1,2-Dibromoethane	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
1,2-Dichlorobenzene	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
1,2-Dichloroethane	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
1,2-Dichloropropane	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
1,3,5-Trimethylbenzene	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
1,3-Dichlorobenzene	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
1,3-Dichloropropane	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
1,4-Dichlorobenzene	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
2,2-Dichloropropane	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
2-Chlorotoluene	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
2-Hexanone	ND	21	ug/Kg	1	08/01/16	JLI	SW8260
2-Isopropyltoluene	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
4-Chlorotoluene	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
4-Methyl-2-pentanone	ND	21	ug/Kg	1	08/01/16	JLI	SW8260
Acetone	ND	210	ug/Kg	1	08/01/16	JLI	SW8260
Acrylonitrile	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
Benzene	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
Bromobenzene	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
Bromochloromethane	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
Bromodichloromethane	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
Bromoform	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
Bromomethane	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
Carbon Disulfide	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
Carbon tetrachloride	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
Chlorobenzene	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
Chloroethane	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
Chloroform	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
Chloromethane	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
cis-1,2-Dichloroethene	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
cis-1,3-Dichloropropene	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
Dibromochloromethane	ND	2.5	ug/Kg	1	08/01/16	JLI	SW8260
Dibromomethane	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
Dichlorodifluoromethane	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
Ethylbenzene	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
Hexachlorobutadiene	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
Isopropylbenzene	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
m&p-Xylene	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
Methyl Ethyl Ketone	ND	25	ug/Kg	1	08/01/16	JLI	SW8260
Methyl t-butyl ether (MTBE)	ND	8.3	ug/Kg	1	08/01/16	JLI	SW8260
Methylene chloride	ND	8.3	ug/Kg	1	08/01/16	JLI	SW8260
Naphthalene	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
n-Butylbenzene	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
n-Propylbenzene	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
o-Xylene	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
p-Isopropyltoluene	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
sec-Butylbenzene	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
Styrene	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
tert-Butylbenzene	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
Tetrachloroethene	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
Tetrahydrofuran (THF)	ND	8.3	ug/Kg	1	08/01/16	JLI	SW8260
Toluene	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
Total Xylenes	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
trans-1,2-Dichloroethene	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
trans-1,3-Dichloropropene	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
trans-1,4-dichloro-2-butene	ND	8.3	ug/Kg	1	08/01/16	JLI	SW8260
Trichloroethene	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
Trichlorofluoromethane	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
Trichlorotrifluoroethane	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
Vinyl chloride	ND	4.2	ug/Kg	1	08/01/16	JLI	SW8260
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	100		%	1	08/01/16	JLI	70 - 130 %
% Bromofluorobenzene	93		%	1	08/01/16	JLI	70 - 130 %
% Dibromofluoromethane	96		%	1	08/01/16	JLI	70 - 130 %
% Toluene-d8	98		%	1	08/01/16	JLI	70 - 130 %

Polynuclear Aromatic HC

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
2-Methylnaphthalene	ND	240	ug/Kg	1	08/01/16	DD	SW8270D
Acenaphthene	ND	240	ug/Kg	1	08/01/16	DD	SW8270D
Acenaphthylene	ND	240	ug/Kg	1	08/01/16	DD	SW8270D
Anthracene	ND	240	ug/Kg	1	08/01/16	DD	SW8270D
Benz(a)anthracene	ND	240	ug/Kg	1	08/01/16	DD	SW8270D
Benzo(a)pyrene	ND	240	ug/Kg	1	08/01/16	DD	SW8270D
Benzo(b)fluoranthene	ND	240	ug/Kg	1	08/01/16	DD	SW8270D
Benzo(ghi)perylene	ND	240	ug/Kg	1	08/01/16	DD	SW8270D
Benzo(k)fluoranthene	ND	240	ug/Kg	1	08/01/16	DD	SW8270D
Chrysene	ND	240	ug/Kg	1	08/01/16	DD	SW8270D
Dibenz(a,h)anthracene	ND	240	ug/Kg	1	08/01/16	DD	SW8270D
Fluoranthene	ND	240	ug/Kg	1	08/01/16	DD	SW8270D
Fluorene	ND	240	ug/Kg	1	08/01/16	DD	SW8270D
Indeno(1,2,3-cd)pyrene	ND	240	ug/Kg	1	08/01/16	DD	SW8270D
Naphthalene	ND	240	ug/Kg	1	08/01/16	DD	SW8270D
Phenanthrene	ND	240	ug/Kg	1	08/01/16	DD	SW8270D
Pyrene	ND	240	ug/Kg	1	08/01/16	DD	SW8270D
QA/QC Surrogates							
% 2-Fluorobiphenyl	61		%	1	08/01/16	DD	30 - 130 %
% Nitrobenzene-d5	55		%	1	08/01/16	DD	30 - 130 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
% Terphenyl-d14	55		%	1	08/01/16	DD	30 - 130 %

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

Phyllis Shiller

Phyllis Shiller, Laboratory Director
August 05, 2016
Reviewed and Released by: Ethan Lee, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

August 05, 2016

FOR: Attn: Ms. Stephanie Wierszchalek
Fuss & O'Neill EnviroScience, LLC
145 Hartford Road
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	CONCRETE	Collected by:		07/29/16	8:15
Location Code:	F&O	Received by:	LB	07/29/16	18:13
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	20160311.A10				

Laboratory Data

SDG ID: GBN83474
Phoenix ID: BN83476

Project ID: OLD HADDAM JAIL
Client ID: 1305160729-20

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Percent Solid	94		%		07/29/16	I	SW846-%Solid
Soil Extraction for PCB	Completed				08/01/16	CC/V	SW3545A
Soil Extraction SVOA PAH	Completed				07/29/16	NB/CKV	SW3545A
Extraction of CT ETPH	Completed				07/29/16	NC/CK	SW3545A
Extraction for PCB	Completed					QQ/IR	SW3540C
Field Extraction	Completed				07/29/16		SW5035A
TPH by GC (Extractable Products)							
Ext. Petroleum HC	110	52	mg/Kg	1	07/30/16	JRB	CTETPH 8015D
Identification	**		mg/Kg	1	07/30/16	JRB	CTETPH 8015D
QA/QC Surrogates							
% n-Pentacosane	80		%	1	07/30/16	JRB	50 - 150 %
Polychlorinated Biphenyls							
PCB-1016	ND	350	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1221	ND	350	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1232	ND	350	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1242	ND	350	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1248	ND	350	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1254	ND	350	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1260	ND	350	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1262	ND	350	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1268	ND	350	ug/Kg	10	08/02/16	AW	SW8082A
QA/QC Surrogates							
% DCBP	108		%	10	08/02/16	AW	30 - 150 %
% TCMX	87		%	10	08/02/16	AW	30 - 150 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Volatiles							
1,1,1,2-Tetrachloroethane	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
1,1,1-Trichloroethane	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
1,1,2,2-Tetrachloroethane	ND	4.1	ug/Kg	1	08/01/16	JLI	SW8260
1,1,2-Trichloroethane	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
1,1-Dichloroethane	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
1,1-Dichloroethene	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
1,1-Dichloropropene	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
1,2,3-Trichlorobenzene	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
1,2,3-Trichloropropane	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
1,2,4-Trichlorobenzene	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
1,2,4-Trimethylbenzene	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
1,2-Dibromo-3-chloropropane	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
1,2-Dibromoethane	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
1,2-Dichlorobenzene	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
1,2-Dichloroethane	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
1,2-Dichloropropane	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
1,3,5-Trimethylbenzene	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
1,3-Dichlorobenzene	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
1,3-Dichloropropane	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
1,4-Dichlorobenzene	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
2,2-Dichloropropane	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
2-Chlorotoluene	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
2-Hexanone	ND	35	ug/Kg	1	08/01/16	JLI	SW8260
2-Isopropyltoluene	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
4-Chlorotoluene	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
4-Methyl-2-pentanone	ND	35	ug/Kg	1	08/01/16	JLI	SW8260
Acetone	ND	350	ug/Kg	1	08/01/16	JLI	SW8260
Acrylonitrile	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
Benzene	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
Bromobenzene	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
Bromochloromethane	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
Bromodichloromethane	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
Bromoform	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
Bromomethane	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
Carbon Disulfide	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
Carbon tetrachloride	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
Chlorobenzene	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
Chloroethane	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
Chloroform	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
Chloromethane	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
cis-1,2-Dichloroethene	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
cis-1,3-Dichloropropene	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
Dibromochloromethane	ND	4.1	ug/Kg	1	08/01/16	JLI	SW8260
Dibromomethane	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
Dichlorodifluoromethane	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
Ethylbenzene	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
Hexachlorobutadiene	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
Isopropylbenzene	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
m&p-Xylene	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
Methyl Ethyl Ketone	ND	41	ug/Kg	1	08/01/16	JLI	SW8260
Methyl t-butyl ether (MTBE)	ND	14	ug/Kg	1	08/01/16	JLI	SW8260
Methylene chloride	ND	14	ug/Kg	1	08/01/16	JLI	SW8260
Naphthalene	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
n-Butylbenzene	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
n-Propylbenzene	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
o-Xylene	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
p-Isopropyltoluene	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
sec-Butylbenzene	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
Styrene	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
tert-Butylbenzene	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
Tetrachloroethene	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
Tetrahydrofuran (THF)	ND	14	ug/Kg	1	08/01/16	JLI	SW8260
Toluene	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
Total Xylenes	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
trans-1,2-Dichloroethene	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
trans-1,3-Dichloropropene	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
trans-1,4-dichloro-2-butene	ND	14	ug/Kg	1	08/01/16	JLI	SW8260
Trichloroethene	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
Trichlorofluoromethane	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
Trichlorotrifluoroethane	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
Vinyl chloride	ND	6.9	ug/Kg	1	08/01/16	JLI	SW8260
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	101		%	1	08/01/16	JLI	70 - 130 %
% Bromofluorobenzene	91		%	1	08/01/16	JLI	70 - 130 %
% Dibromofluoromethane	100		%	1	08/01/16	JLI	70 - 130 %
% Toluene-d8	98		%	1	08/01/16	JLI	70 - 130 %

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

TPH Comment:
**Petroleum hydrocarbon chromatogram contains a multicomponent hydrocarbon distribution in the range of C16 to C36. The sample was quantitated against a C9-C36 alkane hydrocarbon standard.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
This report must not be reproduced except in full as defined by the attached chain of custody.

Phyllis Shiller

Phyllis Shiller, Laboratory Director
August 05, 2016
Reviewed and Released by: Ethan Lee, Project Manager

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

August 05, 2016

FOR: Attn: Ms. Stephanie Wierszchalek
Fuss & O'Neill EnviroScience, LLC
145 Hartford Road
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	CONCRETE	Collected by:		07/29/16	8:20
Location Code:	F&O	Received by:	LB	07/29/16	18:13
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	20160311.A10				

Laboratory Data

SDG ID: GBN83474
Phoenix ID: BN83477

Project ID: OLD HADDAM JAIL
Client ID: 1305160729-21

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Percent Solid	99		%		07/29/16	I	SW846-%Solid
Soil Extraction for PCB	Completed				08/01/16	CC/V	SW3545A
Soil Extraction SVOA PAH	Completed				07/29/16	NB/CKV	SW3545A
Extraction of CT ETPH	Completed				07/29/16	NC/CK	SW3545A
Extraction for PCB	Completed					QQ/IR	SW3540C
Field Extraction	Completed				07/29/16		SW5035A
TPH by GC (Extractable Products)							
Ext. Petroleum HC	ND	50	mg/Kg	1	07/30/16	JRB	CTETPH 8015D
Identification	ND		mg/Kg	1	07/30/16	JRB	CTETPH 8015D
QA/QC Surrogates							
% n-Pentacosane	67		%	1	07/30/16	JRB	50 - 150 %
Polychlorinated Biphenyls							
PCB-1016	ND	330	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1221	ND	330	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1232	ND	330	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1242	ND	330	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1248	ND	330	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1254	ND	330	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1260	ND	330	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1262	ND	330	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1268	ND	330	ug/Kg	10	08/02/16	AW	SW8082A
QA/QC Surrogates							
% DCBP	97		%	10	08/02/16	AW	30 - 150 %
% TCMX	78		%	10	08/02/16	AW	30 - 150 %

Project ID: OLD HADDAM JAIL
Client ID: 1305160729-21

Phoenix I.D.: BN83477

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Volatiles							
1,1,1,2-Tetrachloroethane	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
1,1,1-Trichloroethane	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
1,1,2,2-Tetrachloroethane	ND	2.6	ug/Kg	1	08/01/16	JLI	SW8260
1,1,2-Trichloroethane	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
1,1-Dichloroethane	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
1,1-Dichloroethene	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
1,1-Dichloropropene	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
1,2,3-Trichlorobenzene	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
1,2,3-Trichloropropane	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
1,2,4-Trichlorobenzene	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
1,2,4-Trimethylbenzene	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
1,2-Dibromo-3-chloropropane	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
1,2-Dibromoethane	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
1,2-Dichlorobenzene	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
1,2-Dichloroethane	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
1,2-Dichloropropane	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
1,3,5-Trimethylbenzene	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
1,3-Dichlorobenzene	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
1,3-Dichloropropane	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
1,4-Dichlorobenzene	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
2,2-Dichloropropane	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
2-Chlorotoluene	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
2-Hexanone	ND	22	ug/Kg	1	08/01/16	JLI	SW8260
2-Isopropyltoluene	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
4-Chlorotoluene	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
4-Methyl-2-pentanone	ND	22	ug/Kg	1	08/01/16	JLI	SW8260
Acetone	ND	220	ug/Kg	1	08/01/16	JLI	SW8260
Acrylonitrile	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
Benzene	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
Bromobenzene	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
Bromochloromethane	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
Bromodichloromethane	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
Bromoform	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
Bromomethane	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
Carbon Disulfide	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
Carbon tetrachloride	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
Chlorobenzene	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
Chloroethane	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
Chloroform	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
Chloromethane	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
cis-1,2-Dichloroethene	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
cis-1,3-Dichloropropene	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
Dibromochloromethane	ND	2.6	ug/Kg	1	08/01/16	JLI	SW8260
Dibromomethane	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
Dichlorodifluoromethane	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
Ethylbenzene	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
Hexachlorobutadiene	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
Isopropylbenzene	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
m&p-Xylene	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
Methyl Ethyl Ketone	ND	26	ug/Kg	1	08/01/16	JLI	SW8260
Methyl t-butyl ether (MTBE)	ND	8.7	ug/Kg	1	08/01/16	JLI	SW8260
Methylene chloride	ND	8.7	ug/Kg	1	08/01/16	JLI	SW8260
Naphthalene	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
n-Butylbenzene	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
n-Propylbenzene	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
o-Xylene	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
p-Isopropyltoluene	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
sec-Butylbenzene	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
Styrene	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
tert-Butylbenzene	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
Tetrachloroethene	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
Tetrahydrofuran (THF)	ND	8.7	ug/Kg	1	08/01/16	JLI	SW8260
Toluene	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
Total Xylenes	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
trans-1,2-Dichloroethene	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
trans-1,3-Dichloropropene	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
trans-1,4-dichloro-2-butene	ND	8.7	ug/Kg	1	08/01/16	JLI	SW8260
Trichloroethene	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
Trichlorofluoromethane	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
Trichlorotrifluoroethane	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
Vinyl chloride	ND	4.3	ug/Kg	1	08/01/16	JLI	SW8260
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	101		%	1	08/01/16	JLI	70 - 130 %
% Bromofluorobenzene	93		%	1	08/01/16	JLI	70 - 130 %
% Dibromofluoromethane	97		%	1	08/01/16	JLI	70 - 130 %
% Toluene-d8	100		%	1	08/01/16	JLI	70 - 130 %

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected   BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
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Phyllis Shiller

Phyllis Shiller, Laboratory Director

August 05, 2016

Reviewed and Released by: Ethan Lee, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

August 05, 2016

FOR: Attn: Ms. Stephanie Wierszchalek
Fuss & O'Neill EnviroScience, LLC
145 Hartford Road
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		07/29/16	9:15
Location Code:	F&O	Received by:	LB	07/29/16	18:13
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	20160311.A10				

Laboratory Data

SDG ID: GBN83474
Phoenix ID: BN83478

Project ID: OLD HADDAM JAIL
Client ID: 1305160729-22

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Percent Solid	77		%		07/29/16	I	SW846-%Solid
Soil Extraction for PCB	Completed				08/01/16	CC/V	SW3545A
Extraction of CT ETPH	Completed				08/01/16	BJ/CK	SW3545A
Extraction for PCB	Completed					QQ/IR	SW3540C
TPH by GC (Extractable Products)							
Ext. Petroleum HC	470	320	mg/Kg	5	08/03/16	JRB	CTETPH 8015D
Identification	**		mg/Kg	5	08/03/16	JRB	CTETPH 8015D
QA/QC Surrogates							
% n-Pentacosane	59		%	5	08/03/16	JRB	50 - 150 %
Polychlorinated Biphenyls							
PCB-1016	ND	620	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1221	ND	620	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1232	ND	620	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1242	ND	620	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1248	ND	620	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1254	ND	620	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1260	ND	620	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1262	ND	620	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1268	ND	620	ug/Kg	10	08/02/16	AW	SW8082A
QA/QC Surrogates							
% DCBP	93		%	10	08/02/16	AW	30 - 150 %
% TCMX	51		%	10	08/02/16	AW	30 - 150 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

TPH Comment:
**Petroleum hydrocarbon chromatogram contains a multicomponent hydrocarbon distribution in the range of C9 to C36. The sample was quantitated against a C9-C36 alkane hydrocarbon standard.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
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Phyllis Shiller, Laboratory Director
August 05, 2016
Reviewed and Released by: Ethan Lee, Project Manager

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

August 05, 2016

FOR: Attn: Ms. Stephanie Wierszchalek
Fuss & O'Neill EnviroScience, LLC
145 Hartford Road
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		07/29/16	9:30
Location Code:	F&O	Received by:	LB	07/29/16	18:13
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	20160311.A10				

Laboratory Data

SDG ID: GBN83474
Phoenix ID: BN83479

Project ID: OLD HADDAM JAIL
Client ID: 1305160729-23

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Percent Solid	76		%		07/29/16	I	SW846-%Solid
Soil Extraction for PCB	Completed				08/01/16	CC/V	SW3545A
Extraction of CT ETPH	Completed				08/01/16	BJ/CK	SW3545A
Extraction for PCB	Completed					QQ/IR	SW3540C
TPH by GC (Extractable Products)							
Ext. Petroleum HC	ND	330	mg/Kg	5	08/03/16	JRB	CTETPH 8015D
Identification	ND		mg/Kg	5	08/03/16	JRB	CTETPH 8015D
QA/QC Surrogates							
% n-Pentacosane	69		%	5	08/03/16	JRB	50 - 150 %
Polychlorinated Biphenyls							
PCB-1016	ND	640	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1221	ND	640	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1232	ND	640	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1242	ND	640	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1248	ND	640	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1254	ND	640	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1260	ND	640	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1262	ND	640	ug/Kg	10	08/02/16	AW	SW8082A
PCB-1268	ND	640	ug/Kg	10	08/02/16	AW	SW8082A
QA/QC Surrogates							
% DCBP	126		%	10	08/02/16	AW	30 - 150 %
% TCMX	64		%	10	08/02/16	AW	30 - 150 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
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Phyllis Shiller

Phyllis Shiller, Laboratory Director
August 05, 2016
Reviewed and Released by: Ethan Lee, Project Manager

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

August 05, 2016

FOR: Attn: Ms. Stephanie Wierszchalek
Fuss & O'Neill EnviroScience, LLC
145 Hartford Road
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		07/29/16	10:50
Location Code:	F&O	Received by:	LB	07/29/16	18:13
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	20160311.A10				

Laboratory Data

SDG ID: GBN83474
Phoenix ID: BN83480

Project ID: OLD HADDAM JAIL
Client ID: 1305160729-24

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Percent Solid	93		%		07/29/16	I	SW846-%Solid
Soil Extraction SVOA PAH	Completed				07/29/16	NB/CKV	SW3545A
Extraction of CT ETPH	Completed				07/29/16	NC/CK	SW3545A
Field Extraction	Completed				07/29/16		SW5035A
TPH by GC (Extractable Products)							
Ext. Petroleum HC	ND	53	mg/Kg	1	07/30/16	JRB	CTETPH 8015D
Identification	ND		mg/Kg	1	07/30/16	JRB	CTETPH 8015D
QA/QC Surrogates							
% n-Pentacosane	78		%	1	07/30/16	JRB	50 - 150 %
Volatiles							
1,1,1,2-Tetrachloroethane	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
1,1,1-Trichloroethane	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
1,1,2,2-Tetrachloroethane	ND	3.1	ug/Kg	1	08/01/16	JLI	SW8260
1,1,2-Trichloroethane	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
1,1-Dichloroethane	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
1,1-Dichloroethene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
1,1-Dichloropropene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
1,2,3-Trichlorobenzene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
1,2,3-Trichloropropane	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
1,2,4-Trichlorobenzene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
1,2,4-Trimethylbenzene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
1,2-Dibromo-3-chloropropane	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
1,2-Dibromoethane	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
1,2-Dichlorobenzene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
1,2-Dichloroethane	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
1,2-Dichloropropane	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260

Project ID: OLD HADDAM JAIL
Client ID: 1305160729-24

Phoenix I.D.: BN83480

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
1,3,5-Trimethylbenzene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
1,3-Dichlorobenzene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
1,3-Dichloropropane	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
1,4-Dichlorobenzene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
2,2-Dichloropropane	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
2-Chlorotoluene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
2-Hexanone	ND	26	ug/Kg	1	08/01/16	JLI	SW8260
2-Isopropyltoluene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
4-Chlorotoluene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
4-Methyl-2-pentanone	ND	26	ug/Kg	1	08/01/16	JLI	SW8260
Acetone	ND	260	ug/Kg	1	08/01/16	JLI	SW8260
Acrylonitrile	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Benzene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Bromobenzene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Bromochloromethane	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Bromodichloromethane	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Bromoform	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Bromomethane	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Carbon Disulfide	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Carbon tetrachloride	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Chlorobenzene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Chloroethane	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Chloroform	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Chloromethane	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
cis-1,2-Dichloroethene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
cis-1,3-Dichloropropene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Dibromochloromethane	ND	3.1	ug/Kg	1	08/01/16	JLI	SW8260
Dibromomethane	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Dichlorodifluoromethane	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Ethylbenzene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Hexachlorobutadiene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Isopropylbenzene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
m&p-Xylene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Methyl Ethyl Ketone	ND	31	ug/Kg	1	08/01/16	JLI	SW8260
Methyl t-butyl ether (MTBE)	ND	10	ug/Kg	1	08/01/16	JLI	SW8260
Methylene chloride	ND	10	ug/Kg	1	08/01/16	JLI	SW8260
Naphthalene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
n-Butylbenzene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
n-Propylbenzene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
o-Xylene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
p-Isopropyltoluene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
sec-Butylbenzene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Styrene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
tert-Butylbenzene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Tetrachloroethene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Tetrahydrofuran (THF)	ND	10	ug/Kg	1	08/01/16	JLI	SW8260
Toluene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Total Xylenes	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
trans-1,2-Dichloroethene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
trans-1,3-Dichloropropene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
trans-1,4-dichloro-2-butene	ND	10	ug/Kg	1	08/01/16	JLI	SW8260
Trichloroethene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Trichlorofluoromethane	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Trichlorotrifluoroethane	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Vinyl chloride	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	97		%	1	08/01/16	JLI	70 - 130 %
% Bromofluorobenzene	90		%	1	08/01/16	JLI	70 - 130 %
% Dibromofluoromethane	97		%	1	08/01/16	JLI	70 - 130 %
% Toluene-d8	98		%	1	08/01/16	JLI	70 - 130 %
Polynuclear Aromatic HC							
2-Methylnaphthalene	ND	240	ug/Kg	1	08/01/16	DD	SW8270D
Acenaphthene	ND	240	ug/Kg	1	08/01/16	DD	SW8270D
Acenaphthylene	ND	240	ug/Kg	1	08/01/16	DD	SW8270D
Anthracene	ND	240	ug/Kg	1	08/01/16	DD	SW8270D
Benz(a)anthracene	ND	240	ug/Kg	1	08/01/16	DD	SW8270D
Benzo(a)pyrene	ND	240	ug/Kg	1	08/01/16	DD	SW8270D
Benzo(b)fluoranthene	ND	240	ug/Kg	1	08/01/16	DD	SW8270D
Benzo(ghi)perylene	ND	240	ug/Kg	1	08/01/16	DD	SW8270D
Benzo(k)fluoranthene	ND	240	ug/Kg	1	08/01/16	DD	SW8270D
Chrysene	ND	240	ug/Kg	1	08/01/16	DD	SW8270D
Dibenz(a,h)anthracene	ND	240	ug/Kg	1	08/01/16	DD	SW8270D
Fluoranthene	ND	240	ug/Kg	1	08/01/16	DD	SW8270D
Fluorene	ND	240	ug/Kg	1	08/01/16	DD	SW8270D
Indeno(1,2,3-cd)pyrene	ND	240	ug/Kg	1	08/01/16	DD	SW8270D
Naphthalene	ND	240	ug/Kg	1	08/01/16	DD	SW8270D
Phenanthrene	ND	240	ug/Kg	1	08/01/16	DD	SW8270D
Pyrene	ND	240	ug/Kg	1	08/01/16	DD	SW8270D
QA/QC Surrogates							
% 2-Fluorobiphenyl	71		%	1	08/01/16	DD	30 - 130 %
% Nitrobenzene-d5	65		%	1	08/01/16	DD	30 - 130 %
% Terphenyl-d14	67		%	1	08/01/16	DD	30 - 130 %

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
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Phyllis Shiller, Laboratory Director
August 05, 2016
Reviewed and Released by: Ethan Lee, Project Manager

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

August 05, 2016

FOR: Attn: Ms. Stephanie Wierszchalek
Fuss & O'Neill EnviroScience, LLC
145 Hartford Road
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		07/29/16	11:45
Location Code:	F&O	Received by:	LB	07/29/16	18:13
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	20160311.A10				

Laboratory Data

SDG ID: GBN83474
Phoenix ID: BN83481

Project ID: OLD HADDAM JAIL
Client ID: 1305160729-25

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Percent Solid	94		%		07/29/16	I	SW846-%Solid
Soil Extraction SVOA PAH	Completed				07/29/16	NB/CKV	SW3545A
Extraction of CT ETPH	Completed				07/29/16	NC/CK	SW3545A
Field Extraction	Completed				07/29/16		SW5035A
TPH by GC (Extractable Products)							
Ext. Petroleum HC	ND	53	mg/Kg	1	07/30/16	JRB	CTETPH 8015D
Identification	ND		mg/Kg	1	07/30/16	JRB	CTETPH 8015D
QA/QC Surrogates							
% n-Pentacosane	75		%	1	07/30/16	JRB	50 - 150 %
Volatiles							
1,1,1,2-Tetrachloroethane	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
1,1,1-Trichloroethane	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
1,1,2,2-Tetrachloroethane	ND	3.0	ug/Kg	1	08/01/16	JLI	SW8260
1,1,2-Trichloroethane	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
1,1-Dichloroethane	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
1,1-Dichloroethene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
1,1-Dichloropropene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
1,2,3-Trichlorobenzene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
1,2,3-Trichloropropane	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
1,2,4-Trichlorobenzene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
1,2,4-Trimethylbenzene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
1,2-Dibromo-3-chloropropane	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
1,2-Dibromoethane	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
1,2-Dichlorobenzene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
1,2-Dichloroethane	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
1,2-Dichloropropane	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260

Project ID: OLD HADDAM JAIL
Client ID: 1305160729-25

Phoenix I.D.: BN83481

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
1,3,5-Trimethylbenzene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
1,3-Dichlorobenzene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
1,3-Dichloropropane	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
1,4-Dichlorobenzene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
2,2-Dichloropropane	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
2-Chlorotoluene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
2-Hexanone	ND	25	ug/Kg	1	08/01/16	JLI	SW8260
2-Isopropyltoluene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
4-Chlorotoluene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
4-Methyl-2-pentanone	ND	25	ug/Kg	1	08/01/16	JLI	SW8260
Acetone	ND	250	ug/Kg	1	08/01/16	JLI	SW8260
Acrylonitrile	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Benzene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Bromobenzene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Bromochloromethane	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Bromodichloromethane	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Bromoform	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Bromomethane	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Carbon Disulfide	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Carbon tetrachloride	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Chlorobenzene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Chloroethane	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Chloroform	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Chloromethane	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
cis-1,2-Dichloroethene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
cis-1,3-Dichloropropene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Dibromochloromethane	ND	3.0	ug/Kg	1	08/01/16	JLI	SW8260
Dibromomethane	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Dichlorodifluoromethane	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Ethylbenzene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Hexachlorobutadiene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Isopropylbenzene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
m&p-Xylene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Methyl Ethyl Ketone	ND	30	ug/Kg	1	08/01/16	JLI	SW8260
Methyl t-butyl ether (MTBE)	ND	10	ug/Kg	1	08/01/16	JLI	SW8260
Methylene chloride	ND	10	ug/Kg	1	08/01/16	JLI	SW8260
Naphthalene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
n-Butylbenzene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
n-Propylbenzene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
o-Xylene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
p-Isopropyltoluene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
sec-Butylbenzene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Styrene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
tert-Butylbenzene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Tetrachloroethene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Tetrahydrofuran (THF)	ND	10	ug/Kg	1	08/01/16	JLI	SW8260
Toluene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Total Xylenes	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
trans-1,2-Dichloroethene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
trans-1,3-Dichloropropene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
trans-1,4-dichloro-2-butene	ND	10	ug/Kg	1	08/01/16	JLI	SW8260
Trichloroethene	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Trichlorofluoromethane	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Trichlorotrifluoroethane	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
Vinyl chloride	ND	5.1	ug/Kg	1	08/01/16	JLI	SW8260
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	98		%	1	08/01/16	JLI	70 - 130 %
% Bromofluorobenzene	89		%	1	08/01/16	JLI	70 - 130 %
% Dibromofluoromethane	100		%	1	08/01/16	JLI	70 - 130 %
% Toluene-d8	97		%	1	08/01/16	JLI	70 - 130 %
Polynuclear Aromatic HC							
2-Methylnaphthalene	ND	240	ug/Kg	1	07/30/16	DD	SW8270D
Acenaphthene	ND	240	ug/Kg	1	07/30/16	DD	SW8270D
Acenaphthylene	ND	240	ug/Kg	1	07/30/16	DD	SW8270D
Anthracene	ND	240	ug/Kg	1	07/30/16	DD	SW8270D
Benz(a)anthracene	ND	240	ug/Kg	1	07/30/16	DD	SW8270D
Benzo(a)pyrene	ND	240	ug/Kg	1	07/30/16	DD	SW8270D
Benzo(b)fluoranthene	ND	240	ug/Kg	1	07/30/16	DD	SW8270D
Benzo(ghi)perylene	ND	240	ug/Kg	1	07/30/16	DD	SW8270D
Benzo(k)fluoranthene	ND	240	ug/Kg	1	07/30/16	DD	SW8270D
Chrysene	ND	240	ug/Kg	1	07/30/16	DD	SW8270D
Dibenz(a,h)anthracene	ND	240	ug/Kg	1	07/30/16	DD	SW8270D
Fluoranthene	ND	240	ug/Kg	1	07/30/16	DD	SW8270D
Fluorene	ND	240	ug/Kg	1	07/30/16	DD	SW8270D
Indeno(1,2,3-cd)pyrene	ND	240	ug/Kg	1	07/30/16	DD	SW8270D
Naphthalene	ND	240	ug/Kg	1	07/30/16	DD	SW8270D
Phenanthrene	ND	240	ug/Kg	1	07/30/16	DD	SW8270D
Pyrene	ND	240	ug/Kg	1	07/30/16	DD	SW8270D
QA/QC Surrogates							
% 2-Fluorobiphenyl	69		%	1	07/30/16	DD	30 - 130 %
% Nitrobenzene-d5	68		%	1	07/30/16	DD	30 - 130 %
% Terphenyl-d14	71		%	1	07/30/16	DD	30 - 130 %

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
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Phyllis Shiller

Phyllis Shiller, Laboratory Director
August 05, 2016
Reviewed and Released by: Ethan Lee, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

August 05, 2016

FOR: Attn: Ms. Stephanie Wierszchalek
Fuss & O'Neill EnviroScience, LLC
145 Hartford Road
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		07/29/16	14:00
Location Code:	F&O	Received by:	LB	07/29/16	18:13
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	20160311.A10				

Laboratory Data

SDG ID: GBN83474
Phoenix ID: BN83482

Project ID: OLD HADDAM JAIL
Client ID: 1305160729-27

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Arsenic	5.88	0.85	mg/Kg	1	08/02/16	LK	SW6010C
Lead	147	0.42	mg/Kg	1	08/02/16	LK	SW6010C
Percent Solid	83		%		07/29/16	I	SW846-%Solid
Soil Extraction for Pesticide	Completed				07/29/16	CC/V	SW3545A
Total Metals Digest	Completed				07/29/16	X/AG	SW3050B

Pesticides

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
4,4' -DDD	ND	7.9	ug/Kg	2	08/01/16	CE	SW8081B
4,4' -DDE	3.1	2.0	ug/Kg	2	08/01/16	CE	SW8081B
4,4' -DDT	10	7.9	ug/Kg	2	08/01/16	CE	SW8081B
a-BHC	ND	7.9	ug/Kg	2	08/01/16	CE	SW8081B
Alachlor	ND	7.9	ug/Kg	2	08/01/16	CE	SW8081B
Aldrin	ND	3.9	ug/Kg	2	08/01/16	CE	SW8081B
b-BHC	ND	7.9	ug/Kg	2	08/01/16	CE	SW8081B
Chlordane	ND	39	ug/Kg	2	08/01/16	CE	SW8081B
d-BHC	ND	7.9	ug/Kg	2	08/01/16	CE	SW8081B
Dieldrin	ND	3.9	ug/Kg	2	08/01/16	CE	SW8081B
Endosulfan I	ND	7.9	ug/Kg	2	08/01/16	CE	SW8081B
Endosulfan II	ND	7.9	ug/Kg	2	08/01/16	CE	SW8081B
Endosulfan sulfate	ND	7.9	ug/Kg	2	08/01/16	CE	SW8081B
Endrin	ND	7.9	ug/Kg	2	08/01/16	CE	SW8081B
Endrin aldehyde	ND	7.9	ug/Kg	2	08/01/16	CE	SW8081B
Endrin ketone	ND	7.9	ug/Kg	2	08/01/16	CE	SW8081B
g-BHC	ND	1.6	ug/Kg	2	08/01/16	CE	SW8081B
Heptachlor	ND	7.9	ug/Kg	2	08/01/16	CE	SW8081B
Heptachlor epoxide	ND	7.9	ug/Kg	2	08/01/16	CE	SW8081B
Methoxychlor	ND	39	ug/Kg	2	08/01/16	CE	SW8081B
Toxaphene	ND	160	ug/Kg	2	08/01/16	CE	SW8081B

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
QA/QC Surrogates							
% DCBP	75		%	2	08/01/16	CE	30 - 150 %
% TCMX	57		%	2	08/01/16	CE	30 - 150 %
Client MS/MSD	Completed				07/30/16		

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

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Phyllis Shiller, Laboratory Director
August 05, 2016
Reviewed and Released by: Ethan Lee, Project Manager

Environmental Laboratories, Inc.

587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

August 05, 2016

FOR: Attn: Ms. Stephanie Wierszchalek
Fuss & O'Neill EnviroScience, LLC
145 Hartford Road
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		07/29/16	14:30
Location Code:	F&O	Received by:	LB	07/29/16	18:13
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	20160311.A10				

Laboratory Data

SDG ID: GBN83474
Phoenix ID: BN83484

Project ID: OLD HADDAM JAIL
Client ID: 1305160729-29

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Arsenic	4.69	0.84	mg/Kg	1	08/02/16	LK	SW6010C
Lead	361	4.2	mg/Kg	10	08/03/16	LK	SW6010C
Percent Solid	83		%		07/29/16	I	SW846-%Solid
Soil Extraction for Pesticide	Completed				07/29/16	CC/V	SW3545A
Total Metals Digest	Completed				07/29/16	X/AG/BF	SW3050B

Pesticides

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
4,4' -DDD	ND	8.0	ug/Kg	2	08/03/16	CE	SW8081B
4,4' -DDE	320	40	ug/Kg	10	08/01/16	CE	SW8081B
4,4' -DDT	290	40	ug/Kg	10	08/01/16	CE	SW8081B
a-BHC	ND	8.0	ug/Kg	2	08/03/16	CE	SW8081B
Alachlor	ND	8.0	ug/Kg	2	08/03/16	CE	SW8081B
Aldrin	ND	4.0	ug/Kg	2	08/03/16	CE	SW8081B
b-BHC	ND	8.0	ug/Kg	2	08/03/16	CE	SW8081B
Chlordane	ND	40	ug/Kg	2	08/03/16	CE	SW8081B
d-BHC	ND	8.0	ug/Kg	2	08/03/16	CE	SW8081B
Dieldrin	ND	4.0	ug/Kg	2	08/03/16	CE	SW8081B
Endosulfan I	ND	8.0	ug/Kg	2	08/03/16	CE	SW8081B
Endosulfan II	ND	8.0	ug/Kg	2	08/03/16	CE	SW8081B
Endosulfan sulfate	ND	8.0	ug/Kg	2	08/03/16	CE	SW8081B
Endrin	ND	8.0	ug/Kg	2	08/03/16	CE	SW8081B
Endrin aldehyde	ND	8.0	ug/Kg	2	08/03/16	CE	SW8081B
Endrin ketone	ND	8.0	ug/Kg	2	08/03/16	CE	SW8081B
g-BHC	ND	1.6	ug/Kg	2	08/03/16	CE	SW8081B
Heptachlor	ND	8.0	ug/Kg	2	08/03/16	CE	SW8081B
Heptachlor epoxide	ND	8.0	ug/Kg	2	08/03/16	CE	SW8081B
Methoxychlor	ND	40	ug/Kg	2	08/03/16	CE	SW8081B
Toxaphene	ND	160	ug/Kg	2	08/03/16	CE	SW8081B

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
QA/QC Surrogates							
% DCBP	65		%	2	08/03/16	CE	30 - 150 %
% TCMX	47		%	2	08/03/16	CE	30 - 150 %

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

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Phyllis Shiller, Laboratory Director
August 05, 2016
Reviewed and Released by: Ethan Lee, Project Manager

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

August 05, 2016

FOR: Attn: Ms. Stephanie Wierszchalek
Fuss & O'Neill EnviroScience, LLC
145 Hartford Road
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		07/29/16	15:00
Location Code:	F&O	Received by:	LB	07/29/16	18:13
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	20160311.A10				

Laboratory Data

SDG ID: GBN83474
Phoenix ID: BN83486

Project ID: OLD HADDAM JAIL
Client ID: 1305160729-31

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Arsenic	3.23	0.84	mg/Kg	1	08/02/16	LK	SW6010C
Lead	23.1	0.42	mg/Kg	1	08/02/16	LK	SW6010C
Percent Solid	85		%		07/29/16	I	SW846-%Solid
Soil Extraction for Pesticide	Completed				07/29/16	CC/V	SW3545A
Total Metals Digest	Completed				07/29/16	X/AG/BF	SW3050B
Pesticides							
4,4' -DDD	ND	7.8	ug/Kg	2	08/01/16	MH	SW8081B
4,4' -DDE	ND	7.8	ug/Kg	2	08/01/16	MH	SW8081B
4,4' -DDT	ND	7.8	ug/Kg	2	08/01/16	MH	SW8081B
a-BHC	ND	7.8	ug/Kg	2	08/01/16	MH	SW8081B
Alachlor	ND	7.8	ug/Kg	2	08/01/16	MH	SW8081B
Aldrin	ND	3.9	ug/Kg	2	08/01/16	MH	SW8081B
b-BHC	ND	7.8	ug/Kg	2	08/01/16	MH	SW8081B
Chlordane	ND	39	ug/Kg	2	08/01/16	MH	SW8081B
d-BHC	ND	7.8	ug/Kg	2	08/01/16	MH	SW8081B
Dieldrin	ND	3.9	ug/Kg	2	08/01/16	MH	SW8081B
Endosulfan I	ND	7.8	ug/Kg	2	08/01/16	MH	SW8081B
Endosulfan II	ND	7.8	ug/Kg	2	08/01/16	MH	SW8081B
Endosulfan sulfate	ND	7.8	ug/Kg	2	08/01/16	MH	SW8081B
Endrin	ND	7.8	ug/Kg	2	08/01/16	MH	SW8081B
Endrin aldehyde	ND	7.8	ug/Kg	2	08/01/16	MH	SW8081B
Endrin ketone	ND	7.8	ug/Kg	2	08/01/16	MH	SW8081B
g-BHC	ND	1.6	ug/Kg	2	08/01/16	MH	SW8081B
Heptachlor	ND	7.8	ug/Kg	2	08/01/16	MH	SW8081B
Heptachlor epoxide	ND	7.8	ug/Kg	2	08/01/16	MH	SW8081B
Methoxychlor	ND	39	ug/Kg	2	08/01/16	MH	SW8081B
Toxaphene	ND	160	ug/Kg	2	08/01/16	MH	SW8081B

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
QA/QC Surrogates							
% DCBP	68		%	2	08/01/16	MH	30 - 150 %
% TCMX	57		%	2	08/01/16	MH	30 - 150 %

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected   BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

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Phyllis Shiller

Phyllis Shiller, Laboratory Director
August 05, 2016
Reviewed and Released by: Ethan Lee, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

August 05, 2016

FOR: Attn: Ms. Stephanie Wierszchalek
Fuss & O'Neill EnviroScience, LLC
145 Hartford Road
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		07/29/16	15:55
Location Code:	F&O	Received by:	LB	07/29/16	18:13
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	20160311.A10				

Laboratory Data

SDG ID: GBN83474
Phoenix ID: BN83488

Project ID: OLD HADDAM JAIL
Client ID: 1305160729-33

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Percent Solid	93		%		07/29/16	I	SW846-%Solid
Soil Extraction SVOA PAH	Completed				07/29/16	NB/CKV	SW3545A
Extraction of CT ETPH	Completed				07/29/16	NC/CK	SW3545A
Field Extraction	Completed				07/29/16		SW5035A
TPH by GC (Extractable Products)							
Ext. Petroleum HC	ND	53	mg/Kg	1	08/01/16	JRB	CTETPH 8015D
Identification	ND		mg/Kg	1	08/01/16	JRB	CTETPH 8015D
QA/QC Surrogates							
% n-Pentacosane	62		%	1	08/01/16	JRB	50 - 150 %
Volatiles							
1,1,1,2-Tetrachloroethane	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
1,1,1-Trichloroethane	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
1,1,2,2-Tetrachloroethane	ND	3.1	ug/Kg	1	08/01/16	JLI	SW8260
1,1,2-Trichloroethane	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
1,1-Dichloroethane	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
1,1-Dichloroethene	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
1,1-Dichloropropene	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
1,2,3-Trichlorobenzene	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
1,2,3-Trichloropropane	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
1,2,4-Trichlorobenzene	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
1,2,4-Trimethylbenzene	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
1,2-Dibromo-3-chloropropane	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
1,2-Dibromoethane	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
1,2-Dichlorobenzene	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
1,2-Dichloroethane	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
1,2-Dichloropropane	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260

Project ID: OLD HADDAM JAIL
Client ID: 1305160729-33

Phoenix I.D.: BN83488

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
1,3,5-Trimethylbenzene	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
1,3-Dichlorobenzene	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
1,3-Dichloropropane	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
1,4-Dichlorobenzene	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
2,2-Dichloropropane	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
2-Chlorotoluene	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
2-Hexanone	ND	26	ug/Kg	1	08/01/16	JLI	SW8260
2-Isopropyltoluene	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
4-Chlorotoluene	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
4-Methyl-2-pentanone	ND	26	ug/Kg	1	08/01/16	JLI	SW8260
Acetone	ND	260	ug/Kg	1	08/01/16	JLI	SW8260
Acrylonitrile	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
Benzene	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
Bromobenzene	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
Bromochloromethane	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
Bromodichloromethane	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
Bromoform	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
Bromomethane	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
Carbon Disulfide	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
Carbon tetrachloride	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
Chlorobenzene	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
Chloroethane	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
Chloroform	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
Chloromethane	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
cis-1,2-Dichloroethene	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
cis-1,3-Dichloropropene	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
Dibromochloromethane	ND	3.1	ug/Kg	1	08/01/16	JLI	SW8260
Dibromomethane	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
Dichlorodifluoromethane	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
Ethylbenzene	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
Hexachlorobutadiene	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
Isopropylbenzene	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
m&p-Xylene	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
Methyl Ethyl Ketone	ND	31	ug/Kg	1	08/01/16	JLI	SW8260
Methyl t-butyl ether (MTBE)	ND	10	ug/Kg	1	08/01/16	JLI	SW8260
Methylene chloride	ND	10	ug/Kg	1	08/01/16	JLI	SW8260
Naphthalene	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
n-Butylbenzene	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
n-Propylbenzene	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
o-Xylene	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
p-Isopropyltoluene	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
sec-Butylbenzene	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
Styrene	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
tert-Butylbenzene	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
Tetrachloroethene	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
Tetrahydrofuran (THF)	ND	10	ug/Kg	1	08/01/16	JLI	SW8260
Toluene	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
Total Xylenes	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
trans-1,2-Dichloroethene	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
trans-1,3-Dichloropropene	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
trans-1,4-dichloro-2-butene	ND	10	ug/Kg	1	08/01/16	JLI	SW8260
Trichloroethene	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
Trichlorofluoromethane	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
Trichlorotrifluoroethane	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
Vinyl chloride	ND	5.2	ug/Kg	1	08/01/16	JLI	SW8260
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	100		%	1	08/01/16	JLI	70 - 130 %
% Bromofluorobenzene	93		%	1	08/01/16	JLI	70 - 130 %
% Dibromofluoromethane	96		%	1	08/01/16	JLI	70 - 130 %
% Toluene-d8	98		%	1	08/01/16	JLI	70 - 130 %
Polynuclear Aromatic HC							
2-Methylnaphthalene	ND	250	ug/Kg	1	08/01/16	DD	SW8270D
Acenaphthene	ND	250	ug/Kg	1	08/01/16	DD	SW8270D
Acenaphthylene	ND	250	ug/Kg	1	08/01/16	DD	SW8270D
Anthracene	ND	250	ug/Kg	1	08/01/16	DD	SW8270D
Benz(a)anthracene	ND	250	ug/Kg	1	08/01/16	DD	SW8270D
Benzo(a)pyrene	ND	250	ug/Kg	1	08/01/16	DD	SW8270D
Benzo(b)fluoranthene	ND	250	ug/Kg	1	08/01/16	DD	SW8270D
Benzo(ghi)perylene	ND	250	ug/Kg	1	08/01/16	DD	SW8270D
Benzo(k)fluoranthene	ND	250	ug/Kg	1	08/01/16	DD	SW8270D
Chrysene	ND	250	ug/Kg	1	08/01/16	DD	SW8270D
Dibenz(a,h)anthracene	ND	250	ug/Kg	1	08/01/16	DD	SW8270D
Fluoranthene	ND	250	ug/Kg	1	08/01/16	DD	SW8270D
Fluorene	ND	250	ug/Kg	1	08/01/16	DD	SW8270D
Indeno(1,2,3-cd)pyrene	ND	250	ug/Kg	1	08/01/16	DD	SW8270D
Naphthalene	ND	250	ug/Kg	1	08/01/16	DD	SW8270D
Phenanthrene	ND	250	ug/Kg	1	08/01/16	DD	SW8270D
Pyrene	ND	250	ug/Kg	1	08/01/16	DD	SW8270D
QA/QC Surrogates							
% 2-Fluorobiphenyl	65		%	1	08/01/16	DD	30 - 130 %
% Nitrobenzene-d5	57		%	1	08/01/16	DD	30 - 130 %
% Terphenyl-d14	59		%	1	08/01/16	DD	30 - 130 %

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

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Phyllis Shiller

Phyllis Shiller, Laboratory Director
August 05, 2016
Reviewed and Released by: Ethan Lee, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

August 05, 2016

FOR: Attn: Ms. Stephanie Wierszchalek
Fuss & O'Neill EnviroScience, LLC
145 Hartford Road
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		07/29/16	15:58
Location Code:	F&O	Received by:	LB	07/29/16	18:13
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	20160311.A10				

Laboratory Data

SDG ID: GBN83474
Phoenix ID: BN83489

Project ID: OLD HADDAM JAIL
Client ID: 1305160729-34

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Field Extraction	Completed				07/29/16		SW5035A
Volatiles							
1,1,1,2-Tetrachloroethane	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
1,1,1-Trichloroethane	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
1,1,2,2-Tetrachloroethane	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
1,1,2-Trichloroethane	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
1,1-Dichloroethane	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
1,1-Dichloroethene	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
1,1-Dichloropropene	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
1,2,3-Trichlorobenzene	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
1,2,3-Trichloropropane	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
1,2,4-Trichlorobenzene	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
1,2,4-Trimethylbenzene	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
1,2-Dibromo-3-chloropropane	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
1,2-Dibromoethane	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
1,2-Dichlorobenzene	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
1,2-Dichloroethane	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
1,2-Dichloropropane	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
1,3,5-Trimethylbenzene	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
1,3-Dichlorobenzene	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
1,3-Dichloropropane	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
1,4-Dichlorobenzene	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
2,2-Dichloropropane	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
2-Chlorotoluene	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
2-Hexanone	ND	1300	ug/Kg	50	08/01/16	JLI	SW8260
2-Isopropyltoluene	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
4-Chlorotoluene	ND	250	ug/Kg	50	08/01/16	JLI	SW8260

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
4-Methyl-2-pentanone	ND	1300	ug/Kg	50	08/01/16	JLI	SW8260
Acetone	ND	5000	ug/Kg	50	08/01/16	JLI	SW8260
Acrylonitrile	ND	500	ug/Kg	50	08/01/16	JLI	SW8260
Benzene	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
Bromobenzene	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
Bromochloromethane	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
Bromodichloromethane	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
Bromoform	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
Bromomethane	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
Carbon Disulfide	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
Carbon tetrachloride	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
Chlorobenzene	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
Chloroethane	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
Chloroform	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
Chloromethane	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
cis-1,2-Dichloroethene	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
cis-1,3-Dichloropropene	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
Dibromochloromethane	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
Dibromomethane	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
Dichlorodifluoromethane	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
Ethylbenzene	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
Hexachlorobutadiene	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
Isopropylbenzene	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
m&p-Xylene	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
Methyl Ethyl Ketone	ND	3000	ug/Kg	50	08/01/16	JLI	SW8260
Methyl t-butyl ether (MTBE)	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
Methylene chloride	ND	500	ug/Kg	50	08/01/16	JLI	SW8260
Naphthalene	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
n-Butylbenzene	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
n-Propylbenzene	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
o-Xylene	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
p-Isopropyltoluene	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
sec-Butylbenzene	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
Styrene	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
tert-Butylbenzene	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
Tetrachloroethene	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
Tetrahydrofuran (THF)	ND	500	ug/Kg	50	08/01/16	JLI	SW8260
Toluene	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
Total Xylenes	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
trans-1,2-Dichloroethene	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
trans-1,3-Dichloropropene	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
trans-1,4-dichloro-2-butene	ND	500	ug/Kg	50	08/01/16	JLI	SW8260
Trichloroethene	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
Trichlorofluoromethane	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
Trichlorotrifluoroethane	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
Vinyl chloride	ND	250	ug/Kg	50	08/01/16	JLI	SW8260
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	101		%	50	08/01/16	JLI	70 - 130 %
% Bromofluorobenzene	95		%	50	08/01/16	JLI	70 - 130 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
% Dibromofluoromethane	97		%	50	08/01/16	JLI	70 - 130 %
% Toluene-d8	98		%	50	08/01/16	JLI	70 - 130 %

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight., TRIP BLANK INCLUDED.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
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Phyllis Shiller

Phyllis Shiller, Laboratory Director
August 05, 2016
Reviewed and Released by: Ethan Lee, Project Manager

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

August 05, 2016

FOR: Attn: Ms. Stephanie Wierszchalek
Fuss & O'Neill EnviroScience, LLC
145 Hartford Road
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		07/29/16	16:00
Location Code:	F&O	Received by:	LB	07/29/16	18:13
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	20160311.A10				

Laboratory Data

SDG ID: GBN83474
Phoenix ID: BN83490

Project ID: OLD HADDAM JAIL
Client ID: 1305160729-35

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Field Extraction	Completed				07/29/16		SW5035A
Volatiles							
1,1,1,2-Tetrachloroethane	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
1,1,1-Trichloroethane	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
1,1,2,2-Tetrachloroethane	ND	3.0	ug/Kg	1	08/01/16	JLI	SW8260
1,1,2-Trichloroethane	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
1,1-Dichloroethane	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
1,1-Dichloroethene	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
1,1-Dichloropropene	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
1,2,3-Trichlorobenzene	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
1,2,3-Trichloropropane	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
1,2,4-Trichlorobenzene	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
1,2,4-Trimethylbenzene	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
1,2-Dibromo-3-chloropropane	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
1,2-Dibromoethane	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
1,2-Dichlorobenzene	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
1,2-Dichloroethane	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
1,2-Dichloropropane	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
1,3,5-Trimethylbenzene	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
1,3-Dichlorobenzene	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
1,3-Dichloropropane	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
1,4-Dichlorobenzene	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
2,2-Dichloropropane	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
2-Chlorotoluene	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
2-Hexanone	ND	25	ug/Kg	1	08/01/16	JLI	SW8260
2-Isopropyltoluene	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
4-Chlorotoluene	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260

Project ID: OLD HADDAM JAIL
Client ID: 1305160729-35

Phoenix I.D.: BN83490

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
4-Methyl-2-pentanone	ND	25	ug/Kg	1	08/01/16	JLI	SW8260
Acetone	ND	250	ug/Kg	1	08/01/16	JLI	SW8260
Acrylonitrile	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
Benzene	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
Bromobenzene	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
Bromochloromethane	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
Bromodichloromethane	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
Bromoform	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
Bromomethane	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
Carbon Disulfide	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
Carbon tetrachloride	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
Chlorobenzene	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
Chloroethane	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
Chloroform	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
Chloromethane	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
cis-1,2-Dichloroethene	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
cis-1,3-Dichloropropene	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
Dibromochloromethane	ND	3.0	ug/Kg	1	08/01/16	JLI	SW8260
Dibromomethane	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
Dichlorodifluoromethane	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
Ethylbenzene	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
Hexachlorobutadiene	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
Isopropylbenzene	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
m&p-Xylene	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
Methyl Ethyl Ketone	ND	30	ug/Kg	1	08/01/16	JLI	SW8260
Methyl t-butyl ether (MTBE)	ND	10	ug/Kg	1	08/01/16	JLI	SW8260
Methylene chloride	ND	10	ug/Kg	1	08/01/16	JLI	SW8260
Naphthalene	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
n-Butylbenzene	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
n-Propylbenzene	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
o-Xylene	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
p-Isopropyltoluene	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
sec-Butylbenzene	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
Styrene	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
tert-Butylbenzene	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
Tetrachloroethene	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
Tetrahydrofuran (THF)	ND	10	ug/Kg	1	08/01/16	JLI	SW8260
Toluene	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
Total Xylenes	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
trans-1,2-Dichloroethene	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
trans-1,3-Dichloropropene	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
trans-1,4-dichloro-2-butene	ND	10	ug/Kg	1	08/01/16	JLI	SW8260
Trichloroethene	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
Trichlorofluoromethane	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
Trichlorotrifluoroethane	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
Vinyl chloride	ND	5.0	ug/Kg	1	08/01/16	JLI	SW8260
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	100		%	1	08/01/16	JLI	70 - 130 %
% Bromofluorobenzene	94		%	1	08/01/16	JLI	70 - 130 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
% Dibromofluoromethane	101		%	1	08/01/16	JLI	70 - 130 %
% Toluene-d8	99		%	1	08/01/16	JLI	70 - 130 %

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight., TRIP BLANK INCLUDED.

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Phyllis Shiller, Laboratory Director
August 05, 2016
Reviewed and Released by: Ethan Lee, Project Manager

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

QA/QC Report

August 05, 2016

QA/QC Data

SDG I.D.: GBN83474

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 354074 (mg/kg), QC Sample No: BN83482 (BN83482)													
ICP Metals - Soil													
Arsenic	BRL	0.67	5.88	5.66	3.80	95.9			96.4			75 - 125	30
Lead	BRL	0.33	147	153	4.00	94.6			101			75 - 125	30
QA/QC Batch 354094 (mg/kg), QC Sample No: BN83516 (BN83484, BN83486)													
ICP Metals - Soil													
Arsenic	BRL	0.67	1.72	1.57	NC	87.8			85.5			75 - 125	30
Lead	BRL	0.33	14.1	14.7	4.20	86.6			90.7			75 - 125	30

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QA/QC Report

August 05, 2016

QA/QC Data

SDG I.D.: GBN83474

QA/QC Batch 354047 (mg/Kg), QC Sample No: BN83035 (BN83474, BN83475, BN83476, BN83477, BN83478, BN83479, BN83480, BN83481, BN83488)

TPH by GC (Extractable Products) - Soil

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
Ext. Petroleum H.C.	ND	50	56	57	1.8				60 - 120	30
% n-Pentacosane	72	%	69	70	1.4				50 - 150	30

Comment:

*The MS/MSD could not be reported due to the presence of ETPH in the original sample. The LCS was within QA/QC criteria.

QA/QC Batch 354204 (ug/Kg), QC Sample No: BN83475 10X (BN83474, BN83475, BN83476, BN83477, BN83478, BN83479)

Polychlorinated Biphenyls - Soil

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
PCB-1016	ND	170	81	83	2.4	70	84	18.2	40 - 140	30
PCB-1221	ND	170							40 - 140	30
PCB-1232	ND	170							40 - 140	30
PCB-1242	ND	170							40 - 140	30
PCB-1248	ND	170							40 - 140	30
PCB-1254	ND	170							40 - 140	30
PCB-1260	ND	170	88	99	11.8	79	97	20.5	40 - 140	30
PCB-1262	ND	170							40 - 140	30
PCB-1268	ND	170							40 - 140	30
% DCBP (Surrogate Rec)	112	%	110	119	7.9	97	114	16.1	30 - 150	30
% TCMX (Surrogate Rec)	85	%	80	77	3.8	67	83	21.3	30 - 150	30

QA/QC Batch 354320 (ug/kg), QC Sample No: BN83480 (BN83474, BN83475, BN83476, BN83477, BN83480, BN83481, BN83488, BN83489 (50X) , BN83490)

Volatiles - Soil

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
1,1,1,2-Tetrachloroethane	ND	5.0	99	98	1.0	98	98	0.0	70 - 130	30
1,1,1-Trichloroethane	ND	5.0	93	92	1.1	98	97	1.0	70 - 130	30
1,1,2,2-Tetrachloroethane	ND	3.0	93	92	1.1	97	96	1.0	70 - 130	30
1,1,2-Trichloroethane	ND	5.0	90	88	2.2	91	89	2.2	70 - 130	30
1,1-Dichloroethane	ND	5.0	92	90	2.2	94	94	0.0	70 - 130	30
1,1-Dichloroethene	ND	5.0	95	92	3.2	98	97	1.0	70 - 130	30
1,1-Dichloropropene	ND	5.0	95	90	5.4	97	96	1.0	70 - 130	30
1,2,3-Trichlorobenzene	ND	5.0	94	86	8.9	76	74	2.7	70 - 130	30
1,2,3-Trichloropropane	ND	5.0	91	89	2.2	95	94	1.1	70 - 130	30
1,2,4-Trichlorobenzene	ND	5.0	95	84	12.3	79	78	1.3	70 - 130	30
1,2,4-Trimethylbenzene	ND	1.0	94	88	6.6	93	91	2.2	70 - 130	30
1,2-Dibromo-3-chloropropane	ND	5.0	98	96	2.1	92	93	1.1	70 - 130	30
1,2-Dibromoethane	ND	5.0	96	94	2.1	96	96	0.0	70 - 130	30
1,2-Dichlorobenzene	ND	5.0	91	88	3.4	89	87	2.3	70 - 130	30
1,2-Dichloroethane	ND	5.0	91	89	2.2	92	93	1.1	70 - 130	30
1,2-Dichloropropane	ND	5.0	90	89	1.1	91	90	1.1	70 - 130	30
1,3,5-Trimethylbenzene	ND	1.0	95	89	6.5	94	93	1.1	70 - 130	30
1,3-Dichlorobenzene	ND	5.0	92	87	5.6	88	87	1.1	70 - 130	30
1,3-Dichloropropane	ND	5.0	93	92	1.1	94	93	1.1	70 - 130	30
1,4-Dichlorobenzene	ND	5.0	92	86	6.7	87	86	1.2	70 - 130	30
2,2-Dichloropropane	ND	5.0	96	93	3.2	92	92	0.0	70 - 130	30
2-Chlorotoluene	ND	5.0	92	88	4.4	93	92	1.1	70 - 130	30
2-Hexanone	ND	25	86	84	2.4	82	81	1.2	70 - 130	30
2-Isopropyltoluene	ND	5.0	97	91	6.4	97	95	2.1	70 - 130	30
4-Chlorotoluene	ND	5.0	90	86	4.5	88	88	0.0	70 - 130	30

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
4-Methyl-2-pentanone	ND	25	87	86	1.2	88	86	2.3	70 - 130	30	
Acetone	ND	10	76	75	1.3	55	54	1.8	70 - 130	30	m
Acrylonitrile	ND	5.0	92	92	0.0	93	93	0.0	70 - 130	30	
Benzene	ND	1.0	93	91	2.2	95	94	1.1	70 - 130	30	
Bromobenzene	ND	5.0	92	89	3.3	91	91	0.0	70 - 130	30	
Bromochloromethane	ND	5.0	96	93	3.2	94	96	2.1	70 - 130	30	
Bromodichloromethane	ND	5.0	96	94	2.1	95	95	0.0	70 - 130	30	
Bromoform	ND	5.0	105	103	1.9	96	99	3.1	70 - 130	30	
Bromomethane	ND	5.0	92	93	1.1	103	100	3.0	70 - 130	30	
Carbon Disulfide	ND	5.0	116	114	1.7	110	112	1.8	70 - 130	30	
Carbon tetrachloride	ND	5.0	97	93	4.2	98	99	1.0	70 - 130	30	
Chlorobenzene	ND	5.0	94	91	3.2	92	93	1.1	70 - 130	30	
Chloroethane	ND	5.0	94	91	3.2	96	97	1.0	70 - 130	30	
Chloroform	ND	5.0	92	89	3.3	93	94	1.1	70 - 130	30	
Chloromethane	ND	5.0	90	88	2.2	88	88	0.0	70 - 130	30	
cis-1,2-Dichloroethene	ND	5.0	93	91	2.2	94	94	0.0	70 - 130	30	
cis-1,3-Dichloropropene	ND	5.0	93	91	2.2	89	90	1.1	70 - 130	30	
Dibromochloromethane	ND	3.0	106	105	0.9	100	101	1.0	70 - 130	30	
Dibromomethane	ND	5.0	90	89	1.1	92	92	0.0	70 - 130	30	
Dichlorodifluoromethane	ND	5.0	91	81	11.6	93	92	1.1	70 - 130	30	
Ethylbenzene	ND	1.0	95	92	3.2	97	96	1.0	70 - 130	30	
Hexachlorobutadiene	ND	5.0	97	77	23.0	81	78	3.8	70 - 130	30	
Isopropylbenzene	ND	1.0	94	88	6.6	95	93	2.1	70 - 130	30	
m&p-Xylene	ND	2.0	96	92	4.3	97	95	2.1	70 - 130	30	
Methyl ethyl ketone	ND	5.0	84	81	3.6	82	82	0.0	70 - 130	30	
Methyl t-butyl ether (MTBE)	ND	1.0	86	83	3.6	84	85	1.2	70 - 130	30	
Methylene chloride	ND	5.0	87	85	2.3	98	98	0.0	70 - 130	30	
Naphthalene	ND	5.0	99	95	4.1	89	86	3.4	70 - 130	30	
n-Butylbenzene	ND	1.0	95	79	18.4	90	89	1.1	70 - 130	30	
n-Propylbenzene	ND	1.0	92	84	9.1	92	92	0.0	70 - 130	30	
o-Xylene	ND	2.0	95	92	3.2	94	94	0.0	70 - 130	30	
p-Isopropyltoluene	ND	1.0	97	86	12.0	95	93	2.1	70 - 130	30	
sec-Butylbenzene	ND	1.0	97	89	8.6	98	96	2.1	70 - 130	30	
Styrene	ND	5.0	98	95	3.1	94	96	2.1	70 - 130	30	
tert-Butylbenzene	ND	1.0	93	88	5.5	95	93	2.1	70 - 130	30	
Tetrachloroethene	ND	5.0	95	86	9.9	94	94	0.0	70 - 130	30	
Tetrahydrofuran (THF)	ND	5.0	90	90	0.0	94	93	1.1	70 - 130	30	
Toluene	ND	1.0	92	90	2.2	93	92	1.1	70 - 130	30	
trans-1,2-Dichloroethene	ND	5.0	95	92	3.2	96	96	0.0	70 - 130	30	
trans-1,3-Dichloropropene	ND	5.0	94	92	2.2	90	91	1.1	70 - 130	30	
trans-1,4-dichloro-2-butene	ND	5.0	104	102	1.9	98	98	0.0	70 - 130	30	
Trichloroethene	ND	5.0	94	91	3.2	95	93	2.1	70 - 130	30	
Trichlorofluoromethane	ND	5.0	94	87	7.7	97	97	0.0	70 - 130	30	
Trichlorotrifluoroethane	ND	5.0	98	84	15.4	100	100	0.0	70 - 130	30	
Vinyl chloride	ND	5.0	97	95	2.1	100	99	1.0	70 - 130	30	
% 1,2-dichlorobenzene-d4	102	%	99	100	1.0	100	100	0.0	70 - 130	30	
% Bromofluorobenzene	93	%	101	101	0.0	99	101	2.0	70 - 130	30	
% Dibromofluoromethane	97	%	101	100	1.0	101	102	1.0	70 - 130	30	
% Toluene-d8	99	%	99	99	0.0	100	99	1.0	70 - 130	30	

Comment:

Additional 8260 criteria: 10% of LCS/LCSD compounds can be outside of acceptance criteria as long as recovery is 40-160%.

QA/QC Batch 354066 (ug/kg), QC Sample No: BN83481 (BN83474, BN83475, BN83476, BN83477, BN83480, BN83481, BN83488)

Polynuclear Aromatic HC - Soil

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
2-Methylnaphthalene	ND	230	64	66	3.1	69	68	1.5	30 - 130	30
Acenaphthene	ND	230	68	72	5.7	70	71	1.4	30 - 130	30
Acenaphthylene	ND	230	66	69	4.4	68	67	1.5	30 - 130	30
Anthracene	ND	230	70	73	4.2	71	72	1.4	30 - 130	30
Benz(a)anthracene	ND	230	70	75	6.9	74	71	4.1	30 - 130	30

QA/QC Data

SDG I.D.: GBN83474

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
Benzo(a)pyrene	ND	230	67	71	5.8	68	67	1.5	30 - 130	30	
Benzo(b)fluoranthene	ND	230	68	74	8.5	72	70	2.8	30 - 130	30	
Benzo(ghi)perylene	ND	230	73	76	4.0	73	72	1.4	30 - 130	30	
Benzo(k)fluoranthene	ND	230	72	75	4.1	69	68	1.5	30 - 130	30	
Chrysene	ND	230	74	79	6.5	75	74	1.3	30 - 130	30	
Dibenz(a,h)anthracene	ND	230	70	74	5.6	75	70	6.9	30 - 130	30	
Fluoranthene	ND	230	71	74	4.1	75	74	1.3	30 - 130	30	
Fluorene	ND	230	69	72	4.3	69	71	2.9	30 - 130	30	
Indeno(1,2,3-cd)pyrene	ND	230	70	74	5.6	73	70	4.2	30 - 130	30	
Naphthalene	ND	230	64	66	3.1	65	66	1.5	30 - 130	30	
Phenanthrene	ND	230	71	74	4.1	71	71	0.0	30 - 130	30	
Pyrene	ND	230	73	77	5.3	75	76	1.3	30 - 130	30	
% 2-Fluorobiphenyl	68	%	64	69	7.5	58	66	12.9	30 - 130	30	
% Nitrobenzene-d5	66	%	63	65	3.1	66	69	4.4	30 - 130	30	
% Terphenyl-d14	71	%	69	73	5.6	65	73	11.6	30 - 130	30	

QA/QC Batch 354082 (ug/Kg), QC Sample No: BN83482 2X (BN83482, BN83484, BN83486)

Pesticides - Soil

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
4,4' -DDD	ND	1.7	91	78	15.4	52	64	20.7	40 - 140	30	
4,4' -DDE	ND	1.7	89	75	17.1	55	66	18.2	40 - 140	30	
4,4' -DDT	ND	1.7	91	80	12.9	40	55	31.6	40 - 140	30	r
a-BHC	ND	1.0	72	61	16.5	40	47	16.1	40 - 140	30	
a-Chlordane	ND	3.3	86	72	17.7	54	64	16.9	40 - 140	30	
Alachlor	ND	3.3	NA	NA	NC	NA	NA	NC	40 - 140	30	
Aldrin	ND	1.0	78	65	18.2	47	56	17.5	40 - 140	30	
b-BHC	ND	1.0	77	66	15.4	45	59	26.9	40 - 140	30	
Chlordane	ND	33	86	69	21.9	49	56	13.3	40 - 140	30	
d-BHC	ND	3.3	70	59	17.1	40	51	24.2	40 - 140	30	
Dieldrin	ND	1.0	85	75	12.5	53	65	20.3	40 - 140	30	
Endosulfan I	ND	3.3	91	77	16.7	60	71	16.8	40 - 140	30	
Endosulfan II	ND	3.3	104	91	13.3	58	71	20.2	40 - 140	30	
Endosulfan sulfate	ND	3.3	86	77	11.0	43	55	24.5	40 - 140	30	
Endrin	ND	3.3	88	73	18.6	51	64	22.6	40 - 140	30	
Endrin aldehyde	ND	3.3	78	70	10.8	32	43	29.3	40 - 140	30	
Endrin ketone	ND	3.3	99	89	10.6	51	64	22.6	40 - 140	30	
g-BHC	ND	1.0	77	65	16.9	45	56	21.8	40 - 140	30	
g-Chlordane	ND	3.3	86	69	21.9	49	56	13.3	40 - 140	30	
Heptachlor	ND	3.3	86	75	13.7	56	69	20.8	40 - 140	30	
Heptachlor epoxide	ND	3.3	85	69	20.8	47	53	12.0	40 - 140	30	
Methoxychlor	ND	3.3	100	90	10.5	50	62	21.4	40 - 140	30	
Toxaphene	ND	130	NA	NA	NC	NA	NA	NC	40 - 140	30	
% DCBP	101	%	113	104	8.3	62	74	17.6	30 - 150	30	
% TCMX	70	%	73	63	14.7	50	57	13.1	30 - 150	30	

QA/QC Batch 354100 (ug/Kg), QC Sample No: BN83509 2X (BN83474, BN83475, BN83476, BN83477, BN83478, BN83479)

Polychlorinated Biphenyls - Soil

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
PCB-1016	ND	33	81	78	3.8	77	69	11.0	40 - 140	30
PCB-1221	ND	33							40 - 140	30
PCB-1232	ND	33							40 - 140	30
PCB-1242	ND	33							40 - 140	30
PCB-1248	ND	33							40 - 140	30
PCB-1254	ND	33							40 - 140	30
PCB-1260	ND	33	84	81	3.6	81	72	11.8	40 - 140	30
PCB-1262	ND	33							40 - 140	30
PCB-1268	ND	33							40 - 140	30
% DCBP (Surrogate Rec)	102	%	102	98	4.0	97	85	13.2	30 - 150	30
% TCMX (Surrogate Rec)	92	%	86	84	2.4	79	72	9.3	30 - 150	30

l = This parameter is outside laboratory LCS/LCSD specified recovery limits.
m = This parameter is outside laboratory MS/MSD specified recovery limits.
r = This parameter is outside laboratory RPD specified recovery limits.

QA/QC Data

SDG I.D.: GBN83474

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference
LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample Duplicate
MS - Matrix Spike
MS Dup - Matrix Spike Duplicate
NC - No Criteria
Intf - Interference

Phyllis Shiller

Phyllis Shiller, Laboratory Director
August 05, 2016

Sample Criteria Exceedences Report

GBN83474 - FO

Criteria: CT: GAM

State: CT

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units

*** No Data to Display ***

Phoenix Laboratories does not assume responsibility for the data contained in this report. It is provided as an additional tool to identify requested criteria exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.

REASONABLE CONFIDENCE PROTOCOL
LABORATORY ANALYSIS QA/QC CERTIFICATION FORM

Laboratory Name: Phoenix Environmental Labs, Inc. ***Client:*** Fuss & O'Neill EnviroScience, LL

Project Location: OLD HADDAM JAIL ***Project Number:***

Laboratory Sample ID(s): BN83474-BN83482, BN83484, BN83486, BN83488-BN83490 ***Sampling Date(s):*** 7/29/2016

List RCP Methods Used (e.g., 8260, 8270, et cetera) 6010, 8081, 8082, 8260, 8270, ETPH

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 CT DEP method-specific Reasonable Confidence Protocol documents?**	☑ Yes ☐ No
1A	**Were the method specified preservation and holding time requirements met?**	☑ Yes ☐ No
1B	***<u>VPH and EPH methods only:</u>*** **Was the VPH or EPH method conducted without significant modifications (see section 11.3 of respective RCP methods)**	☐ Yes ☐ No ☑ NA
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 ☐ NA
4	**Were all QA/QC performance criteria specified in the Reasonable Confidence Protocol documents acheived? See Sections: ETPH Narration, PEST Narration.**	☐ Yes ☑ No
5	**a) Were reporting limits specified or referenced on the chain-of-custody?** **b) Were these reporting limits met?**	☑ Yes ☐ No ☑ Yes ☐ No
6	**For each analytical method referenced in this laboratory report package, were results reported for all constituents 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 in the 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: Ethan Lee **Position:** Project Manager

Printed Name: Ethan Lee **Date:** Friday, August 05, 2016

Name of Laboratory Phoenix Environmental Labs, Inc.

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

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

NY # 11301

RCP Certification Report

August 05, 2016

SDG I.D.: GBN83474

SDG Comments

Metals Analysis:
The client requested a shorter list of elements than the 6010 RCP list. Only Arsenic and Lead are reported as requested on the chain of custody.

8270 Semi-volatile Organics:
The client requested a short list for 8270 RCP Semivolatile. Only the PAH constituents are reported as requested on the chain-of-custody.

Temperature above 6C:
The samples were received in a cooler with ice packs. The samples were delivered to the Laboratory within a short period of time after sample collection. Therefore no significant bias is suspected.

ETPH Narration

Were all QA/QC performance criteria specified in the Reasonable Confidence Protocol documents achieved? No.

QC Batch 354047 (Samples: BN83474, BN83475, BN83476, BN83477, BN83478, BN83479, BN83480, BN83481, BN83488): -----

One or more analytes is below the method criteria. A low bias for these analytes is possible. (Ext. Petroleum H.C.)

Instrument:

AU-FID11 07/29/16-1 Jeff Bucko, Chemist 07/29/16

BN83474, BN83475, BN83476, BN83477, BN83480

The initial calibration (ETPH707I) RSD for the compound list was less than 30% except for the following compounds: None.
As per section 7.2.3, a discrimination check standard was run and contained the following outliers: C36 73.4%L (20%)
The continuing calibration %D for the compound list was less than 30% except for the following compounds:None.

AU-FID11 07/29/16-2 Jeff Bucko, Chemist 07/29/16

BN83481

The initial calibration (ETPH707I) RSD for the compound list was less than 30% except for the following compounds: None.
As per section 7.2.3, a discrimination check standard was run and contained the following outliers: C36 32.3%L (20%)
The continuing calibration %D for the compound list was less than 30% except for the following compounds:None.

AU-FID11 08/02/16-1 Jeff Bucko, Chemist 08/02/16

BN83478, BN83479

The initial calibration (ETPH802I) RSD for the compound list was less than 30% except for the following compounds: None.
As per section 7.2.3, a discrimination check standard was run and contained the following outliers: C36 34.9%L (20%)
The continuing calibration %D for the compound list was less than 30% except for the following compounds:None.

AU-XL1 08/01/16-2 Jeff Bucko, Chemist 08/01/16

BN83488

The initial calibration (ETPH720I) RSD for the compound list was less than 30% except for the following compounds: None.
As per section 7.2.3, a discrimination check standard was run and contained the following outliers: C36 96%L (20%)
The continuing calibration %D for the compound list was less than 30% except for the following compounds:None.

QC (Batch Specific):

Batch 354047 (BN83035)

BN83474, BN83475, BN83476, BN83477, BN83478, BN83479, BN83480, BN83481, BN83488

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NY # 11301

RCP Certification Report

August 05, 2016

SDG I.D.: GBN83474

ETPH Narration

All LCS recoveries were within 60 - 120 with the following exceptions: Ext. Petroleum H.C.(56%)
All LCSD recoveries were within 60 - 120 with the following exceptions: Ext. Petroleum H.C.(57%)
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.
*The MS/MSD could not be reported due to the presence of ETPH in the original sample. The LCS was within QA/QC criteria.

ICP Metals Narration

Were all QA/QC performance criteria specified in the analytical method achieved? Yes.

Instrument:

ARCOS 08/01/16 19:41 Laura Kinnin, Chemist 08/01/16

BN83482, BN83484, BN83486

The linear range is defined daily by the calibration range.
The following Initial Calibration Verification (ICV) compounds did not meet criteria: None.
The following Continuing Calibration Verification (CCV) compounds did not meet criteria: None.
The following ICP Interference Check (ICSAB) compounds did not meet criteria: None.

ARCOS 08/02/16 18:05 Laura Kinnin, Chemist 08/02/16

BN83484

The linear range is defined daily by the calibration range.
The following Initial Calibration Verification (ICV) compounds did not meet criteria: None.
The following Continuing Calibration Verification (CCV) compounds did not meet criteria: None.
The following ICP Interference Check (ICSAB) compounds did not meet criteria: None.

QC (Batch Specific):

Batch 354094 (BN83516)

BN83484, BN83486

All LCS recoveries were within 75 - 125 with the following exceptions: None.

QC (Site Specific):

Batch 354074 (BN83482)

BN83482

All LCS recoveries were within 75 - 125 with the following exceptions: None.
All MS recoveries were within 75 - 125 with the following exceptions: None.

PAH Narration

Were all QA/QC performance criteria specified in the analytical method achieved? Yes.

QC (Batch Specific):

Batch 354066 (BN83481)

BN83474, BN83475, BN83476, BN83477, BN83480, BN83481, BN83488

All LCS recoveries were within 30 - 130 with the following exceptions: None.
All LCSD recoveries were within 30 - 130 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.

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RCP Certification Report

August 05, 2016

SDG I.D.: GBN83474

PCB Narration

Were all QA/QC performance criteria specified in the Reasonable Confidence Protocol documents achieved? Yes.

Instrument:

AU-ECD48 08/02/16-1 Adam Werner, Chemist 08/02/16

BN83474, BN83475, BN83476, BN83477, BN83478, BN83479

The initial calibration (PC0727AI) RSD for the compound list was less than 20% except for the following compounds: None.
The initial calibration (PC0727BI) RSD for the compound list was less than 20% except for the following compounds: None.
The continuing calibration %D for the compound list was less than 15% except for the following compounds:None.

QC (Batch Specific):

Batch 354100 (BN83509)

BN83474, BN83475, BN83476, BN83477, BN83478, BN83479

All LCS recoveries were within 40 - 140 with the following exceptions: None.
All LCSD recoveries were within 40 - 140 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.

Batch 354204 (BN83475)

BN83474, BN83475, BN83476, BN83477, BN83478, BN83479

All LCS recoveries were within 40 - 140 with the following exceptions: None.
All LCSD recoveries were within 40 - 140 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.

PEST Narration

Were all QA/QC performance criteria specified in the Reasonable Confidence Protocol documents achieved? No.

QC Batch 354082 (Samples: BN83482, BN83484, BN83486): -----

The MS/MSD RPD exceeds the method criteria for one or more analytes, therefore there may be variability in the reported result. (4,4' -DDT)

Instrument:

AU-ECD13 08/01/16-1 Carol Eddy, Chemist 08/01/16

BN83482, BN83484, BN83486

8081 Narration:
Endrin and DDT breakdown was evaluated and does not exceed 15%.

The initial calibration (PS725AI) RSD for the compound list was less than 20% except for the following compounds: None.
The initial calibration (PS725BI) RSD for the compound list was less than 20% except for the following compounds: None.
The continuing calibration %D for the compound list was less than 15% except for the following compounds:None.

AU-ECD13 08/03/16-1 Michael Hahn, Chemist 08/03/16

BN83484

8081 Narration:
Endrin and DDT breakdown was evaluated and does not exceed 15%.

The initial calibration (PS725AI) RSD for the compound list was less than 20% except for the following compounds: None.

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RCP Certification Report

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SDG I.D.: GBN83474

PEST Narration

The initial calibration (PS725BI) RSD for the compound list was less than 20% except for the following compounds: None.
The continuing calibration %D for the compound list was less than 15% except for the following compounds:
Samples: BN83484
Preceding CC 803A017 - None.
Succeeding CC 803A029 - b-BHC -17%L (15%), Dieldrin -21%L (15%), g-BHC -18%L (15%)
A low "1A" standard was run after the samples to demonstrate capability to detect any compounds outside of the CC acceptance criteria. All reported samples were ND for the affected compounds.

QC (Site Specific):

Batch 354082 (BN83482)

BN83482, BN83484, BN83486

All LCS recoveries were within 40 - 140 with the following exceptions: None.
All LCSD recoveries were within 40 - 140 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.
All MS recoveries were within 30 - 150 with the following exceptions: None.
All MSD recoveries were within 30 - 150 with the following exceptions: None.
All MS/MSD RPDs were less than 30% with the following exceptions: 4,4' -DDT(31.6%)

PAH Narration

Were all QA/QC performance criteria specified in the Reasonable Confidence Protocol documents achieved? Yes.

Instrument:

CHEM19 07/29/16-1 Damien Drobinski, Chemist 07/29/16

Initial Calibration Verification (CHEM19/BN_0727):
100% of target compounds met criteria.
The following compounds had %RSDs >20%: None.
The following compounds did not meet recommended response factors: None.
The following compounds did not meet a minimum response factors: None.

Continuing Calibration Verification (CHEM19/0729_04-BN_0727):
Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.
100% of target compounds met criteria.
The following compounds did not meet % deviation criteria: None.
The following compounds did not meet maximum % deviations: None.
The following compounds did not meet recommended response factors: None.
The following compounds did not meet minimum response factors: None.

CHEM25 08/01/16-1 Damien Drobinski, Chemist 08/01/16

BN83475, BN83480, BN83488

Initial Calibration Verification (CHEM25/SV_0727):
99% of target compounds met criteria.
The following compounds had %RSDs >20%: None.
The following compounds did not meet recommended response factors: None.
The following compounds did not meet a minimum response factors: None.

Continuing Calibration Verification (CHEM25/0801_02-SV_0727):

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

RCP Certification Report

August 05, 2016

SDG I.D.: GBN83474

PAH Narration

Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.
100% of target compounds met criteria.
The following compounds did not meet % deviation criteria: None.
The following compounds did not meet maximum % deviations: None.
The following compounds did not meet recommended response factors: None.
The following compounds did not meet minimum response factors: None.

VOA Narration

Were all QA/QC performance criteria specified in the Reasonable Confidence Protocol documents achieved? Yes.

Instrument:

CHEM03 08/01/16-1 Jane Li, Chemist 08/01/16

BN83474, BN83475, BN83476, BN83477, BN83480, BN83481, BN83488, BN83489, BN83490

Initial Calibration Verification (CHEM03/VT-L0801):
99% of target compounds met criteria.
The following compounds had %RSDs >20%: Bromoform 24% (20%)
The following compounds did not meet recommended response factors: None.
The following compounds did not meet a minimum response factors: None.

Continuing Calibration Verification (CHEM03/0801L14-VT-L0801):
Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.
100% of target compounds met criteria.
The following compounds did not meet % deviation criteria: None.
The following compounds did not meet maximum % deviations: None.
The following compounds did not meet recommended response factors: None.
The following compounds did not meet minimum response factors: None.

QC (Batch Specific):

Batch 354320 (BN83480)

BN83474, BN83475, BN83476, BN83477, BN83480, BN83481, BN83488, BN83489, BN83490

All LCS recoveries were within 70 - 130 with the following exceptions: None.
All LCSD recoveries were within 70 - 130 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.
Additional 8260 criteria: 10% of LCS/LCSD compounds can be outside of acceptance criteria as long as recovery is 40-160%.

Temperature Narration

The samples were received at 8C with cooling initiated.
(Note acceptance criteria is above freezing up to 6°C)

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☒ 146 Hartford Road, Manchester, CT 06040
☐ 56 Quarry Road, Trumbull, CT 06611
☐ 1419 Richland Street, Columbia, SC 29201

☐ 78 Interstate Drive, West Springfield, MA 01089
☐ 317 Iron Horse Way, Suite 204, Providence, RI 02908
☐ 80 Washington Street, Suite 301, Poughkeepsie, NY

☐ Other

8°WC 4°P

CHAIN-OF-CUSTODY RECORD 36416

Turnaround
☐ 24-Hour* ☐ 72-Hour* ☐ Other ______ (days)
☐ 48-Hour* ☒ Standard (5 days) *Surcharge Applies

PROJECT NAME	PROJECT LOCATION	PROJECT NUMBER	LABORATORY
Old Haddam Jail	Haddam, CT	20160311.A10	Phoenix

REPORT TO: Stephanie Wierszchalek (F+O)
INVOICE TO: ↓
P.O. NO.:
Sampler's Signature: [signature] Date: 07/29/16

Source Codes:
MW=Monitoring Well PW=Potable Water T=Treatment Facility S=Soil B=Sediment
SW=Surface Water ST=Stormwater W=Waste A=Air C=Concrete
X=Other

Analysis Request / Containers

Item No.	Transfer Check 1	2	3	4	Sample Number	Source Code	Date Sampled	Time Sampled	VOCs	ETPH	PAHs	PCBs	Pesticides	Arsenic + Lead			Soil VOA Vial, methanol	Soil VOA Vial, water	Glass Soil Container (8) oz	Other: Glass Soil Container 4oz	Other:	Water VOA Vial, ☐ As is ☐ HCl	Glass Amber ( ) ml, ☐ As is ☐ H₂SO₄	Plastic - As is, ☐ 250 ml ☐ 500 ☐ 1000 ml	Plastic - H₂SO₄, ☐ 250 ml ☐ 500 ml	Plastic - HNO₃, 250 ml ☐ Filtered ☐ 0.45μ ☐ 10μ	Plastic - NaOH, 250 ml	Comments
01					1305160729-18	C	07/29	0755	X	X	X	X					1	2	2									83474
02					-19	S	↓	0805	↓	↓	↓	↓					1	2	2									83475
03					-20	C	↓	0815	↓	↓	↓	↓					1	2	2									83476
04					-21	C	↓	0820	↓	↓	↓	↓					1	2	2									83477
05					-22	S	↓	0915		X		X								2								83478
06					-23	↓	↓	0930		X		X								2								83479
07					-24	↓	↓	1050	X	X	X						1	2	1									83480
08					-25	↓	↓	1145	X	X	X						1	2	1									83481
09					-27	↓	↓	1400					X	X						6			83482					MS/MSD
10					-28	↓	↓	1415					X	X						2			83483					HOLD

Transfer Number	Relinquished By	Accepted By	Date	Time
1	[signature]	[signature]	07/29/16	1813
2				
3				
4				

Charge Exceptions: ☐ CT Tax Exempt ☐ QA/QC ☐ Other ______
1 Duplicates ____ Blanks (Item Nos:)

Reporting and Detection Limit Requirements: ☐ RCP Deliverables ☐ MCP CAM Cert.
GA reporting + detection limits

Additional Comments: Duplicate and MS/MSD included
Hold Sample 28, No sample 26

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☐ 78 Interstate Drive, West Springfield, MA 01089
☐ 317 Iron Horse Way, Suite 204, Providence, RI 02908
☐ 80 Washington Street, Suite 301, Poughkeepsie, NY

☐ Other ______

8° w/c + IP

CHAIN-OF-CUSTODY RECORD 36413

Turnaround
☐ 24-Hour* ☐ 72-Hour* ☐ Other ______ (days)
☐ 48-Hour* ☒ Standard (5 days) *Surcharge Applies

PROJECT NAME	PROJECT LOCATION	PROJECT NUMBER	LABORATORY
Old Haddam Jail	Haddam, CT	20160311.A10	Phoenix

REPORT TO: Stephanie Wierszchalek (F+O)

INVOICE TO: ↓

P.O. NO.:

Sampler's Signature: [signature] Date: 07/29/16

Source Codes:
MW=Monitoring Well PW=Potable Water T=Treatment Facility S=Soil B=Sediment
SW=Surface Water ST=Stormwater W=Waste A=Air C=Concrete
X=Other Trip Blank

Analysis Request / Containers

Item No.	Transfer Check 1	2	3	4	Sample Number	Source Code	Date Sampled	Time Sampled	Pesticides	Arsenic + Lead	VOCs	ETPH	PAHs				Soil VOA Vial, methanol	Soil VOA Vial, water	Glass Soil Container (4) oz	Other: Glass Soil container 8oz	Other:	Water VOA Vial, ☐ As is ☐ HCl	Glass Amber ( ) ml, ☐ As is ☐ H2SO4	Plastic - As is, ☐ 250 ml ☐ 500 ☐ 1000 ml	Plastic - H2SO4, 250 ml ☐ 500 ml	Plastic - HNO3, 250 ml ☐ Filtered ☐ 0.45μ ☐ 10μ	Plastic - NaOH, 250 ml	Comments
11					130516 0729 - 29	S	7/29	1430	X	X									2									83484
12					-30	↓	↓	1450	↓	↓									2				83485					HOLD
13					-31	↓	↓	1500	↓	↓									2									83486
14					-32	↓	↓	1515	↓	↓									2				83487					HOLD
15					-33	↓	↓	1555			X	X	X				1	2		1								83488
16					-34	X	↓	1558			X						1											83489
17					-35	X	↓	1600			X							2										83490

Transfer Number	Relinquished By	Accepted By	Date	Time
1	[signature]	[signature]	07/29/16	1813
2				
3				
4				

Charge Exceptions: ☐ CT Tax Exempt ☐ QA/QC ☐ Other ______
____ Duplicates ____ Blanks (Item Nos:)

Reporting and Detection Limit Requirements: ☒ RCP Deliverables ☐ MCP CAM Cert.
GA reporting + detection limits

Additional Comments:

PHOENIX
Environmental Laboratories, Inc.

Tuesday, August 16, 2016

Attn: Ms. Stephanie Wierszchalek
Fuss & O'Neill, Inc.
146 Hartford Road
Manchester, CT 06040

Project ID: OLD HADDAM JAIL
Sample ID#s: BN84857 - BN84859

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext. 200.

Sincerely yours,

Phyllis Shiller

Phyllis Shiller
Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #MA-CT-007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B
NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

August 16, 2016

FOR: Attn: Ms. Stephanie Wierszchalek
Fuss & O'Neill, Inc.
146 Hartford Road
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	DRINKING WATER	Collected by:	BC	08/02/16	9:30
Location Code:	F&O	Received by:	LB	08/02/16	17:18
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	20160311.A10				

Laboratory Data

SDG ID: GBN84857
Phoenix ID: BN84857

Project ID: OLD HADDAM JAIL
Client ID: 1305160802-36

Parameter	Result	RL/ PQL	DIL	Units	DW MCL	Sec Goal	Date/Time	By	Reference
Extraction of DW Pesticides	Completed						08/03/16	I/I	E508
Volatile Library Search	Completed						08/03/16	HM	
Pesticides									
4,4' -DDD	ND	0.010	1	ug/L			08/04/16	C/P	E508
4,4' -DDE	ND	0.010	1	ug/L			08/04/16	C/P	E508
4,4' -DDT	ND	0.010	1	ug/L			08/04/16	C/P	E508
a-BHC	ND	0.010	1	ug/L			08/04/16	C/P	E508
Aldrin	ND	0.003	1	ug/L			08/04/16	C/P	E508
b-BHC	ND	0.010	1	ug/L			08/04/16	C/P	E508
Chlordane	ND	0.20	1	ug/L	2		08/04/16	C/P	E508
d-BHC	ND	0.010	1	ug/L			08/04/16	C/P	E508
Dieldrin	ND	0.002	1	ug/L	0.03		08/04/16	C/P	E508
Endosulfan I	ND	0.010	1	ug/L			08/04/16	C/P	E508
Endosulfan II	ND	0.010	1	ug/L			08/04/16	C/P	E508
Endosulfan Sulfate	ND	0.010	1	ug/L			08/04/16	C/P	E508
Endrin	ND	0.010	1	ug/L	2		08/04/16	C/P	E508
Endrin Aldehyde	ND	0.010	1	ug/L			08/04/16	C/P	E508
g-BHC (Lindane)	ND	0.010	1	ug/L	0.2		08/04/16	C/P	E508
Heptachlor	ND	0.010	1	ug/L	0.4		08/04/16	C/P	E508
Heptachlor epoxide	ND	0.010	1	ug/L	0.2		08/04/16	C/P	E508
Methoxychlor	ND	0.010	1	ug/L	40		08/04/16	C/P	E508
Toxaphene	ND	1.0	1	ug/L	3		08/04/16	C/P	E508
QA/QC Surrogates									
%DCBP (Surrogate Rec)	102		1	%	NA	NA	08/04/16	C/P	70 - 130 %
Volatiles									
1,1,1,2-Tetrachloroethane	ND	0.50	1	ug/L			08/03/16	HM	524.2

Parameter	Result	RL/ PQL	DIL	Units	DW MCL	Sec Goal	Date/Time	By	Reference
1,1,1-Trichloroethane	ND	0.50	1	ug/L	200		08/03/16	HM	524.2
1,1,2,2-Tetrachloroethane	ND	0.50	1	ug/L			08/03/16	HM	524.2
1,1,2-Trichloroethane	ND	0.50	1	ug/L	5		08/03/16	HM	524.2
1,1-Dichloroethane	ND	0.50	1	ug/L			08/03/16	HM	524.2
1,1-Dichloroethene	ND	0.50	1	ug/L	7		08/03/16	HM	524.2
1,1-Dichloropropene	ND	0.50	1	ug/L			08/03/16	HM	524.2
1,2,3-Trichlorobenzene	ND	0.50	1	ug/L			08/03/16	HM	524.2
1,2,3-Trichloropropane	ND	0.50	1	ug/L			08/03/16	HM	524.2
1,2,4-Trichlorobenzene	ND	0.50	1	ug/L	70		08/03/16	HM	524.2
1,2,4-Trimethylbenzene	ND	0.50	1	ug/L			08/03/16	HM	524.2
1,2-Dichlorobenzene	ND	0.50	1	ug/L	600		08/03/16	HM	524.2
1,2-Dichloroethane	ND	0.50	1	ug/L	5		08/03/16	HM	524.2
1,2-Dichloropropane	ND	0.50	1	ug/L	5		08/03/16	HM	524.2
1,3,5-Trimethylbenzene	ND	0.50	1	ug/L			08/03/16	HM	524.2
1,3-Dichlorobenzene	ND	0.50	1	ug/L			08/03/16	HM	524.2
1,3-Dichloropropane	ND	0.50	1	ug/L			08/03/16	HM	524.2
1,4-Dichlorobenzene	ND	0.50	1	ug/L	75		08/03/16	HM	524.2
2,2-Dichloropropane	ND	0.50	1	ug/L			08/03/16	HM	524.2
2-Chlorotoluene	ND	0.50	1	ug/L			08/03/16	HM	524.2
4-Chlorotoluene	ND	0.50	1	ug/L			08/03/16	HM	524.2
Benzene	ND	0.50	1	ug/L	5		08/03/16	HM	524.2
Bromobenzene	ND	0.50	1	ug/L			08/03/16	HM	524.2
Bromochloromethane	ND	0.50	1	ug/L			08/03/16	HM	524.2
Bromodichloromethane	ND	0.50	1	ug/L			08/03/16	HM	524.2
Bromoform	ND	0.50	1	ug/L			08/03/16	HM	524.2
Bromomethane	ND	0.50	1	ug/L			08/03/16	HM	524.2
Carbon tetrachloride	ND	0.50	1	ug/L	5		08/03/16	HM	524.2
Chlorobenzene	ND	0.50	1	ug/L	100		08/03/16	HM	524.2
Chloroethane	ND	0.50	1	ug/L			08/03/16	HM	524.2
Chloroform	ND	0.50	1	ug/L			08/03/16	HM	524.2
Chloromethane	ND	0.50	1	ug/L			08/03/16	HM	524.2
cis-1,2-Dichloroethene	ND	0.50	1	ug/L	70		08/03/16	HM	524.2
cis-1,3-Dichloropropene	ND	0.40	1	ug/L			08/03/16	HM	524.2
Dibromochloromethane	ND	0.50	1	ug/L			08/03/16	HM	524.2
Dibromomethane	ND	0.50	1	ug/L			08/03/16	HM	524.2
Dichlorodifluoromethane	ND	0.50	1	ug/L			08/03/16	HM	524.2
Ethylbenzene	ND	0.50	1	ug/L	700		08/03/16	HM	524.2
Hexachlorobutadiene	ND	0.45	1	ug/L			08/03/16	HM	524.2
Isopropylbenzene	ND	0.50	1	ug/L			08/03/16	HM	524.2
m&p-Xylene	ND	0.50	1	ug/L			08/03/16	HM	524.2
Methyl t-butyl ether (MTBE)	ND	0.50	1	ug/L			08/03/16	HM	524.2
Methylene chloride	ND	0.50	1	ug/L	5		08/03/16	HM	524.2
Naphthalene	ND	0.50	1	ug/L			08/03/16	HM	524.2
n-Butylbenzene	ND	0.50	1	ug/L			08/03/16	HM	524.2
n-Propylbenzene	ND	0.50	1	ug/L			08/03/16	HM	524.2
o-Xylene	ND	0.50	1	ug/L			08/03/16	HM	524.2
p-Isopropyltoluene	ND	0.50	1	ug/L			08/03/16	HM	524.2
sec-Butylbenzene	ND	0.50	1	ug/L			08/03/16	HM	524.2
Styrene	ND	0.50	1	ug/L	100		08/03/16	HM	524.2

Parameter	Result	RL/ PQL	DIL	Units	DW MCL	Sec Goal	Date/Time	By	Reference
tert-Butylbenzene	ND	0.50	1	ug/L			08/03/16	HM	524.2
Tetrachloroethene	ND	0.50	1	ug/L	5		08/03/16	HM	524.2
Toluene	ND	0.50	1	ug/L	1000		08/03/16	HM	524.2
Total Trihalomethanes	ND	0.50	1	ug/L	80		08/03/16	HM	524.2
Total Xylenes	ND	0.50	1	ug/L	10000		08/03/16	HM	524.2
trans-1,2-Dichloroethene	ND	0.50	1	ug/L	100		08/03/16	HM	524.2
trans-1,3-Dichloropropene	ND	0.40	1	ug/L			08/03/16	HM	524.2
Trichloroethene	ND	0.50	1	ug/L	5		08/03/16	HM	524.2
Trichlorofluoromethane	ND	0.50	1	ug/L			08/03/16	HM	524.2
Vinyl chloride	ND	0.50	1	ug/L	2		08/03/16	HM	524.2
QA/QC Surrogates									
% 1,2-dichlorobenzene-d4	79		1	%	NA	NA	08/03/16	HM	70 - 130 %
% Bromofluorobenzene	77		1	%	NA	NA	08/03/16	HM	70 - 130 %

RL/PQL=Reporting/Practical Quantitation Level DIL=Dilution (analysis required diluting to evaluate) ND=Not Detected
BRL=Below Reporting Level (less than the reporting level, the lowest amount the laboratory can detect and report.)
MCL = Maximum Contaminant Level MCLG = Maximum Contaminant Level Goal
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Maximum Contaminant Level (Lower of): 40 CFR Part 141; CT Public Health Code 19-13-B102. The highest level of a contaminant that is allowed in drinking water. MCLs are enforceable standards.

Secondary DW Maximum Contaminant Level Goal (MCLG): (Lower of): 40 CFR Part 143; CT Public Health Code 19-13-B102. The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs are non-enforceable public health goals.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
This report must not be reproduced except in full as defined by the attached chain of custody.

Phyllis Shiller

Phyllis Shiller, Laboratory Director
August 16, 2016
Reviewed and Released by: Ethan Lee, Project Manager

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

August 16, 2016

FOR: Attn: Ms. Stephanie Wierszchalek
Fuss & O'Neill, Inc.
146 Hartford Road
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	DRINKING WATER	Collected by:	BC	08/02/16	11:33
Location Code:	F&O	Received by:	LB	08/02/16	17:18
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	20160311.A10				

Laboratory Data

SDG ID: GBN84857
Phoenix ID: BN84858

Project ID: OLD HADDAM JAIL
Client ID: 1305160802-39

Parameter	Result	RL/ PQL	DIL	Units	DW MCL	Sec Goal	Date/Time	By	Reference
Silver	< 0.001	0.001	1	mg/L	0.05		08/03/16	EK	E200.7
Arsenic	0.0012	0.0005	1	mg/L	0.01		08/04/16	TH/RS	E200.9/SM3113B-10
Barium	0.039	0.001	1	mg/L	2		08/03/16	EK	E200.7
Cadmium	< 0.001	0.001	1	mg/L	0.005		08/03/16	EK	E200.7
Chromium	0.007	0.001	1	mg/L	0.1		08/03/16	EK	E200.7
Mercury	< 0.0002	0.0002	1	mg/L	0.002		08/03/16	MA/RS	E245.1
Lead	0.007	0.001	1	mg/L	0.015		08/03/16	EK	E200.5
Selenium	< 0.001	0.001	1	mg/L	0.05		08/03/16	RS	E200.9/SM3113B-10
Mercury DW Digestion	Completed						08/03/16	W/W	E245.1
Extraction of DW Pesticides	Completed						08/03/16	I/I	E508
Semi-Volatile Extraction	Completed						08/02/16	P/UU	SW3520C
Total Metal Digestion	Completed						08/02/16	TH/BF	E200.9
Total Metal Digestion	Completed						08/02/16	TH/BF	E200.5/E200.7
Volatile Library Search	Completed						08/03/16	HM	
Pesticides									
4,4' -DDD	ND	0.010	1	ug/L			08/05/16	C/P	E508
4,4' -DDE	ND	0.010	1	ug/L			08/05/16	C/P	E508
4,4' -DDT	ND	0.1	1	ug/L			08/05/16	C/P	E508
a-BHC	ND	0.010	1	ug/L			08/05/16	C/P	E508
Aldrin	ND	0.003	1	ug/L			08/05/16	C/P	E508
b-BHC	ND	0.010	1	ug/L			08/05/16	C/P	E508
Chlordane	ND	0.20	1	ug/L	2		08/05/16	C/P	E508
d-BHC	ND	0.010	1	ug/L			08/05/16	C/P	E508
Dieldrin	ND	0.002	1	ug/L	0.03		08/05/16	C/P	E508
Endosulfan I	ND	0.010	1	ug/L			08/05/16	C/P	E508
Endosulfan II	ND	0.010	1	ug/L			08/05/16	C/P	E508
Endosulfan Sulfate	ND	0.010	1	ug/L			08/05/16	C/P	E508

Parameter	Result	RL/ PQL	DIL	Units	DW MCL	Sec Goal	Date/Time	By	Reference	
Endrin	ND	0.010	1	ug/L	2		08/05/16	C/P	E508	
Endrin Aldehyde	ND	0.010	1	ug/L			08/05/16	C/P	E508	
g-BHC (Lindane)	ND	0.010	1	ug/L	0.2		08/05/16	C/P	E508	
Heptachlor	ND	0.010	1	ug/L	0.4		08/05/16	C/P	E508	
Heptachlor epoxide	ND	0.010	1	ug/L	0.2		08/05/16	C/P	E508	
Methoxychlor	ND	0.010	1	ug/L	40		08/05/16	C/P	E508	
Toxaphene	ND	1.0	1	ug/L	3		08/05/16	C/P	E508	
QA/QC Surrogates										
%DCBP (Surrogate Rec)	58		1	%	NA	NA	08/05/16	C/P	70 - 130 %	3
Volatiles										
1,1,1,2-Tetrachloroethane	ND	0.50	1	ug/L			08/03/16	HM	524.2	
1,1,1-Trichloroethane	ND	0.50	1	ug/L	200		08/03/16	HM	524.2	
1,1,2,2-Tetrachloroethane	ND	0.50	1	ug/L			08/03/16	HM	524.2	
1,1,2-Trichloroethane	ND	0.50	1	ug/L	5		08/03/16	HM	524.2	
1,1-Dichloroethane	ND	0.50	1	ug/L			08/03/16	HM	524.2	
1,1-Dichloroethene	ND	0.50	1	ug/L	7		08/03/16	HM	524.2	
1,1-Dichloropropene	ND	0.50	1	ug/L			08/03/16	HM	524.2	
1,2,3-Trichlorobenzene	ND	0.50	1	ug/L			08/03/16	HM	524.2	
1,2,3-Trichloropropane	ND	0.50	1	ug/L			08/03/16	HM	524.2	
1,2,4-Trichlorobenzene	ND	0.50	1	ug/L	70		08/03/16	HM	524.2	
1,2,4-Trimethylbenzene	ND	0.50	1	ug/L			08/03/16	HM	524.2	
1,2-Dichlorobenzene	ND	0.50	1	ug/L	600		08/03/16	HM	524.2	
1,2-Dichloroethane	ND	0.50	1	ug/L	5		08/03/16	HM	524.2	
1,2-Dichloropropane	ND	0.50	1	ug/L	5		08/03/16	HM	524.2	
1,3,5-Trimethylbenzene	ND	0.50	1	ug/L			08/03/16	HM	524.2	
1,3-Dichlorobenzene	ND	0.50	1	ug/L			08/03/16	HM	524.2	
1,3-Dichloropropane	ND	0.50	1	ug/L			08/03/16	HM	524.2	
1,4-Dichlorobenzene	ND	0.50	1	ug/L	75		08/03/16	HM	524.2	
2,2-Dichloropropane	ND	0.50	1	ug/L			08/03/16	HM	524.2	
2-Chlorotoluene	ND	0.50	1	ug/L			08/03/16	HM	524.2	
4-Chlorotoluene	ND	0.50	1	ug/L			08/03/16	HM	524.2	
Benzene	ND	0.50	1	ug/L	5		08/03/16	HM	524.2	
Bromobenzene	ND	0.50	1	ug/L			08/03/16	HM	524.2	
Bromochloromethane	ND	0.50	1	ug/L			08/03/16	HM	524.2	
Bromodichloromethane	ND	0.50	1	ug/L			08/03/16	HM	524.2	
Bromoform	ND	0.50	1	ug/L			08/03/16	HM	524.2	
Bromomethane	ND	0.50	1	ug/L			08/03/16	HM	524.2	
Carbon tetrachloride	ND	0.50	1	ug/L	5		08/03/16	HM	524.2	
Chlorobenzene	ND	0.50	1	ug/L	100		08/03/16	HM	524.2	
Chloroethane	ND	0.50	1	ug/L			08/03/16	HM	524.2	
Chloroform	ND	0.50	1	ug/L			08/03/16	HM	524.2	
Chloromethane	ND	0.50	1	ug/L			08/03/16	HM	524.2	
cis-1,2-Dichloroethene	ND	0.50	1	ug/L	70		08/03/16	HM	524.2	
cis-1,3-Dichloropropene	ND	0.40	1	ug/L			08/03/16	HM	524.2	
Dibromochloromethane	ND	0.50	1	ug/L			08/03/16	HM	524.2	
Dibromomethane	ND	0.50	1	ug/L			08/03/16	HM	524.2	
Dichlorodifluoromethane	ND	0.50	1	ug/L			08/03/16	HM	524.2	
Ethylbenzene	ND	0.50	1	ug/L	700		08/03/16	HM	524.2	
Hexachlorobutadiene	ND	0.45	1	ug/L			08/03/16	HM	524.2	

Parameter	Result	RL/ PQL	DIL	Units	DW MCL	Sec Goal	Date/Time	By	Reference
Isopropylbenzene	ND	0.50	1	ug/L			08/03/16	HM	524.2
m&p-Xylene	ND	0.50	1	ug/L			08/03/16	HM	524.2
Methyl t-butyl ether (MTBE)	ND	0.50	1	ug/L			08/03/16	HM	524.2
Methylene chloride	ND	0.50	1	ug/L	5		08/03/16	HM	524.2
Naphthalene	ND	0.50	1	ug/L			08/03/16	HM	524.2
n-Butylbenzene	ND	0.50	1	ug/L			08/03/16	HM	524.2
n-Propylbenzene	ND	0.50	1	ug/L			08/03/16	HM	524.2
o-Xylene	ND	0.50	1	ug/L			08/03/16	HM	524.2
p-Isopropyltoluene	ND	0.50	1	ug/L			08/03/16	HM	524.2
sec-Butylbenzene	ND	0.50	1	ug/L			08/03/16	HM	524.2
Styrene	ND	0.50	1	ug/L	100		08/03/16	HM	524.2
tert-Butylbenzene	ND	0.50	1	ug/L			08/03/16	HM	524.2
Tetrachloroethene	ND	0.50	1	ug/L	5		08/03/16	HM	524.2
Toluene	ND	0.50	1	ug/L	1000		08/03/16	HM	524.2
Total Trihalomethanes	ND	0.50	1	ug/L	80		08/03/16	HM	524.2
Total Xylenes	ND	0.50	1	ug/L	10000		08/03/16	HM	524.2
trans-1,2-Dichloroethene	ND	0.50	1	ug/L	100		08/03/16	HM	524.2
trans-1,3-Dichloropropene	ND	0.40	1	ug/L			08/03/16	HM	524.2
Trichloroethene	ND	0.50	1	ug/L	5		08/03/16	HM	524.2
Trichlorofluoromethane	ND	0.50	1	ug/L			08/03/16	HM	524.2
Vinyl chloride	ND	0.50	1	ug/L	2		08/03/16	HM	524.2
QA/QC Surrogates									
% 1,2-dichlorobenzene-d4	77		1	%	NA	NA	08/03/16	HM	70 - 130 %
% Bromofluorobenzene	73		1	%	NA	NA	08/03/16	HM	70 - 130 %

Semivolatiles by SIM

Parameter	Result	RL/ PQL	DIL	Units	DW MCL	Sec Goal	Date/Time	By	Reference
2-Methylnaphthalene	ND	0.05	1	ug/L			08/03/16	DD	SW8270D (SIM)
Acenaphthene	ND	0.05	1	ug/L			08/03/16	DD	SW8270D (SIM)
Acenaphthylene	ND	0.05	1	ug/L			08/03/16	DD	SW8270D (SIM)
Anthracene	ND	0.05	1	ug/L			08/03/16	DD	SW8270D (SIM)
Benz(a)anthracene	ND	0.05	1	ug/L			08/03/16	DD	SW8270D (SIM)
Benzo(a)pyrene	ND	0.02	1	ug/L	0.2		08/03/16	DD	SW8270D (SIM)
Benzo(b)fluoranthene	ND	0.05	1	ug/L			08/03/16	DD	SW8270D (SIM)
Benzo(ghi)perylene	ND	0.05	1	ug/L			08/03/16	DD	SW8270D (SIM)
Benzo(k)fluoranthene	ND	0.05	1	ug/L			08/03/16	DD	SW8270D (SIM)
Chrysene	ND	0.05	1	ug/L			08/03/16	DD	SW8270D (SIM)
Dibenz(a,h)anthracene	ND	0.01	1	ug/L			08/03/16	DD	SW8270D (SIM)
Fluoranthene	0.06	0.05	1	ug/L			08/03/16	DD	SW8270D (SIM)
Fluorene	ND	0.05	1	ug/L			08/03/16	DD	SW8270D (SIM)
Indeno(1,2,3-cd)pyrene	ND	0.05	1	ug/L			08/03/16	DD	SW8270D (SIM)
Naphthalene	ND	0.10	1	ug/L			08/03/16	DD	SW8270D (SIM)
Phenanthrene	ND	0.05	1	ug/L			08/03/16	DD	SW8270D (SIM)
Pyrene	0.05	0.05	1	ug/L			08/03/16	DD	SW8270D (SIM)
QA/QC Surrogates									
% 2-Fluorobiphenyl	71		1	%	NA	NA	08/03/16	DD	30 - 130 %
% Nitrobenzene-d5	77		1	%	NA	NA	08/03/16	DD	30 - 130 %
% Terphenyl-d14	73		1	%	NA	NA	08/03/16	DD	30 - 130 %

Parameter	Result	RL/ PQL	DIL	Units	DW MCL	Sec Goal	Date/Time	By	Reference

3 = This parameter exceeds laboratory specified limits.

RL/PQL=Reporting/Practical Quantitation Level DIL=Dilution (analysis required diluting to evaluate) ND=Not Detected
BRL=Below Reporting Level (less than the reporting level, the lowest amount the laboratory can detect and report.)
MCL = Maximum Contaminant Level MCLG = Maximum Contaminant Level Goal
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Maximum Contaminant Level (Lower of): 40 CFR Part 141; CT Public Health Code 19-13-B102. The highest level of a contaminant that is allowed in drinking water. MCLs are enforceable standards.

Secondary DW Maximum Contaminant Level Goal (MCLG): (Lower of): 40 CFR Part 143; CT Public Health Code 19-13-B102. The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs are non-enforceable public health goals.

Method 508 Comment:
Poor surrogate recovery was observed. Insufficient sample for re-extraction.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
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Phyllis Shiller, Laboratory Director
August 16, 2016
Reviewed and Released by: Ethan Lee, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

August 16, 2016

FOR: Attn: Ms. Stephanie Wierszchalek
Fuss & O'Neill, Inc.
146 Hartford Road
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	WATER	Collected by:	BC	08/02/16	14:45
Location Code:	F&O	Received by:	LB	08/02/16	17:18
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	20160311.A10				

Laboratory Data

SDG ID: GBN84857
Phoenix ID: BN84859

Project ID: OLD HADDAM JAIL
Client ID: 1305160802-47

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Volatiles							
1,1,1,2-Tetrachloroethane	ND	0.50	ug/L	1	08/03/16	HM	524.2
1,1,1-Trichloroethane	ND	0.50	ug/L	1	08/03/16	HM	524.2
1,1,2,2-Tetrachloroethane	ND	0.50	ug/L	1	08/03/16	HM	524.2
1,1,2-Trichloroethane	ND	0.50	ug/L	1	08/03/16	HM	524.2
1,1-Dichloroethane	ND	0.50	ug/L	1	08/03/16	HM	524.2
1,1-Dichloroethene	ND	0.50	ug/L	1	08/03/16	HM	524.2
1,1-Dichloropropene	ND	0.50	ug/L	1	08/03/16	HM	524.2
1,2,3-Trichlorobenzene	ND	0.50	ug/L	1	08/03/16	HM	524.2
1,2,3-Trichloropropane	ND	0.50	ug/L	1	08/03/16	HM	524.2
1,2,4-Trichlorobenzene	ND	0.50	ug/L	1	08/03/16	HM	524.2
1,2,4-Trimethylbenzene	ND	0.50	ug/L	1	08/03/16	HM	524.2
1,2-Dichlorobenzene	ND	0.50	ug/L	1	08/03/16	HM	524.2
1,2-Dichloroethane	ND	0.50	ug/L	1	08/03/16	HM	524.2
1,2-Dichloropropane	ND	0.50	ug/L	1	08/03/16	HM	524.2
1,3,5-Trimethylbenzene	ND	0.50	ug/L	1	08/03/16	HM	524.2
1,3-Dichlorobenzene	ND	0.50	ug/L	1	08/03/16	HM	524.2
1,3-Dichloropropane	ND	0.50	ug/L	1	08/03/16	HM	524.2
1,4-Dichlorobenzene	ND	0.50	ug/L	1	08/03/16	HM	524.2
2,2-Dichloropropane	ND	0.50	ug/L	1	08/03/16	HM	524.2
2-Chlorotoluene	ND	0.50	ug/L	1	08/03/16	HM	524.2
4-Chlorotoluene	ND	0.50	ug/L	1	08/03/16	HM	524.2
Benzene	ND	0.50	ug/L	1	08/03/16	HM	524.2
Bromobenzene	ND	0.50	ug/L	1	08/03/16	HM	524.2
Bromochloromethane	ND	0.50	ug/L	1	08/03/16	HM	524.2
Bromodichloromethane	ND	0.50	ug/L	1	08/03/16	HM	524.2
Bromoform	ND	0.50	ug/L	1	08/03/16	HM	524.2

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Bromomethane	ND	0.50	ug/L	1	08/03/16	HM	524.2
Carbon tetrachloride	ND	0.50	ug/L	1	08/03/16	HM	524.2
Chlorobenzene	ND	0.50	ug/L	1	08/03/16	HM	524.2
Chloroethane	ND	0.50	ug/L	1	08/03/16	HM	524.2
Chloroform	ND	0.50	ug/L	1	08/03/16	HM	524.2
Chloromethane	ND	0.50	ug/L	1	08/03/16	HM	524.2
cis-1,2-Dichloroethene	ND	0.50	ug/L	1	08/03/16	HM	524.2
cis-1,3-Dichloropropene	ND	0.40	ug/L	1	08/03/16	HM	524.2
Dibromochloromethane	ND	0.50	ug/L	1	08/03/16	HM	524.2
Dibromomethane	ND	0.50	ug/L	1	08/03/16	HM	524.2
Dichlorodifluoromethane	ND	0.50	ug/L	1	08/03/16	HM	524.2
Ethylbenzene	ND	0.50	ug/L	1	08/03/16	HM	524.2
Hexachlorobutadiene	ND	0.45	ug/L	1	08/03/16	HM	524.2
Isopropylbenzene	ND	0.50	ug/L	1	08/03/16	HM	524.2
m&p-Xylene	ND	0.50	ug/L	1	08/03/16	HM	524.2
Methyl t-butyl ether (MTBE)	ND	0.50	ug/L	1	08/03/16	HM	524.2
Methylene chloride	ND	0.50	ug/L	1	08/03/16	HM	524.2
Naphthalene	ND	0.50	ug/L	1	08/03/16	HM	524.2
n-Butylbenzene	ND	0.50	ug/L	1	08/03/16	HM	524.2
n-Propylbenzene	ND	0.50	ug/L	1	08/03/16	HM	524.2
o-Xylene	ND	0.50	ug/L	1	08/03/16	HM	524.2
p-Isopropyltoluene	ND	0.50	ug/L	1	08/03/16	HM	524.2
sec-Butylbenzene	ND	0.50	ug/L	1	08/03/16	HM	524.2
Styrene	ND	0.50	ug/L	1	08/03/16	HM	524.2
tert-Butylbenzene	ND	0.50	ug/L	1	08/03/16	HM	524.2
Tetrachloroethene	ND	0.50	ug/L	1	08/03/16	HM	524.2
Toluene	ND	0.50	ug/L	1	08/03/16	HM	524.2
Total Trihalomethanes	ND	0.50	ug/L	1	08/03/16	HM	524.2
Total Xylenes	ND	0.50	ug/L	1	08/03/16	HM	524.2
trans-1,2-Dichloroethene	ND	0.50	ug/L	1	08/03/16	HM	524.2
trans-1,3-Dichloropropene	ND	0.40	ug/L	1	08/03/16	HM	524.2
Trichloroethene	ND	0.50	ug/L	1	08/03/16	HM	524.2
Trichlorofluoromethane	ND	0.50	ug/L	1	08/03/16	HM	524.2
Vinyl chloride	ND	0.50	ug/L	1	08/03/16	HM	524.2
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	78		%	1	08/03/16	HM	70 - 130 %
% Bromofluorobenzene	75		%	1	08/03/16	HM	70 - 130 %
Volatile Library Search	Completed				08/03/16	HM	

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

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Phyllis Shiller

Phyllis Shiller, Laboratory Director
August 16, 2016
Reviewed and Released by: Ethan Lee, Project Manager

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT ID

1305160802-36

Lab Name: Phoenix Environmental Labs

Client: F&O

Lab Code: Phoenix   Case No.:

SAS No.:

SDG No.: GBN84857

Matrix:(soil/water) WATER

Lab Sample ID: BN84857

Sample wt/vol: 5 (g/mL) mL

Lab File ID: 0802B17.D

Level: (low/med)

Date Received: 08/02/16

% Moisture: not dec. 100

Date Analyzed: 08/03/16

GC Column: rtx-vms   ID: 0.18 (mm)

Dilution Factor: 1

Purge Volume 5000 (uL)

Soil Aliquot Vol (uL): n.a.

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/KG) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

FORM I VOA-TIC

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT ID

1305160802-39

Lab Name: Phoenix Environmental Labs   Client: F&O

Lab Code: Phoenix   Case No.:   SAS No.:   SDG No.: GBN84857

Matrix:(soil/water) WATER   Lab Sample ID: BN84858

Sample wt/vol: 5 (g/mL) mL   Lab File ID: 0802B18.D

Level: (low/med)   Date Received: 08/02/16

% Moisture: not dec. 100   Date Analyzed: 08/03/16

GC Column: rtx-vms   ID: 0.18 (mm)   Dilution Factor: 1

Purge Volume 5000 (uL)   Soil Aliquot Vol (uL): n.a.

Number TICs found: 0   CONCENTRATION UNITS: (ug/L or ug/KG) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

FORM I VOA-TIC

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT ID

1305160802-47

Lab Name: Phoenix Environmental Labs   Client: F&O

Lab Code: Phoenix   Case No.:   SAS No.:   SDG No.: GBN84857

Matrix:(soil/water) WATER   Lab Sample ID: BN84859

Sample wt/vol: 5 (g/mL) mL   Lab File ID: 0802B19.D

Level: (low/med)   Date Received: 08/02/16

% Moisture: not dec. 100   Date Analyzed: 08/03/16

GC Column: rtx-vms ID: 0.18 (mm)   Dilution Factor: 1

Purge Volume 5000 (uL)   Soil Aliquot Vol (uL): n.a.

Number TICs found: 0   CONCENTRATION UNITS: (ug/L or ug/KG) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

FORM I VOA-TIC

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

QA/QC Report

August 16, 2016

QA/QC Data

SDG I.D.: GBN84857

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 354353A (mg/L), QC Sample No: BN83981 (BN84858)													
Arsenic	BRL	0.001				110			107			85 - 115	20
Selenium	BRL	0.001				108			118			85 - 115	20
Comment:													
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.													
QA/QC Batch 354435 (mg/L), QC Sample No: BN84442 (BN84858)													
Mercury	BRL	0.0002	<0.0002	<0.0002	NC	99.4			98.4			85 - 115	20
QA/QC Batch 354416 (mg/L), QC Sample No: BN84869 (BN84858)													
ICP Metals - Aqueous													
Barium	BRL	0.001	0.438	0.449	2.50	108			110			85 - 115	20
Cadmium	BRL	0.001	<0.001	<0.001	NC	104			103			85 - 115	20
Chromium	BRL	0.001	<0.001	<0.001	NC	104			106			85 - 115	20
Lead	BRL	0.001	<0.001	<0.001	NC	103			103			85 - 115	20
Silver	BRL	0.001	<0.001	<0.001	NC	98.1			103			85 - 115	20
Comment:													
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.													

Environmental Laboratories, Inc.

587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045

Tel. (860) 645-1102 Fax (860) 645-0823

QA/QC Report

August 16, 2016

QA/QC Data

SDG I.D.: GBN84857

QA/QC Batch 354438 (ug/L), QC Sample No: BN83417 (BN84857, BN84858)

Pesticides - Drinking Water

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
4,4' -DDD	ND	0.010	104			113			70 - 130	20	
4,4' -DDE	ND	0.010	98			105			70 - 130	20	
4,4' -DDT	ND	0.010	102			103			70 - 130	20	
a-BHC	ND	0.010	80			98			70 - 130	20	
a-Chlordane	ND	0.010	86			94			70 - 130	20	
Aldrin	ND	0.010	120			125			70 - 130	20	
b-BHC	ND	0.010	102			104			70 - 130	20	
Chlordane	ND	0.10	81			88			70 - 130	20	
d-BHC	ND	0.010	74			74			70 - 130	20	
Dieldrin	ND	0.010	98			106			70 - 130	20	
Endosulfan I	ND	0.010	99			105			70 - 130	20	
Endosulfan II	ND	0.010	100			112			70 - 130	20	
Endosulfan sulfate	ND	0.010	89			93			70 - 130	20	
Endrin	ND	0.010	103			110			70 - 130	20	
Endrin aldehyde	ND	0.010	88			77			70 - 130	20	
g-BHC	ND	0.010	86			103			70 - 130	20	
g-Chlordane	ND	0.010	81			88			70 - 130	20	
Heptachlor	ND	0.010	79			100			70 - 130	20	
Heptachlor epoxide	ND	0.010	91			102			70 - 130	20	
Methoxychlor	ND	0.010	96			119			70 - 130	20	
Toxaphene	ND	0.40	NA			NA			70 - 130	20	
% DCBP	102	%	87			89			70 - 130	20	

Comment:

Alpha and gamma chlordane were spiked and analyzed instead of technical chlordane. PCB is not included in the spiking solution.

QA/QC Batch 354361 (ug/L), QC Sample No: BN84015 (BN84858)

Semivolatiles by SIM - Drinking Water

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
2-Methylnaphthalene	ND	0.05	57	71	21.9				30 - 130	20	r
Acenaphthene	ND	0.05	70	79	12.1				30 - 130	20	
Acenaphthylene	ND	0.04	65	75	14.3				30 - 130	20	
Anthracene	ND	0.02	81	84	3.6				30 - 130	20	
Benz(a)anthracene	ND	0.02	79	80	1.3				30 - 130	20	
Benzo(a)pyrene	ND	0.02	77	79	2.6				30 - 130	20	
Benzo(b)fluoranthene	ND	0.02	80	82	2.5				30 - 130	20	
Benzo(ghi)perylene	ND	0.02	83	81	2.4				30 - 130	20	
Benzo(k)fluoranthene	ND	0.02	74	79	6.5				30 - 130	20	
Chrysene	ND	0.02	81	83	2.4				30 - 130	20	
Dibenz(a,h)anthracene	ND	0.01	98	95	3.1				30 - 130	20	
Fluoranthene	ND	0.04	82	85	3.6				30 - 130	20	
Fluorene	ND	0.05	77	85	9.9				30 - 130	20	
Indeno(1,2,3-cd)pyrene	ND	0.02	93	90	3.3				30 - 130	20	
Naphthalene	ND	0.05	45	61	30.2				30 - 130	20	r
Phenanthrene	ND	0.05	75	78	3.9				30 - 130	20	
Pyrene	ND	0.02	84	88	4.7				30 - 130	20	
% 2-Fluorobiphenyl	46	%	59	69	15.6				30 - 130	20	
% Nitrobenzene-d5	41	%	44	57	25.7				30 - 130	20	r
% Terphenyl-d14	82	%	89	92	3.3				30 - 130	20	

QA/QC Data

SDG I.D.: GBN84857

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits

Comment:

A LCS and LCS Duplicate were performed instead of a matrix spike and matrix spike duplicate.

Additional 8270 criteria:20% of compounds can be outside of acceptance criteria as long as recovery is at least 10%. (Acid surrogates acceptance range for aqueous samples: 15-110%, for soils 30-130%)

QA/QC Batch 354467 (ug/L), QC Sample No: BN84441 (BN84857, BN84858, BN84859)

Volatiles - Drinking Water

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
1,1,1,2-Tetrachloroethane	ND	0.50	98	85	14.2	94	92	2.2	70 - 130	30
1,1,1-Trichloroethane	ND	0.50	97	83	15.6	96	92	4.3	70 - 130	30
1,1,2,2-Tetrachloroethane	ND	0.50	101	88	13.8	105	103	1.9	70 - 130	30
1,1,2-Trichloroethane	ND	0.50	91	79	14.1	96	94	2.1	70 - 130	30
1,1-Dichloroethane	ND	0.50	94	80	16.1	93	95	2.1	70 - 130	30
1,1-Dichloroethene	ND	0.50	93	84	10.2	93	93	0.0	70 - 130	30
1,1-Dichloropropene	ND	0.40	99	86	14.1	92	93	1.1	70 - 130	30
1,2,3-Trichlorobenzene	ND	0.50	100	86	15.1	98	96	2.1	70 - 130	30
1,2,3-Trichloropropane	ND	0.50	99	88	11.8	103	101	2.0	70 - 130	30
1,2,4-Trichlorobenzene	ND	0.50	99	87	12.9	93	91	2.2	70 - 130	30
1,2,4-Trimethylbenzene	ND	0.50	101	87	14.9	99	96	3.1	70 - 130	30
1,2-Dichlorobenzene	ND	0.50	98	85	14.2	98	95	3.1	70 - 130	30
1,2-Dichloroethane	ND	0.50	96	82	15.7	98	97	1.0	70 - 130	30
1,2-Dichloropropane	ND	0.50	96	86	11.0	97	96	1.0	70 - 130	30
1,3,5-Trimethylbenzene	ND	0.50	102	90	12.5	102	97	5.0	70 - 130	30
1,3-Dichlorobenzene	ND	0.50	99	87	12.9	99	95	4.1	70 - 130	30
1,3-Dichloropropane	ND	0.50	97	83	15.6	95	95	0.0	70 - 130	30
1,4-Dichlorobenzene	ND	0.50	100	88	12.8	100	96	4.1	70 - 130	30
2,2-Dichloropropane	ND	0.50	91	79	14.1	80	77	3.8	70 - 130	30
2-Chlorotoluene	ND	0.50	100	87	13.9	98	95	3.1	70 - 130	30
4-Chlorotoluene	ND	0.50	98	87	11.9	99	94	5.2	70 - 130	30
Benzene	ND	0.50	93	82	12.6	98	95	3.1	70 - 130	30
Bromobenzene	ND	0.50	98	87	11.9	98	100	2.0	70 - 130	30
Bromochloromethane	ND	0.50	95	84	12.3	98	94	4.2	70 - 130	30
Bromodichloromethane	ND	0.50	100	86	15.1	99	96	3.1	70 - 130	30
Bromoform	ND	0.50	101	83	19.6	91	88	3.4	70 - 130	30
Bromomethane	ND	0.50	94	86	8.9	98	96	2.1	70 - 130	30
Carbon tetrachloride	ND	0.50	97	86	12.0	88	84	4.7	70 - 130	30
Chlorobenzene	ND	0.50	98	84	15.4	96	93	3.2	70 - 130	30
Chloroethane	ND	0.50	88	83	5.8	100	97	3.0	70 - 130	30
Chloroform	ND	0.50	96	84	13.3	101	98	3.0	70 - 130	30
Chloromethane	ND	0.50	92	82	11.5	99	98	1.0	70 - 130	30
cis-1,2-Dichloroethene	ND	0.50	97	87	10.9	99	96	3.1	70 - 130	30
cis-1,3-Dichloropropene	ND	0.40	92	79	15.2	89	89	0.0	70 - 130	30
Dibromochloromethane	ND	0.50	100	87	13.9	95	94	1.1	70 - 130	30
Dibromomethane	ND	0.50	95	85	11.1	98	99	1.0	70 - 130	30
Dichlorodifluoromethane	ND	0.50	79	70	12.1	94	86	8.9	70 - 130	30
Ethylbenzene	ND	0.50	94	84	11.2	95	92	3.2	70 - 130	30
Hexachlorobutadiene	ND	0.40	93	83	11.4	84	81	3.6	70 - 130	30
Isopropylbenzene	ND	0.50	100	85	16.2	94	91	3.2	70 - 130	30
m&p-Xylene	ND	0.50	100	87	13.9	98	94	4.2	70 - 130	30
Methyl t-butyl ether (MTBE)	ND	0.50	91	79	14.1	84	87	3.5	70 - 130	30
Methylene chloride	ND	0.50	91	78	15.4	92	94	2.2	70 - 130	30
Naphthalene	ND	0.50	102	88	14.7	94	96	2.1	70 - 130	30
n-Butylbenzene	ND	0.50	104	90	14.4	98	96	2.1	70 - 130	30
n-Propylbenzene	ND	0.50	98	86	13.0	97	90	7.5	70 - 130	30
o-Xylene	ND	0.50	96	81	16.9	92	91	1.1	70 - 130	30
p-Isopropyltoluene	ND	0.50	105	91	14.3	99	95	4.1	70 - 130	30
sec-Butylbenzene	ND	0.50	104	91	13.3	99	95	4.1	70 - 130	30
Styrene	ND	0.50	103	87	16.8	102	101	1.0	70 - 130	30
tert-Butylbenzene	ND	0.50	101	88	13.8	95	93	2.1	70 - 130	30
Tetrachloroethene	ND	0.50	102	87	15.9	93	91	2.2	70 - 130	30

QA/QC Data

SDG I.D.: GBN84857

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
Toluene	ND	0.50	91	82	10.4	92	91	1.1	70 - 130	30
trans-1,2-Dichloroethene	ND	0.50	90	81	10.5	92	92	0.0	70 - 130	30
trans-1,3-Dichloropropene	ND	0.40	98	80	20.2	90	89	1.1	70 - 130	30
Trichloroethene	ND	0.50	95	86	9.9	92	90	2.2	70 - 130	30
Trichlorofluoromethane	ND	0.50	91	80	12.9	91	87	4.5	70 - 130	30
Vinyl chloride	ND	0.50	94	87	7.7	99	100	1.0	70 - 130	30
% 1,2-dichlorobenzene-d4	82	%	101	104	2.9	103	101	2.0	70 - 130	30
% Bromofluorobenzene	84	%	100	101	1.0	98	97	1.0	70 - 130	30

Comment:

A blank MS/MSD was analyzed with this batch.

r = This parameter is outside laboratory RPD specified recovery limits.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference
LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample Duplicate
MS - Matrix Spike
MS Dup - Matrix Spike Duplicate
NC - No Criteria
Intf - Interference

Phyllis Shiller

Phyllis Shiller, Laboratory Director
August 16, 2016

Tuesday, August 16, 2016

Criteria: CT: GWP, SWP

State: CT

Sample Criteria Exceedences Report

GBN84857 - FO

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units

*** No Data to Display ***

Phoenix Laboratories does not assume responsibility for the data contained in this report. It is provided as an additional tool to identify requested criteria exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.

REASONABLE CONFIDENCE PROTOCOL
LABORATORY ANALYSIS QA/QC CERTIFICATION FORM

Laboratory Name: Phoenix Environmental Labs, Inc. ***Client:*** Fuss & O'Neill, Inc.

Project Location: OLD HADDAM JAIL ***Project Number:***

Laboratory Sample ID(s): BN84857-BN84859 ***Sampling Date(s):*** 8/2/2016

List RCP Methods Used (e.g., 8260, 8270, et cetera) 8270

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 CT DEP 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 or EPH method conducted without significant modifications (see section 11.3 of respective RCP methods)**	☐ Yes ☐ No ☑ NA
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 ☐ NA
4	**Were all QA/QC performance criteria specified in the Reasonable Confidence Protocol documents acheived? See Sections: 508, SVOASIM Narration.**	☐ Yes ☑ No
5	**a) Were reporting limits specified or referenced on the chain-of-custody?** **b) Were these reporting limits met?**	☑ Yes ☐ No ☑ Yes ☐ No
6	**For each analytical method referenced in this laboratory report package, were results reported for all constituents 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 in the 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: Ethan Lee **Position:** Project Manager

Printed Name: Ethan Lee **Date:** Tuesday, August 16, 2016

Name of Laboratory Phoenix Environmental Labs, Inc.

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

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

NY # 11301

RCP Certification Report

August 16, 2016

SDG I.D.: GBN84857

SDG Comments

Metals Analysis:
The client requested a shorter list of elements than the RCP list. Only the RCRA 8 Metals are reported as requested on the chain of custody.

8270 Semi-volatile Organics:
The client requested a short list for 8270 RCP Semivolatile. Only the PAH constituents are reported as requested on the chain-of-custody.

Volatiles Analysis:
The client requested volatiles by 524.2. This method has a shorter list of compounds than the RCP volatile list. The following compounds from the RCP Volatile analyte list were not reported: 2-Hexanone, 4-Methyl-2-pentanone, Acetone, Acrylonitrile, Carbon Disulfide, Tetrahydrofuran (THF), trans-1,4-dichloro-2-butene, Trichlorotrifluoroethane.

Temperature above 6C:
The samples were received in a cooler with ice packs. The samples were delivered to the Laboratory within a short period of time after sample collection. Therefore no significant bias is suspected.

508

Were all QA/QC performance criteria specified in the Reasonable Confidence Protocol documents achieved? No.

BN84858 - The surrogate recovery is below method criteria for %DCBP. Insufficient sample was available for re-extraction. A low bias is possible.

Instrument:

AU-ECD13 08/04/16-1 Michael Hahn, Chemist 08/04/16

BN84857, BN84858

Endrin and DDT breakdown was evaluated and is below 15%.

The initial calibration RSD for the compound list did not exceed 20% except for the following compounds: None

The initial calibration () RSD for the compound list was less than 20% except for the following compounds: None.
The initial calibration (508726BI) RSD for the compound list was less than 20% except for the following compounds: None.

QC (Batch Specific):

Batch 354438 (BN83417)

BN84857, BN84858

All LCS recoveries were within 70 - 130 with the following exceptions: None.
Alpha and gamma chlordane were spiked and analyzed instead of technical chlordane. PCB is not included in the spiking solution.

AA Metals (AS-DW) Narration

Were all QA/QC performance criteria specified in the analytical method achieved? Yes.

Instrument:

PE600-1 08/04/16 02:44 Rick Schweitzer, Tina Hall, Rick Schweitzer, Chemist 08/04/1

BN84858

Any sample below with an analytical spike recovery outside of 85-115% was re-analyzed at a dilution with a passing analytical

AA Metals (AS-DW) Narration

spike recovery.
The following Initial Calibration Verification (ICV) compounds did not meet criteria: None.
The following Continuing Calibration Verification (CCV) compounds did not meet criteria: None.
The following samples did not meet analytical spike criteria: None.

QC (Batch Specific):

Batch 54353A (BN83981)

BN84858

All LCS recoveries were within 85 - 115 with the following exceptions: None.
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.

AA Metals (SE-DW) Narration

Were all QA/QC performance criteria specified in the analytical method achieved? Yes.

Instrument:

PE600-1 08/03/16 11:15 Rick Schweitzer, Tina Hall, Rick Schweitzer, Chemist 08/03/1

BN84858

Any sample below with an analytical spike recovery outside of 85-115% was re-analyzed at a dilution with a passing analytical spike recovery.
The following Initial Calibration Verification (ICV) compounds did not meet criteria: None.
The following Continuing Calibration Verification (CCV) compounds did not meet criteria: None.
The following samples did not meet analytical spike criteria: None.

QC (Batch Specific):

Batch 54353A (BN83981)

BN84858

All LCS recoveries were within 85 - 115 with the following exceptions: None.
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.

Mercury Narration

Were all QA/QC performance criteria specified in the analytical method achieved? Yes.

Instrument:

MERLIN 08/03/16 08:29 Mike Arsenault, Rick Schweitzer, Chemist 08/03/16

BN84858

The method preparation blank contains all of the acids and reagents as the samples; the instrument blanks do not.
The initial calibration met all criteria including a standard run at or below the reporting level.
All calibration verification standards (ICV, CCV) met criteria.
All calibration blank verification standards (ICB, CCB) met criteria.
The matrix spike sample is used to identify spectral interfernce for each batch of samples, if within 85-115%, no interference is observed and no further action is taken.
The following Initial Calibration Verification (ICV) compounds did not meet criteria: None.
The following Continuing Calibration Verification (CCV) compounds did not meet criteria: None.

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NY # 11301

Certification Report

August 16, 2016

SDG I.D.: GBN84857

Mercury Narration

QC (Batch Specific):

Batch 354435 (BN84442)

BN84858

All LCS recoveries were within 85 - 115 with the following exceptions: None.

ICP Metals Narration

Were all QA/QC performance criteria specified in the analytical method achieved? Yes.

Instrument:

BLUE 08/03/16 06:48 Emily Kolominskaya, Chemist 08/03/16

BN84858

The linear range is defined daily by the calibration range.
The following Initial Calibration Verification (ICV) compounds did not meet criteria: None.
The following Continuing Calibration Verification (CCV) compounds did not meet criteria: None.
The following ICP Interference Check (ICSAB) compounds did not meet criteria: None.

QC (Batch Specific):

Batch 354416 (BN84869)

BN84858

All LCS recoveries were within 85 - 115 with the following exceptions: None.
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.

SVOASIM Narration

Were all QA/QC performance criteria specified in the Reasonable Confidence Protocol documents achieved? No.

QC Batch 354361

The LCS/LCSD RPD exceeds the method criteria for one or more analytes, but these analytes were not reported in the sample(s) so no variability is suspected. (2-Methylnaphthalene, Naphthalene)

The LCS/LCSD RPD exceeds the method criteria for one or more surrogates, therefore there may be variability in the reported result. (% Nitrobenzene-d5)

Instrument:

CHEM07 08/03/16-1 Damien Drobinski, Chemist 08/03/16

BN84858

Initial Calibration Verification (CHEM07/SIM_0728):
94% of target compounds met criteria.
The following compounds had %RSDs >20%: None.
The following compounds did not meet recommended response factors: None.
The following compounds did not meet a minimum response factors: None.

Continuing Calibration Verification (CHEM07/0803_02-SIM_0728):

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ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

RCP Certification Report

August 16, 2016

SDG I.D.: GBN84857

SVOASIM Narration

Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.
98% of target compounds met criteria.
The following compounds did not meet % deviation criteria: None.
The following compounds did not meet maximum % deviations: None.
The following compounds did not meet recommended response factors: None.
The following compounds did not meet minimum response factors: None.

QC (Batch Specific):

Batch 354361 (BN84015)

BN84858

All LCS recoveries were within 30 - 130 with the following exceptions: None.
All LCSD recoveries were within 30 - 130 with the following exceptions: None.
All LCS/LCSD RPDs were less than 20% with the following exceptions: % Nitrobenzene-d5(25.7%), 2-Methylnaphthalene(21.9%), Naphthalene(30.2%)
A LCS and LCS Duplicate were performed instead of a matrix spike and matrix spike duplicate.
Additional 8270 criteria:20% of compounds can be outside of acceptance criteria as long as recovery is at least 10%. (Acid surrogates acceptance range for aqueous samples: 15-110%, for soils 30-130%)

VOA-524

Were all QA/QC performance criteria specified in the Reasonable Confidence Protocol documents achieved? Yes.

Instrument:

CHEM15 08/02/16-1 Harry Mullin, Chemist 08/02/16

BN84857, BN84858, BN84859

Initial Calibration Verification (CHEM15/524_0801):
100% of target compounds met criteria.
The following compounds had %RSDs >20%: None.
The following compounds did not meet recommended response factors: None.
The following compounds did not meet a minimum response factors: None.

524 Method Continuing Calibration Verification (CHEM15/0802B03-524_0801):
100% of the target compounds met criteria. The following compounds did not meet minimum % deviations: None.
The following compounds did not meet recommended response factors: None.
The following compounds did not meet minimum response factors: None.

QC (Batch Specific):

Batch 354467 (BN84441)

BN84857, BN84858, BN84859

All LCS recoveries were within 70 - 130 with the following exceptions: None.
All LCSD recoveries were within 70 - 130 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.
A blank MS/MSD was analyzed with this batch.

Temperature Narration

Environmental Laboratories, Inc.
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NY # 11301

RCP Certification Report

August 16, 2016

SDG I.D.: GBN84857

The samples were received at 8C with cooling initiated.
(Note acceptance criteria is above freezing up to 6°C)

FUSS & O'NEILL
(860) 646-2469 • www.FandO.com

☒ 146 Hartford Road, Manchester, CT 06040
☐ 56 Quarry Road, Trumbull, CT 06611
☐ 1419 Richland Street, Columbia, SC 29201
☐ 78 Interstate Drive, West Springfield, MA 01089
☐ 317 Iron Horse Way, Suite 204, Providence, RI 02908
☐ 80 Washington Street, Suite 301, Poughkeepsie, NY
☐ Other

8°w/c+IP

CHAIN-OF-CUSTODY RECORD 36417

Turnaround
☐ 24-Hour* ☐ 72-Hour* ☐ Other ____ (days)
☐ 48-Hour* ☒ Standard (5 days) *Surcharge Applies

PROJECT NAME: Old Haddam Jail
PROJECT LOCATION: Haddam, CT
PROJECT NUMBER: 20160311.A10
LABORATORY: Phoenix

REPORT TO: ~~Stephanie Wiersch~~ Stefanie Wierszchalek (F+O)
INVOICE TO: ↓
P.O. NO.:
Sampler's Signature: [signature] Date: 8/2/16

Source Codes:
MW=Monitoring Well PW=Potable Water T=Treatment Facility S=Soil B=Sediment
SW=Surface Water ST=Stormwater W=Waste A=Air C=Concrete
X=Other Trip Blank

Analysis Request / Containers

Item No.	Transfer Check 1	2	3	4	Sample Number	Source Code	Date Sampled	Time Sampled	VOCs	Pesticides	PAHs	Metals (RCRA 8)					Soil VOA Vial, ☐ methanol	Soil VOA Vial, ☐ water	Glass Soil Container ( ) oz ☐ $Na(SO_4)_2$	Other:	Other:	Water VOA Vial, ☐ As is ☒ HCl	Glass Amber (1000 ml), ☒ As is ☐ H_2SO_4	Plastic - As is, ☐ 250 ml ☐ 500 ☐ 1000 ml	Plastic - H_2SO_4, 250 ml ☐ 500 ml	Plastic - HNO_3, 250 ml ☒ Filtered ☐ 0.45µ ☐ 10µ (unf)	Plastic - NaOH, 250 ml	Comments
1					130516 0802-36	PW	8/2/16	0930	X	X												3	1			[illegible]	[illegible]	84857
2					-39	MW	8/2/16	1133	X	X	X	X										3	2			1		84858
					-47	X	8/2/16	1445	X													2						84859

Transfer Number	Relinquished By	Accepted By	Date	Time
1	[signature]	[signature]	8/2/16	1711
2				
3				
4				

Charge Exceptions: ☐ CT Tax Exempt ☐ QA/QC ☐ Other ____
____ Duplicates ____ Blanks (Item Nos:)

Reporting and Detection Limit Requirements: ☒ RCP Deliverables ☐ MCP CAM Cert.
GA reporting and detection limits

Additional Comments:
Tax Exempt

PHOENIX
Environmental Laboratories, Inc.

Monday, August 08, 2016

Attn: Ms. Stephanie Wierszchalek
Fuss & O'Neill, Inc.
146 Hartford Road
Manchester, CT 06040

Project ID: OLD HADDAM SCHOOL
Sample ID#s: BN84860 - BN84861, BN84863, BN84865, BN84867

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext. 200.

Sincerely yours,

Phyllis Shiller

Phyllis Shiller
Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #MA-CT-007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B
NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

August 08, 2016

FOR: Attn: Ms. Stephanie Wierszchalek
Fuss & O'Neill, Inc.
146 Hartford Road
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:	BC	08/02/16	9:45
Location Code:	F&O	Received by:	LB	08/02/16	17:11
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	20160311.A10				

Laboratory Data

SDG ID: GBN84860
Phoenix ID: BN84860

Project ID: OLD HADDAM SCHOOL
Client ID: 1305160802-37

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Arsenic	4.2	1.2	mg/Kg	1	08/04/16	LK	SW6010C
Lead	61.8	0.61	mg/Kg	1	08/04/16	LK	SW6010C
Percent Solid	57		%		08/02/16	W	SW846-%Solid
Soil Extraction for Pesticide	Completed				08/02/16	CC/V	SW3545A
Total Metals Digest	Completed				08/03/16	X/AG	SW3050B
Pesticides							
4,4' -DDD	ND	11	ug/Kg	2	08/03/16	CE	SW8081B
4,4' -DDE	ND	11	ug/Kg	2	08/03/16	CE	SW8081B
4,4' -DDT	ND	11	ug/Kg	2	08/03/16	CE	SW8081B
a-BHC	ND	11	ug/Kg	2	08/03/16	CE	SW8081B
Alachlor	ND	11	ug/Kg	2	08/03/16	CE	SW8081B
Aldrin	ND	5.7	ug/Kg	2	08/03/16	CE	SW8081B
b-BHC	ND	11	ug/Kg	2	08/03/16	CE	SW8081B
Chlordane	ND	57	ug/Kg	2	08/03/16	CE	SW8081B
d-BHC	ND	11	ug/Kg	2	08/03/16	CE	SW8081B
Dieldrin	ND	5.7	ug/Kg	2	08/03/16	CE	SW8081B
Endosulfan I	ND	11	ug/Kg	2	08/03/16	CE	SW8081B
Endosulfan II	ND	11	ug/Kg	2	08/03/16	CE	SW8081B
Endosulfan sulfate	ND	11	ug/Kg	2	08/03/16	CE	SW8081B
Endrin	ND	11	ug/Kg	2	08/03/16	CE	SW8081B
Endrin aldehyde	ND	11	ug/Kg	2	08/03/16	CE	SW8081B
Endrin ketone	ND	11	ug/Kg	2	08/03/16	CE	SW8081B
g-BHC	ND	2.3	ug/Kg	2	08/03/16	CE	SW8081B
Heptachlor	ND	11	ug/Kg	2	08/03/16	CE	SW8081B
Heptachlor epoxide	ND	11	ug/Kg	2	08/03/16	CE	SW8081B
Methoxychlor	ND	57	ug/Kg	2	08/03/16	CE	SW8081B
Toxaphene	ND	230	ug/Kg	2	08/03/16	CE	SW8081B

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
QA/QC Surrogates							
% DCBP	75		%	2	08/03/16	CE	30 - 150 %
% TCMX	65		%	2	08/03/16	CE	30 - 150 %

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

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Phyllis Shiller, Laboratory Director
August 08, 2016
Reviewed and Released by: Ethan Lee, Project Manager

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

August 08, 2016

FOR: Attn: Ms. Stephanie Wierszchalek
Fuss & O'Neill, Inc.
146 Hartford Road
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:	BC	08/02/16	10:00
Location Code:	F&O	Received by:	LB	08/02/16	17:11
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	20160311.A10				

Laboratory Data

SDG ID: GBN84860
Phoenix ID: BN84861

Project ID: OLD HADDAM SCHOOL
Client ID: 1305160802-38

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Arsenic	4.4	1.2	mg/Kg	1	08/04/16	LK	SW6010C
Lead	61.3	0.61	mg/Kg	1	08/04/16	LK	SW6010C
Percent Solid	57		%		08/02/16	W	SW846-%Solid
Soil Extraction for Pesticide	Completed				08/02/16	CC/V	SW3545A
Total Metals Digest	Completed				08/03/16	X/AG	SW3050B
Pesticides							
4,4' -DDD	ND	11	ug/Kg	2	08/03/16	CE	SW8081B
4,4' -DDE	ND	11	ug/Kg	2	08/03/16	CE	SW8081B
4,4' -DDT	ND	11	ug/Kg	2	08/03/16	CE	SW8081B
a-BHC	ND	11	ug/Kg	2	08/03/16	CE	SW8081B
Alachlor	ND	11	ug/Kg	2	08/03/16	CE	SW8081B
Aldrin	ND	5.7	ug/Kg	2	08/03/16	CE	SW8081B
b-BHC	ND	11	ug/Kg	2	08/03/16	CE	SW8081B
Chlordane	ND	57	ug/Kg	2	08/03/16	CE	SW8081B
d-BHC	ND	11	ug/Kg	2	08/03/16	CE	SW8081B
Dieldrin	ND	5.7	ug/Kg	2	08/03/16	CE	SW8081B
Endosulfan I	ND	11	ug/Kg	2	08/03/16	CE	SW8081B
Endosulfan II	ND	11	ug/Kg	2	08/03/16	CE	SW8081B
Endosulfan sulfate	ND	11	ug/Kg	2	08/03/16	CE	SW8081B
Endrin	ND	11	ug/Kg	2	08/03/16	CE	SW8081B
Endrin aldehyde	ND	11	ug/Kg	2	08/03/16	CE	SW8081B
Endrin ketone	ND	11	ug/Kg	2	08/03/16	CE	SW8081B
g-BHC	ND	2.3	ug/Kg	2	08/03/16	CE	SW8081B
Heptachlor	ND	11	ug/Kg	2	08/03/16	CE	SW8081B
Heptachlor epoxide	ND	11	ug/Kg	2	08/03/16	CE	SW8081B
Methoxychlor	ND	57	ug/Kg	2	08/03/16	CE	SW8081B
Toxaphene	ND	230	ug/Kg	2	08/03/16	CE	SW8081B

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
QA/QC Surrogates							
% DCBP	59		%	2	08/03/16	CE	30 - 150 %
% TCMX	48		%	2	08/03/16	CE	30 - 150 %

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

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Phyllis Shiller, Laboratory Director
August 08, 2016
Reviewed and Released by: Ethan Lee, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

August 08, 2016

FOR: Attn: Ms. Stephanie Wierszchalek
Fuss & O'Neill, Inc.
146 Hartford Road
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:	BC	08/02/16	13:30
Location Code:	F&O	Received by:	LB	08/02/16	17:11
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	20160311.A10				

Laboratory Data

SDG ID: GBN84860
Phoenix ID: BN84863

Project ID: OLD HADDAM SCHOOL
Client ID: 1305160802-41

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Arsenic	5.24	0.91	mg/Kg	1	08/04/16	LK	SW6010C
Lead	26.8	0.46	mg/Kg	1	08/04/16	LK	SW6010C
Percent Solid	76		%		08/02/16	W	SW846-%Solid
Soil Extraction for Pesticide	Completed				08/02/16	CC/V	SW3545A
Total Metals Digest	Completed				08/03/16	X/AG	SW3050B
Pesticides							
4,4' -DDD	ND	8.7	ug/Kg	2	08/03/16	CE	SW8081B
4,4' -DDE	ND	8.7	ug/Kg	2	08/03/16	CE	SW8081B
4,4' -DDT	9.3	8.7	ug/Kg	2	08/03/16	CE	SW8081B
a-BHC	ND	8.7	ug/Kg	2	08/03/16	CE	SW8081B
Alachlor	ND	8.7	ug/Kg	2	08/03/16	CE	SW8081B
Aldrin	ND	4.3	ug/Kg	2	08/03/16	CE	SW8081B
b-BHC	ND	8.7	ug/Kg	2	08/03/16	CE	SW8081B
Chlordane	ND	43	ug/Kg	2	08/03/16	CE	SW8081B
d-BHC	ND	8.7	ug/Kg	2	08/03/16	CE	SW8081B
Dieldrin	ND	4.3	ug/Kg	2	08/03/16	CE	SW8081B
Endosulfan I	ND	8.7	ug/Kg	2	08/03/16	CE	SW8081B
Endosulfan II	ND	8.7	ug/Kg	2	08/03/16	CE	SW8081B
Endosulfan sulfate	ND	8.7	ug/Kg	2	08/03/16	CE	SW8081B
Endrin	ND	8.7	ug/Kg	2	08/03/16	CE	SW8081B
Endrin aldehyde	ND	8.7	ug/Kg	2	08/03/16	CE	SW8081B
Endrin ketone	ND	8.7	ug/Kg	2	08/03/16	CE	SW8081B
g-BHC	ND	1.7	ug/Kg	2	08/03/16	CE	SW8081B
Heptachlor	ND	8.7	ug/Kg	2	08/03/16	CE	SW8081B
Heptachlor epoxide	ND	8.7	ug/Kg	2	08/03/16	CE	SW8081B
Methoxychlor	ND	43	ug/Kg	2	08/03/16	CE	SW8081B
Toxaphene	ND	170	ug/Kg	2	08/03/16	CE	SW8081B

Project ID: OLD HADDAM SCHOOL

Client ID: 1305160802-41

Phoenix I.D.: BN84863

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
QA/QC Surrogates							
% DCBP	76		%	2	08/03/16	CE	30 - 150 %
% TCMX	63		%	2	08/03/16	CE	30 - 150 %
Client MS/MSD	Completed				08/04/16		

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

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Phyllis Shiller

Phyllis Shiller, Laboratory Director
August 08, 2016
Reviewed and Released by: Ethan Lee, Project Manager

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

August 08, 2016

FOR: Attn: Ms. Stephanie Wierszchalek
Fuss & O'Neill, Inc.
146 Hartford Road
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:	BC	08/02/16	14:00
Location Code:	F&O	Received by:	LB	08/02/16	17:11
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	20160311.A10				

Laboratory Data

SDG ID: GBN84860
Phoenix ID: BN84865

Project ID: OLD HADDAM SCHOOL
Client ID: 1305160802-43

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Arsenic	6.25	0.87	mg/Kg	1	08/04/16	LK	SW6010C
Lead	63.1	0.43	mg/Kg	1	08/04/16	LK	SW6010C
Percent Solid	77		%		08/02/16	W	SW846-%Solid
Soil Extraction for Pesticide	Completed				08/02/16	CC/V	SW3545A
Total Metals Digest	Completed				08/03/16	X/AG	SW3050B

Pesticides

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
4,4' -DDD	ND	8.6	ug/Kg	2	08/03/16	CE	SW8081B
4,4' -DDE	ND	8.6	ug/Kg	2	08/03/16	CE	SW8081B
4,4' -DDT	ND	8.6	ug/Kg	2	08/03/16	CE	SW8081B
a-BHC	ND	8.6	ug/Kg	2	08/03/16	CE	SW8081B
Alachlor	ND	8.6	ug/Kg	2	08/03/16	CE	SW8081B
Aldrin	ND	4.3	ug/Kg	2	08/03/16	CE	SW8081B
b-BHC	ND	8.6	ug/Kg	2	08/03/16	CE	SW8081B
Chlordane	ND	43	ug/Kg	2	08/03/16	CE	SW8081B
d-BHC	ND	8.6	ug/Kg	2	08/03/16	CE	SW8081B
Dieldrin	ND	4.3	ug/Kg	2	08/03/16	CE	SW8081B
Endosulfan I	ND	8.6	ug/Kg	2	08/03/16	CE	SW8081B
Endosulfan II	ND	8.6	ug/Kg	2	08/03/16	CE	SW8081B
Endosulfan sulfate	ND	8.6	ug/Kg	2	08/03/16	CE	SW8081B
Endrin	ND	8.6	ug/Kg	2	08/03/16	CE	SW8081B
Endrin aldehyde	ND	8.6	ug/Kg	2	08/03/16	CE	SW8081B
Endrin ketone	ND	8.6	ug/Kg	2	08/03/16	CE	SW8081B
g-BHC	ND	1.7	ug/Kg	2	08/03/16	CE	SW8081B
Heptachlor	ND	8.6	ug/Kg	2	08/03/16	CE	SW8081B
Heptachlor epoxide	ND	8.6	ug/Kg	2	08/03/16	CE	SW8081B
Methoxychlor	ND	43	ug/Kg	2	08/03/16	CE	SW8081B
Toxaphene	ND	170	ug/Kg	2	08/03/16	CE	SW8081B

Project ID: OLD HADDAM SCHOOL
Client ID: 1305160802-43

Phoenix I.D.: BN84865

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
QA/QC Surrogates							
% DCBP	79		%	2	08/03/16	CE	30 - 150 %
% TCMX	48		%	2	08/03/16	CE	30 - 150 %

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

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Phyllis Shiller, Laboratory Director
August 08, 2016
Reviewed and Released by: Ethan Lee, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

August 08, 2016

FOR: Attn: Ms. Stephanie Wierszchalek
Fuss & O'Neill, Inc.
146 Hartford Road
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:	BC	08/02/16	14:25
Location Code:	F&O	Received by:	LB	08/02/16	17:11
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	20160311.A10				

Laboratory Data

SDG ID: GBN84860
Phoenix ID: BN84867

Project ID: OLD HADDAM SCHOOL
Client ID: 1305160802-45

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Arsenic	3.61	0.84	mg/Kg	1	08/04/16	LK	SW6010C
Lead	27.0	0.42	mg/Kg	1	08/04/16	LK	SW6010C
Percent Solid	84		%		08/02/16	W	SW846-%Solid
Soil Extraction for Pesticide	Completed				08/02/16	CC/V	SW3545A
Total Metals Digest	Completed				08/03/16	X/AG	SW3050B

Pesticides

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
4,4' -DDD	ND	7.8	ug/Kg	2	08/03/16	CE	SW8081B
4,4' -DDE	ND	7.8	ug/Kg	2	08/03/16	CE	SW8081B
4,4' -DDT	ND	7.8	ug/Kg	2	08/03/16	CE	SW8081B
a-BHC	ND	7.8	ug/Kg	2	08/03/16	CE	SW8081B
Alachlor	ND	7.8	ug/Kg	2	08/03/16	CE	SW8081B
Aldrin	ND	3.9	ug/Kg	2	08/03/16	CE	SW8081B
b-BHC	ND	7.8	ug/Kg	2	08/03/16	CE	SW8081B
Chlordane	ND	39	ug/Kg	2	08/03/16	CE	SW8081B
d-BHC	ND	7.8	ug/Kg	2	08/03/16	CE	SW8081B
Dieldrin	ND	3.9	ug/Kg	2	08/03/16	CE	SW8081B
Endosulfan I	ND	7.8	ug/Kg	2	08/03/16	CE	SW8081B
Endosulfan II	ND	7.8	ug/Kg	2	08/03/16	CE	SW8081B
Endosulfan sulfate	ND	7.8	ug/Kg	2	08/03/16	CE	SW8081B
Endrin	ND	7.8	ug/Kg	2	08/03/16	CE	SW8081B
Endrin aldehyde	ND	7.8	ug/Kg	2	08/03/16	CE	SW8081B
Endrin ketone	ND	7.8	ug/Kg	2	08/03/16	CE	SW8081B
g-BHC	ND	1.6	ug/Kg	2	08/03/16	CE	SW8081B
Heptachlor	ND	7.8	ug/Kg	2	08/03/16	CE	SW8081B
Heptachlor epoxide	ND	7.8	ug/Kg	2	08/03/16	CE	SW8081B
Methoxychlor	ND	39	ug/Kg	2	08/03/16	CE	SW8081B
Toxaphene	ND	160	ug/Kg	2	08/03/16	CE	SW8081B

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
QA/QC Surrogates							
% DCBP	83		%	2	08/03/16	CE	30 - 150 %
% TCMX	67		%	2	08/03/16	CE	30 - 150 %

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

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Phyllis Shiller

Phyllis Shiller, Laboratory Director
August 08, 2016
Reviewed and Released by: Ethan Lee, Project Manager

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587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

QA/QC Report

August 08, 2016

QA/QC Data

SDG I.D.: GBN84860

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 354522 (mg/kg), QC Sample No: BN84863 (BN84863)													
ICP Metals - Soil													
Arsenic	BRL	0.66	5.24	4.78	9.20	104			92.0			75 - 125	30
Lead	BRL	0.33	26.8	26.1	2.60	101			92.6			75 - 125	30
QA/QC Batch 354523 (mg/kg), QC Sample No: BN84865 (BN84860, BN84861, BN84865, BN84867)													
ICP Metals - Soil													
Arsenic	BRL	0.66	6.25	6.51	4.10	105			96.7			75 - 125	30
Lead	BRL	0.33	63.1	66.1	4.60	100			98.8			75 - 125	30

PHOENIX

Environmental Laboratories, Inc.
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Tel. (860) 645-1102 Fax (860) 645-0823

QA/QC Report

August 08, 2016

QA/QC Data

SDG I.D.: GBN84860

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
QA/QC Batch 354362 (ug/Kg), QC Sample No: BN84863 2X (BN84860, BN84861, BN84863, BN84865, BN84867)											
Pesticides - Soil											
4,4' -DDD	ND	1.7	98	90	8.5	67	65	3.0	40 - 140	30	
4,4' -DDE	ND	1.7	97	87	10.9	84	84	0.0	40 - 140	30	
4,4' -DDT	ND	1.7	99	91	8.4	64	63	1.6	40 - 140	30	
a-BHC	ND	1.0	82	78	5.0	55	53	3.7	40 - 140	30	
a-Chlordane	ND	3.3	94	87	7.7	127	66	63.2	40 - 140	30	r
Alachlor	ND	3.3	NA	NA	NC	NA	NA	NC	40 - 140	30	
Aldrin	ND	1.0	88	82	7.1	62	58	6.7	40 - 140	30	
b-BHC	ND	1.0	86	81	6.0	60	64	6.5	40 - 140	30	
Chlordane	ND	33	91	86	5.6	61	57	6.8	40 - 140	30	
d-BHC	ND	3.3	72	67	7.2	48	47	2.1	40 - 140	30	
Dieldrin	ND	1.0	96	78	20.7	50	66	27.6	40 - 140	30	
Endosulfan I	ND	3.3	102	91	11.4	70	69	1.4	40 - 140	30	
Endosulfan II	ND	3.3	113	104	8.3	77	72	6.7	40 - 140	30	
Endosulfan sulfate	ND	3.3	90	82	9.3	54	55	1.8	40 - 140	30	
Endrin	ND	3.3	97	89	8.6	68	65	4.5	40 - 140	30	
Endrin aldehyde	ND	3.3	84	76	10.0	45	39	14.3	40 - 140	30	
Endrin ketone	ND	3.3	103	94	9.1	64	62	3.2	40 - 140	30	
g-BHC	ND	1.0	86	80	7.2	58	57	1.7	40 - 140	30	
g-Chlordane	ND	3.3	91	86	5.6	61	57	6.8	40 - 140	30	
Heptachlor	ND	3.3	93	86	7.8	66	57	14.6	40 - 140	30	
Heptachlor epoxide	ND	3.3	94	87	7.7	62	59	5.0	40 - 140	30	
Methoxychlor	ND	3.3	105	98	6.9	69	68	1.5	40 - 140	30	
Toxaphene	ND	130	NA	NA	NC	NA	NA	NC	40 - 140	30	
% DCBP	80	%	115	104	10.0	78	80	2.5	30 - 150	30	
% TCMX	68	%	85	84	1.2	62	57	8.4	30 - 150	30	

r = This parameter is outside laboratory RPD specified recovery limits.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference
LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample Duplicate
MS - Matrix Spike
MS Dup - Matrix Spike Duplicate
NC - No Criteria
Intf - Interference

Phyllis Shiller

Phyllis Shiller, Laboratory Director
August 08, 2016

Criteria: CT: GAM

State: CT

Sample Criteria Exceedences Report

GBN84860 - FO

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units

*** No Data to Display ***

REASONABLE CONFIDENCE PROTOCOL
LABORATORY ANALYSIS QA/QC CERTIFICATION FORM

Laboratory Name: Phoenix Environmental Labs, Inc. ***Client:*** Fuss & O'Neill, Inc.

Project Location: OLD HADDAM SCHOOL ***Project Number:***

Laboratory Sample ID(s): BN84860, BN84861, BN84863, BN84865, BN84867 ***Sampling Date(s):*** 8/2/2016

List RCP Methods Used (e.g., 8260, 8270, et cetera) 6010, 8081

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 CT DEP 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 or EPH method conducted without significant modifications (see section 11.3 of respective RCP methods)**	☐ Yes ☐ No ☑ NA
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 ☐ NA
4	**Were all QA/QC performance criteria specified in the Reasonable Confidence Protocol documents acheived? See Section: PEST Narration.**	☐ Yes ☑ No
5	**a) Were reporting limits specified or referenced on the chain-of-custody?** **b) Were these reporting limits met?**	☑ Yes ☐ No ☑ Yes ☐ No
6	**For each analytical method referenced in this laboratory report package, were results reported for all constituents 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 in the 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: Ethan Lee **Position:** Project Manager

Printed Name: Ethan Lee **Date:** Monday, August 08, 2016

Name of Laboratory Phoenix Environmental Labs, Inc.

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

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

RCP Certification Report

August 08, 2016

SDG I.D.: GBN84860

SDG Comments

Metals Analysis:
The client requested a shorter list of elements than the 6010 RCP list. Only Arsenic and Lead are reported as requested on the chain of custody.

Temperature above 6C:
The samples were received in a cooler with ice packs. The samples were delivered to the Laboratory within a short period of time after sample collection. Therefore no significant bias is suspected.

ICP Metals Narration

Were all QA/QC performance criteria specified in the analytical method achieved? Yes.

Instrument:

ARCOS 08/04/16 06:20 Laura Kinnin, Chemist 08/04/16

BN84860, BN84861, BN84863, BN84865, BN84867

The linear range is defined daily by the calibration range.
The following Initial Calibration Verification (ICV) compounds did not meet criteria: None.
The following Continuing Calibration Verification (CCV) compounds did not meet criteria: None.
The following ICP Interference Check (ICSAB) compounds did not meet criteria: None.

QC (Batch Specific):

Batch 354523 (BN84865)

BN84860, BN84861, BN84865, BN84867

All LCS recoveries were within 75 - 125 with the following exceptions: None.

QC (Site Specific):

Batch 354522 (BN84863)

BN84863

All LCS recoveries were within 75 - 125 with the following exceptions: None.
All MS recoveries were within 75 - 125 with the following exceptions: None.

PEST Narration

Were all QA/QC performance criteria specified in the Reasonable Confidence Protocol documents achieved? No.

QC Batch 354362 (Samples: BN84860, BN84861, BN84863, BN84865, BN84867): -----

The MS/MSD RPD exceeds the method criteria for one or more analytes, therefore there may be variability in the reported result. (a-Chlordane)

Instrument:

AU-ECD13 08/03/16-1 Michael Hahn, Chemist 08/03/16

BN84860, BN84861, BN84863, BN84865, BN84867

8081 Narration:
Endrin and DDT breakdown was evaluated and does not exceed 15%.

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ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

RCP Certification Report

August 08, 2016

SDG I.D.: GBN84860

PEST Narration

The initial calibration (PS725AI) RSD for the compound list was less than 20% except for the following compounds: None.
The initial calibration (PS725BI) RSD for the compound list was less than 20% except for the following compounds: None.
The continuing calibration %D for the compound list was less than 15% except for the following compounds:
Samples: BN84863
  Preceding CC 803A004 - % DCBP 19%H (15%)
  Succeeding CC 803A017 - None.
Samples: BN84863
  Preceding CC 803A017 - None.
  Succeeding CC 803A029 - b-BHC -17%L (15%), Dieldrin -21%L (15%), g-BHC -18%L (15%)
A low "1A" standard was run after the samples to demonstrate capability to detect any compounds outside of the CC acceptance criteria. All reported samples were ND for the affected compounds.
Samples: BN84860, BN84861, BN84863, BN84865, BN84867
  Preceding CC 803A029 - b-BHC -17%L (15%), Dieldrin -21%L (15%), g-BHC -18%L (15%)
  Succeeding CC 803A042 - Dieldrin -23%L (15%)
A low "1A" standard was run after the samples to demonstrate capability to detect any compounds outside of the CC acceptance criteria. All reported samples were ND for the affected compounds.

QC (Site Specific):

Batch 354362 (BN84863)

BN84860, BN84861, BN84863, BN84865, BN84867

All LCS recoveries were within 40 - 140 with the following exceptions: None.
All LCSD recoveries were within 40 - 140 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.
All MS recoveries were within 30 - 150 with the following exceptions: None.
All MSD recoveries were within 30 - 150 with the following exceptions: None.
All MS/MSD RPDs were less than 30% with the following exceptions: a-Chlordane(63.2%)

Temperature Narration

The samples were received at 8C with cooling initiated.
(Note acceptance criteria is above freezing up to 6°C)

FUSS & O'NEILL
(860) 646-2469 • www.FandO.com

☒ 146 Hartford Road, Manchester, CT 06040
☐ 56 Quarry Road, Trumbull, CT 06611
☐ 1419 Richland Street, Columbia, SC 29201
☐ 78 Interstate Drive, West Springfield, MA 01089
☐ 317 Iron Horse Way, Suite 204, Providence, RI 02908
☐ 80 Washington Street, Suite 301, Poughkeepsie, NY
☐ Other

8°w/c 4°

CHAIN-OF-CUSTODY RECORD 36405

Turnaround
☐ 24-Hour* ☐ 72-Hour* ☐ Other ______ (days)
☐ 48-Hour* ☒ Standard (5 days) *Surcharge Applies

PROJECT NAME	PROJECT LOCATION	PROJECT NUMBER	LABORATORY
Old Haddam Soil	Haddam, CT	20160311.A10	Phoenix

REPORT TO: Stefanie Wierstchalek (F+O)
INVOICE TO: ↓
P.O. NO.:
Sampler's Signature: [signature] Date: 8/2/16

Source Codes:
MW=Monitoring Well PW=Potable Water T=Treatment Facility S=Soil B=Sediment
SW=Surface Water ST=Stormwater W=Waste A=Air C=Concrete
X=Other

Analysis Request: Pesticides; Arsenic + Lead

Containers: Soil VOA Vial, ☐ methanol; Soil VOA Vial, ☐ water; Glass Soil Container (4) oz ☐ $Na(SO_4)_2$; Other: Glass Soil 8oz; Other:; Water VOA Vial, ☐ As is ☐ HCl; Glass Amber ( ) ml, ☐ As is ☐ H_2SO_4; Plastic - As is, ☐ 250 ml ☐ 500 ☐ 1000 ml; Plastic - H_2SO_4, 250 ml ☐ 500 ml; Plastic - HNO_3, 250 ml ☐ Filtered ☐ 0.45µ ☐ 10µ; Plastic - NaOH, 250 ml

Item No.	Transfer Check 1	2	3	4	Sample Number	Source Code	Date Sampled	Time Sampled	Pesticides	Arsenic + Lead	Soil VOA Vial, methanol	Soil VOA Vial, water	Glass Soil Container (4) oz	Other: Glass Soil 8oz		Comments
1					1305160802-37	S	8/2/16	0945	X	X			2		84800	
2					-38	↓	↓	1000	↓	↓			2		84801	
3					-40			1200					2		84802	HOLD
4					-41			1330						3	84803	MS/MSD
5					-42			1345						1	84804	HOLD
6					-43			1400					2		84805	
7					-44			1415					2		84806	HOLD
8					-45			1425					2		84807	Dup
9					-46			1430					2		84808	HOLD

Transfer Number	Relinquished By	Accepted By	Date	Time
1	[signature]	OParadise	8/2/16	1711
2				
3				
4				

Charge Exceptions: ☐ CT Tax Exempt ☐ QA/QC ☐ Other ______
1 Duplicates ____ Blanks (Item Nos:)

Reporting and Detection Limit Requirements: ☐ RCP Deliverables ☐ MCP CAM Cert.
GA reporting and detection limits

Additional Comments:
One duplicate and one MS/MSD ~~Tax Exempt~~

Wednesday, August 10, 2016

Attn: Stephanie Wierszchalek
Fuss & O'Neill, Inc.
146 Hartford Road
Manchester, CT 06040

Project ID: OLD HADDAM JAIL
Sample ID#s: BN86092

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext. 200.

Sincerely yours,

Phyllis Shiller
Laboratory Director

NELAC - #NY11301	NJ Lab Registration #CT-003
CT Lab Registration #PH-0618	NY Lab Registration #11301
MA Lab Registration #MA-CT-007	PA Lab Registration #68-03530
ME Lab Registration #CT-007	RI Lab Registration #63
NH Lab Registration #213693-A,B	VT Lab Registration #VT11301

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

SDG Comments

August 10, 2016

SDG I.D.: GBN86092

Volatile 8260 analysis:
The reporting level for Acrylonitrile is above the GWP criteria.
1,2-Dibromoethane does not meet GWP criteria, this compound is analyzed by GC/ECD to achieve this criteria.

PHOENIX

Environmental Laboratories, Inc.
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Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

August 10, 2016

FOR: Attn: Stephanie Wierszchalek
Fuss & O'Neill, Inc.
146 Hartford Road
Manchester, CT 06040

Sample Information		Custody Information		Date	Time
Matrix:	WASTE WATER	Collected by:	SW	08/03/16	14:00
Location Code:	F&O	Received by:	SW	08/04/16	14:36
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	20160311A10				

Laboratory Data

SDG ID: GBN86092
Phoenix ID: BN86092

Project ID: OLD HADDAM JAIL
Client ID: 1256160803-01

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Silver	< 0.001	0.001	mg/L	1	08/05/16	LK	E200.7
Arsenic	< 0.004	0.004	mg/L	1	08/05/16	LK	E200.7
Barium	0.017	0.002	mg/L	1	08/05/16	LK	E200.7
Cadmium	< 0.001	0.001	mg/L	1	08/05/16	LK	E200.7
Chromium	< 0.001	0.001	mg/L	1	08/05/16	LK	E200.7
Mercury	< 0.0002	0.0002	mg/L	1	08/08/16	RS	E245.1
Lead	< 0.002	0.002	mg/L	1	08/05/16	LK	E200.7
Selenium	< 0.010	0.010	mg/L	1	08/05/16	LK	E200.7
Mercury Digestion	Completed				08/08/16	W/W	E245.1
PCB Extraction	Completed				08/04/16	Z/Z	SW3510C
Semi-Volatile Extraction	Completed				08/04/16	P/UU	SW3520C
Total Metals Digestion	Completed				08/04/16	AG	
Polychlorinated Biphenyls							
PCB-1016	ND	0.30	ug/L	1	08/05/16	AW	E608
PCB-1221	ND	0.30	ug/L	1	08/05/16	AW	E608
PCB-1232	ND	0.30	ug/L	1	08/05/16	AW	E608
PCB-1242	ND	0.30	ug/L	1	08/05/16	AW	E608
PCB-1248	ND	0.30	ug/L	1	08/05/16	AW	E608
PCB-1254	ND	0.30	ug/L	1	08/05/16	AW	E608
PCB-1260	ND	0.30	ug/L	1	08/05/16	AW	E608
PCB-1262	ND	0.30	ug/L	1	08/05/16	AW	E608
PCB-1268	ND	0.30	ug/L	1	08/05/16	AW	E608
QA/QC Surrogates							
% DCBP	71		%	1	08/05/16	AW	30 - 150 %
% TCMX	80		%	1	08/05/16	AW	30 - 150 %

Project ID: OLD HADDAM JAIL
Client ID: 1256160803-01

Phoenix I.D.: BN86092

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Volatiles							
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	08/05/16	MH	E624
1,1,1-Trichloroethane	ND	1.0	ug/L	1	08/05/16	MH	E624
1,1,2,2-Tetrachloroethane	ND	0.50	ug/L	1	08/05/16	MH	E624
1,1,2-Trichloroethane	ND	1.0	ug/L	1	08/05/16	MH	E624
1,1-Dichloroethane	ND	1.0	ug/L	1	08/05/16	MH	E624
1,1-Dichloroethene	ND	1.0	ug/L	1	08/05/16	MH	E624
1,1-Dichloropropene	ND	1.0	ug/L	1	08/05/16	MH	E624
1,2,3-Trichlorobenzene	ND	1.0	ug/L	1	08/05/16	MH	E624
1,2,3-Trichloropropane	ND	1.0	ug/L	1	08/05/16	MH	E624
1,2,4-Trichlorobenzene	ND	1.0	ug/L	1	08/05/16	MH	E624
1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	08/05/16	MH	E624
1,2-Dibromo-3-chloropropane	ND	1.0	ug/L	1	08/05/16	MH	E624
1,2-Dibromoethane	ND	1.0	ug/L	1	08/05/16	MH	E624
1,2-Dichlorobenzene	ND	1.0	ug/L	1	08/05/16	MH	E624
1,2-Dichloroethane	ND	0.60	ug/L	1	08/05/16	MH	E624
1,2-Dichloropropane	ND	1.0	ug/L	1	08/05/16	MH	E624
1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	08/05/16	MH	E624
1,3-Dichlorobenzene	ND	1.0	ug/L	1	08/05/16	MH	E624
1,3-Dichloropropane	ND	1.0	ug/L	1	08/05/16	MH	E624
1,4-Dichlorobenzene	ND	1.0	ug/L	1	08/05/16	MH	E624
2,2-Dichloropropane	ND	1.0	ug/L	1	08/05/16	MH	E624
2-Chlorotoluene	ND	1.0	ug/L	1	08/05/16	MH	E624
2-Hexanone	ND	5.0	ug/L	1	08/05/16	MH	E624
2-Isopropyltoluene	ND	1.0	ug/L	1	08/05/16	MH	E624
4-Chlorotoluene	ND	1.0	ug/L	1	08/05/16	MH	E624
4-Methyl-2-pentanone	ND	5.0	ug/L	1	08/05/16	MH	E624
Acetone	ND	25	ug/L	1	08/05/16	MH	E624
Acrylonitrile	ND	5.0	ug/L	1	08/05/16	MH	E624
Benzene	ND	0.70	ug/L	1	08/05/16	MH	E624
Bromobenzene	ND	1.0	ug/L	1	08/05/16	MH	E624
Bromochloromethane	ND	1.0	ug/L	1	08/05/16	MH	E624
Bromodichloromethane	ND	0.50	ug/L	1	08/05/16	MH	E624
Bromoform	ND	1.0	ug/L	1	08/05/16	MH	E624
Bromomethane	ND	1.0	ug/L	1	08/05/16	MH	E624
Carbon Disulfide	ND	5.0	ug/L	1	08/05/16	MH	E624
Carbon tetrachloride	ND	1.0	ug/L	1	08/05/16	MH	E624
Chlorobenzene	ND	1.0	ug/L	1	08/05/16	MH	E624
Chloroethane	ND	1.0	ug/L	1	08/05/16	MH	E624
Chloroform	ND	1.0	ug/L	1	08/05/16	MH	E624
Chloromethane	ND	1.0	ug/L	1	08/05/16	MH	E624
cis-1,2-Dichloroethene	ND	1.0	ug/L	1	08/05/16	MH	E624
cis-1,3-Dichloropropene	ND	0.40	ug/L	1	08/05/16	MH	E624
Dibromochloromethane	ND	0.50	ug/L	1	08/05/16	MH	E624
Dibromomethane	ND	1.0	ug/L	1	08/05/16	MH	E624
Dichlorodifluoromethane	ND	1.0	ug/L	1	08/05/16	MH	E624
Ethylbenzene	ND	1.0	ug/L	1	08/05/16	MH	E624
Hexachlorobutadiene	ND	0.40	ug/L	1	08/05/16	MH	E624
Isopropylbenzene	ND	1.0	ug/L	1	08/05/16	MH	E624

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
m&p-Xylene	ND	1.0	ug/L	1	08/05/16	MH	E624
Methyl ethyl ketone	ND	5.0	ug/L	1	08/05/16	MH	E624
Methyl t-butyl ether (MTBE)	ND	1.0	ug/L	1	08/05/16	MH	E624
Methylene chloride	ND	1.0	ug/L	1	08/05/16	MH	E624
Naphthalene	ND	1.0	ug/L	1	08/05/16	MH	E624
n-Butylbenzene	ND	1.0	ug/L	1	08/05/16	MH	E624
n-Propylbenzene	ND	1.0	ug/L	1	08/05/16	MH	E624
o-Xylene	ND	1.0	ug/L	1	08/05/16	MH	E624
p-Isopropyltoluene	ND	1.0	ug/L	1	08/05/16	MH	E624
sec-Butylbenzene	ND	1.0	ug/L	1	08/05/16	MH	E624
Styrene	ND	1.0	ug/L	1	08/05/16	MH	E624
tert-Butylbenzene	ND	1.0	ug/L	1	08/05/16	MH	E624
Tetrachloroethene	ND	1.0	ug/L	1	08/05/16	MH	E624
Tetrahydrofuran (THF)	ND	2.5	ug/L	1	08/05/16	MH	E624
Toluene	ND	1.0	ug/L	1	08/05/16	MH	E624
Total Xylenes	ND	1.0	ug/L	1	08/05/16	MH	E624
trans-1,2-Dichloroethene	ND	1.0	ug/L	1	08/05/16	MH	E624
trans-1,3-Dichloropropene	ND	0.40	ug/L	1	08/05/16	MH	E624
trans-1,4-dichloro-2-butene	ND	5.0	ug/L	1	08/05/16	MH	E624
Trichloroethene	ND	1.0	ug/L	1	08/05/16	MH	E624
Trichlorofluoromethane	ND	1.0	ug/L	1	08/05/16	MH	E624
Trichlorotrifluoroethane	ND	1.0	ug/L	1	08/05/16	MH	E624
Vinyl chloride	ND	1.0	ug/L	1	08/05/16	MH	E624
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	99		%	1	08/05/16	MH	70 - 130 %
% Bromofluorobenzene	95		%	1	08/05/16	MH	70 - 130 %
% Dibromofluoromethane	96		%	1	08/05/16	MH	70 - 130 %
% Toluene-d8	101		%	1	08/05/16	MH	70 - 130 %

Semivolatiles by SIM

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
2-Methylnaphthalene	ND	0.06	ug/L	1	08/05/16	DD	625(SIM)
Acenaphthene	ND	0.06	ug/L	1	08/05/16	DD	625(SIM)
Acenaphthylene	ND	0.06	ug/L	1	08/05/16	DD	625(SIM)
Anthracene	ND	0.06	ug/L	1	08/05/16	DD	625(SIM)
Benz(a)anthracene	ND	0.06	ug/L	1	08/05/16	DD	625(SIM)
Benzo(a)pyrene	ND	0.06	ug/L	1	08/05/16	DD	625(SIM)
Benzo(b)fluoranthene	ND	0.06	ug/L	1	08/05/16	DD	625(SIM)
Benzo(ghi)perylene	ND	0.06	ug/L	1	08/05/16	DD	625(SIM)
Benzo(k)fluoranthene	ND	0.06	ug/L	1	08/05/16	DD	625(SIM)
Chrysene	ND	0.06	ug/L	1	08/05/16	DD	625(SIM)
Dibenz(a,h)anthracene	ND	0.01	ug/L	1	08/05/16	DD	625(SIM)
Fluoranthene	ND	0.06	ug/L	1	08/05/16	DD	625(SIM)
Fluorene	ND	0.06	ug/L	1	08/05/16	DD	625(SIM)
Indeno(1,2,3-cd)pyrene	ND	0.06	ug/L	1	08/05/16	DD	625(SIM)
Naphthalene	ND	0.13	ug/L	1	08/05/16	DD	625(SIM)
Phenanthrene	ND	0.06	ug/L	1	08/05/16	DD	625(SIM)
Pyrene	ND	0.06	ug/L	1	08/05/16	DD	625(SIM)
QA/QC Surrogates							
% 2-Fluorobiphenyl	70		%	1	08/05/16	DD	30 - 130 %
% Nitrobenzene-d5	61		%	1	08/05/16	DD	30 - 130 %

Project ID: OLD HADDAM JAIL
Client ID: 1256160803-01

Phoenix I.D.: BN86092

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
% Terphenyl-d14	80		%	1	08/05/16	DD	30 - 130 %

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
This report must not be reproduced except in full as defined by the attached chain of custody.

Phyllis Shiller

Phyllis Shiller, Laboratory Director
August 10, 2016
Reviewed and Released by: Ethan Lee, Project Manager

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

QA/QC Report

August 10, 2016

QA/QC Data

SDG I.D.: GBN86092

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 354923 (mg/L), QC Sample No: BN85882 (BN86092)													
Mercury - Water	BRL	0.0002	0.0003	<0.0002	NC	92.2			86.5			70 - 130	20
Comment:													
Additional Mercury criteria: LCS acceptance range for waters is 80-120% and for soils is 70-130%.													
QA/QC Batch 354683 (mg/L), QC Sample No: BN86065 (BN86092)													
ICP Metals - Aqueous													
Arsenic	BRL	0.004	<0.004	<0.004	NC	97.1			99.1			75 - 125	20
Barium	BRL	0.002	0.016	0.016	0	103			105			75 - 125	20
Cadmium	BRL	0.001	<0.001	<0.001	NC	100			102			75 - 125	20
Chromium	BRL	0.001	<0.001	<0.001	NC	100			102			75 - 125	20
Lead	BRL	0.002	<0.002	<0.002	NC	101			102			75 - 125	20
Selenium	BRL	0.010	<0.010	<0.010	NC	99.3			99.6			75 - 125	20
Silver	BRL	0.001	<0.001	<0.001	NC	97.8			99.1			75 - 125	20

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QA/QC Report

August 10, 2016

QA/QC Data

SDG I.D.: GBN86092

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 354407 (ug/L), QC Sample No: BN85015 (BN86092)										
Polychlorinated Biphenyls - Waste Water										
PCB-1016	ND	0.050	89	87	2.3				40 - 140	20
PCB-1221	ND	0.050							40 - 140	20
PCB-1232	ND	0.050							40 - 140	20
PCB-1242	ND	0.050							40 - 140	20
PCB-1248	ND	0.050							40 - 140	20
PCB-1254	ND	0.050							40 - 140	20
PCB-1260	ND	0.050	97	96	1.0				40 - 140	20
PCB-1262	ND	0.050							40 - 140	20
PCB-1268	ND	0.050							40 - 140	20
% DCBP (Surrogate Rec)	102	%	94	91	3.2				30 - 150	20
% TCMX (Surrogate Rec)	73	%	101	93	8.2				30 - 150	20

Comment:

A LCS and LCS Duplicate were performed instead of a matrix spike and matrix spike duplicate.

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 354657 (ug/L), QC Sample No: BN85757 (BN86092)										
Semivolatiles by SIM - Waste Water										
2-Methylnaphthalene	ND	0.05	100						30 - 130	20
Acenaphthene	ND	0.05	79						30 - 130	20
Acenaphthylene	ND	0.04	91						30 - 130	20
Anthracene	ND	0.02	83						30 - 130	20
Benz(a)anthracene	ND	0.02	77						30 - 130	20
Benzo(a)pyrene	ND	0.02	75						30 - 130	20
Benzo(b)fluoranthene	ND	0.02	79						30 - 130	20
Benzo(ghi)perylene	ND	0.02	96						30 - 130	20
Benzo(k)fluoranthene	ND	0.02	82						30 - 130	20
Chrysene	ND	0.02	84						30 - 130	20
Dibenz(a,h)anthracene	ND	0.01	97						30 - 130	20
Fluoranthene	ND	0.04	84						30 - 130	20
Fluorene	ND	0.05	80						30 - 130	20
Indeno(1,2,3-cd)pyrene	ND	0.02	79						30 - 130	20
Naphthalene	ND	0.05	70						30 - 130	20
Phenanthrene	ND	0.05	83						30 - 130	20
Pyrene	ND	0.02	86						30 - 130	20
% 2-Fluorobiphenyl	66	%	77						30 - 130	20
% Nitrobenzene-d5	63	%	59						30 - 130	20
% Terphenyl-d14	91	%	91						30 - 130	20

Comment:

A LCS and LCS Duplicate were performed instead of a matrix spike and matrix spike duplicate.
LCSD not reported for this batch.

Additional 8270 criteria:20% of compounds can be outside of acceptance criteria as long as recovery is at least 10%. (Acid surrogates acceptance range for aqueous samples: 15-110%, for soils 30-130%)

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 354918 (ug/L), QC Sample No: BN86076 (BN86092)										
Volatiles - Waste Water										
1,1,1,2-Tetrachloroethane	ND	1.0	99	97	2.0				70 - 130	30
1,1,1-Trichloroethane	ND	1.0	99	95	4.1				70 - 130	30
1,1,2,2-Tetrachloroethane	ND	0.50	99	99	0.0				70 - 130	30
1,1,2-Trichloroethane	ND	1.0	93	93	0.0				70 - 130	30

QA/QC Data

SDG I.D.: GBN86092

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
1,1-Dichloroethane	ND	1.0	95	92	3.2				70 - 130	30
1,1-Dichloroethene	ND	1.0	101	98	3.0				70 - 130	30
1,1-Dichloropropene	ND	1.0	104	99	4.9				70 - 130	30
1,2,3-Trichlorobenzene	ND	1.0	87	84	3.5				70 - 130	30
1,2,3-Trichloropropane	ND	1.0	98	98	0.0				70 - 130	30
1,2,4-Trichlorobenzene	ND	1.0	96	94	2.1				70 - 130	30
1,2,4-Trimethylbenzene	ND	1.0	99	97	2.0				70 - 130	30
1,2-Dibromo-3-chloropropane	ND	1.0	98	95	3.1				70 - 130	30
1,2-Dibromoethane	ND	1.0	98	97	1.0				70 - 130	30
1,2-Dichlorobenzene	ND	1.0	96	95	1.0				70 - 130	30
1,2-Dichloroethane	ND	1.0	93	92	1.1				70 - 130	30
1,2-Dichloropropane	ND	1.0	94	92	2.2				70 - 130	30
1,3,5-Trimethylbenzene	ND	1.0	99	97	2.0				70 - 130	30
1,3-Dichlorobenzene	ND	1.0	98	97	1.0				70 - 130	30
1,3-Dichloropropane	ND	1.0	97	95	2.1				70 - 130	30
1,4-Dichlorobenzene	ND	1.0	98	96	2.1				70 - 130	30
2,2-Dichloropropane	ND	1.0	102	97	5.0				70 - 130	30
2-Chlorotoluene	ND	1.0	101	98	3.0				70 - 130	30
2-Hexanone	ND	5.0	89	90	1.1				70 - 130	30
2-Isopropyltoluene	ND	1.0	99	97	2.0				70 - 130	30
4-Chlorotoluene	ND	1.0	98	96	2.1				70 - 130	30
4-Methyl-2-pentanone	ND	5.0	90	92	2.2				70 - 130	30
Acetone	ND	5.0	78	79	1.3				70 - 130	30
Acrylonitrile	ND	5.0	100	102	2.0				70 - 130	30
Benzene	ND	0.70	97	94	3.1				70 - 130	30
Bromobenzene	ND	1.0	99	99	0.0				70 - 130	30
Bromochloromethane	ND	1.0	96	96	0.0				70 - 130	30
Bromodichloromethane	ND	0.50	96	95	1.0				70 - 130	30
Bromoform	ND	1.0	98	98	0.0				70 - 130	30
Bromomethane	ND	1.0	96	98	2.1				70 - 130	30
Carbon Disulfide	ND	1.0	112	108	3.6				70 - 130	30
Carbon tetrachloride	ND	1.0	101	96	5.1				70 - 130	30
Chlorobenzene	ND	1.0	97	95	2.1				70 - 130	30
Chloroethane	ND	1.0	96	91	5.3				70 - 130	30
Chloroform	ND	1.0	93	91	2.2				70 - 130	30
Chloromethane	ND	1.0	97	94	3.1				70 - 130	30
cis-1,2-Dichloroethene	ND	1.0	96	94	2.1				70 - 130	30
cis-1,3-Dichloropropene	ND	0.40	96	93	3.2				70 - 130	30
Dibromochloromethane	ND	0.50	102	101	1.0				70 - 130	30
Dibromomethane	ND	1.0	94	94	0.0				70 - 130	30
Dichlorodifluoromethane	ND	1.0	102	98	4.0				70 - 130	30
Ethylbenzene	ND	1.0	100	96	4.1				70 - 130	30
Hexachlorobutadiene	ND	0.40	102	99	3.0				70 - 130	30
Isopropylbenzene	ND	1.0	99	96	3.1				70 - 130	30
m&p-Xylene	ND	1.0	99	96	3.1				70 - 130	30
Methyl ethyl ketone	ND	5.0	101	102	1.0				70 - 130	30
Methyl t-butyl ether (MTBE)	ND	1.0	95	94	1.1				70 - 130	30
Methylene chloride	ND	1.0	92	92	0.0				70 - 130	30
Naphthalene	ND	1.0	95	94	1.1				70 - 130	30
n-Butylbenzene	ND	1.0	99	95	4.1				70 - 130	30
n-Propylbenzene	ND	1.0	97	97	0.0				70 - 130	30
o-Xylene	ND	1.0	98	95	3.1				70 - 130	30
p-Isopropyltoluene	ND	1.0	100	98	2.0				70 - 130	30
sec-Butylbenzene	ND	1.0	100	97	3.0				70 - 130	30
Styrene	ND	1.0	101	98	3.0				70 - 130	30
tert-Butylbenzene	ND	1.0	97	95	2.1				70 - 130	30
Tetrachloroethene	ND	1.0	101	100	1.0				70 - 130	30
Tetrahydrofuran (THF)	ND	2.5	94	91	3.2				70 - 130	30
Toluene	ND	1.0	97	94	3.1				70 - 130	30

QA/QC Data

SDG I.D.: GBN86092

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
trans-1,2-Dichloroethene	ND	1.0	99	96	3.1				70 - 130	30
trans-1,3-Dichloropropene	ND	0.40	94	93	1.1				70 - 130	30
trans-1,4-dichloro-2-butene	ND	5.0	96	98	2.1				70 - 130	30
Trichloroethene	ND	1.0	99	96	3.1				70 - 130	30
Trichlorofluoromethane	ND	1.0	101	96	5.1				70 - 130	30
Trichlorotrifluoroethane	ND	1.0	108	105	2.8				70 - 130	30
Vinyl chloride	ND	1.0	103	99	4.0				70 - 130	30
% 1,2-dichlorobenzene-d4	100	%	99	100	1.0				70 - 130	30
% Bromofluorobenzene	96	%	101	101	0.0				70 - 130	30
% Dibromofluoromethane	97	%	99	98	1.0				70 - 130	30
% Toluene-d8	101	%	100	100	0.0				70 - 130	30

Comment:

A LCS and LCS Duplicate were performed instead of a matrix spike and matrix spike duplicate.

Additional 8260 criteria: 10% of LCS/LCSD compounds can be outside of acceptance criteria as long as recovery is 40-160%.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference
LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample Duplicate
MS - Matrix Spike
MS Dup - Matrix Spike Duplicate
NC - No Criteria
Intf - Interference

Phyllis Shiller

Phyllis Shiller, Laboratory Director
August 10, 2016

Sample Criteria Exceedences Report

GBN86092 - FO

Criteria: CT: GWP, SWP

State: CT

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units
BN86092	$8260GWR	Acrylonitrile	CT / VOLATILE ORGANIC COMPOUND / GWPC (ug/L)	ND	5.0	0.5	0.5	ug/L
BN86092	$8260GWR	1,2-Dibromoethane	CT / VOLATILE ORGANIC COMPOUND / GWPC (ug/L)	ND	1.0	0.05	0.05	ug/L

REASONABLE CONFIDENCE PROTOCOL
LABORATORY ANALYSIS QA/QC CERTIFICATION FORM

Laboratory Name: Phoenix Environmental Labs, Inc. ***Client:*** Fuss & O'Neill, Inc.

Project Location: OLD HADDAM JAIL ***Project Number:***

Laboratory Sample ID(s): BN86092 ***Sampling Date(s):*** 8/3/2016

List RCP Methods Used (e.g., 8260, 8270, et cetera) 6010, 7470/7471, 8082, 8260, 8270

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 CT DEP 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 or EPH method conducted without significant modifications (see section 11.3 of respective RCP methods)**	☐ Yes ☐ No ☑ NA
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 ☐ NA
4	**Were all QA/QC performance criteria specified in the CTDEP Reasonable Confidence Protocol documents achieved?**	☑ Yes ☐ No
5	**a) Were reporting limits specified or referenced on the chain-of-custody?** **b) Were these reporting limits met?**	☑ Yes ☐ No ☐ Yes ☑ No
6	**For each analytical method referenced in this laboratory report package, were results reported for all constituents 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 in the 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: Ethan Lee **Position:** Project Manager

Printed Name: Ethan Lee **Date:** Wednesday, August 10, 2016

Name of Laboratory Phoenix Environmental Labs, Inc.

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

PHOENIX

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ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

RCP Certification Report

August 10, 2016

SDG I.D.: GBN86092

SDG Comments

Metals Analysis:
The client requested a shorter list of elements than the 6010 RCP list. Only the RCRA 8 Metals are reported as requested on the chain of custody.

8270 Semi-volatile Organics:
The client requested a short list for 8270 RCP Semivolatile. Only the PAH constituents are reported as requested on the chain-of-custody.

Mercury Narration

Were all QA/QC performance criteria specified in the analytical method achieved? Yes.

Instrument:

MERLIN 08/08/16 08:03 Rick Schweitzer, Chemist 08/08/16

BN86092

The method preparation blank contains all of the acids and reagents as the samples; the instrument blanks do not.
The initial calibration met all criteria including a standard run at or below the reporting level.
All calibration verification standards (ICV, CCV) met criteria.
All calibration blank verification standards (ICB, CCB) met criteria.
The matrix spike sample is used to identify spectral interference for each batch of samples, if within 85-115%, no interference is observed and no further action is taken.
The following Initial Calibration Verification (ICV) compounds did not meet criteria: None.
The following Continuing Calibration Verification (CCV) compounds did not meet criteria: None.

QC (Batch Specific):

Batch 354923 (BN85882)

BN86092

All LCS recoveries were within 70 - 130 with the following exceptions: None.
Additional Mercury criteria: LCS acceptance range for waters is 80-120% and for soils is 70-130%.

ICP Metals Narration

Were all QA/QC performance criteria specified in the analytical method achieved? Yes.

Instrument:

BLUE 08/05/16 06:28 Laura Kinnin, Chemist 08/05/16

BN86092

The initial calibration met criteria.
The continuing calibration standards met criteria for all the elements reported. The linear range is defined daily by the calibration range.
The continuing calibration blanks were less than the reporting level for the elements reported.
The ICSA and ICSAB were analyzed at the beginning and end of the run and were within criteria.The linear range is defined daily by the calibration range.
The following Initial Calibration Verification (ICV) compounds did not meet criteria: None.
The following Continuing Calibration Verification (CCV) compounds did not meet criteria: None.
The following ICP Interference Check (ICSAB) compounds did not meet criteria: None.

QC (Batch Specific):

PHOENIX

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Certification Report

August 10, 2016

SDG I.D.: GBN86092

ICP Metals Narration

Batch 354683 (BN86065)

BN86092

All LCS recoveries were within 75 - 125 with the following exceptions: None.

PCB Narration

Were all QA/QC performance criteria specified in the Reasonable Confidence Protocol documents achieved? Yes.

Instrument:

AU-ECD24 08/05/16-1 Adam Werner, Chemist 08/05/16

BN86092

The initial calibration (PC0728AI) RSD for the compound list was less than 20% except for the following compounds: None.
The initial calibration (PC0728BI) RSD for the compound list was less than 20% except for the following compounds: None.
The continuing calibration %D for the compound list was less than 15% except for the following compounds:None.

QC (Batch Specific):

Batch 354407 (BN85015)

BN86092

All LCS recoveries were within 40 - 140 with the following exceptions: None.
All LCSD recoveries were within 40 - 140 with the following exceptions: None.
All LCS/LCSD RPDs were less than 20% with the following exceptions: None.
A LCS and LCS Duplicate were performed instead of a matrix spike and matrix spike duplicate.

SVOASIM Narration

Were all QA/QC performance criteria specified in the Reasonable Confidence Protocol documents achieved? Yes.

Instrument:

CHEM04 08/05/16-1 Damien Drobinski, Chemist 08/05/16

BN86092

The DDT breakdown and pentachlorophenol & benzidine peak tailing were evaluated in the DFTPP tune and were found to be in control.

In the event that lower detection levels were requested, the samples may have been analyzed by selective ion monitoring (SIM) mode.

If PAH/base neutral were requested, Phoenix utilized a method that contained a shortened list , so some of the compounds in the narrative may be non-applicable.

Initial Calibration Verification (CHEM04/SIM_0728):
66% of target compounds met criteria.
The following compounds had %RSDs >20%: % Nitrobenzene-d5 23% (20%), Benz(a)anthracene 24% (20%), Benzo(b)fluoranthene 25% (20%), Benzo(ghi)perylene 24% (20%), Benzo(k)fluoranthene 25% (20%), Chrysene 23% (20%), Indeno(1,2,3-cd)pyrene 21% (20%), Phenanthrene 25% (20%)
The following compounds did not meet recommended response factors: None.
The following compounds did not meet a minimum response factors: None.

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RCP Certification Report

August 10, 2016

SDG I.D.: GBN86092

SVOASIM Narration

Continuing Calibration Verification (CHEM04/0805_02-SIM_0728):
Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.
98% of target compounds met criteria.
The following compounds did not meet % deviation criteria: None.
The following compounds did not meet maximum % deviations: None.
The following compounds did not meet recommended response factors: None.
The following compounds did not meet minimum response factors: None.

QC (Batch Specific):

Batch 354657 (BN85757)

BN86092

All LCS recoveries were within 30 - 130 with the following exceptions: None.
A LCS and LCS Duplicate were performed instead of a matrix spike and matrix spike duplicate.
LCSD not reported for this batch.
Additional 8270 criteria:20% of compounds can be outside of acceptance criteria as long as recovery is at least 10%. (Acid surrogates acceptance range for aqueous samples: 15-110%, for soils 30-130%)

VOA Narration

Were all QA/QC performance criteria specified in the Reasonable Confidence Protocol documents achieved? Yes.

Instrument:

CHEM17 08/05/16-1 Harry Mullin, Chemist 08/05/16

BN86092

Initial Calibration Verification (CHEM17/VT-S0803M):
98% of target compounds met criteria.
The following compounds had %RSDs >20%: Acetone 24% (20%), Bromomethane 33% (20%)
The following compounds did not meet recommended response factors: 1,2-Dibromo-3-chloropropane 0.037 (0.05), 2-Hexanone 0.086 (0.1), Acetone 0.044 (0.1), Methyl ethyl ketone 0.063 (0.1)
The following compounds did not meet a minimum response factors: None.

Continuing Calibration Verification (CHEM17/0805S07-VT-S0803M):
Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.
100% of target compounds met criteria.
The following compounds did not meet % deviation criteria: None.
The following compounds did not meet maximum % deviations: None.
The following compounds did not meet recommended response factors: 1,2-Dibromo-3-chloropropane 0.033 (0.05), Tetrahydrofuran (THF) 0.046 (0.05)
The following compounds did not meet minimum response factors: None.

QC (Batch Specific):

Batch 354918 (BN86076)

BN86092

All LCS recoveries were within 70 - 130 with the following exceptions: None.
All LCSD recoveries were within 70 - 130 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.

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Tel. (860) 645-1102 Fax (860) 645-0823

NY # 11301

RCP Certification Report

August 10, 2016

SDG I.D.: GBN86092

VOA Narration

A LCS and LCS Duplicate were performed instead of a matrix spike and matrix spike duplicate.
Additional 8260 criteria: 10% of LCS/LCSD compounds can be outside of acceptance criteria as long as recovery is 40-160%.

Temperature Narration

The samples were received at 6C with cooling initiated.
(Note acceptance criteria is above freezing up to 6°C)

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☐ 80 Washington Street, Suite 301, Poughkeepsie, NY
☐ Other

Wiuc
1D

CHAIN-OF-CUSTODY RECORD 33906

Turnaround
☐ 24-Hour* ☐ 72-Hour* ☐ Other ______ (days)
☐ 48-Hour* ☒ Standard (5 days) *Surcharge Applies

PROJECT NAME	PROJECT LOCATION	PROJECT NUMBER	LABORATORY
OLD HADDAM JAIL	HADDAM, CT	20160311.A10	PHOENIX

REPORT TO: STEFANIE WIERSZCHALEK, F&O
INVOICE TO: ↓
P.O. NO.:

Sampler's Signature: [illegible] Date: 8/3/2016

Source Codes:
MW=Monitoring Well PW=Potable Water T=Treatment Facility S=Soil B=Sediment
SW=Surface Water ST=Stormwater W=Waste A=Air C=Concrete
X=Other WASTE WATER

Analysis Request / Containers

Item No.	Transfer Check 1	2	3	4	Sample Number	Source Code	Date Sampled	Time Sampled	VOCs (8260)	PAHs (8270)	PCBs (8082)	RCRA 8 Metals					Soil VOA Vial, ☐ methanol	Soil VOA Vial, ☐ water	Glass Soil Container ( ) oz ☐ $Na_2(SO_4)_2$	Other:	Other:	Water VOA Vial, ☐ As is ☒ HCl	Glass Amber (1L) ☒ As is ☐ H_2SO_4	Plastic - As is, ☐ 250 ml ☐ 500 ☐ 1000 ml	Plastic - H_2SO_4, ☐ 250 ml ☐ 500 ml	Plastic - HNO_3, 250 ml ☐ Filtered ☐ 0.45µ ☐ 10µ	Plastic - NaOH, 250 ml	Comments
					1256160803-01	X	8/3/16	1400	✓	✓	✓	✓										3	4				1	86092

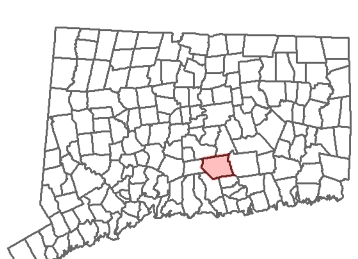
Transfer Number	Relinquished By	Accepted By	Date	Time
1	[illegible]	[illegible]	8/4/16	1430
2				
3				
4				

Charge Exceptions: ☒ CT Tax Exempt ☐ QA/QC ☐ Other ______
____ Duplicates ____ Blanks (Item Nos:)

Reporting and Detection Limit Requirements: ☒ RCP Deliverables ☐ MCP CAM Cert.
6A

Additional Comments:

Appendix C
Test Pit & Percolation Test Logs



LEGEND

- Percolation Test Holes
- Testing Locations
- Parcels

0 30 60 120 Feet

79 Jail Hill Road (Ball Fields)

Haddam Jail
Historic Brownfields Revitilization

Haddam Connecticut

FUSS & O'NEILL
146 Hartford Road
Manchester, CT 06040
860.646.2469 | www.fando.com

Figure 1

Data Source(s):
CTECO, CTDEEP, USGS, NRCS, CTDOT

General Notes:

K:\P2016\0311\A10\MXD\Septic System Investigation.mxd

GRAIN SIZE ANALYSIS - MECHANICAL
HADDAM JAIL PROJECT
DECEMBER 2016 SOIL TESTING
HADDAM, CONNECTICUT

Soil Information

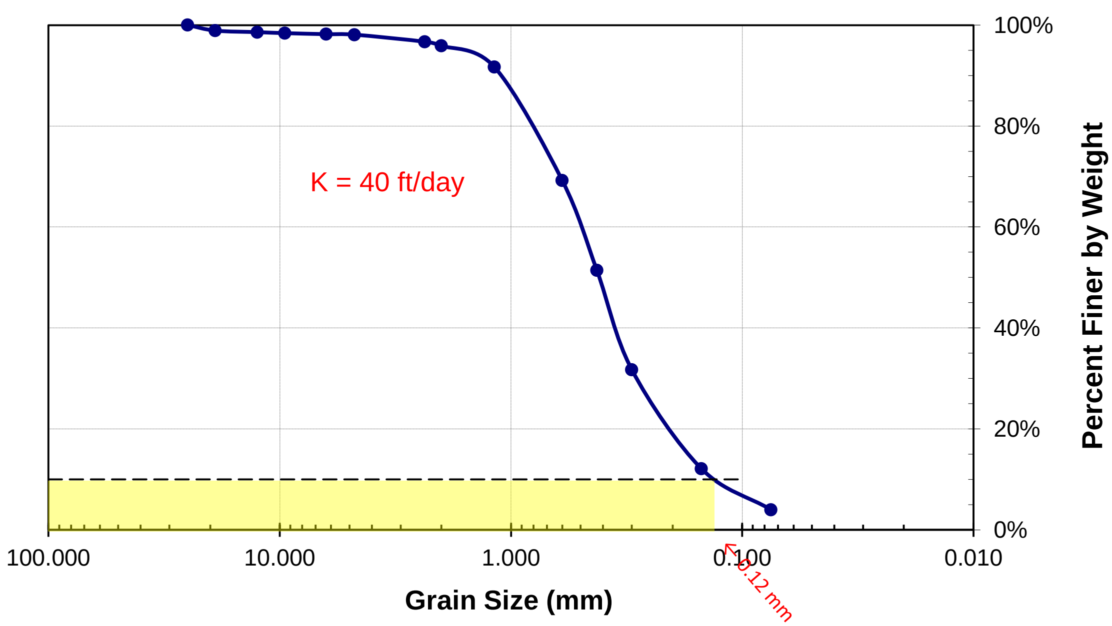
Sample Number:	TP-1 36"	**Test Pit Number:**	*TP-1*
Description of Soil:	Loamy Sand	**Tested By:**	IMTL
Depth of Sample:	36 inches	**Date of Testing:**	12/30/2016

Grain Size Analysis Data

SIEVE NUMBER	SIEVE OPENING (mm)	% PASSING
1"	25.000	100.0%
3/4"	19.000	98.9%
1/2"	12.500	98.6%
3/8"	9.500	98.4%
1/4"	6.300	98.2%
#4	4.750	98.1%
#8	2.360	96.7%
#10	2.000	95.9%
#16	1.180	91.7%
#30	0.600	69.2%
#40	0.425	51.4%
#50	0.300	31.7%
#100	0.150	12.1%
#200	0.075	4.0%

Soil Gradation Tested by Materials Testing, Inc. of New Haven, CT.

Grain Size Analysis Graph



F:\P2016\0311\A10\SSDS\Soil Lab Results & Analysis\Grain Size Analysis_December 2016.xlsx, TP-1 36"

FUSS & O'NEILL
Consulting Engineers, PC

Form #2 Technical Standards for Subsurface Sewage Disposal Systems

SITE INVESTIGATION FOR A SUBSURFACE SEWAGE DISPOSAL SYSTEM

Application/Permit #:

Property Owner Town of Haddam Location 79 Jail Hill Road (Ball Field)

DATE: 12/20/2016

DEEP TEST PIT DATA/SOIL DESCRIPTIONS
(Record all Test Pits)

TEST PIT: TP-1	TEST PIT: TP-2	TEST PIT: TP-3	TEST PIT:
0-42" Fill	0-31" Fill 31-60", m-f sand	0-15" Fill	
Mottles: None	Mottles: None	Mottles: None	Mottles:
GW: None	GW: None	GW: None	GW:
Ledge: 42"	Ledge: 60"	Ledge: 15"	Ledge:
Roots: 18"	Roots: 18"	Roots: N/A	Roots:
Restrictive: 42"	Restrictive: 60"	Restrictive: 15"	Restrictive:

COMMENTS: Shallow ledge with outcroppings throughout the site. Parking lot was blasted for installation ~2000.

GROUNDWATER TABLE (Near max., below max., etc.) Below max. (low)
SOIL MOISTURE (High, medium, low, etc): medium

DATE: 12/20/2016

PERCOLATION TEST DATA
(Record all Perc Tests)

PERC: Perc-1		PERC:		PERC:		PERC:	
DEPTH:		DEPTH:		DEPTH:		DEPTH:	
PRESOAK: ~2hrs		PRESOAK:		PRESOAK:		PRESOAK:	
TIME	READING	TIME	READING	TIME	READING	TIME	READING
9-11AM+	Presoak						
PERC RATE:		PERC RATE:		PERC RATE:		PERC RATE:	

COMMENTS: Due to freezing conditions we don't believe testing would provide accurate results.

GRAIN SIZE ANALYSIS - MECHANICAL
HADDAM JAIL PROJECT
DECEMBER 2016 SOIL TESTING
HADDAM, CONNECTICUT

Soil Information

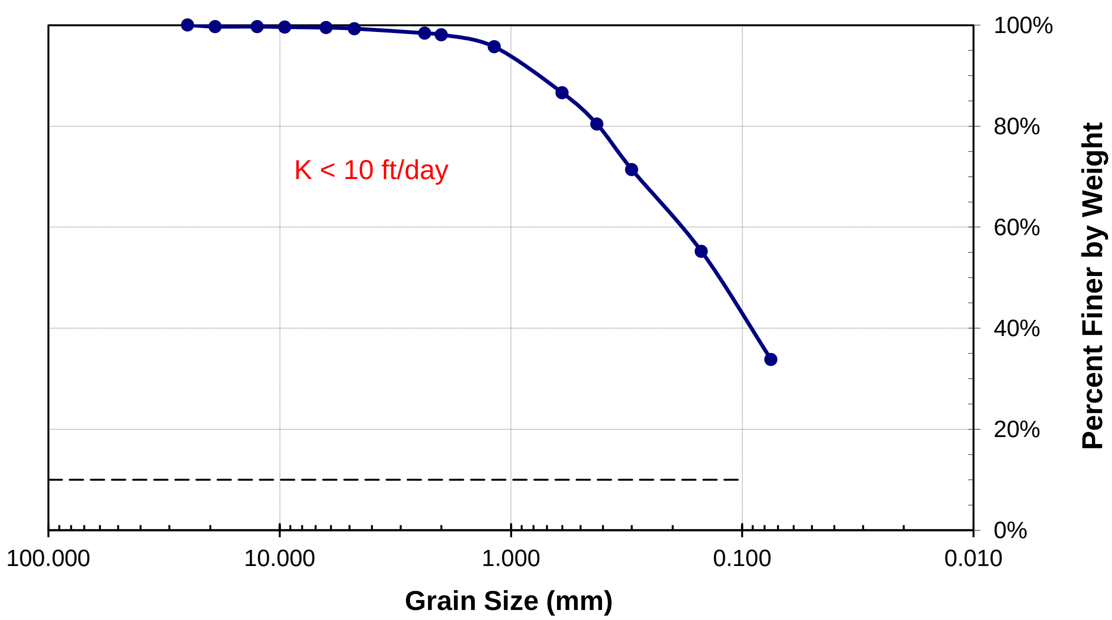
Sample Number:	TP-3 36"	**Test Pit Number:**	*TP-3*
Description of Soil:	Sandy Loam	**Tested By:**	IMTL
Depth of Sample:	36 inches	**Date of Testing:**	12/30/2016

Grain Size Analysis Data

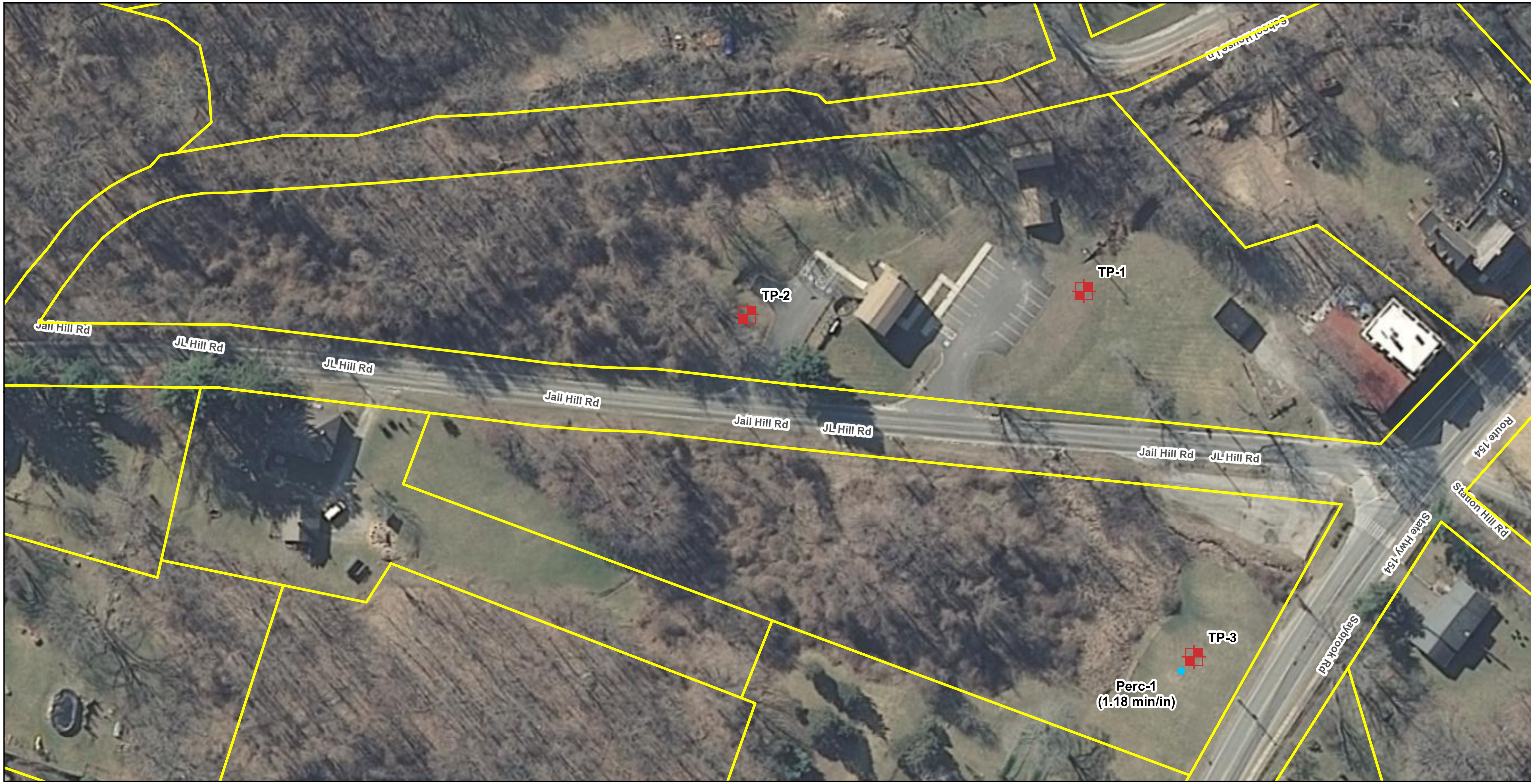
SIEVE NUMBER	SIEVE OPENING (mm)	% PASSING
1"	25.000	100.0%
3/4"	19.000	99.7%
1/2"	12.500	99.7%
3/8"	9.500	99.6%
1/4"	6.300	99.5%
#4	4.750	99.3%
#8	2.360	98.4%
#10	2.000	98.1%
#16	1.180	95.7%
#30	0.600	86.6%
#40	0.425	80.4%
#50	0.300	71.4%
#100	0.150	55.2%
#200	0.075	33.8%

Soil Gradation Tested by Materials Testing, Inc. of New Haven, CT.

Grain Size Analysis Graph



FUSS & O'NEILL
Consulting Engineers, PC



LEGEND

- Percolation Test Holes
- Testing Locations
- Parcels

N

0 25 50 100 Feet

945 Saybrook Road (Jail House)

Haddam Jail

Historic Brownfields Revitilization

Haddam Connecticut

FUSS & O'NEILL
146 Hartford Road
Manchester, CT 06040
860.646.2469 | www.fando.com

Figure 2

Data Source(s):
CTECO, CTDEEP, USGS, NRCS, CTDOT

General Notes:

K:\P2016\0311\A10\MXD\Septic System Investigation.mxd

GRAIN SIZE ANALYSIS - MECHANICAL
HADDAM JAIL PROJECT
DECEMBER 2016 SOIL TESTING
HADDAM, CONNECTICUT

Soil Information

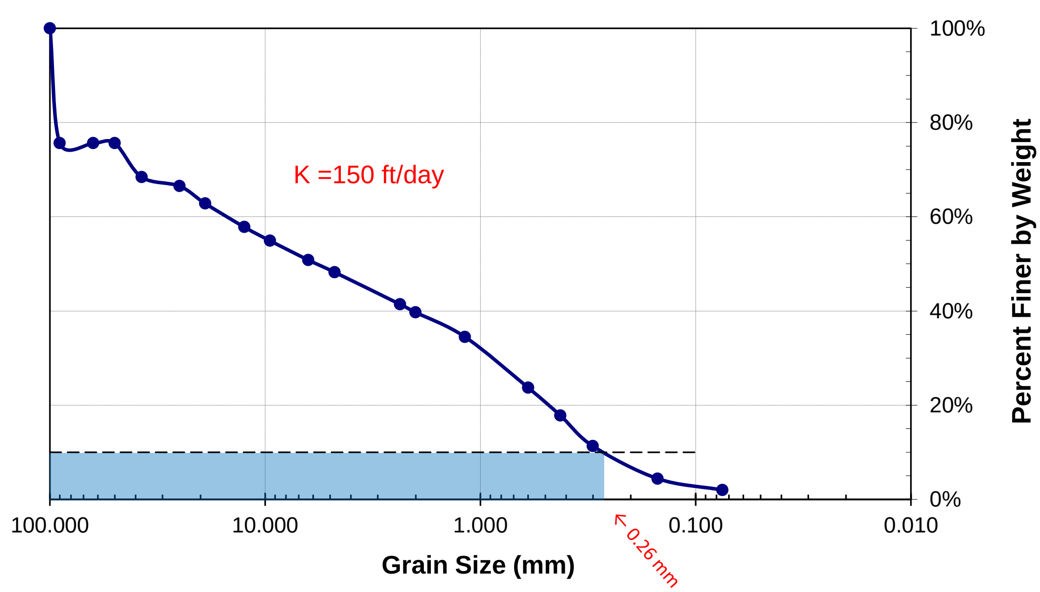
Sample Number:	TP-1 48"	**Test Pit Number:**	*TP-1*
Description of Soil:	Gravelly Sand	**Tested By:**	IMTL
Depth of Sample:	48 inches	**Date of Testing:**	12/30/2016

Grain Size Analysis Data

SIEVE NUMBER	SIEVE OPENING (mm)	% PASSING
4"	100.000	100.0%
3-1/2"	90.000	75.6%
2-1/2"	63.000	75.6%
2"	50.000	75.6%
1-1/2"	37.500	68.4%
1"	25.000	66.5%
3/4"	19.000	62.8%
1/2"	12.500	57.8%
3/8"	9.500	54.9%
1/4"	6.300	50.8%
#4	4.750	48.2%
#8	2.360	41.4%
#10	2.000	39.7%
#16	1.180	34.5%
#30	0.600	23.7%
#40	0.425	17.8%
#50	0.300	11.3%
#100	0.150	4.4%
#200	0.075	2.0%

Soil Gradation Tested by Materials Testing, Inc. of New Haven, CT.

Grain Size Analysis Graph



FUSS & O'NEILL
Consulting Engineers, PC

Form #2 Technical Standards for Subsurface Sewage Disposal Systems

SITE INVESTIGATION FOR A SUBSURFACE SEWAGE DISPOSAL SYSTEM

Application/Permit #:

Property Owner Town of Haddam Location 945 Saybrook Road (Jail House)

DEEP TEST PIT DATA/SOIL DESCRIPTIONS

(Record all Test Pits)

DATE: 12/20/2016

TEST PIT: TP-1 S	TEST PIT: TP-1 N	TEST PIT: TP-2	TEST PIT: TP-3
0-40" Fill 40-97" m-f Sand (Jail Hill Rd Side)	0-72" Fill 72-97" m-f sand	0-16" Fill 16-23" Loamy Sand	0-8" Topsoil 8-34" Orange m-c Sand/loamy Sand 34-91+" m-c Sand and gravel with cobbles
Mottles: None	Mottles: None	Mottles: None	Mottles: None
GW: None	GW: None	GW: None	GW: 91"
Ledge: None	Ledge: None	Ledge: 23"	Ledge: None
Roots: 29"	Roots: 29"	Roots: 12"	Roots: 10"
Restrictive: N/A	Restrictive: N/A	Restrictive: 23"	Restrictive: N/A

COMMENTS: Standpipe installed at TP-3.

GROUNDWATER TABLE (Near max., below max., etc.) below max. (low)
SOIL MOISTURE (High, medium, low, etc): medium

PERCOLATION TEST DATA

(Record all Perc Tests)

DATE: 12/20/16

PERC: Perc-1		PERC: Perc-1		PERC:		PERC:	
DEPTH: 17"-29"		DEPTH: 17"-29"		DEPTH:		DEPTH:	
PRESOAK: ~8 min.		PRESOAK: N/A (2nd round)		PRESOAK:		PRESOAK:	
TIME	READING	TIME	READING	TIME	READING	TIME	READING
0:00	15"	0:00	14.25"				
5:00	25.5"	1:00	17.5"				
6:00	26"	3:00	21.5"				
7:00	26.5"	5:00	24"				
		7:00	25.75"				
		9:00	27"				
PERC RATE:		PERC RATE: 1.18 min./in.		PERC RATE:		PERC RATE:	

COMMENTS:

GRAIN SIZE ANALYSIS - MECHANICAL

HADDAM JAIL PROJECT

DECEMBER 2016 SOIL TESTING

HADDAM, CONNECTICUT

Soil Information

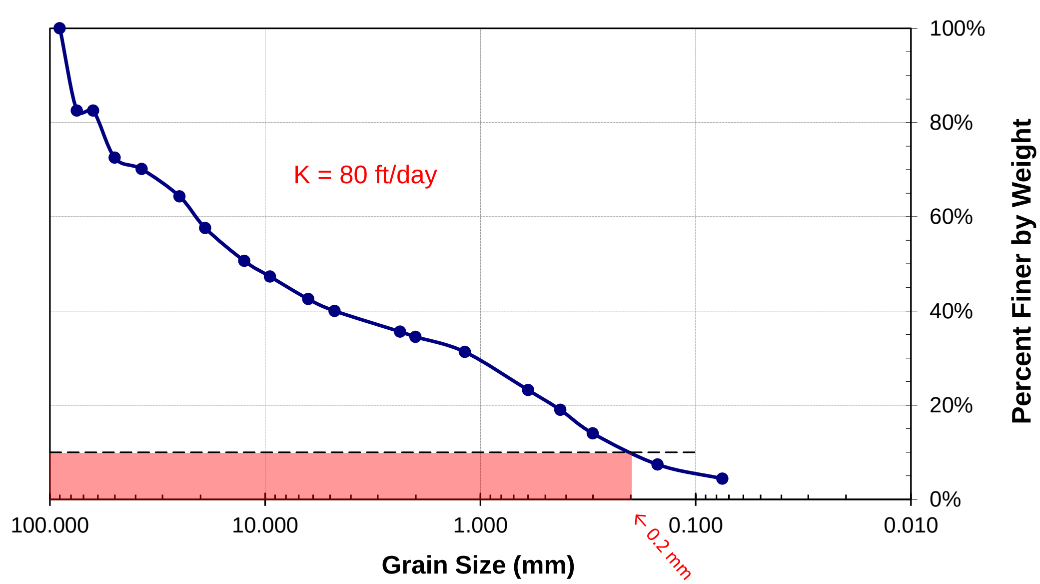
Sample Number:	TP-3 48"	**Test Pit Number:**	*TP-3*
Description of Soil:	Gravelly Sand	**Tested By:**	IMTL
Depth of Sample:	48 inches	**Date of Testing:**	12/30/2016

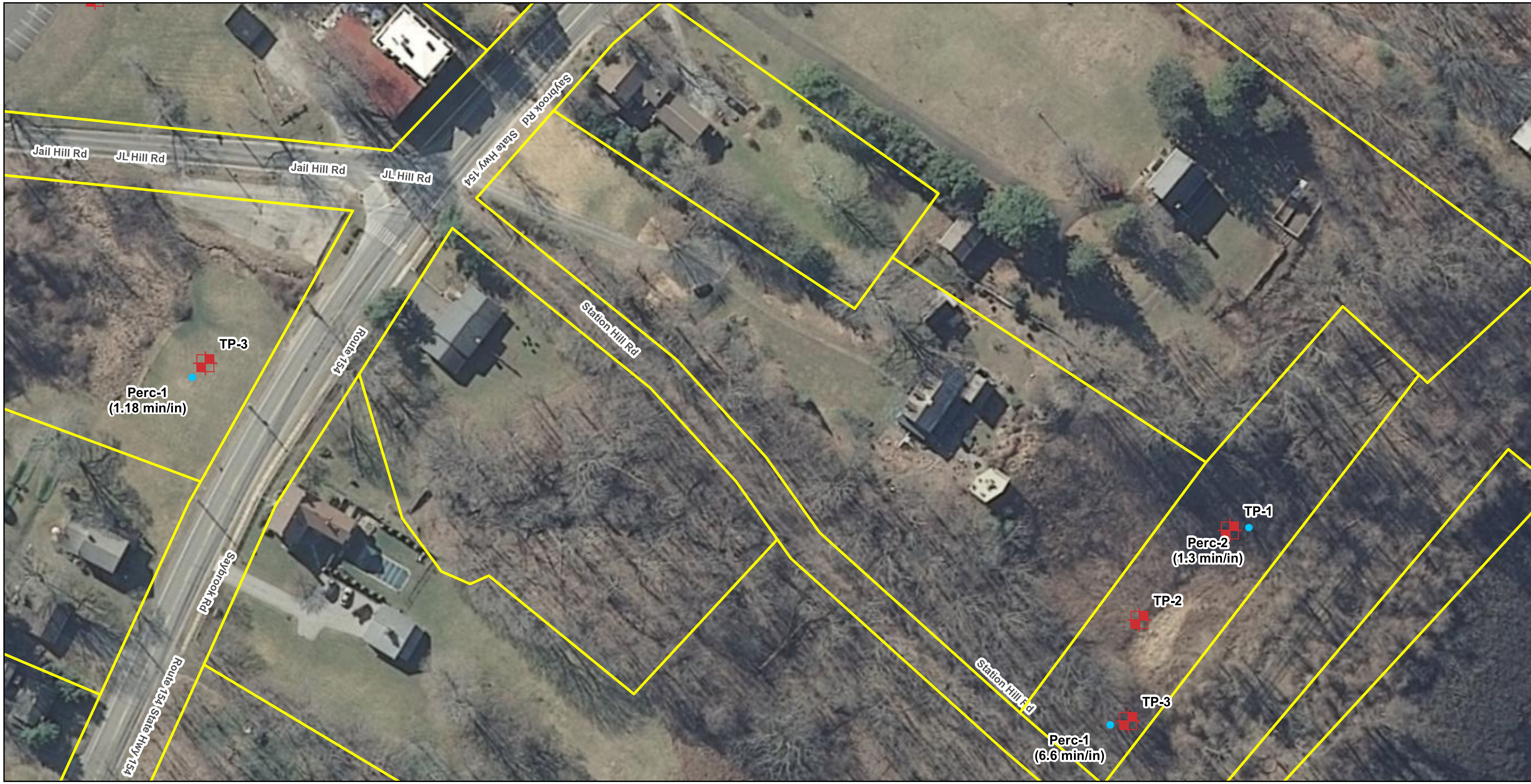
Grain Size Analysis Data

SIEVE NUMBER	SIEVE OPENING (mm)	% PASSING
3-1/2"	90.000	100.0%
3"	75.000	82.5%
2-1/2"	63.000	82.5%
2"	50.000	72.5%
1-1/2"	37.500	70.1%
1"	25.000	64.3%
3/4"	19.000	57.6%
1/2"	12.500	50.6%
3/8"	9.500	47.3%
1/4"	6.300	42.5%
#4	4.750	40.0%
#8	2.360	35.6%
#10	2.000	34.5%
#16	1.180	31.3%
#30	0.600	23.2%
#40	0.425	19.0%
#50	0.300	14.0%
#100	0.150	7.4%
#200	0.075	4.4%

Soil Gradation Tested by Materials Testing, Inc. of New Haven, CT.

Grain Size Analysis Graph





LEGEND

- Percolation Test Holes
- Testing Locations
- Parcels

0 25 50 100 Feet

Station Hill Rd (Railroad Parcel)

Haddam Jail

Historic Brownfields Revitilization

Haddam Connecticut

FUSS & O'NEILL
146 Hartford Road
Manchester, CT 06040
860.646.2469 | www.fando.com

Figure 3

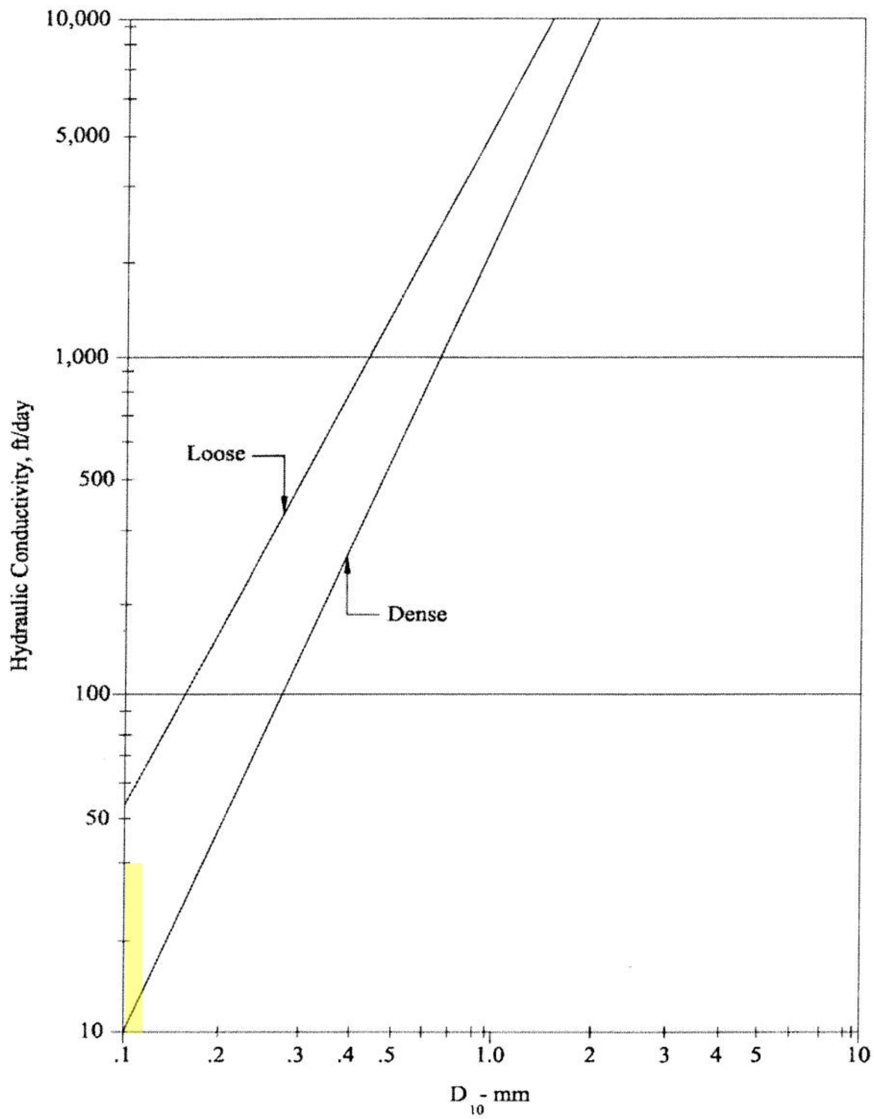
Data Source(s):
CTECO, CTDEEP, USGS, NRCS, CTDOT

General Notes:

K:\P2016\0311\A10\MXD\Septic System Investigation.mxd

CT DEP FIGURE No. 2

K vs. D_{10}- SANDS & GRAVELS



1. Grain Size Distribution

Estimating the hydraulic conductivity from the grain size distribution ignores the effect of compaction or discontinuities and may give very misleading results if the percentage of fine grains is not measured carefully. The method is most accurate with soils that don't contain any silt or clay. Figure (2) gives the hydraulic conductivity of sands and gravel in ft/day versus the d_{10} size. The d_{10} size of a soil is that sieve size that only 10% by weight of the grains are smaller than. A chart such as shown provides accuracies of K within a factor of 2 or 3.

Source: Connecticut Department of Environmental Protection "Guidance for Design of Large Scale On-Site Wastewater Renovation System", February 2006

Form #2 Technical Standards for Subsurface Sewage Disposal Systems

SITE INVESTIGATION FOR A SUBSURFACE SEWAGE DISPOSAL SYSTEM

Application/Permit #:

Property Owner DOT RR Location Station Hill Rd

DATE: 12/20/2016

DEEP TEST PIT DATA/SOIL DESCRIPTIONS
(Record all Test Pits)

TEST PIT: TP-1	TEST PIT: TP-2	TEST PIT: TP-3	TEST PIT:
0-7" Topsoil 7-18" Loamy Sand 18-49" Sand and gravel with cobbles 49-53" band of silt loam 53-91+" tan m-f Sand	0-9" Topsoil 9-30" m-c Sand 30" Gravel and black plastic pipe ~4"ø	0-32" Fill 32-43" Sandy Loam 43-88+" coarse sand and gravel with cobels	
Mottles: None	Mottles: None	Mottles: None	Mottles:
GW: None	GW: None	GW: None	GW:
Ledge: None	Ledge: None	Ledge: None	Ledge:
Roots:	Roots: 28"	Roots: 10"	Roots:
Restrictive: N/A	Restrictive: N/A	Restrictive: N/A	Restrictive:

COMMENTS: May have found a french/curtain drain at ~30" in TP-2. Standpipes installed in TP-1 and TP-3.

GROUNDWATER TABLE (Near max., below max., etc.) Below Max. (Low)
SOIL MOISTURE (High, medium, low, etc): medium

DATE: 12/20/2016

PERCOLATION TEST DATA
(Record all Perc Tests)

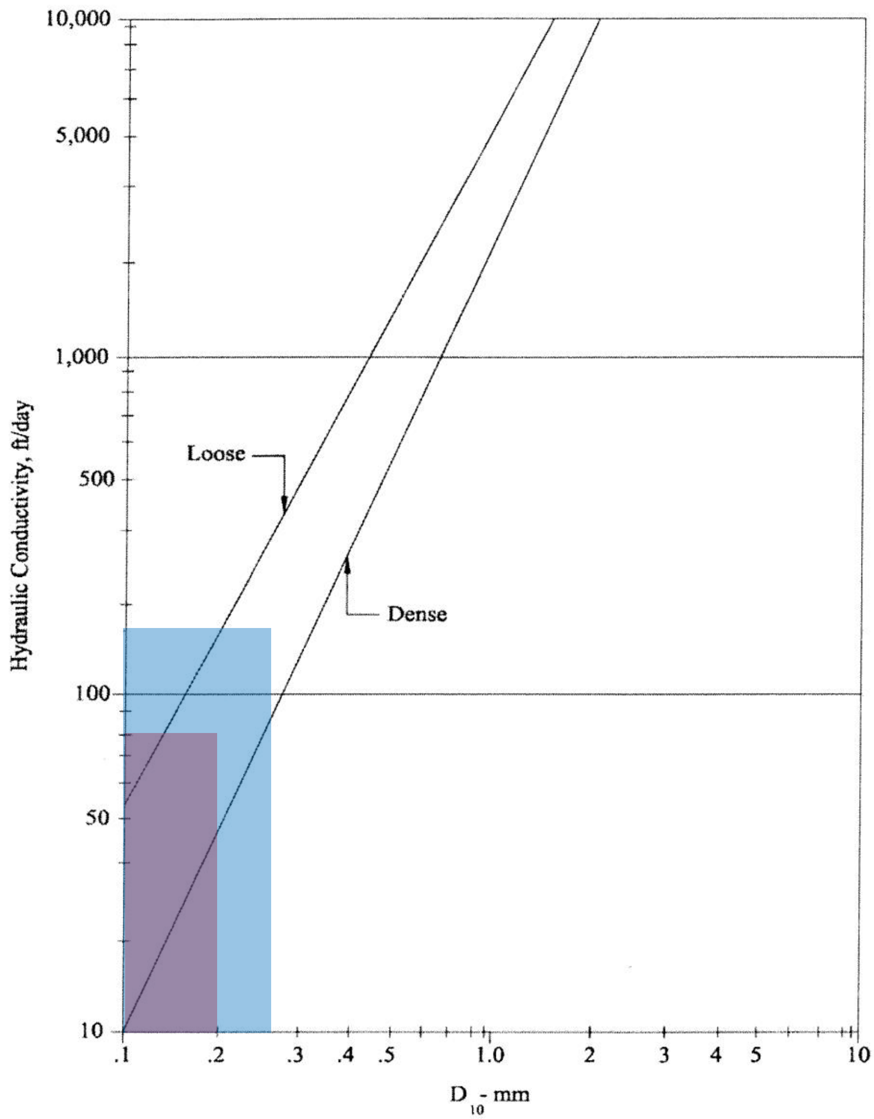
	PERC: Perc-1		PERC: Perc-2		PERC:		PERC:	
	DEPTH: 8-33"		DEPTH: 10"-30"		DEPTH:		DEPTH:	
	PRESOAK: 2-2:47PM		PRESOAK: 2:13-2:23PM		PRESOAK:		PRESOAK:	
	MIN TIME	READING	MIN TIME	READING	TIME	READING	TIME	READING
2:47	0:00	23"	0:00	13.75"				
2:49	2:00	23.25"	2:00	17"				
2:54	7:00	24"	4:00	19.5"				
2:59	12:00	25"	6:00	21"				
3:04	17:00	26"	8:00	22.75"				
3:09	22:00	27"	10:00	24"				
3:14	27:00	27.5"	12:00	26"				
3:19	32:00	28.5"*	14:00	27"				
	PERC RATE: 6.6 min/in.		PERC RATE: 1.3 min/in.		PERC RATE:		PERC RATE:	

COMMENTS: Dug out silt that had settled in Perc-1 at the end of presoaking.

*5" left in the hole

CT DEP FIGURE No. 2

K vs. D_{10}- SANDS & GRAVELS



1. Grain Size Distribution

Estimating the hydraulic conductivity from the grain size distribution ignores the effect of compaction or discontinuities and may give very misleading results if the percentage of fine grains is not measured carefully. The method is most accurate with soils that don't contain any silt or clay. Figure (2) gives the hydraulic conductivity of sands and gravel in ft/day versus the d_{10} size. The d_{10} size of a soil is that sieve size that only 10% by weight of the grains are smaller than. A chart such as shown provides accuracies of K within a factor of 2 or 3.

Source: Connecticut Department of Environmental Protection "Guidance for Design of Large Scale On-Site Wastewater Renovation System", February 2006

Soil Gradation Report

Accurate information you can rely on.

GRADATION ASTM D-422; WET WASH ASTM D-1140

PROJECT:	INFO – HADDAM JAIL (JOB NO. 20160311.A10)	PROJECT NO.:	1160
CLIENT:	FUSS & O'NEILL	REPORT NO.:	059
LAB NO.:	34219	DATE:	12/30/16
USE:	N/A	SAMPLED BY:	CLIENT
SPEC A:	NOT AVAILABLE*	SOURCE:	IN-SITU
SAMPLE ID:	TP-1 36"	EST. PARTICLE SHAPE/HARDNESS:	ANGULAR/HARD

GRADATION RESULTS

SIEVE #		% PASS	SPEC A
25 mm	(1")	100.0	
19 mm	(3/4")	98.9	
12.5 mm	(1/2")	98.6	
9.5 mm	(3/8")	98.4	
6.3 mm	(1/4")	98.2	
4.75 mm	(#4)	98.1	
2.36 mm	(#8)	96.7	
2.0 mm	(#10)	95.9	
1.18 mm	(#16)	91.7	
600 µm	(#30)	69.2	
425 µm	(#40)	51.4	
300 µm	(#50)	31.7	
150 µm	(#100)	12.1	
75 µm	(#200)	4.0	
COMPLIED WITH:			SPEC A: *

. . .AS PER GRADATION ABOVE

SOIL DESCRIPTION: YELLOW/BROWN SAND; TRACE FINES; TRACE GRAVEL

*Requires Engineer's approval

STATE OF CONNECTICUT RICHARD WHITE No. 10836 REGISTERED PROFESSIONAL ENGINEER 1-3-17

REVIEWED BY: 1-3-17

pc: Sara Fusco, Fuss & O'Neill

md

Independent Materials Testing Laboratories, Inc.
57 N. Washington St., P.O. Box 745, Plainville, CT 06062
T 860.747.1000 F 860.747.6455
mail@imtlct.com www.imtlct.com

IMTL
Accurate information you can rely on.

Soil Gradation Report

GRADATION ASTM D-422; WET WASH ASTM D-1140

PROJECT:	INFO – HADDAM JAIL (JOB NO. 20160311.A10)	PROJECT NO.:	1160
CLIENT:	FUSS & O'NEILL	REPORT NO.:	060
LAB NO.:	34220	DATE:	12/30/16
USE:	N/A	SAMPLED BY:	CLIENT
SPEC A:	NOT AVAILABLE*	SOURCE:	IN-SITU
SAMPLE ID:	TP-1 48"	EST. PARTICLE SHAPE/HARDNESS:	ANGULAR/HARD

GRADATION RESULTS

SIEVE #		% PASS	SPEC A
100 mm	(4")	100.0	
90 mm	(3-1/2")	75.6	
63 mm	(2-1/2")	75.6	
50 mm	(2")	75.6	
37.5 mm	(1-1/2")	68.4	
25 mm	(1")	66.5	
19 mm	(3/4")	62.8	
12.5 mm	(1/2")	57.8	
9.5 mm	(3/8")	54.9	
6.3 mm	(1/4")	50.8	
4.75 mm	(#4)	48.2	
2.36 mm	(#8)	41.4	
2.0 mm	(#10)	39.7	
1.18 mm	(#16)	34.5	
600 µm	(#30)	23.7	
425 µm	(#40)	17.8	
300 µm	(#50)	11.3	
150 µm	(#100)	4.4	
75 µm	(#200)	2.0	
COMPLIED WITH:			SPEC A: *
. . .AS PER GRADATION ABOVE			

SOIL DESCRIPTION: YELLOW/BROWN SAND; SOME GRAVEL; SOME COBBLE; TRACE FINES

*Requires Engineer's approval

REVIEWED BY: 1-3-17

pc: Sara Fusco, Fuss & O'Neill
md

STATE OF CONNECTICUT RICHARD WHITE NO. 10036 REGISTERED PROFESSIONAL ENGINEER

Independent Materials Testing Laboratories, Inc.
57 N. Washington St., P.O. Box 745, Plainville, CT 06062
T 860.747.1000 F 860.747.6455
mail@imtlct.com www.imtlct.com

Accurate information you can rely on.

Soil Gradation Report

GRADATION ASTM D-422; WET WASH ASTM D-1140

PROJECT:	INFO – HADDAM JAIL (JOB NO. 20160311.A10)	PROJECT NO.:	1160
CLIENT:	FUSS & O'NEILL	REPORT NO.:	061
LAB NO.:	34221	DATE:	12/30/16
USE:	N/A	SAMPLED BY:	CLIENT
SPEC A:	NOT AVAILABLE*	SOURCE:	IN-SITU
SAMPLE ID:	TP-3 36"	EST. PARTICLE SHAPE/HARDNESS:	ANGULAR/HARD

GRADATION RESULTS

SIEVE #		% PASS	SPEC A
25 mm	(1")	100.0	
19 mm	(3/4")	99.7	
12.5 mm	(1/2")	99.7	
9.5 mm	(3/8")	99.6	
6.3 mm	(1/4")	99.5	
4.75 mm	(#4)	99.3	
2.36 mm	(#8)	98.4	
2.0 mm	(#10)	98.1	
1.18 mm	(#16)	95.7	
600 µm	(#30)	86.6	
425 µm	(#40)	80.4	
300 µm	(#50)	71.4	
150 µm	(#100)	55.2	
75 µm	(#200)	33.8	
COMPLIED WITH:			SPEC A: *

. . .AS PER GRADATION ABOVE

SOIL DESCRIPTION: YELLOW/BROWN SAND; SOME FINES; TRACE GRAVEL

*Requires Engineer's approval

STATE OF CONNECTICUT RICHARD WHITE No. 13058 REGISTERED PROFESSIONAL ENGINEER

REVIEWED BY: 1-3-17

pc: Sara Fusco, Fuss & O'Neill
md

Independent Materials Testing Laboratories, Inc.
57 N. Washington St., P.O. Box 745, Plainville, CT 06062
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F 860.747.6455
mail@imtlct.com
www.imtlct.com

IMTL
Accurate information you can rely on.

Soil Gradation Report

GRADATION ASTM D-422; WET WASH ASTM D-1140

PROJECT:	INFO – HADDAM JAIL (JOB NO. 20160311.A10)	PROJECT NO.:	1160
CLIENT:	FUSS & O'NEILL	REPORT NO.:	062
LAB NO.:	34222	DATE:	12/30/16
USE:	N/A	SAMPLED BY:	CLIENT
SPEC A:	NOT AVAILABLE*	SOURCE:	IN-SITU
SAMPLE ID:	TP-3 48"	EST. PARTICLE SHAPE/HARDNESS:	ANGULAR/HARD

GRADATION RESULTS

SIEVE #		% PASS	SPEC A
90 mm	(3-1/2")	100.0	
75 mm	(3")	82.5	
63 mm	(2-1/2")	82.5	
50 mm	(2")	72.5	
37.5 mm	(1-1/2")	70.1	
25 mm	(1")	64.3	
19 mm	(3/4")	57.6	
12.5 mm	(1/2")	50.6	
9.5 mm	(3/8")	47.3	
6.3 mm	(1/4")	42.5	
4.75 mm	(#4)	40.0	
2.36 mm	(#8)	35.6	
2.0 mm	(#10)	34.5	
1.18 mm	(#16)	31.3	
600 µm	(#30)	23.2	
425 µm	(#40)	19.0	
300 µm	(#50)	14.0	
150 µm	(#100)	7.4	
75 µm	(#200)	4.4	
COMPLIED WITH:			SPEC A: *

. . .AS PER GRADATION ABOVE

SOIL DESCRIPTION: YELLOW/BROWN GRAVEL AND SAND; SOME COBBLE; TRACE FINES

*Requires Engineer's approval

REVIEWED BY: [signature] 1-3-17

pc: Sara Fusco, Fuss & O'Neill
md

STATE OF CONNECTICUT RICHARD WHITE PROFESSIONAL ENGINEER REGISTERED

Independent Materials Testing Laboratories, Inc.
57 N. Washington St., P.O. Box 745, Plainville, CT 06062
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IMTL

Accurate information you can rely on.

CT DEP/DPH Falling Head Permeability

Client:	Fuss & O'Neill	Project No.:	1160
Project:	Info – Haddam Jail (Project No. 20160311.A10)	Report No.:	063
Technician:	Jose Castillo	Date:	01/03/16
Test Method:	CT DEP/DPH Falling Head Permeability	Sampled By:	Client

Sample: TP-1 36"

Source: In-Situ
Material Description: Yellow/Brown Fine Sand
Lab No.: 34223
Percent Compaction: Percent compaction is unknown, as the maximum dry unit weight and optimum moisture is not available.
Coefficient of Permeability: 66.3 Ft/Day

STATE OF CONNECTICUT
RICHARD WHITE
10636
REGISTERED
PROFESSIONAL ENGINEER

pc: Mathew M. Jermine, P.E. Fuss & O'Neill
md

CT DEP/DPH Falling Head Permeability

Client:	Fuss & O'Neill	Project No.:	1160
Project:	Info – Haddam Jail (Project No. 20160311.A10)	Report No.:	064
Technician:	Jose Castillo	Date:	01/03/17
Test Method:	CT DEP/DPH Falling Head Permeability	Sampled By:	Client

Sample: TP-3 36"

Source: In-Situ
Material Description: Yellow/Brown Fine Silty Sand
Lab No.: 34224
Percent Compaction: Percent compaction is unknown, as the maximum dry unit weight and optimum moisture is unknown.
Coefficient of Permeability: 4.1 Ft/Day

STATE OF CONNECTICUT RICHARD WHITE No. 19036 REGISTERED PROFESSIONAL ENGINEER
1-17

pc: Mathew M. Jermine, P.E. Fuss & O'Neill
md

Independent Materials Testing Laboratories, Inc. T 860.747.1000 mail@imtlct.com
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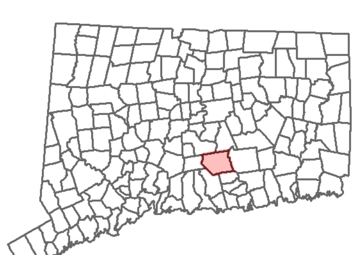


LEGEND

- Percolation Test Holes
- Testing Locations
- Parcels

N

0 30 60 120 Feet

79 Jail Hill Road (Ball Fields)

Haddam Jail

Historic Brownfields Revitilization

Haddam Connecticut

FUSS & O'NEILL
146 Hartford Road
Manchester, CT 06040
860.646.2469 | www.fando.com

Figure

1

Data Source(s):
CTECO, CTDEEP, USGS, NRCS, CTDOT

General Notes:

K:\P2016\0311\A10\MXD\Septic System Investigation.mxd

Form #2 Technical Standards for Subsurface Sewage Disposal Systems

SITE INVESTIGATION FOR A SUBSURFACE SEWAGE DISPOSAL SYSTEM

Application/Permit #:

Property Owner Town of Haddam Location 79 Jail Hill Road (Ball Field)

DATE: 12/20/2016

DEEP TEST PIT DATA/SOIL DESCRIPTIONS
(Record all Test Pits)

TEST PIT: TP-1	TEST PIT: TP-2	TEST PIT: TP-3	TEST PIT:
0-42" Fill	0-31" Fill 31-60", m-f sand	0-15" Fill	
Mottles: None	Mottles: None	Mottles: None	Mottles:
GW: None	GW: None	GW: None	GW:
Ledge: 42"	Ledge: 60"	Ledge: 15"	Ledge:
Roots: 18"	Roots: 18"	Roots: N/A	Roots:
Restrictive: 42"	Restrictive: 60"	Restrictive: 15"	Restrictive:

COMMENTS: Shallow ledge with outcroppings throughout the site. Parking lot was blasted for installation ~2000.

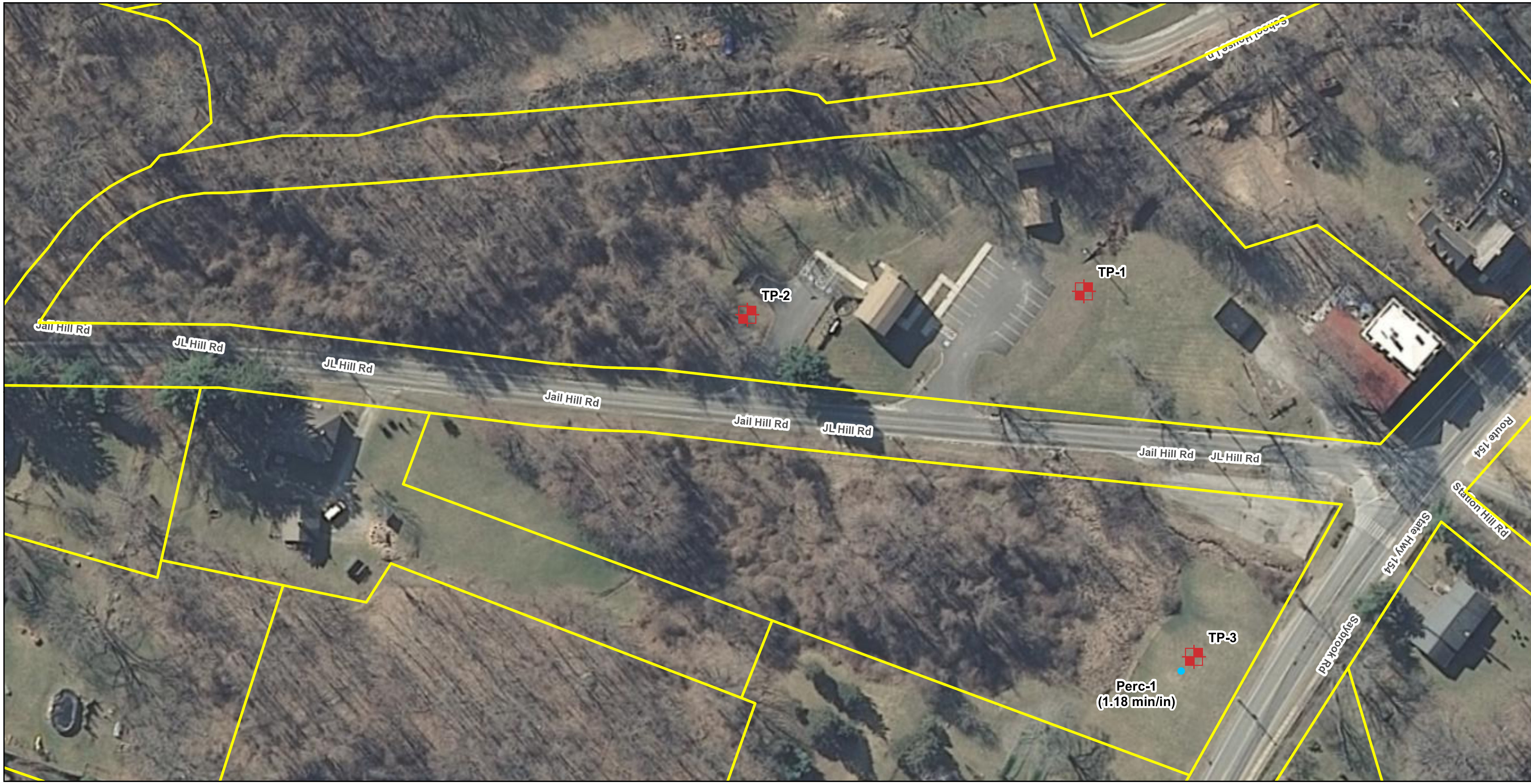
GROUNDWATER TABLE (Near max., below max., etc.) Below max. (low)
SOIL MOISTURE (High, medium, low, etc): medium

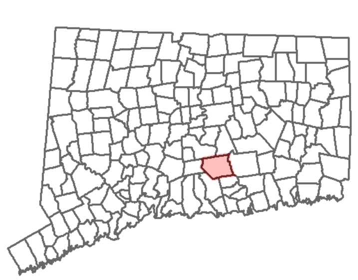
DATE: 12/20/2016

PERCOLATION TEST DATA
(Record all Perc Tests)

PERC: Perc-1		PERC:		PERC:		PERC:	
DEPTH:		DEPTH:		DEPTH:		DEPTH:	
PRESOAK: ≥2hrs		PRESOAK:		PRESOAK:		PRESOAK:	
TIME	READING	TIME	READING	TIME	READING	TIME	READING
9-11AM±	Presoak						
PERC RATE:		PERC RATE:		PERC RATE:		PERC RATE:	

COMMENTS: Due to freezing conditions we don't believe testing would provide accurate results.





LEGEND

- Percolation Test Holes
- Testing Locations
- Parcels

N

0 25 50 100 Feet

945 Saybrook Road (Jail House)

Haddam Jail

Historic Brownfields Revitilization

Haddam Connecticut

FUSS & O'NEILL
146 Hartford Road
Manchester, CT 06040
860.646.2469 | www.fando.com

Figure 2

Data Source(s):
CTECO, CTDEEP, USGS, NRCS, CTDOT

General Notes:

K:\P2016\0311\A10\MXD\Septic System Investigation.mxd

Form #2 Technical Standards for Subsurface Sewage Disposal Systems

SITE INVESTIGATION FOR A SUBSURFACE SEWAGE DISPOSAL SYSTEM

Application/Permit #:

Property Owner Town of Haddam Location 945 Saybrook Road (Jail House)

DEEP TEST PIT DATA/SOIL DESCRIPTIONS

(Record all Test Pits)

DATE: 12/20/2016

TEST PIT: TP-1 S	TEST PIT: TP-1 N	TEST PIT: TP-2	TEST PIT: TP-3
0-40" Fill 40-97" m-f Sand (Jail Hill Rd Side)	0-72" Fill 72-97" m-f sand	0-16" Fill 16-23" Loamy Sand	0-8" Topsoil 8-34" Orange m-c Sand/loamy Sand 34-91+" m-c Sand and gravel with cobbles
Mottles: None	Mottles: None	Mottles: None	Mottles: None
GW: None	GW: None	GW: None	GW: 91"
Ledge: None	Ledge: None	Ledge: 23"	Ledge: None
Roots: 29"	Roots: 29"	Roots: 12"	Roots: 10"
Restrictive: N/A	Restrictive: N/A	Restrictive: 23"	Restrictive: N/A

COMMENTS: Standpipe installed at TP-3.

GROUNDWATER TABLE (Near max., below max., etc.) below max. (low)

SOIL MOISTURE (High, medium, low, etc): medium

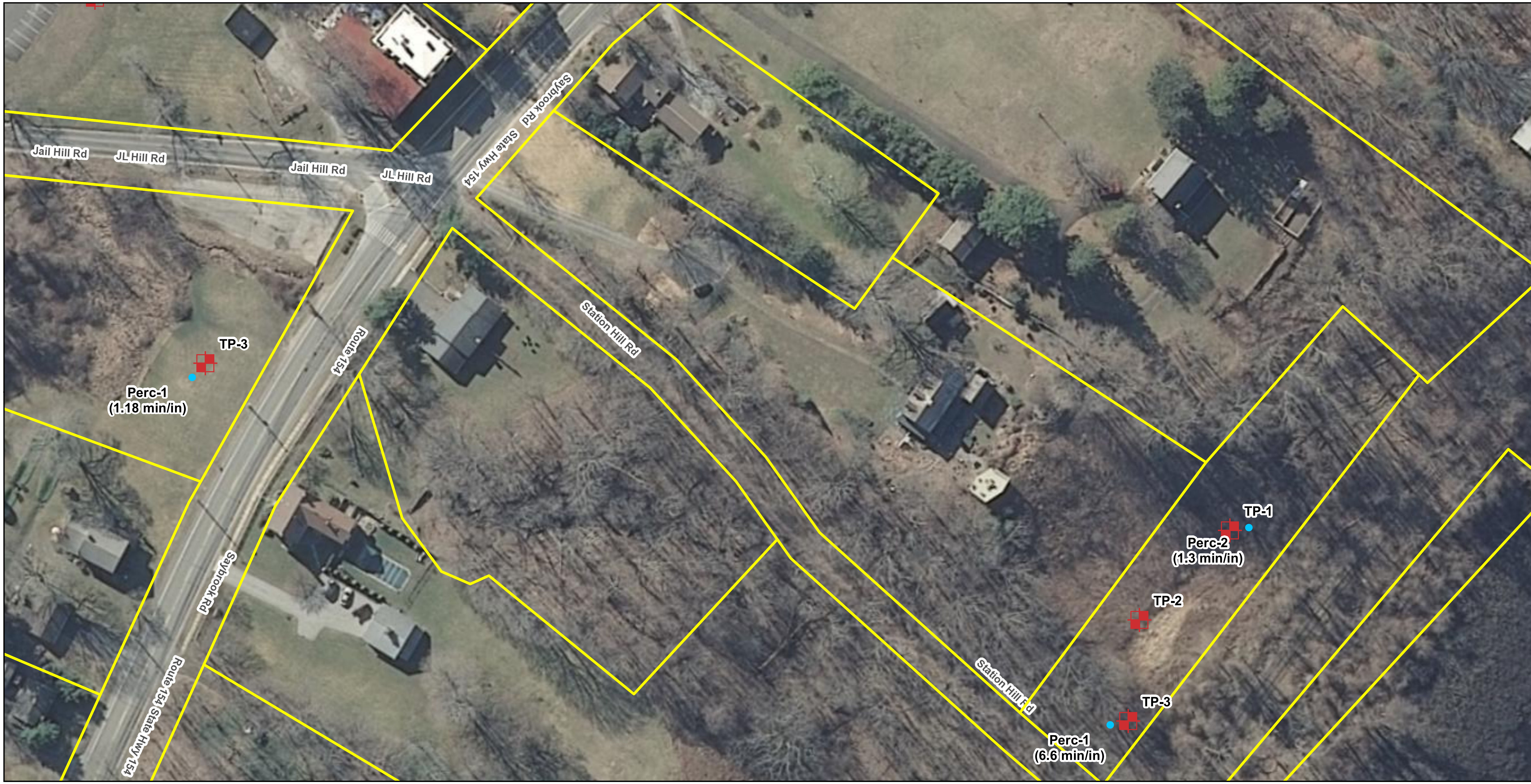
PERCOLATION TEST DATA

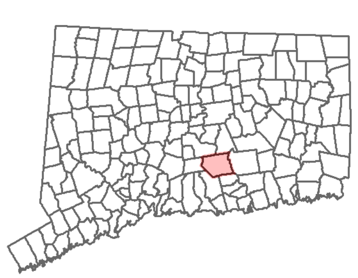
(Record all Perc Tests)

DATE: 12/20/16

PERC: Perc-1		PERC: Perc-1		PERC:		PERC:	
DEPTH: 17"-29"		DEPTH: 17"-29"		DEPTH:		DEPTH:	
PRESOAK: ~8 min.		PRESOAK: N/A (2nd round)		PRESOAK:		PRESOAK:	
TIME	READING	TIME	READING	TIME	READING	TIME	READING
0:00	15"	0:00	14.25"				
5:00	25.5"	1:00	17.5"				
6:00	26"	3:00	21.5"				
7:00	26.5"	5:00	24"				
		7:00	25.75"				
		9:00	27"				
PERC RATE:		PERC RATE: 1.18 min./in.		PERC RATE:		PERC RATE:	

COMMENTS:





LEGEND

- Percolation Test Holes
- Testing Locations
- Parcels

N

0 25 50 100 Feet

Station Hill Rd (Railroad Parcel)

Haddam Jail

Historic Brownfields Revitilization

Haddam Connecticut

FUSS & O'NEILL
146 Hartford Road
Manchester, CT 06040
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Figure

3

Disclaimer: This map is not the product of a Professional Land Survey. It was created by Fuss & O'Neill, Inc. for general reference, informational, planning and guidance use, and is not a legally authoratative source as to location of natural or manmade features. Proper interpretation of this map may require the assistance of appropriate professional services. Fuss & O'Neill, Inc. makes no warrantee, express or implied, related to the spatial accuracy, reliability, completeness, or currentness of this map.

Data Source(s):
CTECO, CTDEEP, USGS, NRCS, CTDOT

General Notes:

K:\P2016\0311\A10\MXD\Septic System Investigation.mxd

Form #2 Technical Standards for Subsurface Sewage Disposal Systems

SITE INVESTIGATION FOR A SUBSURFACE SEWAGE DISPOSAL SYSTEM

Application/Permit #: ____________

Property Owner DOT RR Location Station Hill Rd

DATE: 12/20/2016

DEEP TEST PIT DATA/SOIL DESCRIPTIONS
(Record all Test Pits)

TEST PIT: TP-1	TEST PIT: TP-2	TEST PIT: TP-3	TEST PIT:
0-7" Topsoil 7-18" Loamy Sand 18-49" Sand and gravel with cobbles 49-53" band of silt loam 53-91+" tan m-f Sand	0-9" Topsoil 9-30" m-c Sand 30" Gravel and black plastic pipe ~4"ø	0-32" Fill 32-43" Sandy Loam 43-88+" coarse sand and gravel with cobels	
Mottles: None	Mottles: None	Mottles: None	Mottles:
GW: None	GW: None	GW: None	GW:
Ledge: None	Ledge: None	Ledge: None	Ledge:
Roots:	Roots: 28"	Roots: 10"	Roots:
Restrictive: N/A	Restrictive: N/A	Restrictive: N/A	Restrictive:

COMMENTS: May have found a french/curtain drain at ~30" in TP-2. Standpipes installed in TP-1 and TP-3.

GROUNDWATER TABLE (Near max., below max., etc.) Below Max. (Low)
SOIL MOISTURE (High, medium, low, etc): medium

DATE: 12/20/2016

PERCOLATION TEST DATA
(Record all Perc Tests)

	PERC: Perc-1		PERC: Perc-2		PERC:		PERC:	
	DEPTH: 8-33"		DEPTH: 10"-30"		DEPTH:		DEPTH:	
	PRESOAK: 2-2:47PM		PRESOAK: 2:13-2:23PM		PRESOAK:		PRESOAK:	
	MIN TIME	READING	MIN TIME	READING	TIME	READING	TIME	READING
2:47	0:00	23"	0:00	13.75"				
2:49	2:00	23.25"	2:00	17"				
2:54	7:00	24"	4:00	19.5"				
2:59	12:00	25"	6:00	21"				
3:04	17:00	26"	8:00	22.75"				
3:09	22:00	27"	10:00	24"				
3:14	27:00	27.5"	12:00	26"				
3:19	32:00	28.5"*	14:00	27"				
	PERC RATE: 6.6 min/in.		PERC RATE: 1.3 min/in.		PERC RATE:		PERC RATE:	

COMMENTS: Dug out silt that had settled in Perc-1 at the end of presoaking.

*3" left in the hole

GRAIN SIZE ANALYSIS - MECHANICAL
HADDAM JAIL PROJECT
DECEMBER 2016 SOIL TESTING
HADDAM, CONNECTICUT

Soil Information

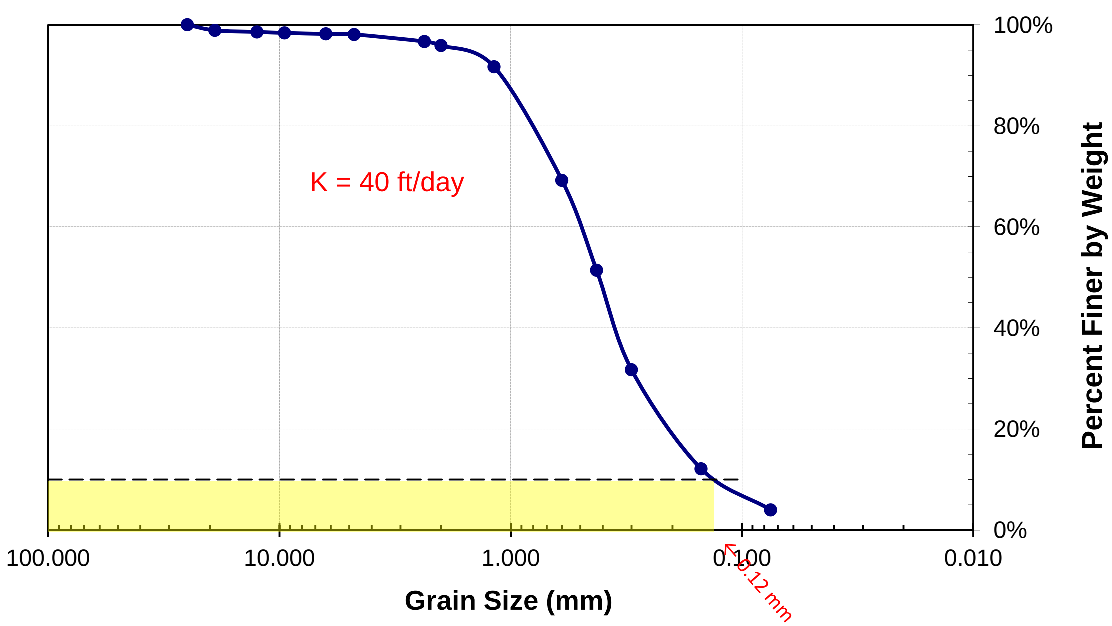
Sample Number:	TP-1 36"	**Test Pit Number:**	*TP-1*
Description of Soil:	Loamy Sand	**Tested By:**	IMTL
Depth of Sample:	36 inches	**Date of Testing:**	12/30/2016

Grain Size Analysis Data

SIEVE NUMBER	SIEVE OPENING (mm)	% PASSING
1"	25.000	100.0%
3/4"	19.000	98.9%
1/2"	12.500	98.6%
3/8"	9.500	98.4%
1/4"	6.300	98.2%
#4	4.750	98.1%
#8	2.360	96.7%
#10	2.000	95.9%
#16	1.180	91.7%
#30	0.600	69.2%
#40	0.425	51.4%
#50	0.300	31.7%
#100	0.150	12.1%
#200	0.075	4.0%

Soil Gradation Tested by Materials Testing, Inc. of New Haven, CT.

Grain Size Analysis Graph



FUSS & O'NEILL
Consulting Engineers, PC

GRAIN SIZE ANALYSIS - MECHANICAL
HADDAM JAIL PROJECT
DECEMBER 2016 SOIL TESTING
HADDAM, CONNECTICUT

Soil Information

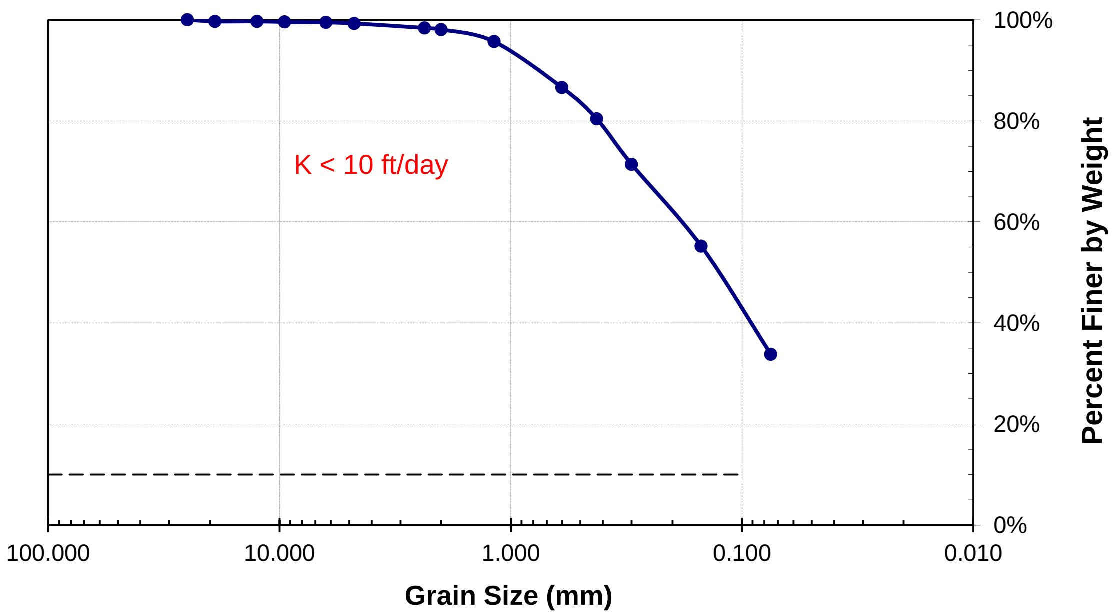
Sample Number:	TP-3 36"	**Test Pit Number:**	*TP-3*
Description of Soil:	Sandy Loam	**Tested By:**	IMTL
Depth of Sample:	36 inches	**Date of Testing:**	12/30/2016

Grain Size Analysis Data

SIEVE NUMBER	SIEVE OPENING (mm)	% PASSING
1"	25.000	100.0%
3/4"	19.000	99.7%
1/2"	12.500	99.7%
3/8"	9.500	99.6%
1/4"	6.300	99.5%
#4	4.750	99.3%
#8	2.360	98.4%
#10	2.000	98.1%
#16	1.180	95.7%
#30	0.600	86.6%
#40	0.425	80.4%
#50	0.300	71.4%
#100	0.150	55.2%
#200	0.075	33.8%

Soil Gradation Tested by Materials Testing, Inc. of New Haven, CT.

Grain Size Analysis Graph



FUSS & O'NEILL
Consulting Engineers, PC

GRAIN SIZE ANALYSIS - MECHANICAL

HADDAM JAIL PROJECT

DECEMBER 2016 SOIL TESTING

HADDAM, CONNECTICUT

Soil Information

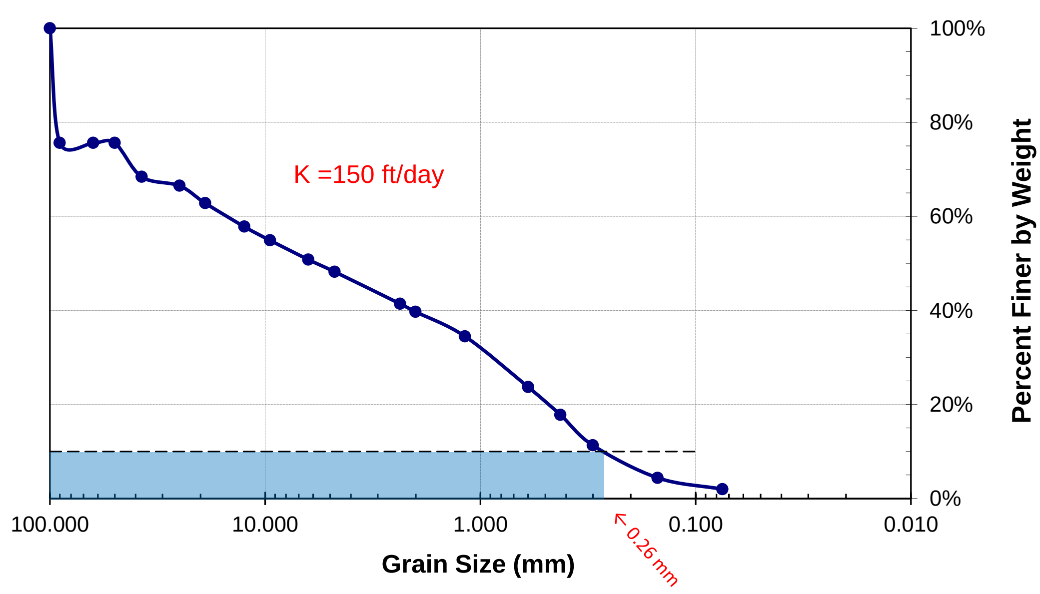
Sample Number:	TP-1 48"	**Test Pit Number:**	*TP-1*
Description of Soil:	Gravelly Sand	**Tested By:**	IMTL
Depth of Sample:	48 inches	**Date of Testing:**	12/30/2016

Grain Size Analysis Data

SIEVE NUMBER	SIEVE OPENING (mm)	% PASSING
4"	100.000	100.0%
3-1/2"	90.000	75.6%
2-1/2"	63.000	75.6%
2"	50.000	75.6%
1-1/2"	37.500	68.4%
1"	25.000	66.5%
3/4"	19.000	62.8%
1/2"	12.500	57.8%
3/8"	9.500	54.9%
1/4"	6.300	50.8%
#4	4.750	48.2%
#8	2.360	41.4%
#10	2.000	39.7%
#16	1.180	34.5%
#30	0.600	23.7%
#40	0.425	17.8%
#50	0.300	11.3%
#100	0.150	4.4%
#200	0.075	2.0%

Soil Gradation Tested by Materials Testing, Inc. of New Haven, CT.

Grain Size Analysis Graph



FUSS & O'NEILL
Consulting Engineers, PC

GRAIN SIZE ANALYSIS - MECHANICAL

HADDAM JAIL PROJECT

DECEMBER 2016 SOIL TESTING

HADDAM, CONNECTICUT

Soil Information

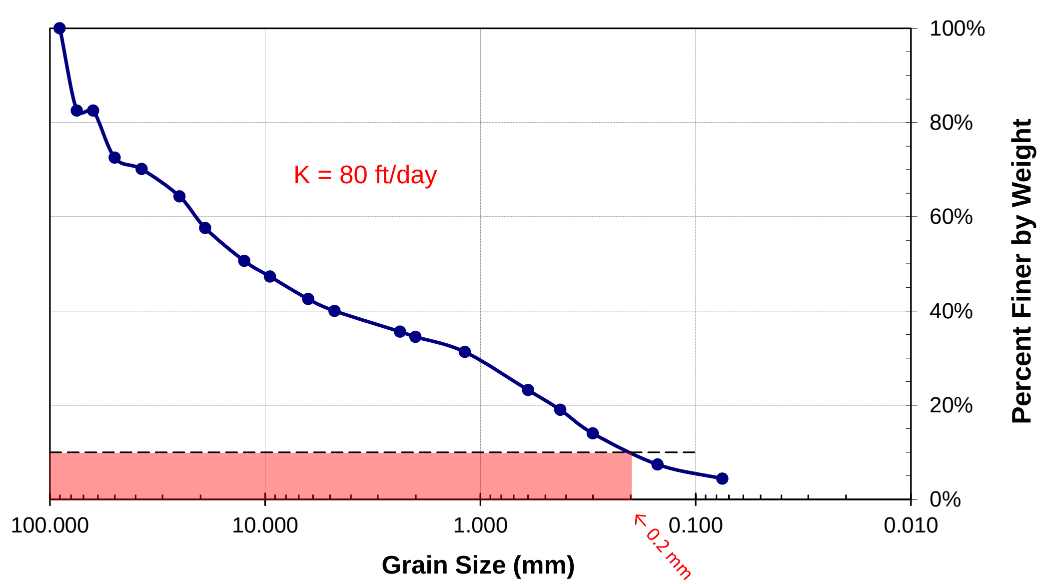
Sample Number:	TP-3 48"	**Test Pit Number:**	*TP-3*
Description of Soil:	Gravelly Sand	**Tested By:**	IMTL
Depth of Sample:	48 inches	**Date of Testing:**	12/30/2016

Grain Size Analysis Data

SIEVE NUMBER	SIEVE OPENING (mm)	% PASSING
3-1/2"	90.000	100.0%
3"	75.000	82.5%
2-1/2"	63.000	82.5%
2"	50.000	72.5%
1-1/2"	37.500	70.1%
1"	25.000	64.3%
3/4"	19.000	57.6%
1/2"	12.500	50.6%
3/8"	9.500	47.3%
1/4"	6.300	42.5%
#4	4.750	40.0%
#8	2.360	35.6%
#10	2.000	34.5%
#16	1.180	31.3%
#30	0.600	23.2%
#40	0.425	19.0%
#50	0.300	14.0%
#100	0.150	7.4%
#200	0.075	4.4%

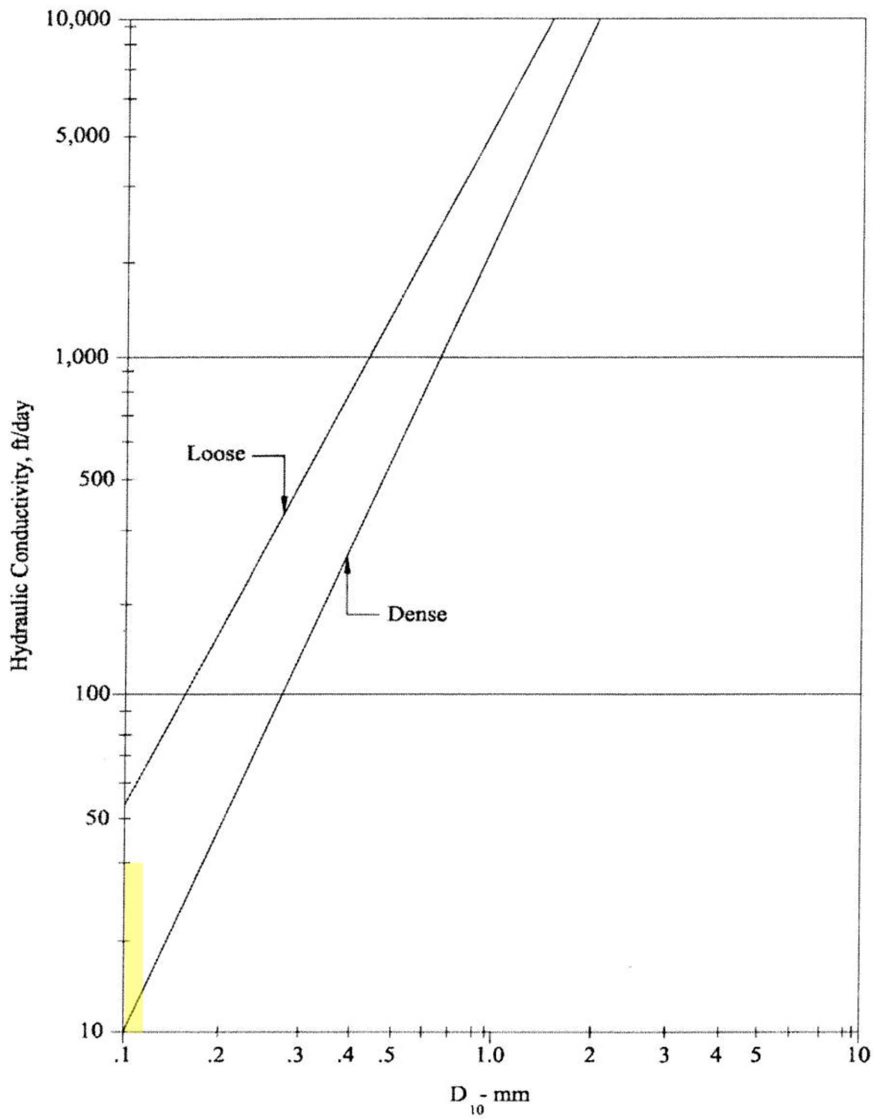
Soil Gradation Tested by Materials Testing, Inc. of New Haven, CT.

Grain Size Analysis Graph



CT DEP FIGURE No. 2

K vs. D_{10}- SANDS & GRAVELS



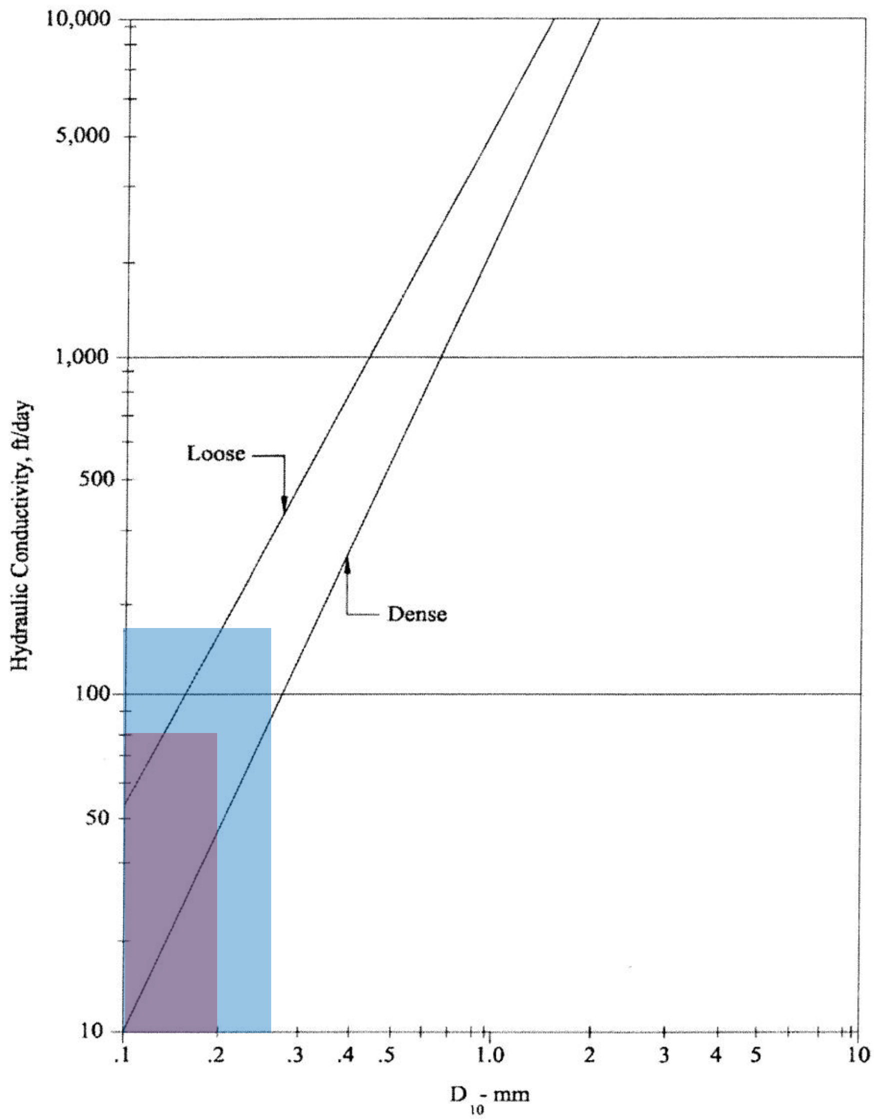
1. Grain Size Distribution

Estimating the hydraulic conductivity from the grain size distribution ignores the effect of compaction or discontinuities and may give very misleading results if the percentage of fine grains is not measured carefully. The method is most accurate with soils that don't contain any silt or clay. Figure (2) gives the hydraulic conductivity of sands and gravel in ft/day versus the d_{10} size. The d_{10} size of a soil is that sieve size that only 10% by weight of the grains are smaller than. A chart such as shown provides accuracies of K within a factor of 2 or 3.

Source: Connecticut Department of Environmental Protection "Guidance for Design of Large Scale On-Site Wastewater Renovation System", February 2006

CT DEP FIGURE No. 2

K vs. D_{10}- SANDS & GRAVELS



1. Grain Size Distribution

Estimating the hydraulic conductivity from the grain size distribution ignores the effect of compaction or discontinuities and may give very misleading results if the percentage of fine grains is not measured carefully. The method is most accurate with soils that don't contain any silt or clay. Figure (2) gives the hydraulic conductivity of sands and gravel in ft/day versus the d_{10} size. The d_{10} size of a soil is that sieve size that only 10% by weight of the grains are smaller than. A chart such as shown provides accuracies of K within a factor of 2 or 3.

Source: Connecticut Department of Environmental Protection "Guidance for Design of Large Scale On-Site Wastewater Renovation System", February 2006

Jail House

Perc-1

Time (min.)	Reading (in.)	Δ Depth (in.)	Perc. Rate (min./in.)	
0	14.25			
1	17.5	3.25	0.31	
2	21.5	4	0.50	
2	24	2.5	0.80	
2	25.75	1.75	1.14	
2	27	1.25	1.60	1.18

Station Hill

Perc-1

Time (min.)	Reading (in.)	Δ Depth (in.)	Perc. Rate (min./in.)
0	23		
2	23.25	0.25	8.00
5	24	0.75	**6.67**
5	25	1	5.00
5	26	1	5.00
5	27	1	5.00
5	27.5	0.5	10.00
5	28.5	1	5.00

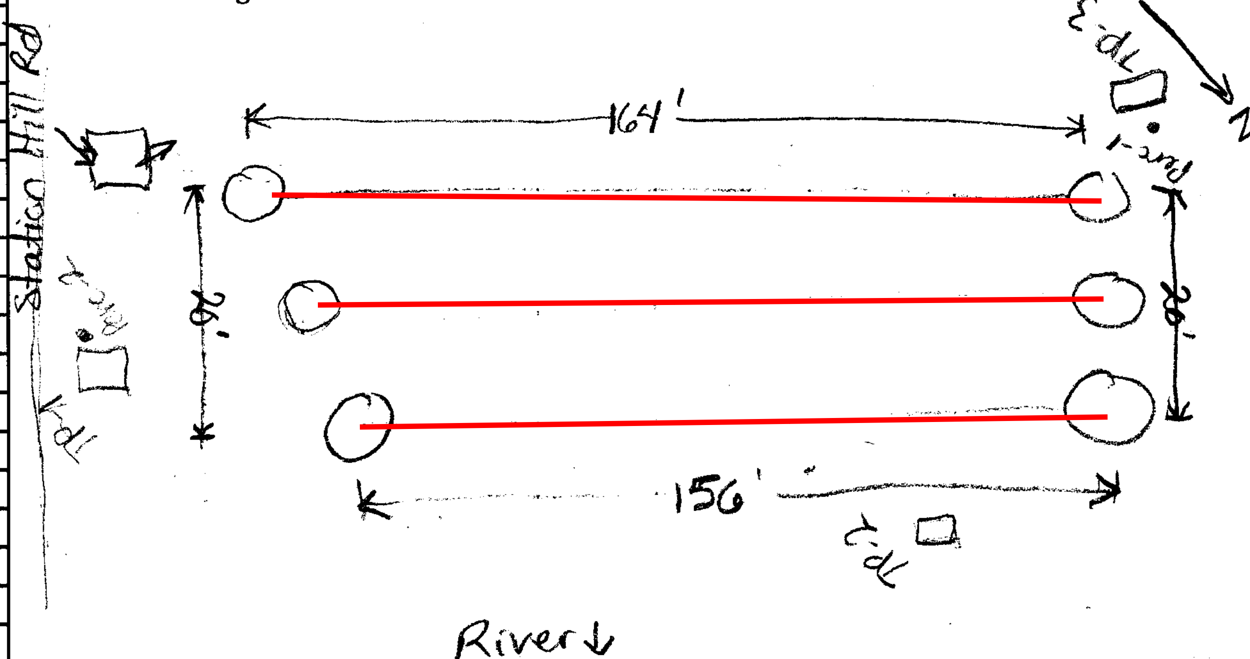
Station Hill

Perc-2

Time (min.)	Reading (in.)	Δ Depth (in.)	Perc. Rate (min./in.)
0	13.75		
2	17	3.25	0.62
2	19.5	2.5	0.80
2	21	1.5	**1.33**
2	22.75	1.75	1.14
2	24	1.25	1.60
2	26	2	1.00
2	27	1	2.00

Special Conditions	
Design Flow > 2000 GPD	
Public Water Supply Watershed	
Probable High Ground Water	
Slope > 25 Percent	
Perc Rate < 1 min/inch	
Perc Rate > 30 min/inch	
Ledge < 5 feet Below Grade	
Limited Suitable Area	
Open Watercourse or Wetland	
Flood Plain/Seasonal Flooding	
G.W. < 36 inches Below Grade	
Conclusions	
Suitable for Sewage Disposal	
Unsuitable for Sewage Disposal	
Additional Investigation Required	
Wet Season Monitoring Required	
Retest During Wet Season	
Licensed Engineer Plan Required	
Other:	

Location Drawing



Design Requirements:

Percolation Test Data

PERC:		PERC:		PERC:		PERC:	
DEPTH:		DEPTH:		DEPTH:		DEPTH:	
PRESOAK:		PRESOAK:		PRESOAK:		PRESOAK:	
TIME	READING	TIME	READING	TIME	READING	TIME	READING
PERC RATE:		PERC RATE:		PERC RATE:		PERC RATE:	

CT DEP/DPH Falling Head Permeability

Client:	Fuss & O'Neill	Project No.:	1160
Project:	Info – Haddam Jail (Project No. 20160311.A10)	Report No.:	063
Technician:	Jose Castillo	Date:	01/03/16
Test Method:	CT DEP/DPH Falling Head Permeability	Sampled By:	Client

Sample: TP-1 36"

Source: In-Situ
Material Description: Yellow/Brown Fine Sand
Lab No.: 34223
Percent Compaction: Percent compaction is unknown, as the maximum dry unit weight and optimum moisture is not available.
Coefficient of Permeability: 66.3 Ft/Day

STATE OF CONNECTICUT
RICHARD WHITE
10636
REGISTERED
PROFESSIONAL ENGINEER

pc: Mathew M. Jermine, P.E. Fuss & O'Neill
md

Accurate information you can rely on.

CT DEP/DPH Falling Head Permeability

Client:	Fuss & O'Neill	Project No.:	1160
Project:	Info – Haddam Jail (Project No. 20160311.A10)	Report No.:	064
Technician:	Jose Castillo	Date:	01/03/17
Test Method:	CT DEP/DPH Falling Head Permeability	Sampled By:	Client

Sample: TP-3 36"

Source: In-Situ
Material Description: Yellow/Brown Fine Silty Sand
Lab No.: 34224
Percent Compaction: Percent compaction is unknown, as the maximum dry unit weight and optimum moisture is unknown.
Coefficient of Permeability: 4.1 Ft/Day

STATE OF CONNECTICUT
RICHARD WHITE
No. 19036
REGISTERED
PROFESSIONAL ENGINEER
1-4-17

pc: Mathew M. Jermine, P.E. Fuss & O'Neill
md

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T 860.747.1000
F 860.747.6455
mail@imtlct.com
www.imtlct.com

Soil Gradation Report

Accurate information you can rely on.

GRADATION ASTM D-422; WET WASH ASTM D-1140

PROJECT:	INFO – HADDAM JAIL (JOB NO. 20160311.A10)	PROJECT NO.:	1160
CLIENT:	FUSS & O'NEILL	REPORT NO.:	059
LAB NO.:	34219	DATE:	12/30/16
USE:	N/A	SAMPLED BY:	CLIENT
SPEC A:	NOT AVAILABLE*	SOURCE:	IN-SITU
SAMPLE ID:	TP-1 36"	EST. PARTICLE SHAPE/HARDNESS:	ANGULAR/HARD

GRADATION RESULTS

SIEVE #		% PASS	SPEC A
25 mm	(1")	100.0	
19 mm	(3/4")	98.9	
12.5 mm	(1/2")	98.6	
9.5 mm	(3/8")	98.4	
6.3 mm	(1/4")	98.2	
4.75 mm	(#4)	98.1	
2.36 mm	(#8)	96.7	
2.0 mm	(#10)	95.9	
1.18 mm	(#16)	91.7	
600 µm	(#30)	69.2	
425 µm	(#40)	51.4	
300 µm	(#50)	31.7	
150 µm	(#100)	12.1	
75 µm	(#200)	4.0	
COMPLIED WITH:			SPEC A: *

. . .AS PER GRADATION ABOVE

SOIL DESCRIPTION: YELLOW/BROWN SAND; TRACE FINES; TRACE GRAVEL

*Requires Engineer's approval

REVIEWED BY: [signature] 1-3-17

pc: Sara Fusco, Fuss & O'Neill
md

STATE OF CONNECTICUT RICHARD WHITE No. 10836 REGISTERED PROFESSIONAL ENGINEER 1-3-17

Independent Materials Testing Laboratories, Inc.
57 N. Washington St., P.O. Box 745, Plainville, CT 06062
T 860.747.1000 F 860.747.6455
mail@imtlct.com www.imtlct.com

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Accurate information you can rely on.

Soil Gradation Report

GRADATION ASTM D-422; WET WASH ASTM D-1140

PROJECT:	INFO – HADDAM JAIL (JOB NO. 20160311.A10)	PROJECT NO.:	1160
CLIENT:	FUSS & O'NEILL	REPORT NO.:	061
LAB NO.:	34221	DATE:	12/30/16
USE:	N/A	SAMPLED BY:	CLIENT
SPEC A:	NOT AVAILABLE*	SOURCE:	IN-SITU
SAMPLE ID:	TP-3 36"	EST. PARTICLE SHAPE/HARDNESS:	ANGULAR/HARD

GRADATION RESULTS

SIEVE #		% PASS	SPEC A
25 mm	(1")	100.0	
19 mm	(3/4")	99.7	
12.5 mm	(1/2")	99.7	
9.5 mm	(3/8")	99.6	
6.3 mm	(1/4")	99.5	
4.75 mm	(#4)	99.3	
2.36 mm	(#8)	98.4	
2.0 mm	(#10)	98.1	
1.18 mm	(#16)	95.7	
600 µm	(#30)	86.6	
425 µm	(#40)	80.4	
300 µm	(#50)	71.4	
150 µm	(#100)	55.2	
75 µm	(#200)	33.8	
COMPLIED WITH:			SPEC A: *

. . .AS PER GRADATION ABOVE

SOIL DESCRIPTION: YELLOW/BROWN SAND; SOME FINES; TRACE GRAVEL

*Requires Engineer's approval

STATE OF CONNECTICUT RICHARD WHITE No. 13058 REGISTERED PROFESSIONAL ENGINEER

REVIEWED BY: 1-3-17

pc: Sara Fusco, Fuss & O'Neill
md

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Soil Gradation Report

GRADATION ASTM D-422; WET WASH ASTM D-1140

PROJECT:	INFO – HADDAM JAIL (JOB NO. 20160311.A10)	PROJECT NO.:	1160
CLIENT:	FUSS & O'NEILL	REPORT NO.:	060
LAB NO.:	34220	DATE:	12/30/16
USE:	N/A	SAMPLED BY:	CLIENT
SPEC A:	NOT AVAILABLE*	SOURCE:	IN-SITU
SAMPLE ID:	TP-1 48"	EST. PARTICLE SHAPE/HARDNESS:	ANGULAR/HARD

GRADATION RESULTS

SIEVE #		% PASS	SPEC A
100 mm	(4")	100.0	
90 mm	(3-1/2")	75.6	
63 mm	(2-1/2")	75.6	
50 mm	(2")	75.6	
37.5 mm	(1-1/2")	68.4	
25 mm	(1")	66.5	
19 mm	(3/4")	62.8	
12.5 mm	(1/2")	57.8	
9.5 mm	(3/8")	54.9	
6.3 mm	(1/4")	50.8	
4.75 mm	(#4)	48.2	
2.36 mm	(#8)	41.4	
2.0 mm	(#10)	39.7	
1.18 mm	(#16)	34.5	
600 µm	(#30)	23.7	
425 µm	(#40)	17.8	
300 µm	(#50)	11.3	
150 µm	(#100)	4.4	
75 µm	(#200)	2.0	
COMPLIED WITH:			SPEC A: *
. . .AS PER GRADATION ABOVE			

SOIL DESCRIPTION: YELLOW/BROWN SAND; SOME GRAVEL; SOME COBBLE; TRACE FINES

*Requires Engineer's approval

REVIEWED BY: 1-3-17

pc: Sara Fusco, Fuss & O'Neill

md

STATE OF CONNECTICUT RICHARD WHITE NO. 10036 REGISTERED PROFESSIONAL ENGINEER

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Soil Gradation Report

GRADATION ASTM D-422; WET WASH ASTM D-1140

PROJECT:	INFO – HADDAM JAIL (JOB NO. 20160311.A10)	PROJECT NO.:	1160
CLIENT:	FUSS & O'NEILL	REPORT NO.:	062
LAB NO.:	34222	DATE:	12/30/16
USE:	N/A	SAMPLED BY:	CLIENT
SPEC A:	NOT AVAILABLE*	SOURCE:	IN-SITU
SAMPLE ID:	TP-3 48"	EST. PARTICLE SHAPE/HARDNESS:	ANGULAR/HARD

GRADATION RESULTS

SIEVE #		% PASS	SPEC A
90 mm	(3-1/2")	100.0	
75 mm	(3")	82.5	
63 mm	(2-1/2")	82.5	
50 mm	(2")	72.5	
37.5 mm	(1-1/2")	70.1	
25 mm	(1")	64.3	
19 mm	(3/4")	57.6	
12.5 mm	(1/2")	50.6	
9.5 mm	(3/8")	47.3	
6.3 mm	(1/4")	42.5	
4.75 mm	(#4)	40.0	
2.36 mm	(#8)	35.6	
2.0 mm	(#10)	34.5	
1.18 mm	(#16)	31.3	
600 µm	(#30)	23.2	
425 µm	(#40)	19.0	
300 µm	(#50)	14.0	
150 µm	(#100)	7.4	
75 µm	(#200)	4.4	
COMPLIED WITH:			SPEC A: *

. . .AS PER GRADATION ABOVE

SOIL DESCRIPTION: YELLOW/BROWN GRAVEL AND SAND; SOME COBBLE; TRACE FINES

*Requires Engineer's approval

REVIEWED BY: [signature] 1-3-17

pc: Sara Fusco, Fuss & O'Neill
md

STATE OF CONNECTICUT RICHARD WHITE PROFESSIONAL ENGINEER REGISTERED

Independent Materials Testing Laboratories, Inc. T 860.747.1000 mail@imtlct.com
57 N. Washington St., P.O. Box 745, Plainville, CT 06062 F 860.747.6455 www.imtlct.com

Appendix D
SSDS Conceptual Design Memo (Fuss & O'Neill, November 2016)

FUSS & O'NEILL

MEMORANDUM

TO: Project File

FROM: Rachel Schnabel, EIT
Matthew Jermine, PE

DATE: April 27, 2017

RE: CT DPH Septic System – SSDS Concept Design Calculations
20160311.A10 Haddam Jail Site

Executive Summary

The site of the existing leaching system for the jail house across Route 154 at the end of Station Hill Road was examined for a new State Health Department regulated septic system. This site is adequate for a 4,980 gallons per day leaching system based on the attached conceptual design.

Exceptions will be required from the Commissioner of Public Health for using a septic system not located on the same lot as the building served and for a leaching field serving multiple buildings; otherwise the system becomes DEEP regulated. Given that the existing septic system is located on the parcel used for this concept design, acquiring these exceptions is not anticipated to be an issue.

On-site soil testing determined that fast soil percolation rates with high hydraulic capacity and very deep groundwater are present. Although groundwater monitoring will continue until the end of the Spring, current measurements indicate a groundwater depth of approximately 18 feet.

The proposed leaching field would have 12 inches of cover, a cross sectional height of 48 inches, and a total depth of 60 inches. The limiting factor for this site has been the Minimum Leaching System Spread (MLSS) requirement which is not required when the groundwater depth is more than 72 inches below the bottom of the leaching field. Therefore the groundwater depth would have to be at 11 feet (60 inches + 72 inches) to make the MLSS a requirement. Groundwater was last measured on April 6th to be 18.6 feet deep.

A restaurant serving dinner only could be sized for up to 166 seats based on Connecticut Public Health Code unit flow rates for sizing septic systems. Flow could be apportioned for other uses such as residential, commercial, museum, office space, etc. if the number of restaurant seats were reduced. If the restaurant serves breakfast, lunch, and dinner, the number of seats must be reduced by 50%.

Based on the results of the camera study, replacement piping will likely be required. The existing septic tank effluent piping is cast iron in poor condition. Blockage in the septic tank effluent pipeline prevented the closed circuit television (CCTV) camera from being fed under Route 145, Saybrook Road. The nearest downhill manhole identified is approximately 670 feet away from the existing septic tank.

This manhole has influent piping of clay in good condition; however, the camera could not reach under the roadway from the downhill manhole. Two cost scenarios have been provided in the attachments; one for open-cut installation of new piping through the roadway and the second for installation of new piping by horizontal directional drilling under the roadway.

Conceptual Design Results

Restaurant Flow	4,980 GPD (166 seats × 30 GPD/seat for dinner only)
Septic Tank	2 @ 5,000 gallon tank in series (due to high solid loading)
Grease Interceptor Tank	2 @ 5,000 gallon tank in series
Leaching Field Type	472 linear feet of Cultec Recharger 900HD
Leaching Field Footprint	44 feet × 163 feet

Design Notes

- Reserve area has the same dimensions as the leaching field footprint.
- The State Health Department requires a minimum leaching system spread (MLSS) for a depth less than 72 inches from the bottom of the leaching system to the seasonal high groundwater table.
    - The MLSS calculation is based on the soil percolation rate, surface slope, and design flow.
    - The site exceeds the 72-inch requirement; therefore the MLSS calculation is not required.
- The design flow limit is 5,000 gallons; otherwise the system becomes DEEP regulated.
- An exception from the Commissioner of Public Health is required for using a septic system not located on the same lot as the building served; otherwise the system becomes DEEP regulated.
- An exception from the Commissioner of Public Health is required for a leaching field serving multiple buildings; otherwise the system becomes DEEP regulated.
- Permitting a DEEP subsurface wastewater absorption system for this site is unlikely because of the very stringent design requirements:
    - A detailed mounding analysis is required to determine the effluent mound height above the seasonal high groundwater elevation.
    - A nitrogen dilution calculation is required to demonstrate the effluent has a concentration of less than 10 mg/l of nitrogen by the time it reaches the nearest point of concern.
    - A 21-day travel time analysis is required from the edge of the leaching field to the nearest point of concern (i.e. property boundary, surface water body, etc.).
- Setback distances for the leaching field:
    - 50 feet from wetlands
    - 10 feet from buildings (also required of septic tanks)

  - 10 feet from property line up-gradient (in terms of groundwater) and from sides of system
    - Reduced from 15 feet because leaching system will be below original grade
  - 15 feet from property line down-gradient of system
    - Reduced from 25 feet because the MLSS calculation is not applicable
- The groundwater measurement data was last downloaded from the sensors on April 6th.
  - Although the groundwater continued to rise (last observed at 18.6 feet deep), the conceptual septic system design was calculated.
  - The groundwater depth would have to rise an additional 6 feet to trigger the MLSS calculation which would reduce the septic system capacity.
  - The groundwater depth will continue to be monitored until the beginning of the summer for future use.

Attachments

- Design Calculations
- Cost Estimate
- Concept Design Figure 1
- Groundwater Monitoring Results
- Soil Test Results

Based on CT DPH January 2015 "Connecticut Public Health Code: On-site Sewage Disposal Regulations, and Technical Standards for Subsurface Sewage Disposal Systems"

1. Design Flow - Alternative 1

Restaurant Building Design Flow, Q = 4,980 gal / day

Restaurant Building Design Flow, Q = (N_S x 30 GPD/seat)
Restaurant Building Number of Seats, N_S = Q_F ÷ 30 GPD/seat
Restaurant Building Number of Seats, N_S = 166 seats

Total Design Flow, Q_F = 4,980 gal / day

2. Effective Leaching Surface Area (ELA)

Percolation Rate, R_P = 6.6 minutes / inch

Nonresidential Building p. 45

Percolation Rate, R_P (minutes / inch)	Problematic Sewage Application Rate, R_{AP} (GPD / sq.ft. of ELA)	Non-Problematic Sewage Application Rate, R_{AN} (GPD / sq.ft. of ELA)
Less than 10.1	0.8	1.5

Restaurant (Problematic Sewage) Required ELA = Q / R_{AP}
Restaurant (Problematic Sewage) Required ELA = 6,225 sq. ft.

Total Required ELA = 6,225 sq. ft.

2. Effective Leaching Surface Area (ELA) - Continued

Total Required ELA = 6,225 sq. ft.

Product = Cultec Recharger 900HD p. 41-44

Width, W_T = 78 inches (Table Lookup)
Height, H_T = 48 inches (Table Lookup)
ELA = 13.3 sq. ft. / lin. ft. (Table Lookup)
Center to Center Spacing, S_T = 15 ft (Table Lookup)
Unit Length, L_U = 9.25 ft (Product DWG Lookup)

9.25 Unit Length, L_U (ft)
3 No. of Rows, N_R
× 17 No. of Units Per Row, N_U
Total Trench Length Provided, L_T = 472 Linear feet

Leaching Area Provided = Trench Length Provided × Total Effective Leaching Area
Leaching Area Provided = 6,274 sq. ft

OK: Greater than Required Effective Leaching Area
[Leaching Area Provided must be ≥ Required Effective Leaching Area]

Width of System = (N_R x W_T) + {(N_R-1) x [S_T-(W_T)]}
Width of System = 44 ft
Length of System = (L_U x N_U) + L_D
Length of System = 157.25 ft
Distribution box required every 100 continuous feet of leaching field
Distribution Box Length = 6 ft
Number of Distribution Boxes Required Per Row = 1

Leaching Field Dimensions = 44 ft wide x 163.25 ft long
Site Limitations = 55 ft wide x 380 ft long

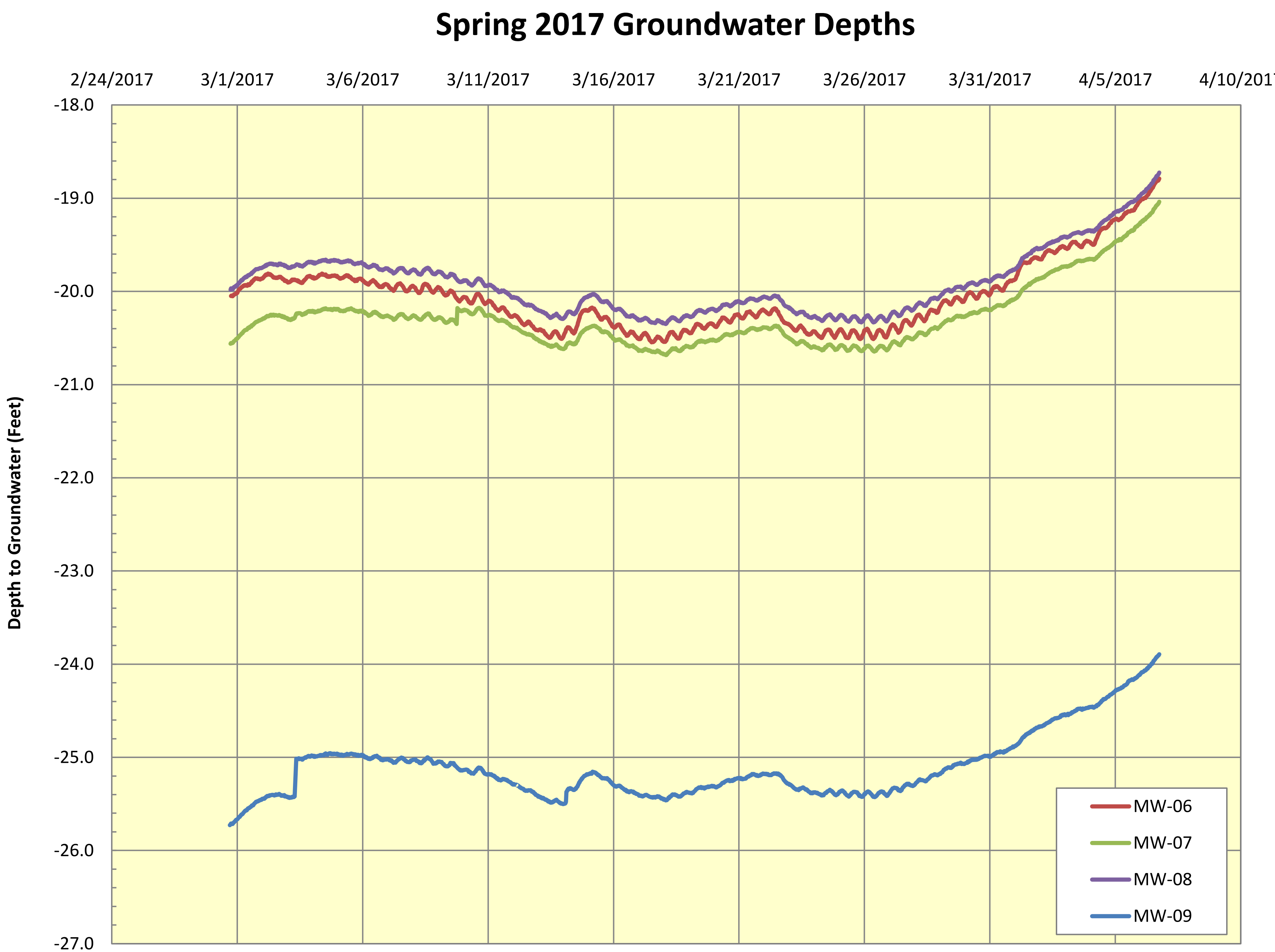
OK: Leaching Field Dimension Meet Site Limitations
[Leaching Field Dimensions must be ≤ Site Limitations]

3. Receiving Soil Depth

Leaching Gallery Cover, D_C =	12	inches		
Leaching Gallery Height, H_T =	48	inches		
Depth to Bottom of Leaching System, d_b =	$D_C + H_T$			
d_b =	60.0	inches		
Required Vertical Height of Unsaturated Soil Between the Bottom of the Leaching Galleries and the Seasonal High Groundwater Table, R_u =	18	inches		
Minimum Depth to Seasonal High Groundwater Table, D_{GW} =	216	inches	=	18 feet
Depth to Bottom of Leaching System, d_b =	60.0	inches		
Distance Between Bottom of Leaching System and Seasonal High GW =	156	inches		

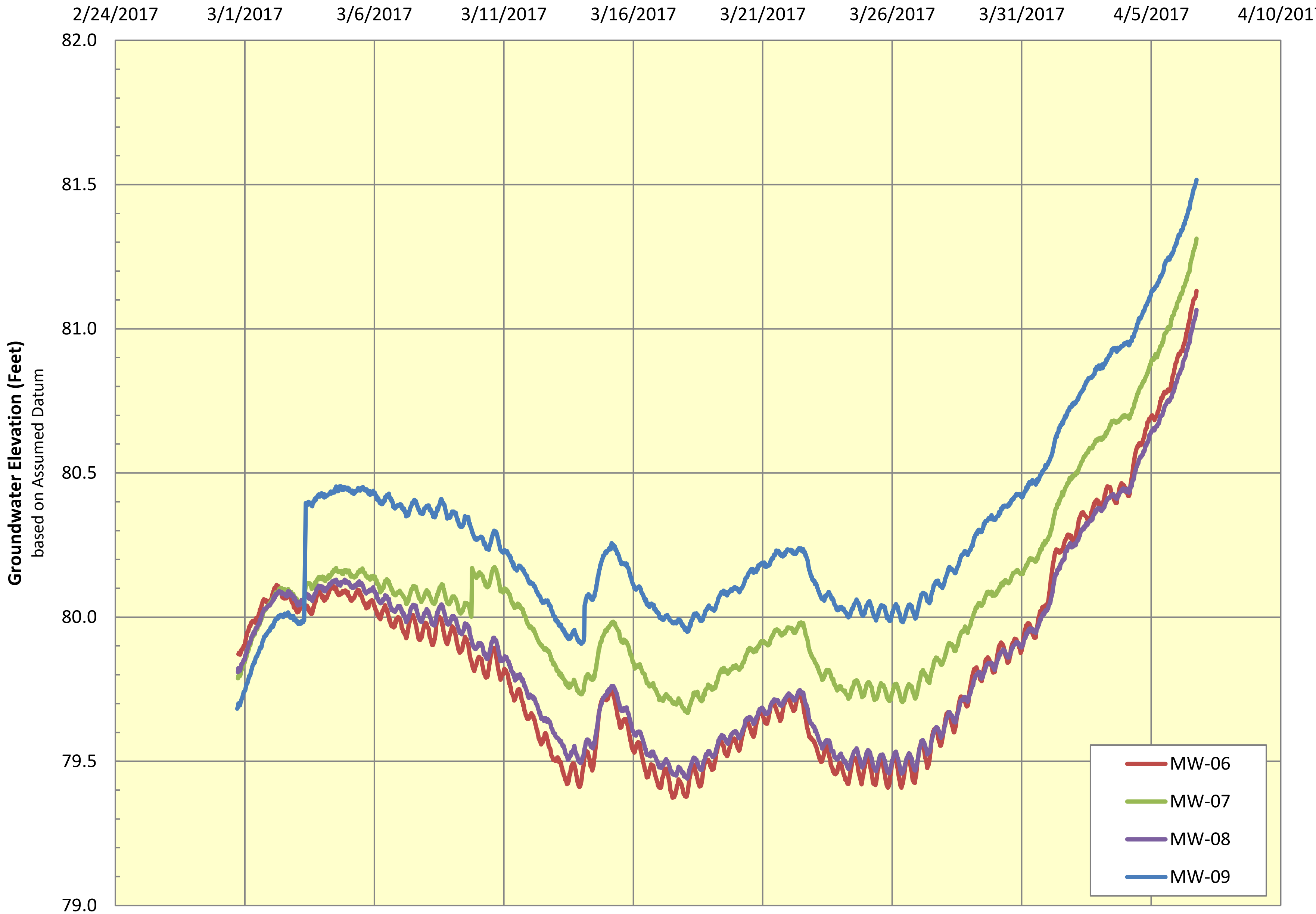
OK: Greater than Required Verticle Height of Unsaturated Soil
[Unsaturated Soil Depth d_u must be ≥ Required Unsaturated Soil Depth R_u]

OK: MLSS Calculation is not required
[Unsaturated Soil Depth d_u > 72 inches does not require MLSS Calculation]



F:\P2016\0311\A10\SSDS\Monitoring Wells\20170406\WaterLevels.xlsx, Chart1

Spring 2017 Groundwater Elevation Measurements



F:\P2016\0311\A10\SSDS\Monitoring Wells\20170406\WaterLevels.xlsx, Chart2

Station Hill Road – Railroad Property

Test Pit TP-1:

- Total depth of test pit was 91 inches (7.6 feet); ledge was not encountered
- Percolation Test Pec-2 was conducted
  - Percolation rate = 1.3 minutes per inch
- Soil sample collected at 36 inches deep for DEEP Falling Head Permeability testing
  - Laboratory Tested Permeability Rate = 66.3 feet per day (loamy sand)
- Soil samples collected for laboratory grain size sieve analysis
  - At 36-inches deep = Interpolated permeability rate is 40 feet per day (loamy sand)
  - At 48-inches deep = Interpolated permeability rate is 150 feet per day (gravelly sand)
- A standpipe was installed for future seasonal high groundwater monitoring

Test Pit TP-2:

- Total depth of test pit was approximately 42 inches (3.5 feet)
- Bedrock was not encountered
- 30 inches (2.5 feet) of native soils
- Gravel and 4-inch diameter black plastic pipe found 30 inches deep – thought to be a French drain

Test Pit TP-3

- Total depth of test pit was 88 inches (7.3 feet); ledge was not encountered
- 32 inches (2.67 feet) of fill
- 56 inches (4.67 feet) of native soils below fill
- Percolation Test Pec-1 was conducted
  - Percolation rate = 6.6 minutes per inch
- Soil sample collected at 36 inches deep for DEEP Falling Head Permeability testing
  - Laboratory Tested Permeability Rate = 4.1 feet per day (sandy loam)
- Soil samples collected for laboratory grain size sieve analysis
  - At 36-inches deep = Interpolated permeability rate is less than 10 feet per day (sandy loam)
  - At 48-inches deep = Interpolated permeability rate is 80 feet per day (gravelly sand)
- A standpipe was installed for future seasonal high groundwater monitoring

Notes:

- The existing septic system was measured to be approximately 20 feet by 160 feet and has three rows; based on the cleanout structures
  - The exact capacity of the existing system has yet to be determined
  - Site observations indicate that the existing septic system may be filled in with debris
  - The Town would need the State Department of Health to grant special permission to construct a new septic system on a separate lot
- The site is very long in the direction perpendicular to groundwater flow

Form #2 Technical Standards for Subsurface Sewage Disposal Systems

SITE INVESTIGATION FOR A SUBSURFACE SEWAGE DISPOSAL SYSTEM

Application/Permit #:

Property Owner DOT RR Location Station Hill Rd

DATE: 12/20/2016

DEEP TEST PIT DATA/SOIL DESCRIPTIONS
(Record all Test Pits)

TEST PIT: TP-1	TEST PIT: TP-2	TEST PIT: TP-3	TEST PIT:
0-7" Topsoil 7-18" Loamy Sand 18-49" Sand and gravel with cobbles 49-53" band of silt loam 53-91+" tan m-f Sand	0-9" Topsoil 9-30" m-c Sand 30" Gravel and black plastic pipe ~4"ø	0-32" Fill 32-43" Sandy Loam 43-88+" coarse sand and gravel with cobels	
Mottles: None	Mottles: None	Mottles: None	Mottles:
GW: None	GW: None	GW: None	GW:
Ledge: None	Ledge: None	Ledge: None	Ledge:
Roots:	Roots: 28"	Roots: 10"	Roots:
Restrictive: N/A	Restrictive: N/A	Restrictive: N/A	Restrictive:

COMMENTS: May have found a french/curtain drain at ~30" in TP-2. Standpipes installed in TP-1 and TP-3.

GROUNDWATER TABLE (Near max., below max., etc.) Below Max. (Low)
SOIL MOISTURE (High, medium, low, etc): medium

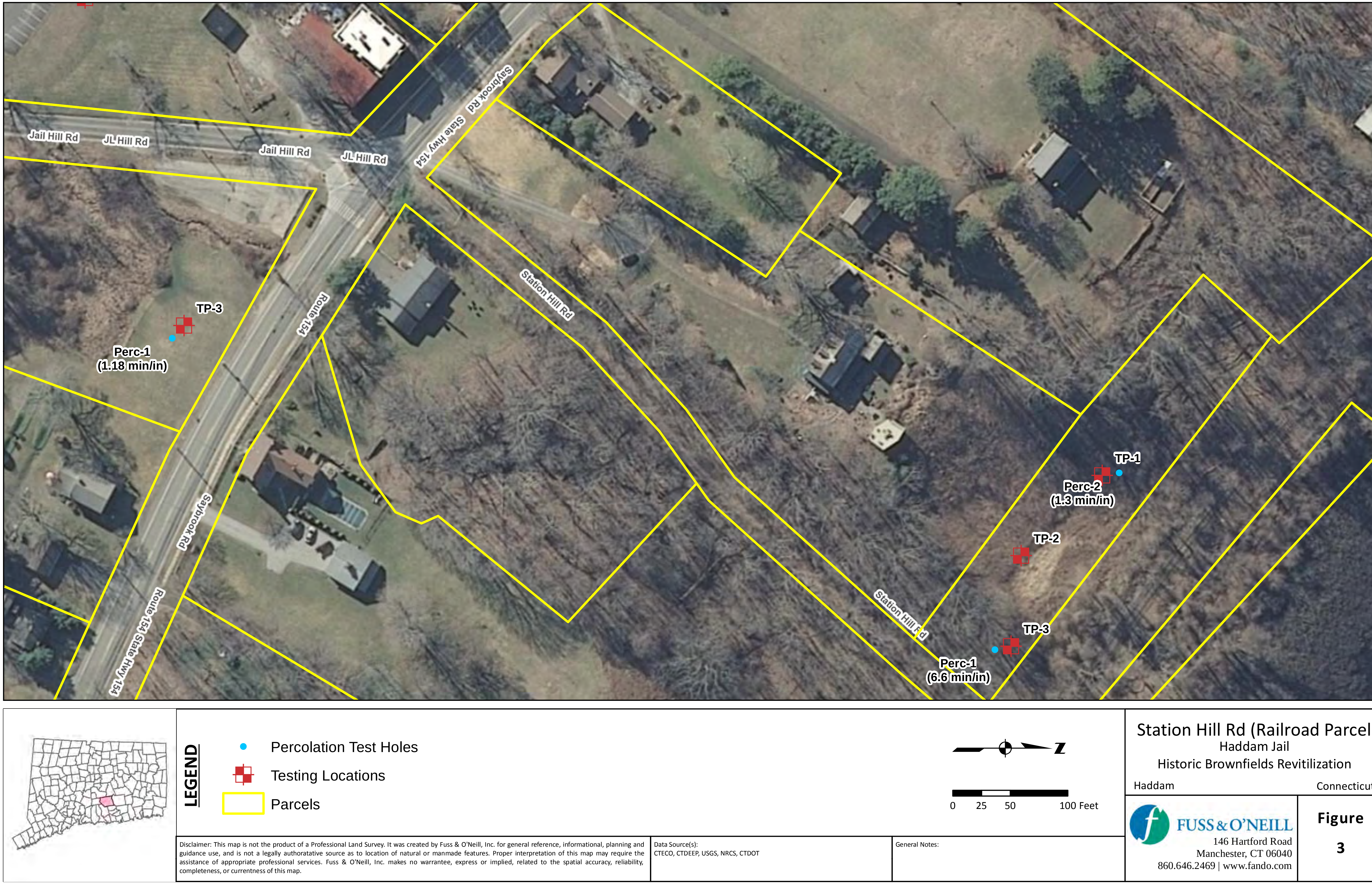
DATE: 12/20/2016

PERCOLATION TEST DATA
(Record all Perc Tests)

	PERC: Perc-1		PERC: Perc-2		PERC:		PERC:	
	DEPTH: 8-33"		DEPTH: 10"-30"		DEPTH:		DEPTH:	
	PRESOAK: 2-2:47PM		PRESOAK: 2:13-2:23PM		PRESOAK:		PRESOAK:	
	MIN TIME	READING	MIN TIME	READING	TIME	READING	TIME	READING
2:47	0:00	23"	0:00	13.75"				
2:49	2:00	23.25"	2:00	17"				
2:54	7:00	24"	4:00	19.5"				
2:59	12:00	25"	6:00	21"				
3:04	17:00	26"	8:00	22.75"				
3:09	22:00	27"	10:00	24"				
3:14	27:00	27.5"	12:00	26"				
3:19	32:00	28.5"*	14:00	27"				
	PERC RATE: 6.6 min/in.		PERC RATE: 1.3 min/in.		PERC RATE:		PERC RATE:	

COMMENTS: Dug out silt that had settled in Perc-1 at the end of presoaking.

*3" left in the hole



Station Hill Rd (Railroad Parcel)

Haddam Jail

Historic Brownfields Revitilization

Haddam Connecticut

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146 Hartford Road
Manchester, CT 06040
860.646.2469 | www.fando.com

Figure 3

Data Source(s):
CTECO, CTDEEP, USGS, NRCS, CTDOT

General Notes:

K:\P2016\0311\A10\MXD\Septic System Investigation.mxd

ORDER OF MAGNITUDE OPINION OF COST		SHEET:	1 OF 1
PROJECT:	Subsurface Disposal System Concept Design	DATE:	04/18/17
LOCATION:	Haddam Jail, CT	ESTIMATOR:	RMDS
DESCRIPTION:	**Cost with open-cut pipe installation crossing State Highway 145.**	CHECKED BY:	MMJ
		PROJECT NO.:	20160311.A10

FUSS & O'NEILL
Disciplines to Deliver

Since Fuss & O'Neill has no control over the cost of labor, materials, equipment or services furnished by others, or over the Contractor(s)' methods of determining prices, or over competitive bidding or market conditions, Fuss & O'Neill's opinion of probable Total Project Costs and Construction Cost are made on the basis of Fuss & O'Neill's experience and qualifications and represent Fuss & O'Neill's best judgment as an experienced and qualified professional engineer, familiar with the construction industry; but Fuss & O'Neill cannot and does not guarantee that proposals, bids or actual Total Project or Construction Costs will not vary from opinions of probable cost prepared by Fuss & O'Neill. If prior to the bidding or negotiating Phase the Owner wishes greater assurance as to Total Project or Construction Costs, the Owner shall employ an independent cost estimator.

ITEM DESCRIPTION		UNITS	NUM. OF UNITS	COST PER UNIT	TOTAL COST
Abandon Existing Septic Tank		EA	2	$500	$1,000
5,000 Gallon Pre-Cast Concrete Tank		EA	4	$10,000	$40,000
Effluent Pump Station		EA	1	$15,000	$15,000
1-Inch HDPE Sewer Piping		LF	1,000	$30	$30,000
Temporary Pavement (State Road)		SY	56	$50	$2,778
Permanent Pavement (State Road)		SY	56	$150	$8,333
State Road Traffic Control - Police Officer		HR	20	$90	$1,800
Cultec Recharger 900HD Plastic Leaching Trench		LF	472	$100	$47,200
Leaching Field Distribution Box		EA	3	$500	$1,500
TOTAL COST (-30% TO +50% ROUNDED)					**$104,000 TO $222,000**

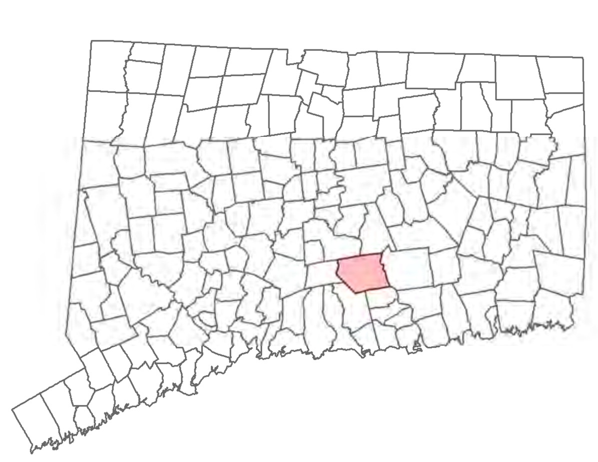
Notes: Does not include site restoration, leaching system select fill, utility relocation, contaminated soil mitigation, wetland permitting.

ORDER OF MAGNITUDE OPINION OF COST		FUSS & O'NEILL *Disciplines to Deliver*	**SHEET:**	**1 OF 1**
PROJECT:	Subsurface Disposal System Concept Design		DATE:	04/18/17
LOCATION:	Haddam Jail, CT		ESTIMATOR:	RMDS
DESCRIPTION:	**Cost with horizontal directional drilling (HDD) pipe installation crossing State Highway 145.**		CHECKED BY:	MMJ
			PROJECT NO.:	20160311.A10

Since Fuss & O'Neill has no control over the cost of labor, materials, equipment or services furnished by others, or over the Contractor(s)' methods of determining prices, or over competitive bidding or market conditions, Fuss & O'Neill's opinion of probable Total Project Costs and Construction Cost are made on the basis of Fuss & O'Neill's experience and qualifications and represent Fuss & O'Neill's best judgment as an experienced and qualified professional engineer, familiar with the construction industry; but Fuss & O'Neill cannot and does not guarantee that proposals, bids or actual Total Project or Construction Costs will not vary from opinions of probable cost prepared by Fuss & O'Neill. If prior to the bidding or negotiating Phase the Owner wishes greater assurance as to Total Project or Construction Costs, the Owner shall employ an independent cost estimator.

ITEM DESCRIPTION	UNITS	NUM. OF UNITS	COST PER UNIT	TOTAL COST
Abandon Existing Septic Tank	EA	2	$500	$1,000
5,000 Gallon Pre-Cast Concrete Tank	EA	4	$10,000	$40,000
Effluent Pump Station	EA	1	$15,000	$15,000
1-Inch HDPE Sewer Piping	LF	1,000	$30	$30,000
Smaller than 3" HDPE Pipe - HDD Installation	LF	50	$600	$30,000
State Road Traffic Control - Police Officer	HR	20	$90	$1,800
Cultec Recharger 900HD Plastic Leaching Trench	LF	472	$100	$47,200
Leaching Field Distribution Box	EA	3	$500	$1,500
TOTAL COST (-30% TO +50% ROUNDED)				**$117,000 TO $250,000**

Notes: Does not include site restoration, leaching system select fill, utility relocation, contaminated soil mitigation, wetland permitting.



LEGEND

- Proposed Tanks
- Primary Leaching Chamber
- Reserve Leaching Chamber
- Distribution Box
- Proposed Piping
- Building Setback
- Property Line Setback
- Wetland Line

N

0 40 80 160 Feet

Disclaimer: This map is not the product of a Professional Land Survey. It was created by Fuss & O'Neill, Inc. for general reference, informational, planning and guidance use, and is not a legally authoratative source as to location of natural or manmade features. Proper interpretation of this map may require the assistance of appropriate professional services. Fuss & O'Neill, Inc. makes no warrantee, express or implied, related to the spatial accuracy, reliability, completeness, or currentness of this map.

Data Source(s):
CTECO, CTDEEP, USGS, NRCS, CTDOT

General Notes:

Subsurface Disposal System Concept Design

Haddam Jail
Historic Brownfields Revitilization

Haddam | Connecticut

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Manchester, CT 06040
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Figure 1

K:\P2016\0311\A10\MXD\SSDS Concept Design.mxd

Appendix E
Property Condition Report
(Fuss & O'Neill, September 2016)

Property Condition Report

Town of Haddam

Former Middlesex County Jail
Jail Hill Road
Haddam, CT 01040

September 28, 2016

Project No. 20160311.A10

Table of Contents

Property Condition Assessment
Haddam Jail, Haddam, CT

Appendices

1 Executive Summary

Fuss & O'Neill, Inc. (F&O) prepared this Property Condition Report (PCR) for the Town of Haddam for the former Middlesex County Jail and adjoining storage and agricultural buildings located at the intersection of Jail Hill Road and Saybrook Road in Haddam, CT. The purpose of this PCR is to assess the structure, building envelope, and mechanical systems for conditions that present immediate concern of risk, hazard, or safety to the Town of Haddam and the building's future occupants. F&O performed the Property Condition Assessment (PCA) on July 21 and 25, 2016. The site survey work for the mechanical and electrical systems was done on August 1, 2016.

The PCA included a visual walk-though survey in which the following building components and building systems were reviewed where possible: basement walls, floor structures, roof structures, exterior and interior bearing walls, the building envelope, mechanical, plumbing and electrical systems. Access to roofing conditions and roof structures were limited, but observations were made where possible and are reported herein.

A prior investigation of all the buildings on site was performed in December, 2005 by Fellner Associates Architects, LLC. Results of this study were compiled in a report which was available for the current team's use. A subsequent study of the jail building was performed by Architectural Workshop in October 2008, which was also available for use. It is our understanding that the jail building was used as such until 1969, then was used through the 70's and 80's as a criminal justice educational facility. It has been abandoned since that time.

The jail building has fallen into a state of disrepair due to neglect over a long period of time, but the current building envelope appears to have been renovated subsequent to the 2008 report and is generally intact. Overall, the main structural system of the building is generally in good condition. The other, smaller structures on the site vary widely, but all have some structural deficiencies and concerns. As plans for reuse of the buildings on site are developed, any buildings that are contemplated for reuse should have all damaged interior finishes removed to permit full visual inspection of structures in order to better identify costs to bring the buildings up to the required capacity for the proposed use. Repairs and upgrades must be made as needed to prepare the buildings for marketing and reuse.

The condition of the mechanical and electrical equipment examined in this report is generally very poor. This equipment has no potential for re-use, with two possible exceptions, namely: the Pump House well for potable water use, and the cistern with its associated well and piping for fire-protection use.

It is important to note the limitations of this PCA. The buildings have no electricity and some contain hazardous materials. Consequently, visibility was limited and the team performing the PCA was careful to not disturb any finishes. Although portions of the structure were exposed to view, many structural elements were concealed by finish materials and could not be directly observed.

Additional limiting conditions for this PCR are described in Section 4.

1.1 General Property Description

The existing jail property lies at the intersection of Jail Hill Road and Saybrook Road near the center of Haddam, Connecticut. The parcel is 4.2 acres and slopes from south to north.

The jail building is at the southwest corner of the intersection, with the other buildings positioned to the south along Jail Hill Road. According to the existing reports, the original jail, currently housing cells, was constructed in 1845, with a cell block added to the west in 1855. The three-story wood-framed administration building was added in 1874. It is not clear when the adjoining agricultural buildings and pump house were added, but none suggest modern construction, and all appear to be well over 50 years old.

An aerial photo is provided in the appendix, with the following buildings and building sections annotated:

A. Jail – Includes the steel and concrete cell block area and wood framed administration wing
B. Pump House – Single story concrete bunker
C. Corn House/Piggery – 2 stories with stone retaining wall on one side, wood framed with gable roof, entrances at both levels
D. Shed – Single story wood-framed gable roof with stone retaining wall along one side
E. Root Cellar – Single story concrete structure constructed of stone walls and concrete girders and columns supporting concrete slabs with earth and vegetation above

The annex building, which currently houses the Haddam Health Department, was excluded from the scope of this PCA.

1.2 General Physical Condition

Based on F&O's field observations, it is F&O's opinion that the subject properties are generally in poor to fair condition, but the structures are generally in fair to good condition. The mechanical and electrical equipment in the buildings is generally in very poor condition. Detailed descriptions of the structures observed in each of the buildings are located in Section 4 of this report.

2 Purpose and Scope of Services

2.1 Purpose

The purpose of the PCA was to evaluate the structural aspects of the subject property's condition as it relates to potential future use by the Town of Haddam and any future occupants. This PCR is based upon those apparent conditions observed at the time the PCA was performed and from facility-related documentation obtained and made available for review. This PCR is not a guarantee of the overall condition of the functional suitability of the real estate asset.

The PCA was performed at the client's request using methods and procedures consistent with good commercial real estate practice. Limiting conditions for this PCR are described in Section 4.

2.2 Scope

The PCA included the following: site reconnaissance, review of available existing building documentation and visual observations. The PCA was limited to the structural frame and building envelope for the following buildings on the site:

- Jail
- Pump House
- Root Cellar
- Shed
- Corn House/Piggery

The annex building at the south end of the site was excluded from the PCA.

This PCR is intended for use as a complete document; therefore interpretations and conclusions drawn from the review of individual sections are the sole responsibility of the user.

Most areas of the property were available for observation during the PCA, however some rooms and areas were inaccessible. Furthermore, much of the jail building, particularly the second and third floors of the administration wing and roof of the cell block, were concealed by finishes and could therefore not be directly observed. Secondary evidence of structural conditions, such as rust staining, floor deflections and irregularities, and cracks in finishes, were observed where possible to assess structural behavior and performance.

3 Existing Documentation

3.1 Fellner Associates Report December 12, 2005

The Fellner report describes a comprehensive assessment of all the buildings on the jail site, including the training building, which has been excluded from the scope of this report. The structures of the buildings were reviewed by Perrone & Zajda Engineers. Comments on the structures are summarized as follows:

3.1.1 Jail Building

- Mortared stone foundation walls were noted in the basement of the administration wing. Some evidence of water infiltration was found, but generally the walls were in satisfactory condition.
- Structural steel beams and channels were used to reinforce the original wood-framed floor. Surface rust was identified on the steel elements.
- Wood framing appeared to be relatively dry and free of insect damage.

- Concrete slabs on steel pans at the cell block area were in satisfactory condition.
- The wood framed roof over the cell block appeared to be sagging significantly. The report recommended replacement of the roofing and roof framing.
- Areas of the 3-story administration wing had deteriorated eaves and window frames.
- Exterior mortared stone walls were generally found to be intact, but required repointing.
- The architectural section of the report refers to a kitchen and dining addition with a flat membrane roof that requires replacement.

3.1.2 Pump House

- Cracks were noted in the cast in place concrete walls of the pump house, including a very wide horizontal crack that traversed across the north, east and south walls of the building, visible both on the interior and exterior faces of the walls.
- The roof appeared to be a cast in place concrete slab, with a steel beam spanning east-west to the exterior bearing walls. No issues were noted at the roof slab.

3.1.3 Corn house/Piggery

- This two-story structure is built into the side of a hill, with stone walls and wood walls supporting wood floor and roof framing.
- A mortared stone wall divides two sections of the lower level. A diagonal crack was noted over an opening in the wall.
- Significant damage was found at several wood floor joists, including a large hole in the floor on the west side.
- Significant damage was found at the northern half of the roof framing, with several large holes in the roof on that side.
- The slab on grade at the lower level was found to be cracked and irregular.

3.1.4 Shed

- The shed was an open structure, with walls on three sides.
- A timber beam along the east edge appeared to be deflecting significantly.
- Wood framing in general appeared to be in satisfactory condition, free of insect damage.
- The west wall of the shed is a mortared stone retaining wall that continues to the north to the piggery. Mortar joints in the wall were found to be damaged.

The report specifies a series of short-term and long-term repair strategies to address the concerns noted.

3.2 Architectural Workshop Report October 28, 2008

The Architectural Workshop report includes "A History of the Middlesex County Gaol at Haddam", prepared by the Haddam Historical Society along with a report of observations of conditions at the jail building.

Comments on the jail structures are summarized as follows:

- Conditions appear to have deteriorated since the Fellner report of nearly three years earlier.
- All roofing materials were deemed beyond their useful life, and water infiltration from failed roofing and ground water was evident.
- Widespread but minor damage to the cornice of the administration wing was noted.
- Structural degradation was noted at the third floor dormers of the administration wing and at the cell block wing along the administration wing, all due to rainwater infiltration.
- Sand deposits were noted at the basement floor.
- Other than roofing, the exterior was found to be in fair condition. Stone masonry walls were plumb and uniform, requiring only repointing.

3.3 Additional Documentation

3.3.1 Well and Cistern Reports

The following reports were consulted for information regarding the wells on this site, as well as the cistern and associated equipment:

- Design Report-Haddam Training Academy-New Potable Water Supply System, issued by Philip W. Genovese & Associates, Inc. in July of 1987
- Letter Report issued by Marin Environmental, Inc. in March of 1996
- Memorandum Report issued by Nathan L. Jacobson & Associates, Inc. in December of 2010
- Memorandum Report issued by Nathan L. Jacobson & Associates, Inc. in August of 2016

4 System Descriptions and Observations

4.1 General Description

4.1.1 Visual Survey

The walk-through survey conducted during the field observers' site visit of the property consisted of non-intrusive visual observations and a survey of readily accessible, easily visible components and systems of the property. Concealed physical deficiencies are excluded from this PCR. The survey should not be considered technically exhaustive. The survey was conducted to the extent it could be completed with the aid of only a short step ladder, without the use of lifts, scaffolding, etc. The assessment of the condition of the exterior wall systems and finishes is based upon observations made from the ground surface and through windows or adjacent building areas, however, close observation of wall systems and finishes above ground level was beyond the scope of the PCA.

Readily accessible areas of the property are defined as areas that were promptly made available for observation by the field observers at the time of the walk-through survey and did not require moving materials. The field observers did not enter spaces they deemed unsafe or impassable for any reason.

The survey included representative observations, that is, a reasonable number of samples of repetitive systems, components, and areas conducted by the field observers during the walk-through survey. The concept of representative observations extends to all conditions, areas, equipment, components, systems, and buildings to the extent that they are similar and representative of one another. F&O may reasonably extrapolate representative observations and findings to all typical areas or systems of the subject property for the purposes of describing such conditions within the report and suggesting remedy of material and physical deficiencies.

F&O conducted the visual walk through survey on July 21 and July 25, 2016. The weather was partly sunny and hot for most of both days, and no active water infiltration was observed.

4.1.2 Changes Subsequent to Previous Reports

Several modifications and repairs have been made to the buildings subsequent to the prior reports, which have gone a long way to mitigate previous areas of concern and retard further degradation of the buildings. Specific changes will be documented in conjunction with current descriptions and observations reported for each building.

4.2 Structural Frame and Building Envelope Evaluations

4.2.1 Jail Building

The site inspection revealed that the jail has undergone a number of significant changes since the previous reports were prepared:

- The dining room addition at the west side of the building has been demolished (see photo J-1). Evidence of the previous roof forms, including flashing embedded in the stone of the administration wing and faded paint at the previous interior walls are visible, and previous interior openings have been boarded up.
- A standing seam metal roof has been constructed above both gable forms of the cell block area (see photo J-2). The sag in the roof that was noted in the Fellner report appears to have been corrected. It is likely that the roof framing has also been replaced, but the attic over the cell block is no longer accessible, so this could not be verified.
- Repairs have been implemented at dormer windows in the administration wing, including new window sashes and reframing and reinforcing of wall and roof framing around windows, including new headers and jamb studs (see photo J-3).

The following additional observations were made in each building area:

4.2.1.1 Administration Wing

- The foundations in this area consist of stone masonry walls. Although there was some evidence of water infiltration, particularly at the southwest corner, the foundations appear to be in adequate condition (see photo J-4).
- A central wood girder that supports floor joists has been reinforced with a pair of structural steel channels. The channels are covered with surface rust, as noted in the previous reports. Water infiltration was noted at the rear (west) wall, exacerbating the rusting (see photo J-5).

Steel material loss still does not appear to be severe, but the original timber is severely damaged at this end.

- Several first floor joists and planks were found that had suffered water damage in the rear southwest corner (see photo J-6).
- At the center of the east span of first floor joists, a line of 8" steel beams was introduced to reinforce the floor. The beams are supported on 4" lally columns. All steel members are coated with surface rust, but do not appear to have significant material loss. This steel framing was noted in the previous reports, but does not appear to have degraded since.
- Post shores have been introduced to support a wood girder at the opening for the basement stair (see photo J-7). The posts are placed directly on the basement slab, likely without a footing.
- Most of the upper floor framing was concealed by ceilings, but in isolated areas, wood joists were found that had been reinforced and/or sistered with new framing (see photo J-8).
- At one location near the front of the building, a brick wall was found, suggesting that the building was expanded toward the street at some point in the past (see photo J-9).
- Single ply roofing (likely PVC) was found on the upper hip roof, with asphalt shingles on the mansards on all four sides of the administration building (see photo J-10). The roofing all appears to be a relatively recent modification, and appears to be intact. Some signs of water infiltration were found at roof joists and walls (see photo J-11), but no active leaking was apparent.
- The stone masonry exterior walls appear to be intact, with no signs of stone degradation or settlement, but mortar is damaged throughout (see photo J-12). Some areas appear to have been repointed and cracks through stones have been repaired, but many areas require repointing. Patching is also required where additions have been removed.
- Some deterioration was noted at the wood trim and cornices throughout the building, primarily due to water exposure. Cornices appear to have been restored along the north and west walls (see photo J-13).
- Masonry anchors were found at various locations on the north and east walls at the second floor level (see photo J-13). It is not clear whether these were installed in response to perceived movements, but the walls appear to be plumb and undamaged.

4.2.1.2 Cell Block

- The cell block in divided into two sections. The front portion has two floors above the basement and the rear sections one floor above the basement. The area at the basement level along the south wall at the lower portion is a two-story tall common space (see photo J-15). A similar two-story space also was found at the center of the three-story portion (see photo J-14).
- A pre-manufactured cell system is used in both sections of the cell block, consisting of steel framing and metals pans with shallow concrete slabs, similar to stair platform construction (see photo J-15). Chipping paint and surface rust was found on many steel surfaces, especially at the basement level (see photo J-16), but significant material loss was not found.
- The roof over the cell block area is made up of intersecting gable forms. A relatively new red standing seam roof covers each portion. Attic framing was not accessible, but through an opening in the gypsum board ceiling, wood ceiling framing can be seen (see photo J-17). Signs of water infiltration (staining, mold, rust at nails) can also be seen at the ceilings, but active leaks were not found.

- A portion of the ceiling above the stair leading to the second floor of the cell block had collapsed, revealing a water-damaged wood attic floor (see photo J-18). It is not clear how severe or widespread this damage is, but presumably it was addressed in the course of replacement of the roof in this area.

4.2.2 Pump House

The pump house is a small (25' x 21') single story building with concrete walls and roof divided into two sections. On the west side, water pumps and other equipment fill the room and limit the visibility of the structure. The west side also contains a pit across its south end, partially covered with a wood platform. The east side is used for storage.

The following observations were noted:

- The Fellner report indicates that the exterior walls are cast in place concrete with score lines on the exterior to mimic concrete masonry in running bond. There are a number of cracks and spalls in the walls that support this conclusion (see photo P-1). Cracks do not correspond with score lines and spalled areas reveal what appears to be solid unreinforced concrete.
- The exterior faces of the walls appear to have been patched numerous times. Large cracks have been filled and the score joints are largely obscured (see photo P-1).
- A large horizontal crack was noted in the east room and extending through the north, south and east walls (see photo P-2). The same crack was noted in the Fellner report, and does not appear to have been addressed, nor has it progressed, at the interior face. Repair mortar was noted at the crack on the exterior face. In some areas, particularly at the northwest corner, the crack has opened up again on the exterior (see photo P-3), while additional cracks have also appeared in the patched exterior surface.
- At the pit, horizontal cracks and efflorescence were found indicating water penetration through the wall along the pit at multiple elevations roughly at the grade elevation (see photo P-4).
- At a small spalled area at the roof, clay masonry (brick or terra cotta) appears to lie above a thin concrete layer (see photo P-5). It is possible that this roof is constructed with terra cotta or brick arch construction with concrete parging at the ceiling, but further exploration would be needed to confirm this.

4.2.3 Corn House/Piggery

The corn house/piggery is a two-story wood framed structure building into the side of a hill with a stone retaining wall separating the high and low grade and allowing entry into the building from both levels. Several modifications to the building were noted subsequent to the 2005 inspection, and additional observations were also made:

- New sheathing and several new roof rafters have been installed across the north face of the gable form. Plywood was used to replace the planks (see photo C-1). Holes in the roof that were reported in the Fellner report no longer exist. No ridge board has been provided at the peak of the roof.
- Significant degradation was noted at the elevated floor, but some conditions appear quite different from what was reported in the Fellner report. A shoring frame made up of reclaimed

timber was discovered below the central girder in the southern portion of the building, but the frame was not in contact with the floor framing (see photo C-2). The central girder is deflecting significantly.

- The base of one of the posts at the shoring frame was found to be severely deteriorated (see photo C-3).
- Several floor planks are decayed, particularly along edges near the floor opening, and need to be replaced (see photo C-4).
- Sections of the wall framing appear to have been replaced, while evidence of water and insect damage was found at some of the original members (see photo C-5).

4.2.4 Shed

The site inspection revealed that the shed has undergone a significant modification since the previous reports were prepared. Specifically, a wall has been added on the east side to enclose the structure (see photo S-1). This has enabled it to be used for secure storage. A large amount of timber framing was found inside the structure, which impeded the inspection to some degree (see photo S-2).

The following additional observations were made at the shed:

- Some water damage was noted at the roof framing and sheathing, and several roof rafters have been replaced (see photo S-3).
- Gaps were found between the stone wall and wood framed wall, between wood planks and along the roof eave (see photo S-4).
- A built up post supporting the frame at the interior of the stone wall appears to be supported directly on sediment above the floor (see photo S-5).
- The Fellner report indicated that the east side frame was undersized and causing the roof to deflect excessively. This condition was likely remedied by the installation of the new east wall, which obscured the girder along the east edge.

4.2.5 Root Cellar

The root cellar is a series of small compartments below grade accessed from a lower grade level on the north side. At least three compartments were identified, but only one was accessible for entry. The entire structure is covered on all sides with vegetation, and the roof appears to have several feet of soil above it (see photo R-1). The root cellar was not addressed in either of the previous studies.

The following observations were made at the root cellar:

- The construction of the accessible compartment of the root cellar appears to consist of a cast in place concrete roof slab spanning between stone masonry walls between the compartments (see photo R-2).
- A section of the roof slab has radial cracks and appears to be displacing excessively around what appears to be an infilled penetration (see photo R-3).
- A larger compartment that was not accessible was viewed from a narrow opening at the door. Two lines of cast in place concrete framing on concrete columns were visible, appearing to

support a concrete arch in this space (see photo R-4). It is likely that the root cellar was expanded at some point, given the differences in the types of construction observed.
- Bearing pockets were found in the stone walls at the smaller compartment, suggesting that wood framing supported the roof in this compartment at one time (see photo R-5 4750).

4.3 Plumbing System Evaluations

4.3.1 Jailhouse

- Domestic Water Piping: Copper domestic water piping was observed in the basement, and at bathroom fixtures in the office wing. The domestic water serving the Jailhouse is piped from the adjacent Pump House building via underground piping, whose path had recently been traced by Call-Before-You-Dig. The Jailhouse water piping (both domestic and fire-protection) was connected to a cistern at the top of Jail Hill Road. Recently, this connection was cut and capped, since water from the cistern has caused flooding problems in the Jailhouse. It has been reported that the cistern was originally the only source of domestic water and fire-protection water for the Jailhouse. A well located in a pit within the Pump House building became an additional source of domestic water for the Jailhouse at some point in the past; however, the well-water piping in the Pump House appears to have been cut, and there is no visible connection to the Jailhouse. The existing domestic water piping in the Jailhouse has no potential for reuse.

- Fire Protection Piping: The only fire protection piping observed within the Jailhouse is a stand-pipe. The fire-protection piping in the Jailhouse has no potential for reuse.

- Sanitary/Sewer Piping: The sanitary/sewer piping in the Jailhouse is significantly rusted, and its functionality is in question. This piping has no potential for reuse.

4.3.2 Pump House

- Domestic Water Piping: The copper domestic water piping emerges from the well in this building; however, it has been cut off within the well pit. This piping is currently open, and is not connected to anything. (See Mech Appendix Photo-1.) Determining the condition of the submersible well pump and the flow rate available from this well are beyond the scope of our visual observations; therefore, the reusability of this well is unknown. We would recommend that, in the next phase of this assessment, money be allocated to investigate these parameters.

- Fire Protection Piping: None present.

- Sanitary/Sewer Piping: None present.

4.3.3 Piggery

- Domestic Water Piping: None present.

- Fire Protection Piping: None present.

- Sanitary/Sewer Piping: None present.

4.3.4 Shed

- Domestic Water Piping: None present.
- Fire Protection Piping: None present
- Sanitary/Sewer Piping: None present.

4.3.5 Cistern

- Domestic Water Piping: None present.
- Fire Protection Piping: The cistern is a 100,000 gallon concrete tank at the top of Jail Hill Road, whose water level is maintained by a nearby well. (See Mech Appendix Photo-2.) The cistern is considered unsuitable as a source of potable water, due to contamination from rodents. (See Mech Appendix Photo-3.) Consequently, the only potential use for the cistern water system would be for fire protection. This system currently feeds the two existing fire hydrants on the site via 6" cement-asbestos underground piping. The structural integrity of the cistern concrete, the adequacy of the connecting piping, and the condition/productivity of the well are beyond the scope of our visual observations; therefore, the reusability of these elements is unknown. Although there are some questions about the long-term reliability of this system, initial indications are that this gravity-based system could meet current fire safety codes, provided that sufficient pressures and flows were available at the points of use. The system would have to be tested in order to quantify these parameters.
- Sanitary/Sewer Piping: None present.

4.4 HVAC System Evaluations

4.4.1 Jailhouse

- Boiler: The existing boiler is located in the basement mechanical room (MER). It is an H.B.Smith, cast-iron sectional, steam boiler, designed to fire #2 fuel oil. The condition of the boiler is extremely poor. It has been partially dismantled, and there appear to be pieces missing. It is clear that this boiler is non-functional at present, and it is doubtful that it can be restored without significant expense. The existing boiler has no potential for reuse. (See Mech Appendix Photo-4.)
- Underground Storage Tank: Drawings indicate that there is an existing 2,000 gallon underground storage tank located behind the building. It is a single-walled, FRP tank, installed in 1996. The condition of the tank and underground piping is unknown. A code analysis, which is beyond the scope of our current assessment, would need to be performed to determine how much longer the tank could remain in service under current code regulations. Consequently, it is

difficult to gauge the reuse potential for this fuel storage system. It should be noted that if future plans for boiler replacement included a condensing boiler, the need for an alternate fuel system (natural gas or propane) would be necessary.

- Space-Heating Equipment: The existing air-handling unit is located in the basement MER, which served the two-story section of the Jailhouse. It was designed for heating and ventilation, equipped with a hot water coil fed by a steam converter. The condition of the air-handling unit is extremely poor. It has also been partially dismantled, and it is doubtful that it can still function. The existing air-handling unit has no potential for reuse. (See Mech Appendix Photo-5.)

  The three-story section of the building is equipped with two-pipe steam radiation equipment, including both cast iron radiators and baseboard fin-tube radiation. This equipment is generally in poor condition, and it has no potential for reuse. (See Mech Appendix Photo-6.)

- Domestic Hot Water Heating Equipment: There is a large domestic hot water storage tank in the basement MER. The water in the tank was heated by means of a piping loop connecting it to a domestic water heating unit with a small circulating pump. The condition of the domestic hot water heating equipment is extremely poor. The existing domestic hot water heating equipment is not functional and has no potential for reuse.

4.4.2 Pump House

- Space-Heating Equipment: The only piece of HVAC equipment in this building is a ceiling-mounted electric unit heater, which appears to be functional. It has the potential for reuse.

4.4.3 Piggery

- No HVAC equipment present.

4.4.4 Shed

- No HVAC equipment present.

4.4.5 Cistern

- Space-Heating Equipment: The only piece of HVAC equipment associated with the cistern is an electric unit heater in the well pit for the cistern. This unit is badly rusted, and it has no potential for reuse.

4.5 Electrical System Evaluations

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4.5.1 Jailhouse

- Electrical Service and Distribution: Electrical power for the jailhouse comes from the electrical service within the pump house at 400 amps, 208 volts, three phase. The electrical distribution equipment within the jailhouse is rusted, in disrepair, in stages of demolition and beyond the useful life of the equipment. The electrical infrastructure within the jailhouse has no potential for reuse. (See Electrical Appendix Photo-1 and 2)

- Lighting, Emergency Lighting, Exit Signs: The lighting systems within the jailhouse were in disrepair, in stages of demolition and beyond the useful life of the equipment. The lighting systems within the jailhouse have no potential for reuse. (See Electrical Appendix Photo-3)

- Fire Alarm: The fire alarm system within the jailhouse was in disrepair, in stages of demolition and beyond the useful life of the equipment. The fire alarm system within the jailhouse has no potential for reuse.

4.5.2 Pump House

- Electrical Service and Distribution: A 400 amp, 208 volt, three phase electrical service is present within this building. This service feed the jailhouse and at one time other buildings. The electrical meter and main disconnect is the only equipment worthy of reuse; however this building does not have an electrical load to justify this size of service. All other distribution equipment is rusted and beyond its useful life. The electrical infrastructure within the pump house has no potential for reuse. (See Electrical Appendix Photo-4,5 and 6).

- Lighting, Emergency Lighting, Exit Signs: There is minimum lighting within this building. While the lighting may be reused, it would be justified to upgrade to meet current energy codes.

- Fire Alarm: None present.

4.5.3 Piggery

- Electrical Service and Distribution: There is a small fused panel within this building that is not energized. It could not be determined what feeds this panel. The minimal electrical infrastructure within this building is beyond its useful life and has no potential for reuse. (See Electrical Appendix Photo-7)

- Lighting, Emergency Lighting, Exit Signs: None present.

- Fire Alarm: None present.

4.5.4 Shed

- Electrical Service and Distribution: None present.
- Lighting, Emergency Lighting, Exit Signs: None present.
- Fire Alarm: None present.

4.5.5 Cistern

- Electrical Service and Distribution: There are two electrical services on a power pole located at the well house that feeds the cistern with water. One meter with fairly new meter socket and main breaker feeds the cistern; the second service with older and rusted meter socket feeds the well house.

  The feeder to the cistern is in PVC conduit running on or just below grade. This is not a code compliant installation. The electrical equipment at the cistern appears to be in fairly good condition. Some minor replacement is needed for some raceway and outlet boxes due to rusting conditions, put over all the electrical distribution can be reused. (See Electrical Appendix Photo-8 and 9).

  The electrical equipment within the well house is rusted due to the damp location. This equipment is not rated for the environment it is installed in. This equipment while still functional should be replaced outside of the well pit due to accessibility and the damp environment. (See Electrical Appendix Photo-10 and 11).

- Lighting, Emergency Lighting, Exit Signs: None present.
- Fire Alarm: None present.

5 Limiting Conditions

F&O's PCA cannot wholly eliminate the uncertainty regarding the presence of physical deficiencies and the performance of a subject property's building systems. Preparation of a Property condition Report (PCR) is intended to reduce – but not eliminate – the uncertainty regarding the potential for component or system failure and to reduce the potential that such component or system may not be initially observed.

This PCR was prepared recognizing the inherent subjective nature of F&O's opinions as to such issues as workmanship, quality of original installation, and estimating the remaining useful life of an given component or system. It should be understood that F&O's suggested remedy may be one of several possible alternatives or methods to rectify the physical deficiency. F&O's opinions are generally formed without detailed knowledge from individuals familiar with the component's or system's performance.

The opinions of F&O consultants expressed in this report were formed utilizing the degree of skill and care ordinarily exercised by any prudent architect or engineer in the same community under similar circumstances. F&O assumes no responsibility or liability for the accuracy of information contained in this report that was obtained from the client or the client's representatives, from other interested parties, or from the public domain. The conclusions presented represent F&O's professional judgment based on information obtained during the course of this assignment. F&O's evaluations, analyses, and opinions are not representations regarding the design integrity, structural soundness, or actual value of the property. Factual information regarding operations, conditions, and test data provided by the client or their representatives is assumed correct and complete. The conclusions presented are based on the information provided, observations made, and conditions that existed specifically on the date of the assessment.

Appendix A

Structural Frame & Building Envelope Photographs

Aerial Photograph of Site

Photo J-1 – Demolished Dining Room Wing

Photo J-2 – Standing Seam Metal Roof Over Cell Block

Photo J-3 – Repairs at Dormer Windows of Admin Wing

Photo J-4 – Foundation Wall at Admin Building

Photo J-5 – Water Infiltration at Channel Reinforcing

Photo J-6 – Deteriorated Floor Elements at Southwest Corner

Photo J-7 – Framing / Shoring at Basement Stair

Photo J-8 – Reinforced Floor Joists

Photo J-9 – Brick Interior Wall

Photo J-10 – Roofing at High Hip Roof at Admin Building

Photo J-11 – Signs of Water Infiltration at Admin Roof Framing

Photo J-12 – Mortar Degradation at Exterior Walls of Admin Building

Photo J-13 – Masonry Anchors and Cornice at North Wall

Photo J-14 – Two-story Space Along South Wall of Cell Block

Photo J-15 – Floor Construction and Open Space at Jail Cells

Photo J-16 – Chipping Paint and Rust at Steel in Cell Block

Photo J-17 – Ceiling Framing at Cell Block

Photo J-18 – Ceiling Damage at Cell Block

Photo P-1 – Exterior Walls of Pump House

Photo P-2 – Large Horizontal Crack at Interior of Pump House Wall

Photo P-3 – Cracked Walls at NW Corner of Pump House

Photo P-4 – Cracks and Efflorescence at Pit at Pump House

Photo P-5 – Apparent Clay Masonry at Pump House Roof

Photo C-1 – New Roof Construction at Corn House

Photo C-2 – Shoring Not in Contact With Floor Framing

Photo C-3 – Deteriorated Post at Shoring

Photo C-4 – Deteriorated Floor Boards at Corn House

Photo C-5 – Modifications and Damage to Wall Framing at Corn House

Photo S-1 – New Wall at Shed

Photo S-2 – Stacked Timber in Shed

Photo S-3 – Roof Framing at Shed

Photo S-4 – Gaps at Wall Interfaces

Photo S-5 – Post Base at Shed

Photo R-1 – Root Cellar

Photo R-2 – Root Cellar Construction at Accessible Compartment

Photo R-3 – Cracks at Roof Slab at Infill at Root Cellar

Photo R-4 – Concrete Arches and Columns at Root Cellar

Photo R-5 – Bearing Pockets at Wall of Root Cellar

Appendix B

Mechanical/Plumbing Photographs

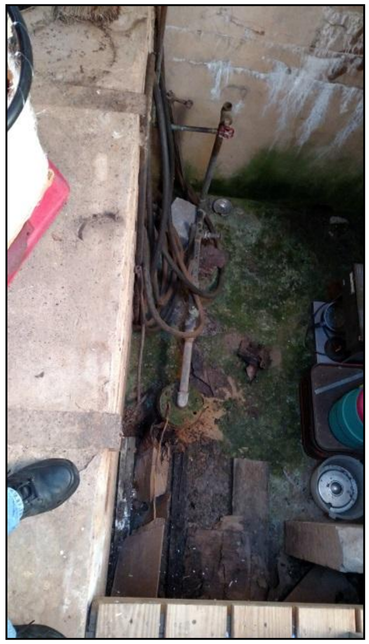


Photo 1 – Pump House Well Head

Photo 2 – Cistern Well Head

Photo 3 – Cistern Access

Photo 4 – Jailhouse Building Boiler

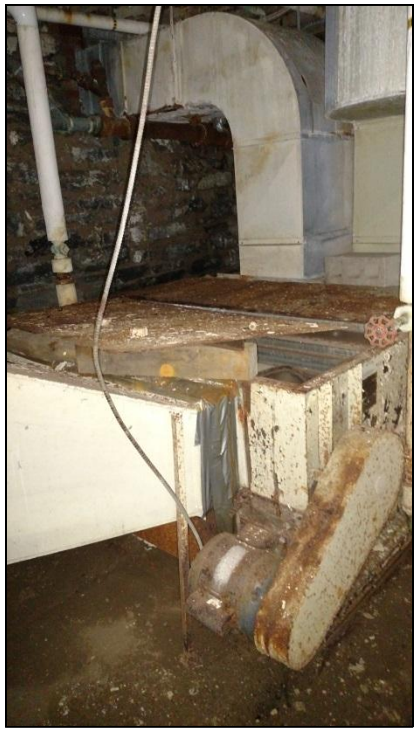


Photo 5 – Jailhouse Building Air Handling Unit

Photo 6 – Jailhouse Building Radiator

Appendix C

Electrical Photographs

Photo 1 – Jail Building Electrical Panel

Photo 2 – Jail Building Electrical Panel

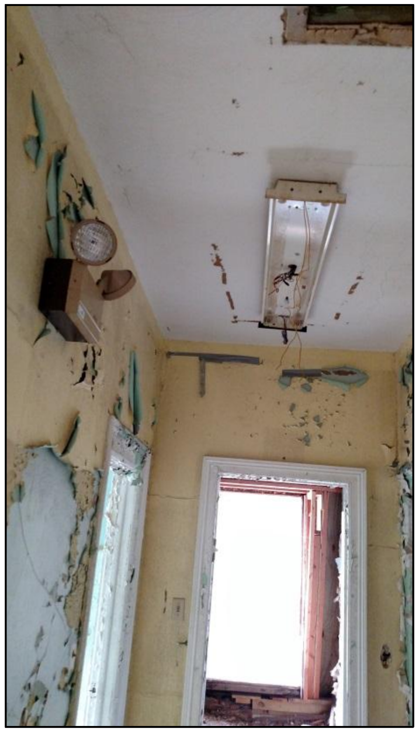


Photo 3 – Jail Building Lighting Equipment

Photo 4 – Pump house Electrical Panel

Photo 5 – Pump House Electrical Panel

Photo 6 – Pump House Electrical Panel

Photo 7 – Piggery Electrical Panel

Photo 8 – Cistern Electrical Equipment

Photo 9 – Cistern Electrical Equipment

Photo 10 – Well Pit Electrical Equipment

Appendix F

Haddam Jail Revitalization & Reuse – Existing Conditions (Crosskey Architects, August 2016)

Haddam Jail Revitalization & Reuse Study

Buildings located at
945 Saybrook Road, Haddam, CT

EXISTING CONDITIONS REPORT

On July 21, 2016 Crosskey Architects conducted a visual, nondestructive inspection of all the buildings on this property to assess their existing conditions and to eventually determine a reuse. The inspection was somewhat limited as access was not provided into all the buildings. We also measured the buildings in order to develop 'as-built' plans so we can document the existing conditions.

This report is an existing conditions report that includes the following buildings; the jailhouse and administrative building, the pump house, the root cellar structure, the corn crib and adjacent barn. The former barn structure (current annex building) was not included within this report.

JAILHOUSE AND ADMINISTRATIVE BUILDING

The administrative building is a three-story structure designed in the Second Empire style with the third floor occurring within the mansard roof. The building was built circa 1878. The attached jailhouse was built in 1843. This wing has a front facing gable and is two stories in scale, although the building actually contains three levels. The buildings have been vacant for several years.

Exterior walls:
The exterior walls of both the administrative wing and the jailhouse consist of thick brick walls faced with a granite veneer set in a random pattern. The granite and mortar joints are in good condition. Some minor repointing will be required where the mortar is damaged or missing. There are scares on the rear of both wings from previous structures that have since been removed. In general, the exterior masonry was found to be in good condition.

Jailhouse Roof:
The Jailhouse roof consists of a red standing seam metal roof. The roof appears to be relatively new and is in good condition. It does not appear to need any corrective work. The gutters, downspouts and flashing are also new and are in good condition.

Administrative Roof:
The roof of the administrative wing consists of mansard roof. The mansard roof is covered with asphalt roof shingles that appear to be relatively new and are in good condition. Some minor repairs will be needed on the south side where some shingles have come loose. The yankee gutters and downspouts appear to be in good condition. The upper or low-sloped portion of the roof is covered with a white membrane roofing. This too appears to be newer and is in good condition. The dormers on the third floor have either have a half round roof or a gabled roof. These too appear to be in good condition. The trim work where the mansard roof transitions to the low-sloped roof appears to be in good condition.

Windows:
The windows on the administrative building consist of narrowed paired double hung windows with a wide mullion. The windows stack on the upper floors. The windows within the mansard are single double hung windows that are dormered into the roof. All the windows appear to be of the same vintage. They are single glazed and have aluminum exterior storm windows. The windows appear to be in fair condition although some restoration work will be required if they are to be retained.

The windows on the jailhouse are limited. They consist of two long narrow fixed windows on the front façade and three on the south façade. These windows are also in fair condition. It appears that these windows have already been restored as they have been retrofitted with double pane glazing. All the windows are wood windows that are in need of painting.

Exterior doors:
The exterior doors are very limited. The jailhouse does not have any doors. The administrative wing appears to have three front doors. Originally, the center opening was the only front door and the side doors were once double windows. The center opening is the only door accessed by exterior stairs. This opening has since been converted to a window, rendering the stairs useless. The other two side doors have no stairs. The doors are in poor condition. The original door should be re-established and the other two side doors should be returned to windows. The rear door on the first floor is missing and the opening has been boarded up. There appears to have been a rear porch or fire escape on the back of the building as is evident by the exterior door on the second floor. There is also a hatchway on the back of the administrative building that allows access the basement.

<u>Building interior</u>:
Jailhouse:
There are two sections to the jailhouse wing. The front section contains three levels while the rear section only has two levels. The basement level contains 18 jail cells; 8 in the front wing and 10 in the rear wing. There is also a two-story "bullpen" area located in the rear wing that opens up the floor above. It appears as if this may have served as the dining hall. There are two stairs, one in the rear wing and one at the transition between the wings that connects all three floors. These stairs are open riser steel stair with a mix of metal guard rails and jail bar walls. The basement level does not connect with the basement of the administrative building.

The first floor level contains 15 jail cells, 5 in the front wing and 10 in the rear wing. The front wing has a story space along the windows of the front wall. The rear wings has the jail cells organized along one side of a central corridor. The opposite side is walled with prison bars is open to the bullpen below. The stairs and standup shower unit are located at the far end of this corridor. This in the only level within the jailhouse the connects to the administrative building.

The second floor of the jailhouse occurs in the front wing. This floor contains two larger holding areas with free stand bunk beds and tables. A gang bathroom occurs along the north wall that abuts the administrative wing. This floor level does not line up or connect with the second floor of the administrative building.

The jailhouse floors are built with reinforce concrete slabs. The slabs have an integral cove bases at each of the prison cells. The jail cells measures 4'x8' with sliding prison bar doors. The rear wall contains a small sink and water closet. There is a plumbing cavity located behind this rear wall. The demising walls between the cells consist of steel plate walls with a single bed suspended on one side. The ceiling heights within the jail cells measure 7'-4" in height. The floor slabs are in good condition. The paint throughout the interior is in poor condition. The ceiling heights are not code compliant with today's code.

The jailhouse has not be altered since it was discontinued. Several of the cells still have the pillow mattress. This portion of the building with its low ceiling height, noncompliant stairs and limited egress exits will make this space very challenging to repurpose.

Administrative Interiors:

This portion of the building contains three floor and a basement. The basement is accessed by a single stair locate off the kitchen. This level housed the mechanical equipment and was not used as occupied space. Two brick chimneys extend from this floor up to the roof.

The first floor contains several small office rooms along the front and north sides of the building. A central stair located near the center connects to the upper floor levels. The kitchen and walk-in freezer are located along the rear of this floor. A wood framed, load bearing wall runs down the center of the building from front to back. This floor has 10'-6" high ceilings. The existing conditions of the interior finishes are in poor condition. With the exception of the central stair, there is nothing on this floor that is worthy of saving.

The second floor contains several small offices organized around a central corridor. The central stair leads into the corridor. There is a residential bathroom located adjacent to these stairs. This floor has 9'-6" high ceilings. Like the first floor, the interiors finishes contain a mix of different materials from plaster walls to wood paneling. The interior finishes are in poor condition.

The third floor layout is very similar to the second floor. The exterior walls are sloped and the windows are dormered as this floor occurs within the mansard roof. The conditions on this floor are much worse than the others. There appears to have been some recent stabilization repairs made at this level as a result of long term roof leaks.

The entire interior of the administrative wing needs to be gutted down the structure.

Mechanical/Electrical/Plumbing Systems

All existing mechanical, electrical and plumbing systems are in poor condition and should be replaced as well.

PUMPHOUSE

The pump house building is a small, one story concrete block building located adjacent to the rear parking lot of the jailhouse. The building measures 20'-7" by 25'-7" and has a low sloping shed roof. The north wall contains two doors. Each door enters into two separate rooms. The single door on the left side leads into a mechanical room that contain the pumps and electrical equipment. A pump pit is located along the far wall of this room across from the door. The double doors on the right lead into a storage area. There are three double hung wood windows, two on the west wall of the storage room and one on the south wall of the pump room. These windows are in fair to poor condition and either need to be replaced or restored. The paint on the exterior walls and doors are also in need of repainting. Access to the roof was not provided at the time of this inspection, therefore the condition of the existing roof could not be assessed.

Pump House. View looking southeast.

ROOT CELLAR

The existing root cellar structure is a one story stone structure built into the sloped hillside behind the jailhouse. This structure is completely overgrown with vegetation, therefore a full assessment of the building was not possible at the time of our inspection. This building is divided into several rooms by fieldstone retaining walls. These rooms are accessed by wood doors on the exposed wall of the structure. A reinforced concrete slab forms the ceiling and roof of this structure. The concrete floor appears to be in good condition.

Exterior view of the existing root cellar structure.

View looking into the root cellar.

CORNCRIB

The existing corncrib is a one story structure with a stone foundation and retaining wall. The building measures 28'-8" long by 18' wide. It is building into the side of the hill. The the upper portions of the building is wood framed with an off center ridge giving it a saltbox shade. The roof has a large overhang that runs the length of the building over the barn access doors. The gable ends are sided with wood and have no windows. The Access into the corn crib was not provided at the time of this inspection so the interior conditions could not be assessed. The stone foundation and the exterior walls appear to be in good condition. The roofing appears to be relatively new and is good condition.

View of the gable end of the corncrib.

View looking towards corncrib doors.

BARN (PIG BARN)

The barn is a two-story structure that is adjacent to the corncrib. This building measures 16' wide by 30' deep. This too was built into the hillside. The upper story of the barn has grade access from the high side of the hill, while the lower level has grade access from rear. The lower level is constructed with stone foundation walls similar to the corncrib. The upper story and roof are constructed of post and beam barn construction. The wood exterior siding is painted white and is in good condition. The roof is in good condition and appears to be same vintage as the corncrib. Access into the interior portion of the barn was not provided to the time of our inspection.

View of the existing barn to the left and the back side of the corncrib on the right.

EXISTING BUILDING CODE REPORT

The following narrative pertains to the existing building code conditions within jailhouse and administrative building. The purpose of this is to call attention to existing code deficiencies so they can be addressed in the proposed reuse. The focus of this narrative will be on the jailhouse and administrative building. The existing pump house, corncrib, root cellar and pig barn are all accessory structures, therefore will not be included within this code report. A more thorough code study will be required once the proposed use(s) have been determined for each the buildings.

Means of egress

The existing jailhouse and administrative building lacks the proper means of egress. The jailhouse wing does not contain a legal means of egress to a public way. The only access in and out this wing occurs at the main level of the administrative wing. There are also two open stairwells that connect each of the levels in this wing. These open stairs are not within a fire rated enclosures, rather they are enclosed by the prison bars and do not meet the code requirement for a means of egress. A new enclosured fire rated enclosed stair will be required within this wing of the building.

The administrative wing of the building has two means of egress, but only on the first floor. The original front door and an existing rear door provide meet the egress requirements with regards to number required, egress capacity and remoteness. The second and third floors however are not compliant. Egress from each of these floors is provided by the central stairs. These stairs are open and are not within a fire rated enclosure. One means of egress may be allowed on these floors, depending on the use and occupant load, but an enclosed, fire rated stair will be required. If the proposed use and occupant load requires a second means of egress, it is likely the an new stair addition will be required at the rear of the building.

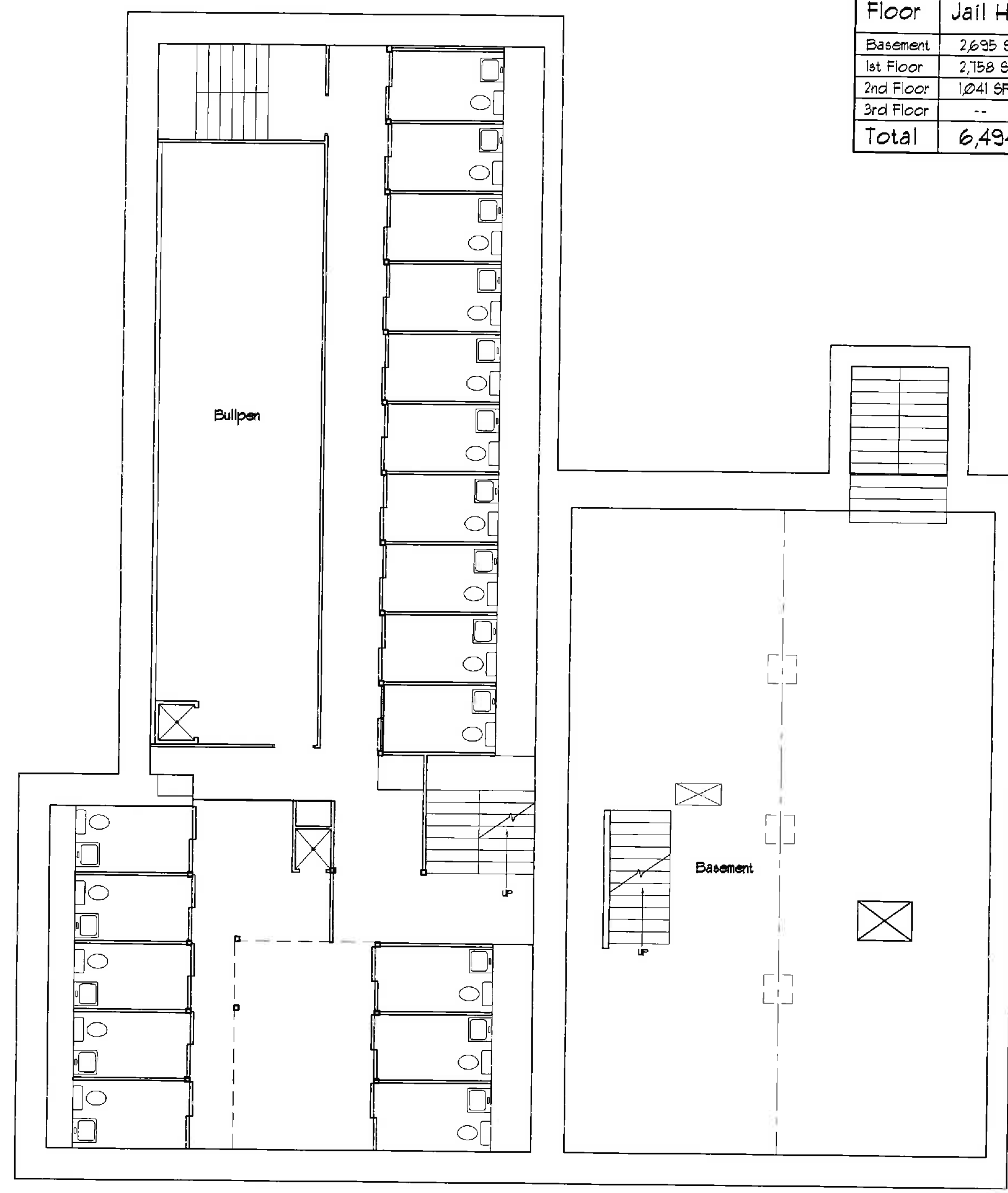
Although this is a historic building, handicap accessibility is still required. Handicap accessibility must be provided at the first floor level as a minimum. Currently that first floor level is approximately four feet above finish grade in the front. The existing grade at the rear of the building slopes up is much closer to the first floor level making it more conducive to providing an accessibility into the building. If the building has no elevator, only the first floor is required to be accessible. If that's the case, all primary functions of the proposed use must be provided on that level. If a new elevator is provided, then all floors serviced by that elevator must provide handicap accessibility throughout.

Ceiling heights within the jailhouse were measured to be 7'-4" high within the jail cells. The minimum ceiling height allowed by code for an occupied space is 7'-6". A building code modification may be required if areas are to be repurposed for another use.

Depending on the reuse of this building, a fire protection system may be required.

Appendix A
Existing Building
Plans and Elevations

Building Square Footage			
Floor	Jail House	Admin. Bldg.	Total SF.
Basement	2,695 SF.	--	2,695 SF.
1st Floor	2,758 SF.	1,604 SF.	4,362 SF.
2nd Floor	1,041 SF.	1,604 SF.	2,645 SF.
3rd Floor	--	1,604 SF.	1,604 SF.
Total	6,494 SF.	4,812 SF.	11,306 SF.



1 BASEMENT FLOOR PLAN
SCALE: 1/4"=1'-0"

NORTH

0' 2' 4' 8' 12' 16'

Crosskey Architects LLC
Architecture Preservation Interiors
750 Main Street, Hartford, CT 06103
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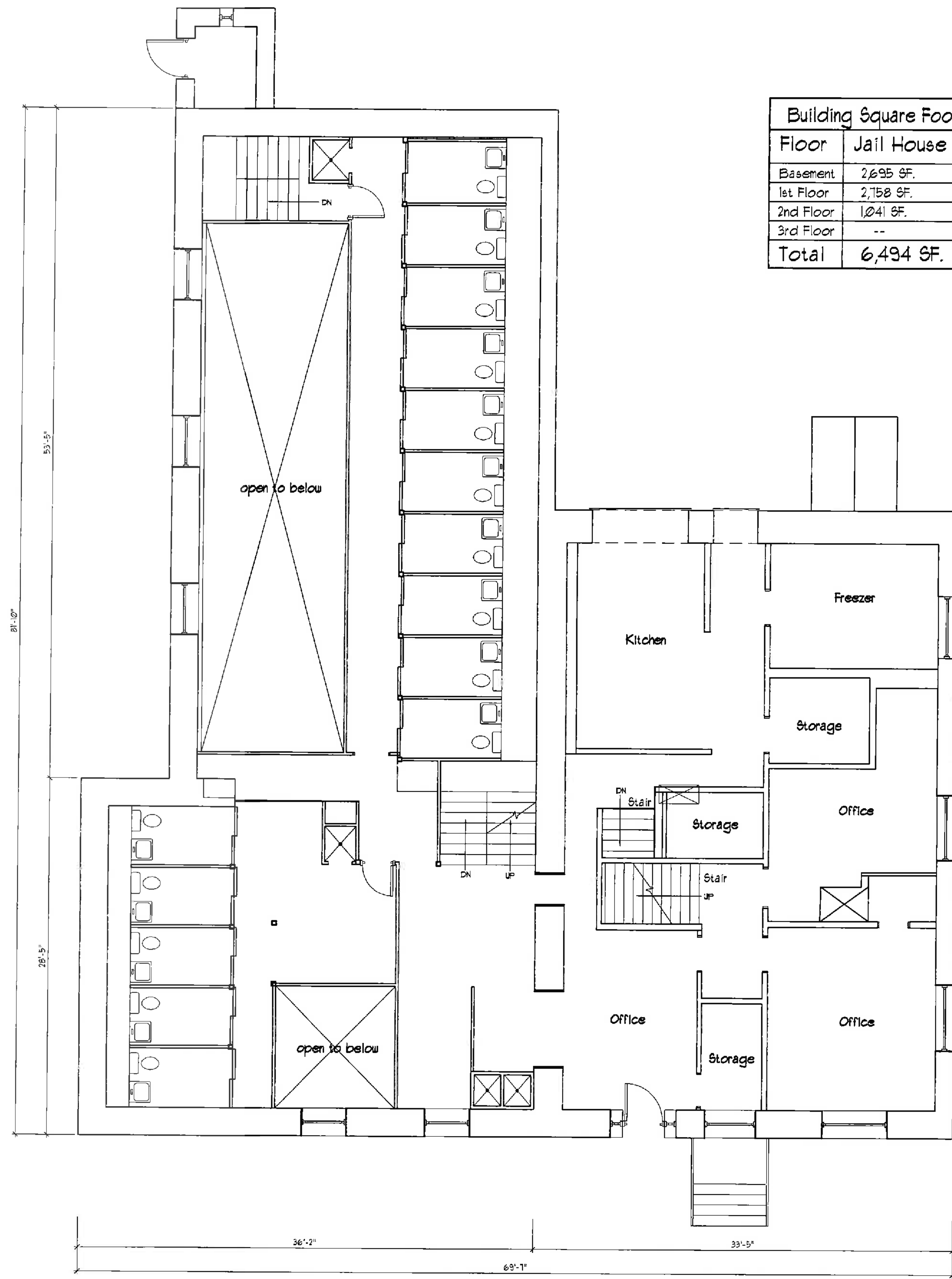
Haddam Jail
Jail Hill Road, Haddam, CT

Drawn: LK,DG
Date: Sept. 14, 2016
Revisions

Existing Basement Plan

A-1

Building Square Footage			
Floor	Jail House	Admin. Bldg.	Total SF.
Basement	2,695 SF.	--	2,695 SF.
1st Floor	2,758 SF.	1,604 SF.	4,362 SF.
2nd Floor	1,041 SF.	1,604 SF.	2,645 SF.
3rd Floor	--	1,604 SF.	1,604 SF.
Total	6,494 SF.	4,812 SF.	11,306 SF.



1 FIRST FLOOR PLAN
SCALE: 1/4"=1'-0"

NORTH

0 2' 4' 8' 12' 16'

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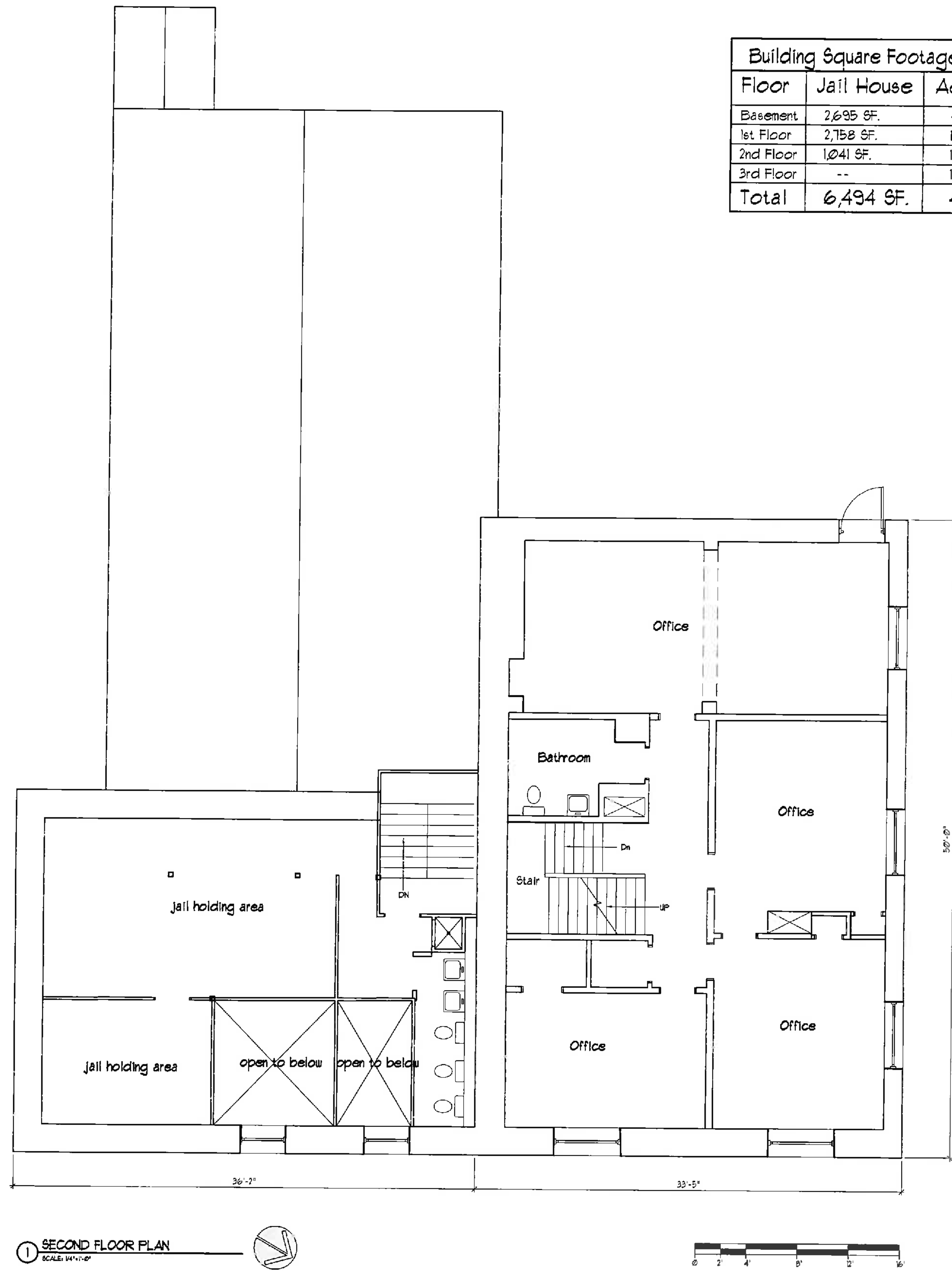
Jail Hill Road, Haddam, CT

Drawn: LK/DG
Date: Sept. 14, 2016
Revisions

Existing
1st Floor Plan

A-2

Building Square Footage			
Floor	Jail House	Admin. Bldg.	Total SF.
Basement	2,695 SF.	--	2,695 SF.
1st Floor	2,758 SF.	1,604 SF.	4,362 SF.
2nd Floor	1,041 SF.	1,604 SF.	2,645 SF.
3rd Floor	--	1,604 SF.	1,604 SF.
Total	6,494 SF.	4,812 SF.	11,306 SF.



1 SECOND FLOOR PLAN

NORTH

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Haddam Jail
Jail Hill Road, Haddam, CT

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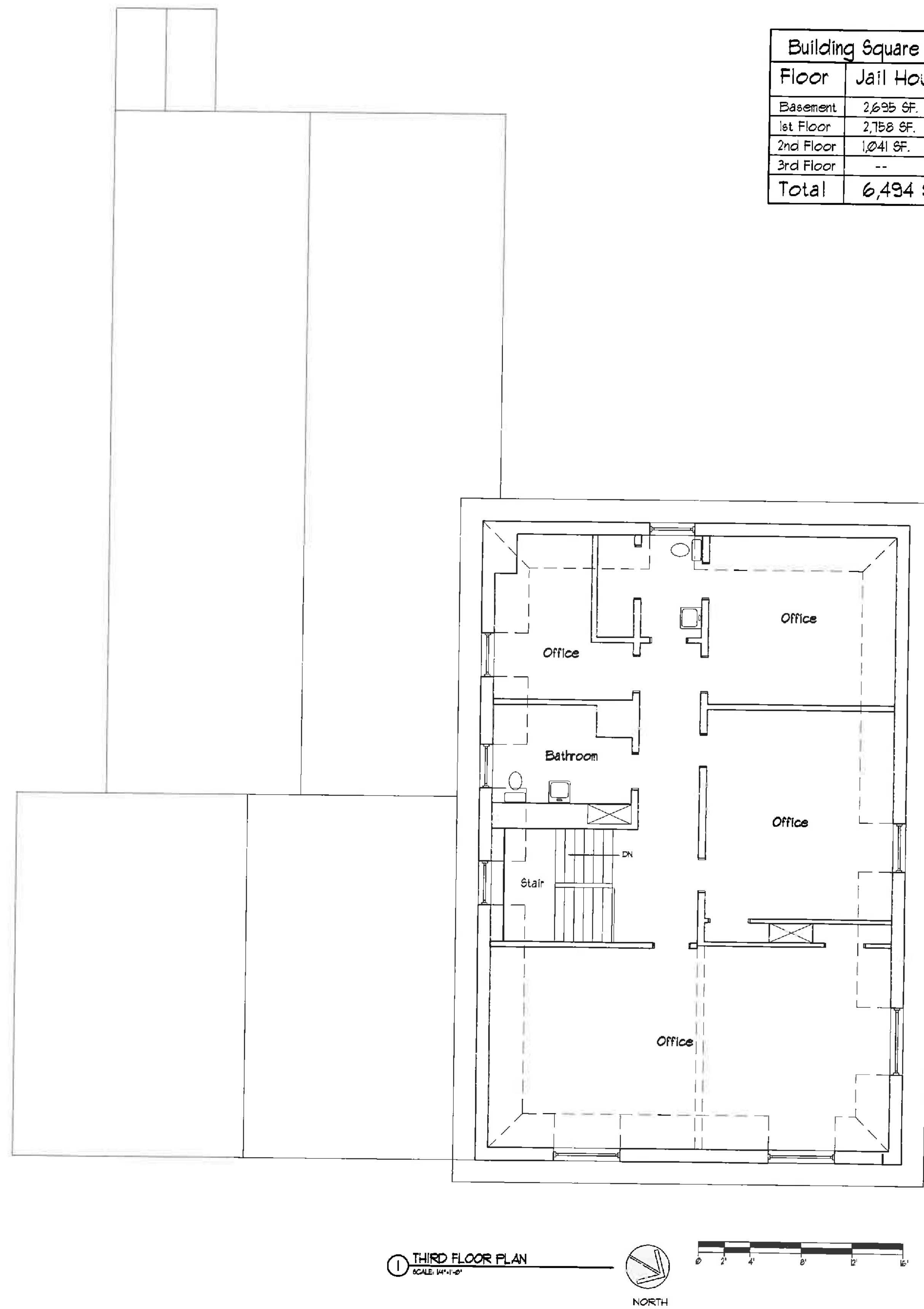
Date: Sept. 14, 2016
Revisions

Existing
2nd Floor Plan

A-3

Building Square Footage			
Floor	Jail House	Admin. Bldg.	Total SF.
Basement	2,695 SF.	--	2,695 SF.
1st Floor	2,758 SF.	1,604 SF.	4,362 SF.
2nd Floor	1,041 SF.	1,604 SF.	2,645 SF.
3rd Floor	--	1,604 SF.	1,604 SF.
Total	6,494 SF.	4,812 SF.	11,306 SF.



1 THIRD FLOOR PLAN
SCALE: 1/4"=1'-0"

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Existing
3rd Floor Plan

A-4

2 NORTH ELEVATION
SCALE: 1/4"=1'-0"

1 EAST ELEVATION
SCALE: 1/4"=1'-0"

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Revisions

Existing
Jail House
Elevations

A-5

4 SOUTH ELEVATION
SCALE: 1/4"=1'-0"

3 WEST ELEVATION
SCALE: 1/4"=1'-0"

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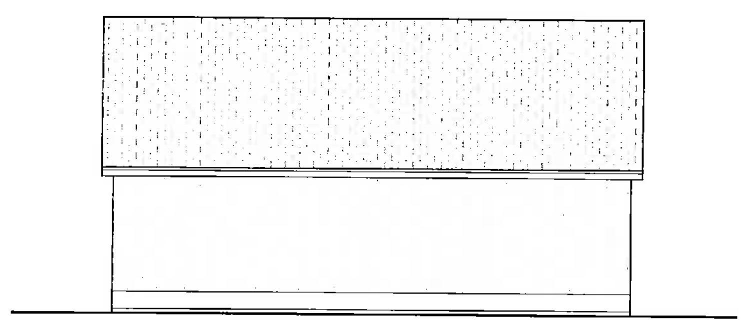
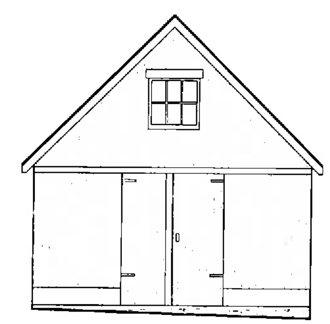
Revisions

Existing Jail House Elevations

A-6



5 WEST ELEVATION
SCALE: 1/4"=1'-0"



4 SOUTH ELEVATION
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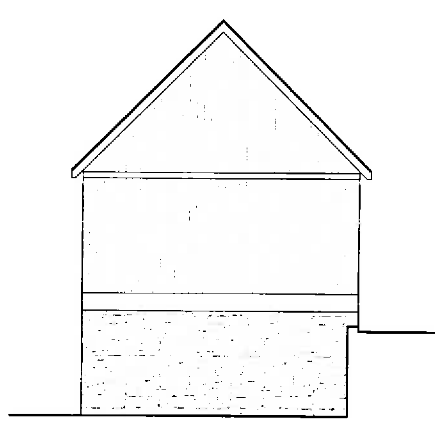
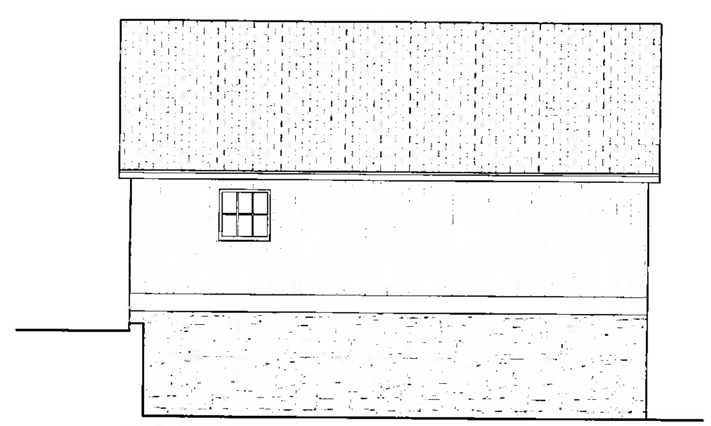


3 NORTH ELEVATION
SCALE: 1/4"=1'-0"



2 EAST ELEVATION
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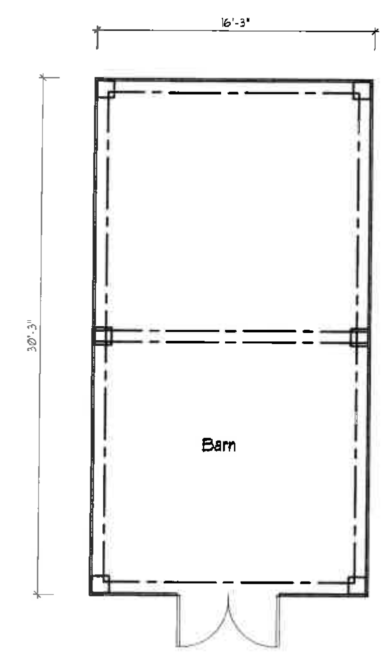

491 SF.
1 BARN FLOOR PLAN
SCALE: 1/4"=1'-0"

NORTH

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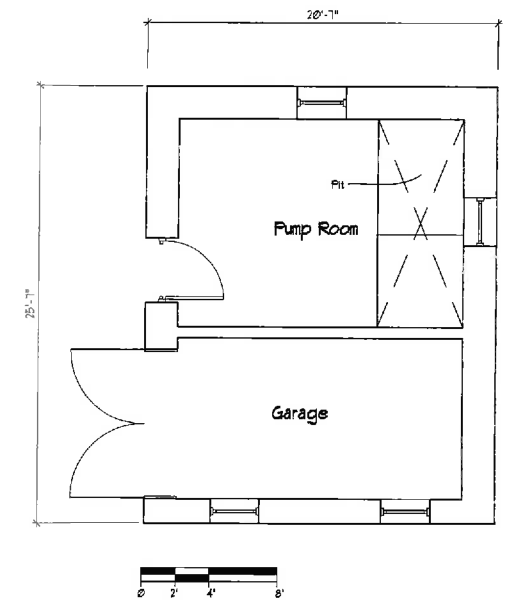
Existing Barn Plans and Elevations

A-7

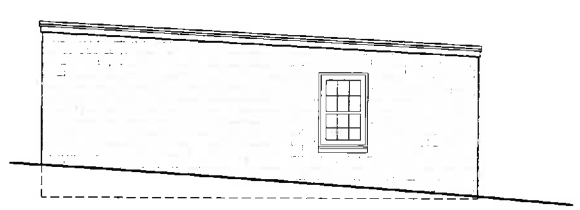


526 SF.

1 PUMP HOUSE FLOOR PLAN

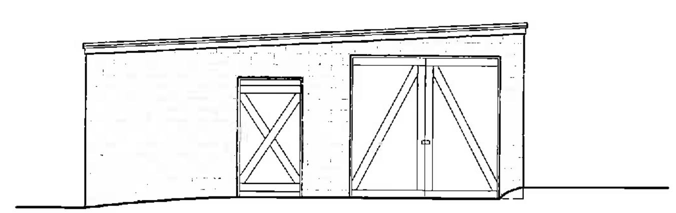
SCALE: 1/4"=1'-0"

NORTH



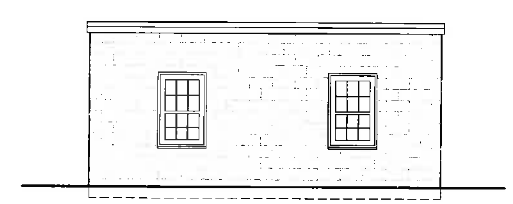
5 EAST ELEVATION

SCALE: 1/4"=1'-0"



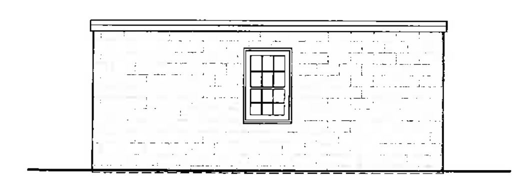
4 WEST ELEVATION

SCALE: 1/4"=1'-0"



3 SOUTH ELEVATION

SCALE: 1/4"=1'-0"



2 NORTH ELEVATION

SCALE: 1/4"=1'-0"

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Haddam Jail
Jail Hill Road, Haddam, CT

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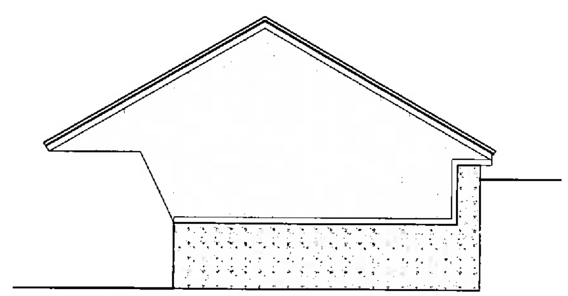
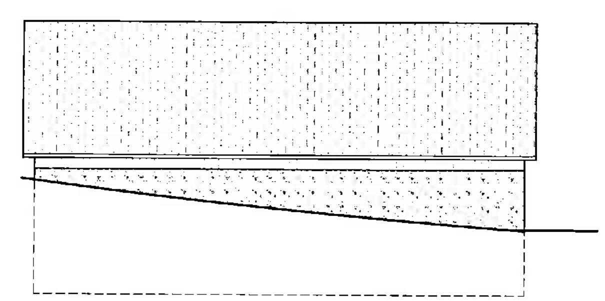
Date: Sept. 14, 2016
Revisions

Existing Pump House Plans and Elevations

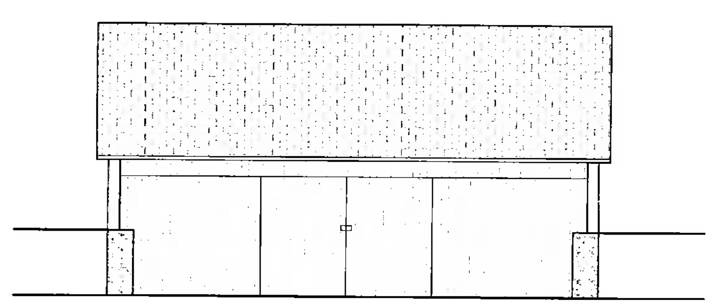
A-8



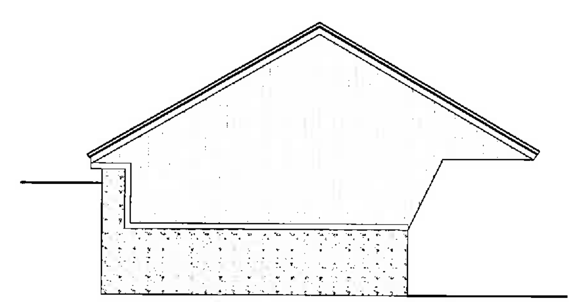
(5) WEST ELEVATION
SCALE: 1/4"=1'-0"



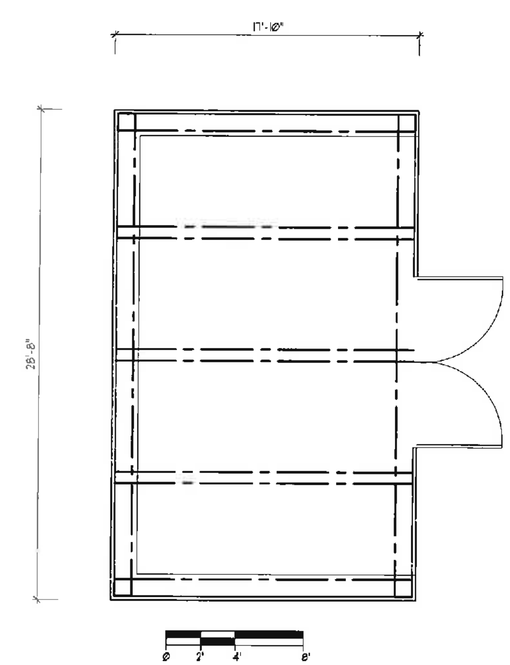
(4) SOUTH ELEVATION
SCALE: 1/4"=1'-0"



(3) NORTH ELEVATION
SCALE: 1/4"=1'-0"



(2) EAST ELEVATION
SCALE: 1/4"=1'-0"



512 SF.
(1) CORN CRIB FLOOR PLAN
SCALE: 1/4"=1'-0"

NORTH

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Haddam Jail
Jail Hill Road, Haddam, CT

Drawn: LX,DG
Date: Sept. 14, 2016
Revisions:

Existing Corn Crib Plans and Elevations

A-9

Haddam Jail House

Crosskey Architects LLC
Architecture
Preservation
Interiors

1. East elevation, camera facing west

2. South elevation, camera facing north

Crosskey Architects LLC
Architecture
Preservation
Interiors

3. Rear elevation of Administration wing camera facing east.

4. Rear elevation of the Jail house camera facing south

5. Interior view from within the bullen, camera facing west.

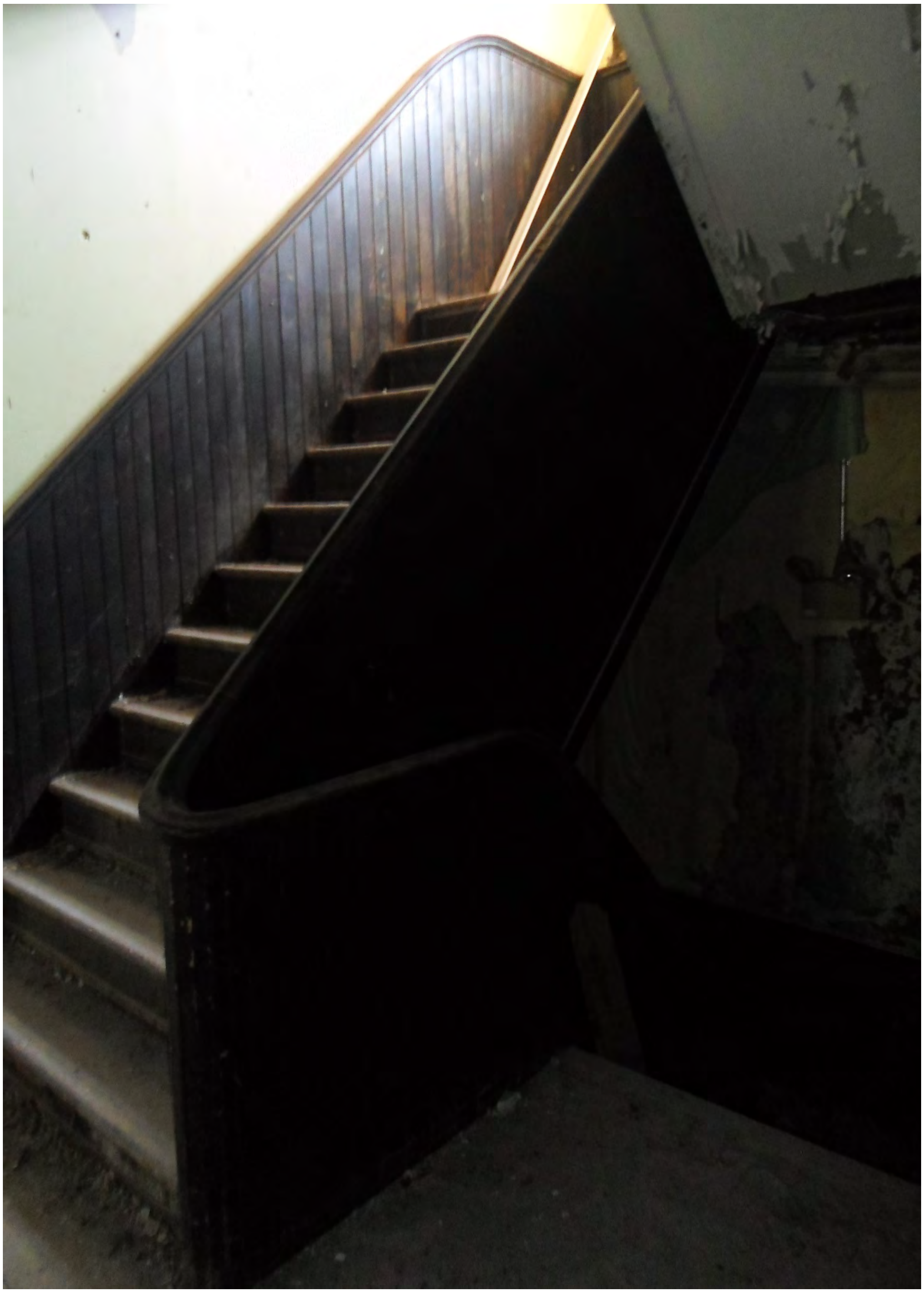
6. Partial south elevation, camera facing north.

7. View from 2nd floor looking into the bullpen. Camera facing west.

Haddam Jail House

8. View of interior Jail house stairs, camera facing west.

9. View looking into the 2nd floor holding cell, camera facing south



10. Main stair within the Administration building at 2nd floor, camera facing east.

11. Main entry of the Administration building at 1st floor. Jail access is through the opening on the left. Camera facing west.

12. View for entry into rear kitchen area. Camera facing west.

Haddam Jail House

13. 1st Floor kitchen area, camera facing west.

14. Front room on the 3rd floor, camera facing east .

15. 2nd Floor corridor within the Administration building, camera facing west.

16. View of chimney in front office of the Administration building at the 2nd floor, camera facing northwest

Appendix G

Market Analysis Report & Financial Feasibility Analysis (Camoin Associates, October 2016)

Haddam Jail Market Analysis

October 2016

Prepared for:

Town of Haddam, CT

camoin associates
ECONOMIC DEVELOPMENT

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About Camoin Associates

Camoin Associates has provided economic development consulting services to municipalities, economic development agencies, and private enterprises since 1999. Through the services offered, Camoin Associates has had the opportunity to serve EDOs and local and state governments from Maine to California; corporations and organizations that include Lowes Home Improvement, FedEx, Volvo (Nova Bus) and the New York Islanders; as well as private developers proposing projects in excess of $600 million. Our reputation for detailed, place-specific, and accurate analysis has led to projects in 29 states and garnered attention from national media outlets including *Marketplace* (NPR), *Forbes* magazine, and *The Wall Street Journal*. Additionally, our marketing strategies have helped our clients gain both national and local media coverage for their projects in order to build public support and leverage additional funding. The firm currently has offices in Saratoga Springs, NY; Boaston, MA; Portland, ME; Richmond, VA and Brattleboro, VT. To learn more about our experience and projects in all of our service lines, please visit our website at www.camoinassociates.com. You can also find us on Twitter @camoinassociate and on Facebook.

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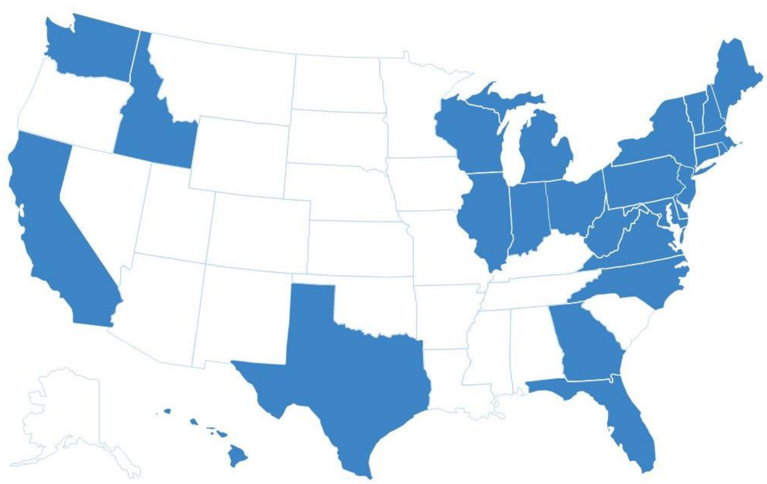

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Summary Report

In early 2016, the Town of Haddam was awarded a Historic Brownfield Revitalization Grant from the State of Connecticut to complete environmental, structural, and re-use assessments of the Haddam Jail property. The goal of this project is to identify feasible re-use options for the property considering market trends, redevelopment costs, and site conditions and constraints.

The Town subsequently retained retain the team of Camoin Associates, Fuss & O'Neil and Crosskey Architects to lead the site assessment and re-use feasibility work. What follows is a summary of findings from the real estate market analysis completed by Camoin Associates.

The lead agency for this work is the Haddam Buildings Committee, who worked closely with the consultant team providing valuable insight and guidance throughout the project.

Purpose, Process, & Methods

The real estate market analysis of the Haddam Jail property seeks to identify regional market trends that impact real estate development, as well as market trends and conditions at the local scale that affect redevelopment opportunities for the site. This information is used to identify market-feasible reuse options.

The market analysis includes a throughout assessment of Haddam's current economic situation and real estate market environment. To inform this analysis, Camoin assessed how the town compares with the county, state, and – where appropriate – nation as a whole. This market analysis is comprised of an assessment of socioeconomic conditions; residential, retail, and office real estate market trends (supply and demand); and a look at trends in the regional tourism industry. Research and analysis for this study included a combination of data collection and analysis, desktop research, and stakeholder interviews.

Much of the data in this report were purchased from proprietary sources such as ESRI Business Analyst Online (ESRI) and Economic Modeling Specialists, Inc. (EMSI). Refer to Appendix B for a complete listing and description of these data sources.

To further understand the current economic and real estate environment, Camoin conducted in-person and telephone interviews with local business owners, commercial and/or mixed-use property developers, economic development professionals, and licensed real estate professionals. Interviews focused on the projected demand for different types of space (commercial, residential, retail, mixed-use, etc.), price points, recent developments, and amenities. Key economic development officials at the county and regional level, as well as local officials and private business leaders, were interviewed to gauge on-the-ground perspectives of the true opportunities for the site.

The Haddam Jail

The original jail building was constructed in the mid 1800's on the south side of Saybrook Road. It housed criminals, the insane, debtors, and the sheriff's family. A second addition was added in 1878 to create housing for women prisoners. In total, the building consists of over 11,400 square feet on 3-4 floors.

The property on which the jail sits is just over 6 acres. It historically included a dairy farm which provided food for the jail and provided prisoners with employment.

"Middlesex County was formed in 1785 from towns that had previously been part of Hartford and New London Counties …. It is believed that Haddam and Middletown were designated 'half-shire' towns to share the county seat because of their central location. Each town was required to erect a courthouse and jail/workhouse in order to carry out their responsibilities as a half-shire town. Middletown erected a series of jail buildings which served as temporary quarters for prisoners convicted of minor crimes, while Haddam was the county's principal jail."

\- Haddam Jail Historical Society

More Haddam Jail history can be found online at: www.haddamhistory .org.

Market Observations

Notable findings from the research and analysis are summarized below. For detailed explanation of these trends, please refer to the Market Trends Analysis.

Socioeconomic Characteristics

No population growth = Limited new demand - While the region is not shedding residents, it is not growing substantially either, which means demand for new services or housing may be limited in the local market.

Town's population is bi-modally distributed – There are two large market segments in Haddam: later career (45 to 59 years) and school age children (5 to 19 years) with a notable lack of young adults (20 to 34 years).

Aging Market – Connecticut is the 7th oldest state in the Nation and Haddam is 5-years older than the state in terms of median age (and getting older).

Middletown – Offers a very different, more diverse market and may present an opportunity as Haddam's neighbor.

Residential

Limited activity following the recession – After 2010, the number of new housing units coming online drops off substantially (less than 1% growth). Haddam is not at the top of developer's lists primarily due to high mill rate and lack of a downtown.

Older housing stock dominated by expensive single-family homes – There is a striking lack of diversity in the local housing market in terms of price points and unit type. Very few rentals or affordable options.

Retail & Services

Strong Household Income = Spending Power – Existing residents earn more on average compared to the county and state, which equates to strong local spending power capable of supporting growth.

Underserved Market – There are few local retailers and services. Residents and visitors travel to other communities to make most purchases and to dine.

Segmented business communities - There appears to be some animosity between the Town's two business centers (Tylerville and Higganum), which will NOT be attractive to outside investors.

Full-service restaurant is needed – All of the data and interviewees agreed!

The interviews, research, and data analysis are telling us…

There is little diversity and not a lot of movement in the market. Immediate opportunities are about re-capture instead of capitalizing on emerging trends or growing markets. Quality will be important. Tying in re-use to Haddam's history and telling a compelling story will be critical.

Quick Facts

Annual population growth

0.7%

0.2% – Middlesex
0.3% – US

Age group that makes up half of Haddam's population

40-to-70

Median Age

46

41 – CT
37 – US

Households earning over $100,000

48%

38.7% - Middlesex
34.9% - CT

Single family homes

93%

72% - Middlesex
59% - CT

Median Home Value

$331,000

$297,000 – Middlesex
$283,972 – CT

Reuse Opportunities for the Haddam Jail

Based on the market observations outlined above, the following uses have been identified as the greatest market-based opportunities for the Haddam Jail property. The ultimate reuse of the structure and the site may include one or a mix of the uses identified below. The market analysis provides a framework for informed decision-making; as a publically owned property, it will ultimately be up to the Haddam community to decide which direction it wishes to go.

High-quality restaurant

According to the retail gap analysis of the local retail trade area, the categories with the greatest opportunity in the local trade area include full and limited service restaurants. This means that local residents are leaving Haddam to dine elsewhere in the region and a new restaurant designed to meet preferences of local market demand could re-capture some of this spending. The need for a quality eating establishments locally echoed throughout the interviews – nearly everyone interviewed for the market analysis suggested this use. With the close proximity to Goodspeed, strong traffic counts, and unique character of the site itself, the Haddam Jail offers a good location for a high-quality restaurant.

Opportunities

- Significant spending leakage in full- and limited-service
- All interviewees agreed!
- Offer high-quality, something different
- Successful case study nearby in Middletown
- Attractive outdoor space
- Lots of local agriculture - farm to table opportunities
- Site has “cool factor”

Challenges

- Difficult business, need to identify right team - ideally national and local experience
- Suburban location
- Location between two centers - will require strategic marketing campaign locally and regionally
- Winter down-time

Quality office space

With few options for commercial space in Haddam, a tightening in the regional office market, and modest growth in the types of industry sectors that occupy office space regionally, there may be an opportunity for re-development of the Haddam Jail to capture some of this growth with new, quality office space. The Jail building offers a unique “cool factor” that would be attractive to many professional service firms such as architect and engineering businesses.

Opportunities

- Growth in office utilizing industries
- Site has “cool” factor
- Offer something new in the market
- Low regional vacancy rates
- Medical office space is growing sector locally, regionally, and nationally

Challenges

- Suburban setting
- Layout of Jail building (little flexibility in spaces)

Market-rate rentals or condo's

On the whole, the population of Middlesex County is very slow-growing. However, while overall growth is sluggish, demographic shifts within the population present market opportunities for specific housing types that are currently in short supply. Essentially all projected household growth can be attributed to 65+ age cohorts. People in this range are typically retirees with grown children and many are seeking to downsize from large single-family homes. They may not yet be ready for a senior community (such as The Saybrook at Haddam), but would like a smaller, lower-maintenance home that is close to shopping and other amenities. Middlesex County is projected to gain over 2,500 households in the 65+ range over the next five years, and with relatively few options for these seniors to downsize, this presents an opportunity for Haddam to capture a portion of these households.

Young adults are another key market for multifamily housing that are critically underserved in the Haddam area. We learned through interviews that there is a significant number of young adults who would like to return to Haddam after college but are unable to find suitable rental housing. Moreover, over 11,000 young adults in Middlesex County between the ages of 18 and 34 live with their parents, or about 41%.[1] A good portion of these young adults would likely move out of their parents' homes and form their own households if they could find affordable housing options.

Opportunities

- Affordable relative to existing market
- Diversify market, offer something new and unique
- Low regional vacancy rates
- Growing 55+ possible target market
- Favorable national/regional market trends
- Lot of activity in Middletown with FedEx Distribution Center (500 jobs)
- Site has "cool" factor
- Natural assets

Challenges

- Untested market
- No downtown, suburban setting
- Lack of young adults
- Haddam is not on developers' "A-list"

[1] American Community Survey. Table B09091. 2015 5-year estimates.

Historic Interpretation

Haddam has a rich, deep history and the Jail property is an important page in Haddam's story. Many of the individuals interviewed, as well as several members of the Buildings Committee, expressed an interest in retaining at least a portion of the building and/or property for historic interpretation. This could mean a portion of the building is dedicated to displaying cultural artifacts in a gallery-style setting or portions of the property are used for interpretation. For example, much of the property used to be agricultural, and those serving time at the Jail would work in the fields. There may be an opportunity for some small-scale farming on the property, which would tie in well with a quality restaurant on-site. Mixing historic interpretation with modern experiences is driving many new trends in tourism and consumer spending such as the farm-to-table movement and experiential tourism. The Jail property offers Haddam an opportunity to be a part of these trends and any use considered for the site should include elements of this story.

Opportunities

- Strong Historic Society
- Library could be a good partner
- Haddam has a rich history
- Historical tourism is strong regionally and Haddam currently attracts this market
- Growing experiential tourism trend where visitors seek an experience

Challenges

- Financial feasibility of maintaining public use with limited potential for income generation
- Identifying the right partners with the talent and drive to make this type of project work

Design-create-sell space

Haddam, particularly the Tylerville area of Haddam, is home to a number of "maker" businesses, pointing to an entrepreneurial spirit within the community. Among these businesses are Whole Harmony Apothecary, a maker and seller of artisan teas and herbs; Creative Cakes by Donna, a cake designer and seller; and Steady Habit Brewing Company, a microbrewery. These businesses and others in the area are small-scale operations that produce high-quality products and sell to a large geographical area. Customers are drawn from well beyond Haddam and the immediate region to patronize these unique businesses.

This cluster of innovative businesses, and associated network of local entrepreneurs working together and supporting each other, is a unique asset within Haddam that many communities would be lucky to have. Adaptive reuse of the Haddam Jail property could include space to support new businesses and entrepreneurs. This could range from simply providing very low cost space to new businesses that meet a pre-defined criteria or creating new non-traditional spaces such as shared office space, co-working space, maker-space, or design-create-sell space. Should the town want to explore this direction further, additional steps must be taken to fully understand the needs of the local and regional entrepreneur community. This can be done through formation or informal surveys, attending startup events, digital media engagement, or other methods of engaging small business owners.

Opportunities

- Small business growth
- Unique local niche retail/service businesses
- Potential to help local businesses grow
- Library nearby is an asset and potential partner
- Site has "cool" factor

Challenges

- No downtown, suburban setting
- Requires low price-points
- Higher churn rates of small startup-style
- Would need focused market analysis
- Rent likely will not cover maintenance costs

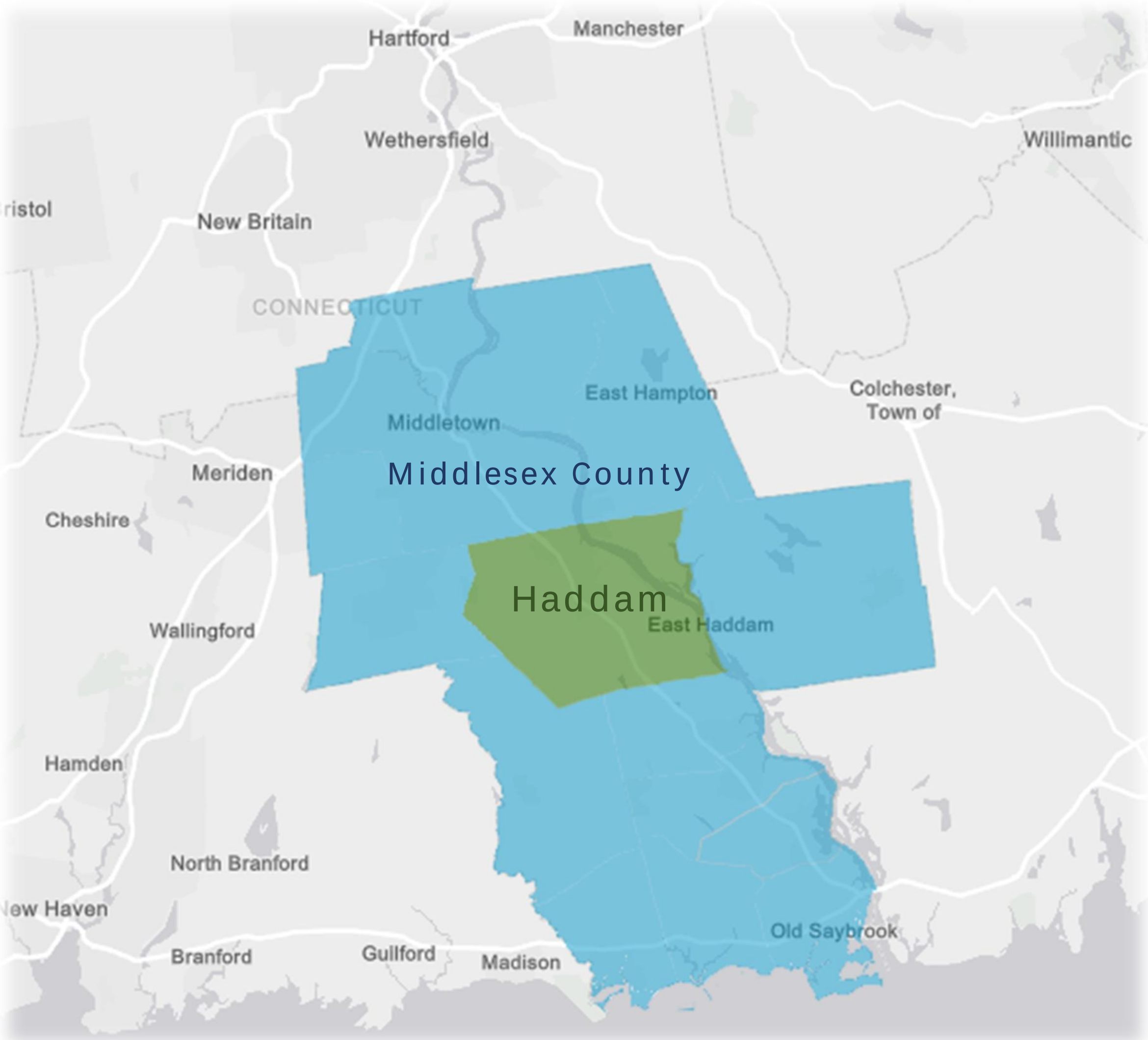
Market Trends Analysis

Camoin Associates gathered data and conducted interviews to understand existing conditions in the Town of Haddam, CT in terms of real estate and economic trends. The purpose of this analysis was to identify market characteristics and emerging trends that will impact future demand for different types of uses and identify market-feasible reuse options for the Haddam Jail property. The Market Trends Analysis begins with a socioeconomic profile of Haddam and comparison geographies, followed by a look at real estate trends in residential, retail, and office markets. The chapter concludes with a profile of the local tourism industry as it relates to opportunities for reuse of the Haddam Jail.

Geographies Studied

The map below illustrates the location of Haddam within Middlesex County. For the Market Trends Analysis of the Haddam Jail, demographic and socioeconomic data for Haddam was compared to the county, as well as Connecticut and the U.S.

Study Area Geographies



Socioeconomic Profile

In order to assess current and future market conditions affecting reuse of the Haddam Jail, it is important to understand current and projected socioeconomic conditions in the town, region, and the state. The following section highlights relevant socioeconomic characteristics in Haddam.

Demographic Snapshot

Demographic data for the three study area geographies illustrates the demographic and socioeconomic differences between Haddam and the surrounding regions. On average, Haddam residents are slightly older and earn significantly more than their neighbors in Middlesex County and the state. The median age in Haddam is more than 8 years older than in the U.S. Since 2010, Haddam's median age has increased by 1.7 years, almost double the 0.9-year increase in the U.S.

Demographic Profile - 2016				
	Haddam	Middlesex County	Connecticut	U.S.
Total Population	8,727	167,476	3,641,078	323,580,626
Total Households	3,336	67,418	1,388,422	121,786,233
Average Household Size	2.61	2.41	2.54	2.59
Median Age	46.1	44.6	41.0	38.0
Median Household Income	$95,828	$77,610	$69,694	$54,149

Source: Esri

Demographic Profile - 2010				
	Haddam	Middlesex County	Connecticut	U.S.
Total Population	8,346	165,676	3,574,097	308,745,538
Total Households	3,218	67,202	1,371,087	116,716,292
Average Household Size	2.59	2.39	2.52	2.58
Median Age	44.4	43.0	40.0	37.1

Source: Esri

Demographic Profile - Change, 2010-2016				
	Haddam	Middlesex County	Connecticut	U.S.
Total Population	4.6%	1.1%	1.9%	4.8%
Total Households	3.7%	0.3%	1.3%	4.3%
Average Household Size	0.8%	0.8%	0.8%	0.4%
Median Age	3.8%	3.7%	2.5%	2.4%

Source: Esri

Population Trends

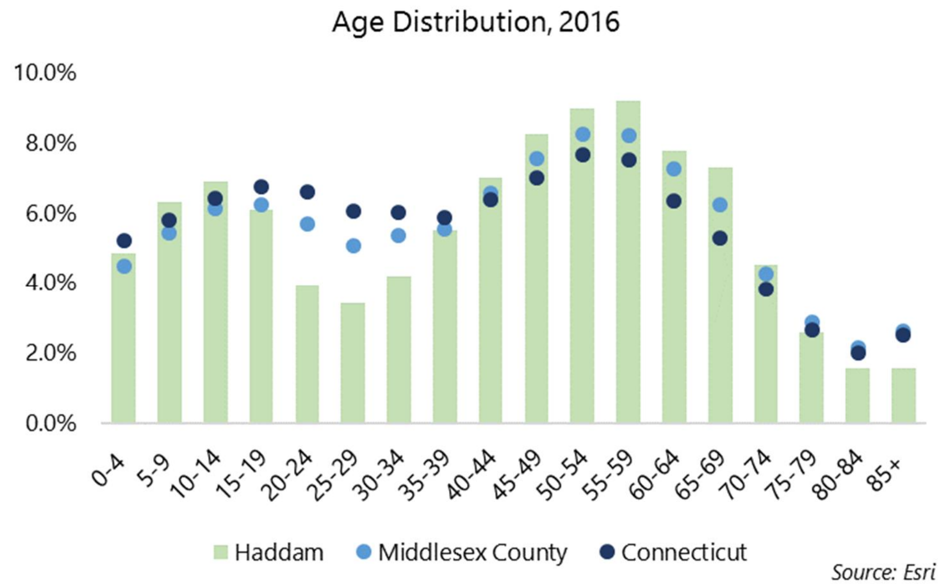
Within all three geographies, there was little change in population since 2010, with annual growth less than 1%, about on par with the U.S. overall. Haddam's growth rate was higher than that of Middlesex County and Connecticut. In the coming years, Haddam's growth rate is expected to slow substantially relative to the other geographies.

Population Change					
	2010 Census	2016	2021 (proj.)	Annual Growth Rate 2010-16	Annual Growth Rate 2016-21
Haddam	8,346	8,727	8,945	0.72%	0.49%
Middlesex County	165,676	167,476	168,652	0.17%	0.14%
Connecticut	3,574,097	3,641,078	3,698,375	0.30%	0.31%
United States	308,745,538	323,580,626	337,326,118	0.79%	0.84%

Source: Esri

Haddam's population is bi-modally distributed, with two large population cohorts. The largest cohort includes those between the ages of 40 and 70, with 55- to 59-year-olds comprising the largest share of any cohort. The 40-to-70 age group makes up close to half of Haddam's population (49%), compared to 44% in Middlesex County and 40% in Connecticut overall. The second cohort includes school-age youth, those between 5 and 19.

Haddam's age distribution shows a notable lack of young adults (20- to 34-year-olds) as compared to the other geographies. This group makes up just 12% of Haddam's population, compared to 16% in the county and 19% statewide.

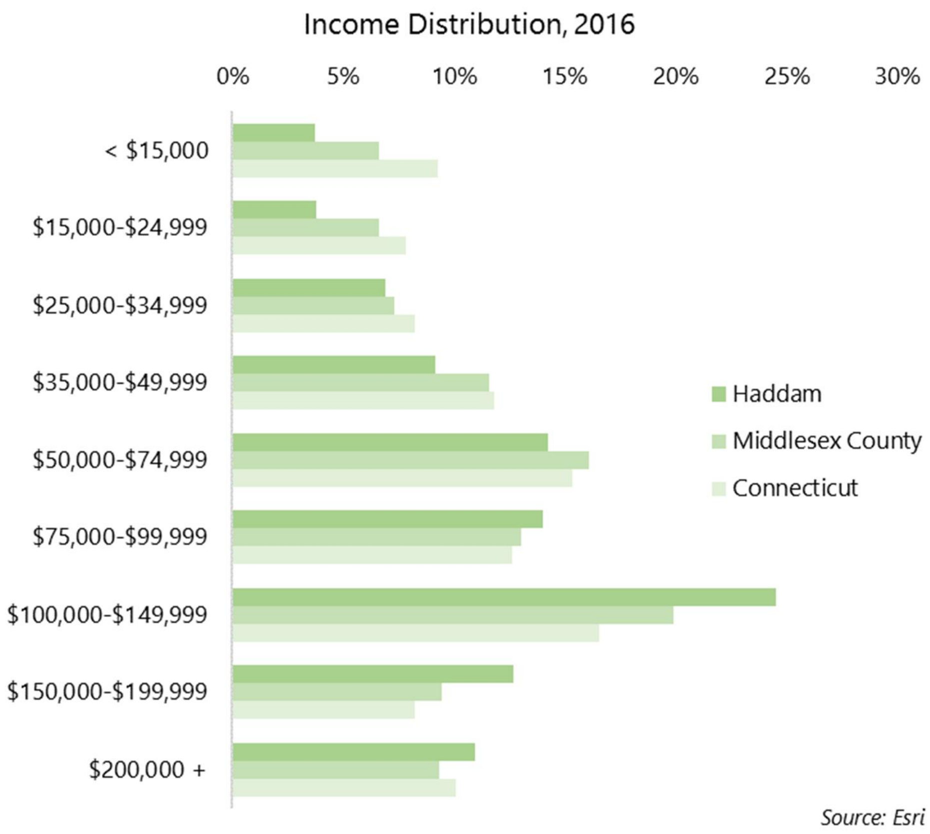


Household Income

Haddam has high household incomes, with almost half (48%) of households earning over $100,000 annually, compared to 39% in Middlesex County and 35% in Connecticut. This indicates high spending power in the Town.

Income Distribution, 2016				
Income Range	Haddam Households	Haddam, Pct. Of Total	Middlesex County, Pct. Of Total	Connecticut, Pct. Of Total
< $15,000	124	3.7%	6.6%	9.3%
$15,000-$24,999	126	3.8%	6.6%	7.8%
$25,000-$34,999	231	6.9%	7.3%	8.2%
$35,000-$49,999	306	9.2%	11.6%	11.8%
$50,000-$74,999	475	14.2%	16.1%	15.3%
$75,000-$99,999	468	14.0%	13.0%	12.6%
$100,000-$149,999	818	24.5%	19.9%	16.6%
$150,000-$199,999	423	12.7%	9.4%	8.2%
$200,000 +	365	10.9%	9.4%	10.1%
	3336	100.0%	100.0%	100.0%

Source: Esri



Resident Education

Haddam is a highly educated community, with 46% of adults holding at least a bachelor's degree, compared to 38% in Connecticut overall and 30% in the U.S.

Population 25+ by Educational Attainment, 2016					
	Haddam	Haddam, Pct. Of Total	Middlesex County, Pct. Of Total	Connecticut, Pct. Of Total	U.S., Pct. Of Total
Less than 9th Grade	66	1.1%	2.0%	4.1%	5.5%
9-12th Grade/No Diploma	117	1.9%	3.8%	5.7%	7.3%
High School Diploma	1,408	22.4%	24.4%	24.2%	23.6%
GED/Alternative Credential	153	2.4%	3.0%	3.3%	4.0%
Some College/No Degree	963	15.3%	17.2%	16.8%	20.9%
Associate's Degree	665	10.6%	8.5%	7.5%	8.2%
Bachelor's Degree	1,614	25.7%	22.7%	21.5%	18.8%
Graduate/Professional Degree	1,289	20.5%	18.4%	16.9%	11.6%
Summary					
High School or Higher	6,092	97%	94%	90%	87%
Bachelor's Degree or Higher	2,903	46%	41%	38%	30%
Graduate/Professional Degree	1,289	21%	18%	17%	12%

Source: Esri

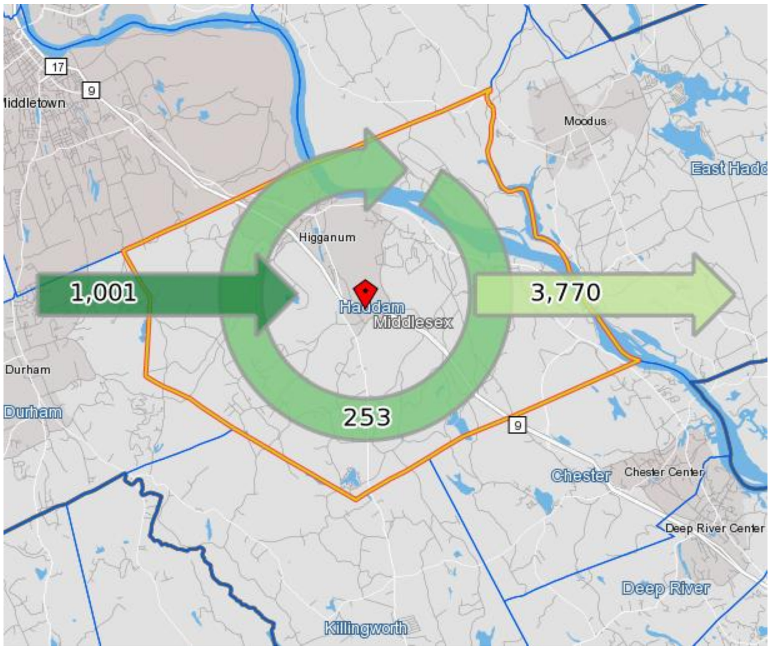
Commuting Patterns & Labor Shed

Haddam is a bedroom community, with almost 4 out-commuters for every in-commuter. About 1,000 workers commute to Haddam for work, with about 250 residents also working within Haddam. The vast majority of Haddam residents leave town for work, (3,770, or about 94% of residents).

Middletown and Hartford are the top cities/towns where Haddam residents work, accounting for 13.5% and 8.1% of residents, respectively. About 6.3% of Haddam residents also work in town.

Top 10 Cities and Towns Where Haddam Residents Work, 2014		
City or Town	Count	Share
Middletown	544	13.5%
Hartford	327	8.1%
Haddam	253	6.3%
Wallingford	137	3.4%
New Haven	128	3.2%
East Hartford	103	2.6%
Rocky Hill	96	2.4%
Chester	94	2.3%
Old Saybrook	89	2.2%
New Britain	84	2.1%
All Other Locations	2,168	53.9%
Total	4,023	100.0%

Source: U.S. Census OnTheMap



Top 10 Cities and Towns Where Haddam Workers Live, 2014		
City or Town	Count	Share
Haddam	253	20.2%
East Haddam	85	6.8%
Killingworth	85	6.8%
Middletown	74	5.9%
Glastonbury	28	2.2%
Chester	26	2.1%
Portland	24	1.9%
Clinton	23	1.8%
Cromwell	22	1.8%
Old Saybrook	22	1.8%
All Other Locations	612	48.8%
Total	1,254	100.0%

Source: U.S. Census OnTheMap

Residential Market

The residential market analysis provides an overview of current housing ownership, type, age, and construction activity in Haddam. Middlesex County and the State of Connecticut were used as benchmark geographies for data collection in the residential market analysis.

Housing Tenure

Haddam has a limited availability of rental units, with just 15% of occupied housing units being renter-occupied. This compares to 28% in Middlesex County and 35% in Connecticut. However, since 2010, the town has added twice as many rental units as owner-occupied units, suggesting a shifting appetite for rental housing. The housing vacancy rate in Haddam stands at a healthy 3.7% when seasonally vacant properties are excluded, considerably lower than that of the county (5.5%) and state (6.6%).

Housing Tenure, Haddam

	2010	2016	2021 (proj.)	Annual Growth Rate 2010-16	Annual Growth Rate 2016-21
Occupied Units	3,218	3,336	3,403	0.60%	0.40%
Owner-Occupied	2,810	2,850	2,906	0.24%	0.39%
Renter-Occupied	408	486	497	2.96%	0.45%
Vacant Units	286	308	312	1.24%	0.26%
Total Housing Units	3,504	3,644	3,715	0.66%	0.39%

Source: Esri

Housing Tenure Comparison, 2016

	Haddam	Middlesex County	Connecticut
Occupied Units, % of total units	92%	89%	91%
Owner-Occupied, % of occupied units	85%	72%	65%
Renter-Occupied, % of occupied units	15%	28%	35%
Vacancy Rate, % of total units	8.5%	11.1%	8.5%
Vacant Rate excl. seasonally vacant units*	3.7%	5.5%	6.6%

* Calculated based on ACS 2014 5-year estimates on share of seasonally vacant units

Source: Esri, ACS 2014 5-year estimates

Structure

Almost 93% of Haddam's housing stock consists of single-family detached units, compared to 72% in the county and 59% in the state. This indicates a lack of housing choice, especially for those not within the typical demographic groups who seek single-family housing.

Housing by Units in Structure, 2014				
Number of Units in Structure	Haddam		Middlesex County	Connecticut
	Count	Pct. of Total	Pct. of Total	Pct. of Total
1 Detached Unit	3,226	92.7%	71.6%	59.2%
1 Attached Unit	32	0.9%	3.8%	5.4%
2 Units	69	2.0%	5.4%	8.1%
3 or 4 Units	82	2.4%	4.2%	9.0%
5 to 9 Units	26	0.7%	4.3%	5.5%
10 to 19 Units	15	0.4%	3.5%	3.7%
20 to 49 Units	31	0.9%	2.5%	3.5%
50 or More Units	-	0.0%	3.3%	4.9%
Mobile Homes	-	0.0%	1.3%	0.8%
Boat/RV/Van	-	0.0%	0.0%	0.0%
Total Housing Units	3,481	100.0%	100.0%	100.0%

Source: ACS 2014 5-year estimates

Age

Haddam's housing stock is slightly newer than the county, with a median construction year of 1973, compared to 1971 in Middlesex County. In Connecticut overall, the median year built is 1964.

Housing by Year Built				
Year Built	Haddam		Middlesex County	Connecticut
	Count	Pct. of Total	Pct. of Total	Pct. of Total
2010 or Later	13	0.4%	0.4%	0.5%
2000-2009	408	11.7%	9.3%	7.0%
1990-1999	363	10.4%	10.9%	7.6%
1980-1989	435	12.5%	15.7%	13.0%
1970-1979	739	21.2%	14.7%	13.4%
1960-1969	242	7.0%	12.3%	13.4%
1950-1959	443	12.7%	11.6%	15.6%
1940-1949	249	7.2%	5.4%	7.0%
1939 or Earlier	589	16.9%	19.7%	22.4%
Total Housing Units	3,481	100.0%	100.0%	100.0%
Median Year Structure Built	1973		1971	1964

Note that units built since 2010 are significantly undercounted because 2014 ACS data is based on a sample taken between 2009 and 2014.
Source: ACS 2014 5-year estimate

Construction Activity

According the building permit data obtained from the U.S. Census, Haddam has added 74 new homes between 2010 and 2015, all of which were single-family residences. These homes accounted for 5% of new residences constructed in Middlesex County over that period. Haddam is home to about 5% of all Middlesex County housing units, which indicates that new residential construction in Haddam has kept pace with the county as a whole.

Residential Building Permits			
Year	Haddam	Middlesex County	Haddam, Pct. Of County
2010	19	279	6.8%
2011	9	190	4.7%
2012	15	249	6.0%
2013	9	234	3.8%
2014	10	228	4.4%
2015	12	302	4.0%
Total	74	1,482	5.0%

Source: U.S. Census Building Permits Survey

Price Points

Haddam has high home values relative the county and state, with a median home value of over $331,000. Close to 60% of homes are valued over $300,000.

2016 Home Values, Owner-Occupied Units				
Home Value	Haddam		Middlesex County	Connecticut
	Count	Pct. of Total	Pct. of Total	Pct. of Total
Less than $50,000	66	2.3%	3.7%	3.5%
$50,000-$99,999	38	1.3%	2.4%	3.1%
$100,000-$149,999	111	3.9%	6.3%	8.1%
$150,000-$199,999	210	7.4%	11.0%	13.4%
$200,000-$249,999	326	11.4%	14.1%	13.6%
$250,000-$299,999	394	13.8%	13.1%	12.3%
$300,000-$399,999	890	31.2%	23.0%	17.3%
$400,000-$499,999	390	13.7%	12.1%	9.9%
$500,000-$749,999	238	8.4%	8.8%	9.3%
$750,000-$999,999	146	5.1%	2.8%	4.4%
$1,000,000 or greater	41	1.4%	2.7%	5.2%
Median Home Value	$ 331,461		$ 297,774	$ 283,972
Average Home Value	$ 368,974		$ 345,768	$ 367,818

Source: Esri

The median rent in Haddam for rental housing units is $828, lower than the county ($920) and the state ($890). Relatively low rents are due to a lack of high-quality, modern rental housing in the town.

Rent, 2014			
	Haddam	Middlesex County	Connecticut
Lower Quartile	$714	$729	$672
Median	$828	$920	$890
Upper Quartile	$948	$1,194	$1,192

Note: Rent is adjusted to exclude utility costs

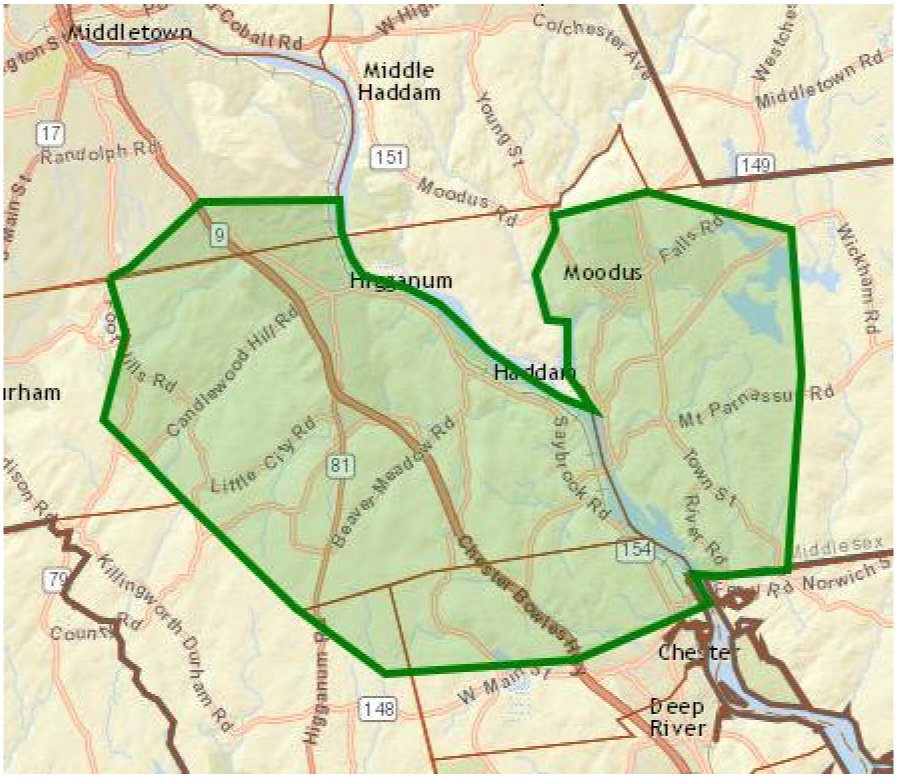
Source: ACS 2014 5-year estimates

Retail Market

Retail market analysis examines the supply and demand for goods and services within a particular region. This process also helps to identify the unique shopping characteristics and amenities that can be expanded upon. The market analysis outlines consumer habits within the region, estimates retail demand, classifies household characteristics of the consumer market, and can help identify business opportunities or niche markets that are not being served by current offerings.

Trade Area

The retail trade area is the geographic extent within which Haddam businesses generate the majority of their customers. It covers the area within a 10- to 20-minute drive time from downtown Haddam, adjusted based on physical, government, and other boundaries, nearby hubs of retail activity, known traffic patterns, and input from local business leaders. Outside of this area, consumers would typically travel to a different location to find similar services and goods. The retail trade area encompasses the majority of the Town of Haddam (excluding the Haddam Neck area on the east side of the Connecticut River) and the western portion of the Town of East Haddam (including downtown East Haddam and Moodus), and extends into northern Chester, southern Middletown, and northeastern Killingworth.



There are approximately 15,800 residents and 6,200 households in the trade area. Population is expected to increase slightly over the next 5 years. The median age for the trade area is 46.3, and expected to rise to 47.6 by 2021.

Retail Trade Area - Demographic Profile					
	2010 Census	2016	2021 (proj.)	Annual Growth Rate 2010-16	Annual Growth Rate 2016-21
Population	15,361	15,826	16,070	0.50%	0.31%
Households	6,048	6,180	6,249	0.36%	0.22%
Average Household Size	2.52	2.54	2.55	0.13%	0.08%
Median Age	44.7	46.3	47.6	0.59%	0.56%

Source: Esri

The population of mid- to later middle aged residents and school-age children is expected to decline slightly over the next five years, while the number of young adults and senior citizens will increase. The 65-79 population cohorts will exhibit the greatest gains.

Median household income is expected to increase from about $89,000 to about $100,000 over the next five years, reflecting an annual growth rate of about 2.5%.

Median Household Income, Retail Trade Area		
2016	2021	Annual Growth Rate 2016-21
$ 88,794	$ 100,225	2.5%

Note: Income values are in current dollars, not adjusted for inflation
Source: Esri

Tapestry Segmentation

A tool used by retail site selectors in determining the characteristics of a particular trade area is market segmentation, which is the classification of consumers according to demographic, socioeconomic, housing, and lifestyle characteristics. It is how retailers and site selectors compare consumer trends across trade areas when considering many site locations.

Market segmentation is based on the concept that people with similar demographic characteristics, purchasing habits, and media preferences naturally gravitate toward each other and into the same neighborhoods. Businesses utilize market segmentation to understand their customers' lifestyle choices, purchasing preferences, and how they spend their free time. Market segmentation data for Haddam's trade area were obtained from Esri's Tapestry Segmentation model. Additional information about the Esri model can be found here: http://www.esri.com/landing-pages/tapestry.

Top Esri Tapestry Segments, Retail Trade Area

	Tapestry Segment	Households	Percent
1	Savvy Suburbanites	2,016	32.6%
2	Green Acres	1,259	20.4%
3	In Style	1,095	17.7%
4	Exurbanites	708	11.5%
5	Comfortable Empty Nesters	653	10.6%
	Other	450	7.3%
	Total	6,180	100.0%

Source: Esri

It is important to recognize that the classifications and labels that Esri uses for defining market segments are generalizations. The descriptions of each segment are based on comparisons with the U.S. as a whole and reflect the propensity of households within that segment to exhibit certain demographic, lifestyle, and consumer characteristics relative to the overall population. The purpose of this exercise is to compare local consumer trends to those of consumers across the U.S. so businesses and developers not familiar with the Haddam region can better understand consumer demand in this area.

The Esri Tapestry segments for the Haddam region are ranked in the table at right, with complete profiles of each segment, including household composition, housing type, income, age, education, and consumer habits in Appendix B.

The top 5 tapestry segments paint a picture of an aging population with moderate to high incomes. These households are typically racially non-diverse, (i.e. vast majority white). Savvy Suburbanites and Exurbanites (a combined 44% of households) tend to be relatively wealthy, well-educated, and well-traveled married couples with children ranging from grade school to college. They have refined tastes and expect high quality. In Style and Comfortable Empty Nesters (a combined 28%) tend to be later middle age with an increasing number of retirees. They tend to own older single-family homes in suburban areas. Green Acres (20% of households) tend to be empty nesters that prefer to live in semi-rural settings. They are do-it-yourselfers when it comes to home improvement and enjoy recreating outdoors.

Retail Gap Analysis

In a retail gap analysis, the existing retail sales ("supply") of trade area businesses are compared to the estimated retail spending of trade area residents ("demand"). The difference between demand and supply is referred to as the "retail gap."[2]

When the demand (spending by trade area residents) for goods and services is greater than sales at trade area businesses, sales are said to "leak out" of the trade area, creating a positive retail gap (i.e. sales leakage). Conversely, if the supply of goods sold (local trade area sales) exceeds trade area demand (spending by trade area residents), it is assumed that non-residents are coming into the trade area and spending money, creating a negative retail gap (i.e. sales surplus).

Sales leakage and sales surplus carry different implications. In many cases, sales leakage presents an opportunity to capture unmet demand in a trade area since a percentage of residential spending occurs outside the trade area. This demand can be met within the trade area by opening new businesses or expanding existing businesses within retail sectors that show sales leakage. However, not all retail categories that exhibit sales leakage within a particular trade area are a good fit for the region.

A sales surplus might exist for several reasons. For example, the region might be a popular shopping destination for tourists and other out-of-towners, or a cluster of competing businesses offering a similar product or service may be located within the trade area, creating a specialty cluster that draws in spending by households from outside the trade area. Alternatively, a sales surplus could be an indicator of market saturation.

The following Retail Gap Analysis table contains a list of industry groups sorted by 3- and 4-digit NAICS codes and includes figures for sales demand (estimated spending by local trade area residents), sales supply (existing retail sales within the trade area), and retail gap (demand minus supply). Retail categories with sales leakage are in green, and those with sales surplus are in red. Almost all retail categories show retail leakage.

Industries experiencing the greatest sales leakage include:

- Grocery stores
- Automobile dealers
- Restaurants
- Clothing stores
- General merchandise stores
- Electronics stores
- Health and personal care stores

The high level of retail leakage indicates that residents leave the trade area for many types of purchases. This indicates that there may be opportunities for the industries with leakage to recapture some consumer demand. However, this does not necessarily indicate that new businesses would succeed in Haddam. The Business Potential analysis following the Retail Gap analysis provides further insight into opportunities for and feasibility of investments in different retail sectors.

[2] Note that existing retail sales are specific to the defined trade area whereas retail spending is an estimate of gross spending by residents living in the trade area regardless of where the retail spending occurs and could include internet sales.

Retail Gap, Haddam Trade Area						
NAICS	Industry Group	Demand (Retail Potential)	Supply (Retail Sales)	Retail Gap	Leakage/ Surplus Factor	Number of Businesses
441	Motor Vehicle & Parts Dealers	$ 76,136,855	$ 2,111,369	$ 74,025,486	94.6	3
4411	Automobile Dealers	$ 63,729,668	$ 1,613,948	$ 62,115,720	95.1	2
4412	Other Motor Vehicle Dealers	$ 8,352,223	$ 497,421	$ 7,854,802	88.8	1
4413	Auto Parts, Accessories & Tire Stores	$ 4,054,964	$ -	$ 4,054,964	100.0	0
442	Furniture & Home Furnishings Stores	$ 11,304,707	$ 4,996,472	$ 6,308,235	38.7	6
4421	Furniture Stores	$ 6,291,434	$ 4,427,365	$ 1,864,069	17.4	4
4422	Home Furnishings Stores	$ 5,013,273	$ 569,106	$ 4,444,167	79.6	2
443	Electronics & Appliance Stores	$ 20,630,361	$ 676,996	$ 19,953,365	93.6	2
444	Bldg Materials, Garden Equip. & Supply Stores	$ 16,030,791	$ 12,867,799	$ 3,162,992	10.9	10
4441	Bldg Material & Supplies Dealers	$ 13,592,867	$ 10,145,682	$ 3,447,185	14.5	8
4442	Lawn & Garden Equip & Supply Stores	$ 2,437,925	$ 2,722,117	$ (284,192)	-5.5	3
445	Food & Beverage Stores	$ 66,634,149	$ 15,051,673	$ 51,582,476	63.1	12
4451	Grocery Stores	$ 56,109,411	$ 7,724,539	$ 48,384,872	75.8	4
4452	Specialty Food Stores	$ 4,456,194	$ 1,057,480	$ 3,398,714	61.6	2
4453	Beer, Wine & Liquor Stores	$ 6,068,544	$ 6,269,653	$ (201,109)	-1.6	7
446,4461	Health & Personal Care Stores	$ 24,856,810	$ 9,457,177	$ 15,399,633	44.9	2
447,4471	Gasoline Stations	$ 19,262,714	$ 13,352,243	$ 5,910,471	18.1	6
448	Clothing & Clothing Accessories Stores	$ 21,734,997	$ 1,554,399	$ 20,180,598	86.7	5
4481	Clothing Stores	$ 15,447,739	$ 814,617	$ 14,633,122	90.0	3
4482	Shoe Stores	$ 2,381,000	$ -	$ 2,381,000	100.0	0
4483	Jewelry, Luggage & Leather Goods Stores	$ 3,906,258	$ 739,781	$ 3,166,477	68.2	2
451	Sporting Goods, Hobby, Book & Music Stores	$ 9,749,582	$ 611,152	$ 9,138,430	88.2	2
4511	Sporting Goods/Hobby/Musical Instr Stores	$ 8,508,735	$ 611,152	$ 7,897,583	86.6	2
4512	Book, Periodical & Music Stores	$ 1,240,847	$ -	$ 1,240,847	100.0	0
452	General Merchandise Stores	$ 48,252,852	$ 1,302,649	$ 46,950,203	94.7	4
4521	Department Stores Excluding Leased Depts.	$ 35,663,933	$ -	$ 35,663,933	100.0	0
4529	Other General Merchandise Stores	$ 12,588,919	$ 1,302,649	$ 11,286,270	81.2	4
453	Miscellaneous Store Retailers	$ 14,974,354	$ 2,616,233	$ 12,358,121	70.3	16
4531	Florists	$ 904,600	$ 241,338	$ 663,262	57.9	2
4532	Office Supplies, Stationery & Gift Stores	$ 3,900,698	$ 340,084	$ 3,560,614	84.0	3
4533	Used Merchandise Stores	$ 829,029	$ 607,877	$ 221,152	15.4	7
4539	Other Miscellaneous Store Retailers	$ 9,340,027	$ 1,426,933	$ 7,913,094	73.5	5
454	Nonstore Retailers	$ 7,517,607	$ 2,045,988	$ 5,471,619	57.2	1
4541	Electronic Shopping & Mail-Order Houses	$ 4,542,958	$ 2,045,988	$ 2,496,970	37.9	1
4542	Vending Machine Operators	$ 267,443	$ -	$ 267,443	100.0	0
4543	Direct Selling Establishments	$ 2,707,206	$ -	$ 2,707,206	100.0	0
722	Food Services & Drinking Places	$ 34,115,937	$ 13,277,399	$ 20,838,538	44.0	35
7221	Full-Service Restaurants	$ 18,910,192	$ 9,082,246	$ 9,827,946	35.1	21
7222	Limited-Service Eating Places	$ 13,287,962	$ 2,694,245	$ 10,593,717	66.3	10
7223	Special Food Services	$ 1,496,401	$ 1,125,049	$ 371,352	14.2	3
7224	Drinking Places - Alcoholic Beverages	$ 421,382	$ 375,859	$ 45,523	5.7	2

Data Note: Supply (retail sales) estimates sales to consumers by establishments. Sales to businesses are excluded. Demand (retail potential) estimates the expected amount spent by consumers at retail establishments. Supply and demand estimates are in current dollars. The Leakage/Surplus Factor presents a snapshot of retail opportunity. This is a measure of the relationship between supply and demand that ranges from +100 (total leakage) to -100 (total surplus). A positive value represents 'leakage' of retail opportunity outside the trade area. A negative value represents a surplus of retail sales, a market where customers are drawn in from outside the trade area. The Retail Gap represents the difference between Retail Potential and Retail Sales. Esri uses the North American Industry Classification System (NAICS) to classify businesses by their primary type of economic activity. Retail establishments are classified into 27 industry groups in the Retail Trade sector, as well as four industry groups within the Food Services & Drinking Establishments subsector

Source: Esri

Retail Potential Analysis

In the following table, we compare the retail spending gap in the Haddam trade area within the retail categories that have sales leakage to the average sales of similar businesses in Connecticut. This allows us to identify which of the industries with sales leakage may have enough unmet demand to warrant opening a new store or expanding existing stores.

The table below identifies the number of new businesses that, theoretically, could be supported in the trade area, assuming:

1. 25% of the sales leakage is recaptured (this is typical among various retail categories), and
2. New businesses have sales comparable to the average sales of all Connecticut businesses in the same retail category.

New Retail Business Potential					
A	B	C	D	E	F
NAICS	Industry Group	Retail Gap	25% Leakage Recapture (C × 25%)	Average Sales per Business (CT)	Potential New Businesses (D / E)
7221	Full-Service Restaurants	$ 9,827,946	$ 2,456,987	$ 502,532	4.9
7222	Limited-Service Eating Places	$ 10,593,717	$ 2,648,429	$ 692,075	3.8
4481	Clothing Stores	$ 14,633,122	$ 3,658,281	$ 1,114,487	3.3
443	Electronics & Appliance Stores	$ 19,953,365	$ 4,988,341	$ 1,763,768	2.8
4539	Other Miscellaneous Store Retailers	$ 7,913,094	$ 1,978,274	$ 868,377	2.3
4451	Grocery Stores	$ 48,384,872	$ 12,096,218	$ 5,934,025	2.0
4511	Sporting Goods/Hobby/Musical Instr Stores	$ 7,897,583	$ 1,974,396	$ 1,048,862	1.9
4461	Health & Personal Care Stores	$ 15,399,633	$ 3,849,908	$ 2,147,837	1.8
4411	Automobile Dealers	$ 62,115,720	$ 15,528,930	$ 10,135,854	1.5
4532	Office Supplies, Stationery & Gift Stores	$ 3,560,614	$ 890,154	$ 623,728	1.4
452	General Merchandise Stores	$ 46,950,203	$ 11,737,551	$ 9,214,791	1.3
4413	Auto Parts, Accessories & Tire Stores	$ 4,054,964	$ 1,013,741	$ 859,251	1.2
4422	Home Furnishings Stores	$ 4,444,167	$ 1,111,042	$ 1,036,568	1.1

Note: Table includes retail categories in which at least one new business could be supported

Source: Esri, Camoin Associates

The retail categories with the greatest opportunity include:

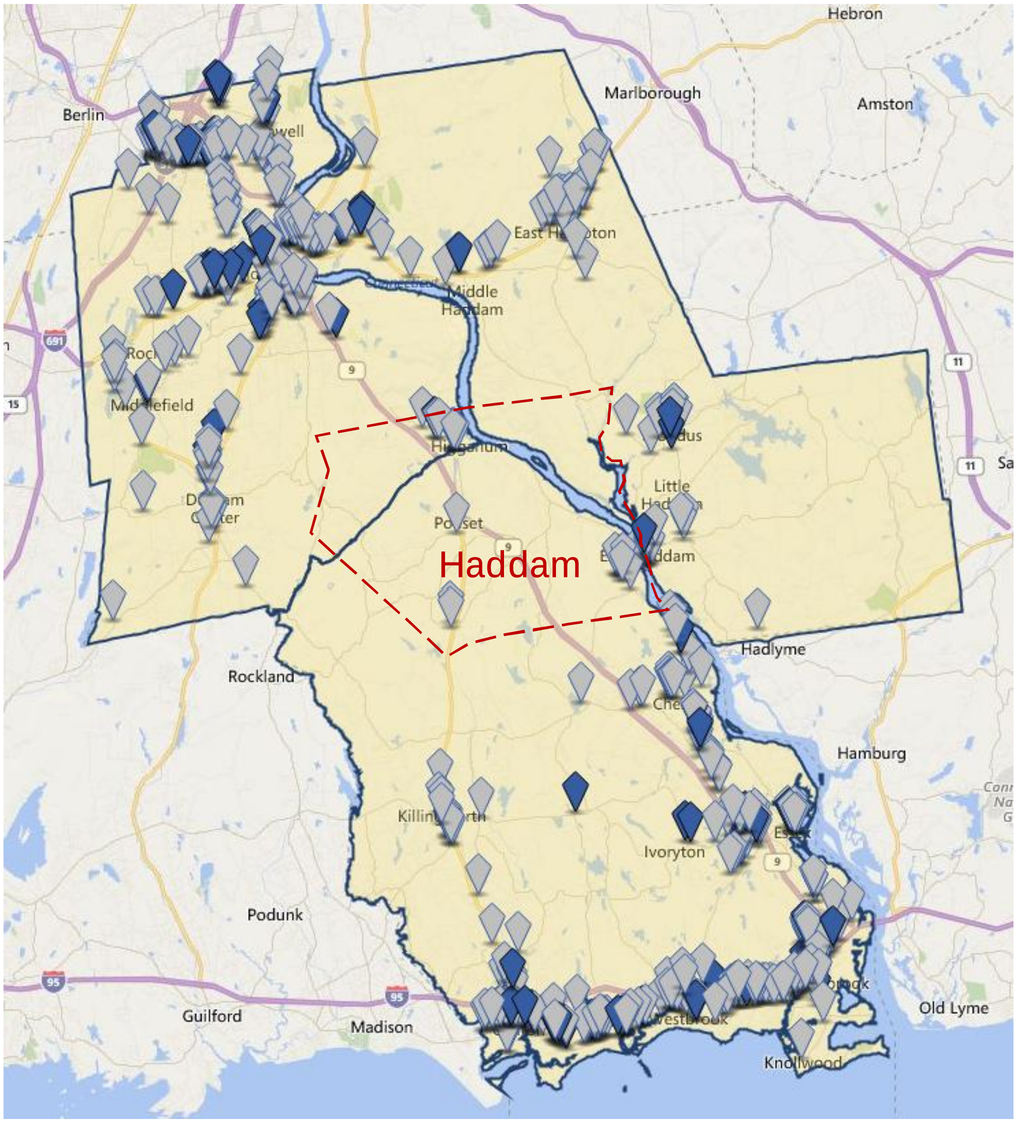
- Full and limited service restaurants
- Clothing stores
- Electronics and appliance stores
- Other miscellaneous store retailers[3]
- Grocery stores

[3] Includes all retail stores not captured in other categories. Examples include pet stores, tobacco stores, artist supply stores, and stores selling other specialized lines of merchandise.

Retail Space

Retail space in Middlesex County tends to be clustered in two major areas: Middletown/Cromwell in the northwest, and along Route 1 through the county's coastal towns of Old Saybrook, Westbrook, and Clinton. There are secondary retail clusters along Route 154 between Essex and Chester. The map below shows the existing retail inventory within the county. Dark blue place-markers indicate currently available space.

Retail Inventory, Middlesex County



Source: CoStar

In Middlesex County, rental rates for currently available retail space average about $12 per SF, triple net (NNN).[4] Vacancy rates are at 4.9%, which is lower than the 6.6% five-year average. There is currently 460,000+ SF of vacant retail space on the market, and absorption has been positive over the last 12 months. About 18,000 SF of new retail space has been delivered over the last twelve months, with no new space under construction. This points to a slowdown in construction activity relative to the last year, during which over 50,000 SF was added to the market.

Overall, Middlesex County is a small but healthy retail market.

Retail Market, Middlesex County

Availability	Survey	5-Year Avg
NNN Rent Per SF	$12.23	$12.09
Vacancy Rate	4.9%	6.6%
Vacant SF	462,581	619,875
Availability Rate	7.4%	8.1%
Available SF	698,181	771,291
Sublet SF	0	4,784
Months on Market	24.7	17.8

Demand	Survey	5-Year Avg
12 Mo. Absorption SF	63,059	63,238
12 Mo. Leasing SF	114,894	128,802

Inventory	Survey	5-Year Avg
Existing Buildings	1,036	1,028
Existing SF	9,490,530	9,441,851
12 Mo. Const. Starts	0	48,464
Under Construction	0	32,052
12 Mo. Deliveries	17,857	53,848

Sales	Past Year	5-Year Avg
Sale Price Per SF	$122	$107
Asking Price Per SF	$141	$119
Sales Volume (Mil.)	$28	$19
Cap Rate	-	8.1%

Source: CoStar

[4] In a triple net (NNN) lease, the tenant is responsible for real estate taxes, insurance, and common area maintenance.

Haddam is positioned in the central part of Middlesex County, an area with limited retail inventory away from heavily-trafficked retail corridors, and generally small retail footprints. Haddam accounts for 2% of the county's retail square footage. There is currently a relatively high level of vacancy in the town, with 13,715 SF of vacant space, compared to a five-year average of 5,500 SF. While over the past five years the town's retail vacancy rate has been less than that of the county overall (3.0% vs 6.6%), Haddam's current vacancy rate of 7.1% is above the county's 4.9%. Over the last 12 months, 6,300 SF of space has been added to the market, contributing to negative absorption of -1,915 SF. Asking rents for currently available space are high compared to the county and also relative to the town's five-year average. Average asking rents are $16.16 per SF NNN, well above the county's $12 average.

Because the retail market in Haddam is very small, it is difficult to draw conclusions about potential new demand since single properties can substantially skew the overall picture of the market. Given the opportunities identified in the retail gap analysis, Haddam seems well-aligned to fill additional retail space provided it is offered at regionally competitive price points.

Retail Market, Haddam

Availability	Survey	5-Year Avg
NNN Rent Per SF	$16.16	$12.89
Vacancy Rate	7.1%	3.0%
Vacant SF	13,715	5,501
Availability Rate	7.1%	4.2%
Available SF	13,715	7,806
Sublet SF	0	0
Months on Market	6.4	8.9

Demand	Survey	5-Year Avg
12 Mo. Absorption SF	-1,915	-1,083
12 Mo. Leasing SF	0	840

Inventory	Survey	5-Year Avg
Existing Buildings	38	37
Existing SF	192,199	186,214
12 Mo. Const. Starts	0	5,040
Under Construction	0	5,040
12 Mo. Deliveries	6,300	6,300

Sales	Past Year	5-Year Avg
Sale Price Per SF	$55	$38
Asking Price Per SF	$108	$108
Sales Volume (Mil.)	$0.3	$0.1
Cap Rate	-	-

Source: CoStar

Office Market

The office space market analysis provides an overview of recent trends and projections within regional office-utilizing industries to identify potential opportunities for office space development in Haddam. Middlesex County was used as the primary geography for data collection in the office market analysis.

Office-Utilizing Industry Growth

The demand for future office space in the county is largely a product of industry growth as measured by jobs. Job growth in industries that typically require office space drives demand that is generally proportional to the number of employees. That is, as the number of jobs increases (or decreases) in office-utilizing industries, demand for office space will respond proportionally.

The tables below show projected 10-year job growth by 2-digit NAICS industries that utilize office space in Middlesex County. Between 2016 and 2026, Middlesex County is expected to show a net gain of approximately 1,200 office jobs. Under a conservative assumption that each new worker will require 175 rentable square feet (RSF) of office space, new demand for space in the county will reach just over 213,000 RSF.

Projected Growth in Office-Utilizing Industries, Middlesex County					
NAICS	Description	2016 Jobs	2026 Jobs	2016 - 2026 Change	2016 - 2026 % Change
11	Crop and Animal Production	447	406	(41)	-9%
21	Mining, Quarrying, and Oil and Gas Extraction	<10	<10	Insf. Data	Insf. Data
22	Utilities	306	282	(24)	-8%
23	Construction	3,436	4,550	1,114	32%
31	Manufacturing	9,415	8,624	(791)	-8%
42	Wholesale Trade	2,251	2,423	172	8%
44	Retail Trade	8,706	9,400	694	8%
48	Transportation and Warehousing	1,502	1,789	287	19%
51	Information	510	289	(221)	-43%
52	Finance and Insurance	1,643	1,509	(134)	-8%
53	Real Estate and Rental and Leasing	491	543	52	11%
54	Professional, Scientific, and Technical Services	2,671	3,099	428	16%
55	Management of Companies and Enterprises	602	778	176	29%
56	Admin/Support & Waste Mgmt/Remediation Svcs	2,962	3,457	495	17%
61	Educational Services	3,792	4,230	438	12%
62	Health Care and Social Assistance	12,255	14,802	2,547	21%
71	Arts, Entertainment, and Recreation	1,260	1,327	67	5%
72	Accommodation and Food Services	6,376	6,866	490	8%
81	Other Services (except Public Administration)	3,141	3,616	475	15%
90	Government	10,745	11,163	418	4%
99	Unclassified Industry	17	25	8	47%
	Total, All Industries	72,535	79,183	6,648	9%
	Total, Office-Utilizing Industries	11,530	12,748	1,218	11%

Source: EMSI QCEW + Non-QCEW Employees, 2016.2. Self-employed excluded.

Medical Office Buildings (MOB)

Aside from traditional office space, Medical Office Buildings (MOBs) are another classification of commercial space that may be an opportunity for Haddam.

According to Colliers International's 2015 Medical Office Outlook, nationally, medical office vacancy rates are at their lowest level since the 2008 recession, and are continuing on a downward trend, as there continues to be strong tenant demand but slowed construction activity.[5] While the full ramifications of the Affordable Care Act cannot yet be evaluated fully, the expected increase in patients has driven demand for healthcare real estate. Additionally, the aging population will continue to tax the healthcare system and force hospitals and their affiliates to expand their square footage if they are to keep up with the demand from the population. Colliers also reports that the healthcare sector was one of the few that managed to add jobs throughout the recession. As well, the Outpatient Care Centers subsector has expanded 4% to 6% for the last three years. This confirms the trend in lower-cost outpatient facilities closer to the target consumer base.

During the recession, MOBs were more stable than suburban or CBD office space, due in part to relatively long-term leases of 7 to 10 years. Colliers International, as well as other real estate developers, note that medical office buildings are becoming more common as investment properties.

Other significant trends in the field of MOBs include: the necessity for flexibility space and multi-specialty offices, which has resulted in the overall increasing size of MOBs. Due to technology advances and the growing amount of technological equipment being used in procedures and follow-ups, space must allow for the technology to be used efficiently. Flexible space opens the possibility for adaptability when technology changes or the needs of the patient change.

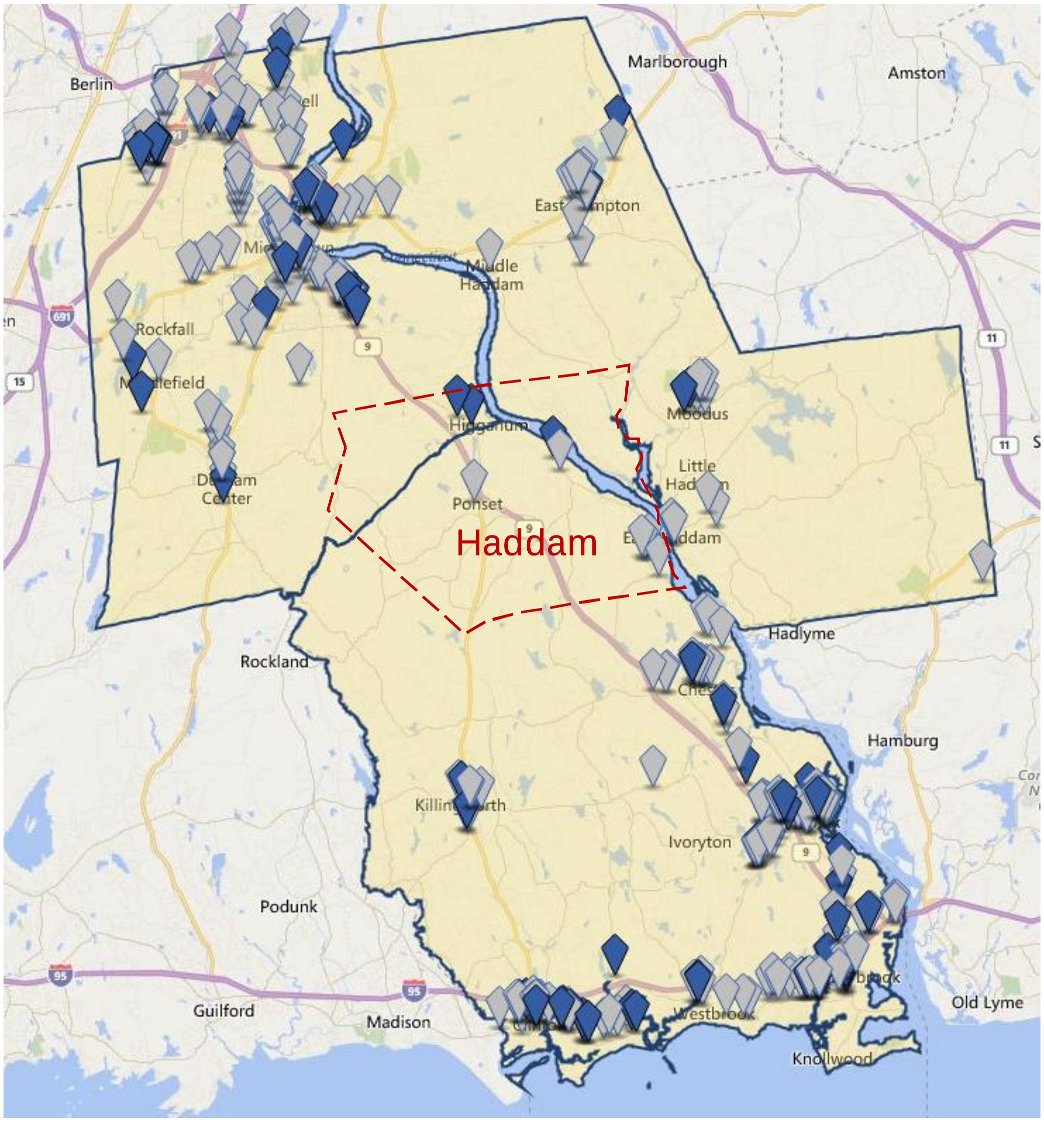
To estimate the future demand for MOBs in Middlesex County, we examined employment projections for ambulatory care or outpatient care services within Middlesex County. Employment in this sector is projected to grow by 1,048 positions over the next 10 years. Assuming an average of 175 RSF per employee, this amounts to 183,400 SF of medical office space needed. Haddam has the opportunity to capture a portion of this projected new demand.

[5] Colliers International, Medical office Highlights, 2015 Outlook, 2015, http://www.colliers.com/-/media/files/marketresearch/unitedstates/2015-market-reports/1HMedicalOffice_d10_FINAL.pdf

Office Space

The location of office space within Middlesex County follows a pattern similar to retail, the Middletown/Cromwell area and coastal area being the primary office clusters. The map below shows the existing office inventory within the county. Dark blue place-markers indicate currently available space.

Office Inventory, Middlesex County



Source: CoStar

In Middlesex County, rental rates for currently available retail space average about $19 per SF, gross.[6] Vacancy rates are at 7.3%, which is lower than the 11.2% five-year average. There is currently 250,000+ SF of vacant office space on the market, and absorption has been positive over the last 12 months. About 12,000 SF of new office space has been delivered over the last 12 months, with no new space under construction. This points to a slowdown in construction activity relative to the last year, during which over 28,000 SF was added to the market.

Office Market, Middlesex County

Availability	Survey	5-Year Avg
Gross Rent Per SF	$19.18	$18.08
Vacancy Rate	7.3%	11.2%
Vacant SF	253,668	386,327
Availability Rate	9.0%	13.6%
Available SF	312,071	470,655
Sublet SF	7,085	16,152
Months on Market	21.1	17.2

Demand	Survey	5-Year Avg
12 Mo. Absorption SF	61,075	34,859
12 Mo. Leasing SF	109,279	94,532

Inventory	Survey	5-Year Avg
Existing Buildings	404	401
Existing SF	3,465,448	3,439,041
12 Mo. Const. Starts	11,976	8,719
Under Construction	0	10,479
12 Mo. Deliveries	11,976	28,913

Sales	Past Year	5-Year Avg
Sale Price Per SF	$79	$84
Asking Price Per SF	$86	$90
Sales Volume (Mil.)	$22	$16
Cap Rate	10.2%	9.8%

[6] Gross rents typically include "nets" (real estate taxes, insurance, common area maintenance) as well as normal building standard services which are provided and paid by the landlord. Such services may include utilities and janitorial services.

Only 1.3% of the county's office inventory is located in Haddam, given its location away from the county's larger population centers. The vacancy rate in the town is substantially lower than it has been over the last five years: 6.4% vs. a 19.4% five-year average. This is partially due to the removal of some inventory from the market. The high availability rate of 33%, however, suggests that vacancies may rise if currently occupied space being marketed as available cannot be filled. Moreover, absorption has been negative at -3,010 SF over the last 12 months.

While data for the county as a whole suggests a healthy office market, it is unlikely that significant demand will exist within Haddam given the town's relative isolation.

Office Market, Haddam

Availability	Survey	5-Year Avg
Gross Rent Per SF	$18.72	$13.92
Vacancy Rate	6.4%	19.4%
Vacant SF	3,010	10,445
Availability Rate	33.2%	23.0%
Available SF	15,510	12,402
Sublet SF	0	0
Months on Market	5.2	31.9

Demand	Survey	5-Year Avg
12 Mo. Absorption SF	-3,010	10
12 Mo. Leasing SF	0	1,540

Inventory	Survey	5-Year Avg
Existing Buildings	9	10
Existing SF	46,697	53,932
12 Mo. Const. Starts	0	0
Under Construction	0	0
12 Mo. Deliveries	0	0

Sales	Past Year	5-Year Avg
Sale Price Per SF	-	$51
Asking Price Per SF	$95	$85
Sales Volume (Mil.)	-	$0.4
Cap Rate	-	-

Entrepreneurial & Small Business Growth

Between 2010 and 2015, the number of small business (2-9 employees) in Middlesex County grew by 5.6%, an increase of 360 businesses. This growth points to a potential need for places within the county for these small businesses to locate.

Business by Employment Stage, Middlesex County				
	2010	2015	Change	Pct. Change
Self-Employed	1,527	1,526	(1)	-0.1%
2-9 Employees	6,428	6,788	360	5.6%
10-99 Employees	1,457	1,458	1	0.1%
100-499 Employees	115	125	10	8.7%
500+ Employees	8	8	-	0.0%
Total	9,535	9,905	370	3.9%

Source: YourEconomy.org

There is a growing culture of entrepreneurship and startup businesses in the region with many talented entrepreneurs locally, especially in Tylerville. A strong support network is one of the most critical elements for fostering entrepreneurship in a community, and the fact that this is already largely present points to an opportunity to build Haddam as a community committed to helping new businesses succeed.

There are many different types of space that can foster and support an entrepreneurial community. This could range from simply providing very low cost space to new businesses that meet a pre-defined criteria or creating new non-traditional spaces such as shared office space, co-working space, maker-space, or design-create-sell space. Should the town want to explore this direction further, additional steps must be taken to fully understand the needs of the local and regional entrepreneur community. This can be done through formation or informal surveys, attending startup events, digital media engagement, or other methods of engaging small business owners.

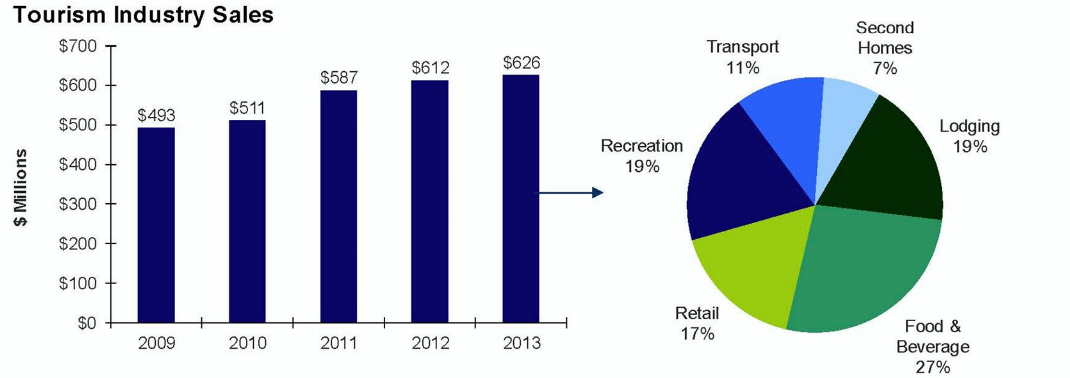
One type of space that might work well in the Haddam Jail property is a Makerspace. Makerspaces, sometimes referred to as hackerspaces or hacklabs, are typically community-operated workspaces where people with common interests can meet and collaborate on projects and entrepreneurial ventures. Makerspaces may focus on a particular interest area, such as computers, machining, technology, science, or art, or may be open to all interests.

Trends in Tourism

Tourism is an important sector of the Middlesex Country economy,[7] supporting between 5,000 and 7,000 jobs with total payroll of between $120-170 million. As is typical with visitation, tourism in the county is seasonal in nature with summer as the high season and winter as the low season. Below is a summary of tourism statistics for Middlesex County (Source: Tourism Economics, 2013) followed by narrative summary information on the regional and local market for tourism in terms of assets and draws.

Middlesex County

Tourism Industry Sales, (millions)								
Year	Lodging	Food & Beverage	Retail	Recreation	Transport	Second Homes	Total	Growth Rate
2013	$116.5	$167.2	$105.7	$120.8	$70.6	$44.9	$625.6	2.2%
2012	$114.3	$162.5	$102.4	$114.0	$72.6	$46.5	$612.2	4.3%
2011	$110.1	$154.6	$99.0	$109.6	$72.0	$41.5	$586.7	14.7%
2010	$100.1	$135.0	$86.8	$96.4	$63.4	$29.8	$511.5	3.8%
2009	$93.9	$125.3	$88.4	$97.9	$60.3	$26.8	$492.6	



Lodging

Most of the hotel accommodations found in the county are in Middletown and along the coast, as would naturally be the case given the disposition of Interstates 95 and 91.[8] Such hotel lodging is predominately in the mid-scale range (e.g. Quality Inn) with some upper-mid-scale (e.g. Courtyard) and economy options as well. In addition, the 2016 GrowSMART report on the County noted 303 vacation rental properties (290 of which are on the shore) and 17 AirBnB units.

In the local Haddam market, however, there are very few lodging options. We note only the Nehemiah Brainerd House B&B and one AirBNB listing for the town. Again, given the disposition of Interstates 95 and 91, this is not surprising as tourist and business travelers have strong preferences of immediate highway access. There are a few more lodging options directly across the river from the town in East Haddam.

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[7] Source: GrowSMART.

[8] Cromwell, adjacent to Middletown, is home to a number of hotels including the Radisson, Courtyard by Marriott, Super 8 and others. It also has a solid commercial sector with a few noteworthy dining establishments

Attractions

Regionally, the casinos in farther east in Connecticut draw large numbers of people, but that target market does not seem to correspond to the tourists drawn to Haddam itself. Within the county, attractions include:[9]

[9] Sources: ConQuest and GrowSMART

- Beaches
- Premium Outlets
- Durham Fair
- Gillette Castle
- Goodspeed Opera House
- Golf courses
- Essex Steam Train and Riverboat
- Museums
- Wineries/vineyards
- Powder Ridge
- Various restaurants
- Brownstone Exploration Discovery Park

In addition to Goodspeed Opera House, other venues in the area include Ivoryton Playhouse, Oddfellows Playhouse, and the Norma Terris Theatre, as well as movie theaters and other sites. Museums include the Connecticut River Museum, the Kidcity Museum, the military museum, etc. The Essex Stream Train and Riverboat also have season-specific special events such as the Polar Express around Christmas as well as dinner cruises on a more year-round basis. With respect to the town itself, attractions include:

- Cockaponset State Forest
- Haddam Meadows State Park
- Access to the Connecticut River, including tour boat
- Andrews Marina,
- Midway Maria
- Riverhouse at Goodspeed Station

Of course, there are other attractions to the town, such as the various historic buildings, etc. Interviewees noted that visitors to the town are most often attracted by Gillette Castle, Essex Steam Train and Riverboat, Goodspeed Opera House, the Fox Hopyard golf course and various retail options in the area.

Food and Beverage

As with lodging, the preponderance of dining establishments in the county appears to be located in Middletown and along the shore. Establishments run the gamut of high-end/mid-scale, family friendly, limited/full service, bars, takeout, ethnic, etc.

Within the Town, there are a number of limited-service eating and drinking places (delis, coffee shops, fast food, etc.). The only full service restaurant in the Town we noted was The Blue Oar, with others located in East Haddam (Gelston House, La Vita, Town Tavern), Essex, and Chester.

Visitor Profiles[10]

A significant portion of tourism in Middlesex County appears to be driven by a relatively “local” base of consumers, namely regional residents living within a 2-hour drive time of the county. A typical visitor is a couple looking for a weekend away from the city (e.g. New York) and who want to enjoy low-impact outdoor activities such as golf and sailing, and are attracted to the historic and cultural assets of the Haddam area.

However, there are other target markets of tourists extending across the Northeast in general. They come to the area for a multi-day trip and may go to Gillette Castle, take a dinner cruise along the river and visit the shoreline. They are most likely to stay in a hotel along the coast and may enjoy a show at the Opera House.

[10] For this and other sections, source: Interview with Jeff Puglisi, Middlesex County Chamber.

Local Conditions Affecting Market Conditions

During the stakeholder interviews and discussions with the Buildings Committee, several characteristics were identified that affect Haddam's real estate market and could influence redevelopment potential of the Jail property.

Mill Rate

Of the 15 municipalities in Middlesex County, Haddam had the sixth highest equalized mill rate in fiscal year 2014.[11] Municipalities closer to the shore generally have lower mill rates. In interviews, the towns of Essex and Chester were called out specifically as being more desirable for development because of their more competitive mill rates. Haddam's FY14 equalized rate of 22.14 is 34% higher than that of neighboring Chester and 55% higher than that of Essex. While the assessed value of a property is likely to be higher in Chester or Essex relative to a comparable property in Haddam, somewhat neutralizing the benefits of a lower mill rate, developers have noted Haddam's mill rate as a factor that discourages development.

Middlesex County Municipalities, Ranked by Equalized Mill Rate FY2014

Rank	Municipality	Equalized Mill Rate FY 2014	Actual Mill Rate FY 2014	Actual Mill Rate FY 2017
1	Middletown*	28.11	33.80	41.20
2	Middlefield	24.68	33.24	32.84
3	Durham	23.87	32.66	35.31
4	Cromwell*	23.04	27.70	33.30
5	Portland	22.24	31.28	32.51
6	Haddam	22.14	29.48	31.20
7	East Hampton	19.40	26.63	29.44
8	Deep River	18.21	25.08	27.53
9	East Haddam	18.21	26.01	29.35
10	Killingworth	18.04	24.53	25.89
11	Clinton	17.80	25.43	27.14
12	Chester	16.48	21.95	25.57
13	Westbrook	14.59	20.98	23.14
14	Essex	14.27	18.99	21.58
15	Old Saybrook	12.63	15.20	19.26

*Adjusted to include Fire District

Note: The Equalized Mill Rate, or Effective Tax Rate, is calculated by dividing the adjusted tax levy, as presented in the municipality's Tax Collector's Report, by the Equalized Net Grand List. The Equalized Net Grand List is the estimate of the market value of all taxable property in the municipality. Municipalities historically revalue their grand lists every 10 years; thus, there can be a marked difference between the market value of all property and the assessed value.

Source: CT Office of Policy and Management, Camoin Associates

[11] Source: CT Office of Policy and Budget. Most recent data year for equalized mill rate is FY2014.
The Equalized Mill Rate, or Effective Tax Rate, is calculated by dividing the adjusted tax levy, as presented in the municipality's Tax Collector's Report, by the Equalized Net Grand List. The Equalized Net Grand List is the estimate of the market value of all taxable property in the municipality. Municipalities historically revalue their grand lists every 10 years; thus, there can be a marked difference between the market value of all property and the assessed value.

Telecommunications Infrastructure

Poor cell phone reception, wireless data access, and slow overall broadband speeds are significant impediments to business growth as well as attraction and retention of new residents in Haddam. The Town is actively weighing different “last-mile” telecommunication infrastructure options to address this issue and hopes to have significant improvements in place by Spring 2017.

Business-Friendly Reputation

During the one-on-one interviews with local business owners and real estate developers, we heard over and over how easy the Town staff is to work with compared to other nearby municipalities, particularly the Planning Department. Being seen as business-friendly by the development and business community is a critical advantage for Haddam. Offering a well-coordinated review process that quickly shepherds projects through, removes layers of uncertainty, and can save the private sector money.

“Multiple Haddams”

Interviews with stakeholders revealed a perception of “multiple Haddams” and a lack of unifying identity among the disparate parts of the town. Tylerville and Higganum are the two main competing areas of town, though other areas such as Haddam Center and Shailerville were identified as contributing to this lack of cohesion. Residents and businesses within the various parts of Haddam tend to only want to support—fiscally and otherwise—their own section of town with little sense of duty and obligation to the town as a whole. There is a lack of understanding around the need to work collectively toward common town interests.

Natural Assets

Haddam is situated along the banks of the Connecticut River, a critical natural asset that drives much of the tourism and visitation within the region. Eagle Landing State Park, Andrews Marina, and the East Haddam Swing Bridge are points of interest where visitors can enjoy the scenic river.

Appendix A. Data Sources

Camoin Associates derived the data for this analysis from several different sources. Proprietary data providers such as EMSI, described below, pull raw data from local, state, and national government data sources as well as private and non-profit research organizations. Individual data providers apply adjustments and corrections to the data based on proprietary models, which can sometimes cause discrepancies when comparing data points from different sources.

Brief summaries of the proprietary and public data sources used in this analysis are provided below along with links to where additional information can be found.

Public Data Sources

American Community Survey (ACS)

The American Community Survey (ACS) is a yearly survey that asks about: age, sex, race, family and relationships, income and benefits, health insurance, education, veteran status, disabilities, where you work and how you get there, and where you live and how much you pay for some essential items. The survey is mandatory to fill out, but the survey is only sent to a small percentage of the population on a rotating basis. The survey is crucial to major planning decisions, like vital services and infrastructure investments, made by municipalities and cities. The questions on the ACS are different than those asked on the decennial census, and help to create yearly snapshots of the nation as a whole, as well as our smaller communities.

Bureau of Labor Statistics (BLS)

The BLS collects data on monthly unemployment figures using the Current Population Survey (CPS). The survey reaches approximately 110,000 individuals, or 60,000 households, each month. The sample is chosen to represent the United States population as a whole, which means about 800 geographic areas are chosen to represent each state and the District of Colombia. The sample includes urban and rural areas, industrial and farming lands, and major geographic divisions of each state. The live interview survey is conducted by a Census Bureau employee every month. The respondent's answers are input into a computer where individuals are then classified as employed, unemployed, or not in the labor force. Additional information can be found at: http://www.bls.gov/cps/cps_htgm.pdf

U.S. Census On-the-Map

OnTheMap helps to visualize US Census and Local Employment Dynamics (LED) data about where workers are employed and where they live. There are also visual mapping capabilities for data on age, earnings, industry distributions, race, ethnicity, educational attainment, and sex.

U.S. Census Bureau – Business Establishments

The U.S. Census Bureau maintains NAICS codes, which are the standard used by Federal statistical agencies in classifying business establishments. 2-digit codes are the highest aggregate NAICS code level and represent broad categories such as "retail", whereas 4-digit industry codes present a finer level of detail such as "grocery stores". For those interested in understanding the composition of the NAICS and for more detail about what is included in each industry, the reader is directed to http://www.census.gov/eos/www/naics/.

Proprietary Data Sources

Economic Modeling Specialists International (EMSI)

To analyze the industrial makeup of a study area, industry data organized by the North American Industrial Classification System (NAICS) is assessed. Camoin Associates subscribes to Economic Modeling Specialists Intl. (EMSI), a proprietary data provider that aggregates economic data from approximately 90 sources. EMSI industry data, in our experience, is more complete than most or perhaps all local data sources (for more information on

EMSI, please see www.economicmodeling.com). This is because local data sources typically miss significant employment counts by industry because data on sole proprietorships and contractual employment (i.e. 1099 contractor positions) is not included and because certain employment counts are suppressed from BLS/BEA figures for confidentiality reasons when too few establishments exist within a single NAICS code.

Environmental Systems Research Institute, Business Analyst Online (Esri BAO)

ESRI is the leading provider of location-driven market insights. It combines demographic, lifestyle, and spending data with map-based analytics to provide market intelligence for strategic decision-making. ESRI uses proprietary statistical models and data from the U.S. Census Bureau, the U.S. Postal Service, and various other sources to present current conditions and project future trends. Esri data are used by developers to maximize their portfolio, retailers to understand growth opportunities, and by economic developers to attract business that fit their community. For more information, visit www.esri.com.

CoStar Group, Inc.

CoStar is the leading source of commercial real estate intelligence in the U.S. It provides a full market inventory of properties and spaces—available as well as fully leased—by market and submarket. Details on vacancy, absorption, lease rates, inventory, and other real estate market data are provided, as well as property-specific information including photos and floor plans. CoStar covers office, retail, industrial, and multifamily markets. CoStar data is researched and verified by the industry's largest professional research team. With 1,200 researchers and 130 field research vehicles, CoStar's team makes calls to property managers; reviews court filings, tax assessor records and deeds; visits construction sites; and scans the web to uncover nearly real-time market changes. More at: www.costar.com.

Appendix B. Esri Tapestry Segments

Note that the number is parentheses following each tapestry segment is the percent of households in the Haddam retail trade area that fall into that segment. Demographic information for each segment is reflective of the U.S. as a whole and is not specific to Haddam.

Savvy Suburbanites (33%)

- Average Household Size: 2.83
- Median Age: 44.1
- Median Household Income: $104,000

Savvy Suburbanites residents are well educated, well read, and well capitalized. Families include empty nesters and empty nester wannabes, who still have adult children at home. Located in older neighborhoods outside the urban core, their suburban lifestyle includes home remodeling and gardening plus the active pursuit of sports and exercise. They enjoy good food and wine, plus the amenities of the city's cultural events. Read more>>

Green Acres (20%)

- Average Household Size: 2.69
- Median Age: 43
- Median Household Income: $72,000

The Green Acres lifestyle features country living and self-reliance. They are avid do-it-yourselfers, maintaining and remodeling their homes, with all the necessary power tools to accomplish the jobs. Gardening, especially growing vegetables, is also a priority, again with the right tools, tillers, tractors, and riding mowers. Outdoor living also features a variety of sports: hunting and fishing, motorcycling, hiking and camping, and even golf. Self-described conservatives, residents of Green Acres remain pessimistic about the near future yet are heavily invested in it. Read more>>

In Style (18%)

- Average Household Size: 2.33
- Median Age: 41.1
- Median Household Income: $66,000

In Style denizens embrace an urbane lifestyle that includes support of the arts, travel, and extensive reading. They are connected and make full use of the advantages of mobile devices. Professional couples or single households without children, they have the time to focus on their homes and their interests. The population is slightly older and already planning for their retirement. Read more>>

Exurbanites (12%)

- Average Household Size: 2.48
- Median Age: 49.6
- Median Household Income: $98,000

Ten years later, Exurbanites residents are now approaching retirement but showing few signs of slowing down. They are active in their communities, generous in their donations, and seasoned travelers. They take advantage of their proximity to large metropolitan centers to support the arts, but prefer a more expansive home style in less crowded neighborhoods. They have cultivated a lifestyle that is both affluent and urbane. Read more>>

Comfortable Empty Nesters (11%)

- Average Household Size: 2.50
- Median Age: 46.8
- Median Household Income: $68,000

Residents in this large, growing segment are older, with more than half of all householders aged 55 or older; many still live in the suburbs where they grew up. Most are professionals working in government, health care, or manufacturing. These Baby Boomers are earning a comfortable living and benefitting from years of prudent investing and saving. Their net worth is well above average. Many are enjoying the transition from child rearing to retirement. They value their health and financial well-being. Read more>>

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Appendix H

Haddam Jail Revitalization & Reuse – Assessment Memo (Crosskey Architects, August 2016)

Haddam Jail Revitalization & Reuse Study

Buildings located at
945 Saybrook Road, Haddam, CT

INTRODUCTION

Scope of Work

Crosskey Architects, LLC was hired by the Fuss & O'Neil, Inc to review the existing buildings of the former Haddam Jail. These buildings include the former jailhouse and administrative building, the pump house, the corncrib, root cellars and adjacent barn. The former barn structure that was previously converted to town office space was not included within this study.

REUSE ASSESSMENT

The existing buildings and site offers great opportunities for being adapted and repurposed for other uses. The following is a listing off potential uses.

Winery

Connecticut has an extensive wine trail that stretches throughout the state. This site could be another stop on that trail. The fields could be converted to vineyards. The former jail building could house the production facility and the administrative wing could be uses as a tasting room and restaurant. The corncrib could be repurposed into an outdoor bar and band shell with an adjacent patio. The basement of the barn could house the restrooms for such, while the upper floor of the barn, the root cellar and the pump house could be repurposed as service buildings for the vineyard. To achieve this, the property could be sold to a private owner. If the town wants to retain ownership, they would need to create a lease agreement with the end user.

Brew House and Tap Room

Given the recent trend of locally crafted microbreweries, the jailhouse space would be a great candidate for such a use. The tall ceilings within the bullpen could house the vats required for the production process. The jail cells could be retained and converted either dining areas or production space. The original house could be used to house taprooms and a restaurant. The outbuildings could also be repurposed as described above. To achieve this, the property could be sold to a private owner. If the town wants to retain ownership, they would need to create a lease agreement with the end user.

Restaurant

The unique character of the existing jailhouse could create an interesting backdrop for a restaurant. The jailhouse vernacular could provide an ambiance like no other in the area. The opportunities afford by this could create a regional attraction. Such an attraction could help the local economy. The site and out buildings could be repurposed for outdoor dining in the summer months. To achieve this, the property could be sold to a private owner. If the town wants to retain ownership, they would need to create a lease agreement with the end user.

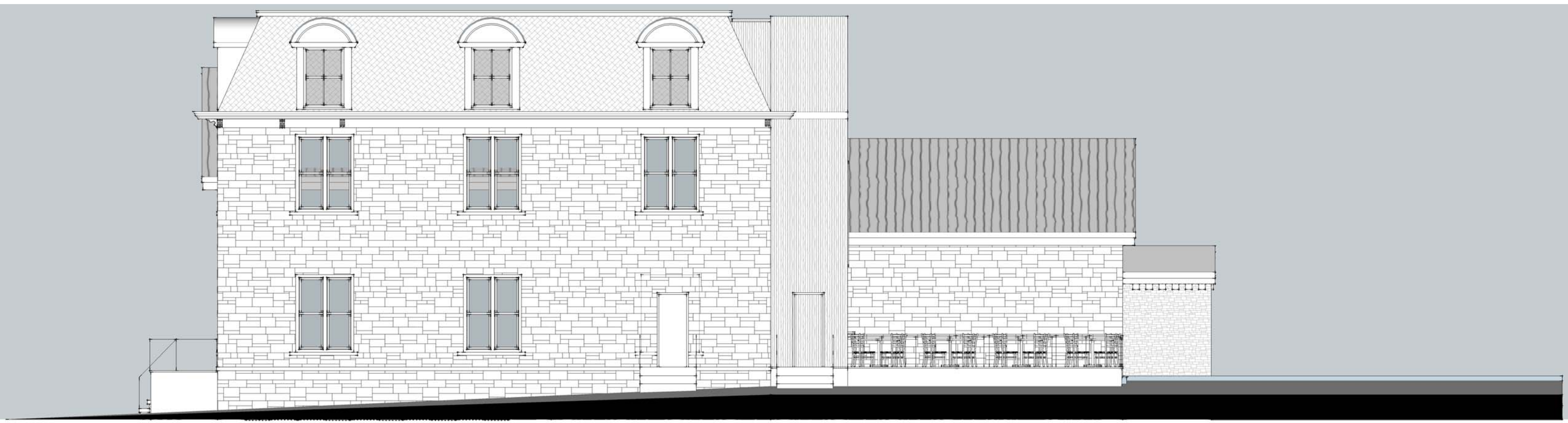
Museum of Local History/Farmer's Market

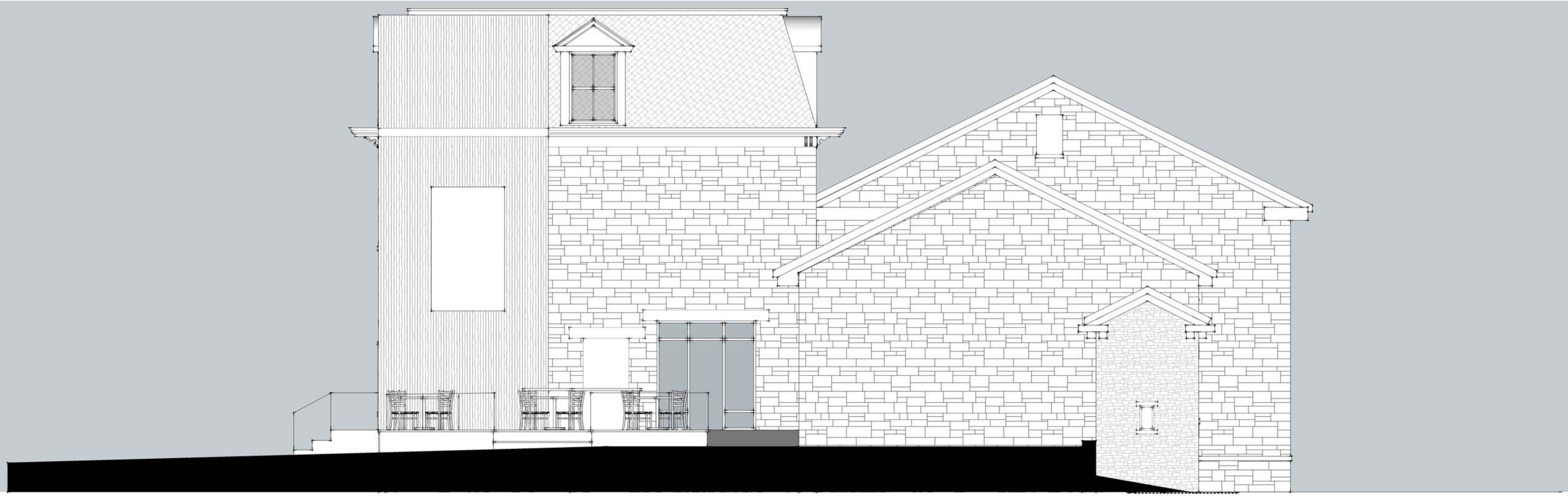
The existing jailhouse is a historic and unique building that has an interesting story to tell. The jailhouse could be fully restored into a museum. The jail cells would preserved. The adjacent house could be used either as additional museum space, office space for the Haddam Historical Society or town office space or a combination there of. The site and outbuildings could be repurposed to accommodate a local farmers market. This market could be a revenue producing use that could help to offset some of the operational costs of the museum. Around Halloween time, the jailhouse and site could become a seasonal attraction for buying pumpkins and corn stalks, a corn maze and the like. The jail could be a used as haunted house. Under this scenario, the town of Haddam would need to retain ownership and maintain the property. The town would need to approve of this. Depending on the towns by laws, such approval may require a referendum. If the town were not willing to take this on, a non-profit agency would need own and operate this facility.

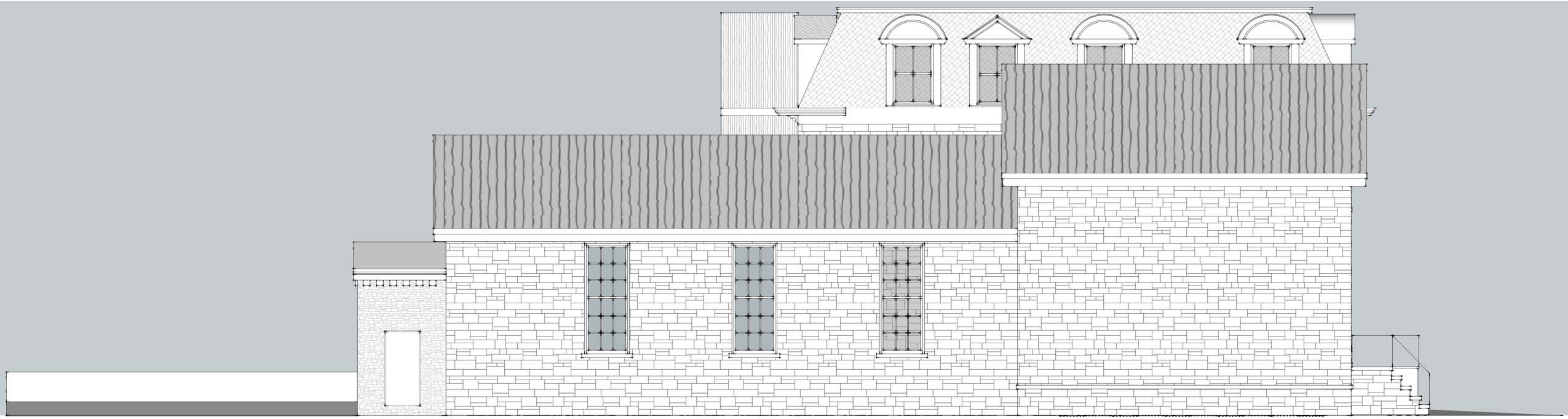
Professional Offices

The existing building could be converted to house private professional office space such as accountants, attorneys, health care facility, engineering offices, etc. Care must be taken with this scenario to preserve the character of the interior jailhouse. The reuse of outbuildings and remaining portions of the site would not factor well for this scenario. This option is the probably the least desirable with regard to reusing and retaining the character and feel of the existing jail and site. However, but it must be considered as it reaches a much larger market.

Appendix I
Haddam Jail Revitalization & Reuse – Exterior Building Model (Crosskey Architects, August 2017)







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