

Shanahan Consulting

36 PENFIELD PLACE, FARMINGTON, CONNECTICUT 06032
TELEPHONE: (860) 677-2674 FAX: (860) 677-4377

PHASE I
ENVIRONMENTAL SITE ASSESSMENT
OF
1 & 7 MAIN STREET
East Haddam, Connecticut

MARCH 2002

Prepared for:

Town of East Haddam
East Haddam, Connecticut

Prepared by:

Shanahan Consulting
Farmington, Connecticut
Document No. 0207R01.WPD

SIGNATURE OF ASSESSOR

This assessment was performed by the individual whose signature appears below. Questions regarding this report should be directed to this person.



Edward W. Shanahan
Senior Scientist

QUALIFICATIONS OF ASSESSOR

Edward W. Shanahan has over 20 years experience as an environmental consultant, including over 16 years focusing on site assessments and other subsurface contamination studies in Connecticut. Mr. Shanahan has evaluated environmental conditions on hundreds of properties, ranging from undeveloped lots to complex industrial facilities. For six years, he managed the completion of site assessments at Haley & Aldrich Inc. (1986-89) and Ground Water, Inc. (1989-92). In December 1992, he founded Shanahan Consulting, a firm specializing in site assessments and reviews of site assessments.

Mr. Shanahan received a Bachelor of Science degree with distinction in Civil & Environmental Engineering from Cornell University in 1973 and a Master of Science degree in Environmental Earth Sciences from Stanford University in 1974.

Mr. Shanahan is a Licensed Environmental Professional [LEP] in the State of Connecticut.

TABLE OF CONTENTS

	Page
I. SUMMARY	1
II. INTRODUCTION	2
A. Purpose	
B. Location	
C. Scope of Work	
D. Previous Studies	
III. DESCRIPTION OF SITE	5
A. Land and Buildings	
B. Abutting Properties	
C. Utilities	
D. Observations During Site Visit	
E. Geology	
F. Ground Water	
G. Surface Water	
IV. HISTORY OF SITE USE	11
A. Site Occupants	
B. Site Owners	
C. Review of Aerial Photographs	
V. USE OF OILS AND CHEMICALS AND WASTE DISPOSAL	14
A. Petroleum Storage Tanks	
B. Other Use of Oils and Chemicals	
C. Floor Drains and Septic Systems	
VI. REVIEW OF REGULATORY FILES	18
A. Review of Connecticut DEP Files	
B. Review of Environmental Databases	
C. Review of Municipal Records	
VII. POTENTIAL OFF-SITE ENVIRONMENTAL CONCERNS	22
VIII. CONCLUSIONS AND RECOMMENDATIONS	24
A. Likelihood of Subsurface Contamination On Site	
B. Other Issues	
C. Recommendations	
IX. LIMITATIONS	28
SOURCES OF INFORMATION	29

FIGURES

Figure 1 - Site Location Map

Figure 2 - Site Plan

TABLES

Table 1 - Potential Off-Site Environmental Concerns

APPENDICES

**Appendix A - Well Logs and Chemical Test Data
from Draft Report by Land-Tech Consultants**

Appendix B - Sanitary Sewer Connection Records

Appendix C - Chemical Tests of Site Supply Well

Appendix D - DEP Tank Registration and Other Tank Data

Appendix E - Manifests from January 2000 Waste Removal Action

**Appendix F - Significant Environmental Hazard Notification
and Related Well Tests**

Appendix G - 1991 DEP Spill Report

I. SUMMARY

Our Phase I Environmental Site Assessment of the properties at 1 & 7 Main Street in East Haddam identified the following potential environmental concerns: (1) six former or current underground tanks (a seventh underground tank, installed in 2001, does not appear to pose a significant risk of contamination); (2) garage floor drains with unknown discharge locations; (3) the possible storage or dumping of oil and chemical wastes outside the garage building; (4) a former septic system that served both the River House and the garage building; (5) the presence of an unknown blue residue (possibly paint flakes) on the ground behind the storage building at 7 Main Street; and (6) a possible fuel pump on a 1932 map on the 7 Main Street property.

We recommend the following actions to further evaluate subsurface contamination on site: (1) perform a magnetometer survey, (2) excavate and remove underground tanks remaining on site, (3) perform an elevation survey of site monitor wells and determine ground water flow direction, (4) perform a soil vapor survey and soil testing under the floor of the garage, and (5) perform a Phase III Site Assessment consisting of test borings, monitor wells, and chemical testing to evaluate the extent and degree of contaminant source areas identified on the site.

We recommend that an attorney be consulted to evaluate whether the property at 1 Main Street is an "establishment" under the Connecticut Transfer Act. The property at 7 Main Street does not appear to be an "establishment".

Suspect asbestos pipe insulation was observed in the basement of the town hall. We recommend that a licensed asbestos consultant or contractor be requested to inspect and recommend actions to address the suspect asbestos.

The site was historically occupied by residences. From 1911 to 1973, the Connecticut Department of Transportation operated a bridge maintenance garage at 1 Main Street and the Town of East Haddam later operated their Department of Public Works garage at this address. The 7 Main Street property has been occupied by a lumber company and by the East Haddam town hall.

Local ground water is classified "GB" (degraded), but since the area is not served by public water, the site and nearby properties use individual supply wells.

We did not identify off-site properties that appeared to pose a significant threat of contaminating site ground water. However, our evaluation of the threat posed by off-site concerns was based on presumed, not measured, ground water flow patterns.

The work scope completed for this assessment included: a review of a previous report; historical research; a review of regulatory files and databases; personal interviews; and a site visit.

II. INTRODUCTION

A. Purpose

The purpose of this Phase I Environmental Site Assessment is to evaluate whether or not subsurface contamination by oils or hazardous chemicals exists on the site.

B. Location

The site is located on the northern side of Main Street (Route 82), on the bank of the Connecticut River, in the center of the Town of East Haddam. Refer to Figure 1 for site location.

C. Scope of Work

The following tasks were performed for this assessment:

1. A review of an unfinished draft version of a 12 December 2000 Environmental Site Assessment report prepared by Land-Tech Consultants, Inc. [Land-Tech].
2. A review of aerial photographs, historical maps, and city directories.
3. A review of numerous environmental databases listing known or suspected locations of subsurface contamination.
4. A review of selected files at the Connecticut Department of Environmental Protection [DEP].
5. A review of data at the offices of the assessor, building department, land use office, and town clerk of East Haddam. We also interviewed the director of the East Haddam Department of Public Works [DPW] and the former town fire marshal.
6. Interviews with employees of the Town of East Haddam [site owner/occupant], employees of the Connecticut Department of Transportation [DOT] [site occupant and former site owner], Michael Bartos, Jr. of Land-Tech, Dan Maus of Maus & Son [site oil dealer and plumbing contractor], Andrew Lord [attorney for the town], and Shire Corporation [tank removal contractor].
7. A review of hydrogeologic data for the area.
8. A visit to the site to view surface conditions.

The work scope did not include the chemical testing of soil or ground water samples, but this report presents chemical testing data

collected on site by previous investigators.

D. Previous Studies

Ned Shanahan reviewed an unfinished draft 12 December 2000 Environmental Site Assessment report prepared by Land-Tech for the site.

After evaluating potential environmental concerns on the site, Land-Tech completed limited subsurface explorations consisting of the drilling of four borings (MW1-MW4), three of which were completed as monitor wells (MW1-MW3). Ground water was not encountered in MW4 and a well was not constructed. MW1 was drilled south of the River House office building where apparent contamination associated with a dry well or septic tank had reportedly been encountered in 1995 during excavation work by the Town of East Haddam. MW2 was located outside the southwest corner of the garage building near a former underground gasoline tank. MW3 was drilled adjacent to a former underground gasoline tank removed from the 7 Main Street property in January 2000. Figure 2 shows the approximate locations of the wells. Appendix A presents the logs for the four borings.

Land-Tech reported that soils observed in the borings did not exhibit odors or stains. Soil samples collected at depths of 5-7 feet in MW2 and MW3 were tested in a laboratory for Total Petroleum Hydrocarbons [TPH] by EPA Method 418.1, volatile organic compounds [VOCs] by EPA Method 8260, and for eight RCRA metals by both mass analysis and TCLP methods. The results of the soil tests are presented in Appendix A and are summarized in the table below.

SOIL TEST DATA					
1 & 7 Main Street, East Haddam, Connecticut					
CONTAMINANT	MW2 5-7 ft.	MW3 5-7 ft.	POLLUTANT MOBILITY CRITERIA	DIRECT EXPOSURE CRITERIA	
				Residential	Commercial
TPH (ppm)	200	54	500	500	2500
VOCs (ppb)	ND	ND	Varies	Varies	Varies
arsenic (ppm)	3.5	5.6	NA	10	10
barium (ppm)	28	33	NA	4700	140,000
chromium (ppm)	18	28	NA	3900	51,000
lead (ppm)	31	8.5	NA	500	1000
TCLP metals (ppm)	ND	ND	Varies	NA	NA

Notes: 1. ND means not detected. NA means criteria not applicable to this parameter. NE means no criteria established.
 2. Criteria taken from the DEP Remediation Standard Regulations. The Pollutant Mobility Criteria for "GA" areas has been used since ground water is not present in overburden deposits throughout the site.

The soil test data do not exceed remediation criteria established in the DEP Remediation Standard Regulations [RSRs].

On 28 July 2000, ground water samples were collected from each of the three wells and tested for TPH by Method 418.1, VOCs by Method 8260, and for eight RCRA total metals (unfiltered water samples were used for the metal tests). On 15 November 2000, the three monitor wells were sampled again and the samples were tested for pesticides by EPA Method 8081. The results of the ground water tests are presented in Appendix A and are summarized below.

GROUND WATER TEST DATA							
1 & 7 Main Street, East Haddam, Connecticut							
CONTAMINANT	MW1	MW2	MW3	GROUND WATER PROTECTION CRITERIA	SURFACE WATER PROTECTION CRITERIA	VOLATILIZATION CRITERIA	
						Residential	Commercial
TPH (ppm)	1.8	1.4	ND	0.5	NE	NA	NA
toluene (ppb)	5.5	ND	ND	1000	4,000,000	23,500	50,000
chloroform (ppb)	2.0	1.9	ND	6	14,100	287	710
pesticides	ND	ND	ND	Varies	Varies	NA	NA
arsenic (ppb)	16	47	ND	50	4	NA	710
barium (ppb)	180	380	30	1000	NE	NA	NA
chromium (ppb)	200	250	ND	50	NE	NA	NA
lead (ppb)	ND	570	ND	15	13	NA	NA

Notes: 1. ND means not detected. NA means criteria not applicable to this parameter. NE means no criteria established.
 2. Criteria taken from the DEP Remediation Standard Regulations. Ground Water Protection Criteria have been shown in the table even though the site is in a "GB" ground water area due to the local use of supply wells.

The concentrations of TPH in the ground water samples from MW1 and MW2 exceed the Ground Water Protection Criteria [GWPC] established in the RSRs. The relative absence of VOCs in the samples suggests that the TPH detection may not represent ground water contamination. Re-analysis of ground water from the wells by the Extractable Total Petroleum Hydrocarbon [ETPH] may demonstrate that the TPH detections are not due to the presence of petroleum spills.

The concentrations of total arsenic in the MW1 and MW2 water samples exceed the Surface Water Protection Criteria [SWPC]. The concentration of chromium in MW1 and MW2 exceed the GWPC. The concentration of lead in MW2 exceeds the GWPC and the SWPC. We suspect that the metal exceedances may be the result of silt in the unfiltered samples and may not represent ground water contamination. Re-sampling of the wells may indicate that ground water is not significantly contaminated with metals.

III. DESCRIPTION OF SITE

A. Land and Buildings

The approximately 2.75-acre site consists of two parcels of land as follow: (1) approximately 1.56-acre parcel at 1 Main Street designated as Lot 14 on assessor's map 17 and (2) approximately 1.19-acre parcel at 7 Main Street designated as Lot 15 on map 17.

The 1 Main Street parcel is occupied by a former Town of East Haddam Department of Public Works [DPW] garage (largely vacated in December 2000), by an office building used by the State Police and by the Town of East Haddam (commonly called the "River House"), by a small shed outside the northwest corner of the garage, and by an emergency generator house operated by the State of Connecticut Department of Transportation [DOT]. The DOT generator house is located on a 0.098-acre perpetual easement ceded by the Town of East Haddam to the State of Connecticut in 1985 for the operation of the adjoining Connecticut River drawbridge.

The 7 Main Street parcel is occupied by the town hall of East Haddam and by a rear storage building and adjoining vacant shed. the storage building is used by the Goodspeed Opera House for the storage of theater equipment.

Figure 2 provides a plan of the site.

The garage at 1 Main Street is a one-story structure with no basement that was apparently erected in stages from circa 1911 to circa 1950 (see Figure 2 for approximate dates of construction for various portions of the building). The office building (River House) includes two upper floors and a basement and was erected in circa 1911. The DOT generator house was built in circa 1988 and is one-story in height.

Former buildings at 1 Main Street included: (1) a former residence near Main Street that was erected before 1874 and was demolished in 1903, (2) a former office building used by the DOT that was erected south of the River House in circa 1911 and was torn down before 1935, and (3) a small blacksmith shop and a small storage shed that were located in the area of the circa 1950 addition to the garage from circa 1911 to the 1940s.

The town hall at 7 Main Street was erected as a residence prior to 1874. The town hall has two upper floors and a basement. The rear storage building and adjacent shed at 7 Main Street are one-story buildings with no basements.

Former buildings at 7 Main Street consisted of various small sheds on the northern part of the property that were in place from the late 1880s to early 1900s.

The ground surface on the site slopes downward toward both the west (toward the adjoining Connecticut River) and to the south (toward Main Street).

B. Abutting Properties

The site is located in a mixed residential and commercial area. The site parcels are bounded as follows: (1) on the north by a residence at 2 Broom Street and by Broom Street (and by a residential property across Broom Street); (2) on the west by the Connecticut River; (3) on the south by Main Street (and across Main Street by the Goodspeed Opera House at 6 Main Street and by the Gelston House [inn and restaurant] at 8 Main Street); and (4) on the east by a residence at 17 Main Street, by a real estate office at 15 Main Street, and by a store [Wallflowers by Design] at 9 Main Street.

C. Utilities

The town hall at 7 Main Street and the office building and former garage at 1 Main Street have reportedly been connected to the public sanitary sewer system since 1999 (see connection records in Appendix B). Prior to 1999, the town hall was served by a septic system located north of the building. The garage and the River House office building were served by a single septic system located south of the River House that was installed by the DOT in 1971. Prior to 1971, wastes from the garage and the River House apparently went directly to the Connecticut River.

The site buildings are served by a supply well located west of the 1 Main Street garage. Public water systems do not service the area. Reportedly, site occupants use bottled water and do not consume the well water.

A dug well, located between the town hall and the rear storage building at 7 Main Street, formerly provided water to the town hall property. The well recently became inactive when the town extended a water line from the supply well at 1 Main Street onto the 7 Main Street property.

The site buildings are heated by oil.

D. Observations During Site Visit

Ned Shanahan of Shanahan Consulting visited the site on 19 March 2002 to observe surface conditions. Pete Linko, the director of public works for the Town of East Haddam, answered questions during the site visit. The site was free of snow cover on the day of the inspection.

1. Interior Observations

Office Building at 1 Main Street (River House)

The upper floors of the office building are occupied by the Town of East Haddam and by the resident state police trooper. The basement and attic are used for storage.

Oils and chemicals were not observed in the building with the exception of a 275-gallon tank of heating oil in the basement. The oil tank did not appear to be leaking.

No floor drains or suspect friable asbestos materials were observed in the River House.

Former DPW Garage Building at 1 Main Street

The garage building is divided into three parts: a southern vehicle bay, a central area used by a theater group, and a northern area used by the town for storage.

The northern area included two 275-gallon tanks above the floor. The tank on the western end appeared to be an inactive, empty, former heating oil tank, while the tank on the eastern end was used to store oil to heat the building. The two tanks did not appear to be leaking. Two sealed 55-gallon drums of unknown contents were observed in the eastern end of the central area used by the theater group.

Two sealed floor drains were observed in the southern vehicle bay. A third sealed floor drain was reportedly located in the central bay, but a rug covered the apparent drain location. Ned Shanahan did not observe a fourth sealed drain in the northern area, but Mike Bartos of Land-Tech reported that a drain is located in this area and that it had been sealed (the drain may have been covered by stored items on the day of our site visit).

Ned Shanahan did not observe suspect friable asbestos materials in the garage building.

DOT Generator House at 1 Main Street

The small generator house included an emergency generator to operate the drawbridge. No oils or chemicals, floor drains, or suspect friable asbestos materials were observed in the building.

Town Hall at 7 Main Street

The town hall includes two upper floors of offices and a basement used for storage. No oils or chemicals were observed in the town hall.

The basement includes a 275-gallon heating oil tank and a sump and pump to remove water that occasionally enters the basement. No floor

drains were observed. Approximately 200 linear feet of suspect asbestos pipe insulation, some exhibiting damage, were observed in the basement.

Rear Storage Building and Shed at 7 Main Street

The storage building at 7 Main Street contains theater equipment used by the Goodspeed Opera House. An inactive oil-fired furnace and an empty 55-gallon drum labeled "motor oil" in a wooden drum rack were observed in the southwest corner of the building. Several 5-gallon pails of apparent waste motor oil were also seen in the southwestern part of the building. The building did not appear to include plumbing facilities (i.e. no bathrooms or sinks were observed).

No floor drains, oils or chemicals, or suspect friable asbestos materials were observed in the adjoining shed. A few oily stains were noted on the wooden floor of the shed, which is elevated above the underlying ground surface by an open crawl space. The shed included a few old engines and some metal parts.

2. Outdoor Observations

The 1 Main Street property includes the three buildings (River House offices, garage, generator house), a paved driveway and parking area outside the western and southern ends of the garage, and a lawn area south of the River House on the bank of the river.

The property at 7 Main Street includes the town hall and the rear storage building and shed, as well as a paved driveway and parking lot near the town hall, a rear gravel-covered lot behind the storage building, and a steep brushy slope on the western end of the property leading up to Broom Road.

Evidence of former or current petroleum storage tanks on site included: (1) a pavement patch outside the southwest corner of the garage for a reported former underground tank [labeled UST#1 on Figure 2]; (2) two sets of fill and vent pipes for two apparent underground tanks outside the eastern wall of the garage building [UST#3 and UST#4] (the fill and vent for UST#3 was labeled "Fuel #3" on the adjoining wall); (3) a vent pipe outside the southwestern corner of the storage building at 7 Main Street for a possible underground tank (no fill pipe was found) [labeled UST#5]; (4) a metal clip similar to those used to hold tank vent pipes was observed on the southern wall of the shed behind the town hall apparently from the underground gasoline tank removed from this area in January 2000 [UST#6]; (5) a set of fill and vent pipes and two nearby tank monitor wells outside the southern wall of the DEP generator house for the reported underground diesel fuel tank [UST#7]; (6) a set of fill and vent pipes outside the northern wall of the town hall (although the set of pipes were some distance from the wall, they reportedly serve the basement tank in the building); (7) a set of fill and vent pipes outside the eastern wall of the garage which connect to an indoor heating oil tank; and (8) a set of fill and vent pipes protruding from the eastern wall of the River House which serve

the basement heating oil tank.

Three ground water monitor wells, reportedly installed by Land-Tech in 2000, were observed on the site.

On-site evidence of spills or disposal observed during the site visit was limited to two areas near the rear storage building at 7 Main Street, as follows: (1) an approximately 3 foot by 2 foot oily surface stain under a metal frame formerly used to store highway equipment located off the northern edge of the gravel lot behind the storage building - the stain was excavated with a hand shovel, was found to be limited to the ground surface, and was judged to be insignificant and (2) a blue residue (possibly paint flakes) observed in surface soils and covering approximately 8 feet by 3 feet outside the northeast corner of the storage building at 7 Main Street.

E. Geology

The published Surficial Materials Map of Connecticut indicates that the site is covered by glacial till, an unsorted mixture of sediment ranging in size from clay to boulders.

Borings drilled on the site in August 2000 for the Land-Tech site assessment encountered overburden materials consisting largely of sand and silt with some gravel.

The published Bedrock Geological Map of Connecticut indicates that bedrock on site consists of a mixture of schist and gneiss. Bedrock occurs at shallow depths and is exposed at the ground surface on the southwestern part of the site. The Land-Tech borings encountered bedrock at the following depths below ground surface: MW1 - 4½ feet, MW2 - 8 feet, MW3 - bedrock not encountered in drilling to 20 feet, and MW4 - approximately 10½ feet.

F. Ground Water

1. General Information

Ground water beneath the site is classified "GB", indicating that ground water is known or presumed to be degraded and may not be suitable for drinking purposes without treatment. The cleanup of spills in "GB" areas is generally governed by more lenient requirements than in areas where ground water is regulated as drinkable ("GA" areas).

Surface topography suggests that overburden ground water may flow toward the west or south. Predictions of ground water flow patterns based on surface topography may be inaccurate. The flow of ground water in bedrock formations is also controlled by fracture patterns in the rock.

A 1984 DEP map of community water systems in Connecticut shows no public drinking water wells within approximately one mile of the site. The site is not shown within Aquifer Protection Areas mapped by the Connecticut DEP.

2. Site Supply Wells

Dan Maus of Maus & Son [plumbing contractor] reported that the active supply well west of the DPW garage is approximately 100-120 feet deep and apparently taps the bedrock aquifer (based on the shallow exposures of bedrock reported on site).

The inactive dug well on the 7 Main Street property is reportedly 20 to 24 feet deep (according to Dan Maus).

The Connecticut Department of Public Health [DPH] regulates the active site supply well as a Transient Non-Community public water system and requires quarterly tests of the well water for coliform bacteria and physical parameters (pH, color, odor, turbidity) and annual tests for nitrate and nitrite. The DPH sent a 26 October 2001 violation letter to the Town of East Haddam for its failure to perform the required testing.

Appendix C presents water quality data for the site supply wells. The data include samples collected on 17 March 1992 (apparently from both the current supply well and from the inactive dug well) that showed no coliform bacteria detections. On 30 August 2000, Land-Tech collected a water sample from the supply well at 1 Main Street and tested the water for TPH (not detected) and eight RCRA metals (lead detected at 2 ppb and other metals not detected). Finally, in response to the 2001 request from the Connecticut Department of Public Health, the supply well was tested 28 February 2002 and no coliform bacteria were detected. An additional test of the supply well for nitrate and nitrite is pending according to town building official Wayne Green. The various supply well test data reviewed by Shanahan Consulting did not reveal exceedances of drinking water standards.

G. Surface Water

Connecticut River, which adjoins the site to the west, is classified SB by the DEP, indicating that the tidal river is degraded.

Succor Brook, located approximately 300 feet south of the site, is classified "B/A" by the DEP, indicating that the stream is presently degraded, but the DEP regulates discharges to the brook with the goal of improving its water quality.

Flood Insurance Rate Maps show a 100-year flood at an elevation of 11 feet NGVD in the river reach adjoining the site. The developed areas of the site are not located within the flood plain.

IV. HISTORY OF SITE USE

A. Site Occupants

Historical maps, city directories, municipal records, and personal interviews were used to evaluate the history of site use.

Usage of 1 Main Street is summarized as follows:

OCCUPANTS OF 1 MAIN STREET	
DATE	ACTIVITY
At least 1874 to 1903	Residence near Main Street.
1903 to 1911	Property largely vacant except for old ice house associated with former residence.
1911 to 1973	Operations of the Connecticut DOT on property, including residence (the "River House") for operator of drawbridge and maintenance garage.
1973 to 2000	The former River House used for offices and former DOT garage used as a garage by the East Haddam DPW. DOT operates generator house on southwest corner of property.
2000 to present	Garage building used for storage and by a theater group. Offices continue in the River House and DOT continues to operate generator house.

We did not determine the initial date of the development of 1 Main Street. The residence of W.H. Goodspeed is shown on the property on an 1874 county atlas reviewed for this assessment.

Usage of 7 Main Street is summarized as follows:

OCCUPANTS OF 7 MAIN STREET	
DATE	ACTIVITY
At least 1874 to circa 1936	Residence.
Circa 1936 to 1938	A bank apparently occupied the former residence.
Circa 1939 to 1957	Lumber company operated by Consolidated Building Materials Co. and later by Diamond Match Company [DBA East Haddam Coal & Lumber Company] used former residence as an office and used a newly-erected storage building on the rear part of the property. Town of East Haddam also rented some office space for town offices on second floor of the former residence beginning in 1939.
1957 to present	Former residence operated as East haddam town hall, while rear building used for storage.

The initial date of development of 7 Main Street was not determined. The 1874 atlas shows the residence of T. Gross, Jr. on the property.

Sanborn Fire Insurance Maps of East Haddam dated 1884, 1889, 1895, 1903, 1908, 1925, and 1935 depict the site. Of environmental significance, the Sanborn Map of 1925 shows an underground gasoline tank outside a former office building at 1 Main Street. The 1935 Sanborn Map shows another underground gasoline tank outside the southwest corner of the present garage structure and indicates that the DOT garage operation includes: a blacksmith shop, a machine shop, bridge construction & fabrication, and paint storage.

B. Site Owners

Our research of site history included a review of land records at the East Haddam town clerk's office.

Owners of **1 Main Street** have included: Town of East Haddam (1973 to present); State of Connecticut (1911 to 1973); and William H. Goodspeed (undetermined period prior to 1911).

Owners of **7 Main Street** have included: Town of East Haddam (1957 to present); The Diamond Match Company (1947 to 1957); Consolidated Building Materials, Inc. (1939 to 1947); Consolidated Building Materials, Inc. [front part of parcel] and Elmer N. Peck [rear part] (1938 to 1939); The National Bank of New England [front part] and Elmer N. Peck [rear part] (1937 to 1938); The National Bank of New England [front part] and Helen F. Dickinson [rear part] (1936 to 1937); Hampton D. Ewing [front part] and Helen F. Dickinson [rear part] (1936); Florence G. Hatstat [front part] and Helen F. Dickinson [rear part] (1923 to 1936); and Ellen A. Gross [front part] and Helen F. Dickinson [rear part] (1920 to 1923).

C. Review of Aerial Photographs

Our assessment included a review of aerial photographs dated 1934, 1951, 1965, 1970, 1975, 1980, 1986, 1990, and 1995. The 1934 and 1951 photographs were viewed at the Connecticut State Library and the 1965-95 photographs were borrowed from the Connecticut DEP.

The 1934 aerial photograph shows the DOT garage and the "River House" residence on the 1 Main Street parcel and a residence and rear sheds on the 7 Main Street property. In 1934, the garage building at 1 Main Street did not include the east central addition erected in circa 1950.

The development of the site looks similar to current conditions beginning on the 1951 aerial photographs with the construction of the rear storage building at 7 Main Street and the completion of the garage at 1 Main Street. We observed little change in site buildings on the 1970, 1975, 1980, 1986, 1990, and 1995 photographs with the exception of the construction of the current DOT bridge generator house between the 1986 and 1990 photographs.

We did not observe evidence of waste disposal activities (i.e. landfill operations) on site in the nine photograph sets. Some apparent storage is noted on the western edge of the rear gravel lot behind the storage building at 7 Main Street on the 1965 through 1995 photographs (the area was reportedly used for equipment storage by the East Haddam DPW).

V. USE OF OILS AND CHEMICALS AND WASTE DISPOSAL

A. Petroleum Storage Tanks

Appendix D presents DEP tank registration forms and other data available concerning petroleum storage tanks on the site.

1. Underground Tanks

Our research has documented the presence of seven former or current underground storage tanks on the site, as is described in the table below.

FORMER AND CURRENT UNDERGROUND STORAGE TANKS 1 & 7 Main Street, East Haddam, Connecticut	
TANK	DESCRIPTION
UST#1	Former gasoline tank removed from in front of garage building sometime after 1991. The tank, which was apparently either 1000 gallons or 2000 gallons in size, had been inactive since 1989. A gasoline tank had been shown at this location as early as 1935 (on Sanborn Map).
UST#2	Former gasoline tank shown on 1925 Sanborn Map, but not present on subsequent Sanborn Map of 1935. Size of tank unknown.
UST#3	An apparent 1000-gallon heating oil tank reportedly installed by the Connecticut DOT before 1973 when the town acquired the lot. The tank is inactive.
UST#4	An apparent 1000-gallon gasoline tank installed by the DOT prior to 1973. Tank is inactive.
UST#5	Vent pipe on wall of storage building suggests the former or current presence of an underground tank, possibly a heating oil tank since the oil burner is located in the same corner of the building where the vent pipe was observed.
UST#6	Former 1000-gallon gasoline tank reportedly removed by the town in January 2000. No soil samples collected from tank grave.
UST#7	Active 300-gallon diesel fuel tank installed in 2001 by the DOT to serve the emergency generator for the drawbridge. DOT employee reported that the tank includes double containment and two vapor monitoring wells.

The approximate locations of the seven underground tanks are shown on Figure 2.

2. Aboveground Tanks

We identified four **outdoor** former or current aboveground storage tanks, as described below (see Figure 2 for approximate locations).

FORMER AND CURRENT OUTDOOR ABOVEGROUND TANKS 1 & 7 Main Street, East Haddam, Connecticut	
TANK	DESCRIPTION
AST#1	Former 550-gallon gasoline tank installed in October 1989 by the town and moved to new DPW garage on Parnassus Road in circa 2000.
AST#2	Former 550-gallon waste oil tank with built-in containment area. Tank recently moved to new DPW garage.
AST#3	Former 275-gallon heating oil tank outside the eastern wall of the garage building. Tank has been replaced by an indoor heating oil tank.
AST#4	Active 275-gallon heating oil tank used to heat the storage building at 7 Main Street.

We also identified four indoor heating oil tanks, each of 275 gallons capacity, as follows: basement tank in town hall at 7 Main Street, basement tank in River House office building at 1 Main Street, and two ground-floor tanks in northern end of the garage building at 1 Main Street. One of the two tanks in the garage building contained heating oil, but the second tank was empty and apparently inactive.

B. Other Use of Oils and Chemicals

1. Former DOT Bridge Maintenance Garage

The former Connecticut DOT bridge maintenance garage at 1 Main Street (circa 1911 to 1973) included garage repair bays, a machine shop, a blacksmith shop, and paint storage areas. These activities and the reported petroleum storage tanks discussed above suggest the use of the following oils and chemicals: gasoline, heating oil, lubricating oil, paints and paint thinners, machine oil, and possibly degreasing solvents. The machine shop was located in the southeastern corner of the garage, while the blacksmith shop was located in the area of the circa 1950 addition (see Figure 2).

A 1932 highway right of way map shows an unidentified "pump" on the southeastern corner of the property at 1 Main Street [see "Pump (1932)" on Figure 2]. We do not know if the pump was for dispensing petroleum fuel.

2. Town DPW Garage

The former DPW garage operations of the Town of East Haddam included vehicle repairs, landscaping, and other maintenance work. The DPW performed painting work prior to 1996, but ceased this activity after 1996. Oils and chemicals used at the garage (based on a review of waste shipment records, interviews with DPW personnel, and other information sources) included: heating oil, gasoline, corrosive

materials, motor oil, solvents (toluene, probably kerosene, paint thinners), and pesticides.

On 26 January 2000, several containers of various wastes and unused chemical products were removed from the garage and disposed of off site (see waste shipment data in Appendix E). Peter Linko of the East Haddam DPW reported that the material had been accumulated over a period of at least 12 years. The waste materials removed in January 2000 are summarized in the table below.

JANUARY 2000 WASTE SHIPMENT 7 Main Street, East Haddam, Connecticut		
WASTE	RCRA WASTE CODES	QUANTITY
Toluene (unused product)	D001, U220	55 gallons
Waste paint related material (paint thinners)	D001, D035, F003, F005	130 gallons
Waste paint related material (unused paint)	D001, D007, D008, D035	110 gallons
Salt of herbicide 2,4-D (unused product)	D016, U240	30 gallons
Waste flammable solvents	D001, D037, F027	50 pounds
Waste corrosive liquid	D002	100 pounds
Waste motor oil	Not a RCRA waste	55 gallons
No. 6 heating oil (unused product)	Not a RCRA waste	55 gallons
Detergent (unused product)	Not a RCRA waste	60 gallons

Our review of the waste shipment records suggests that RCRA hazardous wastes removed on 26 January 2000 amounted to 325 gallons and 150 pounds (equivalent to a total of approximately 1297 kilograms). An additional 170 gallons of oily wastes (not RCRA hazardous wastes) were also disposed of. The hazardous wastes sent off for disposal consisted of approximately 737 kilograms of unused products and approximately 560 kilograms of generated wastes. The Town of East Haddam used a temporary EPA identification number for the shipment of hazardous wastes.

3. Other Occupants

We do not expect that the former lumber company at 7 Main Street (circa 1939 to 1957) used significant quantities of oils or chemicals.

We did not identify other operations on site that are expected to have used significant amounts of oils or chemicals with the exception of heating oil.

C. Floor Drains and Septic Systems

1. Floor Drains

Most of the available data on floor drains in the DPW garage was collected by Mike Bartos of Land-Tech during his investigation of the site in 2000.

Four floor drains are reported in the former DPW garage structure including one in the northern end of the building, one in the central part, and two in the southern part (see Figure 2 for approximate drain locations). All four drains were reportedly cleaned and sealed with cement in August 2000.

Prior to their sealing, an attempt was made to determine their discharge location, with the following results: (1) northern drain - the use of a drain "snake" indicated that the drain discharge pipe exited the garage to the west toward the Connecticut River with an unknown discharge location, our review of sanitary sewer connection data (see Appendix B) suggests that a single 7½-inch steel pipe carried waste from this part of the garage toward the Connecticut River until the pipe was connected to a newly-installed septic system south of the River House in June 1971, (2) central drain - flow test demonstrated that the drain discharged to a storm drainage catch basin and eventually to the Connecticut River via an open paved ditch near the DOT generator house, and (3) two southern drains - flow tests suggested that the two drains discharged toward one another in the central part of the bay floor, the location of their common discharge not determined but a possible dry well under the floor was considered a possibility.

2. Septic Systems

A septic system was formerly located outside the northern end of the town hall building at 7 Main Street until the system was abandoned in circa 1999 when a connection was made to the public sanitary sewer system (see Appendix B).

A septic system was installed in the lawn area south of the River House at 1 Main Street in June 1971 to serve both the office building and the garage building to the east. The septic system was abandoned in circa 1999 when the buildings were connected to the public sanitary sewer system. Prior to 1971, wastes from the two buildings at 1 Main Street were apparently discharged directly to the Connecticut River.

VI. REVIEW OF REGULATORY FILES

A. Review of Connecticut DEP Files

A review of information on file with the Bureau of Water Management, the Oil & Chemical Spills Unit, the Waste Engineering & Enforcement Division, and the Underground Storage Tank Unit of the Connecticut DEP was conducted on 13 February 2002.

The review included the following specific resources:

1. the correspondence files of the Bureau of Water Management.
2. the correspondence files for the Waste Engineering & Enforcement Division.
3. administrative orders, lists of discharge permits, Notices-of-Violation, and P-5 inspection files kept by the Bureau of Water Management.
4. the Superfund town file for East Haddam.
5. underground tank registrations.
6. spill reports and correspondence kept by the Oil & Chemical Spills Unit.
7. hazard notification files kept by Ken Feathers of the DEP Bureau of Water Management.

We encountered the following references to the site in the DEP files:

1. a 10-13-00 wastewater discharge general permit for the 7 Main Street address issued to the Town of East Haddam department of public works for the discharge of stormwater related to construction activities. We are not aware of any construction activities on the site in October 2000 and suspect that the permit may have been associated with work at the off-site DPW garage that was incorrectly listed under the 7 Main Street address.
2. underground tank registration data (the correspondence file was not available, but a computer printout of the registered tanks was provided. Appendix D provides copies of the DEP tank registration forms found elsewhere during our research.
3. Significant Environmental Hazard Notification Report dated 9-6-00 and subsequent tests of nearby supply wells (see Appendix F). The chemical tests of the nearby supply wells are summarized in the table below.

GROUND WATER TEST DATA - NEARBY SUPPLY WELLS								
Concentrations in ppb								
WELL	DATE	Arsenic	Barium	Lead	Mercury	TPH	VOCs	SVOCs
2 Norwich Road	10-6-00	ND	30	7	ND	31,000	---	---
	12-26-00	---	---	---	---	---	ND	Phthalate 0.4
4 Norwich Road	10-6-00	7	ND	2	ND	30,000	---	---
	1-3-01	---	---	---	---	---	Bromoform 0.9	---
6 Main Street	10-6-00	ND	ND	2	0.2	14,000	---	---
9 Main Street	10-6-00	5	9	2	ND	ND	---	---
12 Main Street	1-6-00	4	ND	1	ND	ND	---	---
15 Main Street	10-6-00	ND	18	22	ND	ND	---	---
	12-26-00	---	---	18/4*	---	---	---	---
17 Main Street	10-6-00	8	ND	3	ND	ND	---	---
19 Main Street	10-6-00	ND	ND	2	ND	19,000	---	---
	12-26-00	---	---	---	---	---	ND	Phthalate 0.7
24 Lumbyard Rd	10-6-00	ND	30	3	ND	25,000	---	---
CT Drinking Water Action Levels		50	2000	15	2	**	Bromoform - 80	Phthalate - NE

- Notes:
1. ND means not detected. VOCs are volatile organic compounds. SVOCs are semivolatile organic compounds.
 2. * Two samples collected. "First draw" sample contained 18 ppb of lead and second sample collected after flushing pipes for 5 minutes contained 4 ppb lead.
 3. ** TPH is a screening level test with no Action Level. The detection of TPH necessitates more refined testing.
 4. NE means no limit established for phthalate in drinking water. Phthalates are found in samples due to contamination by plastic sampling materials.

The well tests performed in connection with the Significant Environmental Hazard Report were performed in two stages as follows: (1) Stage 1 - testing of supply wells within approximately 500 feet of contaminated site monitor wells for Total Petroleum Hydrocarbons [TPH] and metals and (2) Stage 2 - follow-up testing of three of five wells where elevated TPH had been detected (only affected residential wells were tested) for VOCs by Method 524.2, the testing of two wells for SVOCs (the third sample was not suitable for testing), and follow-up testing at 15 Main Street for lead (both a first draw and a flushed water sample).

The test results suggest that nearby supply wells have not been significantly affected by releases on site. The detection of various metals (particularly lead) in the nearby wells is likely due to the leaching of metals from the plumbing systems in the homes (as is demonstrated by the first draw and flushed samples at 15 Main Street). The detections of TPH in several wells appears to be due to the relative inaccuracy of the TPH test method since no significant levels of specific VOCs were identified in follow-up testing of three of the five affected wells. Bromoform was detected at a low concentration (below the drinking water limit) in the sample from 4 Norwich Road (such a detection usually indicates that the well had been recently chlorinated) and bis 2-ethylhexyl phthalate was detected at low levels in two water samples (probably due to the use of plastic sampling supplies).

4. a 1-9-91 DEP spill report documenting an anonymous report of underground tanks improperly abandoned and possibly leaking at the 7 Main Street garage (see Appendix G). The DEP inspected the garage and found three inactive underground fuel tanks that had been left in the ground while the town sought funds for their removal.

With the exception of the data described above, we did not encounter references to the site in our DEP file review.

B. Review of Environmental Databases

We reviewed the following 16 environmental databases of known or suspected locations of contamination or oil/chemical usage: (1) the State of Connecticut hazardous waste disposal site list; (2) the State of Connecticut Superfund Priority List; (3) the U.S. EPA Superfund National Priority Site List; (4) the U.S. EPA CERCLIS hazardous waste site inventory; (5) the U.S. EPA list of CERCLIS properties where no further remedial action is planned [NFRAP]; (6) the U.S. EPA list of RCRA Treatment, Storage, and Disposal Facilities (TSDFs); (7) the U.S. EPA list of RCRA Hazardous Waste Generators; (8) the U.S. EPA Emergency Response Notification System (ERNS) list of spills; (9) the DEP list of active solid waste landfills; (10) the DEP LUST list (leaking underground storage tanks); (11) the DEP Leachate and Wastewater Discharge Sources Maps (which show the locations of landfills, leaking underground tanks, wastewater lagoons, road salt piles, and other contaminant sources known to the DEP); (12) the DEP list of filings under the Transfer Act; (13) the DEP list of registered underground storage tanks; (14) the DEP Site Discovery & Assessment Data Base; (15) the DEP list of Environmental land use Restrictions [ELURs], and (16) the DEP list of residential underground storage tank removals.

The former public works garage at 7 Main Street was included on the LUST list in connection with the 1991 anonymous report of improperly abandoned tanks.

The site was not included in the remaining environmental databases reviewed for this assessment.

C. Review of Municipal Records

On 19 March 2002, Ned Shanahan reviewed data at several municipal offices of the Town of East Haddam, as follows: (1) assessor (assessor's map, current computer field card, and field cards for 1964, 1974, and 1984); (2) town clerk (deeds and maps); (3) building department (building permits, well test data for site supply well); and (4) land use department (topographic map of site area).

We interviewed Pete Linko of the department of public works during our inspection of the site.

The former East Haddam fire marshal (John Shanaghan) reported no additional data on underground tanks or spills on site. He provided some information on the history of site use. The current fire marshal (John Kananowicz) did not return our telephone message requesting information on the site.

VII. POTENTIAL OFF-SITE ENVIRONMENTAL CONCERNS

Our review of State and Federal inventories revealed the presence of spills or the threat of contamination at numerous nearby properties. Table 1 summarizes the results of our review.

The inventory research included a review of the following data sources:

1. the EPA National Priority Site List for locations within approximately one mile of the site.
2. the EPA list of RCRA Treatment, Storage, and Disposal Facilities (TSDFs) for locations within approximately one mile of the site.
3. the EPA CERCLIS list of hazardous waste disposal areas for locations in East Haddam within approximately one-half mile of the site.
4. the Connecticut Superfund Priority List of high priority hazardous waste disposal sites for locations in East Haddam within approximately one mile of the site.
5. the Connecticut hazardous waste disposal site list for locations in East Haddam within approximately one-half mile of the site.
6. the DEP Leachate and Wastewater Discharges Map for locations in East Haddam within approximately one-half mile of the site (referred to as "DEP Map" in Table 1).
7. the DEP list of active solid waste landfills for locations in East Haddam within approximately one-half mile of the site.
8. the DEP LUST list (leaking underground storage tanks) for locations in East Haddam within approximately one-half mile of the site.
9. the DEP Oil & Chemical Spills Unit spill reports and correspondence files of spill incidents for locations within approximately 500 feet of the site (referred to as "Spill Reports" in Table 1).
10. the DEP list of filings under the Transfer Act for locations adjoining the site.
11. the DEP list of registered underground tanks for locations adjoining the site (referred to as "Tank Registration" in Table 1).

12. the EPA Emergency Response Notification System (ERNS) list of spills for locations adjoining the site.
13. the EPA list of RCRA Hazardous Waste Generators for locations adjoining the site.
14. the DEP Site Discovery & Assessment Data Base for locations adjoining the site.
15. the DEP list of residential underground storage tank removals for locations adjoining the site.
16. the DEP list of properties subject to Environmental Land Use Restrictions [ELURs] for locations adjoining the site.
17. potential concerns identified in the immediate vicinity of the site during our review of the Connecticut DEP files (referred to as "DEP Files") or during our historical research.

In general, our consideration of off-site threats did not include a review of possible sources of contamination in the adjacent Town of Haddam due to the presence of the Connecticut River (a significant hydraulic barrier) between the site and Haddam. However, as is required by the ASTM site assessment standards, we did search the National Priority List of hazardous waste disposal sites and the list of RCRA Hazardous Waste Treatment Storage & Disposal Facilities [TSDFs] for properties in both East Haddam and Haddam.

Using presumed ground water flow patterns based on surface topography, we concluded that the off-site concerns in Table 1 are apparently not upgradient of the site and therefore do not appear to pose a significant threat of contaminating site ground water.

VIII. CONCLUSIONS AND RECOMMENDATIONS

A. Likelihood of Subsurface Contamination On Site

Potential sources of subsurface contamination identified in our assessment included:

1. six former or current underground tanks. Of the six tanks, two were apparently removed from locations west of the garage building [UST#1, UST#2], two remain in the ground east of the garage [UST#3, UST#4], one is a suspected tank outside the storage building at 7 Main Street (marked by a vent pipe) [UST#5], and one was removed in January 2000 from a location between the town hall and the storage building [UST#6].

No soil testing of the graves of the removed tanks has been reported. Monitor wells installed near UST#1 and UST#6 suggest that significant contamination may not be present at these tanks.

A seventh tank, installed in 2001 adjacent to the DOT generator building, does not appear to pose a significant contamination threat due to its recent age and reported double containment design.

2. garage floor drains with unknown discharge locations. The drains have reportedly been sealed. One of the drains reportedly discharges to the local storm drainage system, but the discharge locations of the remaining drains are uncertain and may pose a threat of oily discharges to the ground.
3. the possible storage or dumping of oils and chemicals at the garage building by the DOT or the Town of East Haddam. The east central portion of the building, covered by a circa 1950 addition, could have served as an historical storage or dumping area.
4. a former septic system that served both the River House and the garage building. The septic system may have received oily wastes from the garage. We do not expect that a former septic system behind the town hall received significant amounts of oils or chemicals and this septic system does not appear to pose a significant risk of subsurface contamination.
5. the presence of an unknown blue residue (possibly paint flakes) on the ground behind the northeast corner of the storage building at 7 Main Street. The blue residue appeared to cover an area approximately 8 feet by 3 feet in size. An oily stain off the northern edge of the gravel lot behind the building appeared to be surficial in nature and is not considered significant.
6. a pump of unknown purpose (possibly to dispense fuel) shown on a 1932 map on the 1 Main Street property adjacent to Main Street.

7. a former aboveground waste oil tank and former and current aboveground heating oil tanks. The waste oil tank reportedly included a built-in containment basin, reducing the risk of spills to the ground. We did not observe evidence of spills on the ground near the reported tank locations. In general, the aboveground tanks do not appear to pose a significant risk of subsurface contamination.

2. Ground Water Quality

A test of the site supply well for metals and TPH did not detect significant contamination (a low level of lead was reported, likely due to leaching of lead from plumbing fixtures).

The sampling of three ground water monitor wells by Land-Tech detected elevated concentrations of TPH and metals, but did not detect significant concentrations of VOCs. The TPH detections in the absence of significant levels of VOCs raises the possibility that the TPH test result may not reflect contamination by oils or chemicals, but may be due to natural organic materials. The metal detections may be due to the presence of silt in the unfiltered ground water samples and may not reflect metal contamination of ground water. In our experience, metals are not generally transported significant distances in ground water except under conditions of heavy pollutant inputs (e.g. from the repeated disposal of metal solutions to wastewater lagoons). Further ground water testing may clarify whether significant releases have occurred on site.

B. Other Issues

Local ground water is classified "GB", indicating that ground water is known or presumed to be degraded and may not be suitable for drinking without treatment. However, the site and surrounding properties use ground water for supply purposes since public water systems do not serve the area. Reportedly, the water from the site supply well is not consumed.

The property at 7 Main Street does not appear to be an "establishment" under the Connecticut Transfer Act [C.G.S. 22a-134 through 134e]. The Transfer Act status of the 1 Main Street property is less certain. The act specifies that operations which generate more than 100 kilograms of hazardous waste in any one month are "establishments" subject to the act. In January 2000, approximately 1297 kilograms of hazardous wastes were removed from the former DPW garage at 1 Main Street. The materials removed had reportedly been accumulated for at least 12 years. The hazardous wastes included 560 kilograms of wastes generated by routine on-site activities (painting wastes) as well as 737 kilograms of unused chemical products. Assuming a 12-year period of generation, the waste generation rate for the 1297 kilograms would be less than 100 kilograms per month. However, the disposal of unused chemical products could be viewed as the

"instantaneous" generation of more than 100 kilograms of waste in the month of January 2000.

We did not conduct an asbestos inspection of the site buildings. However, during our walk through the buildings, we did look for suspect friable asbestos materials. In the basement of the town hall, we observed an estimated 200 linear feet of suspect friable asbestos pipe insulation, some of which exhibited damage. If demolition or renovation of buildings is planned, then formal asbestos inspections of those buildings would be warranted.

We did not identify spills on off-site properties that appeared to pose a significant risk of contaminating site ground water. However, our evaluation of the potential threat posed by off-site properties is based on inferred, not measured, ground water flow patterns.

C. Recommendations

The major focus of future actions would be the removal of sources of contamination (underground tanks, dry wells, contaminated soils exceeding DEP cleanup standards) and the initiation of a ground water monitoring program. If the property at 1 Main Street is determined by an attorney to be an establishment under the Transfer Act, then the recommended actions may be enough to prepare the property for a Form IV transfer which requires that necessary remedial actions have been taken, but future ground water monitoring is needed.

Shanahan Consulting recommends the following actions:

1. Consult with an attorney regarding the applicability of the Transfer Act.

An attorney should be requested to review our data and issue an opinion whether future transfers of the site (and in particular the 1 Main Street property) are subject to the Transfer Act.

2. Address suspect asbestos pipe insulation in town hall basement.

We recommend that a licensed asbestos consultant or contractor be requested to inspect the suspect pipe insulation and recommend actions (including estimated costs) to address the insulation.

3. Complete a magnetometer survey for underground tanks.

Estimated cost: \$600

We recommend that a magnetometer survey be performed to explore for suspected underground tanks.

4. Excavate and remove underground tanks.

Estimated cost: Dependent on number and size of tanks to be removed. Removal of two underground tanks identified east of garage by a tank contractor may cost approximately \$5000.

Underground tanks identified during our site visit and during the subsequent magnetometer survey should be excavated and removed. Soil samples should be collected from each tank grave (whether or not contamination is observed) and tested in a laboratory to document soil conditions. If contaminants exceed DEP cleanup criteria, then a soil removal program (at unknown cost) would need to be undertaken.

5. Perform an Elevation Survey of Monitor Wells.

Estimated cost: \$400

We recommend that the three site monitor wells be surveyed and that ground water table elevations be determined to allow for a computation of ground water flow direction. In addition, the rim of the inactive dry well should be surveyed to provide for a possible fourth ground water elevation point from the water level in this well.

6. Perform a soil vapor survey/soil sampling under the garage floor.

Estimated cost: \$1000

We recommend that soil vapors be collected through holes drilled through the floor of the garage near the floor drains in the southern part of the structure and in areas of building additions. If elevated vapor readings are noted, then soil samples should be collected for laboratory analysis by manually driving sampling rods into the sampling holes. The survey is intended to explore for possible floor drainage dry wells and historical storage/dumping areas that may be located under additions.

7. Perform a Phase III Environmental Site Assessment.

Estimated cost: At least \$15,000. Cost uncertain until other work has been performed to identify areas of concern.

The Phase III Assessment would consist of the drilling of test borings, the installation of additional monitor wells, and the chemical testing of soil and ground water samples to evaluate the extent and degree of contamination at each area of concern identified on site.

IX. LIMITATIONS

The conclusions provided in this report are based on the scope of work conducted and the sources of information used in the course of this investigation. If additional pertinent information becomes available, it should be provided to Shanahan Consulting so that we may alter this report as necessary.

This assessment was performed to evaluate whether subsurface contamination involving oils or hazardous chemicals might be present on site. The report should not be used for any other purpose.

We did not inspect for asbestos-containing materials or lead paint in site buildings. However, we did note the presence of suspect friable asbestos materials if observed during the site visit.

The work was undertaken in accordance with generally accepted environmental consulting practices. No other warranty, express or implied, is made.

SOURCES OF INFORMATION

Aerial photographs of Connecticut: available at the Connecticut State Library for the years 1934, 1951/52, 1965, and 1970; available at the Connecticut Department of Environmental Protection for the years 1965, 1970, 1975, 1980, 1985/86, 1990, and 1995/96.

Assessor's maps of East Haddam, Town of East Haddam assessor's office.

"ASTM Standards on Environmental Site Assessments for Commercial Real Estate, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process", E 1527-00, American Society for Testing and Materials, 2000.

Beers, F.W., "Atlas of Middlesex, Connecticut", 1874.

Bingham, J.W., F.D. Paine, and L.A. Weiss, "Hydrogeologic Data for the Lower Connecticut River Basin, Connecticut", Connecticut Water Resources Bulletin No. 30, 1975.

City Directories for East Hampton and East Haddam, Connecticut, 1967, 1969, 1971, 1974-75.

City Directories for Meriden (including East Haddam), Connecticut, 1993 to 2000.

Connecticut Department of Environmental Protection, "Connecticut Aquifer Protection Areas", September 2000.

Connecticut Department of Environmental Protection, "Community Water Systems in Connecticut, A 1984 Inventory", 1986.

Connecticut Department of Environmental Protection, "Inventory of Hazardous Waste Sites in Connecticut and Recommendations for Continuing Action", 4/5/00.

Connecticut Department of Environmental Protection, List of Active Landfills, November 2000.

Connecticut Department of Environmental Protection, List of Environmental Land Use Restrictions, 10/1/01.

Connecticut Department of Environmental Protection, List of Filings under the Transfer Act, 6/21/01.

Connecticut Department of Environmental Protection, LUST List, 9/21/00.

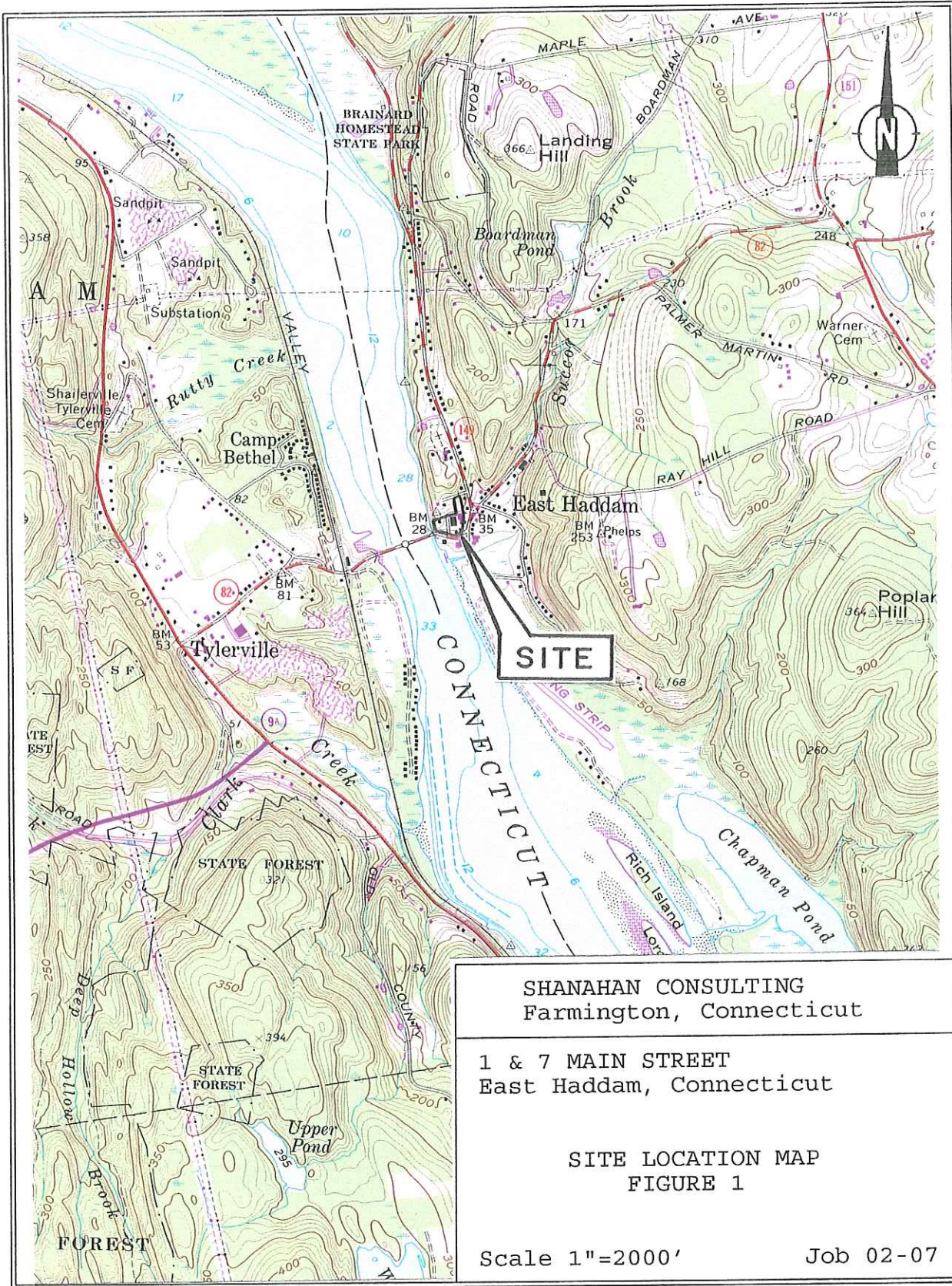
Connecticut Department of Environmental Protection, List of Registered Underground Storage Tanks, 8/10/01.

- Land-Tech Consultants, Inc., Draft Version of "Environmental Site Assessment of 1 & 7 Main Street, East Haddam, Connecticut", 12/12/00, provided by Mike Bartos of Land-Tech Consultants.
- "Map Showing Easement Acquired from the Town of East Haddam by the State of Connecticut", prepared by the State of Connecticut, 2/15/85, East Haddam Town Clerk Map No. 1585.
- "Map Showing Land Released to the Town of East Haddam by the State of Connecticut, Route 82", prepared by the State of Connecticut, June 1973, map copied at the offices of the Connecticut DOT.
- "Property Survey for Town of East Haddam in East Haddam, Connecticut", prepared by Richard Ziobron, 3/14/88, East Haddam Town Clerk Map No. 3174.
- "Right of Way Map, Town of East Haddam, East Approach to East Haddam Bridge From the East Haddam Bridge Easterly to the Moodus Road, Route No. 82", prepared by the Connecticut State Highway Department, 8/31/32 with minor revisions of 11/8/60 and 11/28/73, DOT Map No. 40-05, Sheet 1 of 1, copy obtained at the offices of the Connecticut DOT.
- Rodgers, John, "Bedrock Geological Map of Connecticut", U.S. Geological Survey, 1985.
- Sanborn Fire Insurance Maps of East Haddam, Connecticut, 1884, 1889, 1895, 1903, 1908, 1925, and 1935.
- Stone, J.R., J.P. Schafer, E.H. London, and W.B. Thompson, "Surficial Materials Map of Connecticut", U.S. Geological Survey Map.
- "Topographic Map Land Surrounding East Haddam Town Hall, East Haddam, Connecticut", prepared by URS Greiner Woodward Clyde, January 2000, map provided by the Town of East Haddam
- Untitled Sketch of Pieces Combined as Lot No. 15 on assessor's map No. 17, dated 8/9/45, East Haddam Town Clerk Map No. 320.
- U.S. Environmental Protection Agency, CERCLIS Site List sites, 2/1/02.
- U.S. Environmental Protection Agency, CERCLIS NFRAP [No Further Action Planned] list, 2/1/02.
- U.S. Environmental Protection Agency, Emergency Response Notification System [ERNS] list of spills, 3/3/02.
- U.S. Environmental Protection Agency, List of RCRA Hazardous Waste Generators, 3/16/02.
- U.S. Environmental Protection Agency, List of RCRA Treatment, Storage, and Disposal Facilities (TSDFs), 3/16/02.

U.S. Environmental Protection Agency, National Priority List [NPL],
2/1/02.

U.S. Geological Survey, topographic quadrangle map for the Deep River
Quadrangle (1984).

FIGURES



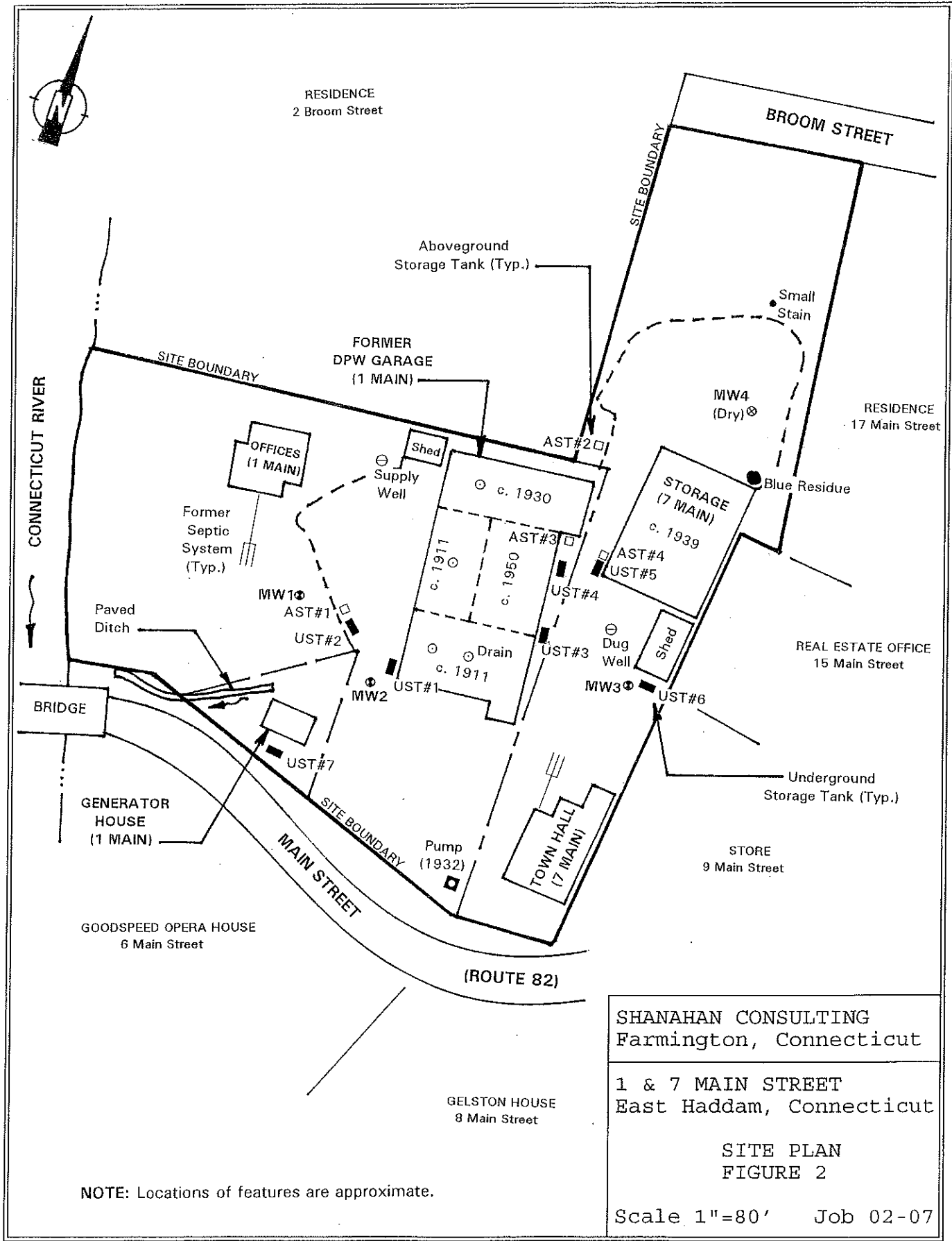
SHANAHAN CONSULTING
Farmington, Connecticut

1 & 7 MAIN STREET
East Haddam, Connecticut

SITE LOCATION MAP
FIGURE 1

Scale 1"=2000'

Job 02-07



NOTE: Locations of features are approximate.

SHANAHAN CONSULTING
 Farmington, Connecticut

1 & 7 MAIN STREET
 East Haddam, Connecticut

SITE PLAN
 FIGURE 2

Scale 1"=80' Job 02-07