Town of St. Johnsbury
Armory Redevelopment Project

REQUEST FOR PROPOSALS
Architectural and Engineering Services

The Town of St. Johnsbury ("Town") is seeking to renovate and redevelop the historic Armory building located at 1249 Main Street into a municipal police station and emergency dispatch center. The Town is requesting proposals from qualified architect led design teams ("Design Team") to provide full architectural and engineering services for the project including schematic design, design development, construction documents, bidding, and construction administration.

ISSUE DATE:	**October 20, 2021**
PROPOSER'S SITE VISIT:	**October 27, 2021 (3:00 PM)**
QUESTIONS DUE BY:	**November 3, 2021**
RFP RESPONSES DUE BY:	**November 19, 2021**

CONTEXT AND BACKGROUND

St. Johnsbury, the largest Town in the NEK, was first settled in 1786 and was designated the Caledonia County seat in 1856. St. Johnsbury became a rail and highway junction as well as the industrial, commercial, and cultural crossroads of the NEK because of its proximity to the Passumpsic, Moose and Sleepers Rivers, as well as its proximity to Canada. Over the years, prosperity waned as roads replaced rivers as the primary form of transportation, and changes to the manufacturing industry forced many local businesses to close their doors. Thus, the Town has been littered with run-down and abandoned former industrial and commercial properties (brownfields) for decades.

In 2019, the Vermont Department of Environmental Conservation (VTDEC) received a $20,000 Small Technical Assistance Grant from the Environmental Protection Agency (EPA) for planning activities related to brownfield redevelopment in the town of St. Johnsbury. This planning grant provided an avenue for all of the necessary partners to come together to work through site challenges and identify a path forward to redevelop St. Johnsbury's Main Street corridor. The planning work conducted with this grant included a financial evaluation of different redevelopment strategies; the Armory property was prioritized because it had been vacant for the last decade and provided a significant opportunity for the Town to act as a driver of redevelopment on Main Street.

St. Johnsbury is on the cusp of turning its economy around. The Town has an opportunity to enhance its economy by focusing on creating a vibrant downtown, new business growth, attractive housing and neighborhoods, and leveraging its proximity to world class recreational facilities. We believe cleanup and revitalization of the Armory will not only protect the health of

the many nearby residents but will be the cornerstone project that will serve as a catalyst for economic development, improve public safety operations, and enhance livability in our community.

PROJECT DESCRIPTION

The Town of St. Johnsbury is interested in redeveloping the former Armory building located at 1249 Main Street for use as a municipal police station and regional emergency dispatch center. Owned by the Town, this building is within the historic district and represents a significant opportunity for the Town to drive economic redevelopment in this important downtown corridor. The building is contaminated and structurally compromised. The vacant building has no utility until properly remediated. The Town has continued to fund the basic maintenance, but there will soon be a need for capital investment just to prevent more significant deterioration.

The Selectboard is committed to remediating the property and playing an active role in the property's redevelopment as a revitalization catalyst in this area. Project specifics include:

- Lot Size: 0.44 acres (see attached survey prepared by Truline Land Surveyors and existing conditions site plan prepared by Dufresne Group).
- Current Building Size: Approximately 17,720 sf. The building consists of an east wing and west wing. The east wing fronts on Main Street and is 2 stories plus a usable basement. The west wing is one story plus a basement and contains a former gymnasium.
- Proposed Building Size: Approximately 13,090 sf. A portion of the west "gymnasium" wing will be razed and replaced by on-site parking, a carport, and a new addition for the police sally port (see attached site plan prepared by Dufresne Group).
- The entire 2-story east wing (plus usable basement) fronting on Main Street will be retained and renovated. Current plans call for the north and south walls of a portion of the west wing to be retained. The gambrel roof will be removed and a second story with flat roof will be added (see attached preliminary floor plans and elevations prepared by Wiemann Lamphere Architects).
- Environmental contamination consisting of lead-based paint, asbestos and PCBs will be fully remediated to acceptable and safe standards. The cost to remediate is estimated to be $800,000 to $1.3 M.

WORK DONE TO DATE

A considerable amount of work has already been completed for the Armory Redevelopment Project including:

- Environmental assessment and testing – see attached environmental reports.
- Preliminary floor plans and elevations – see attached plans prepared by Wiemann Lamphere Architects.

- Civil engineering assessment and site plan – see attached site plan prepared by Dufresne Group.

- Permitting – the above referenced site plan and building elevations received Town of St. Johnsbury Development Review Board approval in June 2021. Dufresne Group is currently coordinating any required VT ANR permits.

- Historic preservation review – The Town retained an architectural historian and archeological consultant and is working with the Vermont Division of Historic Preservation. See attached historic Section 106 Review Memorandum prepared by 106 Associates and the Archeological Resource Assessment prepared by Hartgen Archeological Associates.

- Preliminary cost estimating – a preliminary construction cost estimate was prepared by Austin Hill Estimating in February 2021. See attached draft budget for the Armory Redevelopment Project dated 3/25/21.

FUNDING

The Town intends to fund the Armory Redevelopment Project with a combination of general obligation bond and grant funding. Town voters recently approved $5.4 million in bond spending for renovation of the Armory building into a new police station and emergency dispatch center. The Town has also secured a $500,000 clean-up grant from EPA for environmental remediation and will be applying for another $500,000 in environmental clean-up funding through the Community Development Block Grant (CDBG) program administered by the Vermont Community Development Program.

Other grant funding sources the Town intends to pursue for environmental remediation, building construction and equipment purchase include USDA Rural Development, Vermont Division of Historic Preservation, VT Buildings and General Services, VT Agency of Commerce and Community Development, and the Northern Borders Regional Commission.

The Design Team should be prepared to comply with procurement and other policies that may be required by the above referenced federal and state agencies.

OTHER INFORMATION AND REQUIREMENTS

The Design Team shall include qualified architects, structural engineers, MEP engineers, fire safety/sprinkler engineers, civil engineers, landscape architects, and other consultants the Design Team deems necessary for the project. The Design Team shall also include an independent cost estimation firm to provide construction cost estimating throughout the design process. All consultants that are part of the Design Team shall subcontract through the lead architectural firm.

In addition to retaining the services of a Design Team, the Town intends to enter into contracts with the following entities:

- Construction Manager – likely to be brought on at the end of schematic design or beginning of the design development phase.

- Qualified Environmental Consultant – responsible for preparing the environmental corrective action alternatives (ECAA) and corrective action plan (CAP), coordinating environmental review and approval by regulatory agencies, and leading the bid process for environmental remediation contractors if not handled by the construction manager.

Design Teams submitting a proposal shall certify that the proposal is made in good faith without fraud, collusion, or connection of any kind with any other proposer/bidder for the same work, and that the proposer/bidder is competing solely on his/her behalf without connection with or obligation to any undisclosed person or firm.

SCOPE OF WORK

Schematic Design

1. Meet with Town Manager, Police Chief, and emergency dispatch representative to understand their program requirements.

2. Review and evaluate the preliminary floor plans and elevations prepared by Wiemann Lamphere Architects.

3. Working off the preliminary floor plans and elevations prepared by Wiemann Lamphere Architects, prepare schematic design plans.

4. Coordinate and attend design meetings with Town to present and revise as necessary the schematic plans.

5. Prepare an outline specification and coordinate with the independent cost estimator to prepare a preliminary construction cost estimate.

6. Coordinate with the qualified environmental consultant as necessary. Work with Design Team's civil engineer on required state permit applications. Revise and refine the design as necessary based on permitting requirements.

7. Identify permit and code requirements and issues for Town/team review.

8. Assist the Town in drafting an RFP for a construction manager and participate in the RFP review process.

9. This phase includes all site visits, meetings, and reviews necessary to present deliverables, edit deliverables, and receive approval from the Town to proceed to the next phase.

Design Development

1. Subcontract with necessary consultants including structural, MEP and fire protection/sprinkler.

2. Produce design development plans and revise the outline specifications

3. Design Team work with Town and Efficiency Vermont and/or other energy consultant to determine the building envelope details and HVAC system for the building.

4. Coordinate and attend design meetings with construction manager and Town and revise as necessary the design development plans. Key members of the Design Team, including architect, structural engineer, MEP engineer, civil engineer, etc., shall attend regularly scheduled design meetings.

5. Provide plans to cost estimator or construction manager for a cost estimate at 100% completion of design development drawings.

6. This phase includes all site visits, meetings, and reviews necessary to present deliverables, edit deliverables, and receive approval from the Town to proceed to the next phase.

Construction Documents

1. Design Team coordinate meetings with Town and construction manager as required to review plans and resolve issues.

2. Coordinate MEPF design with construction manager.

3. Review and incorporate in final plans and specifications, energy related building improvements, as recommended by Efficiency Vermont.

4. Prepare final construction drawings and project manual for bidding. These plans and specifications will be complete, and detailed, coordinating all components of the project including site plan, civil and structural engineering, landscape plan, architecture, and mechanical/plumbing, electrical and fire protection systems.

5. Work with construction manager for revised cost estimates at approximately 80% completion of construction drawings. Review estimate and assess any design modifications.

6. Take lead role in obtaining all building code and fire safety permits.

Bidding and Negotiation

1. Publicly advertise the project for construction bids, distribute contract documents to potential bidders and maintain a plan holder's list unless these tasks are performed by the construction manager.

2. Attend pre-bid walk through with contractors.

3. Respond to questions and requests for information (RFIs) during the bid phase.

4. Assist construction manager as necessary in conducting and attending public bid openings, if required, on behalf of the Town of St. Johnsbury.

5. Assist Town and construction manager in evaluating subcontractor bids.

Construction Administration

1. Assist construction manager as needed.

2. Review and approve shop drawings and required submittals from contractors.

3. Attend monthly project meetings with Town, construction manager, contractors, and funding partners. Perform periodic site visits required to approve the work performed.

ATTACHMENTS

Enclosed with this RFP are the following materials to assist firms in evaluating the work required:

1. Property survey prepared by Truline Land Surveyors, Inc. dated January 2021
2. Existing conditions site plan prepared by Dufresne Group Consulting Engineers dated September 2019.
3. Proposed site plan prepared by Dufresne Group Consulting Engineers dated 5/3/21.
4. Preliminary floor plans and building elevations prepared by Wiemann Lamphere Architects dated 9/3/21.
5. Draft Budget for Armory Redevelopment Project dated September 2021.
6. Historic Section 106 Review Memorandum prepared by 106 Associates dated 6/24/21.
7. Archeological Resource Assessment prepared by Hartgen Archeological Associates dated July 2021.
8. Phase I Environmental Site Assessment prepared by The Johnson Company dated May 2012 (partial report).
9. Environmental Survey prepared by Cardno ATC dated 3/28/13 (partial report).
10. PCB Building Materials Survey prepared by ATC dated 3/3/17 (partial report).
11. Draft Targeted Brownfields Assessment Report prepared by KGSNE, LLC dated 3/9/21 (partial report).

PROPOSED PROJECT SCHEDULE

Proposals for A/E services due	November 19, 2021
Interview potential candidates	November 30, 2021
Anticipated project start	December 8, 2021
Schematic, Design Development, and Construction Documents	December 2021 – May 2022
Bidding for environmental remediation	January/February 2022
Environmental remediation	April – September 2022
Bidding for building/site construction	May/June 2022
Commencement of building/site construction	September 2022
Anticipated completion	Summer 2023

PROPOSAL SUBMISSION REQUIREMENTS

Proposals should address all items below, and include any relevant information regarding the Design Team and the proposal:

Approach

- Letter of interest including a brief description of how Design Team proposes to approach this project.

Experience

- Design Team's experience with similar projects, particularly renovations to historic, public buildings.
- Design Team's experience with high performance design and building renovations.
- Identify and provide information regarding the Design Team's experience and specific personnel to be assigned to this project.
- Provide three references of current similar work.

Procedures and Scheduling

- Address Design Team's concurrent workload, and ability to meet schedule requirements.
- Prepare a schedule for completing the work outlined in this RFP including dates for key deliverables.

Fees and Costs

- Proposed fixed fee for services of the Design Team and broken out for each phase. Fixed fee cost should include Basic Services in accordance with appropriate AIA contracts for selected construction delivery method plus the services of civil, MEPF, structural, landscape, and other consultants included on the Design Team.
- Estimate of reimbursable expenses.

- Provide detailed schedule of hourly billing rates for any Town-approved extra services beyond the base proposal.
- Provide evidence of insurance coverage showing levels of protection for general liability, errors, and omissions.

In addition to this list of required information and responses, please add any information and/or make any suggestions that you believe would be helpful to the Town in determining how best to proceed.

EQUAL OPPORTUNITY EMPLOYER

The Town of St. Johnsbury is dedicated to the principles of equal employment opportunity in any term, condition, or privilege of employment. We do not discriminate on the basis of age, race, sex, color, religion, national origin, disability, veteran status, sexual orientation, gender identity, or any other status protected by the state or local law. This policy applies to all employees and non-employees such as customers, clients, vendors, contractors, subcontractors, and consultants.

PROPOSAL DUE DATE

Proposals shall be submitted in electronic format no later than **4 PM on Friday, November 19, 2021**, to Joe Kasprzak, Assistant Town Manager, at jkasprzak@stjvt.com.

MAG NORTH

NAD83 (2011)

GRID NORTH (VT)

GRACE UNITED METHODIST CHURCH
TAX MAP #23-04-61
REFER TO BK. 123, PG. 133

ST. ANDREWS EPISCOPAL CHURCH
TAX MAP #23-04-73
REFER TO BK. 18, PG. 357

PLAN BY J. M. PERHAM FOR
"ST. ANDREWS CHURCH LOT"
DATED DEC. 1912
W/ TRULINE FILE #A25

18.10' (G)

53.55' (G)

S 71°50'46" E
156.23'

N 15°05'58" E
124.77'

PAVED PARKING AREA

AC UNIT

ELEVATOR

OVERHANG

35.7' (B)

CSW

14" APPLE

SIGN

SIGN

PAVED DRIVE

PARCEL #1
AREA = 0.437 ACRE
(19,038 SQ. FT.)
TAX MAP #23-04-74
REFER TO BK. 56, PG. 223

PLAN BY J. M. PERHAM FOR
"ARMORY SITE"
DATED APR. 1916
W/ TRULINE FILE #D17

29.95' (G)

24.65' (G)

CONC. RAMP

PAVED PARKING AREA

10.80'

54.98' (G)

62.10' (G)

S 15°05'58" W
48.37'

N 13°40'37" E
48.40'

N 69°35'16" W 142.74'
131.94'

63.10' (B)

52.85' (B)

TBM = TOP OF HYDRANT BOLT AT ELEV. 697.23 FT.

HWY SIGN

LIGHT POLE

S 21°12'38" W 130.40'

MAIN STREET

TBM = TOP OF HYDRANT BOLT AT ELEV. 695.96 FT.

CSW

REFER TO BK. 13 PG. 477

S 70°02'51" E
12.00'

63.35' (B)

REFER TO RD. BK. 2 PG. 158

CENTRAL STREET

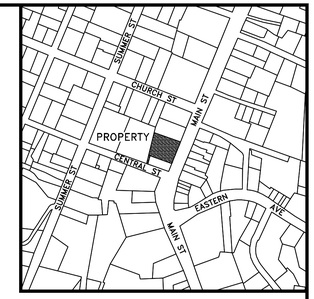
PARCEL #2
AREA = 0.012 ACRE
(549 SQ. FT.)
P/O TAX MAP #23-04-61
REFER TO BK. 56, PG. 223

PLAN BY J. M. PERHAM FOR
"ARMORY SITE"
DATED APR. 1916
W/ TRULINE FILE #D17

R. S. & C. C. KOZLOWSKI
TAX MAP #23-04-75
REFER TO BK. 249, PG. 125

PLAN BY J. M. PERHAM FOR
"PASSUMPSIC SAVINGS BANK"
DATED JUNE 1930
W/ TRULINE FILE #BB17

Town of St. Johnsbury, VT Received for Record
_____ A.D. _____
at _____ o'clock _____ minutes _____M
and recorded at _____
attest: _____
Town Clerk



– LOCUS –
SCALE: 1" = 400'±

– LEGEND –

- IRON PIPE
- REINFORCING ROD
- UNMARKED/ANGLE POINT
- (G) GRANITE TIE
- (B) BRICK TIE
- HYDRANT
- UTILITY POLE
- CSW CONC. SIDEWALK
- "E" EXISTING MONUMENT
- "S" SET MONUMENT
- PROPERTY LINE
- RIGHT–OF–WAY LIMITS
- CHAIN LINK FENCE
- OUW OVERHEAD UTILITY WIRES
- IRON RAIL FENCE

– NOTES –

1. THIS PLAT IS PREPARED FOR THE EXCLUSIVE USE OF THE TOWN OF ST. JOHNSBURY AND NO REPRESENTATIONS ARE MADE TO, OR ANY RELIANCE JUSTIFIED BY, ANY OTHER INDIVIDUAL OR ENTITY.
2. THE BEARINGS SHOWN ARE BASED ON VERMONT GRID NORTH, NAD83 (2011). THE COORDINATES SHOWN ARE BASED ON VERMONT GRID NAD83 (2011), FEET.
3. THE METES AND BOUNDS SHOWN ARE BASED ON A CLOSED TRAVERSE OF AN ELECTRONIC MEASURMENT SYSTEM SURVEY WITH A DEGREE OF PRECISION OF 1 IN 27,000.
4. ALL EXISTING MONUMENTS AND SET MONUMENTS SHOWN ARE STABLE AND PLUMB UNLESS OTHERWISE NOTED.
5. NO ATTEMPT WAS MADE TO IDENTIFY OR LOCATE ANY UNRECORDED OR OBSCURED EASEMENTS AND/OR RIGHTS, OTHER THAN SHOWN, DURING THE COURSE OF THIS SURVEY.
6. THIS IS A CERTIFIED PLAT WHEN ACCOMPANIED BY AN ORIGINAL SIGNATURE, DATE AND REGISTERED SURVEYOR'S STAMP OF A TRULINE REPRESENTATIVE.

– CERTIFICATION –

I HEREBY CERTIFY THAT THE PROPERTY LINES SHOWN ARE BASED ON AND ARE CONSISTENT WITH THE DEED REFERENCES LISTED (EXCEPT WHERE NOTED) AND/OR OTHER DOCUMENTS REFERRED TO HEREON AS WELL AS EXISTING MONUMENTATION AND OTHER EVIDENCE OBSERVED ON THE PROPERTY, AND ARE CORRECT TO THE BEST OF MY KNOWLEDGE AS OF JANUARY 19, 2021. THIS PLAT CONFORMS WITH THE REQUIREMENTS OF V.S.A. TITLE 27 §1403. (SEE NOTES.)

SIGNATURE

01/19/2021
DATE

0' 5' 10' 20' 30' 40' 50' FEET
0 5 10 15 METERS

– ZONING INFORMATION –

MIXED USE DISTRICT – "MU"

MINIMUM LOT SIZE:	6000 SQ. FT.		
MINIMUM LOT FRONTAGE:	75 FT.		
MINIMUM LOT DEPTH:	N/A		
MINIMUM SETBACKS:	FRONT	SIDE	REAR
	15	15	15
HEIGHT REGULATIONS:	ALL STRUCTURES: 80 FT.		

* BASED ON THE ZONING BY–LAWS FOR THE TOWN OF ST. JOHNSBURY, EFFECTIVE APRIL 30, 2018.

SHANE B. CLARK, LS

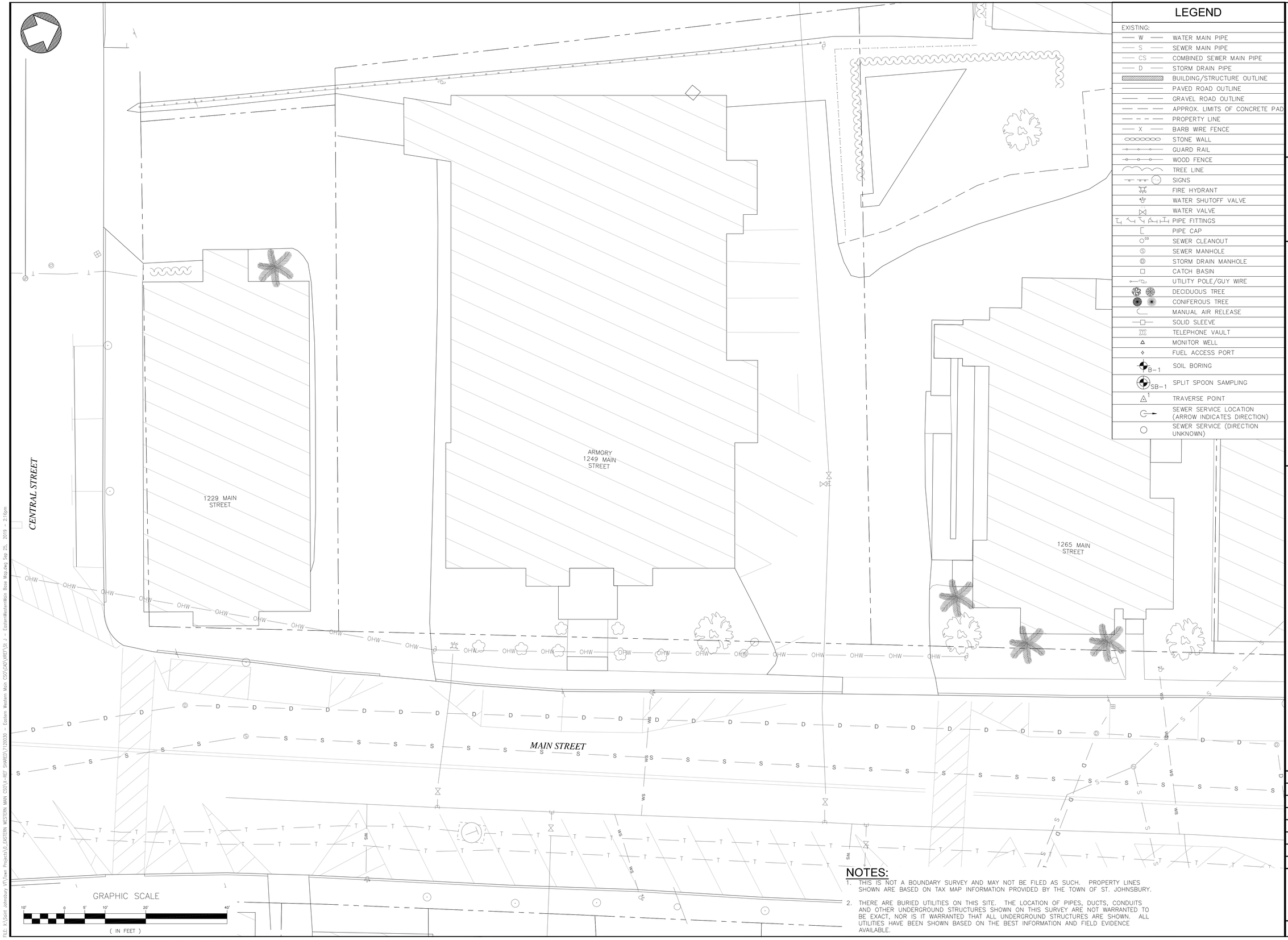
STATE OF VERMONT
SHANE B. CLARK No.703
LICENSED LAND SURVEYOR

PLAN PREPARED FOR
TOWN OF ST. JOHNSBURY
"ARMORY BUILDING"
1249 MAIN STREET – ST. JOHNSBURY, VT

LAND SURVEYORS LAND PLANNERS
Truline Land Surveyors, Inc.
448 SUMMER ST., STE. 102
ST. JOHNSBURY, VT. 05819
Phone/Fax : (802) 748–3946
truline448@gmail.com

SCALE :	1" = 10'
SURVEY DATE :	JANUARY 2021
SURVEYED BY :	C.W.W. / C.J.J.
DRAFTED BY :	S.B.C.
CHECKED BY :	S.B.C.
PLOT DATE :	01/19/2021
FILE NO. :	21D–1–1620

Armory Survey.DWG



LEGEND

EXISTING:

- W — WATER MAIN PIPE
- S — SEWER MAIN PIPE
- CS — COMBINED SEWER MAIN PIPE
- D — STORM DRAIN PIPE
- BUILDING/STRUCTURE OUTLINE
- PAVED ROAD OUTLINE
- GRAVEL ROAD OUTLINE
- APPROX. LIMITS OF CONCRETE PAD
- PROPERTY LINE
- X — BARB WIRE FENCE
- STONE WALL
- GUARD RAIL
- WOOD FENCE
- TREE LINE
- SIGNS
- FIRE HYDRANT
- WATER SHUTOFF VALVE
- WATER VALVE
- PIPE FITTINGS
- PIPE CAP
- CO — SEWER CLEANOUT
- S — SEWER MANHOLE
- D — STORM DRAIN MANHOLE
- CATCH BASIN
- UTILITY POLE/GUY WIRE
- DECIDUOUS TREE
- CONIFEROUS TREE
- MANUAL AIR RELEASE
- SOLID SLEEVE
- TELEPHONE VAULT
- MONITOR WELL
- FUEL ACCESS PORT
- B-1 — SOIL BORING
- SB-1 — SPLIT SPOON SAMPLING
- 1 — TRAVERSE POINT
- SEWER SERVICE LOCATION (ARROW INDICATES DIRECTION)
- SEWER SERVICE (DIRECTION UNKNOWN)

NOTES:

1. THIS IS NOT A BOUNDARY SURVEY AND MAY NOT BE FILED AS SUCH. PROPERTY LINES SHOWN ARE BASED ON TAX MAP INFORMATION PROVIDED BY THE TOWN OF ST. JOHNSBURY.
2. THERE ARE BURIED UTILITIES ON THIS SITE. THE LOCATION OF PIPES, DUCTS, CONDUITS AND OTHER UNDERGROUND STRUCTURES SHOWN ON THIS SURVEY ARE NOT WARRANTED TO BE EXACT, NOR IS IT WARRANTED THAT ALL UNDERGROUND STRUCTURES ARE SHOWN. ALL UTILITIES HAVE BEEN SHOWN BASED ON THE BEST INFORMATION AND FIELD EVIDENCE AVAILABLE.

DUFRESNE GROUP
CONSULTING ENGINEERS
56 Main Street, Suite 200
Springfield, Vermont 05156
E-mail: info@dufresnegroup.com
Web: www.dufresnegroup.com
• • •
Springfield, VT • Tel: (802) 674-2904 Fax: (802) 674-2913
Barre, VT • Tel: (802) 479-3698
St. Johnsbury, VT • Tel: (802) 748-8605
Manchester, VT • Tel: (802) 768-8291
• • •
Dufresne Group is owned by Dufresne & Associates, PC

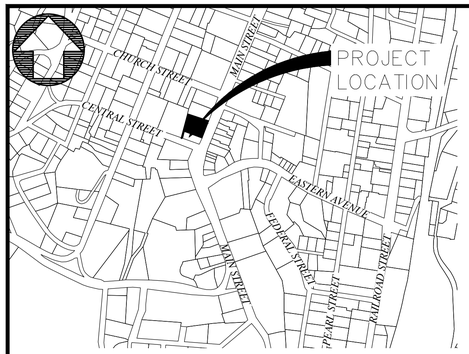
1249 MAIN STREET ARMORY BUILDING

ST. JOHNSBURY, VERMONT

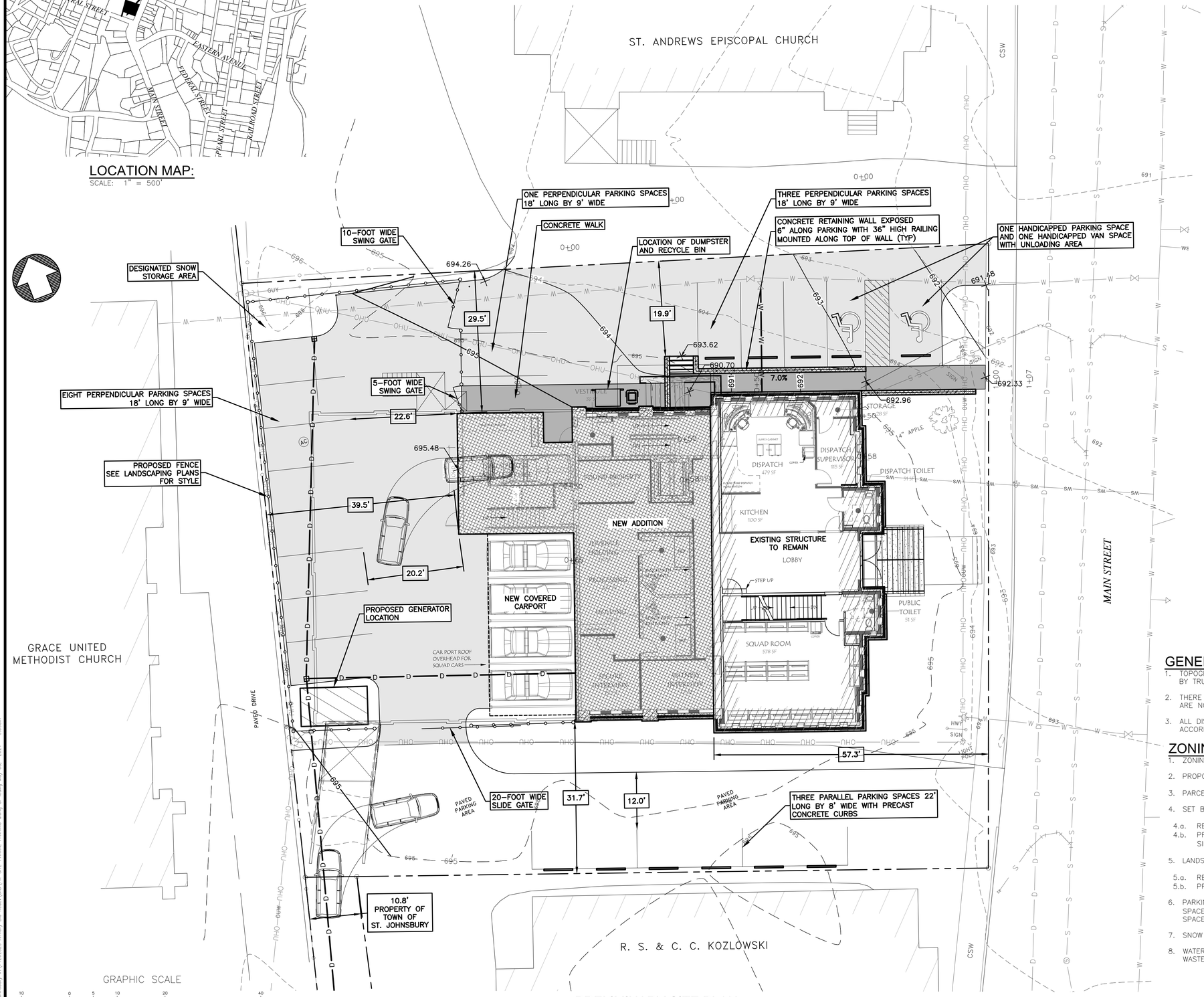
Project #	NUMBER
Project Mgr.	PROJMAN
Design by	NAME
Drawn by	CAD DRAFT NAME
Reviewed by	REVIEWED BY
Approved by	NAME
Date	SEPTEMBER 2019
Scale	AS SHOWN

FIG 1

SHEET 1 OF TOTALNUMSHEET



LOCATION MAP:
SCALE: 1" = 500'



PRELIMINARY SITE PLAN:
SCALE: 1" = 10'

GRAPHIC SCALE
10 0 5 10 20 40
(IN FEET)

LEGEND

EXISTING:	
W W	WATER MAIN PIPE
S	SEWER MAIN PIPE
D D	STORM DRAIN PIPE
OHU OHU	OVERHEAD WIRE
	BUILDING/STRUCTURE OUTLINE
	PAVED ROAD OUTLINE
	GRAVEL ROAD OUTLINE
	PROPERTY LINE
X	BARB WIRE FENCE
	STONE WALL
	GUARD RAIL
	WOOD FENCE
500	MAJOR CONTOUR
502	MINOR CONTOUR
	CLEAN OUT
	TREE LINE
	SIGNS
	FIRE HYDRANT
	WATER SHUTOFF VALVE
	WATER VALVE
S	SEWER MANHOLE
	CATCH BASIN
	IRON PIPE/REBAR
	UTILITY POLE/GUY WIRE
	DECIDUOUS TREE
	CONIFEROUS TREE
MB	MAIL BOX
1	TRAVERSE POINT
PROPOSED:	
S	SEWER MAIN PIPE
ss	SEWER SERVICE
D	STORM DRAIN PIPE
UD	6" PERFORATED UNDERDRAIN
W W	WATER MAIN PIPE
ws ws	WATER SERVICE
500	MAJOR CONTOUR
502	MINOR CONTOUR
	SECURITY FENCE
	RAILING
	BUILDING/STRUCTURE OUTLINE
	PAVED AREA
	CONCRETE WALKWAY
	PAINTED PARKING LINE
	CATCH BASIN

GENERAL NOTES:

1. TOPOGRAPHIC SURVEY AND BOUNDARY LINES BASED ON INFORMATION PROVIDED BY TRULINE LANDSURVERYORS, THIS IS NOT A BOUNDARY SURVEY.
2. THERE ARE BURIED UTILITIES ON THIS SITE. THE LOCATION OF BURIED UTILITIES ARE NOT WARRANTED TO BE EXACT.
3. ALL DISTURBED AREAS OUTSIDE OF PAVED AREAS SHALL BE RESTORED IN ACCORDANCE WITH LANDSCAPE PLANS.

ZONING NOTES:

1. ZONING DISTRICT: MIXED USE
2. PROPOSED USE: POLICE STATION AND DISPATCH CETNER
3. PARCEL SIZE: 1249 MAIN STREET: 19,040 SQUARE FEET (0.44 ACRES)
4. SET BACKS:
   - 4.a. REQUIRED: FRONT = 15-FEET SIDE/REAR = 15-FEET
   - 4.b. PROPOSED: FRONT = 57.3-FEET SIDE (NORTH) = 29.5-FEET/ SIDE (SOUTH) = 31.7-FEET/REAR = 39.5-FEET
5. LANDSCAPED/GREEN STRIP:
   - 5.a. REQUIRED: FRONT = 10-FEET SIDE/REAR = 5-FEET
   - 5.b. PROPOSED: FRONT = N/A SIDE/REAR = 0-FEET
6. PARKING SPACES PROVIDED: 8 EMPLOYEE SPACES, 4 COVERED PATROL CAR SPACES, 1 SALLY PORT/GARAGE SPACE, 4 PUBLIC SPACES AND 2 HANDICAPPED SPACES. 19 SPACES TOTAL
7. SNOW SHALL BE STORED IN DESIGNATED AREAS AND REMOVED AS NECESSARY.
8. WATER AND WASTEWATER USAGE ESTIMATED AT 950 GPD BASED ON THE VERMONT WASTEWATER SYSTEM AND POTABLE WATER SUPPLY RULE.

DUFRESNE GROUP
CONSULTING ENGINEERS
Suite 200, 56 Main Street
Springfield, Vermont 05156
E-mail: info@dufresnegroup.com
Web: www.dufresnegroup.com
Springfield, VT • Tel: (802) 674-2904 Fax: (802) 674-2913
Barre, VT • Tel: (802) 479-3698
St. Johnsbury, VT • Tel: (802) 748-8605
Manchester, VT • Tel: (802) 768-8291
Dufresne Group is owned by Dufresne & Associates, PC

REVISIONS

DATE	COMMENTS	BY

ARMORY BUILDING REDEVELOPMENT

PRELIMINARY SITE PLAN

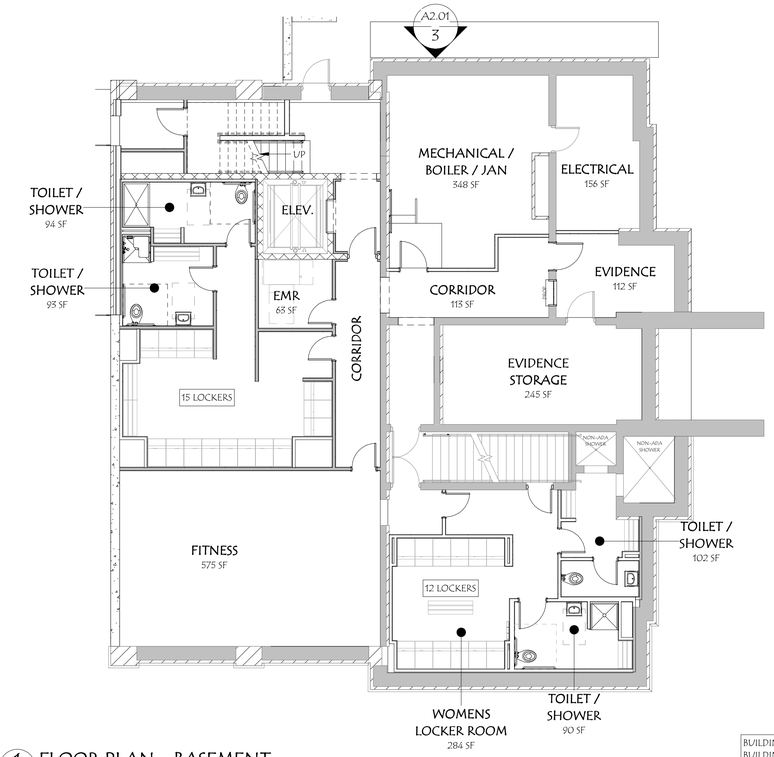
ST JOHNSBURY, VERMONT

Project #	
Project Mgr.	EAE
Design by	EAE
Drawn by	EAE
Reviewed by	REVIEWED BY
Approved by	NAME
Date	MAY 3, 2021
Scale	AS SHOWN

C1

SHEET 1 OF 1

FILE: J:\St. Johnsbury VT\7120229 Armory Bld Redev\CAD\PR-SITE-PARKING along dr k.dwg May 03, 2021 - 9:09am



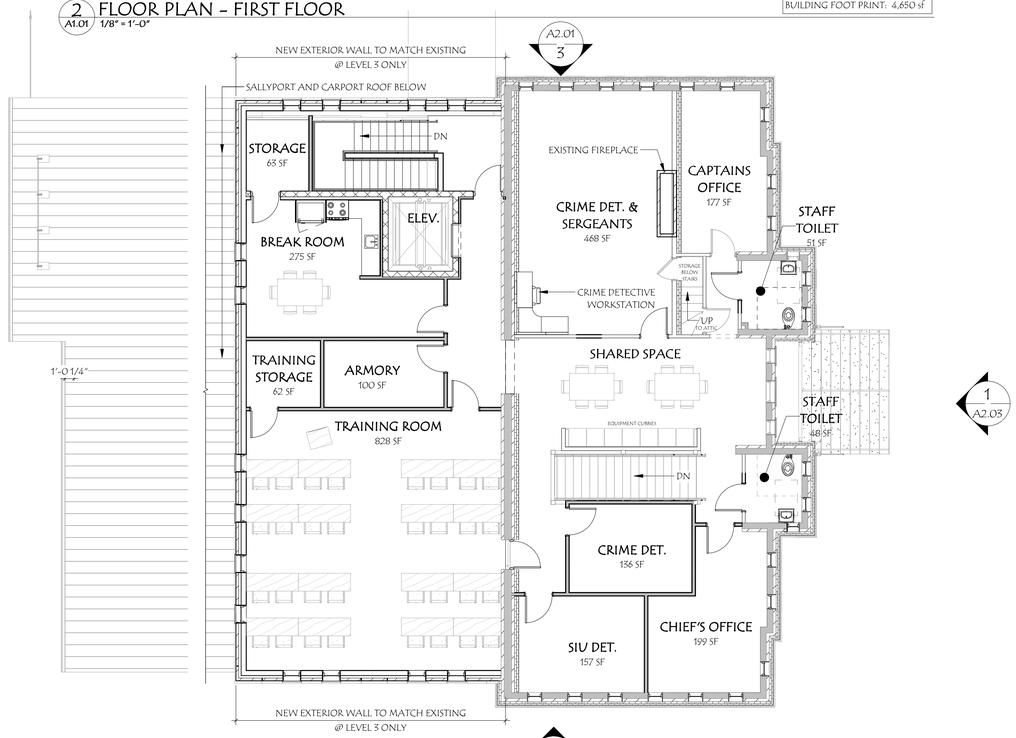
1 A1.01 FLOOR PLAN – BASEMENT
1/8" = 1'-0"

BUILDING CODE AREA: 3,765 sf
BUILDING FOOT PRINT: 4,222 sf

1 A2.03

2 A1.01 FLOOR PLAN – FIRST FLOOR
1/8" = 1'-0"

BUILDING CODE AREA: 4,295 sf
BUILDING FOOT PRINT: 4,650 sf



1 A2.03

3 A1.01 FLOOR PLAN – SECOND FLOOR
1/8" = 1'-0"

BUILDING CODE AREA: 3,770 sf
BUILDING FOOT PRINT: 4,060 sf

Project Status

Wiemann Lamphere ARCHITECTS
525 Hercules Drive
Suite Two
Colchester, VT 05446
802.655.5020
802.622.6567
wiemannlamphere.com

PUBLIC SAFETY FACILITY
ST. JOHNSBURY VERMONT

NO.	DATE:	REVISION:

1 A2.01

PROGRESS PRINT DATE: 9/3/2021 4:12:38 PM
SCALE: 1/8" = 1'-0"
PROJECT NO: 2017067
DRAWN BY: RJH
CHECKED BY: DPR

SHEET TITLE:
POLICE DEPT. ARMORY RENOVATION PLANS

SHEET NUMBER:
A1.01

PRINTED: 9/3/2021 4:12:38 PM FILENAME: C:\Users\bhoppe.WIEMANNLAMPHERE\Documents\2020\2005 St. J Public Safety_821_SD2_ARCH_bhoppeTROPO.rvt

1 A2.01 EAST 3/16" = 1'-0"

3 A2.01 NORTH 3/16" = 1'-0"

Wiemann Lamphere ARCHITECTS
525 Hercules Drive
Suite Two
Colchester, VT 05446
802.655.5020
802.622.6567
wiemannlamphere.com

Project Status

PUBLIC SAFETY FACILITY
VERMONT
ST. JOHNSBURY

NO.	DATE:	REVISION:

PROGRESS PRINT DATE: 9/3/2021 4:10:13 PM
SCALE: 3/16" = 1'-0"
PROJECT NO.: 2017067
DRAWN BY: Author
CHECKED BY: Checker

SHEET TITLE:
ELEVATIONS

SHEET NUMBER:
A2.01

PRINTED: 9/3/2021 4:10:15 PM FILENAME: C:\Users\bhoppe.WIEMANNLAMPHERE\Documents\2020005 St. J Public Safety_R21_SD2_ARCH_bhoppeTROPO.rvt

1 A2.02 SOUTH 3/16" = 1'-0"

2 A2.02 WEST 3/16" = 1'-0"

Project Status

Wiemann Lamphere ARCHITECTS
525 Hercules Drive
Suite Two
Colchester, VT 05446
802.655.5020
802.622.6567
wiemannlamphere.com

PUBLIC SAFETY FACILITY
VERMONT
ST. JOHNSBURY

NO.	DATE:	REVISION:

PROGRESS PRINT DATE: 9/3/2021 4:15:09 PM
SCALE: 3/16" = 1'-0"
PROJECT NO.: 2017067
DRAWN BY: Author
CHECKED BY: Checker

SHEET TITLE: ELEVATIONS

SHEET NUMBER: A2.02

Draft Budget for Armory Redevelopment Project - September 2021

Saint Johnsbury Public Safety Building

PHASE I: Environmental Review & Remediation	
Cost to analyze, administer and remediate	**$1,300,000**
Total Phase I	**1,300,000**

PHASE II: Construction		
PD	Armory Construction	**$2,778,561**
Subtotal CONSTRUCTION COSTS		**$2,778,561**
01	CM General Conditions	**$203,733**
	Insurances	**$27,143**
	General Requirements	**$84,771**
	CM Fee	**$216,595**
	CM P&P Bond	**$27,143**
	Estimating Contingency	**$311,421**
Subtotal CM COSTS		**$870,806**
Other	Escalation to 2022 Construction Start	**$197,142**
Subtotal PROJECT CONSTRUCTION COST		**$3,846,509**
Subtotal SOFT COSTS		**$702,409**
Total Phase II		**4,548,918**

Total Phase I - Environmental Review & Remediation	**$1,300,000**
Total Phase II - Construction	**$4,548,918**
Total Project Budget	**$5,848,918**

106 Associates
11 Ward Street
Burlington, VT 05401
(802) 777-1572
scottnewman@106associates.com

Memorandum

June 24, 2021

Elizabeth Peebles
Historic Resources Specialist
Vermont Division for Historic Preservation
1 National Life Drive
Montpelier, VT 05633

Re: St. Johnsbury Armory Redevelopment
Section 106 Review: CDBG, EPA

Dear Elizabeth,

The project team is appreciative of your and Yvonne's attendance at the May 11 onsite meeting to discuss the Armory redevelopment project. Following the meeting the Town commissioned additional renderings enabling the team to further consider the merits and constraints of the range of alternatives we discussed. This memorandum is intended to convey the findings of the additional consultation and design work for your consideration in advance of the preparation of a full Section 106 Review. Some project background and analysis are provided here to preface the team's recommendations in Section 6:

1. Summary Exterior Description

The design of the ca. 1916, National Register-listed Armory comprises two connected blocks in brick construction: the front, street-facing block being two stories, seven-by-three bays, with a half-above-grade basement and flat roof. The façade is highlighted by wall planes that stagger back from full-height projecting bays flanking the central entrance, and an embattled parapet at the flat roofline. The entirety of the front block has continuous courses of decorative brick banding terminating in corbelled brackets at the eaves. The six-by-four bay rear block houses the clear-span drill hall under a slate-covered gambrel roof supported on steel trusses. The brick wall planes are punctuated with regularly spaced brick pilasters. Ornament on the rear block is minimal in comparison. With few exceptions, the building is fenestrated by original 1/1 wood sash double-hung windows measuring 13" wide by 43" tall with jack-arch lintels and concrete sills. The front entrance paired doors are unsympathetic 1970s replacements.

2. Summary Interior Description

The interior remains largely configured per the original design, with some partitions added when Town departments occupied the building beginning in the 1970s. Front block first and second floors are divided into offices on either side of central halls that contain the stairs. Trim is generally flat stock boards with rounded over edges. Of particular significance are the ranking officer's office (room 2-3) on the second floor containing an original, albeit inoperable fireplace, the 12-light fixed sash windows overlooking the drill hall of which only one is uncovered, and the five-panel and

pane-and-panel interior doors. The drill hall is a clear span space with overhead built-up trusses supporting the gambrel roof. Floors are hardwood, walls are exposed brick, and the full, uninsulated gambrel is paneled overhead. A street-facing, 8-light fixed sash window remains in the gambrel overlooking the front block flat roof. The original windows overlooking the drill hall have been covered over, save one. The basement is heavily partitioned, containing mechanical rooms, bathrooms, storage rooms, locker rooms, and some office spaces. Most of the wood partitions have been stripped to the studs and the basement appears in an unfinished space in poor condition. The plumbing and heating have been disconnected.

3. Summary Conditions

Conditions of the building vary per component. Overall, the brick walls appear sound although some sections require repointing and further evaluation will be necessary. Several of the concrete sills need heavy repairs or replacement. The rear garage has failed and would need to be replaced. The front block flat roof is covered with a temporary membrane secured by several dozen rubber tires. The upper planes of the slate-covered gambrel have also been covered with rubber membrane to temporarily address active roof leaks. The brick chimney has been metal-banded to prevent collapse. Wood-sash windows are intact but the paint system has failed; some deterioration of the sash was observed on the exterior. Interior conditions are poor with much of the deterioration related to freeze/thaw action and long-term roof leaks. Plaster has failed in multiple areas exposing the wood lath which was observed to be buckling in places. Some walls have been intentionally stripped of plaster. Remaining plaster shows heavy cracking and paint is peeling off the walls in sheets. Paint has also failed on most of the trim but the wood appears to be generally sound. Finish flooring has been removed in much of the interior, exposing diagonal plank subfloor. Mechanical systems have been disconnected, are considered obsolete and will need 100% replacement. Life safety and accessibility facilities do not meet code, and the building is uninsulated.

4. Historic Properties

The Saint Johnsbury Armory is listed as a contributing building (No. 68) in the National Register of Historic Places St. Johnsbury Main Street Historic District; date of listing is May 28, 1975. It was built in 1916 to serve as a regional headquarters for Company D, First Vermont Infantry of the Vermont National Guard. The Armory mirrors the design of two other armories built in the previous four years by the Vermont State Armory Board, in Saint Albans and Bellows Falls. The March 2012 edition of the Saint Johnsbury Historic and Heritage Center's Newsletter provides a concise history of the building's construction which is excerpted here:

> *"The property chosen after looking at three different locations was the former Burnham property located between the Union Block and the Episcopal Church. Captain Herbert Wilcox and Lieutenant H. N. Ladd of Company D took part in the inspection of possible sites on Western Avenue and Railroad Street before settling on the Burnham property. In the 1875 F. W. Beers Atlas of Caledonia County, the property is shown with four buildings on it. The buildings were bought and moved by Rev. John Wesley. Claire Dunne Johnson's research in her book I See By the Paper – Volume 1 tells us that one building went to Green Street and the others went to Harvey Street, being the second, third and fourth houses on the left. She goes on to say that this was a second move for the first one on Harvey Street (former Knapp house) as it had stood where the Athenaeum is! In fact it had been occupied on the second*

floor by early photographer F. B. Gage that we talk of in December. The Burnham property was bought by the town and deeded to the state with the understanding it could be available for Town meetings and voting.

The Cummings Construction Company was the contractor after the houses were removed. B. G. Miles supervised the work; he had done the same with the Masonic Temple and the St. Johnsbury Annex as well as others.

As the armory neared completion, it was reported that amenities included lounging and reading rooms, billiard rooms, lockers, showers and dressing rooms were "conveniently arranged" and would make its occupants comfortable. The drill practice shed was 62.5 by 84 feet. Initially in this hall light was provided by six large tungstens, developing 1800 watts of power. The floor was hard birch and the area was heated by steam pipes along the walls near the floor. A wide stairway led to the second floor where the officers' quarters were located on the south side. On the north side was a reading room complete with fireplace. The basement was home to the mess hall and shooting range; space also provided a modern kitchen, two shower baths, toilets and dressing rooms. The woodwork was of hard pine, stained a dark oak color.

February 20, 1917 was the grand ball marking the formal opening of the armory. The drill hall was draped in red, white and blue colors and the crowd filled the hall as well as surrounding rooms. Sargent's orchestra provided the music for the evening. The orchestra opened with the grand march at nine and closed with a good night waltz. So began the life of the armory on Main Street."

5. Project Development

The Armory served its intended purpose for several decades before being sold to the Town of St. Johnsbury in 1975. Several municipal departments occupied the building until it was vacated in 2009 because the utilities, maintenance, code compliance, and environmental remediation costs had become prohibitively expensive. Among the many obstacles to rehabilitation is an unacceptably high level of PCBs in the basement paint. At 5,700 parts per million, it far surpasses the acceptable concentration of 50 parts per million. The town has offered the building to developers for $1 over several years, but the deteriorated conditions and environmental contamination have been too expensive to attract any takers.

The lack of outside interest combined with the central location of this important building resulted in the Town of St. Johnsbury pursuing a redevelopment on its own and assembling a project team comprising the following members: Assistant Town Manager Joe Kasprzak and Town Manager Chad Whitehead from the Town of St. Johnsbury, Joe Weith (development consultant) from White + Burke Real Estate Advisors, David Roy (architect) from Wiemann Lamphere Architects, Scott Newman (HP consultant) from 106 Associates, and Chief Tim Page from the St. Johnsbury Police Department in an advisory capacity.

The team's objective has been to advance a rehabilitation project that will house the Town's Police Department and dispatch center whose current quarters at 1187 Main Street are considered unsuitable both structurally and in available space. The larger objectives of the rehabilitation are to adaptively reuse the centrally located, National Register-listed building on the Town's Main Street; remediate the environmental contamination of PCB's, asbestos, and lead; and provide a catalyst for

further economic activity and rehabilitation in St. Johnsbury's downtown core. To this end, the Town has applied for – and been awarded - a $500,000 EPA grant to address the environmental contamination. The town is also seeking VCDP assistance to complete the rehabilitation under the Slums and Blight program.

Local consultation to date has included presentations of the project at two Selectboard meetings and the VCDP-required meeting attending application to the Slums and Blight Program. The feedback has been consistently supportive. The concluding component of public input for the Armory project will be the bond vote to go before the Town late summer or early fall, 2021.

6. Concept Alternatives Evaluation

Preserving and rehabilitating the main block is among the primary goals of the Town. The street fronting façade is highly decorated with banded and corbelled brickwork yet imposing with its embattled roofline and central entrance flanked by projecting pavilions. Its original function as an early 19th century Armory is clear its form and ornament. The project will preserve and restore the main block by repairing brickwork and window surrounds, replacing the roof covering, and installing compatible entrance doors.

Issues attending treatment of the rear block are more complex. As discussed onsite and as will be further detailed in the Section 106 review, proposed parking and specialized access requirements for the police department will consume most of the area now under the gambrel roof, requiring the removal of most of the rear block as shown in the attached site plan dated 5-3-21. The resulting issue was how to treat the two remaining bays behind the main block. To that end, the team further evaluated the two concepts discussed at the onsite meeting: (1) retaining a section of the gambrel roof as shown in the attached plans and elevations dated 5-27-21, and (2) raising the walls to two full stories and constructing a flat roof as shown in the attached elevations dated 5-10-21. The response to the concept drawings was unanimous. While acknowledging the historic importance of the drill hall and the slate-covered gambrel that covered it, the team strongly preferred the two story/flat roof design. The following bullet points reflect the team's considerations:

- The geometry of the truncated gambrel is visually awkward compared to its original form, an architecturally off-putting appearance that extends to the entirety of the rehabilitated building.

- Trying to force retention of the gambrel element into the design resulted in a less desirable outcome and one that did not respect the proportions and scale of the original structure.

- The value of retaining a section of the gambrel would be limited to the exterior only, as the gambrel would be infilled with office space on the second floor, removing the ability to appreciate the original open space for which it was designed.

- To avoid having the trusses pierce the office below the code-compliant level of 7'6", truss members will be buried within or against dividing walls, limiting the ability to appreciate the structural system.

- The trusses do not meet code-compliant load capacity and would need to be strengthened with stiffening plates, further diminishing the value of retaining them in the new design.

- The gambrels are steeply sloped at the north and south eaves and present potentially hazardous conditions with falling snow and ice at the ADA building entrance, sidewalks and stairs, the proposed dumpster/recycling area, and at driveway access points.

- The truncated gambrel would constitute a long-term maintenance and liability concern for the Town related to loose or damaged slates over the driveways and access points.

Project architect and President of Wiemann Lamphere Architects, David Roy, summed up his evaluation of retaining the section of gambrel roof as follows:

> *"All parties agree that the armory building is a significant structure in the St. Johnsbury community and should be preserved in the most meaningful way possible. It has always been our assertion that the frontage on Main Street is the principal façade and has the material qualities and details seen only in the buildings of the early 20th century. In fact, current development plans will not only maintain the original brick massing and coursing, repair crumbling portions of the façade and mitigate the effects of past weather and water intrusion issues. The end result will be a rejuvenated exterior, with newly cleaned masonry and repointing of the masonry joints as well as replacement of windows and doors to their respective historic character. These measures will extend the useful life of the building and its presence on Main Street for future generations.*
>
> *As we studied the building for development, we discussed at great length the extent to which we could preserve the gambrel roof element(s) of the building. The program requirements of the building only require a small portion of the original drill hall area and the access and site requirements for the project mandated that a portion of the building be removed to accommodate the needs of the police department. As we studied alternative concepts, the idea of maintaining only a portion of the gambrel roof, although possible, failed to maintain the original proportions of the building and the presence of the drill hall as a prominent element of the overall structure. The result was a massing that as awkward and disproportional with respect to the balance of the building. It was our assertion that trying to force this roof element into the design resulted in a less desirable outcome and one that did not respect the proportions and scale of the original structure."*

The project was also presented to the St. Johnsbury Design Advisory Committee (DAC) for a recommendation for the Design Control District. After discussion, the DAC issued a letter (attached) in support of the preferred alternative, stating:

> *"The DAC recommends the proposed changes to the Armory. Specifically, removing the gambrel roof in order to provide better protection to the handicap ramp and entrance from snow and rain runoff. The expense and limitations of keeping the gambrel roof would result in architecture that would be visually awkward and would not enhance the building.*
>
> *We also recommend that green space on the northeast corner of the building be increased to enhance the streetscape.*
>
> *Regarding the carport and sallyport, the DAC recommends the proposed white clapboard be reconsidered for a dark graphite or grey to create less contrast with the brick.*

The DAC recommends that the black fencing recently installed at the Fairbanks Museum be considered for the Armory for cohesion with existing historic properties in the Design Control District."

7. Conclusions and Recommendations

With 106 Associates engaged to address historic preservation permitting, I have been part of the consultations and concur with opinions of the project team and St. Johnsbury DAC as expressed above. Having heard all views and considered the alternatives, it is my opinion that the preservation value of retaining a section of the gambrel is limited, as described, and advancing the concept expressed in the site plans dated 5-3-21 and elevations dated 5-10-21 is a preferred preservation resolution. It prioritizes the overall scale and geometry of the building and prominence of the street-fronting main block and has wide support in the Town. It is understood that this conceptual design will need refinements to ensure compatibility and legibility of the new work. It is also understood that the Officer's room with the fireplace will need to be retained intact as an important interior feature, that interior doors and trim should be retained as possible, and the windows that originally opened over the drill hall should be preserved as possible on whichever side retains more historic fabric. Lastly, consistent with the requirements of Section 106, consultation on the project and the preferred alternative will continue with the St. Johnsbury Design Advisory Committee, the History and Heritage Center, the public, and the Division for Historic Preservation to ensure all input is taken into consideration.

The team would like to arrange a follow up online meeting to hear your thoughts about this memo, some issues concerning the possible extension of the rear block side walls, and mitigating the anticipated adverse effect. I will be pleased to be in touch to work out timing for the meeting.

Sincerely,

D. Scott Newman
Principal, 106 Associates

cc: Chad Whitehead, St. Johnsbury Town Manager
Joe Kasprzak, St. Johnsbury Assistant Town Manager
Joe Weith, White + Burke Real Estate Advisors

HARTGEN
archeological associates inc

ARCHEOLOGICAL RESOURCE ASSESSMENT

St. Johnsbury Armory Redevelopment Project

Town of St. Johnsbury
Caledonia County, Vermont

HAA # 5685.11

Submitted to:

Joe Kasprzak
Town of St. Johnsbury
51 Depot Square, Suite #3
St. Johnsbury, Vermont 05819
p. (802) 535-6956
e. jkasprzak@stjvt.com

Prepared by:

Hartgen Archeological Associates, Inc.
PO Box 81
Putney, Vermont 05346
p +1 802 387 6020
f +1 802 387 8524
e emanning@hartgen.com

www.hartgen.com

An ACRA Member Firm
www.acra-crm.org

July 2021

MANAGEMENT SUMMARY

Involved State and Federal Agencies: Vermont Division for Historic Preservation
Phase of Survey: Archeological Resource Assessment

LOCATION INFORMATION

Location: Armory Building located at 1249 Main Street
Town: Town of St. Johnsbury
County: Caledonia County, Vermont

PROJECT COMPONENTS

Area of APE: 0.44 acres (0.18 hectares)

7.5 Minute Quadrangle Map: 1988 St. Johnsbury

RESULTS OF RESEARCH

Precontact Archeological sites within one mile: Four
Historic Archeological sites within one mile: Five
National Register Historic District: Main Street Historic District
Precontact Sensitivity: Low due to previous disturbance
Historic Sensitivity: Low

RECOMMENDATIONS

The project Area of Potential Effects (APE) has been heavily modified during the historic period from construction and deconstruction of structures on the property. No further archeological investigation is recommended for the project area.

Report Authors: Elise Manning-Sterling, MA

Date of Report: July 2021

ARCHEOLOGICAL RESOURCE ASSESSMENT

Introduction

Hartgen Archeological Associates, Inc. (Hartgen) was retained by the Town of St. Johnsbury, Vermont to conduct an Archeological Resource Assessment (ARA) for the proposed St. Johnsbury Armory Redevelopment Project located on Main Street in St. Johnsbury, Caledonia County, Vermont (Map 1). The project includes involvement from the Vermont Community Development Program (VCDP) Community Development Block Grant (CDBG) program and the federal Department of Housing and Urban Development (HUD), and is subject to compliance with Section 106 of the National Historic Preservation Act. The archeological report will be reviewed by the Vermont Division for Historic Preservation (VDHP).

The project entails redeveloping the former Armory building, built in 1916 and located at 1249 Main Street, for use as a municipal police station and regional emergency dispatch center (Map 2). The redevelopment will include removal of the "gymnasium wing" at the back of the structure and replacement with a new wing attached to the 1916 front of the structure. The following project description was included in the request for proposal.

Project Description

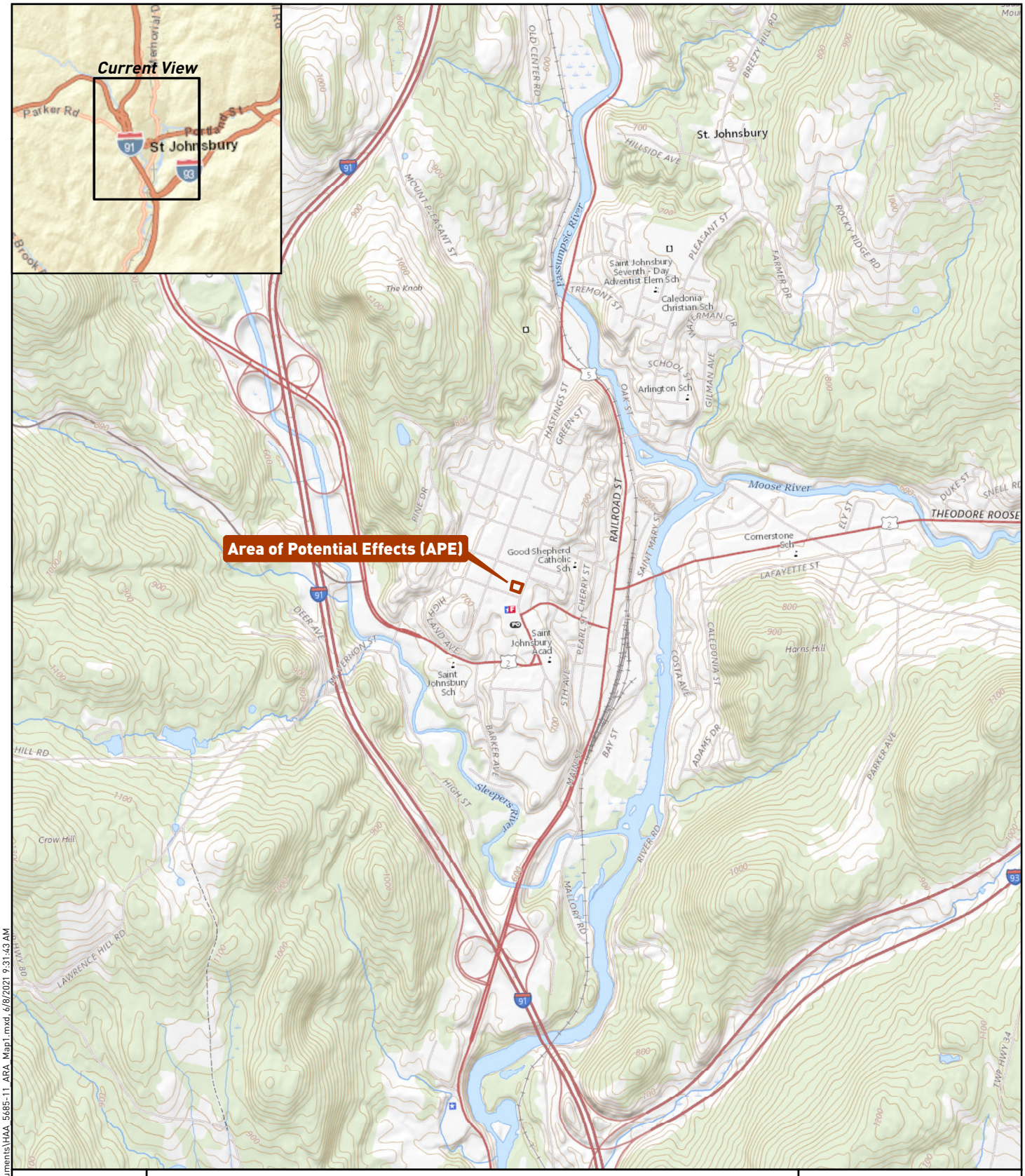
The Town of St. Johnsbury is interested in redeveloping the former Armory building located at 1249 Main Street for use as a municipal police station and regional emergency dispatch center. Owned by the Town, this building is within the historic district and represents a significant opportunity for the Town to drive economic redevelopment in this important downtown corridor. The building is contaminated and structurally compromised. Project specifics include:

• Lot Size: 0.44 acres.
• Current Building Size: Approximately 16,100 sf. The building consists of an east wing and west wing. The east wing fronts on Main Street and is 3 stories including the usable basement. The west wing is 2 stories (including the basement) and contains a former gymnasium.
• Proposed Building Size: Approximately 11,855 sf. A portion of the west "gymnasium" wing will be razed and replaced by on-site parking, a carport and a new addition for the police sally port.
• The entire 3-story east wing fronting on Main Street will be preserved. A portion of the west wing will be retained and renovated into a 3-story structure.

Environmental Background

The environment of an area is significant for determining the sensitivity of the project area for archeological resources. Precontact and historic groups often favored level, well-drained areas near wetlands and waterways. Therefore, topography, proximity to wetlands, and soils are examined to determine if there are landforms in the project area that are more likely to contain archeological resources. In addition, bedrock formations may contain chert or other resources that may have been quarried by precontact groups. Soil conditions can provide a clue to past climatic conditions, as well as changes in local hydrology.

The project area is located within the Vermont Piedmont physiographic region, located at an approximate elevation of 700 feet above means sea level (amsl), on a predominantly level terrace situated above the Passumpsic River, the Moose River and the Sleepers River. The project area is located approximately 3,000 feet southwest of the confluence of the Passumpsic and Moose Rivers, and approximately 1,500 feet east of the Sleepers River. To the north and south of the project area are steep sided rounded hill tops which reach to heights over 1,000 feet amsl, including Saddleback Mountain to the north, The Knob to the northwest and Harris Hill to the south.



1,000 0 1,000 2,000 Feet

300 0 300 600 Meters

Note: Contour interval is 20 feet.

Project Location

GIS Services Accessed 6/8/2021: Environmental Systems Research Institute, Inc., World Street Map; USGS The National Map

HARTGEN archeological associates inc

Map 1

N

30 0 30 60 Feet

9 0 9 18 Meters

Project Map

Vermont Center for Geographic Information, Orthoimagery, 2016-2020

HARTGEN archeological associates inc

Map 2

C:\HAA\projects\5685\GIS\Documents\HAA_5685-11_ARA_Map2.mxd, 6/8/2021 9:26:52 AM

The project area consists of a rectangular parcel in the central part of downtown St. Johnsbury, which presently contains the standing Armory structure. There are very thin strips of grass lawn along the south, west and north perimeters of the building which are surrounded by paved parking areas or driveways (Photos 1-3). At the southwest corner of the structure, there is a driveway which accesses a lower level of the building (Photo 1). On the Main Street side of the building, there is a wide central concrete sidewalk leading up the concrete front stairway. There is grass lawn with perennial plantings located on either side (north and south) of the sidewalk (Photo 4).

Photo 1. Photo shows the south side of the Armory building. Note the lower level driveway access on the left. View is to the northeast.

Soils

Soil surveys provide a general characterization of the types and depths of soils that are found in an area. This information is an important factor in determining the appropriate methodology if and when a field study is recommended. The soil type also informs the degree of artifact visibility and likely recovery rates. For example, artifacts are more visible and more easily recovered in sand than in stiff glacial clay, which will not pass through a screen easily.

The soils in the project area are designated as Urban land – Adams Nicholville Complex 0-8% slopes (USDA 2021). The soils within the Adams Nicholville Complex are found at the foot slope of lake terrace landforms and are characterized as somewhat excessively drained loam fine sand over sand subsoil. Urban Land is defined as land mostly covered by streets, parking lots, buildings and other structures characteristic of urban areas, with the original soils potentially altered or removed. (USDA 2021).

Photo 2. Photo shows the west side of the Armory building. View is to the northeast.

Photo 3. Photo shows the north side of the Armory building. View is to the east.

Photo 4. Photo shows the east side of the Armory building, facing Main Street. View is to the southwest.

Bedrock Geology

The bedrock geology of the project vicinity consists of Waits River formation that is characterized as "gray quartzose and micaceious crystalline limestone interbedded with gray quartz-muscovite phyllite or schist" and the Gile Mountain formation consisting of "gray quartz-muscovite phyllite or schist and gray micacious quartzite, calcareous mica schist and quartzose and micaceous crystalline limestone" (Doll et al. 1961). This material is not likely to have been sought after by Native American groups for stone tools.

HISTORIC DOCUMENTARY RESEARCH

Historic Archeological Sites and Cemeteries

The study of the VDHP site files revealed that there are several historic archeological sites located within one mile of the project area. No historic archaeological sites are located within or directly adjacent to the project area. The historic archeological sites in the general project vicinity include:

VT-CA-20 – Arnold Forge, a circa 1828 Iron works and blast furnace with a domestic complex known as "Paddock Village", located at Arnold's Falls. Located in St. Johnsbury on the west side of the Passumpsic River.

VT-CA-31 – A stone retaining wall located approximately one mile north of the APE.

VT-CA-32 – Industrial ruins dating from 1850-1950, which were located at Arnold's Falls. A Phase IA archaeological survey was conducted here in 1990 by Louis Berger and Associates, Inc. Located in St. Johnsbury on the west side of the Passumpsic River.

VT-CA-33 – Gage Impoundment - a historic standing structure and industrial ruins dating to 1850-1950. A Phase IA archaeological survey was conducted here in 1990 by Louis Berger and Associates, Inc.

VT-CA-40 – Grave excavations at a historic house in St. Johnsbury.

There are no known cemeteries located within the project area (Hyde and Hyde 1991).

State Register and National Register Sites

A search of the VDHP online resource files revealed that St. Johnsbury has over 500 individual structures listed on the Vermont State Register and/or National Register, as well as a number of National Register districts, several of which are outlined below.

The *St. Johnsbury Main Street Historic District* includes a large portion of Main Street, located west of Railroad Street, and several smaller east-west aligned side streets. The former Armory building is included as a contributing structure within the Main Street Historic District. Located approximately one block to the north of the Armory, on the east side of Main Street, is the National Register listed Fairbanks Museum. Built in 1890-91 by the firm of St. Johnsbury's most prominent architect, Lambert Packard, this structure is a 25,000 square foot, one-and-a-half story, U-shaped Richardsonian Romanesque style museum building, constructed of reddish-brown Longmeadow sandstone (National Register Nomination form 2007).

The *Railroad Street Historic District* included the lower portion of the block south of Portland St, extending south to the old railroad station. In 1980, a National Register Boundary Increase document was prepared that created the *St. Johnsbury Historic District* which combined the *Railroad Street Historic District* and the *St. Johnsbury Main Street Historic District*.

The *St. Johnsbury Paper Company Historic District* is located on both sides of Bay Street, located at the south end of St. Johnsbury near the Passumpsic River.

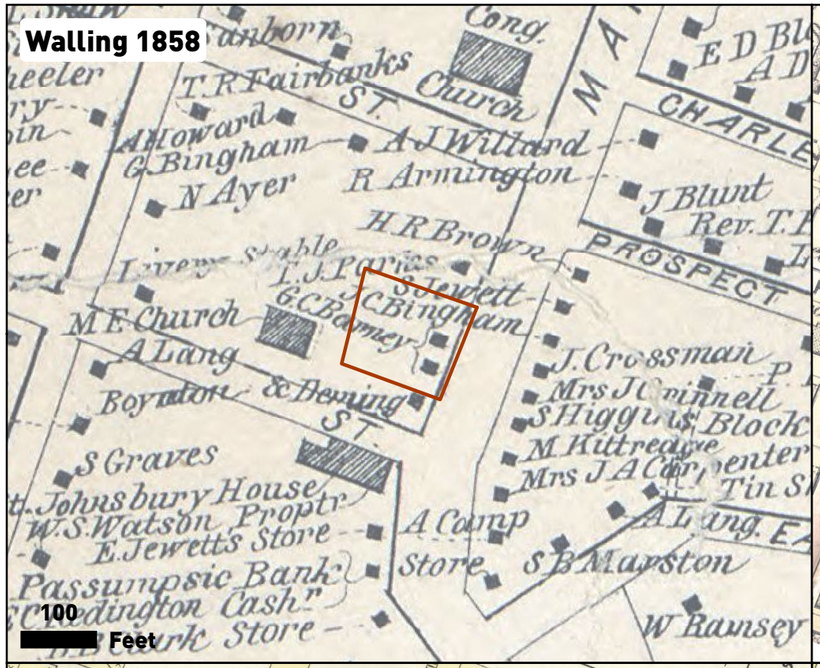
Historical Map Review and Archeological Sensitivity

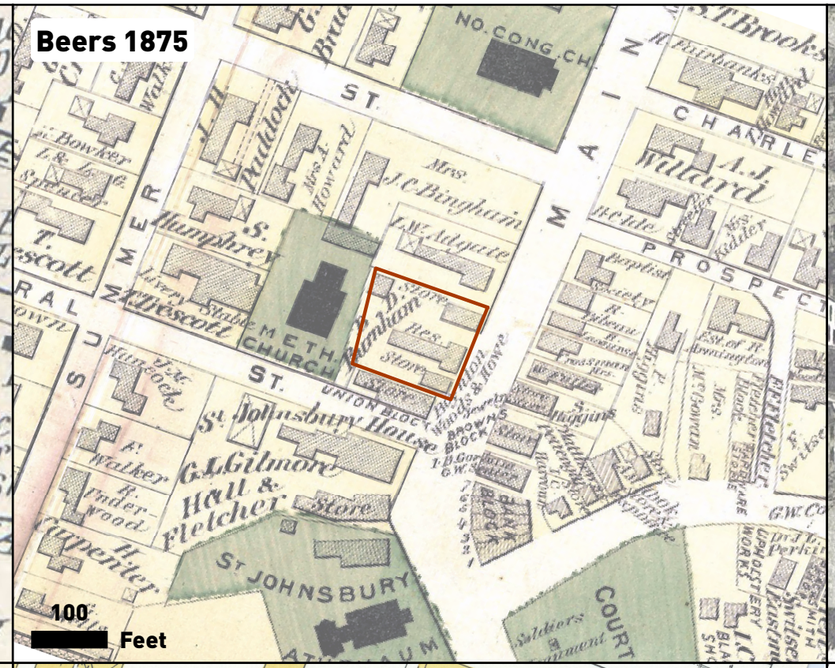
A review of historic maps of the project area was conducted to attain an overview of the changing historical and environmental landscape within the project area. This review includes the study of historic structures that may or may no longer be extant, alterations to road and rail systems, and changes in stream and river courses.

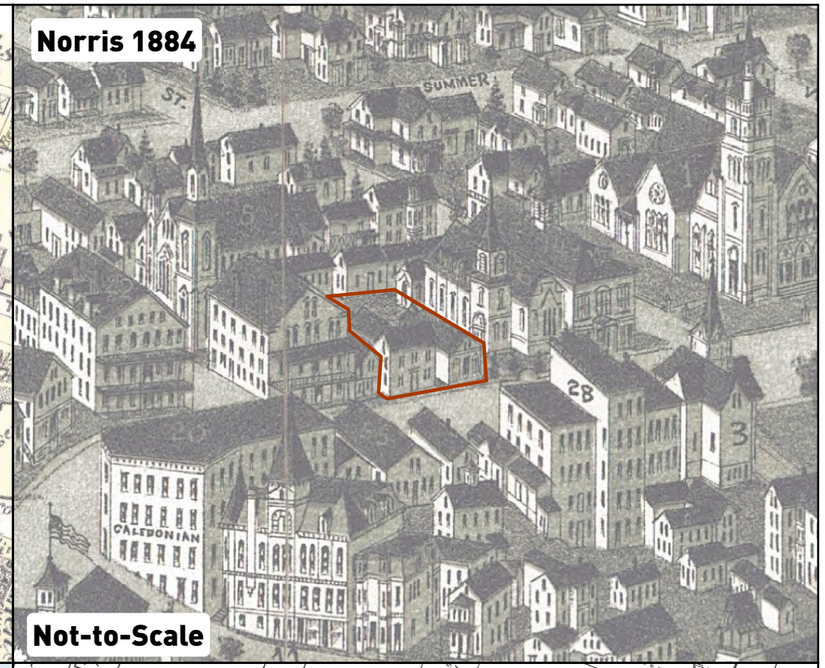
Examination of the 1858 Walling historic atlas map of Caledonia County shows two structures within the project parcel, most likely residences, owned by *J.C. Bingham* and *G.C. Barney* (Map 3). Seventeen years later, as shown on the 1875 Beers map, the configuration of buildings on the lot had changed to contain one domestic residence bordered to the north and south by stores (Map 3). A small outbuilding is also shown in the northwest corner of the lot. It is unclear whether any of the structures shown on the 1858 Walling map are the same as those on the Beers map, or if the earlier structures were razed, with newer structures constructed on the lot.

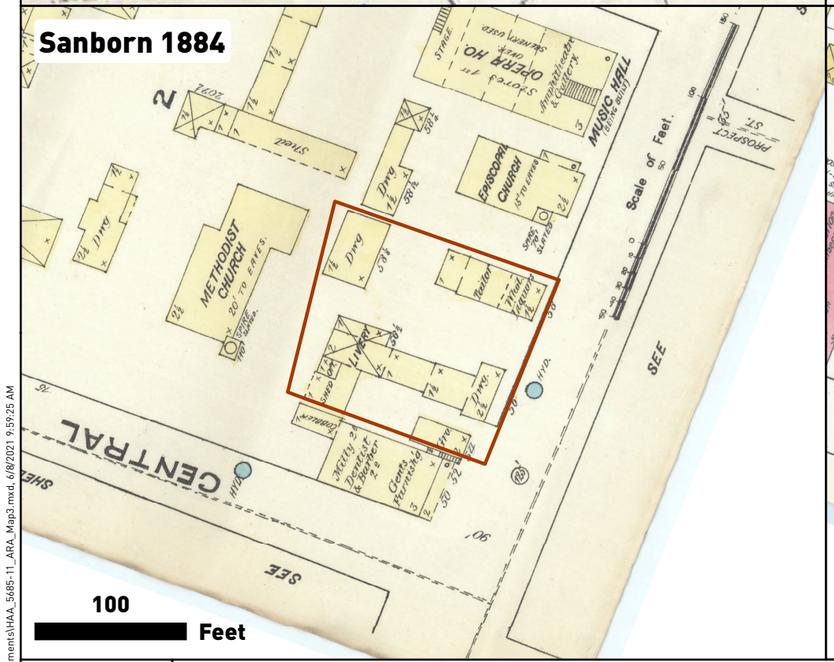
The 1884 Norris birdseye map provides a more detailed view of the structures that were located there at the time. The buildings were relatively substantial and varied in height from 1.5 to 2.5 stories (Map 3). The 1884 and 1912 Sanborn Insurance maps show a similar, but more detailed, configuration of buildings as depicted on the 1875 Beers map. Finally, the 1927 Sanborn map shows the Co. D. 1st Infantry Vermont National Guard Armory which was built in the center of the lot in 1916. The front section of this 3-story brick building was constructed with a full basement.

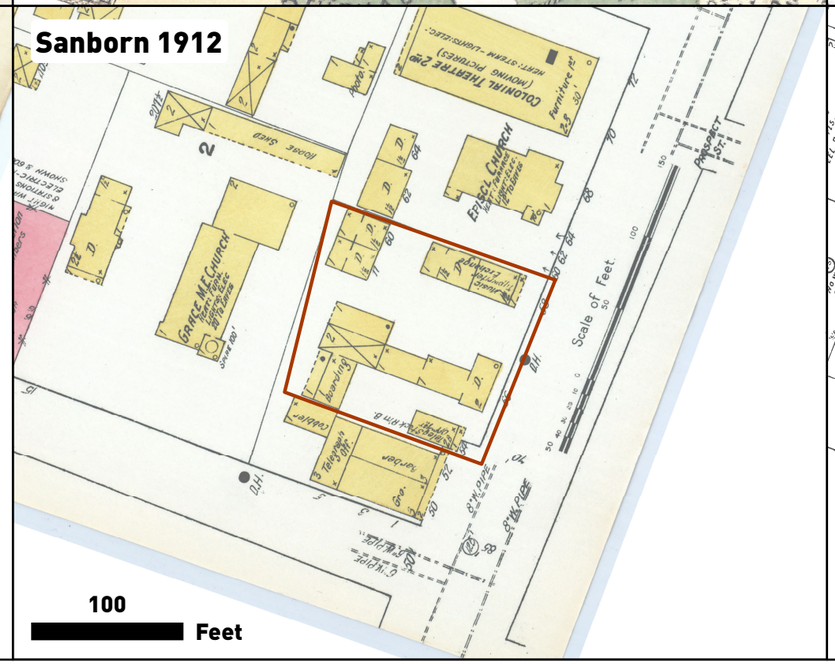
The map research indicates that there were a number of construction episodes within the project area throughout the 19th- and 20th- centuries, with earlier structures being razed and replaced with newer buildings. Because of the amount of construction and deconstruction, including the building of the Armory with a full basement, it is unlikely that there are any undisturbed archeological deposits that could provide potentially significant information about the historic use of the property. Therefore, the historic sensitivity of the project area is considered to be low.

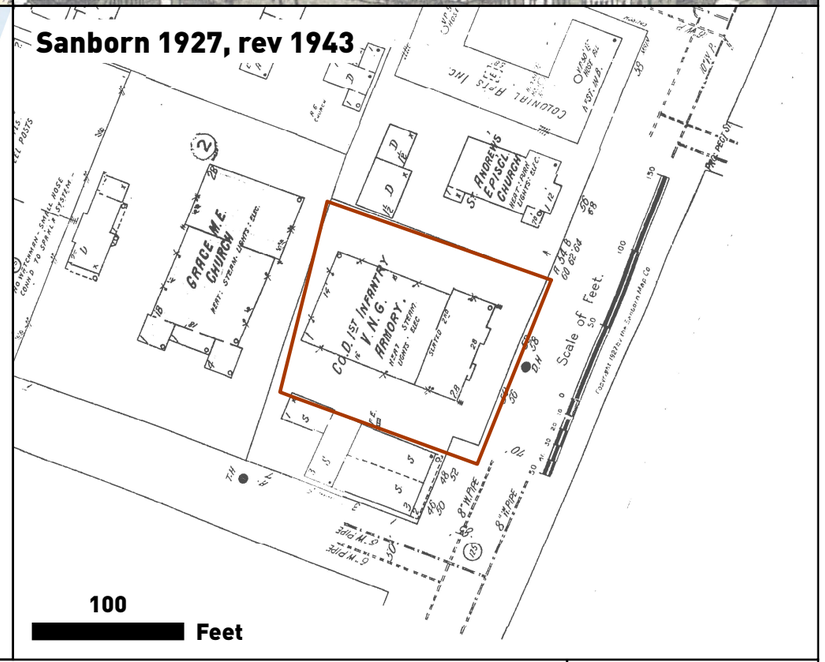












N

Legend

Area of Potential Effects (APE)

Historical Maps

1858-1943

HARTGEN archeological associates inc

Map 3

C:\HAA\projects\5685\GIS\Documents\HAA_5685-11_ARA_Map3.mxd, 6/8/2021 9:59:25 AM

PRECONTACT DOCUMENTARY RESEARCH

Precontact Archeological Sites

Previously reported archeological sites provide an overview of both the types of sites that may be present in the project area and relation of sites throughout the surrounding region. Examination of Vermont Archaeological Inventory (VAI) online resource center (orc) site files indicates that there are several recorded precontact sites in the general area in similar settings as the project area.

There are four precontact sites reported within one mile of the project area. Because of the presence of the three major rivers in the project vicinity, as well as smaller streams and wetlands, a greater number of precontact sites in the area would be anticipated. The paucity of precontact archaeological sites in the St. Johnsbury vicinity is more likely attributable to limited archeological investigations rather than a true lack of sites. In particular, the confluence of the Moose and Passumpsic Rivers, an area that contains small islands would have drawn Native Americans to the area to exploit natural resources.

There are four precontact sites located within several miles of the APE which are outlined below:

VT-CA-18 – SJ2 - A Late Archaic site located on the south/west bank of the Moose River located approximately one mile east of the project area. Lithic debitage and eleven projectile points of various material types were recovered from this site.

VT-CA-19 – Penny Brook Site (SJ3) - A precontact site of undetermined time period, located near the confluence of Sleepers River and Creamery Brook. Artifacts collected included stone debitage and bifaces of poor quality gray/black chert, and quartz. The site was located on the east side of the Passumpsic River located near I-91, whose construction destroyed the site.

VT-CA- 70 – A Middle Woodland site located on the Passumpsic River approximately one mile north of the project area was interpreted to be a small, short-term occupation camp. The cultural material included a basalt Fox Creek-like project point, and several quartzite flakes. A study conducted by UVM concluded that the site was not eligible for listing on the NRHP.

VT-CA-115 – Hookers Bluff Site – The site is reported based on antidotal reports and archival references to a precontact site located on an island at the confluence of the Passumpsic and Moose Rivers.

Precontact Archeological Sensitivity

The VDHP Environmental Predictive Model was completed for the project area, which produced an overall rating of 12 (Appendix 1), with a rating of 32 or above indicating precontact sensitivity. This project area received points based on its location near a drainage divide, as well as its proximity to glacial Lake Hitchcock. However, the disturbance caused by historic and modern construction and deconstruction of structures on the project area parcel, as well as the installation of associated parking areas and sidewalks greatly decreased the overall sensitivity rating.

ARCHEOLOGICAL POTENTIAL AND RECOMMENDATIONS

The archeological potential of the project APE is considered to be low for the presence of historic and precontact resources. No further archeological study is recommended for the St. Johnsbury Armory project area. This report and these recommendations should be submitted to the VDHP for review and concurrence.

BIBLIOGRAPHY

Beers, Frederick W.
1875 *Atlas of Caledonia County, Vermont.* F. W. Beers, New York.

Child, Hamilton
1887 *Gazetteer and Business Directory of Caledonia County, Vermont.* The Journal Office, Syracuse, NY.

Doll, Charles G., Wallace M. Cady, James B. Thompson, Jr. and Marland P. Billings
1961 *Centennial Geologic Map of Vermont*, State of Vermont Geological Survey, Waterbury, Vermont.

Hyde, Arthur L., and Frances P. Hyde (eds.)
1991 *Burial Grounds of Vermont*, Vermont Old Cemetery Association, Bradford, Vermont.

Norris, George E.
1884 *St. Johnsbury, County Seat of Caledonia County, VT.* George E. Norris. Brockton, Mass.

Ritchie, William A.
1953 A Probable Paleo-Indian Site in Vermont. *American Antiquity* 18(3):249-258.

Stewart, David P.
1956-1966 Draft Surficial Geology Map. Annotated 1943 St. Johnsbury 15' USGS Quadrangle, on CD provided by Vermont Geological Survey, Waterbury, Vermont.

United States Department of Agriculture (USDA)
2021 Soil Survey Information for Caledonia County. Information provided by the Caledonia County office of the USDA.

United States Geological Survey (USGS)
1943 *St. Johnsbury, Vermont 15' USGS Quadgrangle.* USGS, Washington, DC.
1983 *St. Johnsbury, Vermont 7.5'x15' USGS Quadrangle.* USGS, Reston, Virginia.

Vermont Division for Historic Preservation (VDHP)
2015 Vermont's Prehistoric Cultural Heritage. *Vermont Historic Preservation Plan,* Division for Historic Preservation, Montpelier.

Walling, H. F.
1858 *Map of Caledonia County, Vermont.* Baker and Tilden, New York.

APPENDIX I

ENVIRONMENTAL PREDICTIVE MODEL

Phase I
Phase I Environmental Site Assessment

Former Saint Johnsbury Armory
VT DEC Site #2010-4075
(SMAC September 7, 2010)
1249 Main Street
Saint Johnsbury, Vermont

May 2012

Prepared for:
VTDEC Sites Management Section
103 South Main Street
Waterbury, VT

The Johnson Company

ENVIRONMENTAL SCIENCE AND
ENGINEERING SOLUTIONS

PARTNERS FOR SMART THINKING
AND CREATIVE STRATEGIES

We declare that, to the best of our professional knowledge and belief, we meet the definition of Environmental Professional as defined in §312.10 of 40 CFR Part 312.

We have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. We have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

THE JOHNSON COMPANY, INC.

James R. Bowes, P.G.
Senior Geologist

Jeremy Matt, a Staff Engineer with The Johnson Company, Inc., assisted with the research and preparation of this report

The Johnson Company ENVIRONMENTAL SCIENCE AND ENGINEERING SOLUTIONS

ph (802) 229-4600
fax (802) 229-5876
100 State Street, Suite 600
Montpelier, VT 05602
www.johnsonco.com

May 23, 2012

Ms. Jennifer Schwartz
Brownfields Response Program
Waste Management Division - DEC
103 South Main Street/West Office
Waterbury, VT 05671

Re: Phase I Environmental Site Assessment Report
St. Johnsbury Armory Building Property,
1249 Main Street, St. Johnsbury, Vermont 05671

Dear Ms. Schwartz:

The Johnson Company is pleased to present you with this report of our findings of a Phase I Environmental Site Assessment (ESA) of the St. Johnsbury Armory Building property located at 1249 Main Street, Saint Johnsbury, Vermont. This ESA was conducted in accordance with the scope and limitations of the American Society for Testing and Materials' Standard Practice for Environmental Site Assessments (ASTM) E 1527-05 in conformance with 40 CFR Part 312, Standards and Practices for All Appropriate Inquiries.

We appreciate working for you on this project. Please call Jeremy Matt or myself if you have questions regarding any of the following information.

Sincerely,
THE JOHNSON COMPANY, INC.

By: Tim Bowes

James R. Bowes, P.G.
Senior Geologist

Attachment

cc: Peggy Pearl, St. Johnsbury History and Heritage Center
Dorrie Paar, US EPA Region I
Kathleen Castagna, US EPA Region I
Gail Aloisio, NVDA
Hugo Martinez-Cazon VTDEC

K:\3-2202-37\Phase I\052212_St J Armory_Phase_I CLL.doc

EXECUTIVE SUMMARY

The Johnson Company, Inc., of Montpelier, Vermont was retained by Vermont Department of Environmental Conservation (Brownfield Contract #16752) to conduct a Phase I Environmental Site Assessment (ESA) of the property referred to as the Saint Johnsbury Armory located at 1249 Main Street in Saint Johnsbury, Vermont (the Site).

This ESA was performed by personnel from The Johnson Company who meet the definition of Environmental Professional as defined in 40 CFR Part 312. This ESA included reviewing existing information including available aerial photographs and topographic maps, determining the regulatory status of the Site, contacting appropriate personnel regarding past and present uses of the Site, investigating the potential for past releases of petroleum products and/or hazardous substances at the Site, and conducting a site reconnaissance to visually inspect accessible portions of the Site to ascertain the presence of recognized environmental conditions (RECs) in the form of past, present or potential release(s) of hazardous substances or petroleum products.

Although the Site is listed by the VT DEC Sites Management Section as a hazardous site, its status is inactive (Sites Management Activity Complete letter dated September 7, 2010 issued by the VTDEC; Schwer, 2010). The Site is not included in the Federal Records System as a RCRA generator. The Site is not listed on the Federal National Priority List (NPL) as a Superfund Site. The Site is not listed as a hazardous waste site on the federal Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS). The Site is a former permitted underground storage tank (UST) facility which had a 1,000 gallon gasoline UST and a 6,000 gallon heating oil (#2 fuel oil) UST. Both USTs were permanently decommissioned and removed from the property in June 2010. According to previous investigation reports reviewed as part of this ESA, petroleum contaminated soil (PCS) associated with the fuel oil UST was transported off site and disposed in accord with State and Federal regulations. A confirmation soil sample was collected from the west end of the former heating oil UST by Horizons Engineering June 23, 2010 and no detectable concentrations of volatile organic compounds (VOCs) or total petroleum hydrocarbons (TPH) were reported above laboratory detection limits. Upon review of the documentation regarding off Site transport and disposal, and the confirmation sample, the VTDEC issued the SMAC letter.

The VT DEC and the United States Coast Guard National Response Center databases do not have any record of spills of hazardous substances or petroleum products occurring on the Site.

A Site reconnaissance conducted by The Johnson Company on April 26, 2012 included an inspection of the interior and exterior of portions of the Site. Photographs of Site conditions that day are included as Appendix 1 of this report.

The Johnson Company understands that the Saint Johnsbury History and Heritage Center wishes to assess the feasibility for redevelopment of the Site into a possible office headquarters, education, and museum space.

We have performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E-1527 of the Saint Johnsbury Armory, 1249 Main Street, Saint Johnsbury, Vermont, the property. Any exception to, or deletions from, this practice are described in Section 8.1 of this report. This assessment has revealed no evidence of recognized environmental conditions in connection with the property except for the following:

HISTORICAL REC:

According to the July 21, 2010 Horizons Engineering (Littleton, NH) UST closure report, petroleum contaminated soils (PCS) were identified in June 2010 during the permanent closure and removal of a 1,000 gallon capacity gasoline and 6,000 gallon capacity fuel oil UST. Both USTs were observed to be in poor condition at the time of removal. No subsurface impact to underlying soil was observed with the gasoline UST and pump island ; however, elevated photo-ionization detector (PID) readings registering between 12 and 50 parts per million (ppm) were noted in the soils adjacent to piping area, the fill area and the west end of the fuel oil UST (Horizons Engineering, 2010). A total of 22 tons of PCS were removed. According to the Horizons report, following removal of the PCS, no registered PID readings were identified in excess of 10 ppm within the area of excavation. The PCS were transported off site for treatment and disposal to Environmental Soil Management Inc. (ESMI) in Loudon NH and a cleanup confirmation soil sample was collected from the base of the excavation at the west end of the UST by Horizon Engineering and submitted for laboratory analysis for total petroleum hydrocarbons (TPH) and volatile organic compounds (VOCs) using EPA Methods 8100, and 8260, respectively. The confirmatory soil sampling results revealed no detectable concentrations of VOC or TPH above method detection limits in the soil. A Sites Management Activity Complete (SMAC) designation was granted and the Site was removed from the SMS active hazardous waste site list.

Recommendation: No further action is recommended with respect to the former USTs. Following their discovery during the UST closure, the PCS were identified and managed per State and Federal guidelines such that an SMAC designation was assigned to the Site September 7, 2010.

RECS:

1. Three pits/floor drain structures were identified during the April 26th, 2012 Site reconnaissance effort:

    a. A pit observed in the northeast corner of the Armory building basement was covered with a ¼ inch thick, removable, steel plate. There is a 6-inch diameter iron pipe

across the bottom of the pit with a vertical 'tee' section protruding upward in the middle of the pit. Standing water was observed in the vertical portion of "tee"; however, no sheens or odor were associated with this water.

b. A filled-in structure (approximately 7 feet long by 1 foot wide) was observed in the floor of the basement, next to the vehicle access ramp located in the southwest portion of the Armory building basement (Figure 3). This structure has the appearance of a trench/floor drain that has been decommissioned. Jim Rust (Town of St Johnsbury) indicated to The Johnson Company that in years past when the building operated as the Armory, vehicles were stored in the basement of the Armory building, and floor drains were installed to convey surface water flow entering via the vehicle access ramp southwest corner of the building (Figure 3).

c. A grated opening observed approximately 8-10 feet north of the aforementioned filled-in structure (in the west-central portion of the Armory building basement) which has an iron pipe (approximately 4-inches in diameter) in the base of the pit under the grated opening. Although not confirmed, the pipe may convey water from the pit toward a sump pump located approximately 5-10 feet to the north. The discharge pipe routed from the sump pump may be connected to the sewer line, although this is not confirmed.

Recommendation: The pit/floor drain structures should be further inspected for the presence of contamination and to better ascertain what they are connected to. According to Mr. Jim Rust, Town of St. Johnsbury, it was his understanding that the 6-inch iron pipe observed in the pit in the northeast corner is connected to pipe that conveys water from roof drains, however this was not confirmed. Attempts should be made to further ascertain the history of the filled-in structure in order to determine if this was indeed a former floor drain. This would entail review of additional building plans (if available), review of Town sewer lines records in the immediate vicinity of the Armory building (if available) and, attempt to identify and contact personnel with knowledge of the filling process regarding more specific information as to when the structure was filled, and what its purpose was. The follow-up review should be augmented with a dye-test to determine connectivity between the various water collection structures and ultimately an outlet point (if possible). Soil or sediment present or discovered (during additional investigation) in the pit/floor drain structures should be sampled and submitted for laboratory analysis for VOCs and TPH.

2. A pile of discarded paint cans and buckets (1 – 5 gallon nominal volume) was observed stacked under the roof of the access ramp located in the southwest corner of the Armory building. Although leaks, spills or other visual indications of release(s) from this pile of containers were not observed, there is possibility of surface water and groundwater impacts

should some or all of the containers contain residual potentially hazardous materials that could create an inadvertent spill or leak from this debris.

Recommendation: The pile of containerized potentially hazardous debris should be inventoried by a qualified environmental contractor, to quantify and better characterize the contents to determine appropriate management alternatives. Once debris is adequately characterized, the containers and their contents should be disposed of in accordance with State and Federal regulations.

3. A pole-mounted transformer was observed in the northwest corner of the Site. A call to CVPS, the electric service provider, indicated this unit was installed in 1973. CVPS did not have any information as to whether the oil in this unit contained PCBs. Although there were no visual indications that the transformer has leaked, the age of the transformer suggests the oil within it may contain PCBs.

   Recommendation: CVPS should be contacted about replacing the transformer, or replacing the oil within the transformer with PCB-free oil.

4. Aged electrical components (electrical panel, capacitors, switches) were observed in the boiler room, in the basement of the Armory building. Additional, older-appearing, electrical components were observed in several rooms in the Armory building. PCB-containing fluorescent light ballasts may be present at the Site. Due to the age of the building, there is a potential for PCB-containing construction material to be present in the building as a component of window caulking, sealants, paints, floor adhesive/mastic.

   Recommendation: A qualified hazardous waste inspector with expertise specific to PCB-containing electric equipment and construction material should sample this equipment and materials for PCBs. Particular attention must be made as to whether any of the components are leaking, or if any of the aforementioned building material have been disturbed creating a likelihood for release(s) of PCBs to underlying concrete or soil, if outside.

5. There is potential for heavy metals contamination, particularly lead, associated with use of the basement as a firing range. Powder generated from bullets and from shell casings at the firing range presents risk of metals contamination

   Recommendation: More research to determine the location of the firing range in the Armory basement in the form of reviewing plans and blueprints if available; and identification and interview(s) with personnel who may have knowledge about the firing range operations. This research should be followed up with a preliminary lead inspection which may include collecting bulk concrete samples, collecting samples of any residual powder or sediment, and then screening using an XRF or similar type instrument. This sample screening effort could be combined with a lead-paint inspection (see RECs beyond ASTM 1527-05, below).

RECs beyond the Scope of ASTM 1527-05 and AAI

1. Given the age of the building, lead based paint may coat surfaces of interior and exterior walls at the Site. Also lead impacted paint chips may also be associated with the Site.

   Recommendation: A lead paint inspection should be conducted by a certified lead paint inspector and a report should be generated outlining the findings.

2. Asbestos-containing materials (ACM) were documented with the Armory building by an ACM investigation performed by Crothers Environmental Group in October 2008 (Crothers, 2008). Of the 48 samples analyzed, six reported positive detections for ACM (2% or more Chrysotile Asbestos). The positive samples were all from plaster wall surfacing material located throughout the building interior. The report also identified the presence of 'Presumed' ACM consisting of non-fiberglass pipe and fitting insulation located in the basement and first floor; and, internal boiler gaskets, refractory and packing materials located in the basement boiler room (Crothers, 2008). A copy of the ACM sampling report is included as Appendix 5.

   Recommendation: Although a previous ACM inspection has been performed (see Appendix 5), a follow-up inspection should be conducted in anticipation of soliciting formal ACM abatement quotes from licensed contractors. This follow-up inspection will confirm completeness of the previous inspection and identify any potential data gaps.

3. Based on information provided in the Environmental Questionnaire (Appendix 3) the Armory building has a mold problem due to constant moisture generated from leaking fire sprinkler lines. According to Peggy Phelps (SJHHC) a mold abatement project was in process to clean up the mold. A follow up call to the Town of St Johnsbury indicated that the project had been placed on hold due to increasing expenditures and no clear end in sight.

   Recommendation: Follow up inspection/testing by a certified contractor should be performed to better delineate extent of mold damage. Following an initial inspection and receipt of results of the testing, a detailed cleanup plan should be presented along with estimated costs for completion.

TABLE OF CONTENTS

1.0 INTRODUCTION 1
2.0 SITE DESCRIPTION 2
2.1 SETTING AND SURROUNDING DEVELOPMENT 2
2.2 HEATING, WATER AND SEWER 2
2.3 GEOLOGY AND HYDROGEOLOGY 3
3.0 SITE HISTORY AND REVIEW OF EXISTING INFORMATION 3
3.1 HISTORICAL REVIEW 3
3.1.1 Land Records 4
3.1.2 U.S.G.S. Topographic Maps 5
3.1.3 Aerial Photographs 5
3.1.4 Sanborn Fire Insurance Maps 5
3.1.5 Manning's Street Directory 5
3.1.6 Environmental Questionnaire 7
3.2 INTERVIEWS 7
3.2.1 Current Owner/Occupant 7
3.2.2 Past Owner/Occupant 7
3.2.3 State/Local Officials 8
3.2.4 Neighboring or Nearby Property Owner/Occupant 8
3.3 PRIOR INVESTIGATIONS 9
3.3.1 June 2010 Underground Storage Tank Closure 9
3.3.2 Asbestos and Mold Investigation/Abatement 10
4.0 REGULATORY STATUS 11
4.1 ENVIRONMENTAL LIENS 11
4.2 FEDERAL REGULATORY FILES 11
4.2.1 Federal National Priority List (NPL) 11
4.2.2 Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) List 11
4.2.3 Federal Resource Conservation and Recovery Act (RCRA) Generators 12
4.2.4 RCRA Treatment, Storage and Disposal (TSD) Facilities 12
4.2.5 Federal Institutional Control/Engineering Registries 12
4.2.6 Federal Emergency Response Notification (ERNS) List 13
4.2.7 EPA On-scene Coordinator Program 13
4.3 STATE/TRIBAL REGULATORY FILES 13
4.3.1 Vermont Sites Management Section Hazardous Sites List 13
4.3.2 Underground Storage Tank List 15
4.3.3 Spills List 15
4.3.4 Landfills 15
4.3.5 Institutional Controls/Engineering Controls Registries 15
4.3.6 Voluntary Cleanup Sites 23
4.3.7 Brownfield Sites 23

4.4 LOCAL REGULATORY FILES 23
4.4.1 Fire Department 23
4.4.2 Health Officer 23
4.4.3 Local Electric Utility Company (Polychlorinated biphenyls) 24
4.5 NON-AAI/ASTM SCOPE CONSIDERATIONS 24
4.5.1 Asbestos and Lead Paint Issues 24
4.5.2 Mold 24
5.0 SITE RECONNAISSANCE 24
5.1 EXTERIOR OBSERVATIONS 25
5.2 INTERIOR OBSERVATIONS 26
6.0 USER RESPONSIBILITIES 28
7.0 CONCLUSIONS AND RECOMMENDATIONS 29
8.0 DATA GAPS/LIMITATIONS 33
8.1 DATA GAPS 33
8.2 LIMITATIONS 34
9.0 REFERENCES 35

LIST OF TABLES

Table 3-1 Summarized History of Ownership 4
Table 4-1 Hazardous Waste Generators near St. Johnsbury Armory 11
Table 4-2 Hazardous Waste Sites within 0.25 miles of St. Johnsbury Armor 13
Table 4-3 Hazardous Waste Sites within 0.25 and 1 Mile of St. Johnsbury Armory 15
Table 4-4 Inactive Hazardous Waste Sites within 0.25 and 1 Mile of St. Johnsbury Armory 18
Table 4-5 Registered USTs at or near St. Johnsbury Armory 22

LIST OF FIGURES

Figure 1 Site Location Map
Figure 2 Orthophoto of Site and Host Vicinity
Figure 3 Basement Site Sketch

LIST OF APPENDICES

Appendix 1 Resumes of Environmental Professionals
Appendix 2 Sanborn Fire Insurance Maps
Appendix 3 Environmental Questionnaire User's Questionnaire
Appendix 4 Asbestos Inspection Report by Crothers Environmental Group
Appendix 5 Photographic Plates
Appendix 6 User Questionnaire

1.0 INTRODUCTION

The Johnson Company was retained by the Vermont Department of Environmental Conservation (VT DEC) to conduct a Phase I Environmental Site Assessment (ESA) of the building and property referred to as the Saint Johnsbury Armory, 1249 Main Street, Saint Johnsbury VT (the Site). The location of the Site is depicted in Figure 1.

The Site is located within a mixed-use, developed area of commercial land. The Site consists of an approximately 0.44-acre parcel which hosts one building that is comprised of a three-story masonry structure. The building is currently vacant. The Johnson Company understands that the Saint Johnsbury History and Heritage Center (SJHHC) is considering redevelopment of the Site for potential use as their main offices, educational use, and museum.

The purpose of the ESA was to identify recognized environmental conditions associated with the Site that indicate the presence or likely presence of hazardous substances or petroleum products under conditions that indicate an existing release, past release, or a material threat of a release associated with the property. This ESA included reviewing existing information made available and/or that was reasonably ascertainable regarding current and past usage of the property, determining the Site's regulatory status, contacting appropriate personnel regarding current and past uses of the Site, investigating the potential for past releases of petroleum products and/or hazardous substances on the Site, and conducting a reconnaissance to visually inspect the accessible portions of the Site.

This ESA was performed by personnel from The Johnson Company who meet the definition of Environmental Professional as defined in 40 CFR Part 312, in general conformance within the scope and limitations of ASTM E 1527-05 and in compliance with 40 CFR Part 312, Standards and Practices for All Appropriate Inquiries.

Credentials of The Johnson Company personnel involved with the preparation of this ESA are included as Appendix 1.

2.0 SITE DESCRIPTION

2.1 SETTING AND SURROUNDING DEVELOPMENT

The 0.44±-acre Site is located on the west side of Main Street, bounded on the north and west by the Saint Andrews Episcopal Church and the Grace Methodist Church, respectively; a dentist's office (Dr. Kozlowski) to the south; and, to the east, Main Street across from which are the Passumpsic Savings Bank, and several small businesses. The host vicinity, downtown Saint Johnsbury, is primarily commercial use. The Site itself is relatively flat but the topography slopes significantly, from Main Street towards the east. The Passumpsic River is located approximately 2,100 feet west of the Site. Figure 1 shows the location of the Site relative to its surroundings.

The Site, owned by Town of Saint Johnsbury, is currently vacant. There is one building on the Site. A Site Orthophoto for the property and the immediate vicinity has been provided as Figure 2. The basement level and exterior layout of the building is shown in Figure 3.

According to information obtained from an architectural study provided to The Johnson Company by Peggy Phelps (E.H. Danson Associates, 2009), the 16,700 square feet (sf) building has approximately 7,300 sf +/- basement space and approximately 2,100 sf +/- on the second floor. All exterior portions of the site are paved with the exception of a small area along the northeast corner of the building which is gravel-covered, and small lawn immediately east of the building between the building and Main Street.

2.2 HEATING, WATER AND SEWER

As of the date of this report, the main building is currently without heat. Historically the building was heated with a fuel-oil fired boiler and steam radiators. Steam for the entire building was generated by a single boiler in the Boiler Room; however, the boiler was disconnected when the underground storage tank providing fuel to the boiler was permanently closed in June 2010. The layout of the boiler room is shown in Figure 3. Electricity, water, and sewer services are provided to the Site by CVPS and the Town of Saint Johnsbury utility departments, respectively.

2.3 GEOLOGY AND HYDROGEOLOGY

The surficial geology at the Site is primarily categorized as glacial outwash sand and/or gravel Urban Land (60%)-Adams (15%)-Nichollsville (10%)Complex (NRCS, 2011). The Adams composition is described as sandy glaciofluvial deposits and Nichollsville is described as silty glaciolacustrine deposits. The bedrock in the area is mapped as Devonian-age Waits River Formation, described as "Gray quartzose and micaceous crystalline limestone weathered to distinctive brown earthy crust; interbedded and intergradational with gray quartz-muscovite phyllite or schist". Where more metamorphosed, the limestones contain actinolite, hornblende, zoisite, diopside, wollastonite, and garnet, and the phyllite and schist, biotite, garnet, and locally andalusite, kyanite or sillimanite." (USGS, 2006).

The direction of groundwater flow was not measured as part of this ESA. The Site is located approximately 2,100 feet west of the Passumpsic River, which flows in a southerly direction towards the Connecticut River. Based on the location of the Passumpsic River and the surrounding terrain, groundwater likely flows in an easterly direction across the site (UNH, 2007; Google, 2010), although flow direction may be localized at the Site.

According to the Vermont ANR Environmental Interest Locator, there are no rare, threatened, or endangered species located within 0.4 mile of the Site. The Vermont Significant Wetlands Inventory, accessed through the ANR Interest Locator on March 22, 2012, lists one Class 2 wetland located 2,400 feet west of the Site, with a total acreage of approximately 15-acres (VT DEC1, 2012). The wetland is located along the west shore of the Passumpsic River and at a lower elevation from the Site.

3.0 SITE HISTORY AND REVIEW OF EXISTING INFORMATION

3.1 HISTORICAL REVIEW

The armory building was constructed around 1916 (Caledonian Record, 2012). This is the earliest known use of the Site as the Armory. The property is believed to have been used as residences prior to construction of the Armory (Caledonian Record, 2012). During review of the

land records, no record of property transactions were identified earlier than 1861 which suggests 1861 may be the earliest known development of the property. Sanborn Fire Insurance Maps covering the immediate vicinity depict the Armory on a 1919 edition, and four separate dwellings on earlier editions (see Section 3.1.4).

3.1.1 Land Records

A search of the Land Records at the St. Johnsbury Town Clerk's office was conducted by Jim Bowes (JCO) on April 26, 2012. Table 3-1 is a summary of the ownership history for the Site as determined from the April 26th review.

Table 3-1
Summarized History of Ownership

Deed Type	Grantee	Grantor	Book/Page	Date
Quitclaim Deed	Town of Saint Johnsbury	State of Vermont	151/1	January 21, 1975
Warranty Deed	State of Vermont	Town of Saint Johnsbury	56/253	July 10, 1916
Warranty Deed[1]	G.L. Barney	M.E. Associates	17/199	May 13, 1861

[1] This covers only a portion of the parcel described in the July 1916 deed, and represents the oldest record document reviewed in the land record describing ownership.

No further information was able to be determined in the land record for property beyond the May 13, 1861 transaction of a portion of the Site. An article in the Caledonian Record (March 28, 2012 edition) by Peggy Pearl, Director of the SJHHC documents that the Town of St. Johnsbury purchased the property from Burnham circa 1916 and deeded it to the State (Caledonian Record, 2012); however there is no information in the land records that documents this transaction. Wording on the 1861 Deed states that "…no building is to be constructed within 66 feet of the street…". Although it is not clear from information on the 1861 Deed that other buildings already existed on the Site, this may represent first developed use of the Site. A data gap exists with respect to determining earliest developed use since it is not clear how ownership was transferred to the Town before it was sold in 1916. A copy of a map of downtown Saint Johnsbury dated 1855 is mounted on the wall of the land records office. Based on review of the 1855 map, there does not appear to have been any structures on the current parcel location at that time.

3.1.2 U.S.G.S. Topographic Maps

The 1943 (15-minute) and 1949 (15-minute) Saint Johnsbury, Vermont Quadrangle United States Geological Survey (USGS) topographic quadrangle maps were reviewed as part of this ESA (UNH, 2007). The 1943 and 1949 maps are very similar and show what appears to be the building structure that is associated with the Site, and neighboring buildings. The USGS 7.5 x 15 -minute topographic map from 1983 for the Saint Johnsbury quadrangle was also reviewed. This map, provided as Figure 1, shows the Site in its current configuration and adjacent buildings in the general vicinity of the Site.

3.1.3 Aerial Photographs

A State of Vermont low-altitude aerial photograph (VT-62-L 8-256) of the Site from 1962 and digital orthophotos from 1998, 2003, 2006, 2008, 2009, and 2011 (GoogleEarth, 2012) were reviewed as part of this ESA. The 2012 orthophoto has been used as a base map for Figure 2. The Site appears in its current configuration in the all of the reviewed orthophotos.

3.1.4 Sanborn Fire Insurance Maps

The Sanborn Maps specific to the Site were purchased from Environmental Data Resources (EDR) and reviewed. Maps from 1964, 1958, 1943, 1927, 1919, 1912, 1905, 1900, 1895, 1889, and 1884 were evaluated. The Site appears in its current configuration on the maps beginning with the 1919 edition identified as "C.O.D. 1st Infantry V.N.G. Armory. The Sanborn maps are included with this report as Appendix 2. The Sanborn map editions from 1882 to 1912 show the Site was occupied by four separate dwellings, with liquor store, and a "Tailor Shop" being depicted in the east-center dwelling on the 1884 and 1889 editions. The neighboring properties comprised primarily of churches, a livery stable, and merchants.

3.1.5 Manning's Street Directory

The Manning's Street Directories for St. Johnsbury, available at the Vermont Law Library, were reviewed for the years between 1931 and 1989. This resource provides a chronological operational history for a particular address. The Site address was 50 Main Street

between the years of 1931 and 2000; after 2000 the address was listed as 1249 Main Street. A summary of the results is provided below (note that for many years multiple entities were listed at the Site.

1931:	*State Armory*
1933:	*State Armory*
	VT 172nd Machine Gun Battalion
1935:	*State Armory*
	VT 172nd Machine Gun Battalion
	US Re-employment Service
1938:	*State Armory*
	VT 172nd Machine Gun Battalion
	White Pine Blister Rust Control USDA
1939:	*State Armory*
	VT 172nd Machine Gun Battalion
	White Pine Blister Rust Control USDA
	St J Tax Collector (village and town)
1941-1948:	*State Armory*
	VT State Guard (Company M)
1950:	*State Armory*
	VT National Guard (Company M)
	Selective Service System Local Board
1954-1966:	*State Armory*
1967-1976:	*Vermont Army National Guard Armory*
1977-1978:	*Equifax, Inc*
	St Johnsbury Police Dept.
	St J Dept. Civil Defense
	St J Dept. Parks & Recreation
1979-1984:	*St Johnsbury Police Dept.*
	St J Dept. Civil Defense
	St J Dept. Parks & Recreation
1988-1989:	*American Red Cross Caledonia Lower Essex Chapter*
	REACT Caledonia County 2424 Metro
	St Johnsbury Police Dept.
	St. Johnsbury, Town of

No Manning's directories were available after 1989, but the telephone book entries for the Town of St. Johnsbury municipal offices between 1991 and 2006 were reviewed. According to the telephone books, the St. Johnsbury Police Department was located at the Site between the years of 1991 and 2000. The St. Johnsbury Department of Parks & Recreation is intermittently

listed at the Site between the years 1991 and 2006, so it is reasonable to assume that the department was located at the Site during these years. The St. Johnsbury Domestic Violence Task Force was listed at the Site between 2003 and 2006. It is not known if other, non-municipal, entities were located at the Site between 1991 and 2006 because only the municipal entries were inspected. The telephone books were not reviewed beyond a reasonable search.

3.1.6 Environmental Questionnaire

The Johnson Company's standard environmental questionnaire was completed by Ms. Peggy Pearl, Director of the Saint Johnsbury History and Heritage Center (SJHHC) on April 11, 2012. A copy of the questionnaire has been included as Appendix 3.

3.2 INTERVIEWS

3.2.1 Current Owner/Occupant

The current owner of the building is the Town of Saint Johnsbury. Mr. Jim Rust with the Town of Saint Johnsbury was interviewed by Jim Bowes (JCO) April 26, 2012 regarding the Site. Mr. Rust confirmed that the current status of the Site is vacant and the building is unheated. The building has been without heat since the 6,000 gallon fuel oil UST that fueled the boiler was permanently closed in 2010. Mr. Rust also indicated that since the Town has owned the property occupation has been limited to recreational use of the gymnasium located in the west half of the building, and/or office space (Bowes, 2012a). With the exception of underground storage tank activities associated with the Site (described in detail in Section 3.3.1 of this report) Mr. Rust was unaware of any spills or releases of hazardous materials or petroleum products.

3.2.2 Past Owner/Occupant

The past owner of the property was the State of Vermont in 1916. For the purposes of this Phase I ESA, no attempt to contact the past owner/occupant was made.

3.2.3 State/Local Officials

Ms. Jenny Schwartz with the VTDEC Brownfields Response Program was contacted April 2, 2012 via e-mail by Jim Bowes (JCO) for available information in the State files related to the 2010 UST closure. Ms. Schwartz provided digital files for review regarding the 2010 UST closure at the Site, and a 1993 UST Closure at the Saint Johnsbury Municipal Office (Schwartz, 2012)..

Captain Bradley Reed, Saint Johnsbury Fire Chief was contacted on March 21, 2012 and asked if he recalled the Saint Johnsbury Fire Department responding to any incidents associated with spills or releases of hazardous waste or petroleum products on Site (Bowes, 2012b). Captain Reed provided a fax copy the incident reports for 1249 Main Street. Of the incidents listed, the only one related to spills or releases of hazardous material or petroleum was a report filed June 17, 2002 which was listed as a vehicle leaking gas on the property, however, upon arrival, the respondents reported no vehicle and no odors of gas (Bowes, 2012b). No further information and/or description of follow-up action were provided.

The Town Health Officer, Mr. Tim Angel was contacted on March 23, 2012 regarding hazardous materials incidents at the Site (Bowes, 2012c). Mr. Angel was not aware of any incidents above and beyond the UST Closure (Section 3.3.1) at the Site. He added he was not familiar with the Site. He did recall that at one time during usage as the Armory, (date range not specifically indicated,) portions of the basement of the Site building may have been used as a firing range.

3.2.4 Neighboring or Nearby Property Owner/Occupant

The neighbor to the west-abutting Methodist Church, Pastor Kirk Thompson was interviewed during the Site Reconnaissance. April 26, 2012. Pastor Thompson has been the Pastor for approximately 1 ½ years, and he has no knowledge of any spills releases or emergency responses to the Armory property.

3.3 PRIOR INVESTIGATIONS

3.3.1 June 2010 Underground Storage Tank Closure

The St. Johnsbury Armory was listed as a hazardous waste site (SMS #: 20104075) under the name "St J Recreation Dept." as a result of contamination encountered during removal of two USTs which occurred on June 23, 2010 (VT DEC1, 2012). A UST Closure Report prepared by Horizons Engineering (Littleton, NH) documented the closure and removal process (Horizon Engineering, 2010). The USTs consisted of a 1,000 gallon gasoline UST with an associated dispenser pump, and a 6,000 gallon heating oil UST. Both USTs were observed to be in poor condition at the time of removal. No subsurface impact to underlying soil was observed with the gasoline UST and dispenser; however, elevated PID readings registering between 12 and 50 parts per million (ppm) were noted in in the soils adjacent to the piping area, the fill area and the west end of the fuel oil UST (Horizons Engineering, 2010). A total of 22 tons of petroleum contaminated soil (PCS) were removed from the top and west end of the heating oil UST. According to the July 2010 report prepared by Horizons Engineering (Littleton, NH), following removal of the PCS, no registered PID readings were identified in excess of 10 ppm within the area of excavation. The PCS were transported off site for treatment and disposal to Environmental Soil Management Inc. (ESMI) in Loudon, NH and a cleanup confirmation soil sample was collected from the base of the excavation at the west end of the UST by Horizon Engineering and submitted for laboratory analysis for total petroleum hydrocarbons (TPH) and volatile organic compounds (VOCs) using EPA Methods 8100, and 8260, respectively. The confirmatory soil sampling results revealed no detectable concentrations of VOC or TPH above method detection limits in the soil.

The PCS were transported off site for treatment and disposal to Environmental Soil Management Inc. (ESMI) in Loudon NH. According to a letter dated September 7, 2010 from VTDEC Sites Management to the Town of Saint Johnsbury, a sensitive receptor survey was performed during the UST closure and no sensitive receptors were identified other than the PCS that were removed (Schwer, 2010). A Sites Management Activity Complete (SMAC) designation was granted and the Site was removed from the SMS active hazardous waste site list.

According to the ANR interest locator and the VT DEC Waste Management Interactive Database (WM-ID), no other USTs are located at the Site (VT DEC1, 2012; VTDEC 3, 2012).

3.3.2 Asbestos and Mold Investigation/Abatement

Peggy Pearl, Director of the Saint Johnsbury History and Heritage Center (SJHHC), provided The Johnson Company with a copy of an asbestos sampling report dated November 1, 2008 by Crothers Environmental Group LLC (Crothers, 2008). The report provided a list of samples collected which were submitted for analysis for presence of asbestos containing materials (ACM). Of the 48 samples tested, six were returned positive for ACM (2% or more Chrysotile Asbestos). The positive samples were all from plaster wall surfacing material located throughout the building interior. The report also identified the presence of 'Presumed' ACM consisting of non-fiberglass pipe and fitting insulation located in the basement and first floor; and, internal boiler gaskets, refractory and packing materials located in the basement boiler room (Crothers, 2008).

These findings mandate that prior to renovations, any ACM that would be disturbed by renovations, must be properly removed under a Certified Asbestos Abatement Entity. A copy of the November 2008 asbestos inspection report is included with this report as Appendix 4.

According to information filled out in the Environmental Questionnaire by Peggy Pearl (SJHHC) there is a mold abatement project underway in the Armory Building. This work was being done for the Town of St. Johnsbury. A call was placed April 30, 2012 to Mr. Jim Rust of the Town regarding the status of the mold abatement. Mr. Rust informed Jim Bowes that the project was currently "on hold" due to increasing expenditures incurred on the project with no clear end in sight (Bowes, 2012e). At present, no further information is available other than the fact that the mold abatement is unfinished.

4.0 REGULATORY STATUS

4.1 ENVIRONMENTAL LIENS

A search of the files at the Saint Johnsbury Town Clerk's office on April 26, 2012 revealed no environmental liens on the property.

4.2 FEDERAL REGULATORY FILES

4.2.1 Federal National Priority List (NPL)

According to the Environmental Protection Agency's (EPA) website, which provided information extracted on March 8, 2012, the Site is not listed on the National Priority List (NPL; also known as Superfund) as an active site, nor is any property within a 1-mile search radius from the nearest property boundary of the Site (EPA1, 2012).

4.2.1.1 Delisted NPL sites

Neither the Site nor any other properties within the 0.5-mile search radius from the nearest property boundary are delisted or partially delisted NPL sites (EPA2, 2012).

4.2.2 Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) List

The Site does not appear on the CERCLIS list. The Fairbanks Morse Foundry site (EPA Registry ID: 110009259765, SMS ID: 870029) is located approximately 2,390 feet to the south west of the Site (EPA1, 2012; VT DEC1, 2012). See Section 4.3.1 for additional details.

4.2.2.1 No Further Remedial Action Planned (NFRAP) Site List

Neither the Site nor any properties within a 0.5-mile search radius from the nearest property boundary are listed as CERCLIS designated sites with a no further remedial action planned (NFRAP) status (EPA3, 2012).

4.2.3 Federal Resource Conservation and Recovery Act (RCRA) Generators

According to the Agency of Natural Resources (ANR) Environmental Interest Locator No hazardous waste generators are shown on the Site or adjoining properties (VT DEC1, 2012) but the Waste Management Division generator list, the WM-ID, and the EPA Envirofacts Warehouse list one generator on adjoining properties (VT DEC2, 2010; VT DEC3, 2012; EPA5, 2010). The Site is not listed as a RCRA generator by either the Waste Management Division or the EPA. Table 4-1 below summarizes the RCRA generators near the Site (EPA5, 2012; VT DEC1, 2010; VT DEC2, 2010; VT DEC3, 2010).

Table 4-1
Hazardous Waste Generators near Saint Johnsbury Armory

Handler ID	Name	Address	Environmental Interest Type
Adjoining Properties			
VTR000504852	DR RICHARD S KOZLOWSKI DDS	1229 MAIN ST	CE SQG (ACTIVE)

Notes:
CE - Conditionally Exempt
SQG - Small Quantity Generator

4.2.3.1 RCRA Corrective Action Sites (CORRACTS) List

The Site is not on the list of RCRA Corrective Action sites for EPA Region 1, nor is any property within a 1-mile search radius from the nearest property boundary of the Site (EPA6, 2012).

4.2.4 RCRA Treatment, Storage and Disposal (TSD) Facilities

There are no non-CORRACTS transportation and disposal (TSD) facilities listed within a 0.5-mile search radius from the nearest property boundary of the Site (EPA5, 2010).

4.2.5 Federal Institutional Control/Engineering Registries

As of the date of this report, the EPA was developing the Institutional Controls Tracking System, and the system had not yet been implemented (EPA7, 2010).

4.2.6 Federal Emergency Response Notification (ERNS) List

As of March 25, 2012, there were no spills or releases of hazardous materials or petroleum products at the Site listed on the ERNS list (NRC, 2012).

4.2.7 EPA On-scene Coordinator Program

The EPA On-scene Coordinator (EPA OSC) program performs rapid responses to remove direct contact risks by trespassers or the general public. As of March 23, 2012, no sites within a one mile radius from the nearest property boundary are listed on the EPA OSC website (EPAOSC, 2012).

4.3 STATE/TRIBAL REGULATORY FILES

There are no recognized tribal or American Indian-owned lands within Vermont; therefore, no tribal files were searched during this ESA.

4.3.1 Vermont Sites Management Section Hazardous Sites List

The Site is currently listed as an "Inactive Site" with VTDEC Sites Management Section (SMS); SMS Site file, 2010-4075 (see the bold row in Table 4-2). Section 3.3.1 provided additional details regarding the Site conditions and activities associated with SMS# 2010-4075. A review of the SMS' Waste Management Interactive Database (WM-ID) indicates there are 60 Vermont listed hazardous waste sites located within 1 mile from the nearest property boundary of the Site, 36 of which are inactive with Sites Management Activity Closed (SMAC) or No Further Action Planned (NFAP) designation. The SMAC or NFAP status indicates that environmental assessment and/or management has been performed on a property to the extent that the VTDEC does not see a need for additional management activity at the time the designation letter was issued. A total of 17 (5 inactive and 12 active) of the 60 sites listed are located within 0.25 miles of the Site (VT DEC1, 2012). Table 4-2 below summarizes the hazardous wastes sites located within 0.25 miles of the Site.

Table 4-2 Hazardous Waste Sites within 0.25 miles of the St Johnsbury Armory			
St Johnsbury Armory			
Site Number	**Priority**	**Site Name**	**Address**
Active Sites			
900570	LOW	Brightlock Apartments	14 Summer St
962030	LOW	Gossco Inc (Goss Tire)	37 Summer St
900513	MED	Doanne & Ruggles	Rt 2
911157	MED	St Johnsbury Water & Sewer	Western Ave
20063498	MED	Canterbury Inn	46 Cherry St
Inactive Sites			
870091	NFAP	St Johnsbury Trucking	n/a
20104075	**SMAC**	**St J Recreation Dept.**	**1249 Main St**
900584	SMAC	Caledonia Records	25 Federal St.
931390	SMAC	Palmers Dry Cleaners	72 - 78 Eastern Ave
931398	SMAC	St Johnsbury Municipal Bldg.	Main St
931434	SMAC	Fairbanks Museum	81 Main St
951769	SMAC	Main St Citgo	Main St
20002803	SMAC	former St Johnsbury House	44 Main St
20012925	SMAC	former Sears Building	Pearl St
20023016	SMAC	Frank Adams School	481 Summer St
20063478	SMAC	Grace United Methodist Church	36 Central St
20002834	SMAC	Laperle Property	105 Summer St

The nearest adjacent listed site is an Inactive Site, the Grace Methodist Church, which is the west-abutting property (SMS #20063478). The Site was listed due to a release in 2006 of heating oil from a UST. Impact to the subsurface soils was severe enough to warrant an active soil vapor extraction system to recover vapor phase petroleum. Although the Site was host to an active remediation system, groundwater testing revealed little to no impact to groundwater, which was determined to flow in a southeasterly direction away from the Church property (Ross Environmental, 2006). Subsequent monitoring was performed on the Grace Methodist Church site, and the site was designated with SMAC status in 2008.

Hazardous Sites between 0.25 and 1 mile of the Site

Table 4-3, provided on the following pages, summarizes the active hazardous waste sites located between 0.25 and 1 mile of the Site. Similarly, Table 4-4, provided after Table 4-3, summarizes the inactive hazardous waste sites located within the same distance range. With the

exception of the "Contaminant" column all data were extracted without edits from the WM-ID (VT DEC3, 2012). Where available, the "Contaminant" entries are from the WM-ID; where not available, the "Contaminant" entries have been inferred from other fields such as "Source of Contamination" (UST-Gasoline, UST-Heating Oil, etc.) and "Project Status".

4.3.2 Underground Storage Tank List

As described in Sections 3.3.1 on June 23, 2010 two USTs (one 1,000-gallon gasoline UST and one 6,000-gallon heating oil UST) were removed from the Site. See Section 3.3.1 for additional details regarding the UST closures. Other than these two tanks, there are no other known USTs present at the Site (VT DEC1, 2012; VT DEC3, 2012). There are no records of any other UST removal efforts at the Site. Table 4-5 below summarizes the registered USTs at the Site and on adjacent properties. The formerly registered USTs that were on Site are shown in bold and shaded text on Table 4-5, below.

4.3.3 Spills List

According to the WM-ID no spills have been reported at the Site (VT DEC3, 2010). The WM-ID does list a spill (spill number WMD033) of fuel oil on January 23, 2006 at the Grace United Methodist Church (located at 36 Central Street); Grace United is on an adjoining parcel. Additional details regarding this incident and the resulting investigation are provided in Section 4.3.1.

4.3.4 Landfills

There are no certified landfills within a 0.5-mile search radius from the nearest property boundary of the Site (EPA8, 1995; VT DEC3, 2012; VT DEC4, 2006).

4.3.5 Institutional Controls/Engineering Controls Registries

An investigation of the records available at the Saint Johnsbury Town Clerk's office revealed that no institutional and/or engineering controls had been filed in the Land Records for the Site as of April 26, 2012.

Table 4-3 Active Hazardous Waste Sites 0.25 to 1 miles of St Johnsbury Armory					
Site Number	**Priority**	**Site Name**	**Address**	**Contaminant**	**Project Status (Verbatim from the WM-ID)**
890433	LOW	Railroad St Texaco	490 Railroad Street	Gasoline	Additional groundwater monitoring needed. Request sent 06/2010.
931549	LOW	Windshield World	Railroad St	Gasoline	09/10: Annual monitoring continuing. Considering whether enhanced bioremediation would be beneficial in the vicinity of MW-4.
982421	LOW	High Street Transfer Station	High St	VOCs	Groundwater contaminants in two wells are over standards for volatile organic compounds (EPA Method 8260). Also, the most downgradient well, MW-2S, contains lead in excess of standards. The site will be monitored on a semi-annual basis for two years to determine if it is then eligible for a SMAC.
972205	LOW	Former Portland Street Mini Mart	81 Portland St	Gasoline	Annual groundwater monitoring ongoing. Persistent groundwater contamination in one area of the site. Potential for vapor migration to impact adjacent building will be evaluated in next annual report.
921244	LOW	Lawrence Sangravco	Bay St	VOCs/Lead	No Further Action Until Investigation Complete @ Northern Petro,91-1169
870029	MED	Fairbanks Morse Foundry/Colt Industries	High St	Heating Oil	GW pump & treat product recovery ongoing, EPA SIP done 2/95, Combined with site #770079. 10,258 gal total since 10/86
911169	MED	Northern Petroleum - St J	492 Bay St	Gasoline	Remediation Ongoing- passive product recovery
20053397	MED	Northern Petroleum Bulk Facility	521 Bay St	Diesel, Gasoline, Heating Oil, Kerosene	Petroleum contamination likely due to historical use as a bulk facility. Free product present in several wells. ECS will continue groundwater monitoring. SMS instructed ECS to submit a corrective action feasibility investigation for potential treatment of the most contaminated areas. Contamination does not appear to be migrating downgradient of the property boundary.

Table 4-3 Active Hazardous Waste Sites 0.25 to 1 miles of St Johnsbury Armory					
Site Number	**Priority**	**Site Name**	**Address**	**Contaminant**	**Project Status (Verbatim from the WM-ID)**
931524	MED	Depot Square Apts	Railroad St	Gasoline	Contaminated soils are stockpiled on the property of Scott Construction, Inc. in Newport, Vt. Soils were supposed to be monitored on a quarterly basis, but no testing has been done, and there has been no activity in this file since August 8th, 1996. This was a letter requesting a response to a previous letter dated June 22, 1994. (7/28/99)
951844	MED	Former Ralston Purina Plant	40 Bay St	Gasoline	Contamination found during removal of gasoline UST. Monitoring well installed in the tank pit showed elevated levels of VOCs in 2005. Additional compliance monitoring necessary to determine current contaminant levels.
20012904	MED	Northern Auto	125 Railroad St	Heating Oil	Underground storage tank removed. Contamination found. Investigation needed. Formerly Bond Auto Parts
20073728	MED	Former House of Pizza	250 Hastings Hill	Chlorinated Solvents/Heating Oil	Underground storage tank removed. Contamination found during tank assessment, which was conducted long after the UST removal. No significant petroleum-related substances detected on the property, though chlorinated substances were detected. It appears that the source of this contamination is an historic auto repair shop. A soil vapor survey was conducted using Gore sorber technology. This survey showed that the contamination is concentrated in the parking lot in front of the motel and adjacent to the pool. Groundwater monitoring will continue on a regular basis to ensure that contamination continues to degrade and dissipate.
982484	MED	Lewis Oil Company	Bay Street	Diesel, Gasoline, Heating Oil	March 00: Approved work plan for additional monitoring wells. Drilling is scheduled for April 00. Sampling will follow two weeks later. Surfactant flush pilot test scheduled for December 2006. Significant amount of FP localized on site. 2011 - Have an approved CAP (high vacuum extraction) at site, however having difficult time coordinating with RP and property owner (VTrans).

Table 4-3 Active Hazardous Waste Sites 0.25 to 1 miles of St Johnsbury Armory					
Site Number	**Priority**	**Site Name**	**Address**	**Contaminant**	**Project Status (Verbatim from the WM-ID)**
921261	MED	C N Brown	51 Portland St	Gasoline	Soil Stockpiled Off-site. Quarterly Monitoring. 5/2002 3' FP off site. 4 of 5 MWs above VGES spring 2004, 2005 Chemical oxidation injections, 11/09 3 of MWs above VGES, semi-annual sampling additional chemox to be performed
770080	MED	St Johnsbury Dump	High Street	Industrial & Household Waste	EPA contractor report completed. Site assigned low priority.
982356	MED	St Johnsbury Rail Yard	Rt 5 and Bay St	Diesel	Nov 01: Based on soil samples collected throughout the central yard, no remediation is required to address PAHs in soil under current use. Additional samples were requested to define the degree and extent of arsenic in surface soils and to determine if chromium VI is present in the soils.
972178	MED	St Johnsbury Town Storage	Almshouse Rd	Diesel, Gasoline, Other Metals, Other Petroleum	07/02: Awaiting work plan in response to SMS letter and site meeting in June for further characterization, including installing at least one monitoring well.; 10/05: sent letter requesting work plan for supplemental site investigation. April 2006 - performing additional site characterization. Sent email to PRP and KAS on 1/23/07 requesting site status update.
941579	MED	St Johnsbury Trucking	385 Portland St	Gasoline	Last contact with owner was a 5/5/94 letter requesting further sampling and a workplan for soil treatment/disposal. As of this update there has been no further activity in file. (7/29/99). Sent another letter to RP in January 2006. Fourth request sent May 2010.
982451	MED	Cumberland Farms #4012	Portland St and U S Route 2	Gasoline	Annual GW monitoring

Table 4-4 Inactive Hazardous Waste Sites 0.25 to 1 miles of the St. Johnsbury Armory					
St Johnsbury Armory					
Site Number	**Priority**	**Site Name**	**Address**	**Contaminant**	**Project Status (Verbatim from the WM-ID)**
900536	NFAP	St. Johnsbury, WWTF	Bay St	Gasoline	Ust Contamination Found. Soils Stockpiled.
880179	NFAP	Northern Petroleum	n/a	Gasoline	Site Closed
20023017	SMAC	former Lyndon Motors	7 Passumpsic St	Gasoline	3 abandoned USTs removed. Contam found. Investigtion completed. No impact to GW. SMAC
20083789	SMAC	CVPS - Rte 5	Rte 5	Heating Oil	Heating oil overfill at CVPS facility. Irving Oil is RP and is paying for cleanup. 46 tons PCS excavated. 128.6 gals oil unaccounted for. post excavation ISI complete, confirmatory GW sampling completed. 5/2010 no more impact to GW
972187	SMAC	Carlet Gilson And Hurley	50 Bay Street	Heating Oil	Groundwater below standards; soil sample taken from basement below RBC Table levels; soil sample taken from suspected discharge location of sump free of contaminants.
20063582	SMAC	Black Bear Tavern	205 Hastings St	Heating Oil	Underground storage tank removed. Contamination found. 27 cubic yards of contaminated soil removed from tank grave. Confirmatory soil samples indicated that the full extent of contamination had been defined. Soils were properly disposed of at ESMI in Louden, NH. All properties in the vicinity of the former tank are served by municipal utilities. Indoor air of the onsite building was screened and showed no evidence of contamination.
20023066	SMAC	A D Sanel Parts	684 Portland St	Heating Oil	UST removed. Contam found. Investigation complete. 1 MW below VGES, 3 MWs ND VOCs. 1 MW, above VGES, site paved, SMAC.
20104049	SMAC	2-8 Bay Street	2-8 Bay Street	Waste Oil	Older industrial area of St. Johnsbury. Only building foundations remain. Phase 1 ESA found 3700 ppm TPH soil in floor drain at maintenance garage. Investigation complete. No contamination found above standards.
921202	SMAC	CVPS-St Johnsbury	Bay St	Gasoline	Site Closed
20002791	SMAC	Gold Crown Lanes	212 Hastings St	Heating Oil	UST filled in place. Contamination found. Investigation completed. No impact to groundwater. SMAC

Table 4-4 Inactive Hazardous Waste Sites 0.25 to 1 miles of the St. Johnsbury Armory					
St Johnsbury Armory					
Site Number	**Priority**	**Site Name**	**Address**	**Contaminant**	**Project Status (Verbatim from the WM-ID)**
20093901	SMAC	Irving Oil Mainway	142 Railroad St	Gasoline	Minor contamination discovered during the removal of several gasoline USTs and one diesel UST. Site is being taken out of service as a bulk storage facility. Most PID readings were below action level of 20 ppm. No significant VOCs or TPH detected in laboratory samples. No groundwater or bedrock encountered during subsurface activities. Water is supplied by the municipal system.
941711	SMAC	13 Portland St	13 Portland St	Chlorinated Solvents	Groundwater free of contaminants.
921237	SMAC	Mike's Automotive	20 Passumsic Street	Gasoline	Invest Complete, Awaiting Results
20012883	SMAC	Yankee Traveler Motel	342 Portland St	Heating Oil	UST removed. Contamination found. 4 MWs installed, 2/8/02 1 ND, 3 dry. 4/24/02 4 MWs ND, SMAC
911016	SMAC	St. Johnsbury Schools	St. Johnsbury Center St	Heating Oil	Landfarm Completed
972277	SMAC	Party Tyme	157 Railroad St	Gasoline	Ust Removed. Contamination Found. Soils stockpiled. 6/28/00 soils screened clean. SMAC
20012857	SMAC	Portland Street School	510 Portland St	Heating Oil	UST removed. Contamination found. Investigation completed. 4/13/01 1 MW above, 3 MWs below VGES, 10/19/01 4 MWs below VGES, SMAC
770188	SMAC	Pratt-read (old True Temper)	Portland St	Non-petroleum	No Contamination To Groundwater
20012929	SMAC	Rent Way	429 Railroad St	Heating Oil	UST removed. Contamination found. Investigation completed. 4 soil borings ND for VOCs, no GW found. SMAC
992584	SMAC	River Street Homes	River Street	Gasoline	Recurring vapors in homes from sewer since 2/98. SMS has used the Site Investigation Contract to monitor vapors over several months; however, no vapors were detected during the monitoring events. From 1999 to 2009, no complaints were received by either the St. Johnsbury Fire Department or the Waste Management Division. Exact source was never found.

Table 4-4 Inactive Hazardous Waste Sites 0.25 to 1 miles of the St. Johnsbury Armory					
St Johnsbury Armory					
Site Number	**Priority**	**Site Name**	**Address**	**Contaminant**	**Project Status (Verbatim from the WM-ID)**
921223	SMAC	Rodd Roofing	2 Perkins Street	Gasoline	Soil Contamination Found During Ust Removal. No GW contamination identified. Soils treated and thinspread on site.
962032	SMAC	St Johnsbury Middle School	24 Western Ave	Gasoline	Contamination Limited To Ust Area. Site Closed.
931459	SMAC	Wayne Ford-Chrysler	Route 5 N	Gasoline, Non-Petroleum, Other Petroleum, Waste Oil	UST removed. Soils excavated. 3 MWs installed. No VGES exceedances. Paint thinner found in oil drum storage area. 10/11/00 3 new MWs required. Soil contamination found. 1 MW below VGES, 2 ND. 11/03 contamination soil excavated during UST replacement. SMAC
20073751	SMAC	Menut & Parks	50 St Marys St	Gasoline, Heating Oil	3 underground storage tanks removed. Contamination found. 4 monitoring wells installed on the property. November 08 water quality exhibited exceedances of VOC concentrations in MW-4. Bi-annual water quality monitoring in place. June 09 sampling shows decreasing levels of contamination. The source area well, MW-4 still exhibits groundwater enforcement exceedance for Naphthalene at 30.8 ppb. Instructed to dismantle monitoring wells in preparation for site closure. Site closed on 9/7/2010.

Table 4-5 Registered USTs at or near St Johnsbury Armory												
St Johnsbury Armory												
Facility ID	**Facility Name**	**Facility Address**	**VT SMS #**	**Permit Exp.**	**Permit Exp.**	**Tank #**	**Status**	**Capacity**	**Year Installed**	**Year Removed**	**Substance**	**Condition**
815	**St. Johnsbury Community Center**	**1249 Main Street**	**20104075**	**NA**	**NA**	**1**	**Pulled**	**6000**	**1971**	**2010**	**24**	**Poor**
						1	**Pulled**	**1000**	**Unknown**	**2010**	**GS**	**Poor**
1659	Colonial Apartments	17 Church Street	NA	NA	NA	1	Active	4000	1978	NA	24	NA
						2	Active	10000	1986	NA	24	NA
2204	St Johnsbury House	Central Street	20002803	NA	NA	1	Pulled	3000	Unknown	2000	24	Fair
						2	Pulled	1000	Unknown	2000	UN	Poor
						3	Pulled	2000	Unknown	2000	UN	Good
2233	Fairbanks Museum	81 Main Street	931434	NA	NA	1	Active	3000	1993	NA	24	NA
						2	Pulled	3000	Unknown	1993	24	Fair

Notes:

24 - #2 or #4 heating oil
DZ – Diesel Fuel
GS – Gasoline
UO – Used Oil
UN –
NA – Not Applicable or Not Available

4.3.6 Voluntary Cleanup Sites

Vermont does not specifically have a voluntary cleanup program, but the Brownfield Reuse Environmental Liability Limitation Act (BRELLA, effective July 1, 2008), acts as one for non-responsible parties. Prior to BRELLA the Vermont Redevelopment of Contaminated Properties Program (RCPP) acted as a voluntary cleanup program for Brownfield sites. The Site is currently not considered a Brownfield Site.

4.3.7 Brownfield Sites

As of the date of this report, the Site is not listed as a Brownfield property on the VTDEC database. According to the ANR Interest Locator, no other Brownfield sites are located within 0.5 miles from the nearest property boundary of the site (VT DEC1, 2012; VT DEC2, 2010; VT DEC3, 2012).

4.4 LOCAL REGULATORY FILES

4.4.1 Fire Department

According to Captain Bradley Reed (Saint Johnsbury Fire Chief) the Saint Johnsbury Fire Department has only one incident listed on their "Incident Activity Log" associated with the Armory that involved hazardous materials: a vehicle reported to be leaking gas on June 17, 2002. According to Captain Reed, the on-duty staff responding to the incident reported that upon their arrival, there was neither a vehicle on site, or gasoline odors (Bowes, 2012a).

4.4.2 Health Officer

The Town Health Officer, Mr. Tim Angel was contacted on March 23, 2012 regarding hazardous materials incidents at the Site (Bowes, 2012b). Mr. Angel was not aware of any incidents above and beyond a UST Closure (Section 3.3) at the Site. He added he has very little familiarity with the Site due to it being vacant for some time. He did recall that at one time (not specifically indicated) the basement of the Site building may have been used as a firing range.

4.4.3 Local Electric Utility Company (Polychlorinated biphenyls)

One transformer was identified on a power pole (Pole #1-2) located in the northwest corner of the Site. A call was placed by Jim Bowes (JCO) April 27, 2012 to Central VT Public Service Company who is the service provider. Mike Sullivan of CVPS reviewed the database and informed JCO that the transformer is dated 1973, but CVPS did not have any records available that stated whether the transformer oil in this unit contained PCBs (Bowes, 2012d). This suggests that oil inside the transformer may contain PCBs (PCBs were generally eliminated from transformers circa 1975). The overall appearance of the transformer was intact, and it did not appear to be leaking, however, due to its age, there is a chance that the unit may be filled with oil that contains PCBs.

4.5 NON-AAI/ASTM SCOPE CONSIDERATIONS

4.5.1 Asbestos and Lead Paint Issues

An asbestos and lead paint assessment was not performed as part of this ESA. Section 3.3.2 of this report describes the findings of an ACM inspection effort that was performed in October 2008 by Crothers Environmental Group(Crothers, 2008). Painted surfaces were observed throughout the interior of the Armory building. Given the age of the building, it is likely some of the paint may contain lead.

4.5.2 Mold

Through course of conducting this ESA, The Johnson Company has learned that a mold abatement project was underway in the Armory Building. Section 3.3.2 provided additional details regarding the current status of the mold abatement.

5.0 SITE RECONNAISSANCE

A Site reconnaissance was conducted on April 26, 2011 by Jim Bowes of The Johnson Company, Inc. Mr. Bowes was accompanied by Ms. Peggy Pearl, Director SJHHC, and Mr. Bob DeRochers, Fairbanks Mill, who is on the Board of Directors, SJHHC. The weather conditions

on the day of the Site visit were partly cloudy with a temperature of approximately 50 degrees Fahrenheit. Site conditions on the day of the Site visit are documented in the photo plates included as Appendix 5 of this report.

The Site reconnaissance included an inspection of the interior and exterior portions of the Site, where accessible. The Site walkover was a non-intrusive investigation that focused on identifying signs of an existing or potential risk to human health or the environment.

5.1 EXTERIOR OBSERVATIONS

The Site consists of the Armory building and a parking lot. The Armory building is a three-story (basement, first and second floors) building with a flat membrane roof in the east portion and slate-roof over the western portion. The entire building is brick masonry construction. A small lawn exists at the front of the building, between the sidewalk along Main Street and the Armory building (see Plate 1 in Appendix 5). A narrow grassy area abuts the south and west walls of the building. All other portions of the Site are either paved, graveled (parking lot outside the northeast corner of the Armory building), or within the footprint of the building itself. Numerous scratch marks were observed on the paved portion of the parking lot immediately north of the building (Plate 3, Appendix 5). Mr. DeRochers indicated these marks are likely attributed to the Town's maintenance of ice accumulations along the north wall of the building; i.e.; the thick ice accumulations shed off the steep roof needed to be scooped away from the building with an excavator bucket to avert water seeping into the building. Other than the numerous scratch marks, the pavement appears to be in good condition and no evidence of storage, spills or releases of hazardous materials or petroleum products was observed.

An automobile access ramp is located in the southwest portion of the Armory building. Numerous paint cans and buckets were observed piled in a heap within the access ramp (see Plate 5 in Appendix 5). No indication of spillage or releases from any of the containers was

observed, however, some housekeeping is required in the form of removal and proper disposal of the containers.

The former location of the removed USTs (now covered with gravel) was visually observed, and no indication of spills, releases, or olfactory evidence of petroleum products were indicated (Plate 2, Appendix 5). The former USTs are a historical REC (see Section 3.3.1).

The Grace Methodist Church is an Inactive Site listed with the SMS (SMS#20063478) and is directly west of the Armory. The portion of the Methodist Church property that was subject to prior environmental actions was visually inspected from the Site and no evidence of residual stained soils and/or stressed vegetation was observed. The adjacent property to the north is the Saint Andrews Episcopal Church and to the south, a dentist's office (Dr. Kozlowski). The site is bound to the east by Main Street, across from which are the Passumpsic Savings Bank, and assorted small businesses.

A telephone pole with a transformer was observed in the far northwest corner of the Site. The transformer was observed to be in good condition, with no visual indication of leaks. Further information on the age and condition of the transformer was made available through correspondence with CVPS personnel (see Section 4.4.3).

5.2 INTERIOR OBSERVATIONS

All three floors of the building interior as well as the roof top in the east half of the building were visually inspected for indications of storage or releases of hazardous materials or petroleum products. The building consists of a wood-floor gymnasium in the west half of the building, two floor levels with numerous rooms in the east half, and a full basement. Several stained areas of what appeared to be water were observed on the first and second floors. According to Peggy Pearl, there had been a problem with burst pipes in the previous winter due to no heat in the building. No evidence of spills or releases of hazardous materials or petroleum

were observed. Given the current vacant state of the building, the general upkeep of the interior portions of the building was in good repair, particularly in the basement, where floors were dry, and the concrete was in good condition (Plate 8, Appendix 5). Evidence of the mold abatement work is indicated in the stripped down walls in the north-central portion of the basement (details in Section 3.3.3; Plate 8 Appendix 5). The photos in Appendix 5 document conditions observed. The following items were observed that may provide likelihood of potentially hazardous materials:

- A steel plate approximately 3 feet by 3 feet in dimension was observed in the northwest corner of the basement. The steel plate was removed, underneath which a concrete lined vault, approximately 2 feet deep was observed (see Figure 3 of this report and Plate 13, Appendix 5). A 6-inch diameter cast iron pipe was observed on the bottom of the vault which was covered with fiberglass-like insulation. The pipe crosses the pit in an east- west direction and exits to the east, presumably to the outside, given the location of the pit along the exterior wall. There is an approximate 4-inch high vertical 'tee' in the middle of the pipe which is open-ended and with standing water observed in the pipe. No petroleum/solvent sheens or odors were associated with the water.

- A filled-in structure (approximately 7 feet long by 1 foot wide) was observed in the floor of the basement, next to the vehicle access ramp (Figure 3; photo in Appendix 5). The shape of the filled-in structure suggests it may have been a floor drain.

- A grated opening approximately 1 foot by 2 feet in dimension is located approximately 8-10 feet north of the filled-in structure (Plate 10, Appendix 5). The grated opening is not filled in, and an approximate 4-inch diameter iron pipe was observed penetrating the south side of the pit. An abundance of dirt and debris was observed in the bottom of the opening, but no visual or olfactoral indications of spills or releases of hazardous materials or petroleum was indicated. The pipe appears to be oriented toward a sump pump located approximately 5-10 feet further north (Figure 3, and Plate 11, Appendix 1). The sump is approximately 1-1.5 feet deep with an electric submersible pump fitted inside. The discharge pipe routed from the sump pump is plumbed into other piping which may be connected to the sewer line, but was not confirmed.

- An out of service boiler is located in the basement in the northeast corner of the basement. (Plate 12, Appendix 1). The boiler is suspected to host asbestos containing materials (ACM).

- Pipe insulation was observed on piping associated with the boiler. The insulation is suspected ACM.

- An electric panel was identified in the Armory building, in the boiler room. Other older-appearing electrical components were observed in several rooms in the Armory building. The equipment associated with this panel appeared dated and therefore may have been manufactured during an era that used PCBs in this type of equipment. Similarly, PCB containing fluorescent light ballasts may be present at the Site.

- Caulking was observed on the windows of the Armory building. The windows viewed during the Site walkover appeared to be undisturbed condition, but it is not clear whether these are original fixtures or if they have replaced the originals. In the event the windows are of older construction, there is a likelihood that they may contain PCBs.

- Painted surfaces were observed throughout the building. Given the age of the building, any paints should be suspected of containing lead.

Although not directly observed during the Site walkover, the Saint Johnsbury Health Officer indicated that a firing range may have at some point been set-up in the basement of the Armory building, and there is also a reference to a "..shooting range in the basement.." in an article in the Caledonian Record (2012). Particular care was made during the April 26th Site walkover to identify area(s) in the basement that may have been associated with a firing range, however no readily identifiable features were observed. The occurrence of a firing range presents a likelihood of heavy metals contamination, particularly lead, from bullets and/or shell casings.

6.0 USER RESPONSIBILITIES

In order to qualify for one of the Landowner Liability Protections (LLP) offered by the Small Business Liability Relief and Brownfields Revitalization Act of 2001, the user must provide the following information (if available) to the environmental professional:

1. Environmental cleanup liens that are filed or recorded against the Site;

2. Activity and land use limitations that are in place on the Site or that have been filed or recorded in a registry;
3. Specialized knowledge or experience of the person seeking to qualify for the LLPs;
4. Relationship of the purchase price to the fair market value of the property if it were not contaminated;
5. Commonly known or reasonably ascertainable information about the property;
6. The degree of obviousness of the presence or likely presence of contamination at the property and the ability to detect the contamination by appropriate investigation.

All of the information listed above was addressed by Ms. Peggy Pearl, Director SJHHC and provided to The Johnson Company. A copy of a completed User Questionnaire pertaining to the Site has been included with this report as Appendix 6. Because this property has the potential to be involved in the Brownfields Reuse and Environmental Liability Limitation Act (BRELLA) the VTDEC should also be considered a User of this ESA.

7.0 CONCLUSIONS AND RECOMMENDATIONS

We have performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E-1527 of the Saint Johnsbury Armory, 1249 Main Street, Saint Johnsbury, Vermont, the property. Any exception to, or deletions from, this practice are described in Section 8.1 of this report. This assessment has revealed no evidence of recognized environmental conditions in connection with the property except for the following:

HISTORICAL REC:

According to the July 21, 2010 Horizons Engineering (Littleton, NH) UST closure report, petroleum contaminated soils (PCS) were identified in June 2010 during the permanent closure and removal of a 1,000 gallon capacity gasoline and 6,000 gallon capacity fuel oil UST. Both USTs were observed to be in poor condition at the time of removal. No subsurface impact to underlying soil was observed with the gasoline UST and pump island ; however, elevated photo-

ionization detector (PID) readings registering between 12 and 50 parts per million (ppm) were noted in the soils adjacent to piping area, the fill area and the west end of the fuel oil UST (Horizons Engineering, 2010). A total of 22 tons of PCS were removed. According to the Horizons report following removal of the PCS, no registered PID readings were identified in excess of 10 ppm within the area of excavation. The PCS were transported off site for treatment and disposal to Environmental Soil Management Inc. (ESMI) in Loudon NH and a cleanup confirmation soil sample was collected from the base of the excavation at the west end of the UST by Horizon Engineering and submitted for laboratory analysis for total petroleum hydrocarbons (TPH) and volatile organic compounds (VOCs) using EPA Methods 8100, and 8260, respectively. The confirmatory soil sampling results revealed no detectable concentrations of VOC or TPH above method detection limits in the soil. A Sites Management Activity Complete (SMAC) designation was granted and the Site was removed from the SMS active hazardous waste site list.

Recommendation: No further action is recommended with respect to the former USTs. Following their discovery during the UST closure, the PCS were identified and managed per State and Federal guidelines such that an SMAC designation was assigned to the Site September 7, 2010.

RECS:

1. Three pits/floor drain structures were identified during the April 26th, 2012 Site reconnaissance effort:
   a. A pit observed in the northeast corner of the Armory building basement was covered with a ¼ inch thick, removable, steel plate. There is a 6-inch diameter iron pipe across the bottom of the pit with a vertical 'tee' section protruding upward in the middle of the pit. Standing water was observed in the vertical portion of "tee"; however, no sheens or odor were associated with this water.

   b. A filled-in structure (approximately 7 feet long by 1 foot wide) was observed in the floor of the basement, next to the vehicle access ramp located in the southwest portion of the Armory building basement (Figure 3). This structure has the appearance of a trench/floor drain that has been decommissioned. Jim Rust (Town of St Johnsbury) indicated to The Johnson Company that in years past when the building operated as the

Armory, vehicles were stored in the basement of the Armory building, and floor drains were installed to convey surface water flow entering via the vehicle access ramp southwest corner of the building (Figure 3).

c. A grated opening observed approximately 8-10 feet north of the aforementioned filled-in structure (in the west-central portion of the Armory building basement) which has an iron pipe (approximately 4-inches in diameter) in the base of the pit under the grated opening. Although not confirmed, the pipe may convey water from the pit toward a sump pump located approximately 5-10 feet to the north. The discharge pipe routed from the sump pump may be connected to the sewer line, although this is not confirmed.

   Recommendation: The pit/floor drain structures should be further inspected for the presence of contamination and to better ascertain what they are connected to. According to Mr. Jim Rust, Town of St. Johnsbury, it was his understanding that the 6-inch iron pipe observed in the pit in the northeast corner is connected to pipe that conveys water from roof drains, however this was not confirmed. Attempts should be made to further ascertain the history of the filled-in structure in order to determine if this was indeed a former floor drain. This would entail review of additional building plans (if available), review of Town sewer lines records in the immediate vicinity of the Armory building (if available) and, attempt to identify and contact personnel with knowledge of the filling process regarding more specific information as to when the structure was filled, and what its purpose was. The follow-up review should be augmented with a dye-test to determine connectivity between the various water collection structures and ultimately an outlet point (if possible). Soil or sediment present or discovered (during additional investigation) in the pit/floor drain structures should be sampled and submitted for laboratory analysis for VOCs and TPH.

2. A pile of discarded paint cans and buckets (1 – 5 gallon nominal volume) was observed stacked under the roof of the access ramp located in the southwest corner of the Armory building. Although leaks, spills or other visual indications of release(s) from this pile of containers were not observed, there is possibility of surface water and groundwater impacts should some or all of the containers contain residual potentially hazardous materials that could create an inadvertent spill or leak from this debris.

   Recommendation: The pile of containerized potentially hazardous debris should be inventoried by a qualified environmental contractor, to quantify and better characterize the contents to determine appropriate management alternatives. Once debris is adequately characterized, the containers and their contents should be disposed of in accordance with State and Federal regulations.

3. A pole-mounted transformer was observed in the northwest corner of the Site. A call to CVPS, the electric service provider, indicated this unit was installed in 1973. CVPS did not have any information as to whether the oil in this unit contained PCBs. Although there were no visual indications that the transformer has leaked, the age of the transformer suggests the oil within it may contain PCBs.

   Recommendation: CVPS should be contacted about replacing the transformer, or replacing the oil within the transformer with PCB-free oil.

4. Aged electrical components (electrical panel, capacitors, switches) were observed in the boiler room, in the basement of the Armory building. Additional, older-appearing, electrical components were observed in several rooms in the Armory building. PCB-containing fluorescent light ballasts may be present at the Site. Due to the age of the building, there is a potential for PCB-containing construction material to be present in the building as a component of window caulking, sealants, paints, floor adhesive/mastic.

   Recommendation: A qualified hazardous waste inspector with expertise specific to PCB-containing electric equipment and construction material should sample this equipment and materials for PCBs. Particular attention must be made as to whether any of the components are leaking, or if any of the aforementioned building material have been disturbed creating a likelihood for release(s) of PCBs to underlying concrete or soil, if outside.

5. There is potential for heavy metals contamination, particularly lead, associated with use of the basement as a firing range. Powder generated from bullets and from shell casings at the firing range presents risk of metals contamination

   Recommendation: More research to determine the location of the firing range in the Armory basement in the form of reviewing plans and blueprints if available; and identification and interview(s) with personnel who may have knowledge about the firing range operations. This research should be followed up with a preliminary lead inspection which may include collecting bulk concrete samples, collecting samples of any residual powder or sediment, and then screening using an XRF or similar type instrument. This sample screening effort could be combined with a lead-paint inspection (see RECs beyond ASTM 1527-05, below).

RECs beyond the Scope of ASTM 1527-05 and AAI

1. Given the age of the building, lead based paint may coat surfaces of interior and exterior walls at the Site. Also lead impacted paint chips may also be associated with the Site.

Recommendation: A lead paint inspection should be conducted by a certified lead paint inspector and a report should be generated outlining the findings.

2. Asbestos-containing materials (ACM) were documented with the Armory building by an ACM investigation performed by Crothers Environmental Group in October 2008 (Crothers, 2008). Of the 48 samples analyzed, six reported positive detections for ACM (2% or more Chrysotile Asbestos). The positive samples were all from plaster wall surfacing material located throughout the building interior. The report also identified the presence of 'Presumed' ACM consisting of non-fiberglass pipe and fitting insulation located in the basement and first floor; and, internal boiler gaskets, refractory and packing materials located in the basement boiler room (Crothers, 2008). A copy of the ACM sampling report is included as Appendix 5.

   Recommendation: Although a previous ACM inspection has been performed (see Appendix 5), a follow-up inspection should be conducted in anticipation of soliciting formal ACM abatement quotes from licensed contractors. This follow-up inspection will confirm completeness of the previous inspection and identify any potential data gaps.

3. Based on information provided in the Environmental Questionnaire (Appendix 3) the Armory building has a mold problem due to constant moisture generated from leaking fire sprinkler lines. According to Peggy Phelps (SJHHC) a mold abatement project was in process to clean up the mold. A follow up call to the Town of St Johnsbury indicated that the project had been placed on hold due to increasing expenditures and no clear end in sight.

   Recommendation: Follow up inspection/testing by a certified contractor should be performed to better delineate extent of mold damage. Following an initial inspection and receipt of results of the testing, a detailed cleanup plan should be presented along with estimated costs for completion.

8.0 DATA GAPS/LIMITATIONS

8.1 DATA GAPS

The history of property ownership/transactions for the Site could not be completely traced at the St. Johnsbury land records beyond 1861. The 1861 transaction described only a portion of the property that the Site is situated on. No records of specific uses or activities at the Site prior to 1861 were identified. As such, it is not possible to absolutely identify earliest developed usage of the Site. Although this is a data gap, it should not be considered a data failure, since it can be approximated when the Site was first developed based on review of an

1855 map of Saint Johnsbury which depicts the area believed to be where the Armory is located as undeveloped. Therefore it can be assumed that the Site was developed at some point between 1855 and 1861.

No key site manager was available during the conduct of this ESA. A key site manager is typically someone who has good knowledge of the uses and physical characteristics of a property, such as a property manager, chief physical plant supervisor or chief maintenance person. Due to the fact that this property has been vacant since 2010, no such personnel were available. A key site manager may have been able to provide insight as to several environmental issues associated with the property such as the location of the firing range in the basement of the armory, and history of activities which have occurred which could provide better basis as to the connection(s) of the floor drains and pits, and age of some of the building materials such as window caulking observed in the building.

8.2 LIMITATIONS

The conclusions of this ESA were arrived at based upon information obtained and made available to The Johnson Company from the following sources: Saint Johnsbury Town Clerk; the Saint Johnsbury Health Officer; the VT DEC; the Federal EPA; Mr. Jim Rust, Town of Saint Johnsbury, Mr. Bob DeRochers, Board Member with Saint Johnsbury History and Heritage Center, Ms. Peggy Pearl, Director, Saint Johnsbury History and Heritage Center, Captain Bradley Reed, Saint Johnsbury Fire Department and from information gathered during the Site reconnaissance. This information has been intended for the sole use of Vermont Department of Environmental Conservation for specific application to the Saint Johnsbury Armory Building, 1249 Main Street in Saint Johnsbury, Vermont. No other uses, expressed or implied, are warranted. The design of the investigation was based on sound scientific techniques and experience with similar investigations. Should additional information become available pertaining to environmental concerns that may be associated with the Site, the information should be made available to The Johnson Company so that we may re-evaluate our conclusions.

9.0 REFERENCES

Bowes, J., 2012a, Telephone conversation with Mr. Jim Rust, Town of St. Johnsbury, April 26, 2012.

Bowes, J. 2012b, Telephone conversation with Captain Bradley Reed, Fire Chief, Saint Johnsbury Fire Department March 21, 2012.

Bowes, J. 2012c, Telephone conversation with Health Officer Tim Angel, Town of Saint Johnsbury March 22, 2012.

Bowes, J., 2012d, Telephone conversation with Mike Sullivan, CVPS , April 27, 2012.

Bowes, J., 2012e, Telephone conversation with Mr. Jim Rust, Town of St. Johnsbury, April 30, 2012.

Crothers, 2008, Letter report RE: Saint Johnsbury Community Center, 1249 Main Street, St. Johnsbury, VT, Interior Asbestos Inspection Limited, November 1, 2008.Doll, Charles, 1961. Centennial Geologic Map of Vermont, State of Vermont Geologist's Office. 1961.

EPA1, 2012. http:\\www.epa.gov/enviro/html/cerclis/cerclis_query.html, "Superfund (CERCLIS) Query Form", Office of Emergency Remedial Response, U.S. Environmental Protection Agency. March 8, 2012.

EPA2, 2012. http://www.epa.gov/superfund/sites/npl/status.htm, "NPL Site Status Information", U.S. Environmental Protection Agency. March 2, 2012.

EPA3, 2012. http://cfpub.epa.gov/supercpad/cursites/srchsites.cfm. "Superfund Site Information", U.S. Environmental Protection Agency. March 23, 2012.

EPA5, 2012. www.epa.gov/enviro/html/rcris/rcris_query_java.html, RCRA Information System, U.S. Environmental Protection Agency. March 13, 2012.

EPA6, 2012. www.epa.gov/ne/cleanup/rcra/, "Waste Site Cleanup and Reuse in New England", Region 1, U.S. Environmental Protection Agency. March 23, 2012.

EPA7, 2010. http://www.epa.gov/oswer/onecleanupprogram/, Solid Waste and Emergency Response, Environmental Protection Agency. September 15, 2010.

EPA8, 1995. http://www.epa.gov/epawaste/nonhaz/municipal/landfill/section3.pdf, "List of Municipal Solid Waste Landfills", United States Environmental Protection Agency. January 1995.

EPAOSC, 2012. EPA OSC Region I website, available: http://www.epaosc.org/site/region_list.aspx?region=1. March 23, 2012

E. H. Danson Associates, 2009, Building Evaluation/Accessibility Assessment St. Johnsbury Community Center, St. Johnsbury, VT, February 28, 2009.

Google, 2010. Google Maps Terrain Layer & Orthophoto Layer. [available online] http://maps.google.com. October 27, 2010

Horizons Engineering, 2010. Underground Storage Tank Closure Report, Saint Johnsbury Recreation Department, 1249 Main Street, Saint Johnsbury, Vermont. July 21, 2010.

NRC, 2012. http://www.nrc.uscg.mil/foia.html, National Response Center, United States Coast Guard. March 25, 2012.

NRCS, 2010. http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx, "Web Soil Survey", National Resource Conservation Service. November 5, 2010.

Ross Environmental, 2006, Initial Site Investigation and Emergency Corrective Action Report, Grave United Methodist Church, 36 Central Street, St. Johnsbury, Vermont 05819, March 20, 2006.

Schwartz, J., 2012, E-mail dated April 3, 2012 re; VTDEC Sites Management Section files 931398 and 20104075 made available on VTDEC FTP site.

Schwer, 2010. Letter from Charles Schwer, VT SMS, to Jim Fitzgerald, Town of Saint Johnsbury RE: Site Management Activity Complete. September 7, 2010.

Stewart, D.P. and MacClintock, P., 1970. Surficial Geologic Map of Vermont, State of Vermont. 1970.

UNH, 2007. http://docs.unh.edu/nhtopos/nhtopos.htm, Government Documents Department, University of New Hampshire. May 5, 2007.

USGS, 1995. Aerial Photograph. Accessed at http://msrmaps.com/Default.aspx. U.S. Geological Survey. May 9, 1995.

USGS, 2006. Preliminary Integrated Geologic Map Databases for the United States: Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, Rhode Island, Vermont. United States Geological Survey. 2006.

VT DEC1, 2012. http://maps.vermont.gov/imf/sites/ANR_NATRESViewer/jsp/launch.jsp, Environmental Interest Locator, Vermont Agency of Natural Resources, Department of Environmental Conservation. March 22, 2012.

VT DEC2, 2010. www.anr.state.vt.us/dec/wastediv/rcra/pubs/allVTGen.pdf, "All Vermont Generators, (Active IDs Only)", Vermont Agency of Natural Resources, Department of Environmental Conservation. August 13, 2010.

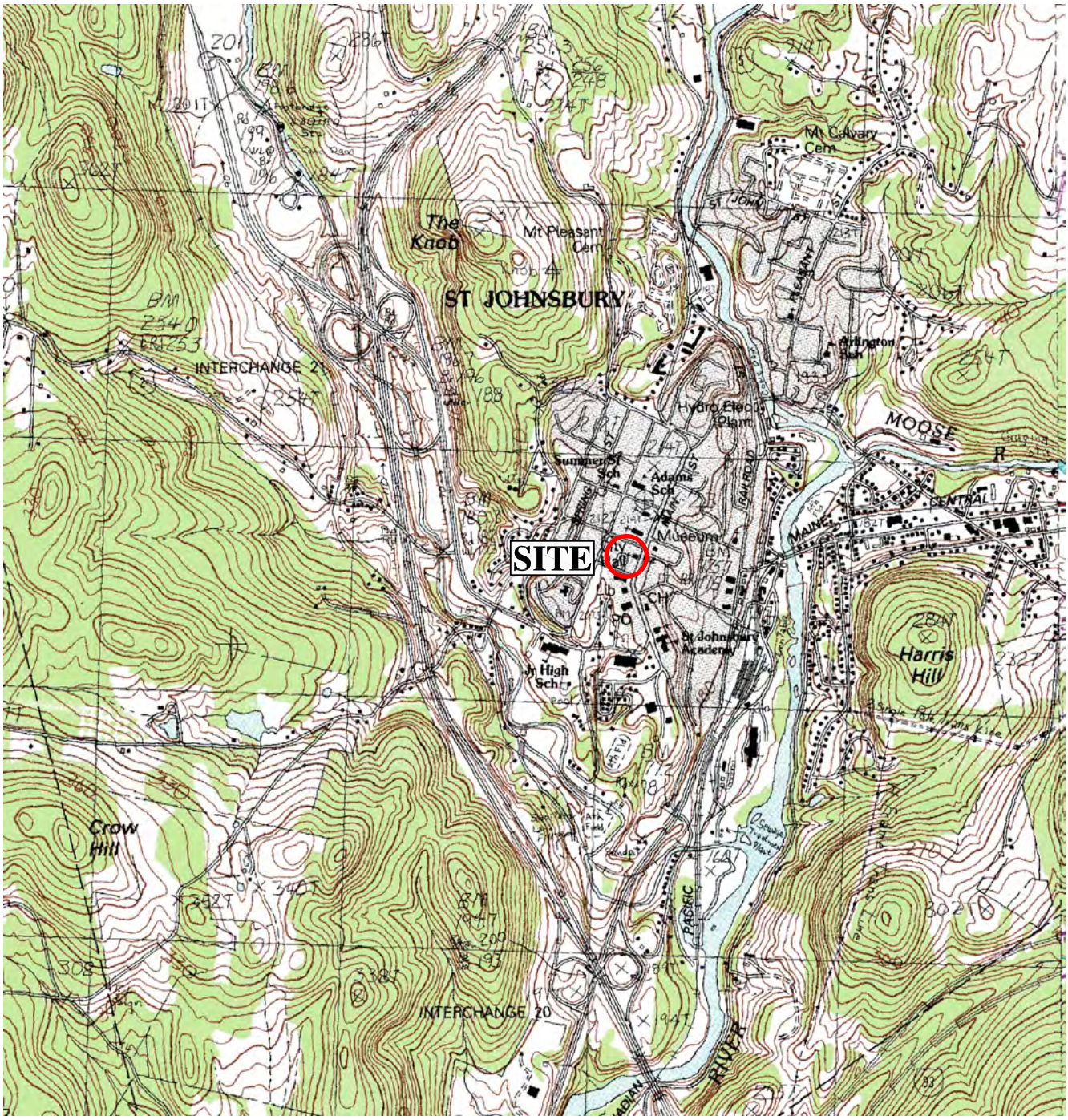
VT DEC3, 2012. www.anr.state.vt.us/WMID/HazSites.aspx, "Waste Management Interactive Database (WM-ID)", Vermont Agency of Natural Resources, Department of Environmental Conservation. Accessed on March 22, 2012.

VT DEC4, 2006. www.anr.state.vt.us/dec/wastediv/solid/pubs/Vermont.Solid.Waste.Facilities.pdf, "Vermont Solid Waste Management Facilities", Vermont Agency of Natural Resources, Waste Management Division, Solid Waste Management Program. July 25, 2006.

VCGI, 2007. 1:5000 (0.5 meter) Black & White Vermont orthos, flown May 2007. Vermont Center for Geographic Information. May 2007

FIGURES

K:\3-2202-37\Location Map.dwg



N

1 0.5 0 1

MILES

1000 0 1000 2000 3000 4000 5000 6000 7000

FEET

CONTOUR INTERVAL 6 METERS

MAP LOCATION

BASE MAP: USGS 7.5 Minute Topographic Quadrangle Saint Johnsbury, Vermont 1983

FIGURE 1: SITE LOCATION MAP
SAINT JOHNSBURY ARMORY PROPERTY
SAINT JOHNSBURY, VERMONT

The Johnson Company

100 State Street, Suite 600
Montpelier, VT 05602

Drawn by: TJK Date: 03/21/12
Chk'd by: JRB Date: 03/21/12
Scale: As Shown Project: 3-2202-37

Figure 2 - Orthophoto.mxd

N

Legend

St. Johnsbury Parcels (2007)

Parcel Boundaries

St. Johnsbury Armory

50 0 50 100 150 200 250 300 350

FEET

VT

MAP LOCATION

SOURCE: 1:40000 (1 meter) True Color Vermont orthos, flown July and August 2009. Vermont Center for Geographic Information. Posted April 8, 2010.

FIGURE 2: ORTHOPHOTO
SAINT JOHNSBURY ARMORY PROPERTY
SAINT JOHNSBURY, VERMONT

The Johnson Company

100 State Street, Suite 600
Montpelier, VT 05602

Drawn by: JEM	Date: 3/23/11
Chk'd by: JRB	Date: 3/24/11
App'd by: JRB	Date: 3/24/11
Scale: As Shown	Project: 3-2202-37

Source: EH Danson Associates, 2009.

K: \3-2202-37\CAD\Basement.dwg

Note: All locations approximate.

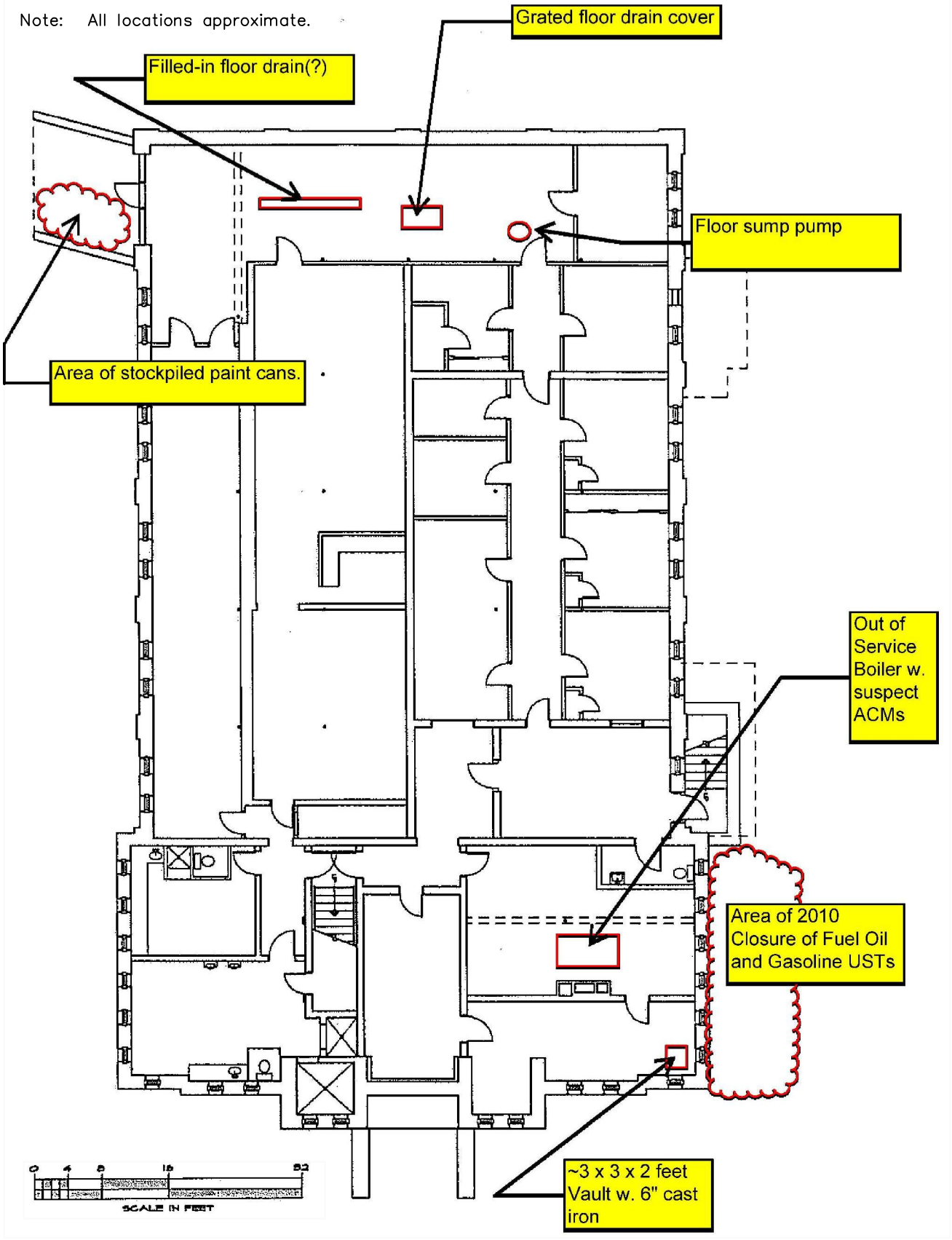


FIGURE 3: ARMORY BUILDING BASEMENT FLOOR PLAN
SAINT JOHNSBURY ARMORY PROPERTY
SAINT JOHNSBURY, VERMONT

The Johnson Company

100 State Street, Suite 600
Montpelier, VT 05602

Drawn by: TJK	Date: 05/08/12
Chk'd by: JRB	Date: 05/08/12
Scale: As Shown	Project: 3-2202-37

Environmental Survey

Former Saint Johnsbury Armory
1249 Main Street
Saint Johnsbury, Vermont

Prepared for:

Ms. Gail Aloisio
Northeastern Vermont Development Association
36 Eastern Avenue, Suite 1
PO Box 630
St. Johnsbury, Vermont 05819

Prepared by:

Cardno ATC
171 Commerce Street, P.O. Box 1486
Williston, VT 05401

Cardno ATC Project No. 063.35078.0013

March 28, 2013

Table of Contents

1.0 BACKGROUND 1
2.0 FINDINGS 1
2.1 ASBESTOS SURVEY 1
2.1.1 Asbestos Quality Assurance/Quality Control 2
2.1.2 Asbestos Recommendations 2
2.2 PCB IN BUILDING MATERIALS SURVEY 3
2.2.1 PCB Quality Assurance/Quality Control 3
2.2.2 PCB Recommendations 3
2.3 LEAD BASED PAINT XRF SURVEY 3
2.3.1 Lead in Paint Quality Assurance/Quality Control 4
2.3.2 Lead in Paint Recommendations 4
2.4 LEAD IN DUST SAMPLING 5
2.4.1 Lead in Dust Quality Assurance/Quality Control 7
2.4.2 Lead in Dust Recommendations 7
2.5 Indoor Air Quality Investigation 7
2.5.1 IAQ Quality Assurance/Quality Control 10
2.5.2 IAQ Recommendations 10
2.6 SEDIMENT SAMPLING AND DYE TEST 10
2.6.1 Sediment Sampling Quality Assurance/Quality Control 11
2.6.2 Sediment Sampling and Dye Test Recommendations 11

Appendices

Site Diagram

Appendix A: Asbestos Sample Location Diagram
List of Suspect Asbestos-Containing Materials
Asbestos Laboratory Report
Appendix B: PCB Sample Location Diagram
List of Suspect PCB-Containing Materials
PCB Laboratory Report
Appendix C: Building Diagram with Room Numbers
XRF Field Sheets
XRF Protocol
Performance Characteristic Sheet
XRF QA/QC Results
Appendix D: Lead in Dust Sample Location Diagram
Lead in Dust Laboratory Report
Appendix E: Indoor Air Quality Sample Location Diagram
Indoor Air Quality Laboratory Reports
Appendix F: Diagram of Floor Drains and Sediment Sample Location
Sediment Sample Laboratory Reports

1.0 BACKGROUND

The following report documents the asbestos, polychlorinated biphenyls (PCBs), lead based paint (LBP), lead in dust, indoor air quality (IAQ), drain sediment sampling performed at the former Saint Johnsbury Armory facility, located at 1249 Main Street (the site) in Saint Johnsbury, Vermont. In addition the report documents the dye-testing results of the basement floor drain system.

The site is currently developed with the former St. Johnsbury Armory building, a three story masonry structure. The building is currently vacant and is located on an approximately 0.44 acre parcel. The property is located in downtown St. Johnsbury in an area with mix-use development. The property is located on the west side of Main Street and is bounded on the north and west by the Saint Andrews Episcopal Church and the Grace Methodist Church, respectively; a dentist's office to the south and to the east, across Main Street is the Passumpsic Savings Bank and several other small business'.

Pursuant to the Phase I Environmental Site Assessment (May 2012, the Johnson Company), the property has been developed since at least 1882, originally with four separate buildings. Apparently the current armory building was constructed circa 1916. Modern uses of the building include use by the St, Johnsbury Police Department, the American Red Cross and the St. Johnsbury Parks and recreation Department. The Phase I indicates that the Vermont National Guard last occupied the building in 1976.

Cardno ATC understands that the Saint Johnsbury History and Heritage Center is assessing the feasibility for redevelopment of the building into a possible office headquarters, education and museum space.

This US EPA Brownfields project was completed by Cardno ATC for the Northeastern Vermont Development Association (NVDA) and pursuant to the approved Site Specific Quality Assurance Project Plan (SSQAPP) Addenda F-1 dated November 28, 2012. The Scope of Work for this project as outlined in the SSQAPP was based on the findings of the Phase I Environmental Site Assessment completed for the site in May of 2012 (prepared by the Johnson Company).

2.0 FINDINGS

2.1 ASBESTOS SURVEY

Pursuant to the SSQAPP, all asbestos samples were collected pursuant to the Cardno ATC SOP F-SOP-1.12. This *baseline* asbestos survey was also conducted pursuant to ASTM method E2356-04 "Standard Practice for Comprehensive Building Asbestos Surveys". Samples were submitted to the Cardno ATC Asbestos Laboratory Division (NY, NY) for laboratory analysis via polarized light microscopy (PLM) analysis.

A *Baseline Survey* is a building-wide or facility wide inspection that provides a general sense of the overall location, type, quantity and conditions of asbestos –containing materials (ACM) present. The baseline survey provides information for long-term management of ACM and prioritization of response actions, however a baseline survey is unobtrusive in that walls and other barriers are not damaged (opened up) in order to collect samples. Therefore, it is possible that suspect ACM may be located behind walls other barriers (such as inside boilers, doors, etc.).

Previous asbestos sampling data from Crothers Environmental Group LLC's "Limited Interior Asbestos Inspection" report Dated November 1, 2008 was utilized and sampling data from the 2008 report was incorporated into this report. The fieldwork was conducted by Cardno ATC on December 10, 17, 18 and 28, 2012.

Asbestos bulk samples were analyzed by Polarized Light Microscopy (PLM). Asbestos Containing Material (ACM) is defined as material that contains any type of asbestos in an amount greater than 1% asbestos.

The following building materials were identified as ACM from this survey:

- **Air cell pipe insulation (Homogenous Material No. 24 [H 24])**
- **Mudded joint packings (H42)**

The following materials were found to previously be identified as ACM within the previous 2008 survey:

- **Plaster walls and ceilings (H11)**

The following materials have not been sampled (due to inaccessibility) and should be assumed to be ACM:

- **Door Insulation (H15)**
- **Fire Brick (H26)**
- **Vibration Cloth (H34)**
- **Boiler Door Insulation (H37)**
- **Boiler Internal Materials (H43)**

The following materials were found to contain trace amounts (<1%) of asbestos:

- **Exterior Window Caulking (H4)**
- **Exterior Tar Brick Caulking (H5)**

Appendix A of this report contains a listing of suspect asbestos containing materials, a sample location diagram and the asbestos laboratory hardcopy results.

2.1.1 Asbestos Quality Assurance/Quality Control

For the purposes of comparing duplicate samples, samples 01A and 01B (duplicate) were utilized. Both samples were below were below laboratory detection limits. Laboratory in-house QA/QC included duplicate analysis of 10% of samples by the original analyst as well as a duplicate analysis by a second analyst (recounts). All QA/QC laboratory recounts passed QA/QC requirements; the Data Entry sheet for the asbestos bulk sample laboratory recounts is included with the laboratory hardcopy results in **Appendix A**.

2.1.2 Asbestos Recommendations

- Prior to any renovations/demolition to the building, any asbestos containing materials that may be disturbed must be removed or abated as required (per State and Federal regulations).

- Suspect ACM may be enclosed or concealed in areas Cardno ATC did not access during this survey. If suspect materials that are not included in this survey are discovered during renovation / demolition activities, they shall be tested prior to disturbance.

- Materials containing “trace” amounts of asbestos (<1%) are not considered Asbestos Containing Materials (ACM) by the US EPA and many state agencies. However, certain sections of OSHA standard 29 CFR 1926.1101 apply when such materials are subject to disturbance. Refer to “OSHA Standard Interpretation and Compliance Letter” dated 8/13/1999, subject: “Requirements for demolition operations involving material containing <1% asbestos”.

- Asbestos abatement activities must be performed by a Vermont certified abatement contractor following all applicable State and Federal regulations. Abatement activities should be designed by a Vermont certified asbestos project designer and overseen by a Vermont certified asbestos project monitor.

2.2 PCB IN BUILDING MATERIALS SURVEY

Pursuant to the SSQAPP, all PCB samples were collected pursuant to the Cardno ATC SOP F-SOP-1.17. Samples were submitted to EMSL Analytical, Inc. (Cinnaminson, NJ) for laboratory analysis via 3540C/8082A analysis. PCB bulk samples of suspect materials (oil paints, caulking or similar elastic sealant materials installed prior to 1978) were collected; a minimum of two bulk samples representative of each different homogeneous area of suspect material sampled were collected.

Cardno ATC visually inspected accessible areas of the facility for homogeneous groupings of suspect PCB containing materials. Only suspect (window and door caulking, paint, expansion joints etc.) materials installed prior to 1978 were investigated. Cardno ATC sampled ten (10) materials that are considered to be suspect for containing PCB's.

The EPA regulatory limit ("not authorized for use" under the Toxic Substances Control Act of 1976 [TSCA]) for PCBs in building materials is 50 parts per million (ppm).

The gray floor paint in the basement level (H16) was the only material identified during this survey as containing levels of PCBs in excess of 50 ppm. The PCB content of the gray paint was identified as containing levels up to 5,700 ppm.

Appendix B of this report contains a listing of suspect PCB materials, a PCB sample location diagram and PCB laboratory hardcopy results.

2.2.1 PCB Quality Assurance/Quality Control

Pursuant to the SSQAPP one duplicate PCB sample was collected. Sample number 16C (grey floor paint, H16) is a duplicate of sample number 16B (as well as 16A). The Relative Percent Difference (RPD) between samples 16B (5,600 ppm) and 16C (4,600) is 21%, which is within the RPD requirement of 50% pursuant to the SSQAPP. The RPD between samples 16A and 16C is 0%.

2.2.2 PCB Recommendations

- Additional PCB sampling should be conducted to determine to what extent, if any, of the PCBs from the flooring paint have leached into the concrete floor substrate. Required removal of PCB materials (such as the flooring paint) must be conducted pursuant to TSCA and may require an EPA approved work plan.

2.3 LEAD BASED PAINT XRF SURVEY

Pursuant to the SSQAPP, the XRF lead based paint (LBP) Survey was conducted pursuant to the Cardno ATC SOP F-SOP-1.19. The LBP XRF survey of the building was conducted on December 10 and 17, 2012. Lead based paint is defined as paint or other surface coatings that contain lead equal to or greater than 1.0 mg/cm^2 (by XRF).

A lead paint analyzer (XRF) was used to sample representative painted components and surfaces for lead content. The following **Table 1** summarizes the various components identified as LBP.

Table 1: Summary of XRF Lead in Paint Results						
Component	***Room No.***	***Condition***	***Substrate***	***Color***	***Location in Room***	***Result (mg/cm^2)***
Windows – All Components	Exterior	Good - Poor	Wood	White	All	>9.9 (maximum reading of instrument)
Side Porch	Exterior	Good	Wood	White	D side	3.0
Window Wells	Throughout Building	Good - Poor	Wood	White	All	>9.9 (maximum reading of instrument)
Wall	Room 21	Good	Brick	Blue	C side	3.0
Door	Room 21	Good	Metal	Green	C side	3.4
Floor	Throughout Basement	Fair - Poor	Concrete	Grey	All	1.5
Walls and Ceiling	Room 23	Good - Fair	Brick	Green	All	1.5
Walls	Room 24	Good - Poor	Brick	Green	All	3.0
Walls	Room 25	Good	Brick	White	All	3.0
Stair Riser	Room 25	Good	Wood	White	A side	1.1

Individual room by room testing results are contained on the field sheets included in **Appendix C** of this report.

2.3.1 Lead in Paint Quality Assurance/Quality Control

Pursuant to QA/QC procedures within the Cardno ATC SOP (F –SOP-1.19), QA/QC repeat testing was conducted on ten (10) surfaces. A procedure for calculating the retest tolerance limit is specified in the XRF instrument Performance Characteristic Sheet (PCS). The retest conducted by Cardno ATC was within the tolerance limit for the instrument.

Appendix C contains the room location diagram, field sheets, XRF instrument protocol, the repeated testing (QA/QC) results, and the PCS.

2.3.2 Lead in Paint Recommendations

- If Demolition/Renovation activities are planned that would disturb finish coatings, then appropriate work practices should be employed to satisfy the Lead in Construction OSHA Standard (1926.62), including but not limited to representative air monitoring to determine actual employee exposures.
- Copies of this report should be provided to the general contractor and demolition contractor to assist with compliance to VOSHA Lead in Construction Standard.
- Any abatement of lead hazards must be completed by a Vermont licensed lead abatement firm, pursuant to the Vermont Regulations for Lead Control.

- Subsequent to renovation/demolition activities a lead-specific final cleaning should be conducted in all areas and lead in dust sampling should be completed prior to building occupancy.

2.4 LEAD IN DUST SAMPLING

As required by the SSQAPP, lead-in-dust sampling was conducted pursuant to the Cardno ATC SOP F-SOP-1.20.

Cardno ATC collected lead in dust samples from representative locations throughout the facility on December 17, 2012. Lead in dust sampling was conducted to determine existing lead-in-dust levels and to determine potential impacts related to the reported use of the basement as an indoor firing range. On December 10, 2012, Cardno ATC interviewed St. Johnsbury Police Chief Clement Houde and Corporal Gil Roberts regarding the possible former use of the armory building and the location of the former firing range. According to Cpl. Roberts, the building has not included an indoor firing range since at the latest 1992. Upon review of the space, it was determined that the range was likely located in the basement in the vicinity of rooms 26, 27, and 28. Based on this finding, lead in dust samples numbers 13-20 were collected within rooms 26 – 28 (as well as other areas of the building).

Although lead in dust samples are not a regulatory requirement prior to renovation activities, the "clearance levels" contained in the Vermont Regulations for Lead Control (V.S.A. Title 18, Chapter 38) were utilized as de facto target levels for this project. The Vermont clearance levels are 40 µg/ft² for floor samples and 250 µg/ft² for interior window sills.

For lead-abatement projects in Vermont, work areas must be cleaned until clearance dust samples indicate levels of lead-in dust are below the clearance levels. The clearance levels are commonly utilized outside of lead-abatement projects as standards to determine if a response action is needed related to lead in dust contamination. All lead in dust samples were analyzed by EMSL Analytical, Inc. of Cinnaminson NJ by Analytical Method SW846-6010B/C ICP-AES. The following **Table 2** summarizes lead in dust sampling results

Table 2 : Pre Renovation Lead in Dust Sample Results

Sample Number	*Room # / Location*	*Floor*	*Lead Concentration (µg/ft²)*	*VT Clearance Level (µg/ft²)*
F-01	03-Floor	2nd	52	40
S-02	03 – Sill	2nd	86,000	250
F-03	08 – Floor	2nd	250	40
S-04	08 - Sill	2nd	20,000	250
F-05	04 - Floor	2nd	230	40
F-06	10 - Floor	2nd	130	40
F-07	12 - Floor	1st	2.7	40
S-08	12 - Sill	1st	1,200	250
F-09	16 - Floor	1st	21	40
S-10	16 - Sill	1st	4,300	250
F-11	17 - North Floor	1st	6	40
F-12	17 - South Floor	1st	7.5	40
F-13	26 - East Floor	Basement	430	40
F-14	26 - Center Floor	Basement	350	40
F-15	26 - West Floor	Basement	340	40
S-16	26 - East Sill	Basement	860	250
S-17	26 - Center Sill	Basement	1,800	250
S-18	26 - West Sill	Basement	390	250
F-19	28 - Floor	Basement	83	40
F-20	27 - Floor	Basement	260	40
F-21	29 - Floor	Basement	670	40
F-22	32 - Floor	Basement	590	40
F-23	21 - Floor	Basement	510	40
F-24	23 - Floor	Basement	2,600	40
F-25	Field Blank	NA	BDL	Not Applicable
F-26	Blind Spike*	NA	180 µg	Not Applicable

** - Spike Known Value of 232.6 µg*

As noted in **Table 2**, lead-in-dust results above target/clearance levels were identified in all levels of the building. Sample results above the target levels are shaded in **Table 2**; rooms where the former firing range was apparently located have also been highlighted (in yellow) in **Table 2.**

2.4.1 Lead in Dust Quality Assurance/Quality Control

Pursuant to QA/QC procedures within the SSQAPP Cardno ATC submitted one "blind" lead-in-dust spike sample (sample # F-26) with a known lead content of 232.6 µg. Pursuant to the SSQAPP the acceptance criteria is within +/- 30% of the known lead content (162.82 – 302.38 µg). The analysis result of the spike sample was 180 µg and therefore falls within the acceptance criteria. In addition, no lead was detected in the field blank (sample # F-25).

Appendix D contains the lead in dust sample location diagram (which includes the approximate location of the former firing range) and the lead in dust laboratory hardcopy results.

2.4.2 Lead in Dust Recommendations

- Copies of this report should be provided to the general contractor and demolition contractor to assist with compliance to VOSHA Lead in Construction Standard.
- Subsequent to renovation/demolition activities a lead-specific final cleaning should be conducted in all areas and lead in dust sampling should be completed prior to building occupancy.

2.5 Indoor Air Quality Investigation

Pursuant to the SSQAPP, Cardno ATC conducted air sampling for culturable fungi and total fungal structures in four (4) indoor locations and one (1) outdoor location for comparison. *The mold assessment was conducted pursuant to the Cardno ATC "Guidelines for Environmental Sampling for Microbial Contamination" (April 2002) hereby incorporated into the Cardno ATC Generic QAPP as Cardno ATC SOP F-SOP-1.21.*

Cardno ATC utilized an Andersen N6 sampler to collect the airborne culturable mold samples on malt extract agar plates for 5 minutes at a flow rate of approximately 27.29 liters per minute. Zefon Air-O-Cell™ microbial spore trap cassettes and a Buck Bio-Aire sampling pump (serial number B150547) were used to collect each sample of total airborne fungal structures for 10 minutes at a flow rate of 15 liters per minute. Both bioaerosol sampling techniques were calibrated prior to sample collection. Bulk (swab) samples were also collected in areas of apparent mold growth.

The air and bulk samples were submitted to EMSL Analytical Inc. of Cinnaminson NJ for analysis of predominant mold species and concentrations.

The American Conference of Governmental Industrial Hygienists (ACGIH) considers comparison of indoor/outdoor bioaerosol data a common method for evaluating indoor fungal reservoirs or concerns. In well maintained indoor environments, the total concentrations of fungi in the indoor air are commonly equal to, or less than, the total concentration outdoors. If indoor fungal bioaerosol concentrations are greater than those outdoors, then indoor fungal reservoirs are likely to be present (however winter conditions will generally result in lower outdoor levels). In addition, the types (i.e., taxa or groups) of fungal bioaerosols found inside a building should be qualitatively similar to the taxa recovered outdoors; presuming outdoor air is the only source of indoor fungal bioaerosols. There are no regulatory standards or other widely accepted numerical guidelines available for interpretation of bioaerosol data. Current ACGIH guidelines refrain from providing numerical thresholds for bioaerosols.

The following **Table 3** presents the total quantitative results for the culturable air samples:

Table 3: Culturable Sample Analysis			
Sample Number	***Location***	***Predominant Species***	***Total CFU/m^3***
IP-01	Exterior – North Door	*Penicillium*	98
IP-02	Room 3 – 2nd Floor	*Aspergillus*	210
IP-03	Room 11 – 1st Floor	*Aspergillus*	511
IP-04	Room 25 - Basement	*Aspergillus*	252
IP-05	Field Blank	*None Detected*	-

Predominant culturable species found indoors (Aspergillus) were different than the predominant species noted outdoors (Penicillium). The outdoor total was lower than indoor concentrations. Based on Cardno ATC's experience the indoor levels are not considered significantly elevated and due to ambient temperatures being at or below freezing (which would serve to reduce the total cultural spore concentrations and types found outside) it is not unusual for indoor levels to exceed outdoor levels under these conditions. The predominant types of fungi identified (inside and outside) are common types of fungi. Based on Cardno ATC's experience the culturable levels identified do not represent a significant concern.

The following **Table 4** presents the quantitative results for the total airborne fungal structure samples:

Table 4: Total Airborne Fungal Structure Sample Analysis

Sample Number	***Location***	***Predominant Species***	***Total Structures/m^3***
Z-01	Exterior – North Door	*Aspergillus/Penicillium*	611
Z-02	Room 3 – 2nd Floor	*Aspergillus/Penicillium*	577
Z-03	Room 11 – 1st Floor	*Aspergillus/Penicillium*	458
Z-04	Room 25 - Basement	*Aspergillus/Penicillium*	3,187
Z-05	Field Blank	*None Detected*	-

The predominant spore types found outdoors were similar to the indoor predominant types (Aspergillus/Penicillium) and except for the basement sample the totals were similar as well. The basement (room 25) level however, did indicate a possible amplification of Aspergillus/Penicillium fungal types.

The following **Table 5** presents the total qualitative results for the swab samples:

Table 5: Fungal Structure Swab Sample Analysis

Sample Number	***Location***	***Substrate***	***Area (ft^2)***	***Predominant Species***	***Category Count***
S-01	Room 16/11 – wall Bottom of Stairs	*Plaster*	*<1*	*Chaetomium*	High
				Penicillum	Medium
				Aspergillus	Rare
S-02	Room 03 – West Wall	*Plaster*	*<1*	*Penicillium/Aspergillus*	Rare
				Cladosporium	Rare
S-03	Room 16 – Ceiling	*Structural Wood*	*25*	*None Detected*	-
S-04	Field Blank	*Not Applicable*	*Not Applicable*	*None Detected*	-

As noted in Table 5 above, only limited areas of apparent visual fungal growth were noted by Cardno ATC Swab samples (samples S-01, S-02 and S-03) were collected from areas of apparent growth. Analysis of swab samples for fungal spores and structures indicated the presence of common fungal structures on only two of the three swab samples. Extensive fungal growth was not observed by Cardno ATC within the building. **Appendix E** includes the fungi sample location diagram and laboratory hardcopy results of the fungi sampling.

2.5.1 IAQ Quality Assurance/Quality Control

Indoor air quality sampling was conducted pursuant to Cardno ATC's "Guidelines for Environmental Sampling for Microbial Contamination". One field blank sample was collected for each type of fungal analysis. No contamination was noted on any of the field blank samples.

2.5.2 IAQ Recommendations

- If significant fungal growth is identified during renovation/demolition activities, removal of the growth should be conducted pursuant to the EPA document Mold Remediation in Schools and Commercial Buildings (EPA 402-K-01-001).
- Subsequent to renovation/demolition activities a final HEPA cleaning should be conducted in the basement area.
- Any sources of water infiltration should be corrected. Continued water infiltration (such as roof leaks) would likely cause additional IAQ related problems. If renovations are not planned for the near-future, additional mold sampling may be warranted.

2.6 SEDIMENT SAMPLING AND DYE TEST

Cardno ATC conducted an investigation related to the presence of the floor drain system in the basement, to help determine potential impacts to the subsurface related to potential vehicle maintenance previously conducted in the basement level. The investigation included a visual inspection of the drain system, interviewing individuals with knowledge of the building's historical use, sampling of sediment in the floor drain itself, as well as performing a dye tracing test to determine the discharge location of the drain system.

The floor drain system in the basement consists of and exterior catch basin adjacent to the southwest entrance, an abandoned trench drain in the southwest corner, a floor drain to the north of the trench drain, a sump pump adjacent to the floor drain and a clean-out pit in the northeast corner of the basement. All the basement catch basins and sump/pump appear to discharge tot the main wastewater line for the building which runs along the north wall and to the cleanout-pit (see dye-test results below). **Appendix F** contains a diagram of the configuration of the floor drain system.

On December 10, 2012, Cardno ATC interviewed St. Johnsbury Police Corporal Gil Roberts regarding the drainage configuration in the vicinity of room 28. Cpl. Roberts described the Police Department's historical use of the room (vehicle maintenance, cleaning, and storage) as well as drainage patterns during use.

The visual examination and Cpl. Roberts' description both indicated that wastewater entering the floor drain in room 28 flows north into the sump at the north end of room 28. A sump pump lifts that water into the building main wastewater line in room 29. From room 29, the main wastewater line runs east along the north wall of the basement, until it reaches a cleanout/trap in a pit in the northeast corner of room 21. From there it continues generally east to the city sewer under Main St.

On December 17, 2012, sediment samples from the floor drain in room 28 were collected to be analyzed for the following analytes: diesel range organics (S-01) via EPA SW-846 Method 8015B – DRO., mercury (S-03) via EPA SW-846 Method 7471B, metals (S-05) via EPA SW-846 Method 6010 C and volatile organic compounds (S-07) via EPA SW-846 Method 8260B. Duplicate samples were collected of each (S-02, S-04, S-06, and S-08, respectively). All sediment samples were collected pursuant to Cardno ATC's standard operating procedure F-SOP-1.7. The results of the sediment sampling were compared to the Soil Screening Values (SSVs) for industrial and commercial properties as listed in the Vermont Department of Environmental Conservation's "Investigation and Remediation of Contaminated Properties

Procedures". **Sediment concentrations of arsenic and bromomethane exceeded the SSVs.** It should be noted that concentrations of four analytes were identified in S-08 (duplicate) that were not identified in S-07. None of these additional detections exceeded the relevant SSV. A summary of sediment sample detections (from the initial sediment samples) are provided in the following **Table 6**:

Table 6: Sediment Sample Detections

Sample Number	*Analyte*	*Result*	*SSV*	*Unit*
S-01	DRO*	120	1,000	mg/kg
S-03	Mercury	0.063	43	mg/kg
S-05	Antimony	0.54	410	mg/kg
S-05	Arsenic	2.5	1.6	mg/kg
S-05	Beryllium	0.38	2,000	mg/kg
S-05	Cadmium	0.45	800	mg/kg
S-05	Chromium	19.3	103	mg/kg
S-05	Copper	56.4	41,000	mg/kg
S-05	Lead	62.1	800	mg/kg
S-05	Nickel**	20.1	20,000	mg/kg
S-05	Zinc	101	310,000	mg/kg
S-07	Bromomethane	37	32	µg/kg
S-07	Acetone	310	630,000	µg/kg
S-07	Methyl acetate	120	1,000,000	µg/kg

* - Diesel Range Organics, compared to the SSV for Total Petroleum Hydrocarbons

On December 18, 2013, a dye test was performed to confirm the discharge point of the building wastewater system. Hugh Wescott of the St. Johnsbury Department of Public Works (DPW) visited the site. Mr. Wescott indicated that he has no knowledge of any wastewater discharge from the armory building other than the main wastewater line to the city sewer. DPW provided access to a sewer junction (manhole) downstream of the armory. Dyed water was released into the cleanout in the northeast corner of room 21. Approximately six minutes later, dye was observed flowing through the downstream manhole, located east of the site in a parking lot off of Route 2 (this downstream manhole location is depicted on the Site Diagram).

The results of this investigation indicate the likelihood that any pollutant captured by the floor drain system in room 28 would have been discharged to the city wastewater system and it would be unlikely that a significant impact to the subsurface has occurred on site.

2.6.1 Sediment Sampling Quality Assurance/Quality Control

The sediment sampling was conducted pursuant to the Cardno ATC "Standard Procedure, Sediment Sampling" hereby incorporated into the Cardno ATC Generic QAPP as Cardno ATC SOP F-SOP-1.7. Of analytes that were detected in the sediment samples, only acetone (a common laboratory contaminant) was found in excess of the relative percent difference requirements established in the QAPP. It should be noted that, due to laboratory equipment malfunctions, analysis of the VOC duplicate samples was completed outside of the holding time. However, due to the relative consistency between the initial and duplicate samples Cardno ATC considers the data to be valid.

2.6.2 Sediment Sampling and Dye Test Recommendations

Results of the investigation indicate elevated levels of some pollutants in the floor drain sediment. Any sediment (likely less than on 55-gallon drum) associated with the floor drain system should be excavated and disposed of according to all applicable state and federal regulations.

Signatures of Environmental Professionals

Cardno ATC has performed above activities in general conformance with the project QAPP (Addenda F-1) for the Former St. Johnsbury Armory located in St. Johnsbury, VT.

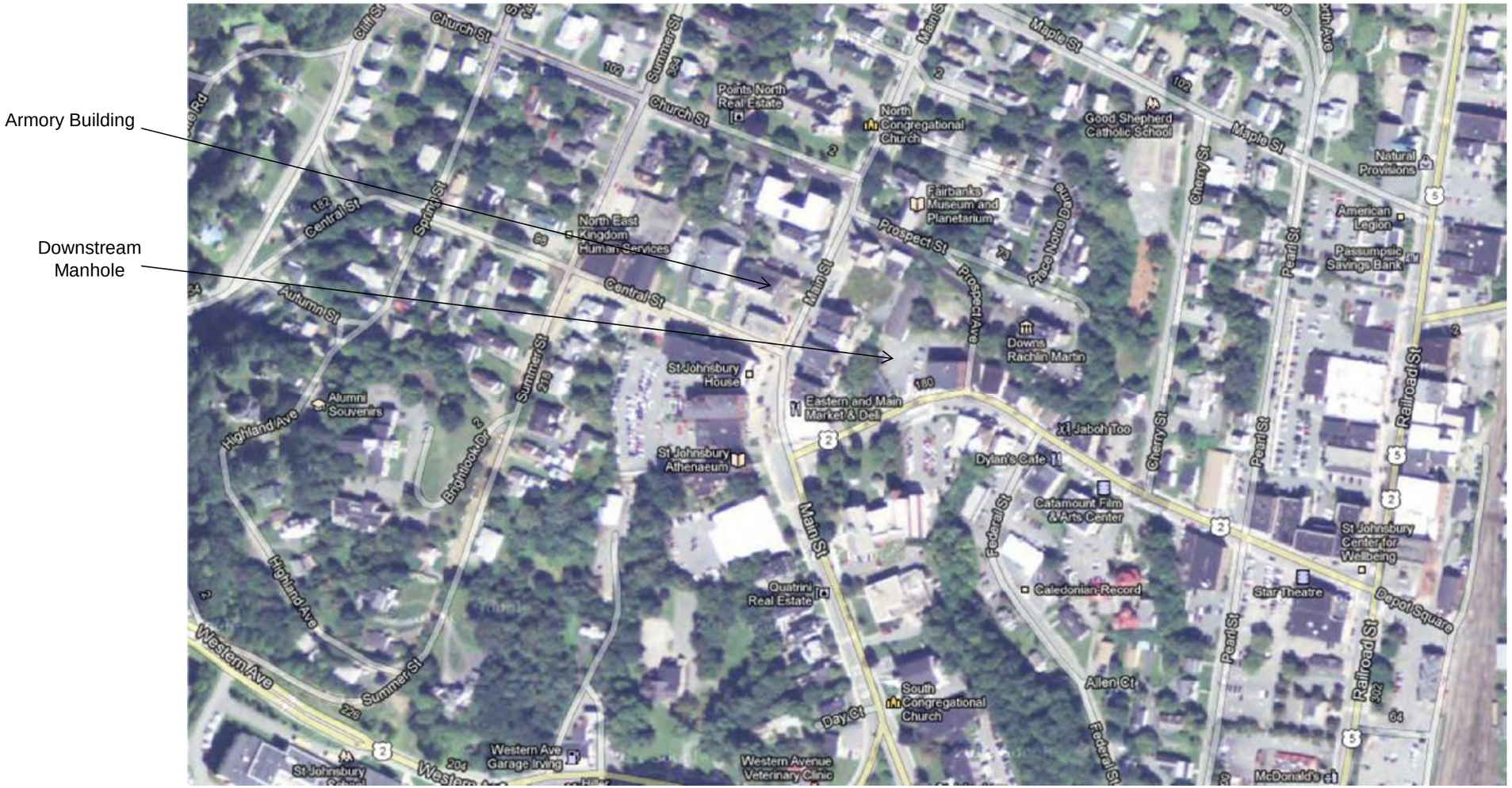
CARDNO ATC

Harland Miller
Senior Environmental Technician

Devin Porter
Senior Environmental Technician

Andra Liberty
Project Manager

Stephen Znamierowski
Senior Project Manager



SITE LOCATION DIAGRAM

Address: St. Johnsbury Armory
1249 Main Street
St. Johnsbury, Vermont

Project Number: 063.35078.0013

Cardno ATC
Shaping the Future
171 Commerce St. Williston, Vermont 05495
Phone:(802) 862-1980 Fax: (802) 862-1405

SOURCE : Field Notes

SCALE: Unknown

ENVIRONMENTAL • GEOTECHNICAL
BUILDING SCIENCES • MATERIALS TESTING

171 Commerce Street · PO Box 1486
Williston, VT 05495
Telephone 802-862-1980
Fax 802-862-1405
www.atcgroupservices.com

March 3, 2017

Mr. Joe Kasperzak
Assistant Town Manager
Town of St. Johnsbury
51 Depot Square, Suite 3
St. Johnsbury, VT 05819

Transmitted via electronic mail to: jkasprzak@stjvt.com

RE: PCB Building Material Survey
St. Johnsbury Armory Building
St. Johnsbury, Vermont
ATC Project # 280BS00783

Dear Joe,

The following report details the PCB in building material sampling, PCB wipe sampling, and airborne PCB concentration sampling conducted by ATC Group Services LLC (ATC) at the St. Johnsbury Armory located in St. Johnsbury, Vermont.

ATC was retained by the City of St. Johnsbury (ST. J) to perform a survey for the presence of polychlorinated biphenyls (PCBs) in suspect building materials associated with the building. The survey was conducted as a supplement to a previous PCB screening survey conducted by ATC for the Northeastern Vermont Development Association (NVDA) dated November 28, 2012. The objective of that and this current survey is evaluate for the presence of PCB-containing materials (i.e. various caulking, paint and glazing compound materials) that would require special management as part of the building renovation project.

The facility is constructed primarily of brick, with a concrete foundation. The windows are constructed of wood panel frames. The previous NVDA report indicated the presence of PCB's in various paint and caulking materials, some of which exceeding the EPA action level of 50 ppm.

Sampling was performed in a phased manner during between November 21, 2016 and December 21, 2016, as summarized below:

Airborne PCB Concentration Sampling – November 21, 2016

Airborne PCB Concentration samples were collected from two (2) indoor areas and one (1) exterior area of the facility prior to the disturbance of building materials. Additionally one (1) field blank sample was collected for quality control purposes. Indoor samples were collected from the basement (area of highest previously identified PCB containing material) and the first floor (area identified as next most likely to be impacted by PCB containing materials). Samples were submitted to Con-test Analytical Laboratory in East Longmeadow, MA for laboratory analysis via EPA To-10A/EPA 680 (Homolog) analysis.

The following Table 1 details the laboratory results of Airborne PCB Concentration samples:

Table 1: Airborne PCB Concentration Results- November 21, 2016:

Sample Number	Location Description	Total PCB Results* ug/m^3
PCBV-1	Exterior	0.0068
PCBV-2	First Floor- Main Drill Hall	0.12
PCBV-3	Basement- Center large open area	0.033
PCBV-4	Field Blank	0.0086 ug

*Total= Total of all Homologs detected

Total Airborne PCB concentrations can be compared to the US EPA's Regional Screen Level (RSL) for Composite Worker Ambient Air Table (May 2016 version). The 2016 RSL provides Carcinogenic Target Risk Values for High Risk, Low Risk and Lowest Risk comparisons. These values would be selected based on the population utilizing the building, how long that population was potentially in the building and various other risk factors for exposure. Since this building is currently unoccupied the lowest risk value was used for comparison purposes.

The 2016 EPA RSL for Lowest Risk Value is 0.61 ug/m^3. Sample results for the armory building show that the indoor airborne concentrations for all samples were below the 2016 RSL lowest risk value.

PCB Bulk Sampling – November 22, 2016

Additional PCB bulk samples of suspect materials were collected of previously sampled suspect PCB containing materials. The initial NVDA survey consisted of two (2) samples of each homogeneous area. Recent EPA guidance has illustrated the need for a minimum of three (3) sample to be collected for each material. ATC collected a total of nine (9) bulk samples of suspect materials for laboratory analysis to meet the EPA guidelines. Samples were submitted to Con-test Analytical Laboratory in East Longmeadow, MA for laboratory analysis via EPA 3540C/8082 (full soxhlet extraction) analysis.

The EPA regulatory limit ("not authorized for use" under the Toxic Substances Control Act of 1976 [TSCA]) for PCBs in building materials is 50 parts per million (ppm). The following Table 2 summarizes the PCB Bulk sampling results for the NVDA report and the subsequent ATC sampling event on November 21, 2017:

Table 2: PCB Bulk Sample Results:

Sample Number	Description	Highest 2012 concentration mg/kg (ppm)	2017 Sample Result mg/kg (ppm)
PCB-2C	Exterior Window Caulk- newer	1.5	ND
PCB-3C	Exterior Window Glaze	ND	0.87
PCB-4C	Exterior- Window Caulk- old	26	0.81
PCB-5C	Exterior Tar Caulking	ND	ND
PCB-6C	Silver Flashing	ND	ND
PCB-9C	Black Rood Caulking	ND	ND
PCB-16D	**Grey Floor Paint – Basement**	**5,700**	**20,000**
PCB-19C	White Wall Paint	7.4	9.0
PCB-20C	**Blue Floor Paint- Basement**	**44**	**67.0**

ND= None Detect **Bold=** Materials in excess of 50 mg/Kg

The combined sample results mostly confirm previous sampling results with the exceptions of the blue basement floor paint which is now identified as exceeding the EPA regulatory threshold along with the Grey basement floor paint. The Grey and Blue basement color paint are considered to be prohibited use products and as such classified as Bulk Product Waste under TSCA and its implementing regulation at 40 CFR Part 761.

Several of the materials were found to contain levels of PCB's in detectable levels but below the EPA regulatory threshold. These materials will either be classified as PCB remediation waste or PCB Exempt material. These materials include the Exterior window caulking (two types) and the white interior wall paint.

PCB excluded waste is any material installed prior to 1984 that has been showed to have PCB concentrations below 50 ppm and not impacted by other PCB containing materials. It is likely that the exterior window caulking would meet this definition as no other PCB containing materials are located in proximity to the material and the windows appear to have been installed prior to 1984. Excluded Wastes are not required to be removed by TSCA regulations, however, can still present a potential exposure risk.

PCB remediation waste is any material with a PCB concentration great than 1 ppm and less than 50 ppm that has been directly impacted by another material with a concentration great than 50. These materials must be managed according to EPA directive or removed according to applicable regulations.

PCB Surface Wipe Sampling – November 22, 2016

ATC conducted PCB wipe sampling of the interior floor surfaces throughout the facility to determine if PCBs have impacted or settled on the interior surfaces within the facility.

ATC collected 11 wipe samples and 1 Blank from various floor surfaces throughout the facility. Wipe samples were submitted to Con-test Analytical Laboratory in East Longmeadow, MA for laboratory analysis via EPA 3540C/8082 (full soxhlet extraction) analysis.

The following table 3 summarizes the PCB Interior PCB Wipe sampling results:

Table 3: PCB Wipe Sample Results- November 22, 2017:

Sample Number	Sample Location	Results ug/100 cm^2
W-01	Field Blank	ND
****W-02**	**Room 25- at room 37**	**4,500**
****W-03**	**Room 26- East Center**	**23**
W-04	**Room 11- Top of Stairs**	**110**
W-05	**Room 16- Center**	**3.7**
W-06	**Room 11 – at door to room 17**	**5.2**
W-07	**Room 17- 10' from door to room 11**	**2.0**
W-08	Room 14- North on path to room 13	0.89
W-09	Room 17- Southwest	0.22
W-10	**Room 3- Top step of stairs**	**9.4**
W-11	Room 3- at door to room 9	0.81
W-12	Room 5- at door to room 3	0.34

ND – Below noted laboratory reporting limits (RL) **-PCB Painted surface **Bold**= materials in excess of 1 ug/cm^2

Results of the above wipe samples indicate that all 11 wipe samples collected were found to contain detectable levels of PCBs. These levels are generally highest at in the area of PCB containing paint and generally reduce as foot traffic would move from this area to other parts of the facility. This pattern is typical of contaminants being moved via foot traffic carrying the material throughout the building.

Please note that the wipe testing is designed for non-porous surfaces such as metal and ceramic tile but it is a useful tool for preliminary evaluations. The interior wipe sample results (levels above the common post abatement standard of 1.0 ug/100 cm^2) indicate that PCBs are present in significant quantities in these areas.

PCB Basement Concrete Coring Sampling – November 27, 2016

ATC conducted concrete coring sampling of the interior floor surfaces throughout the basement slab of the facility to determine if PCBs in the painted material have impacted the underlying substrate.

ATC collected a total of 36 concrete core samples from various areas of the basement areas identified as having PCB containing paint above the EPA regulatory threshold of 50 ppm. 28 core samples, including one (1) duplicate sample collected for quality control purposes, were collected from seven (7) locations with in the basement area at a variety of depths to identify how deep, if any, PCB's have impacted the substrate. Samples were collected from 0.0 to 0.25", 0.25 to 0.5", 0.5 to 1.0" and 1.0 to 1.5" depths. In seven (7) additional locations samples were collected from the 0.0 to 0.5" depth interval only. This was done to determine if patterns were present across the painted portion of the slab while limiting sampling analysis costs.

Samples were collected in general conformance with EPA Region 1 *Standard Operating Procedure for Sampling Porous Surfaces for Polychlorinated Biphenyls (PCBs) Revision 4,* dated May 5, 2011. Core samples were submitted to Con-test Analytical Laboratory in East Longmeadow, MA for laboratory analysis via EPA 3540C/8082 (full soxhlet extraction) analysis.

The following table 4 summarizes the concrete core sample results:

Table 4: PCB Concrete Core Sample Results- November 27, 2017:

Sample Location	Results mg/kg (ppm) 0.0 to 0.25" depth	Results mg/kg (ppm) 0.25 to 0.50" depth	Results mg/kg (ppm) 0.50 to 1.0" depth	Results mg/kg (ppm) 1.0 to 1.5" depth	Results mg/kg (ppm) 0.0 to 0.50" depth
01- Room 37	1,040	650	226	310	NS
02- Room 23	82	45	3.3	2.5	NS
03- Room 26	20.3	3.5	3.2	0.12	NS
04- Room 28	26	20.6	4.7	0.75	NS
05- Room 27	41	6.3	2.59	1.99 (1.3)	NS
06- Room Hall between Rooms 30 and 34	14.8	3.89	0.40	0.87	NS
07- Room 31	106	58	36	41	NS
08- Room 36	NS	NS	NS	NS	180
09- Room 28	NS	NS	NS	NS	1.6
10- Room 27	NS	NS	NS	NS	7.0
11- Room 26	NS	NS	NS	NS	4.3
12- Room 25	NS	NS	NS	NS	14
13- Room Hall Between Rooms 24 and 25	NS	NS	NS	NS	16
14- Room 27	NS	NS	NS	NS	1.9

NS- No Sample collected for interval depth (#) - Duplicate sample for QA/QC purposes

All but 4 of the sample results of the above concrete cores samples indicate that the concrete slab of the painted portion of the basement has been impacted to a depth of at least 1.5" by PCB contamination at levels above the 1 mg/Kg Remediation Waste standard.

These results indicated that the painted portion of the concrete slab of the basement area would be considered a PCB remediation waste material and subject to EPA regulatory authority to a depth of at least 1.5".

Additionally, ATC advanced four (4) cores from the slab surface to the subsurface of the slab to determine approximate slab thicknesses. The concrete slab was observed to range between 2.5" to 5" in thickness.

Data Usability

The laboratories utilized did not report any quality control/quality assurance issues with their analyses which would affect the usability of the data for this project.

Recommendations:

Identified PCB Bulk Product Waste (basement grey and blue floor paint) must be removed in accordance with TSCA and disposed off-Site at a landfill that can accept PCB Bulk Product Waste. TSCA requires that all PCB Bulk Product Waste be removed. TSCA does not prescribe a schedule for this removal. This can be accomplished in one of the two following manners:

1) ATC recommended approach - Develop a Performance Based abatement plan to remove identified PCB Bulk Product Waste and PCB Remediation Waste that might be present; incorporate PCB abatement requirements into project Technical Specifications; and implement abatement plan, with oversight by a qualified environmental professional.
    a. Based upon current data, ATC envisions that a Performance-Based approach would include the removal of the entirety of the painted basement slab as PCB Bulk Product. Cleaning or removal of impacted flooring materials from the remainder of the facility as PCB remediation waste. Dispose of all materials at a landfill that is permitted to accept PCB Bulk and Remediation Product wastes. Dispose of all containment, PPE, filters and tools that cannot be decontaminated as PCB waste with PCB concentrations > 50 ppm.

2) Develop a Risk Based Remediation plan which would remove all PCB Bulk Product Waste and manage all PCB Remediation Waste (identified as materials impacted by Bulk Product waste in concentrations greater than 1 ppm) in place. This would require management and removal be conducted in accordance with 40 CFR 761.61(b) following approval from the EPA.

As part of the PCB remediation design and implementation procedure for either option additional sampling will be required. These items could be include but are not limited to painted surfaces and sub slab soil sampling.

Limitations

Our professional services have been performed and our findings obtained and prepared in accordance with customary principles and practices in the field of environmental science and engineering. This statement is in lieu of other statements either expressed or implied. This report does not warrant against future operations or conditions, nor does it warrant against operations or conditions present of a type or at a location not investigated. Environmental evaluations are limited in the sense that conclusions are developed and information obtained from limited research and secondary sources. Except as set forth in this report, ATC has not made independent investigations as to the accuracy or completeness of the information derived from the secondary sources and personal interviews and has presumed that such information was accurate and complete. This report is intended for the sole use of the Town of St. Johnsbury. The scope of services performed in execution of this evaluation may not be appropriate to satisfy the needs of other users, and use or re-use of this document or the findings or conclusions is at risk of said user.

Additional information can be found in the attached **Appendix A,** sample location diagrams, and **Appendix B** contains the laboratory analytical results.

Thank you for selecting ATC for your environmental management needs. If you have any questions, please do not hesitate to call us at (802) 862-1980.

Sincerely,

ATC Group Services LLC.

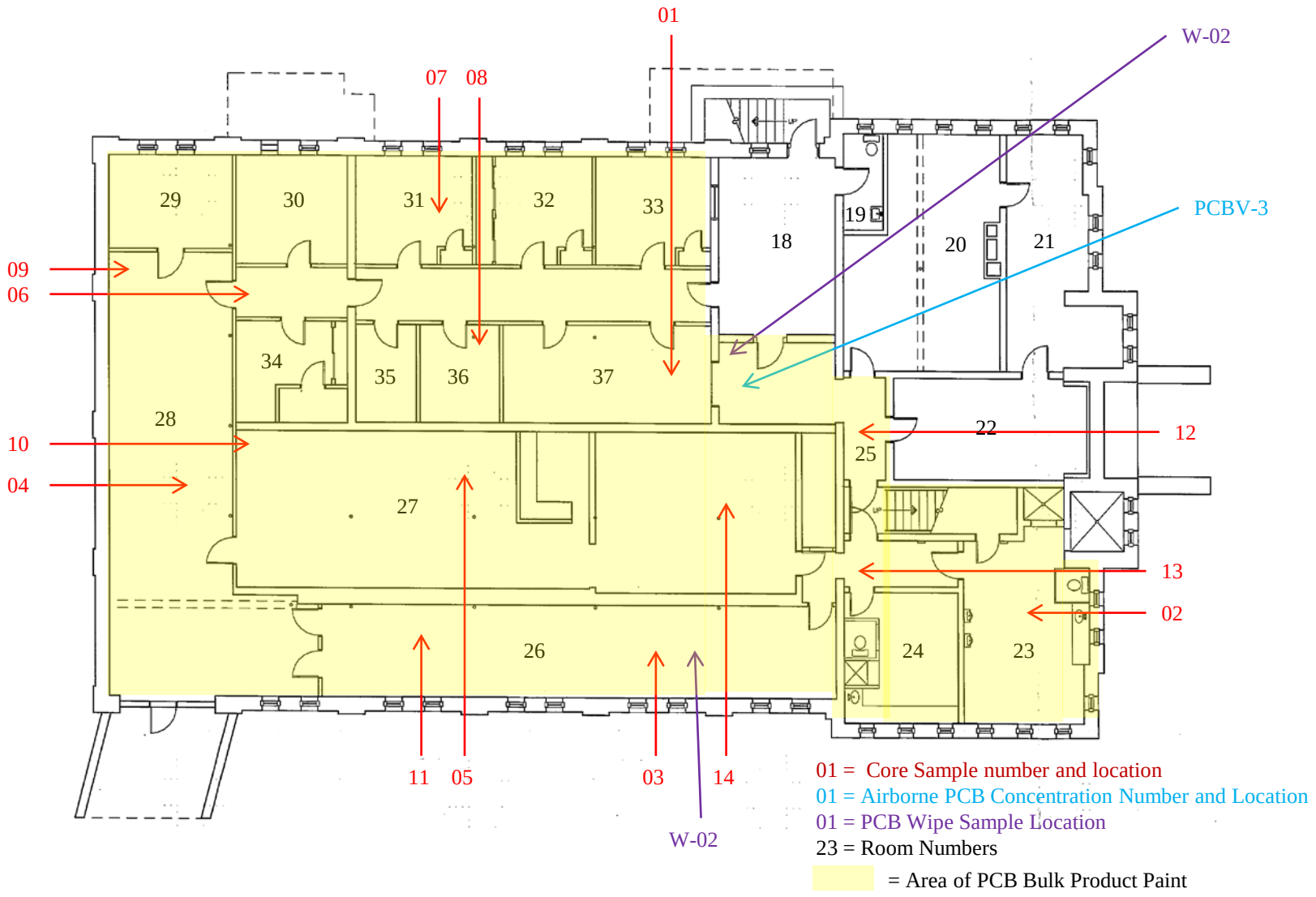
Jesse Stratton
Project Manager
for ATC Group Services LLC
Direct Line +1 802-862-1980
Email: jese.stratton@atcassociates.com

Thomas J. Broido
Principal
for ATC Group Services LLC
Direct Line +1 802-862-1980
Email: tom.broido@atcassociates.com

S:\Projects - BST\R-T\St. Johnsbury, Town of\280BS00783 Armory PCB Sampling\280BS00783 St. J Armory PCB report.docx

Appendix A

Sample Location Diagrams



Sample Location Diagram

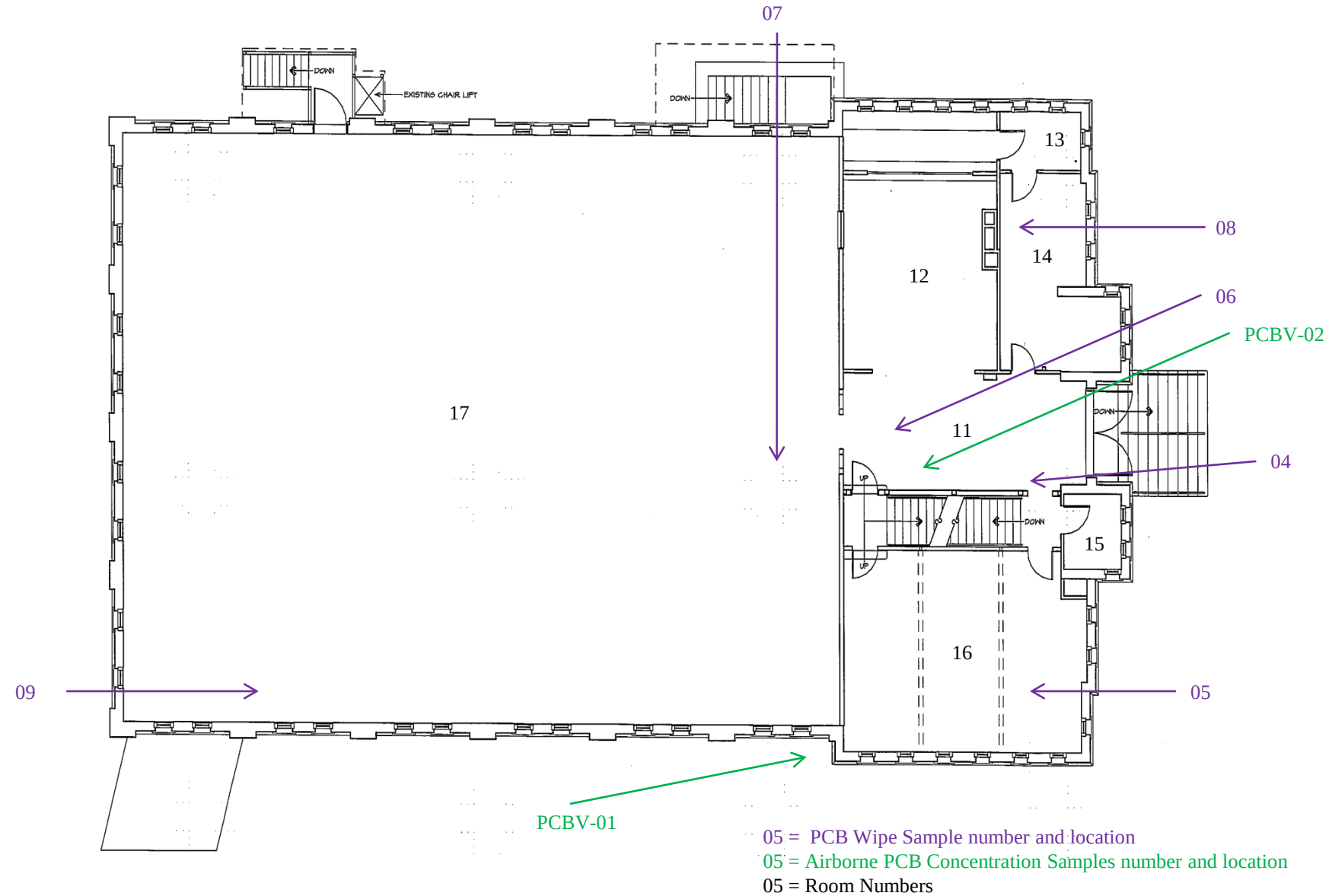
Address: St. Johnsbury Armory- Basement
1249 Main Street
St. Johnsbury, Vermont

Project Number: 280BS00783

171 Commerce St. Williston, Vermont 05495
Phone:(802) 862-1980 Fax: (802) 862-1405

Source: Field Notes

SCALE: Not to scale



Sample Location Diagram

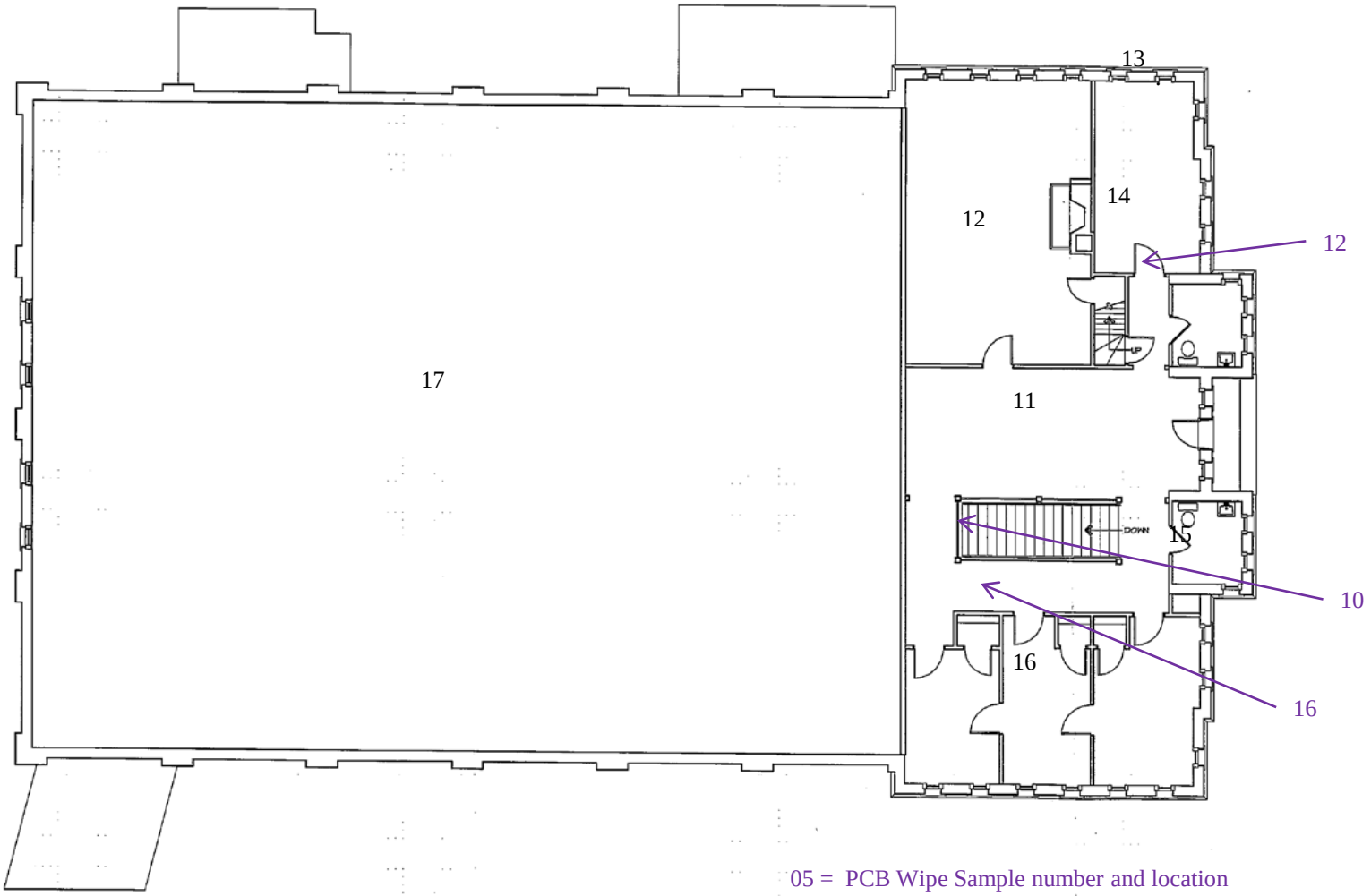
Address: St. Johnsbury Armory- 1st Floor
1249 Main Street
St. Johnsbury, Vermont

Project Number: 280BS00783

171 Commerce St. Williston, Vermont 05495
Phone:(802) 862-1980 Fax: (802) 862-1405

Source: Field Notes

SCALE: Not to scale



05 = PCB Wipe Sample number and location
05 = Room Numbers

Sample Location Diagram

Address: St. Johnsbury Armory- 2nd Floor
1249 Main Street
St. Johnsbury, Vermont

Project Number: 280BS00783

ATC
171 Commerce St. Williston, Vermont 05495
Phone:(802) 862-1980 Fax: (802) 862-1405

Source: Field Notes

SCALE: Not to scale

DRAFT TARGETED BROWNFIELDS ASSESSMENT REPORT

FORMER ST. JOHNSBURY ARMORY
ST. JOHNSBURY, VERMONT

Prepared For:
U.S. Environmental Protection Agency (EPA)
Region I
Land, Chemicals, and Redevelopment Division
5 Post Office Square, Suite 100
Boston, Massachusetts 02109-3912

EPA CONTRACT NO. EP-S1-17-01
TDD NO. BR-01-20-06-0001

Submitted By:
KGSNE, LLC
293 Boston Post Road, West, Suite 100
Marlborough, MA 01752

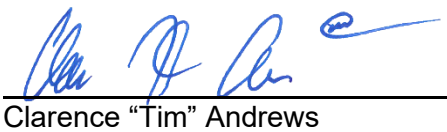
Submittal Date: March 9, 2021

EPA Region I
Reviewed and Approved:

Contracting Officer's Representative (COR) — Date

Region I START
Reviewed and Approved:

Alyssa Epstein
Project Scientist — March 9, 2021 Date



Clarence "Tim" Andrews
Project Manager — March 9, 2021 Date

TABLE OF CONTENTS
TARGETED BROWNFIELDS ASSESSMENT REPORT
FORMER ST. JOHNSBURY ARMORY
1249 MAIN STREET, ST. JOHNSBURY, VERMONT

SECTION **PAGE**

1.0 INTRODUCTION 1
1.1 Key Team Members 1
1.2 Site Background 2
1.3 Contaminants of Concern 2
1.4 Document Review 2

2.0 TBA SITE INVESTIGATION ACTIVITIES 2
2.1 Asbestos Containing Materials (ACM) 3
2.2 Lead Based Paint (LBP) 4
2.3 Polychlorinated Biphenyls (PCBs) 5
2.4 Hazardous/Regulated Materials 6
2.5 Mold 6
2.6 Survey Limitations 7

3.0 CONCLUSIONS AND RECOMMENDATIONS 8
3.1 ACM 8
3.2 LBP 8
3.3 PCBs 9
3.4 Hazardous Materials Inventory 11
3.5 Mold 11
3.6 Abatement Costing 12

4.0 DATA USABILITY AND VALIDATION 13

5.0 REFERENCES 13

TABLES

NUMBER

1 Summary of Positive Asbestos Analytical Results
2 Summary of Negative Asbestos Analytical Results
3 Summary of Positive Lead Based Paint Screening Results
4 Summary of PCB Analytical Results
5 Hazardous/Regulated Materials Inventory
6 Summary of Mold Swab Analytical Results
7 Summary of Mold Air Analytical Results
8 Abatement Cost Estimate

TABLE OF CONTENTS (cont.)
TARGETED BROWNFIELDS ASSESSMENT REPORT
FORMER ST. JOHNSBURY ARMORY
1249 MAIN STREET, ST. JOHNSBURY, VERMONT

FIGURES

NUMBER

1 Site Locus
2A Basement Layout with Sample Data
2B First Floor Layout with Sample Data
2C Second Floor Layout with Sample Data

APPENDICIES

NUMBER

A Environmental Survey, ATC March 28, 2013
B Site Photographs
C Asbestos Analytical Report
D Lead Inspection Report
E PCB Analytical Report
F Mold Analytical Report
G Limitations
H Data Validation Memo

1.0 INTRODUCTION

This Targeted Brownfields Assessment (TBA) Report was prepared by KGSNE JV, LLC (KGSNE) for the United States Environmental Protection Agency (EPA) under contract EP-S1-17-01, Task Order No. 68HE0119F0009, Technical Direction Document No. BR-01-20-06-0001. This TBA Report documents the Hazardous Materials Building Survey (HBMS) conducted at the Former Armory Building located at 129 Main Street in St. Johnsbury, Vermont. A Site Locus Map is included as Figure 1.

The objective of this investigation is to identify hazardous building materials, mold, and regulated materials/universal wastes within the building. These results will be used to evaluate potential remedial actions and associated abatement costs. For this investigation, the entire building represents the sole Area of Concern (AOC).

KGSNE conducted Site activities and prepared this TBA Report in accordance with the EPA-approved Site-Specific Quality Assurance Project Plan Addendum (SSQAPPA) as prepared by KGSNE, (September 2, 2020). The TBA activities included surveys and sampling to locate, quantify, or otherwise determine the presence of the following:

- Asbestos containing materials (ACMs);
- Lead-based paint (LBP);
- Polychlorinated biphenyls (PCBs) in bulk building materials;
- Hazardous/regulated materials/universal wastes (survey only, no sampling); and
- Mold/fungi.

1.1 Key Team Members

Jim Byrne is the EPA Task Order Project Officer (TOPO). The Brownfield Grantee is the Town of St. Johnsbury. Tim Andrews managed KGSNE and subcontractor tasks, and Gary Glennon coordinated with the analytical laboratories and managed data review activities. Josh Stewart implemented field activities as the Field Operations Leader (FOL).

EMSL Analytical, Inc. (EMSL) located in Woburn, Massachusetts, performed the asbestos analysis. Eastern Analytical, Inc. (EAI) performed the PCB Analysis. The mold sampling and analysis was performed by Environmental Compliance Associates, LLC (ECA). Lead-Based Paint

(LBP) testing was performed by Vermont-licensed Lead Inspector/Risk Assessor John Madigan with KD Associates.

1.2 Site Background

The Former Armory building is a 2-story 5,600 (+/-) square foot building that was constructed in 1916. The building has served as an armory, gymnasium, and meeting house over the years. The building has remained vacant and unconditioned for several years, leading to extensive mold growth and damage to various building materials. The building floorplans are included as Figures 2A through 2C.

1.3 Contaminants of Concern

Potential contaminants of concern (COCs) in building materials include asbestos, lead paint, PCBs, and mold.

1.4 Document Review

KGSNE reviewed the Environmental Survey report completed by ATC on March 28, 2013 to determine which materials have been previously sampled and identified as ACM. A Copy of the report is included as Appendix A. KGSNE sampled additional materials that were suspect as ACM to adequately characterize the building in preparation for demolition activities to comply with EPA NESHAP and the Vermont Regulations for Asbestos Control (VRAC).

2.0 TBA SITE INVESTIGATION ACTIVITIES

KGSNE performed the hazardous building materials survey on February 2, 2021 and February 3, 2021. Christopher Clement, CIH (Vermont-licensed Asbestos Site Inspector #MP032436) performed the asbestos and mold surveys and sampling. Josh Stewart performed the hazardous material (HM) inventory and PCB sampling. John Madigan (Vermont-licensed Lead Inspector), with KD Associates, was subcontracted by KGSNE to conduct the United States Occupational Safety and Health Administration (OSHA) pre-demolition LBP survey on February 2, 2021.

A floor plan depicting the building layout and assigned room numbers is included as Figures 2A through 2C. Photographs from the survey are included as Appendix B. Inspection findings are presented in the following sections.

2.1 Asbestos Containing Materials (ACM)

State and federal regulations require that inspectors collect multiple samples from homogeneous areas to identify asbestos content in suspect ACM. Homogeneous areas consist of areas that appear to be similar in material color, texture, and date of installation or application. KGSNE collected 45 samples of suspect ACM for laboratory analysis to characterize building materials in identified homogeneous areas.

Previous analytical testing identified plaster walls and ceilings, AirCell pipe insulation and mudded joint fittings as ACM. These materials were not resampled by KGSNE during this assessment. Bulk samples that tested positive for the presence of asbestos are presented in Table 1. Bulk samples that returned negative results for the presence of asbestos are presented in Table 2.

Bulk samples were transmitted under a chain-of-custody to EMSL Analytical, Inc., an accredited Vermont-certified laboratory located at 5 Constitution Way, Unit A in Woburn, Massachusetts. Samples were analyzed by polarized light microscopy (PLM) in accordance with the EPA “Method for Determination of Asbestos in Bulk Material”; EPA/600/R-93/116 (July 1993). Laboratory analytical data for asbestos sampling is included as Appendix C.

Bulk samples collected from each homogeneous area were analyzed using the “hit-stop” procedure. Per this procedure, additional analysis of duplicate samples collected from identical homogeneous areas is not required if asbestos is detected in any one of the samples from the homogeneous group. A total of 45 bulk samples of suspect ACM were analyzed by PLM during this sampling event (no samples were omitted by the hit-stop procedure).

The PLM analysis method sometimes has difficulty identifying asbestos in non-organically bound (NOB) materials (floor tile, caulking, roof tar) since the opaque material binder can impede visual estimation of fibers. Transmission Electron Microscope (TEM) analysis is often used to confirm analytical results of NOB materials that tested negative for asbestos by the PLM analytical

method. KGSNE submitted 7 samples of NOB materials for TEM analysis to confirm PLM analytical results. Asbestos was not detected in the samples submitted for TEM analysis.

In addition, the following materials are assumed to contain asbestos:

- Any foundation damp proofing encountered below ground surface during demolition.
- Any lining or insulation materials identified behind the brick façade.
- Boiler internals (interior gaskets and insulation).

Additional limitations are presented in Section 2.6 below. Assumed ACM should be abated as ACM or tested when demolition allows for sampling and access to materials.

2.2 Lead Based Paint (LBP)

Vermont Lead Inspector John Madigan performed an OSHA pre-demolition lead survey on interior and exterior painted building components to identify materials that contain LBP. This LBP determination was conducted using X-ray Fluorescence (XRF) that non-destructively tests building components for the presence of lead.

Lead screening results are used to calculate worker exposure levels for OSHA compliance and to assess lead levels for proper handling and disposal of building materials during demolition or renovation. Screening results also provide an indication of the concentration of lead likely to be present in the abatement/demolition waste stream and identify lead concentrations with regards to future occupant safety. The lead-based paint survey was based on EPA protocols and United States Department of Housing and Urban Development (HUD) guidance and acceptable practices adopted for inspecting for LBP.

Building components returning results greater than 1.0 mg/cm^2 include all window components, stair risers, concrete floor paint, brick walls and ceilings, metal doors and ceilings, plaster walls, wood columns, and wood porch trim. Refer to Table 3 for positive LBP screening results. The Lead Inspection Report is included in Appendix D.

Per EPA and HUD regulations, LBP is present on any surface containing lead equal to or greater than 1.0 milligrams per square centimeter (mg/cm^2); however, the OSHA Lead Construction Standard,

Chapter 29, Section 1926.62 of the Code of Federal Regulations (29 CFR 1926.62) regulates worker exposure at any lead concentration. Based on current OSHA regulations, any painted surfaces containing lead at levels above 0.0 mg/cm^2 that will be disturbed during demolition activities must be handled as lead containing/LBP.

2.3 Polychlorinated Biphenyls (PCBs)

KGSNE collected five (5) samples of building materials laboratory analysis of PCBs. The materials sampled included floor paper, tar, and paint. Sampling was performed by removing a minimum of 10 grams of suspected PCB-containing media from building components to accurately determine the concentration of PCBs. Eastern Analytical Inc. (EAI) in Concord, New Hampshire analyzed PCB samples by SW-846 Method 8082 using the Soxhlet extraction method (SW-846 3540C).

Gym floor paper, hardwood subfloor paper, light pink paint, and light blue paint were identified to contain levels of PCBs at concentrations above the Toxic Substances Control Act (TSCA) cleanup standard of 1.0 ppm for high occupancy areas. Additionally, samples collected by ATC in 2013 indicated grey door caulking, white window caulking, white wall paint, and blue floor paint were also detected above the TSCA cleanup standard of 1.0 ppm for high occupancy areas.

Building materials with total PCB concentrations greater than 50 ppm present in a high occupancy use area must be removed and disposed of as a TSCA regulated PCB waste. Grey floor paint sampled by ATC was detected at a concentration of 5,700 ppm, which exceeds the 50-ppm limit. This material will require EPA notification, and removal and disposal will need to be performed in general accordance with TSCA regulated waste.

Table 4 summarizes PCB analytical results. PCB analytical laboratory reports are included as Appendix E.

In addition, fluorescent light ballasts may contain PCB oils. KGSNE observed PCB-containing light ballasts and other ballasts labeled with a “no-PCBs” designation during the HM inventory. Therefore, hazardous materials removal contractors should consult labels on each fluorescent light ballast during removal to confirm if ballasts contain PCBs. The fluorescent light ballast tally is included in the HM survey results section below.

2.4 Hazardous/Regulated Materials

KGSNE surveyed the building for regulated materials, universal waste, and miscellaneous hazardous materials. Hazardous/regulated materials encountered during the survey include fluorescent light tubes, fluorescent light ballasts, standalone lead acid batteries and in emergency lights and exit signs, fire extinguishers, refrigerator/freezer, and microwave. The hazardous materials inventory is presented in Table 5.

Additional hazardous materials (oils, gaskets, packing, insulation, mercury switches, etc.) may be located inside equipment, components, controls, and switches. If needed, a qualified technician should dismantle equipment and remove internal hazardous materials prior to component disposal.

2.5 Mold

ECA collected 9 spore trap air samples and 10 surface samples using tape-lift method from various surfaces throughout the building. Spore Trap Samples were collected onto Micro5™ spore trap cassettes. The samples were collected using high flow sampling pumps. In general, air is sampled at a rate of 5 liters per minute (lpm) through the Micro5™ cassettes for 5 minutes, totaling 25 liters. Upon receipt by the laboratory, the slide is removed from the cassette for the enumeration and identification of fungal spores. The deposition trace is analyzed at 400-800X magnification using Kohler Illumination.

Surface samples are collected by adhering a strip of clean, invisible tape directly to a surface/substrate and mounting it on a standard microscope slide for direct microscopic examination. Surface samples are helpful in determining what types of mold are present, whether growth is occurring on seemingly clean surfaces, and the extent of contamination of interior substrates.

Because of the ubiquity of fungi, samples collected from suspect areas need to be evaluated against samples collected from the outdoors and non-suspect areas for comparison. In general, the genus of fungi collected from the indoor air should be like those found outdoors and should contain similar concentrations. Significantly higher concentrations of fungi of different genera can indicate a mold problem in the indoor environment.

EPA has not set standards or threshold limit values for mold since fungal spores are ubiquitous and mold background levels vary greatly by region, season, and location. In addition, mold health

hazards and mold sensitivity vary with mold types, exposure levels, and the susceptibility an individual (i.e., genetic predisposition, age, pre-existing medical conditions, etc.), often making it difficult to identify dose/response relationships that are required to establish “safe” or “unsafe” levels (i.e., permissible exposure limits).

Laboratory analysis identified several mold and fungal species of varying concentrations including aspergills/penicillium, basidiospores, Cladosporium, Chaetomium, and Stachybotrys. Mold surface sample results are summarized on Table 6 and mold air sampling results are summarized on Table 7. The mold analytical report is included in Appendix F.

2.6 Survey Limitations

This report is subject to the limitations included in Appendix G. In addition, the following limitations were encountered during the inspection due to the condition of the on-site building or for other safety reasons:

- KGSNE attempted to characterize all building materials in the inspection area; however, it is impractical and costly to sample all materials in all areas. Inspection regulations are based on representative sampling. KGSNE collected representative samples from suspect asbestos and PCB-containing materials observed throughout the building.

- KGSNE did not observe foundation damp proofing on concrete foundations during the inspection; however, it was beyond the scope to core through pavement abutting the building or excavate soil adjacent to foundations.

- Building supplies and specialized equipment (cleaning agents, building materials, viable equipment, etc.) are not included in the hazardous waste inventory as these items are likely to be retained/relocated prior to renovation.

- Additional sampling or analysis of air, soil, water, or any other regulated or hazardous materials was beyond the scope of the HBMS.

3.0 CONCLUSIONS AND RECOMMENDATIONS

KGSNE completed the hazardous materials survey on February 2 and 3, 2021. The objective was to identify building materials containing ACM, LBP, and PCBs, and to inventory universal and/or regulated wastes to determine safety, abatement, and disposal requirements prior to renovation and/or demolition activities.

3.1 ACM

Materials identified as ACM are presented in Table 1 and include plaster walls and ceilings, AirCell pipe insulation and mudded joint fittings. Bulk samples that returned negative results for the presence of asbestos are presented in Table 2.

Asbestos abatement must be conducted in accordance with the Vermont Department of Health VSA Title 18, Chapter 26, Vermont Regulations for Asbestos Control.

Abatement activities must be conducted in accordance with Federal, State, and local regulations and protocols, and by a certified asbestos abatement contractor. A Vermont-certified Asbestos Project Monitor must provide abatement oversight, background/ambient air sampling, a final visual inspection, and final clearance air sampling during and at the completion of abatement activities.

3.2 LBP

Building components returning results greater than 1.0 mg/cm^2 are presented in Table 3 and include all window components, stair risers, concrete floor paint, brick walls and ceilings, metal doors and ceilings, plaster walls, wood columns, and wood porch trim.

LBP demolition/renovation is required to be performed by a contractor in compliance with the OSHA Rules for Occupational Health and Environmental Controls for Lead 29 CFR 1926.62, including implementation of a written worker protection program, personal air monitoring, and respiratory protection program.

Although EPA has established a 1.0 mg/cm^2 (0.5% by dry weight) threshold value for dangerous levels of lead, OSHA has not. The OSHA Lead Standard has no set limit for LBP concentrations

below which the standards do not apply (i.e. – OSHA considers any paint with detectable lead concentrations to be LBP).

If contractors are working with any levels of LBP, they must comply with exposure assessment criteria, worker protection, and other regulatory requirements until air sampling or historical data proves otherwise, regardless of concentration. LBP abatement may be required prior to working with, dismantling, or otherwise handling materials coated with LBP. A phased demolition plan could be implemented based on project specifications to save costs and possibly eliminate LBP abatement requirements.

During demolition, representative samples of LBP waste generated should be collected for toxicity characteristic leaching procedure (TCLP) lead analysis in accordance with 40 CFR Part 261 prior to material disposal. Under the Resource Conservation and Recovery Act (RCRA), the “acceptable” level of lead (i.e., not hazardous waste) in demolition debris is 5 milligrams per liter (mg/L) by TCLP. If demolition debris exceeds 5 mg/L of lead by TCLP, it must be disposed of as hazardous waste. Sampling and TCLP analysis of materials with low to mid-range XRF results may be used to establish lower limits under which materials can be disposed of as non-hazardous waste. If metal building components are to be recycled, lead abatement may not be necessary. Cleanup protocols for LBP vary based on intended building reuse (i.e., residential vs industrial).

3.3 PCBs

KGSNE identified PCB concentrations above the TSCA cleanup standard of 1.0 ppm in samples collected from gym floor paper, hardwood subfloor paper, light pink paint, light blue paint, grey door caulking, white window caulking, white wall paint, and blue floor paint. PCB analytical results are presented in Table 4.

Federal TSCA regulations establish remediation and disposal requirements for hazardous wastes with total PCB concentrations greater than 50 ppm. TSCA hazardous wastes are either classified as PCB bulk product waste or PCB remediation waste, and generally PCB-containing building materials are considered as a bulk product waste. EPA defines PCB bulk product waste as waste derived from products manufactured to contain PCBs in a non-liquid state at 50 ppm or greater (e.g., caulk, paint, mastics, and sealants). Grey floor paint was detected at a concentration of 5,700

ppm, which exceeds the 50-ppm limit. This material will require EPA notification, and removal and disposal will need to be performed in general accordance with TSCA regulated waste.

In 2013, EPA clarified the meaning of TSCA “Excluded PCB Products” to deemphasize the regulation of commercial products containing low concentrations of PCBs. Excluded products include materials legally installed before October 1, 1984, products legally manufactured and used pursuant to authority granted by EPA, and materials where the resulting PCBs concentration is not the result of diffusion, leaks, or spills of PCBs in concentrations over 50 ppm. However, the burden of demonstrating that a regulatory exclusion applies rests with the party seeking that exclusion.

The disposal contractor should perform additional investigations to determine if materials with PCB concentrations greater than 1 ppm, but less than 50 ppm are a TSCA Excluded PCB Product as defined in 40 CFR Part 761.3 and are therefore unregulated.

If the material is deemed an excluded product and unregulated, removal may not be required. If PCB -containing components are to be removed, proper handling of PCB-containing materials by appropriately trained workers is still required and waste must be disposed of at a facility permitted to accept PCB-containing materials at the concentrations present. These materials should be evaluated by the demolition/disposal contractor and the receiving facility to identify any disposal limitations prior to material removal.

If the PCB-containing material is not an excluded product, it is regulated under TSCA and special handling, disposal, and regulatory compliance are required. Surrounding substrates such as brick, cement block, and cement may also be subject to special handling and disposal if PCBs have leached into these building components at concentrations greater than 1 ppm and remediation of adjacent materials such as soil may also be necessary if PCB-containing materials have degraded and cross-contaminated the surroundings. Additional testing should be performed on substrates to which the PCB-containing material was adhered and on surrounding material to delineate PCB leaching and cross contamination if a product is not excluded from TSCA regulations.

3.4 Hazardous Materials Inventory

Regulated materials and universal wastes encountered during the survey include fluorescent light tubes, fluorescent light ballasts, lead acid batteries, fire extinguishers, refrigerator/freezer, and a microwave. The hazardous materials inventory is presented in Table 5.

Hazardous materials that may require special handling and disposal should be removed from the building prior to renovation/demolition. Materials handling, transport, and recycling or disposal should be in accordance with applicable Federal, State, and local laws and regulations.

Hazardous materials removal contractors should consult labels on each fluorescent light ballast during removal to confirm if ballasts contain hazardous waste. Fluorescent light ballasts labeled as non-PCB containing may contain diethylhexyl phthalate (DEHP). DEHP was the primary substitute to replace PCBs for small capacitors in fluorescent lighting ballasts and is a toxic substance and a suspected carcinogen. Superfund liability exists for landfilling of DEHP-containing ballasts; therefore, the disposal contractor should avoid disposing of DEHP containing ballasts in the general waste stream. Non-PCB ballasts should be disposed of via metals recycling and incineration.

3.5 Mold

Mold samples were found to contain significantly elevated concentrations of mold in the air, as well as heavy to moderate mold growth on surfaces. Mold results are included on Tables 6 and 7. All mold types may cause health symptoms. Generally, mold health hazards increase as mold spore counts increase. Fruiting structures (active mold) also increase mold health hazards; therefore, high spore counts, fruiting structures, and toxigenic molds should be considered the most hazardous. Indoor fungal growth is undesirable, and measures should be taken to eliminate mold.

Mold is very common in buildings and homes and will grow where there is moisture. Although mold is ubiquitous, the Center for Disease Control recommends that molds be removed from buildings. Toxigenic mold should be eliminated; however, mold cannot be eliminated or controlled until the moisture source is eliminated. Personnel working in mold infested areas should don worker protection such as respirators and Tyvek suits until air sampling or mold sampling data proves mold is no longer a hazard or until mold is removed.

Building demolition will not likely require mold abatement; however, building renovation will require mold removal. If possible, moldy building components should be cleaned or removed during renovation; however, widespread mold growth identified on materials throughout the building may be too intrusive for cleaning and would require material removal to eliminate mold hazards.

Based on building conditions, KGSNE does not recommend reuse of non-structural building components contaminated with mold, as the removal of organic based building materials is the best method to eliminate mold. Surfaces that are metal, concrete, and plaster can be cleaned with an agent to remove the mold, depending on the physical condition of the building material. Conditions such as water leaks, condensation, and flooding must be corrected to prevent mold regrowth.

3.6 Abatement Costing

Table 8 provides a preliminary cost estimate based on prevailing wage rates for abatement and disposal of hazardous and regulated wastes identified in accessible building areas. The disposal contractor should verify hazardous material locations, quantity, and disposal costs before conducting removal activities. Actual abatement and disposal costs may vary and are strongly influenced by abatement contractor availability, the building reuse determination, building design, and the selection of demolition or renovation.

Encapsulation and management of ACM, LBP, and PCBs do not appear to be viable options in this case due to extensive damage to building materials throughout the building. Additional costs should be anticipated for the disposal of hidden and/or miscellaneous items found throughout the building during demolition/renovation. Additional cost should be carried for engineering planning and oversight (i.e., industrial hygiene costs). KGSNE considered the following while generating the cost estimates:

- Abatement cost estimates are based on unit costs provided by New England based abatement contractors providing typical in-type abatement and disposal services.

- While addressing lead and mold may not produce a hazardous waste stream that requires management and disposal, LBP and mold should be addressed in accordance with OSHA regulations for worker safety. KGSNE has included costs for LBP abatement/preparation prior to torch cutting for worker safety. Lead abatement may not be necessary if the

selected method of demolition does not create a lead hazard for demolition personnel (e.g., crushing vs torch cutting).

- LBP and mold abatement costs are heavily dependent on plans for re-use (lead and mold may only have to be abated if the buildings are to be renovated), and renovation and demolition plans and should be reviewed by a licensed lead paint and mold abatement contractors after final reuse is determined. In many instances, it is more cost effective to remove and dispose of non-structural components contaminated with mold and LBP rather than to perform abatement and reuse these materials.

- Abatement of PCB contaminated materials is not included in the abatement estimate. Costing is highly dependent on means and measures. Consult an abatement contractor for actual pricing.

4.0 DATA USABILITY AND VALIDATION

KGSNE performed an EPA Region 1 Tier I Plus data validation on the PCB analytical data. The data validation memorandum is included in Appendix H. The data review was completed in accordance with the *EPA New England Environmental Data Review Supplement for Regional Data Review Elements and Superfund Specific Guidance/Procedures* (June 2018); *USEPA National Functional Guidelines for Superfund Organic Methods Data Review* (January 2017); *USEPA National Functional Guidelines for Superfund Inorganic Methods Data Review* (January 2017); and the SSQAPPA.

EAI performed the requested analyses in conformance with the established planning documents.

Data validation indicates that the data meets the project quality criteria and that the results can be used without restriction. Based on this determination, these results are considered usable for decision making.

5.0 REFERENCES

EPA Region I. 2009.Planning and Documenting Brownfields Projects Generic Quality Assurance Project Plans and Site Specific QAPP Addenda. March.

KGSNE JV, LLC. 2017. Program Quality Assurance Project Plan; RFA# 17078. May 17.

KGSNE JV, LLC. 2020. Site-Specific Quality Assurance Project Plan Addendum for Hazardous Materials Assessment. September 2.

TABLES

Table 1
Summary of Positive Asbestos Analytical Results
Former St. Johnsbury Armory
St. Johnsbury, VT

Sample ID	Sample Location	Sample Description	Analytical Result
Historically Sampled	Throughout	Plaster walls and ceilings	2% Chrysotile
24A-24C	Room 27	6" Aircell pipe insulation	40% Chrysotile
42A-42C	Room 27	Mudded joint packing	33% Chrysotile
N/A	Boiler room	Boiler internal materials	Assumed Positive

Notes:

1. Positive ACM samples were identified in ATC Environmental Survey Report dated March 28, 2013.

Table 2
Summary of Negative Asbestos Analytical Results
Former St. Johnsbury Armory
St. Johnsbury, VT

Sample ID	Sample Location	Sample Description	Result
SJ-ACM-1	Gym Floor - 1st Level - S. Side	Black Flooring Felt	ND
SJ-ACM-2	Gym Floor - 1st Level - NE Corner	Black Flooring Felt	ND
SJ-ACM-3	1st Floor Foyer - S. Wall	Beige Wall Glue	ND
SJ-ACM-4	1st Floor Foyer - S. Wall	Beige Wall Glue	ND
SJ-ACM-5	Attic by Roof Hatch - W. Side of Stairs	Black Knob & Tube Wiring	ND
SJ-ACM-6	Attic by Roof Hatch - Stairwell	Black Knob & Tube Wiring	ND
SJ-ACM-7	2nd Level - SW Room	Black Electrical Wiring	ND
SJ-ACM-8	2nd Level - SW Room	Black Electrical Wiring	ND
SJ-ACM-9	2nd Floor - Large Center Room/Foyer N. Side	Brown Flooring Paper	ND
SJ-ACM-10	1st Floor SE Room - S. Side	Brown Flooring Paper	ND
SJ-ACM-11	2nd Level - NW Room - Ceiling - NW Corner	Black Roofing Tar	ND
SJ-ACM-12	2nd Level - NW Room - Ceiling - W. Side	Black Roofing Tar	ND
SJ-ACM-13	2nd Level - NW Room - E. Fireplace	Fireplace Brick	ND
SJ-ACM-14	2nd Level - NW Room - E. Fireplace	Fireplace Brick	ND
SJ-ACM-15	2nd Level - NW Room - E. Fireplace	Fireplace Mortar	ND
SJ-ACM-16	2nd Level - NW Room - E. Fireplace	Fireplace Mortar	ND
SJ-ACM-17	Basement - W. Addition - NE Room	Orange Carpet Glue Remnant	ND
SJ-ACM-18	Basement - W. Addition - W. End of Hallway	Orange Carpet Glue Remnant	ND
SJ-ACM-19	1st Level - Main Entrance Bathroom - W. Side	Brown Battleship Linoleum	ND
SJ-ACM-20	1st Level - Main Entrance Bathroom - E. Side	Brown Battleship Linoleum	ND
SJ-ACM-21	Basement - Door at Bottom of Stairwell	Fireproof/Retardant Board	ND
SJ-ACM-22	Basement - Door at Bottom of Stairwell	Fireproof/Retardant Board	ND
SJ-ACM-23	Basement - Door at Bottom of Stairwell	Fireproof/Retardant Board	ND
SJ-ACM-24	Basement - Boiler Room	Boiler Cementitious Coating	ND
SJ-ACM-25	Basement - Boiler Room	Boiler Cementitious Coating	ND
SJ-ACM-26	Basement - Boiler Room	Boiler Cementitious Coating	ND
SJ-ACM-27	Boiler Door - Putty Material	Boiler Door Putty	ND
SJ-ACM-28	Boiler Door - Putty Material	Boiler Door Putty	ND
SJ-ACM-29	Boiler Door - Putty Material	Boiler Door Putty	ND
SJ-ACM-30	Boiler - Interior	Firebrick	ND
SJ-ACM-31	Boiler - Interior	Firebrick	ND
SJ-ACM-32	Boiler - Stacked by Boiler	Firebrick	ND
SJ-ACM-33	Boiler - Bottom Ext. Layer	Blue Tinted Insulation	ND
SJ-ACM-34	Boiler - Bottom Ext. Layer	Blue Tinted Insulation	ND
SJ-ACM-35	Boiler - Bottom Layer	Blue Tinted Insulation	ND
SJ-ACM-36	1st Level - Main Foyer - E. Side	Flooring Glue Remnant	ND
SJ-ACM-37	1st Level - Main Foyer - W. Side	Flooring Glue Remnant	ND
SJ-ACM-38	Basement - S. Corridor - N. Wall	Tan Wall Adhesive	ND
SJ-ACM-39	Basement - S. Corridor - NE Corner	Tan Wall Adhesive	ND
SJ-ACM-40	2nd Level - NE Room - N. Side	White 2x4 Ceiling Tile	ND
SJ-ACM-41	2nd Level - NE Room - S. Side	White 2x4 Ceiling Tile	ND
SJ-ACM-42	2nd Level - NW Room - N. Side	Ceiling Panel Remnant	ND
SJ-ACM-43	2nd Level - NW Room - S. Side	Ceiling Panel Remnant	ND
SJ-ACM-44	Boiler Room - Electrical Panel - NW Corner	High Voltage Wire Coating	ND
SJ-ACM-45	Boiler Room - Electrical Panel - NW Corner	High Voltage Wire Coating	ND
01A-01C	Exterior	Gray door caulking	ND
02A-02C	Exterior	White window caulking	ND
03A-03C	Exterior	White window glazing	ND
04A-04C	Exterior	White window caulking	<1%[1]
05A-05C	Exterior	Tar brick caulking	<1%[1]

Table 2
Summary of Negative Asbestos Analytical Results
Former St. Johnsbury Armory
St. Johnsbury, VT

Sample ID	Sample Location	Sample Description	Result
06A-06C	Exterior	Silver flashing	ND
07A-07C	Roof	Built up pebble and tar	ND
08A-08C	Roof	Roofing felt	ND
09A-09C	Exterior	Black caulk at gambrel flashing	ND
12A-12C	First floor	Carpet mastic	ND
16A-16C	Basement	Gray floor paint	ND
19A-19C	Basement	White wall paint	ND
20A-20C	Rooms 25 and 26	Blue floor paint	ND
21A-21C	Room 18	12x12 Beige Floor Tile	ND
22A-22C	Room 18	Mastic on 21A-21C floor tile	ND
28A-28C	Gym	White window sill wall coating	ND
29A-29C	Room 12	Blue & maroon resilient sheet flooring	ND
30A-30C	Room 12	Mastic on 29A-29C sheet flooring	ND
31A-31C	First floor and basement	Black stair tread risers	ND
33A-33C	Room 25	Brown glue dabs	ND
35A-35C	Rooms 18 and 29	Blown-in-insulation	ND
38A-38C	Room 20 - boiler room	Debris on boiler, exhuast, duct & hot water tank	ND
40A-40C	Room 21	Pipe putty	ND
44A	Boiler room	Boiler gasket	ND

Notes:

1. Environmental Survey by ATC dated March 28, 2013 identified "Trace" quantities of asbestos as <1%
2. Samples SJACM-1 through SJACM-45 were collected by Nobis on February 3-4, 2021.
3. Samples 01A-44A were collected by ATC as identified in the Environmental Survey report dated March 28, 2013.

Table 3
Summary of Positive LBP Screening Results
Former St. Johnsbury Armory
St. Johnsbury, VT

Location	Description	Max XRF Screening Value (mg/cm^2)
ATC Environmental Survey 3/28/13		
Exterior	White windows - all components	>9.9
Exterior	White wood side porch	3
Throughout Building	White wood window wells	>9.9
Room 21	Blue brick wall	3
Room 21	Green metal door	3.4
Basement	Grey concrete floor	1.5
Room 23	Green brick walls and ceiling	1.5
Room 24	Green brick walls	3
Room 25	Green brick walls	3
Room 25	White wood stair riser	1.1
KD Associates LBP Assessment 2/15/21		
Room 3	Tan plaster walls	1.5
Room 3	Brown wood column	1.9
Stairwells	Brown wood stair railing	1.9
Stairwells	White stair riser	1.1
Room 24	Tan brick walls	4
Room 23	White metal ceiling	1.6
Room 23	Green brick walls	1.6
Room 22	Green cement floor	1.5
Room 25	Green brick walls	3.1
Room 25	Grey cement floor	1.3
Exterior	White window trim	19.3
Exterior	Green window sash	28.6
Exterior	White porch trim	1.7

Notes:
1. XRF - x-ray fluorescence
2. Table presents XRF screening results for media that tested positive for LBP. Refer to Appendix C - Lead Report for a complete listing of media tested during the survey.
3. Listed XRF screening values are the highest value recorded for the range of screening values for each media.
4. Room numbers from KD Associates, Inc. Lead Based Paint Assessment dated 2/15/21 were changed to match room numbers from ATC Environmental Survey dated 3/28/13.

Table 4
Summary of PCB Analytical Results
Former St. Johnsbury Armory
St. Johnsbury, VT

Parameter	TSCA Cleanup Standard	Sample Results (mg/kg)													
Sample ID		**P-1**	**P-2**	**P-3**	**P-4**	**P-5**	**1B**	**2A**	**3B**	**4A**	**5B**	**6A**	**16C**	**19B**	**20B**
Sampling Date		2/3/2021	2/3/2021	2/3/2021	2/3/2021	2/3/2021	12/17/2012	12/17/2012	12/17/2012	12/17/2012	12/17/2012	12/17/2012	12/17/2012	12/17/2012	12/17/2021
Sampling Time		11:45 AM	12:20 PM	12:30 PM	12:40 PM	12:50 PM	10:06 AM	10:15 AM	10:28 AM	10:31 AM	10:42 AM	11:01 AM	11:49 AM	11:55 AM	12:06 PM
Description		Gym Floor Paper	Black Tar- 2nd floor	Hardwood Subfloor Paper	Light Pink Paint - 2nd Floor	Light Blue Paint- 2nd Floor	Grey Door Caulking	White Window Caulk	Window Glaze	Window Caulk	Tar Caulking	Silver Flashing	Grey Floor Paint	White Wall Paint	Blue Floor Paint
PCBs (ppm)															
PCB 1016	~	<0.2	<1	<0.09	<0.3	<0.4	<0.89	<0.84	<0.64	<0.85	<0.71	<0.49	<500	<0.50	<0.88
PCB 1221	~	<0.2	<1	<0.09	<0.3	<0.4	<0.89	<0.84	<0.64	<0.85	<0.71	<0.49	<500	<0.50	<0.88
PCB 1232	~	<0.2	<1	<0.09	<0.3	<0.4	<0.89	<0.84	<0.64	<0.85	<0.71	<0.49	<500	<0.50	<0.88
PCB 1242	~	<0.2	<1	<0.09	<0.3	<0.4	<0.89	<0.84	<0.64	<0.85	<0.71	<0.49	<500	<0.50	<0.88
PCB 1248	~	<0.2	<1	<0.09	<0.3	<0.4	<0.89	<0.84	<0.64	<0.85	<0.71	<0.49	<500	<0.50	<0.88
PCB 1254	~	4.4	<1	7.8	45	22	14	1.5	<0.64	26	<0.71	<0.49	5700	7.4	44
PCB 1260	~	<0.2	<1	<0.09	<0.3	<0.4	<0.89	<0.84	<0.64	<0.85	<0.71	<0.49	<500	<0.50	<5.5
PCB 1262	~	<0.2	<1	<0.09	<0.3	<0.4	<0.89	<0.84	<0.64	<0.85	<0.71	<0.49	<500	<0.50	<5.5
PCB 1268	~	<0.2	<1	<0.09	<0.3	<0.4	<0.89	<0.84	<0.64	<0.85	<0.71	<0.49	<500	<0.50	<5.5
Total PCBs	1	**4.4**	<1	**7.8**	**45**	**22**	**14**	**1.5**	<0.64	**26**	<0.71	<0.49	**5700**	**7.4**	**44**

Notes:
1. Results are in parts per million (ppm)/milligrams per kilogram (mg/kg).
2. Samples analyzed by Method SW-846 8082A with Soxhlet extraction
3. Bold values exceed the Toxic Substances Control Act (TSCA) cleanup standard (1 ppm total PCBs).
4. PCB - Polychlorinated Biphenyls
5. "<0.46" = Not detected above the lab reporting limits (shown in parenthesis).
6. Samples P-1 through P-5 were collected by Nobis on 2/3/21.
7. Samples 1B through 20B were collected by ATC on 12/17/12 identified in the ATC Associates Environmental Survey report dated 3/28/13.

Table 5
Hazardous/Regulated Materials Inventory
Former St. Johnsbury Armory
St. Johnsbury, VT

Material	Quantity
First Floor Gym	
Halogen Lights	12
Emergency Light and Exit Signs (lead acid battery)	2
Emergency Light (lead acid battery)	1
Fire Extinguisher	1
First Floor Entry	
Light ballasts	3
Fluorescent light bulb - 4'	6
Fire Extinguisher	1
First Floor Food Service	
Light ballasts	8
Fluorescet light bulb - 4'	16
Refrigerator/Freezer	1
Microwave	1
First Floor Northeast Office	
Light ballasts	4
Fluorescent light bulb - 4'	8
Fluorescent light bulb - 4' (loose)	5
First Floor Utility Closet	
Light ballasts	1
Fluorescent light bulb - 4'	1
Consumer cleaning products	NA
First Floor Southeast Room	
Light ballasts	3
Fluorescent light bulb -4'	6
Second Floor Main Area	
Compact Fluorescent Bulbs	5
Second Floor Northwest Room	
Light ballasts	14
Second Floor Northeast Room	
Compact Fluorescent Bulbs	1
Basement Men's Room	
Compact Fluorescent Bulbs	2
Emergency Light and Exit Signs (lead acid battery)	1
Basement Bathroom Hallway	
Compact Fluorescent Bulbs	1
Emergency Light (lead acid battery)	1
Basement Womens Room	
Compact Fluorescent Bulbs	2
Emergency Light and Exit Signs (lead acid battery)	1
Basement South End Hallway	
Light ballasts	8
Fluorescent light bulb-4'	14
Emergency Light and Exit Signs (lead acid battery)	1
Basement West End Hallway	
Car Battery	1
Compact Fluorescent Bulbs	2
Emergency Light and Exit Signs (lead acid battery)	2
Fluorescent Light Bulbs -4'	20
Light ballasts	7

Table 5
Hazardous/Regulated Materials Inventory
Former St. Johnsbury Armory
St. Johnsbury, VT

Material	Quantity
Basement South Rooms	
Light ballasts	20
Fluorescent Light Bulbs -4'	24
Emergency Light and Exit Signs (lead acid battery)	1
Basement North Rooms	
Light ballasts	36
Fluorescent Light Bulbs -4'	58
Compact Fluorescent Bulbs	3
Emergency Light and Exit Signs (lead acid battery)	4
Basement North Entrance	
Light ballasts	10
Fluorescent Light Bulbs -4'	20
Emergency Light and Exit Signs (lead acid battery)	1
Basement East Room Next to Stairway	
Light ballasts	2
Fluorescent Light Bulbs -4'	4

Table 6
Summary of Mold Swab Analytical Results
Former St. Johnsbury Armory
St. Johnsbury, VT

Sample ID	SJ1	SJ2	SJ3	SJ4	SJ5	SJ6	SJ7
Sample Location	Gym - First Level	Foyer - First Level	Foyer - Second Level	Northwest Room - Second Level	Northeast Basement Corridor	Far Basement Corridor	Basement Shower Room- Mushrooms
Aspergillys/Penicillium like	Heavy	Moderate	Heavy	Heavy	Heavy	Heavy	-
Basidiospores Type II	Heavy	Heavy	Heavy	Heavy	Heavy	Heavy	Heavy
Chametomium globosum	-	Heavy	-	-	-	-	-
Cladosporium cladosporioides	Heavy	Moderate	-	Heavy	-	-	-
Cladosporium sphaerospermum	-	-	-	-	-	-	-
Stachybotrys	-	-	-	Heavy	-	-	-
Ulocladium like	-	-	-	-	-	-	-
Trichoderma	-	-	-	-	-	-	-

Notes:
1. Results are presented as the following ranges - Few: 1 to 100 Moderate: 101-1000 Heavy: > 1000.
2. - = Non Detect.
3. Molds identified are Type II - Risky molds associated with indoor mositure problems (when indoor levels are signficantly higher than background levels).

Table 6
Summary of Mold Swab Analytical Results
Former St. Johnsbury Armory
St. Johnsbury, VT

Sample ID	SJ8	SJ9	SJ10
Sample Location	Southwest Basement Corridor	Gym- First Level Floor Surface	Foyer Floor - First Level
Aspergillys/Penicillium like	Heavy	Heavy	Heavy
Basidiospores Type II	Heavy	Heavy	Heavy
Chametomium globosum	-	-	-
Cladosporium cladosporioides	-	Heavy	-
Cladosporium sphaerospermum	-	-	-
Stachybotrys	-	-	-
Ulocladium like	-	-	-
Trichoderma	-	-	-

Notes:
1. Results are presented as the following ranges - Few: 1 to 100 Moderate: 101-1000 Heavy: > 1000.
2. - = Non Detect.
3. Molds identified are Type II - Risky molds associated with indoor mositure problems (when indoor levels are signficantly higher than background levels).

Table 7
Summary of Mold Air Analytical Results
Former St. Johnsbury Armory
St. Johnsbury, VT

Sample ID	2606118			2606127			2606099		
Sample Location	Gym - First Level			Kitchen/Bar Area - First Level			Southeastern Room - First Level		
Air Volume	25 liters			25 liters			25 liters		
Limit of Detection	0.4			0.4			0.4		
Background Debris Scale	2			2.5			3		
	Raw Count	Count/m^3	%	Raw Count	Count/m^3	%	Raw Count	Count/m^3	%
Total Fungal Spore Count	**62**	**2,480**	**100**	**91**	**3,640**	**100**	**55**	**2,200**	**100**
Type I									
Badiospores	-	-	-	-	-	-	-	-	-
Type II									
Aspergillus/Penicillium like	42	1,680	68	65	2,600	71	37	1,480	67
Badiospores	20	800	32	26	1,040	29	18	720	33
Chaetomium globsum	-	-	-	-	-	-	-	-	-
Cladosporium cladosporiodes	-	-	-	-	-	-	-	-	-
Spore Chains/Clusters	-	2	-	-	2	-		1	-

Notes:
1. Results are presented as the following ranges - Few: 1 to 100 Moderate: 101-1000 Heavy: > 1000.
2. - = Non Detect.
3. Type I - Dominant outdoor molds that migrate into all indoor environments, but very rarely grow indoors.
4. Type II - Risky molds associated with indoor mositure problems (when indoor levels are signficantly higher than background levels).

Table 7
Summary of Mold Air Analytical Results
Former St. Johnsbury Armory
St. Johnsbury, VT

Sample ID	2606129			2606119			2606139		
Sample Location	Northeast Room - Second Level			Large Foyer - Second Level			Southwest Room - Second Level		
Air Volume	25 liters			25 liters			25 liters		
Limit of Detection	0.4			0.4			0.4		
Background Debris Scale	3			3			2		
	Raw Count	Count/m^3	%	Raw Count	Count/m^3	%	Raw Count	Count/m^3	%
Total Fungal Spore Count	**97**	**3,880**	**100**	**40**	**1,600**	**100**	**96**	**3,840**	**100**
Type I									
Badiospores	1	40	1	-	-	-	1	40	1
Type II									
Aspergillus/Penicillium like	57	2,280	59	32	1,280	80	75	3,000	78
Badiospores	39	1,560	40	8	320	20	20	800	21
Chaetomium globsum	-	-	-	-	-	-	-	-	-
Cladosporium cladosporiodes	-	-	-	-	-	-	-	-	-
Spore Chains/Clusters	-	None	-	-	None	-	-	None	-

Notes:
1. Results are presented as the following ranges - Few: 1 to 100 Moderate: 101-1000 Heavy: > 1000.
2. - = Non Detect.
3. Type I - Dominant outdoor molds that migrate into all indoor environments, but very rarely grow indoors.
4. Type II - Risky molds associated with indoor mositure problems (when indoor levels are signficantly higher than background levels).

Table 7
Summary of Mold Air Analytical Results
Former St. Johnsbury Armory
St. Johnsbury, VT

Sample ID	2606140			2606130			2606120		
Sample Location	Southeast Bathroom - Basement			North Central Corridor - Basement			Southwest Hall - Basement		
Air Volume	25 liters			25 liters			25 liters		
Limit of Detection	0.4			0.4			0.4		
Background Debris Scale	2			2			2		
	Raw Count	Count/m^3	%	Raw Count	Count/m^3	%	Raw Count	Count/m^3	%
Total Fungal Spore Count	**419**	**16,760**	**100**	**208**	**8,320**	**100**	**67**	**2,680**	**100**
Type I									
Badiospores	-	-	-	-	-	-	7	280	10
Type II									
Aspergillus/Penicillium like	176	7,040	42	126	5,040	61	17	680	25
Badiospores	237	9,480	57	68	2,720	33	39	1,560	58
Chaetomium globsum	2	80	0.5	4	160	2	-	-	-
Cladosporium cladosporiodes	4	160	1	10	400	5	4	160	6
Spore Chains/Clusters	-	9	-	-	4	-	-	3	-

Notes:
1. Results are presented as the following ranges - Few: 1 to 100 Moderate: 101-1000 Heavy: > 1000.
2. - = Non Detect.
3. Type I - Dominant outdoor molds that migrate into all indoor environments, but very rarely grow indoors.
4. Type II - Risky molds associated with indoor mositure problems (when indoor levels are signficantly higher than background levels).

Table 7
Summary of Mold Air Analytical Results
Former St. Johnsbury Armory
St. Johnsbury, VT

Sample ID	**2606109**		
Sample Location	**Outdoors**		
Air Volume	**25 liters**		
Limit of Detection	**0.4**		
Background Debris Scale	**2**		
	Raw Count	**Count/m^3**	**%**
Total Fungal Spore Count	**12**	**480**	**100**
Type I			
Badiospores	8	320	67
Type II			
Aspergillus/Penicillium like	2	80	17
Badiospores	2	80	17
Chaetomium globsum	-	-	-
Cladosporium cladosporiodes			
Spore Chains/Clusters	-	None	-

Notes:
1. Results are presented as the following ranges - Few: 1 to 100 Moderate: 101-1000 Heavy: > 1000.
2. - = Non Detect.
3. Type I - Dominant outdoor molds that migrate into all indoor environments, but very rarely grow indoors.
4. Type II - Risky molds associated with indoor mositure problems (when indoor levels are signficantly higher than background levels).

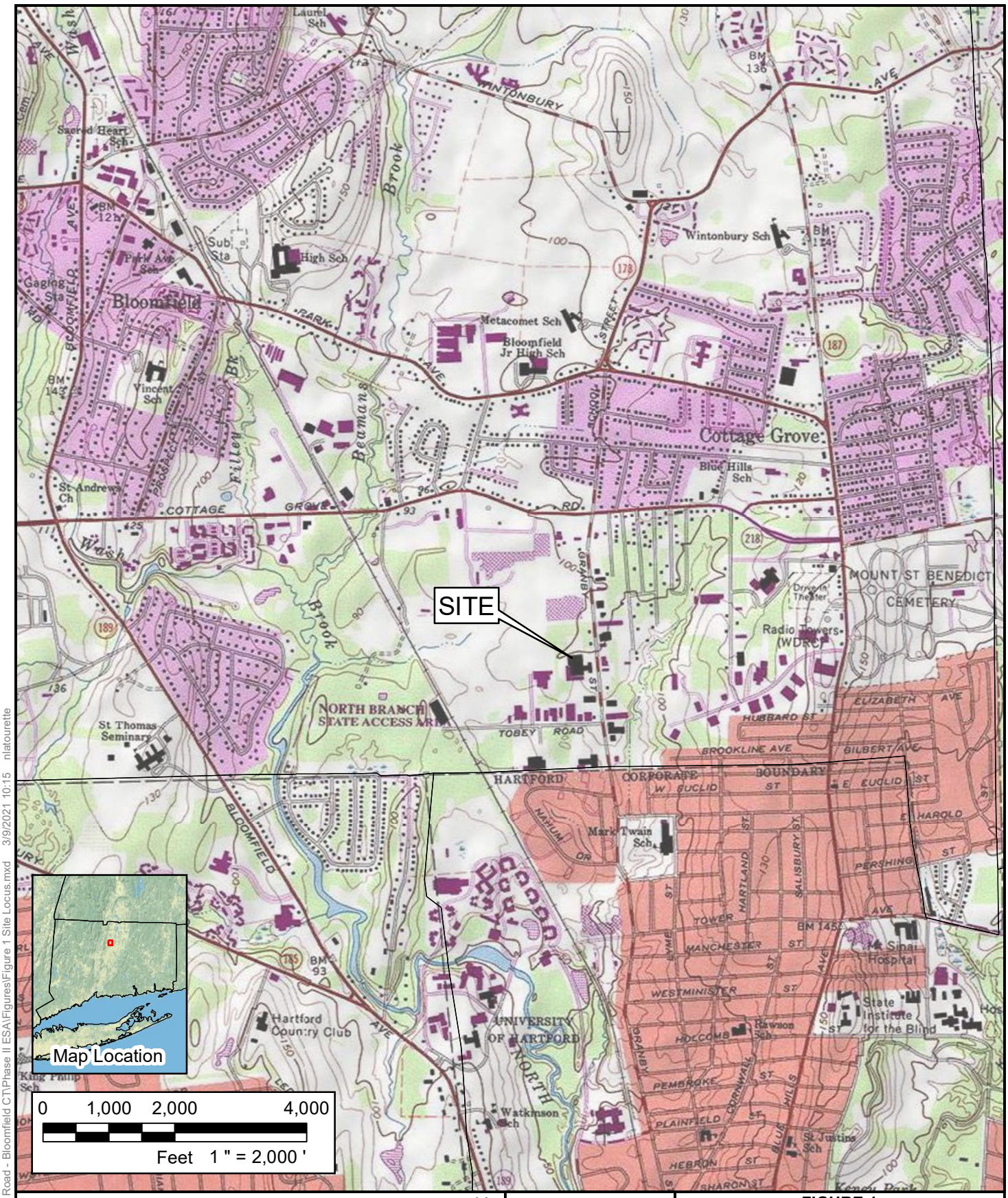
Table 8
Abatement Cost Estimate
Former St. Johnsbury Armory
St. Johnsbury, VT

Material	Location	Quantity	Units	Price Per Unit	Disposal Cost Estimate
ACM					
Wall/Ceiling Plaster	Throughout	12,500	SF	$ 5.00	$ 62,500.00
Air Cell Pipe Insulation	Room 27 Basement	100	LF	$ 22.00	$ 2,200.00
Mudded Joint Packing	Room 27 Basement	10	LF	$ 30.00	$ 300.00
Boiler Internals	Basement Northeast	1	EA	$ 5,000.00	$ 5,000.00
				Subtotal	**$ 70,000.00**
LBP					
Lead abatement/preparation prior to torch cutting for worker safety [8]		3	EA	$ 30,000.00	**$ 90,000.00**
					$ 90,000.00
Regulated/Hazardous Materials					
Fluorescent Bulbs (4')	Throughout	650	LF	$ 0.10	$ 65.00
Compact Fluorescent and Halogen Bulbs	Throughout	30	EA	$ 5.00	$ 150.00
Ballasts (No PCB Type)	Throughout	40	EA	$ 15.00	$ 600.00
Ballasts (PCB)	Basement	66	EA	$ 30.00	$ 1,980.00
Batteries (Emergency lights and exit signs)	Throughout	30	lb	$ 5.00	$ 150.00
Batteries (Automotive)	Basement Hallway	1	EA	$ 50.00	$ 50.00
				Subtotal	**$ 2,995.00**
			Grand Total (Does Not Include Lead Costs)		**$ 72,995.00**
			Grand Total (Inculding Lead Cost)		**$ 162,995.00**

Notes:

1. Hazardous materials inventory does not include chemicals (cleaners, oils, fuels, etc.) or equipment and appliances (TVs, refrigerators, AC units, etc.) as they are likely to be removed from the building prior to renovation.
2. Disposal cost for ballast assumes that all ballasts are "No PCB" type ballasts, as PCB containing ballasts were not observed during the survey. If PCB ballasts are encountered during renovation, disposal costs would be $30/ea. Disposal contractor is responsible for confirming PCB content of light ballasts.
3. ACM and Hazardous Materials inventory does not include materials located in inaccessible sections of the building.
4. Emergency light and exit sign battery disposal costs are calcualted assuming that each battery weighs 2 pounds. Automotive battery disposal costs assumes labor charge for removal and transport and that batteries are recycled (no disposal charge or credit given).
5. Quantities established from field calculations or Town-provided drawings.
6. Some quantities are estimated or rounded up to provide a conservative abatement cost.
7. Price per unit rates are prevailing wage rates.
8. Lead abatement cost is for OSHA worker safety compliance. Lead abatement may not be necessary if the selected method of demolition does not create a lead hazard for demolition personnel (e.g. crushing vs torch cutting). Nobis assumes up to 3 major structures will require lead abatement prior to torch cutting to dismantle structures to be demolished.
9. Cost for areas with multiple layers of ACM were calculated seprately for each layer.
10. PCBs are not included in this estimate, TSCA level PCBs require sepcial handing and disposal. Non-TSCA level PCBs may also require special handling and disposal. Contact an abatement contractor for costing.
11. Mold abatement is not included in this estimate. Mold abatement may be required for renovations, contact an abatement contractor for abatement costing.

FIGURES



USGS Topographic Map
Hartford North, Conn.
Revised 1964

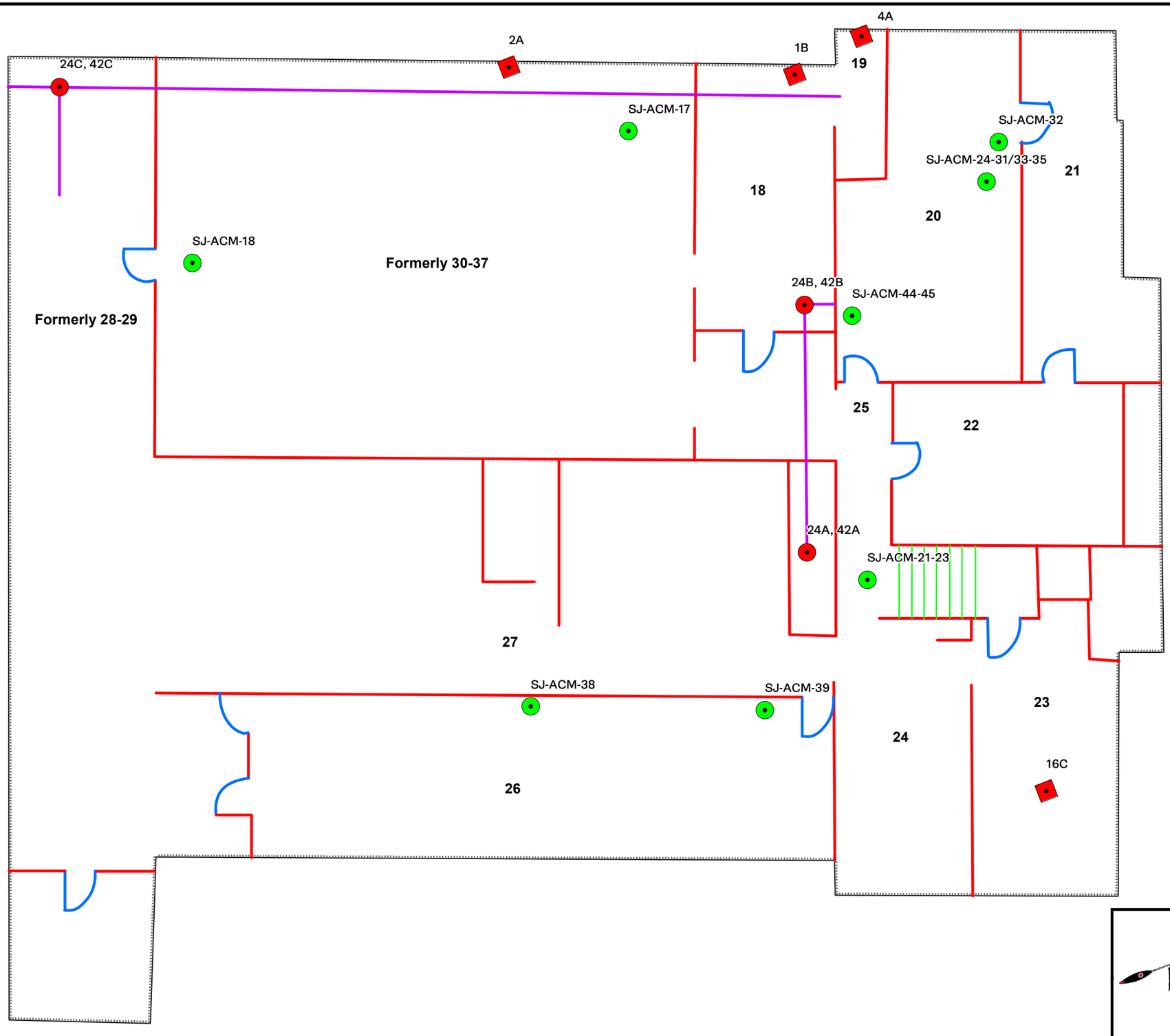
KGSNE

FIGURE 1

SITE LOCUS
85 GRANBY STREET
BLOOMFIELD, CONNECTICUT

PREPARED BY: NL	CHECKED BY: TA
PROJECT NO. 095560.000	DATE: MARCH 2021

J:\095560.20 - 85 Grandby Road - Bloomfield CT\Phase II ESA\Figures\Figure 1 Site Locus.mxd 3/9/2021 10:15 nlatourette



Notes:

1. Samples with "SJ-ACM-#" sample IDs were collected by Nobis on 2/4/21.

2. Absetos Samples 24A, 24B, 24C, 42A, 42B and 42C were collected by ATC and indentified in the ATC Environmental Survey Report.

3. PCB Samples 1B, 2A, 4A and 16C were collected by ATC on 12/17/12 and identified in the ATC Associates Environmental Survey Report.

4. Room numbers are from the ATC Environmental Survey Report. Room features may be represented differently than those in the Survey.

5. Locations of site features depicted hereon are approximate and given for illustrative purposes only.

Legend

- PCB Sampling Location Result >1 ppm
- Asbestos Sampling Location Result >1%
- Asbestos Sampling Location Result "Non-Detect"
- Air Cell TSI
- Basement Door
- Basement Stairs
- Basement Wall
- Basement Footprint

0 5 10 20

Feet

1 inch = 10 feet

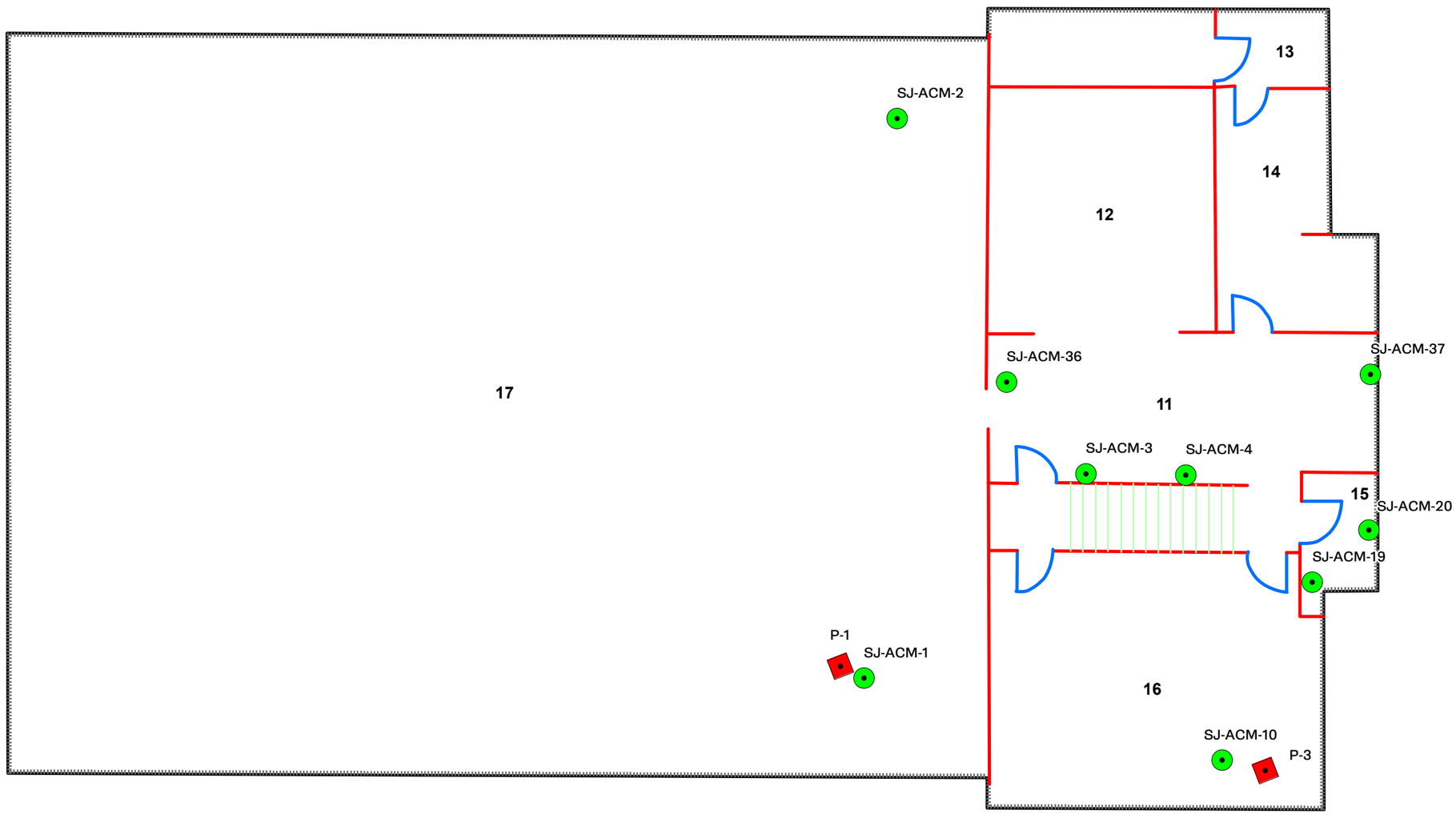
N

KGSNE

FIGURE 2A

BASEMENT LAYOUT WITH SAMPLE DATA
ST. JOHNSBURY ARMORY
ST. JOHNSBURY, VERMONT

PREPARED BY: NL	CHECKED BY: TA
PROJECT NO. 93203.11	DATE: MARCH 2021



Notes:

1. Samples with "SJ-ACM-#" sample IDs were collected by Nobis on 2/4/21.

2. Samples P-1 and P-3 were collected by Nobis on 2/3/21.

3. Room numbers are from the ATC Environmental Survey Report. Room features may be represented differently those presented in the survey.

4. Locations of site features depicted hereon are approximate and given for illustrative purposes only.

Legend

- Asbestos Sample Location Result "Non-Detect"
- PCB Sample Location Result >1 ppm
- 1st Floor Door
- 1st Floor Stairs
- 1st Floor Wall
- Floor Footprint

0 5 10 20

Feet

1 inch = 10 feet

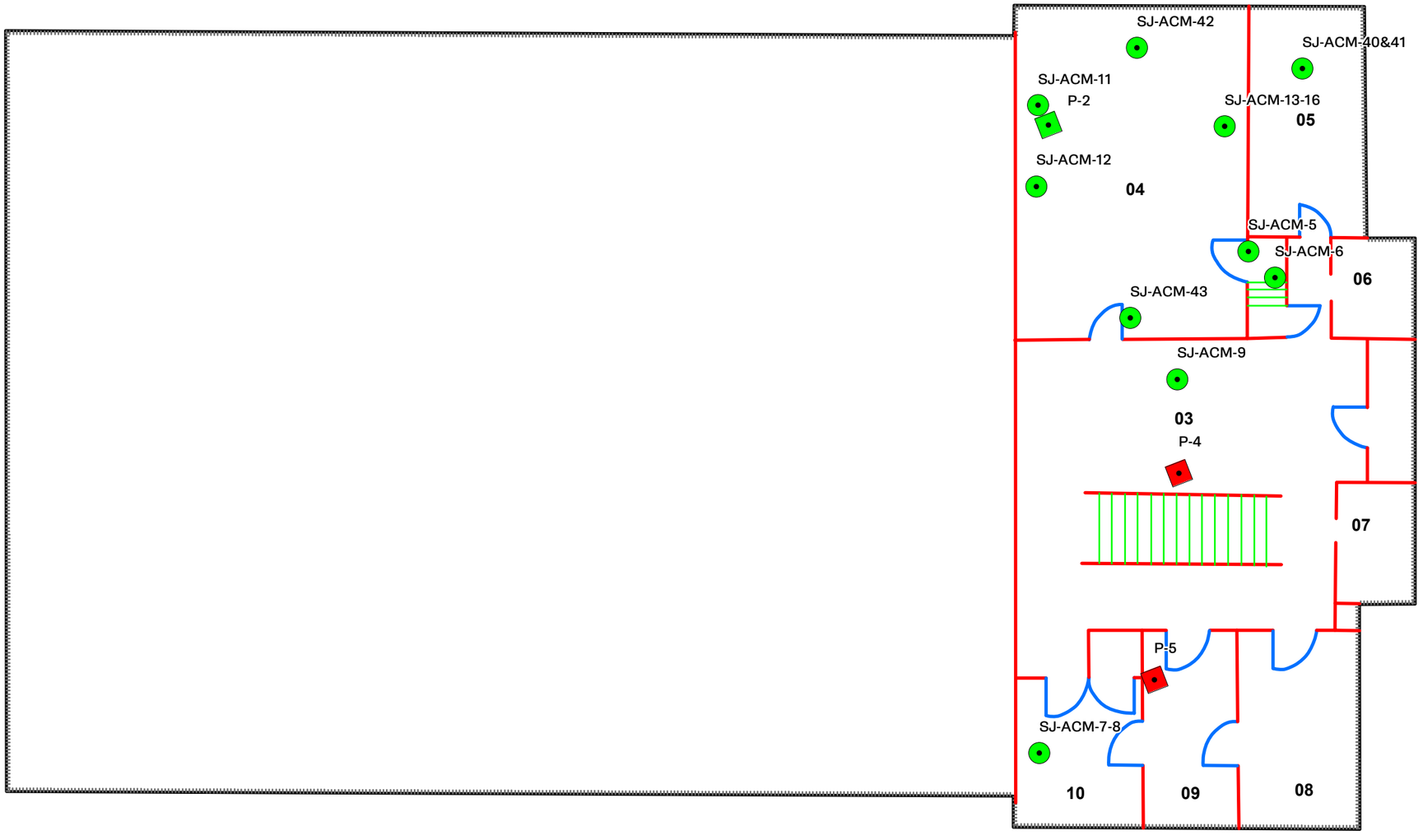
N

KGSNE

FIGURE 2B

FIRST FLOOR LAYOUT WITH SAMPLE DATA
ST. JOHNSBURY ARMORY
ST. JOHNSBURY, VERMONT

PREPARED BY: NL	CHECKED BY: TA
PROJECT NO. 93203.11	DATE: MARCH 2021



Notes:

1. Samples with "SJ-ACM-#" sample IDs were collected by Nobis on 2/4/21.

2. Samples P-2, P-4 and P-5 were collected by Nobis on 2/3/21.

3. Room numbers are from the ATC Environmental Survey Report Room features may be represented differently than those in the survey.

4. Locations of site features depicted hereon are approximate and given for illustrative purposes only.

Legend

- PCB Sample Location Result >1 ppm
- PCB Sample Location Result <1 ppm
- Asbestos Sampling Location Result "Non-Detect"
- 2nd Floor Door
- 2nd Floor Stairs
- 2nd Floor Wall
- Floor Footprint

0 5 10 20

Feet

1 inch = 10 feet

N

KGSNE

FIGURE 2C

SECOND FLOOR LAYOUT WITH SAMPLE DATA
ST. JOHNSBURY ARMORY
ST. JOHNSBURY, VERMONT

PREPARED BY: NL	CHECKED BY: TA
PROJECT NO. 93203.11	DATE: MARCH 2021