



City of Saint Albans MS4 Annual Report for 2014

In order to meet requirements of State of Vermont General Permit 3-9014 (2012) issued to the City of Saint Albans on October 1, 2013 we are submitting the following annual report covering stormwater activities completed in calendar year 2014.

1. Minimum Measure 1 – Public Education and Outreach

- 1.1. Payment made to Franklin County RSEP: **\$5,000** (total for MM1 and MM2)
- 1.2. Visitors to Regional Stormwater Education Program (RSEP) web site: **To be recorded for future permit years**
RSEP web address: www.fcsvt.org
- 1.3. Number of stormwater educational brochures distributed: **2,342**
- 1.4. The Franklin County RSEP annual report for Minimum Measure 1 can be found in Appendix A.

2. Minimum Measure 2 – Public Involvement and Participation

- 2.1. Payment made to the Franklin County RSEP: **\$5,000** (total for MM1 and MM2)
- 2.2. Number of volunteers at RSEP outreach events: **To be recorded for future events**
- 2.3. Green Up Day Stream Team trash collected: **½ ton**
- 2.4. Number of new storm drains marked with the “No Dumping, Drains to Stream” message: **Program under development**
- 2.5. The Franklin County RSEP annual report for Minimum Measure 2 can be found in Appendix A.

3. Minimum Measure 3 – Illicit Discharge Detection and Elimination

- 3.1. Illicit Discharges detected and eliminated:
 - 3.1.1. The Missisquoi River Basin Advanced IDDE Study final report was completed in October 2014. Sections of the report pertinent to the City of Saint Albans can be found in Appendix B.
- 3.2. Stormwater infrastructure map updates: **Various new and found structures have been inventories in 2014, including from the as-builts of the 2013 Main Street Streetscape Project. The City is compiling the existing map/GIS data on catch basins and working on a protocol for a standard internal update procedure.**
- 3.3. Number of stormwater outfalls inspected: **10**
- 3.4. Development of Illicit Discharge Ordinance: **Adoption due by 2017**

4. Minimum Measure 4 –Construction Site Runoff Control

4.1. Develop Land Development Regulations Related to Erosion Control for sites disturbing greater than or equal to 1 acre:

4.1.1. Recently the City hired a team of consultants to take a comprehensive look at standards regulations and procedures to implement erosion and sediment control regulations for construction sites permitted within the City. The project is scheduled to be complete in April 2016. The Project Request for Proposals including Scope of Services can be found in Appendix C. **Adoption of ordinance due in 2017.**

4.2. Number of City projects with State approved ESCP plans: **1 – Parking Garage project at 15 Lake Street in downtown core lot.**

4.3. Number of private development project ESCP plans reviewed: **To be recorded in future years.**

4.4. Number of private development ESCP site inspections: **To be recorded in future years.**

5. Minimum Measure 5 – Post Construction Stormwater Management

5.1. Develop Land Development Regulations Related to Erosion Control for sites disturbing greater than or equal to 1 acre:

5.1.1. Recently the City hired a team of consultants to take a comprehensive look at standards regulations and procedures to implement stormwater management and regulations to support LID for development permitted within the City. The project is scheduled to be complete in April 2016. The Project Request for Proposals including Scope of Services can be found in Appendix C. **Adoption of ordinance due in 2017.**

5.2. Number of City owned stormwater management systems under State jurisdiction: **3**

5.3. Number of private development stormwater management plans reviewed: **To be recorded in future years.**

5.4. Number of private development stormwater management projects inspected: **To be recorded in future years.**

6. Minimum Measure 6 – Pollution Prevention and Good Housekeeping

6.1. Number of catch basins cleaned: **430**

6.2. Volume of material removed from catch basins: **142 cubic yards**

6.3. Volume of material collected from street sweeping activities: **261 cubic yards**

6.4. Stormwater training attended by City staff: **8 staff trained = 2 at IDDE workshop, 3 at catch basin cleaning training and 3 at street sweeper training.**

6.5. Schedule MCAP inspections of municipal facilities: **Due and scheduled in 2015.**

6.6. No additional MSGPs required for City owned facilities.

6.7. Funds spent on the stormwater management in fiscal year: **To be recorded in future years.**

6.8. Catch basin structures repaired or replaced: **7.**

7. Flow Restoration Plan (FRP) Development

The City of Saint Albans must participate in the development of an FRP for Stevens Brook and Rugg Brook. The City is working with the Town of Saint Albans and consultants to complete the FRPs by the deadlines specified in the MS4 permit. Below is an update on the City's progress on the FRP requirements:

- 7.1. **Stevens Brook FRP** – The City, with the Town of St. Albans and VTrans, submitted the draft FRP for Stevens Brook to the State in 2014. Stormwater retrofits have been identified throughout the watershed along with cost estimates and a proposed timeline for design and construction. The FRP includes a full list of expired permits within the Stevens Brook watershed with a description of their existing storm water system and proposed retrofit (if applicable).
- 7.2. **Rugg Brook FRP** – The City began work with the Town of St. Albans and VTrans on the FRP for Rugg Brook in 2014. Stormwater retrofits have been identified throughout the watershed and the draft plan has been presented to the participants for review. When the review is complete the draft FRP will be finalized and submitted to the State in 2015. The FRP includes a full list of expired permits within the Rugg Brook watershed with a description of their existing storm water system and proposed retrofit (if applicable).

The City is currently developing a policy regarding the handling of expired State stormwater permits. The policy could provide private permittees to either have their permit adopted under the MS4 permit, or to request coverage under a Residual Designation Authority (RDA) permit from the State. If retrofit projects are to be covered under the MS4 permit, the MS4 may elect to take over operation and maintenance (O&M) of the stormwater system and will report on any pertinent O&M activities as part of the MS4 requirements. If the retrofit project is to be covered under an RDA permit, the private landowners holding the RDA permit may retain the responsibility of O&M on the retrofit stormwater system. The decision as to how these retrofit projects are covered in the future will be subject to discussion and agreement with the private landowners, the MS4, and the State.

8. Identify opportunities for and provide technical assistance to property owners related to Low Impact Design Best Management Practices: **Due in 2016**
9. Adopt strategies to protect and regulate stream corridors in stormwater Impaired watersheds: **Due in 2016**

10. Stream Flow Monitoring

The State of Vermont will undertake a joint flow monitoring program for MS4s and will soon release an RFP for the work.

11. Proposed Changes

There are no changes proposed to the SWMP at this time. The City will notify Vermont DEC

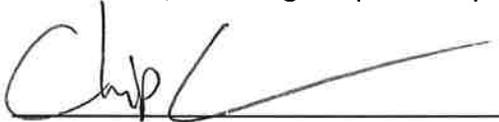
in the event that changes are proposed.

12. Reliance on Other Entities

In order to meet MS4 permit obligations, the City relies on the Franklin County Regional Stormwater Education Program (RSEP).

13. Certification

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information submitted is, to the best of my knowledge and belief, true accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."



Chip Sawyer
Director of Planning & Development
City of St. Albans, VT

4/1/15
Date

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Appendix A
Franklin County RSEP Annual Report

**Franklin County Regional Stormwater Education,
Public Involvement and Participation Outreach Program**

Summary of Activities January 1 – December 31, 2014

Prepared by Northwest Regional Planning Commission

During 2014 program year, the Franklin County RSEP was formed between the City of St. Albans, the Town of St. Albans and the Northwest Regional Planning Commission. The RSEP is charged with satisfying the relevant requirements of the Minimum Control Measure (MCM) One, Public Education and Outreach, and MCM Two, Public Involvement and Participation of the Phase II NPDES Permit. This report will summarize the RSEP accomplishments in 2014.

The minimum requirements to be completed on MCM 1 regarding Public Education and Outreach are provided in Table 1 below.

Table 1. MCM 1 – Public Education and Outreach activities and goals.

MCM #	Activity	Measurable Goal(s)
1-1	Maintain stormwater website	Develop website and content
1-2,3,4	Participate in RSEP	Establish Regional Stormwater Education Program (RSEP)
1-5a	Develop or acquire information brochures	Develop brochures
1-5b	Distribute stormwater brochures	Report number of brochures distributed (2x/year)
1-5c	Seek local news media to run new or feature stories	Report number of media buys and/or stories run (2x/year)
1-5d	Develop school materials and teacher meetings	Initial contacts with teachers and school districts

Task 1-1 Stormwater website. NRPC obtained a domain name and developed a logo for the RSEP. The basic framework for the website was developed to allow for growth in content and types of resources such as video, to be added as the list of resources developed expands. The website was live to the public in November 2014 to coincide with Election Day on November 4th as an opportunity for promotion to community residents.



Task 1-2,3,4 Regional Stormwater Education Program. Northwest Regional Planning Commission, the City of St. Albans and the Town of St. Albans drafted and signed a Memorandum of Understanding that outlined the activities and deliverables NRPC will provide to meet MCM-1 and MCM-2 components of the MS4 communities permit requirements. The Regional Stormwater Education Program named the Franklin County Stormwater Collaborative was established in April 2014.

Task 1-5a,b. Develop and distribute brochures. NRPC developed two new brochures during this reporting period (see Appendix 1). The first informational piece was developed with the intent of introducing community members to the RSEP and its formation as well as sending an initial message on identifying causes of stormwater pollution. This flyer was printed and distributed town-wide with the

**Franklin County Regional Stormwater Education,
Public Involvement and Participation Program**
Summary of Activities January 1 – December 31, 2014

July tax bill in the Town of St. Albans and the August water/sewer bill with the City of St. Albans. A total of 6,725 flyers were printed and 3,306 were distributed in the Town and 2,342 were distributed in the City.

A second flyer was created as a promotional piece to announce the arrival of the Franklin County Stormwater Collaborative website. The message for this flyer was to highlight the name and purpose of the Collaborative, provide the website for more information and again provide a primer on stormwater pollution. This flyer was distributed at the November 4th elections and is also available to the public at the municipal offices. A total of 2,000 flyers were printed and were distributed on November 4th in both municipalities.

Task 1-5c Media Buys and Stories. Given that the RSEP was developing its program and resources for much of the 2014 reporting period. The aim was to focus the media presence once the Collaborative website was online. NRPC released a press release on December 17th announcing the Franklin County Stormwater Collaborative which led to a feature story on the RSEP in The Messenger, run on December 30, 2014 (Appendix 1). A media buy was purchased in December that presented winter tips for stormwater management and inform on the types and best practices of snow and ice management (Appendix 1). The Messenger has a circulation of 5,500 people.

Task 1-5d Stormwater in Schools. The Friends of Northern Lake Champlain were subcontracted to conduct this task. FNLC found that the subject of stormwater is focused in the science curriculum although it has been incorporated into a Social Studies and History class by a BFA teacher (Jeff Moulton). The following is a list of teachers that teach on the subject of water quality and watersheds.

School	Teacher
St. Albans Town School – Middle School	Keith Peterson
	Janet Montagne
	Lorelei Westbrook*
	Laura Zettler*
	Tina Phelps*
St. Albans City School – Middle School	Peter Deslauriers (Science)
	Val Loucy (Science)
	Kyle Marlow (Wetlands)
	Veronica Pallas (Science and Wetlands)
BFA – High School	Chris Hungerford
	Jeff Rouleau
	Dan Plimpton (AP Environmental Science)
	Jeff Moulton
<i>*These teachers have taken the LCBP's CBEI 5 credit graduate course for Watershed For Every Classroom</i>	

**Franklin County Regional Stormwater Education,
Public Involvement and Participation Program**
Summary of Activities January 1 – December 31, 2014

The minimum requirements to be completed on MCM 2 regarding Public Involvement and Participation are provided in Table 2 below.

Table 2. MCM 2 – Public Involvement and Participation activities and goals.

MCM #	Activity	Measurable Goal(s)
2-1	Participate in RSEP	Establish Franklin County Stormwater Education Program (FC RSEP)
2-2	Institute a public workshop series on stormwater awareness	Develop workshop series
2-3	Institute a storm drain stenciling project	Inventory storm drains to be stenciled
2-4	Sponsor periodic community stream corridor “clean-up” days	Develop network for volunteer efforts

Task 2-1 Participate in RSEP. See summary under Task 1-2,3,4.

Task 2-2 Institute public workshop series on stormwater awareness. NRPC develop a list of potential workshops and identified partners for teaching and/or developing the materials. The workshops will focus on increasing the understanding of how stormwater works and practices property owners can implement at their homes or businesses to mitigate stormwater impacts. NRPC also applied for a Lake Champlain Basin Program grant to aid in further workshop development. Below is a list of potential workshops.

Workshop topics may include:

1. Watershed Walk – Explore our watershed and how it works
2. Rain Harvesting – Make your own rain barrel
3. Managing Runoff on Your Property - What to look for and range of solutions
4. Landscaping with a Rain Gardens – Learn to install and maintain your own
5. Sustainable Lawn Care – How to preserve a beautiful lawn and lake
6. Follow the Flow – Learn how stormwater moves through our neighborhoods

Potential partners include the Friends of Northern Lake Champlain, Winooski Natural Resources District, Lake Champlain Sea Grant, VT Master Gardeners, St. Albans Area Watershed Association.

Task 2-3 Institute a storm drain stenciling project. NRPC assisted the City and Town in providing maps of the storm drains for review and updates by the Planning and Public Works Department staff.

Task 2-4. Sponsor community steam corridor “Clean-Up” days. The Friends of Northern Lake Champlain were subcontracted to conduct this task. As a way to build momentum from an existing effort, we will aim to coordinate a clean-up event that is associated with Green Up Day, an event held the first Saturday of every May. The task for 2014 was to identify existing partners in the community for clean-up events, FNLC identified partners in both the City and the Town that have participated in clean up events in the community.

**Franklin County Regional Stormwater Education,
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- City – Currently the Boy Scouts organize Green-Up day in each of the City Wards, an event held in May.
- Town – Ben and Jerry's has hosted a volunteer day on Green-Up day for employees but there has not been an organized community event to date.

For May 2014, FNLC promoted residents to participate in Green Up Day by posting notices of the event on their Facebook page during the week leading up to May 3rd. FNLC also produced three public service announcements at Channel 15 to explain the Green Up day event and encourage residents to get out and help as well as pay attention to the streams and rivers.

A clean-up event was coordinated on August 8, 2014; a team of eight volunteers from the Green Mountain Coffee Roasters removed trash and material from the Stevens Brook diversion canal area. The amount of material removed filled one dump truck with waste. Green Mountain Coffee Roasters provided the gloves and trash bags for the event.



APPENDIX 1. MCM 1 Materials & Deliverables

BROCHURE #1

Regulating Stormwater in St. Albans

MS4

A municipal separate storm sewer system is a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains).

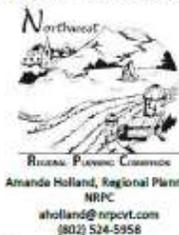
Under the 1987 Clean Water Act Amendments, the U.S. Environmental Protection Agency (EPA) developed new regulations to address stormwater impacting water quality with the National Pollutant Discharge Elimination System (NPDES) stormwater permitting program. The NPDES stormwater program regulates point source discharges of stormwater into surface waters of the State of Vermont from certain municipal, industrial and construction activities.

As of December 2012, this program has designated the City and Town of St. Albans as MS4 (Municipal Separate Storm Sewer System) communities. This MS4 designation requires each community to file a five year Stormwater Management Plan (SWP) which responds to six "Minimum Control Measures." The communities are obligated to file an annual report describing the stormwater management activities completed each year.

Both municipalities have developed a plan to improve stormwater management over the next five years. The City and Town are working together on a public outreach and education program with Northwest Regional Planning Commission to address the first two required elements of the regulation below. The municipalities are currently working on a website and other actions to encourage area residents to get personally involved in reducing stormwater pollution in Lake Champlain.

MS4 Minimum Control Measures

1. Public Education and Outreach
2. Public Works
3. Illicit Discharge Detection and Elimination
4. Construction Site Stormwater Management
5. Post-Construction Stormwater Management
6. Pollution Prevention/Good Housekeeping



For more information

SAINT ALBANS
Chip Sawyer, Director of
City of St. Albans
(802) 524-1

What is stormwater runoff?

Stormwater runoff occurs when water from rain or snowmelt comes into contact with an impervious or semi-impervious surface like a driveway, rooftop, parking lot gravel road, or patch of compacted soil. These areas prevent water from naturally soaking into the ground and, as a result, increase the amount and speed of water travelling across the land surface.

Why is it a problem?

Excess surface water can pick up pollutants such as oil, grease, chemicals, nutrients, metals and bacteria. This pollutant rich water often flows directly to a lake, stream, river or wetland. In some cases it may be caught by a municipal stormwater system. However, the result is the same. Anything that enters the stormwater system is discharged untreated into the waterways we use for swimming, fishing and providing drinking water. Stormwater can also be a problem when high amounts of water cause flooding and erosion of stream banks.

What can you do about it at home?

The following actions can impact the quality of our waters and the amount of stormwater being sent to the Lake.

Fertilizers and Pesticides - Follow the prescribed amount by the manufacturer and consider spot treatment rather than applying everywhere. Do not dispose of old chemicals by dumping them on the ground, in a well or draining into ditches, sewers or septic systems. Not sure what nutrients to apply? Contact UVM Extension for a soil test.

Rural Landscape - Reduce soil erosion by covering exposed soils with vegetation. Vegetation will not only improve the appearance of your home, but will also assist in filtering out pollutants from water. Consider aerating and amending soils with a thin layer of compost to increase permeability.

Autos & Other Equipment - Repair vehicles and other equipment away from wells, ditches and drains. Avoid accidental spills by using a drip pan and funnel when draining or pouring fluids. Prevent leaks from stored vehicles by draining gas, hydraulic oil, and other fluids.

Septic Systems - Septic systems should never be piped into a road ditch, storm sewer, stream, or farm drain tile system. Also, avoid washing or flushing grease, alcohol, or strong chemicals into your septic system; these substances kill the bacteria needed to break down wastes. Have your septic system emptied regularly (generally every 3-5 years).

Pet Waste - Pet waste left on the ground can be carried away by stormwater, contributing to harmful bacteria, parasites and viruses in our water. Scoop the poop!

Storm Drains - Never dump anything down storm drains or in streams.

What is your community doing to address it?

The City and Town of St. Albans are working together to encourage area residents to get personally involved in reducing stormwater pollution in Lake Champlain. This effort will be conducted as a part of a public education requirement of a federal Environmental Protection Agency stormwater system permit, called MS4.

A Regional Stormwater Education Program (RSEP) is gearing up and a website is currently under construction that will provide information on specific stormwater problems, such as proper pet waste disposal, proper disposal of toxic chemicals, safer car washing, and reducing erosion and over fertilization of lawns and gardens. This program will also be providing educational events to raise awareness and encourage residents to help be a part of the solution.

Stay tuned for more messages from Northwest Regional Planning Commission

FRANKLIN COUNTY STORMWATER



A Stormwater Education & Outreach Collaborative

Franklin County Stormwater is a Saint Albans City and Town effort to inform the community about ways our homes and businesses may contribute to stormwater runoff and actions we can take to keep our waterways clean. The collaborative was formed to meet federal regulations and is part of a plan to improve stormwater management.

WHAT CAN YOU DO?

Ways to take action include:

- ⇒ Reducing the amount of stormwater runoff
- ⇒ Slowing down runoff
- ⇒ Preventing pollution from entering the waterways
- ⇒ Removing pollutants that could get into runoff

To find out more visit
www.fcsvt.org

Stormwater...



Stormwater occurs when rain and snow melt flow off of streets, rooftops, lawns and fields. As it encounters these surfaces it picks up potential pollutants like salt, soil, fertilizers, grass clippings, oil, litter, and many other pollutants.

Since these pollutants are washed off a broad area and cannot be traced back to a single source, they are called nonpoint source pollutants.

Where does stormwater and the pollutants it carries go?

All stormwater, in both the city and country, runs into nearby streams and drains into Lake Champlain.



Tuesday, December 30, 2014

MESSENGER

\$1.00

Established in 186

Vermont's Oldest Evening Newspaper

BERKSHIRE MONTGOMERY SHELDON FAIRFIELD HIGHGATE RICHFORD ENOSBURG SWANTON GEORGIA FAIRFAX FRANKLIN BAKERSFIELD FLETCHER

Christopher A. Pappano, 54, was taken into custody following a search of his home. According to Vermont State Police, troopers in conjunction with the Milton Police Dept., the Grand Isle County Sheriff's Dept., U.S. Border Patrol and the Bureau of Alcohol, Tobacco and Firearms executed the search warrant on Lamolite Terrace at 1 p.m.

Pappano is scheduled to be arraigned at the U.S. District Court in Burlington.

He is charged under federal law because it is not a crime in Vermont for a convicted felon to possess firearms.

TODAY'S OBITUARIES

- KENNETH MIDDLEBROOK, 79, *Albany*
- DONALD L. WILLEQUER, 83, *St. Albans*

See obituaries, page 5A, or subscribe to our digital edition at www.samessenger.com

WEATHER:
Tonight: Increasing clouds.

ENVIRONMENT

Collaborative focuses on runoff

City, Town consider stormwater rules

*By MICHELLE MONROE
Messenger Staff Writer*

ST. ALBANS — St. Albans City and Town have partnered with Northwest Regional Planning Commission (NRPC) and the Friends of Northern Lake Champlain (FNLC) to create the Franklin County Stormwater Collaborative.

The collaborative will be responsible for many of the education and public outreach requirements the town and city must undertake as part of their Municipal Separate Storm Sewer System (MS4) permits.

In addition to the collaborative, the city and town are working together on new municipal regulations for stormwater management.

► See WATZER on page 5A

DAIRY

Plaintiffs attack settlement

Letter claims processors stand to benefit

*By MICHELLE MONROE
Messenger Staff Writer*

ST. ALBANS — Representatives for farmers in a class action suit filed against Dairy Farmers of America (DFA) are calling on their fellow farmers to oppose a proposed settlement, saying it would not cause any significant changes in the operations of DFA.

In a suit filed in 2009, plaintiffs, including farmers from Vermont, alleged that DFA, Dairy Marketing Services (DMS), a Dean Foods had engaged in anti-competitive



The St. Albans (Vt.) Messenger, Tuesday, Dec. 30, 2014

Water

continued from page 1

aimed at projects too small to require state permits.

This month the collaborative unveiled a new Web site (www.kvsr.org) to provide residents of the county with information about stormwater and steps they can take to reduce the amount of pollutants and stormwater coming from their property.

"We're hoping this will educate people about how they can make a difference," said St. Albans Town Manager Carrie Johnson. "I think a lot of people understand we're concerned about water quality, but the path to getting there isn't as easily understood."

"Everyone can make a difference," she added. As the site explains, stormwater is a threat to water quality for two reasons. The first is the sheer volume of water hitting rivers and streams and the volume at which it is moving. The water causes stream banks to erode, bringing nutrient laden sediment into the lake. The nutrients, in turn, feed the growth of blue-green algae.

The second is contaminants that are carried in the water, including nutrient sources such as fertilizer, pet waste and dead plant matter. Stormwater can also contain pollutants such as pesticides and automobile fluids.

The site has information on how residents can improve water quality by using alternative cleaners when washing cars, properly disposing of pet waste and minimizing the impact of lawn and garden care on the watershed. Also included is information on how to use rain barrels and other methods of reducing the amount of stormwater coming off of residential property.

In addition to the Web site, the collaborative has created brochures on various aspects of stormwater management and pollutant reduction. More brochures will follow.

To encourage public involvement, the collaborative will invite volunteers to assist with stream-focused clean up efforts on Green Up Day and will be offering workshops for residents on how to manage stormwater on their property.

Currently, efforts are underway to identify where the storm drains in St. Albans come out. The drains will then be labeled with their ultimate location. The hope is that if people understand where the drains come out, they'll be less likely to send pollutants down them, explained Amanda Holland of NRPC. Although many of the town's residents live in suburban-style developments

close to the city, others reside in more rural areas. The steps they can take are the same as those taken by city residents, explained Holland.

"The things you do in a city are the same things you do in a rural landscape," she said. "Obviously, you see it a little more readily in urban areas."

Those who live along the lake and its tributaries can take steps to reduce shoreline erosion, as well, such as vegetated buffers, explained Holland. NRPC has published a guide to preserving and restoring shorelines for lakeside residents.

Although the city and town are providing the funding for the collaborative, they deliberately chose to name it for the entire county, not just St. Albans. "Should any other communities want to join, they certainly may," said Johnson.

The idea behind the collaborative is to create a framework that can serve the entire county, according to Johnson.

City & Town

In regard to possible city and town stormwater management regulations for smaller projects outside the purview of the state, Chip Sawyer, the city's director

of planning and development, said, "We have to provide adequate regulations for development both post construction and during construction."

The two municipalities must also examine the operation of their public works departments to minimize impact on the lake.

Finally, they are required to reduce the amount of stormwater reaching Stevens and Rugg brooks. "It's really trying to keep that stormwater from hitting the brook without any kind of velocity reduction or pollution control," said Sawyer.

In combination with the Agency of Transportation, which also has an MS4 permit for Stevens and Rugg brooks, the city and town sponsored an analysis of possible locations for stormwater management in the city and town. The intent is to collect water during a rain event and then slowly release it, preventing the water from hitting the brooks in a rush during storms, explained Sawyer. Storing the water down also allows time for pollutants to settle out of the water.

No decisions have yet been made about future stormwater management sites.

MEDIA BUY

The St. Albans (Vt.) Messenger, Wednesday, Dec. 31, 2014

WOR

Italy saves 970 migrants abandoned by smugglers

ROME (AP) — The Italian Coast Guard has safely rescued 970 migrants after smugglers abandoned them on a cargo ship in rough seas.

Coast Guard officials said the migrants, most of them believed to be Syrians, arrived in Gallipoli, south-eastern Italy, before dawn Wednesday. More than 100 migrants were treated for hypothermia.

Six Italian Coast Guard workers had been lowered by helicopter onto the Moldovan-flagged Blue Sky M after a passenger sent out a distress call while the ship was off the Greek coast. Coast Guard Cmdr. Filippo Marini said they found no crew aboard and the ship's engine shut off. The Italians then steered the ship to Italy.

To avoid capture, smugglers frequently abandon migrants at sea.

Winter Stormwater Tips for Homeowners

Stormwater pollution is a year-round concern. We may use sand and salt to control winter's weather but after the ice melts the remaining materials can get into our waterways and pose a threat to the health of our streams and fish. Follow these tips to guide the amount of material you use on your driveways and sidewalks:

- **Shovel early.** The more snow and ice you remove, the less salt you will have to use and the more effective it can be.
- **More salt does not mean more melting.** Apply appropriately - salt takes time to work. Consider purchasing a hand-held spreader to help you apply a consistent amount.
- **15°F is too cold for salt.** Most salts stop working at this temperature. Use a traction agent as needed, but remember they do not melt ice.
- **Sweep up excess salt or sand on dry pavement.** It is no longer doing any work, sweep it up before it is washed away and apply less the next time.
- **Try an alternative for traction.** Sand and kitty litter are effective but can clog sewers and degrade stream habitat when washed away. Cracked corn can be an alternative to try that is more environmentally friendly.
- **Understand what's in it.** All deicers will melt the ice but some have less of an impact on the environment. Instead of sodium chloride or calcium chloride use an acetate (such as Premiere Ice Melter), potassium chloride, or magnesium chloride (such as Safe Step 8300).

FRANKLIN COUNTY Stormwater

Check out www.fcsvt.org to understand which deicing product to use for the weather conditions and their impacts.

This message is brought to you by Franklin County Stormwater, a St. Albans City and Town Collaborative to Educate the Community about Stormwater. Learn more at WWW.FCSV.T.ORG.

Appendix B
Missisquoi River Basin Advanced IDDE Study

Missisquoi River Basin Advanced Illicit Discharge Detection and Elimination (IDDE) Study

FINAL REPORT

October 10, 2014

Prepared for:

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1. INTRODUCTION

BACKGROUND

Illicit Discharge Detection and Elimination (IDDE) programs were first developed in Vermont to meet the requirements of the EPA's Phase II Stormwater Rule. The Rule requires that owners of Municipal Separate Storm Sewer Systems (MS4s) develop, implement, and enforce a storm water management program that is designed to reduce the discharge of pollutants to the maximum extent practicable, protect water quality, and satisfy the applicable water quality requirements of the Clean Water Act.

In 2000, the Vermont Legislature expanded IDDE efforts from the MS4 regulated communities to all developed areas in Vermont by requiring the Department of Environmental Conservation (DEC) to implement a statewide program to promote detection and elimination of improper or illegal connections and illicit discharges (Sec. 3. 10 V.S.A § 1264 (b) (9)). The Legislature's intent was to expand IDDE efforts from the MS4 communities to encompass all developed areas of Vermont. Following the Legislature's mandate, the DEC Ecosystem Restoration Program has assisted municipalities not subject to the Phase II Stormwater Rule by mapping drainage systems and performing IDDE programs.

In 2009-2010, Stone Environmental conducted an IDDE project for Vermont DEC involving six municipalities in the Missisquoi River Basin. Several illicit discharges were identified and were reportedly resolved as a result of this project, but technical questions remained regarding several other drainage systems in which contaminants were detected. Recommendations were made in the project final report regarding further investigation of these systems.

In 2010, the Town and City of St. Albans were designated by the DEC as small MS4s to be regulated under the National Pollutant Discharge Elimination System (NPDES), due to discharges to the Stevens and Rugg Brooks, both of which are listed as stormwater impaired watersheds on the EPA approved Vermont 303(d) listing. In order to conform to the DEC General Permit 3-9014 for Stormwater Discharges from small MS4s an IDDE study was performed by Watershed Consulting Associates, LLC in 2012.

In 2013-2014 Aldrich + Elliott, PC, in collaboration with Stone Environmental, reassessed the stormwater drainage systems in which illicit discharges had been confirmed or suspected in the Missisquoi River Basin. The drainage systems in the Missisquoi River Basin are located in Enosburg Falls, North Troy, Richford, Swanton, and St. Albans. This report presents the findings of these advanced investigations.

7. CITY OF ST. ALBANS IDDE FINDINGS

Ten drainage systems were investigated in the City of St. Albans and these systems are described in the following sections. Results of water quality testing are summarized in Appendix D.

Outfall 24 (Maple Pro Plant, Lemnah Drive)

Outfall 24 is an 18” corrugated metal pipe with a concrete headwall that collects stormwater from several catch basins along Lemnah Drive and the Maple Pro Plant. Refer to Figure 5 in Appendix B for a map of the drainage system for Outfall 24.

In 2012, Outfall 24 and the collection system were investigated by Watershed Consulting Associates, LCC. During initial sampling, the outfall sample contained high levels of ammonia (3.2 mg/L), potassium (11 ppm), detergents (0.30 ppm), and phosphorus (1.88 mg/L). Water quality results showed that the concentrations of ammonia were prevalent at the catch basins near the Maple Pro Plant loading dock, and low at the catch basins adjacent to Lemnah Drive. The catch basins were monitored and sampled periodically throughout 2012 with varying high levels of ammonia originating at the Maple Pro Plant, even after the catch basins were cleaned by the Public Works Department. The contamination was believed to be a result of cleaning products being flushed through the system and improperly disposed of, as there was no inlet pipe near the loading dock.

On October 24, 2013, follow up investigation was conducted by Aldrich + Elliott. Water quality results in the catch basin at the Maple Pro Plant loading dock yielded a high concentration of ammonia (2.1 mg/L). Results of the water quality data is presented in Table 10.

Table 10. Water analysis data for Outfall 24 drainage system

System	Sp. conductance (µs/cm)	Total chlorine (mg/L)	E. Coli (CFN/mL)	Ammonia (mg/L)	OB Result	Observations
24	3,150	0	---	2.1	---	October 24, 2013
24	---	---		1.4	---	July 23, 2014

In July 2014, Aldrich + Elliott with the assistance of the City of St. Albans Public Works Department resampled the outfall and revisited catch basin CB14.CBD near the loading dock. A+E and the City talked with the owner about activities at the building, but the discussions were inconclusive.

Based on the information provided by the Owner and the decreasing ammonia levels from 2012 (3.2 mg/L) to 2014 (1.4 mg/L), it is believed that the ammonia is a residual from a past cleaning and is still residing in the sediment within the catch basin sumps. It is recommended that the City clean the catch basins semi-annually within this network.

Outfall 26 (Blooming Minds Daycare, Lemnah Drive)

Outfall 26 is a 24" corrugated metal pipe located adjacent to Lemnah Drive and collects stormwater from portions of Lemnah Drive and the adjacent parking lot to the south of Blooming Minds Daycare. Refer to Figure 6 in Appendix B for a map of the drainage system.

During the extensive investigations in June 2012 by Watershed Consulting Associates, LLC, Outfall 26 was found to have high concentrations of ammonia (1.96 mg/L), potassium (12 ppm) and detergents (0.75 ppm). The catch basins upstream of the outfall were sampled for ammonia and concentrations increased as you moved farther away from the outfall. The catch basins also had detectable levels of detergents (0.25 mg/L). The Blooming Minds Daycare was dyed tested, but no dye was observed in catch basin.

In 2013, follow up investigation was performed by Aldrich + Elliott with the aid of the City of St. Albans Public Works Department staff. The City and A+E conducted additional investigations on October 24, 2013 to review the site and perform dye testing on the Blooming Minds Daycare. Dye tests were inconclusive. During the investigation A+E approached the City about using their push camera to visually inspect the stormwater line for wyes or unknown tie-ins. The City offered their camera for this application and planned to complete the cleaning and televising.

Attached in Appendix F is a log of the camera investigation. The City of St. Albans Public Works Department completed the cleaning and televising in early November 2013. The original camera log was not recorded during the initial investigation, so a second day of televising was conducted. On the 1st day, the stormline from catch basin 26.CBC to 26 MB was televised. The unknown structure referred to in Watershed Consulting Associates, LLC report in 2012 was not found, but a 4" pipe was observed by the Public Works Department connecting into the storm pipe. The source of the 4" pipe is unknown and further dye testing needs to be completed to confirm the source. The City attempted to further televise the storm pipe but was unable to reach the 4" pipe.

In 2014, Aldrich and Elliott and the City Public Works Department, visited 2 Lemnah Drive to determine the source of the 4" pipe seen during the televising. A+E and the City spoke with the Owner of 2 Lemnah Drive, Maple Pro Plant, and the Owner explained that building was just used for storage with the exception of an embroidery business. The Owner gave permission for A+E and the City to dye test the building. Dye tests were performed and were not evident in the stormwater line. The toilet in the embroidery business was initially turned off when we entered the building. The catch basins within the network were observed to be filled with sediment, and the water residing in the sump of the catch basin 26.CBC was observed to be stagnant.

It is recommended that the City clean the catch basins semi-annually within the stormwater network. Based on the results and observations made, it is believed that this problem can be resolved with regular cleaning of the catch basins.

Outfall 27 (Lower Welden Street)

Outfall 27 is a 24" concrete pipe that collects stormwater from areas west of the Stevens Brook on Lower Welden Street and discharges directly into the Stevens Brook. This area of the collection system has a well-documented history of combined sewer overflow (CSO) events. The intersection of Lower Welden Street and South Elm Street is a low point in the wastewater system and has an overflow that is connected to catch basin 27.CBA. Refer to Figure 7 in Appendix B for a location map.

Watershed Consulting Associates, LLC investigated Outfall 27 in 2009, and determined that the outfall had high concentrations of ammonia (0.96 mg/L), detergents (0.40 ppm), and E. Coli (1000 and 900 CFU/100 mL).

The State of Vermont Department of Environmental Conservation issued the City of St. Albans 1272 Order No. 3-1279-A2 which required the City to investigate the contributing factors to the Lower Welden Street CSO and evaluate recommended alternatives for elimination. The current 1272 Order No. 3-1279-A5 requires the following:

- Completion of construction of Downtown Streetscape project by December 31, 2013.
(Completed)
- Roof drains affected by the Downtown Streetscape Project be disconnected by December 31, 2015.
- Submit a progress report on the status of the Federal Street Connector project by December 31, 2014.
- The City shall continue to monitor precipitation and the frequency, duration, and magnitude of the Lower Welden Street CSO discharges and submit a report of the results to the Agency on December 31, 2013 and December 31, 2015.

As this area in the sewer and stormwater collection system is a known problem, the City as an MS4 Phase II community has been diligent at best management practices and monitoring CSO events. After each CSO event, the City cleans the catch basins to remove any accumulated material. The City has worked with A+E over the years to address CSO issues in the collection systems, and a study completed by Aldrich + Elliott in 2013 evaluated the CSO issues. The City completed the Downtown Streetscape Project in 2013 and is on schedule to meet other deadlines. The study explains that the solution is not any single project but a combined influence of several projects to provide the greatest reduction in flow. The recommended future CSO abatement projects for the near term are Murray Drive, Federal Street and remaining roof drain disconnections on Main Street, in prioritized order. **No further investigation is needed at this time, as the City continues monitoring and addressing CSO issues as required by the 1272 Order.**

Outfall 34 (La Salle Street)

Outfall 34 is a 30" concrete outfall located along La Salle Street that collects stormwater from a residential neighborhood to the west of the Stevens Brook. Refer to Figure 8 in Appendix B for a map of the collection system for Outfall 34.

The outfall was sampled and tested on June 6, 2012 by Watershed Consulting Services, LLC and found to have high concentrations of ammonia (0.39 mg/L), potassium (6 ppm) and E. Coli (880 ppm). Drummac Septic Service conducted a camera investigation of 34.MD and found two (2) inlet pipes (12" and 9") from the west side of the manhole. Based on the findings, there is a suspected wastewater leak entering the storm system somewhere between Lake Street and 34.MB.

In 2013, Aldrich and Elliott asked for the assistance of the City Public Works department to investigate the stormline between 34.MB and 34.MD with the City owned camera. The City made efforts to clean and televise the line using the City owned vactor truck and camera but were unsuccessful removing enough debris to televise the line. A private contractor could not be utilized to investigate this portion of the stormwater collection system due to scheduling conflicts.

In 2014, A+E met with the City Public Works Department to discuss their knowledge of the stormwater line between manholes 34.MD and 34.MB. The City staff explained that they had televised this line a few years ago and did not observe any pipes intruding into the line between the two manholes. A+E and the City worked together to clean this sewer line with vactor truck. The sewer line is divided evenly on North Elm Street, with half the flow going toward LaSalle Street and the other half towards Lake Street. Dye was inserted into the sewerline that flowed toward Lake Street between stormwater manholes 34.MD and 34.MB, and no dye was seen infiltrating into the stormline.

Based on the extensive efforts to find the source of the illicit discharge, no further investigation was performed under this study. Storm plans from 1973 show an unknown line entering a catch basin next to the Holy Angel Rectory. It is recommended that the City follow up and confirm the presence of the pipe. If the pipe is confirmed, additional investigative work is recommended to determine the outlet.

Outfall 37 (Pearl Street)

Outfall 37 is a concrete structure that collects stormwater from the residential neighborhood to the west of the Stevens Brook on Pearl Street. Refer to Figure 9 in Appendix B for a map of the drainage system for Outfall 37.

On June 6, 2012 Watershed Consulting Associates, LCC sampled and tested the outfall. Ammonia (0.32 mg/L) and detergents (0.25 ppm) were the only water quality parameter that exceeded the threshold. No further investigation was conducted in the collection system due to time constraints.

Aldrich and Elliott performed follow up investigations beginning in October 2013. Initial sampling and testing was conducted at the outfall on October 24, 2013. All water quality results were below the threshold limit with the exception of potassium which yielded 5.7 mg/L. To further isolate the collection system, bracket sampling was performed at manholes located in the intersection of Pearl Street and North Elm, Walnut and Cedar Streets on October 30, 2013. The manholes at these locations were examined by confined space entry by Nathan Pion of Aldrich and Elliott, with assistance from the City of St. Albans Public Works Department Staff. At the intersections of Cedar and Walnut, there was no measureable flow coming from the south. The manhole at the intersection of Pearl Street and North Elm Street was found to be submerged from the Stevens Brook. The water in the sump of the

stormwater manhole was sampled and tested. Results from the sampling show elevated levels of E. Coli (>2400 MPN/100 mL), ammonia (0.11 mg/L) and potassium (13 mg/L). All water quality results are summarized in Appendix D. Presented below in Table 11 are the water quality results from the bracket sampling.

Table 11. Water analysis data for Outfall 37 drainage system

System	Sp. conductance (µs/cm)	Total chlorine (mg/L)	E. Coli (CFN/mL)	Fluoride (mg/L)	Ammonia (mg/L)	Phosphorus (mg/L)	Potassium (mg/L)	MBAS	Observations
Cedar	---	---	---	---	---	---	---	---	No measureable flow.
Walnut	---	---	---	---	---	---	---	---	No measureable flow.
North Elm	1,000	0	>2,400	0.1	0.11	0.09	4.5	<20	Submerged.

A desktop evaluation was conducted for the drainage system around the intersection of North Elm Street and Pearl Street. The desktop evaluation using Vermont ANR Atlas, showed that a hazardous waste generator site was present at 42 North Elm Street, but has since been closed by the State.

Based on observations and field water quality testing, the intersections of Cedar and Walnut Street can be eliminated as neither had any measureable flow during dry weather conditions. Results show that the source of the contamination is isolated near the intersections of North Elm and Maple Street. Due to the size of the stormline, the City is not able to use their push camera to view this stormwater line. It is more likely that the source of the contamination is to the south of Outfall 37 where it intercepts the Stevens Brook and is being surcharged into the outfall. Outfall 37 should continue to be monitored at the intersection of Pearl Street and North Elm to determine the source of the contamination. The City should resample the manhole at North Elm for E. Coli.

Outfall 43A (Rewes Drive)

Outfall 43A is a 24" corrugated metal pipe located across the street from the St. Albans Messenger on Main Street (Route 7) that collects stormwater from the east side of Main Street. Refer to Figure 10 in Appendix B for a map of Outfall 43A drainage system.

Watershed Consulting Associates, LLC investigated the outfall and collection system in 2012. Field staff found elevated levels of ammonia (0.3 mg/L) and E. Coli (Too Numerous To Count) during the initial investigation on June 7, 2012. Based on observation of upstream catch basins the high ammonia and detergents, later found in catch basin 43A.CBA, are a direct result of runoff from the adjacent car wash located on the east side of Main Street. Dye testing and camera inspection by Drummac was conducted to eliminate the possibility of a wastewater leak.

In 2013, Aldrich + Elliott conducted follow up investigation and sampling of Outfall 43A. The drainage ditch along the St. Albans Messenger, which was recommended to be monitored in the Watershed Consulting Services Report, was retested for E. Coli and resulted in a slightly higher concentration (108 MPN/100 mL) than the threshold limit. Outfall 43A was dry on November 20, 2013 when the drainage ditch was sampled. With the aid of the City of St. Albans Public Works Department staff, the stormwater

collection system was cleaned and inspected through the use of a camera. The camera was pushed from both the Outfall 43A and catch basin 43A.CBA. Both inspections were halted by junction boxes under Main Street, confirming the results of the camera inspection by Drummack in 2012. The St. Albans Messenger was also dye tested again and received in the wastewater collection system, eliminating it as a source of contamination.

Based on the available information, the source of the E. Coli within the drainage ditch is most likely intermittent as contributed from animal waste upstream of the St. Albans messenger. No further investigation is required.

Outfall 16 (Upper Welden Street)

Outfall 16 is a 30” concrete pipe located at the intersection of Upper Welden Street and Main Street that collects a large portion of residential and commercial neighborhoods to the north on Main Street. The collection system eventually discharges into a culvert that directs the Stevens Brook under Main Street. Refer to Figure 11 in Appendix B for a location of Outfall 16.

In 2012, Watershed Consulting Associates, LCC sampled and tested the outfall and all the major water quality parameters exceeded the threshold limit. Catch basins to the north (CBA, CBB and CBC) along Main Street were inspected and found to have a trickle of flow but high concentrations of ammonia. Catch basin 16.CBC was dry and eliminated as a source. It was recommended the bracket sampling be conducted up stream of Outfall 16.

On October 30, 2013, Aldrich and Elliott with the assistance of the City of St. Albans Public Works Department staff conducted confined space entry of the stormwater manholes at the intersection of Main Street and Upper Welden, Fairfield and Bank Street. Nathan Pion of Aldrich + Elliott, performed the confined space entry and sampling of each stormwater manhole, while the Public Works Department performed the safety and air quality testing for the confined space entry. At all three (3) locations, the water was surcharged in the sumps and could not be isolated during sampling, with the exception of Bank and Main Street. At these locations, a sample of the sump was collected. The water quality results are summarized in Table 12 and also in Appendix D.

Table 12. 2013 Water analysis data for Outfall 16 drainage system

System	Sp. conductance (µs/cm)	Total chlorine (mg/L)	E. Coli (CFN/mL)	Fluoride (mg/L)	Ammonia (mg/L)	Phosphorus (mg/L)	Potassium (mg/L)	MBAS	Observations
Bank	1,880	0	3	<0.10	0.1	0.03	4.9	<20	
Main/Bank	1,540	0	>2,400	<0.10	0.18	0.04	14	<20	Submerged
Fairfield	2,470	0	>2400	<0.10	0.16	0.05	8.6	<20	Submerged
Up Welden	2,580	0	225	<0.10	0.19	0.04	8.8	<20	Submerged

Based on lab results, Bank Street does not appear to be a source of contamination as all water quality results were below the threshold limit. At the remaining locations, E.Coli, Ammonia and Potassium all surpassed the threshold limit.

Table 13. 2014 Water analysis data for Outfall 16 drainage system

System	E. Coli (CFN/mL)	Fluoride (mg/L)	Ammonia (mg/L)	Phosphorus (mg/L)	Potassium (mg/L)	MBAS	Observations
Congress/Main	2	0.10	0.32	<0.01	9.7	<10	
Main	870	<0.10	0.75	0.21	26	19.6	
Bank	150	<0.10	0.37	0.32	11	37.0	
Maiden	3	<0.10	0.30	0.33	8.2	65.3	

In 2014, follow up bracket sampling was conducted up stream of the manhole located at the intersection of Main and Bank Street. Nathan Pion of Aldrich + Elliott performed the confined space entry with the assistance of the City Public Works Department on July 23, 2014. A high level of E. Coli was found in the stormwater line north of Main and Congress Street. Water quality results for the 2014 sampling are provided in Table 13.

Based on discussions with the City, they stated confirmation of the existence of a cross tie between the sewer and stormwater line in a catch basin located at the intersection of North Main and Hudson Street. This cross tie was discovered during investigations for the Streetscape project by the City. When the sewerline surcharged it would overflow into the catch basin and into the stormwater line. The City intends to disconnect the sewerline from the catch basin in the late summer/early fall of 2014.

Once the sewerline is disconnected from the catch basin, no further investigation is recommended.

Outfall 15 (Upper Welden/Main Street)

Outfall 15 located at the intersection of Upper Welden Street and Main Street was investigated in 2012 by Watershed Consulting due to suspicion of an intermittent illicit discharge for ammonia and potassium. Refer to Figure 12 in Appendix B for a location of Outfall 15. Based on findings and observations done in 2012, the discharge was determined to be from ground water infiltration from a non-point source using fertilizer within the drainage area. **Due to these findings and conclusions, no further investigation was conducted by Aldrich + Elliott in 2013.**

Outfall 11 (Barlow Street)

Outfall 11 is a 10" PVC pipe that discharges in to the bank of the Stevens Brook along Barlow Street. Refer to Figure 13 in Appendix B for a location of Outfall 11.

In 2012, Watersheds Consulting Associates, LLC conducted investigations showing elevated concentrations of ammonia (0.25 mg/L), detergents (0.6 ppm), and E. Coli (200 MPN/100 mL). On August 8, 2012, Drummac televised the pipe and found that it went 10' and dead ended in the side of the bank. The conclusion was that the contamination was from fertilizer used on the lawns or a potential septic leak.

Aldrich and Elliott performed similar water quality testing in 2013. Samples resulted in a high concentration of E. Coli (610 MP/100 mL), conductivity (2,230 μ S/cm) and ammonia (0.11 mg/L). From discussions with the City of St. Albans, they also informed A+E that the City had tried to camera the line but the camera will only go a few feet before getting stuck or reaching the assumed end of the pipe.

In 2014, Aldrich + Elliott conducted follow up investigation with the City Public Works to determine the source of the discharges. During the investigation, an odor of chlorine was noted during investigations in the Stevens Brook. A chlorine sample was taken on Outfall 13 from which the chlorine odor was apparent and confirmed that the \sim 10 gpm flow from the outfall had a chlorine concentration of approximately \sim 0.3 mg/L. The City Public Works Department was notified of the water leak present on Barlow Street to the north of the Stevens Brook.

Further investigation into Outfall 11 proved inconclusive. A+E and the City confirmed that the sewerline to the south of Stevens Brook flows into a manhole located below Outfall 11. Based on in field investigations, there is no accessible entry into the sewerline upstream of this manhole for the few homes served on Barlow Street. A+E and the City approached the home owners at 29 Barlow Street, which is a duplex, but the home owners were not home during the investigation and access could not be gained to dye test the apartment building.

No further conclusions were drawn that altered those 2012. All investigations performed by A+E were inconclusive and no further investigation was performed under this study.

Trunkline Investigation

The stormwater trunkline is the old, abandoned wastewater line that extends from the City of St. Albans WWTF to the south near the Briarwood Trailer Park located on Nason Street. The trunkline crosses the Steven's Brook at multiple locations creating numerous points of potential illicit discharges. Refer to Figure 14 in Appendix B for a location of the storm manholes and catch basins investigated along the trunkline.

Watershed Consulting Associates, LLC conducted an extensive investigation of the trunkline in 2012. Conclusions from Watershed Consulting Associates, LLC investigation was that there is most likely a diluted wastewater leak entering the trunk line somewhere between T-6 and the last manhole in the trunkline, T-8. Follow up in 2013 by Aldrich and Elliott focused on addressing the recommended next steps:

- Conduct a camera or smoke investigation from TL-6 up the trunk line to better identify sources of cross contamination.
 - Smoke testing was not performed as the trunkline has catch basins directly connected.
- Clean catch basin TL-7 and verify connect to the trunk line. Conduct follow up sampling from the basin to detect if ammonia levels are elevated.

Aldrich and Elliott, with the support of the City of St. Albans Public Works Department staff, worked to schedule and conduct the cleaning and televising of the trunkline. As the trunkline is large and filled with a significant amount of debris, the City did not feel that their vector truck and camera were best

suited for the job. A+E contacted Hartigan of Middlesex, VT to perform the cleaning and televising of the trunkline. The City paid for this cleaning out of the Wastewater Department budget. Beginning on November 20 thru the 21st, Hartigan cleaned the trunkline by jetting the line and vactoring out any accumulated debris and sediment between the Briarwood Trailer Park and Lower Welden Street (TL-6). The City of St. Albans provided Hartigan with on-site water and disposal, and assisted in observing the cleaning and vactoring in the field. The picture below shows the Hartigan vactor truck on-site cleaning the trunkline at manhole TL-8.



On November 25, 2013, Hartigan televised the trunkline with the assistance of the City. Video logs of the camera inspection and a report by Hartigan can be found in Appendix G. Hartigan approached the trunkline from three (3) different directions. The first began in back of SB Collins near the old CVPS cooling ponds. Hartigan began televising upstream of TL-8 towards the Briarwoods Trailer Park. The camera inspection went a total distance of 140' before it encountered an underground

structure which it could not navigate through and the structure is not accessible without excavation. Prior to the obstruction, the camera investigation found a couple of fractures and pieces of broken pipe within the 15" vitrified clay pipe. No wyes or junctions were found prior to the underground structure. Hartigan attempted to inspect downstream of TL-8 toward Lower Welden Street. The camera inspection made it approximately 10' prior to encountering another similar buried underground structure which the camera could not navigate through. At the underground structure, the 18" vitrified clay pipe transitioned to ductile iron. The camera did pick up an abandoned, partially obstructed vitrified clay pipe to the left (west). Hartigan attempted televising the trunkline from TL-6 upstream toward TL-8. Due to significant sediment and debris the camera was not able to pass through and conduct the investigation.

Catch basin TL-7 was inspected by A+E on October 25, 2013 with the City of St. Albans Public Works Department staff. A significant ammonia odor was observed at the catch basin. The Public Works Department went back with their vactor truck and cleaned the catch basin. On November 20, 2013, catch basin TL-7 was sampled for ammonia after the cleaning and yielded results of 0.39 mg/L. Based on visual observations, there were no inlet pipes protruding through catch basins other than the 8" PVC outlet pipe connecting to the trunkline. This location was previously a cooling station for a CVPS Diesel Plant and is on the Vermont Hazardous Waste Site as Site #20114205. The sites status is closed but reports of the monitoring wells show traces of acetone and naphthalene.

TL- 6 and TL- 7 were resampled for Ammonia in 2014, with results yielding 0.85 mg/L and 4.3 mg/L respectively.

Based on observation and conclusions provided by Water Consulting Associates, LLC in 2012 and investigation provided by A+E, the source of the ammonia may be due to ground water infiltration into the stormlines as evidence by excessive iron deposits and oxidation found within the trunkline. The other reason to speculate that groundwater infiltration is the source is due to the fact that TL-7 (catch basin) continues to have high concentrations of ammonia. TL-7 has no inlet pipe and is located in a grass swale. It can be concluded that overland flow is not the contributing factor to the catch basin as concentrations would be lower after passing through the surrounding grass. It is recommended that TL-7 be referred to the Vermont DEC Site Management Division for further investigation.

APPENDIX B

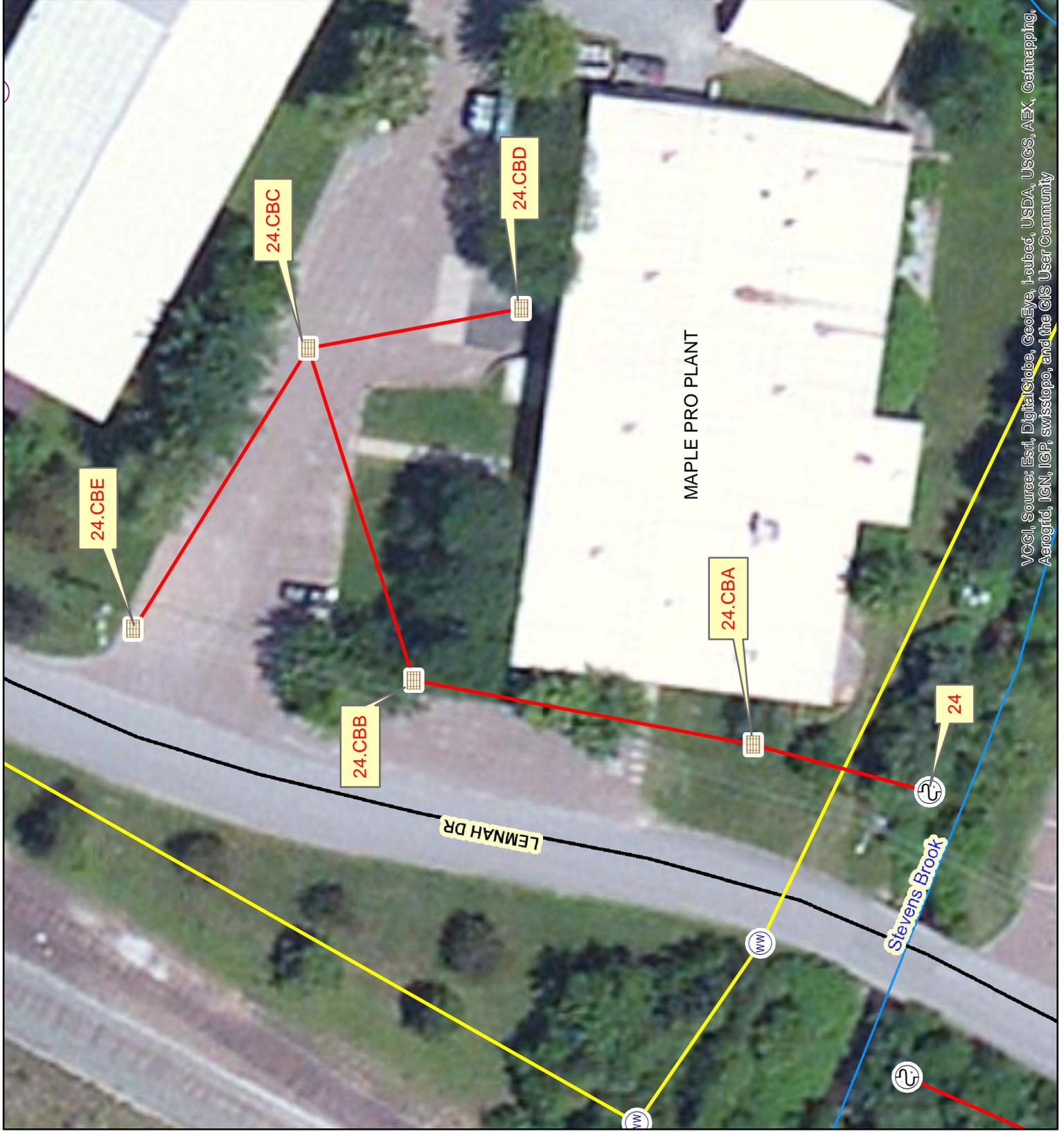
TOWN AND CITY OF ST. ALBANS

IDDE FIGURES



INFRASTRUCTURE LEGEND

-  Catchbasin
-  Outfall
-  Sanitary Manhole
-  Stormwater Manhole
-  Sanitary line
-  Storm line



VCGI, Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerotid, IGN, IGP, swisstopo, and the GIS User Community

**CITY OF ST. ALBANS
OUTFALL 24**

**ADVANCED IDDE
INVESTIGATIONS IN THE
MISSISSQUOI BASIN, VT**



0 15 30 60 Feet

INFRASTRUCTURE LEGEND

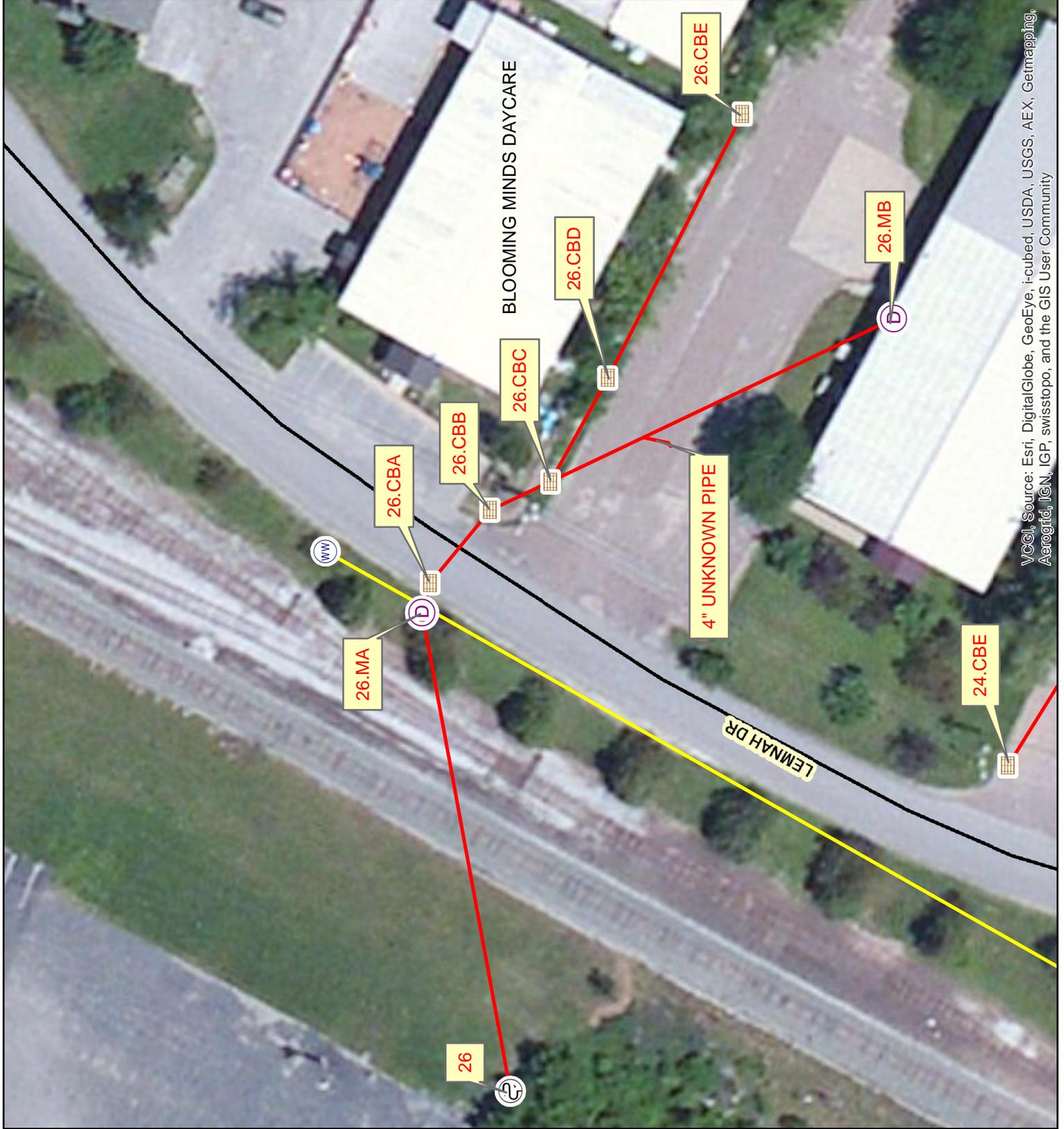
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	Outfall
	Sanitary Manhole
	Stormwater Manhole
	Sanitary line
	Storm line

**CITY OF ST. ALBANS
OUTFALL 26**

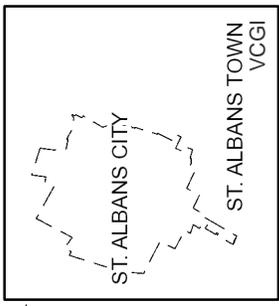
**ADVANCED IDDE
INVESTIGATIONS IN THE
MISSISQUOI BASIN, VT**



FIGURE
6

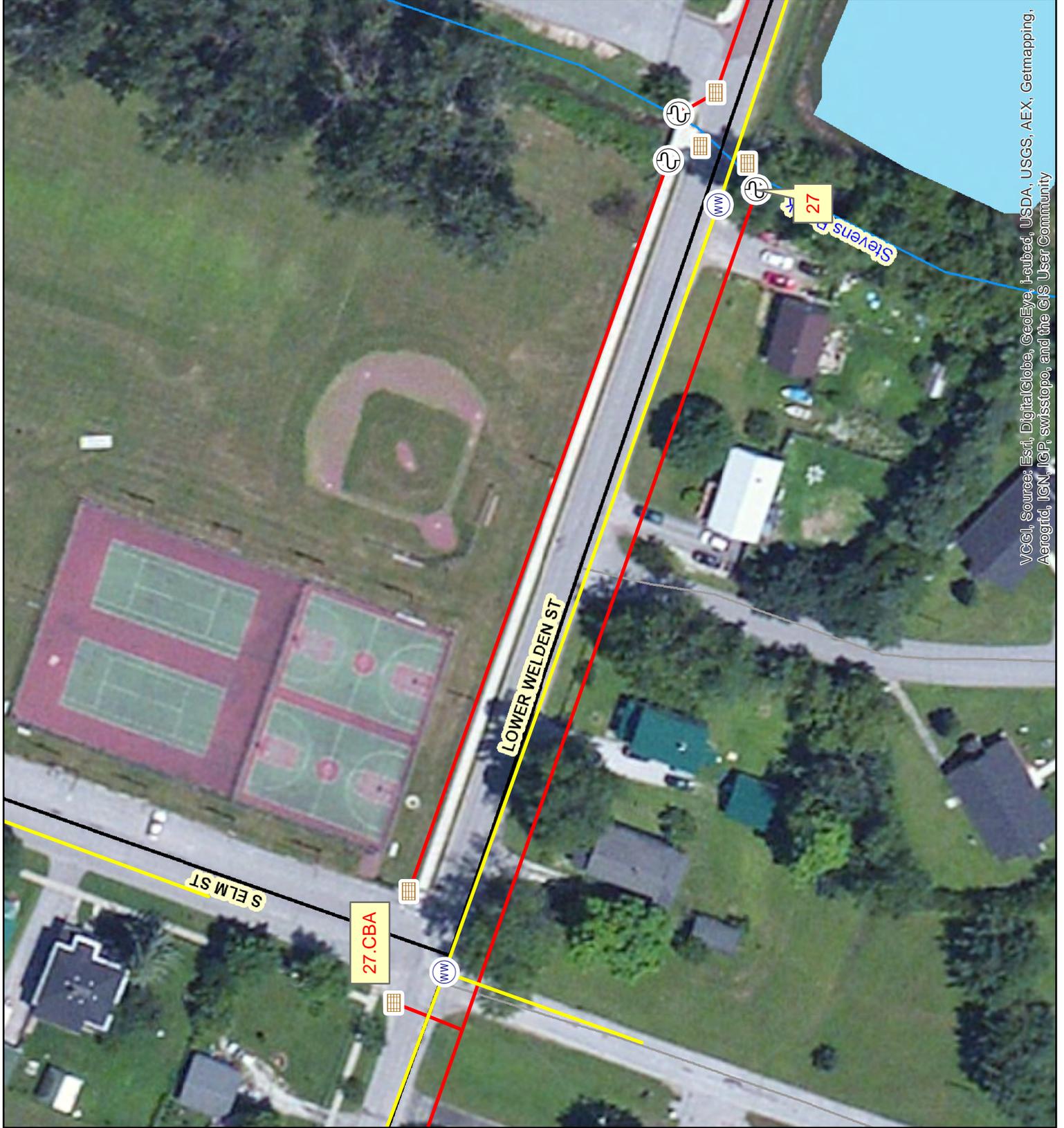


VCGI, Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



INFRASTRUCTURE LEGEND

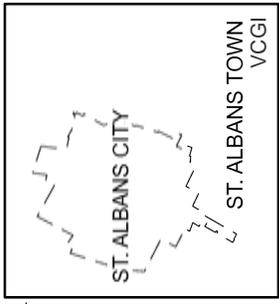
-  Catchbasin
-  Outfall
-  Sanitary Manhole
-  Stormwater Manhole
-  Sanitary line
-  Storm line



VCGI, Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIs User Community

**CITY OF ST. ALBANS
OUTFALL 27**

**ADVANCED IDDE
INVESTIGATIONS IN THE
MISSISQUOI BASIN, VT**



INFRASTRUCTURE LEGEND

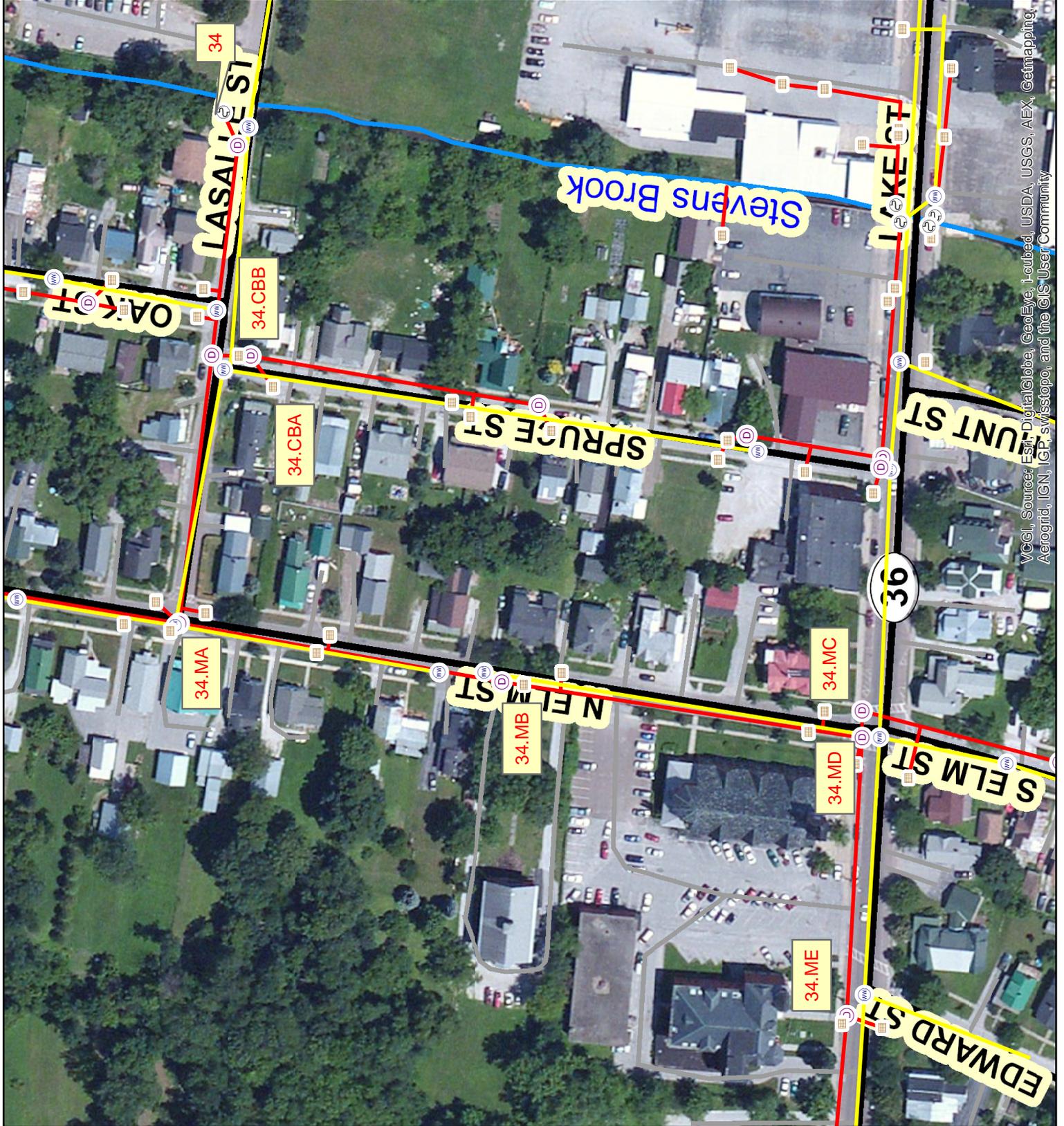
	Catchbasin
	Outfall
	Sanitary Manhole
	Stormwater Manhole
	Sanitary line
	Storm line

**CITY OF ST. ALBANS
OUTFALL 34**

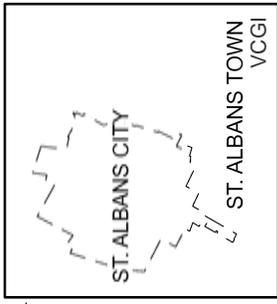
**ADVANCED IDDE
INVESTIGATIONS IN THE
MISSISQUOI BASIN, VT**

AE
Aldrich + Elliott
WATER RESOURCE ENGINEERS

FIGURE 8



VCGI, Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



0 95 190 380 Feet

INFRASTRUCTURE LEGEND

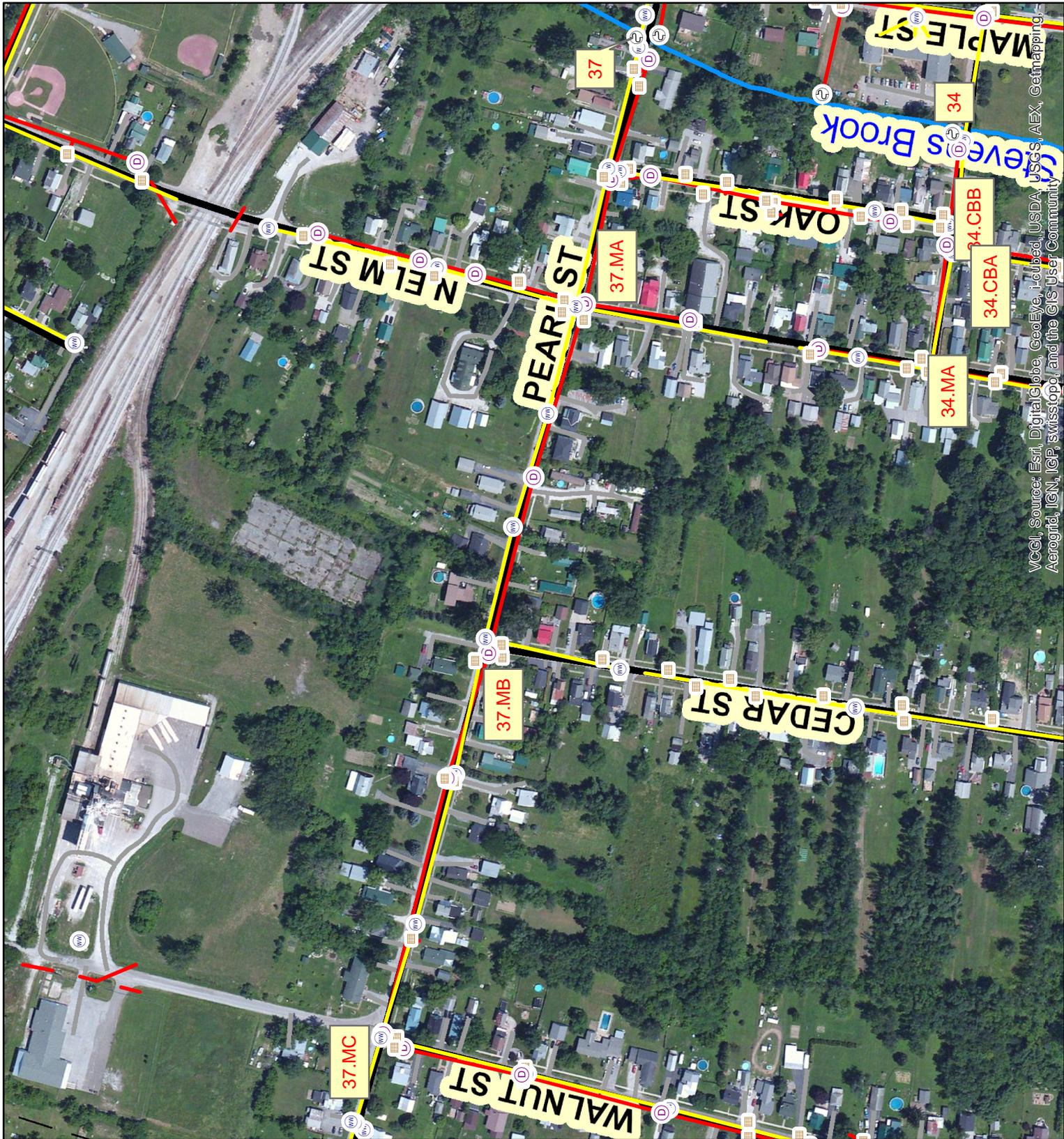
	Catchbasin
	Outfall
	Sanitary Manhole
	Stormwater Manhole
	Sanitary line
	Storm line

**CITY OF ST. ALBANS
OUTFALL 37**

**ADVANCED IDDE
INVESTIGATIONS IN THE
MISSISSQUOI BASIN, VT**

AE
Aldrich + Elliott
WATER, TERRACE, URBANITE

FIGURE 9



VCGI, Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

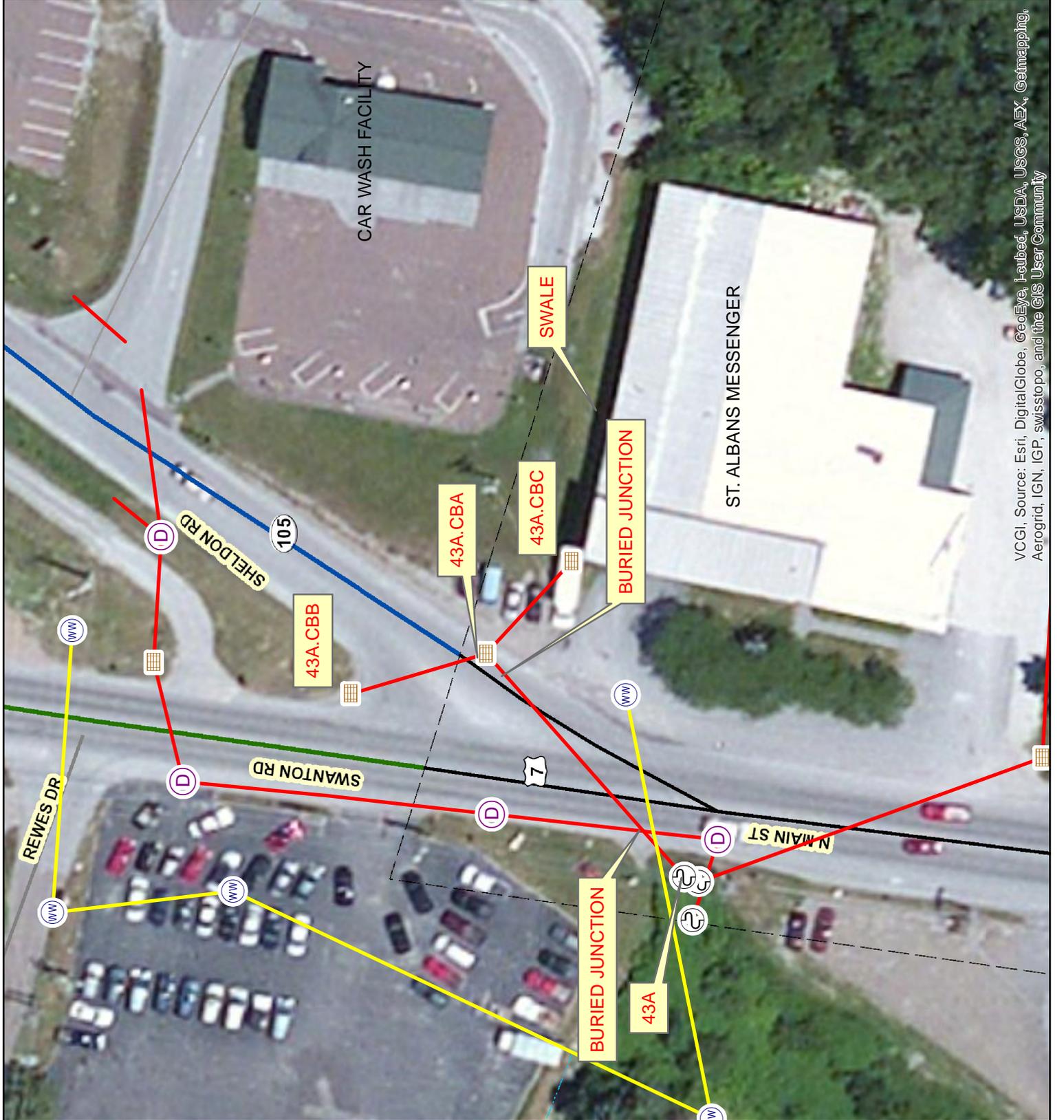


INFRASTRUCTURE LEGEND

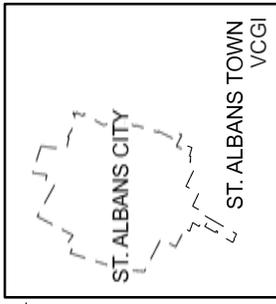
	Catchbasin
	Outfall
	Sanitary Manhole
	Stormwater Manhole
	Sanitary line
	Storm line

**CITY OF ST. ALBANS
OUTFALL 43A**

**ADVANCED IDDE
INVESTIGATIONS IN THE
MISSISSQUOI BASIN, VT**



VCGI, Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



INFRASTRUCTURE LEGEND

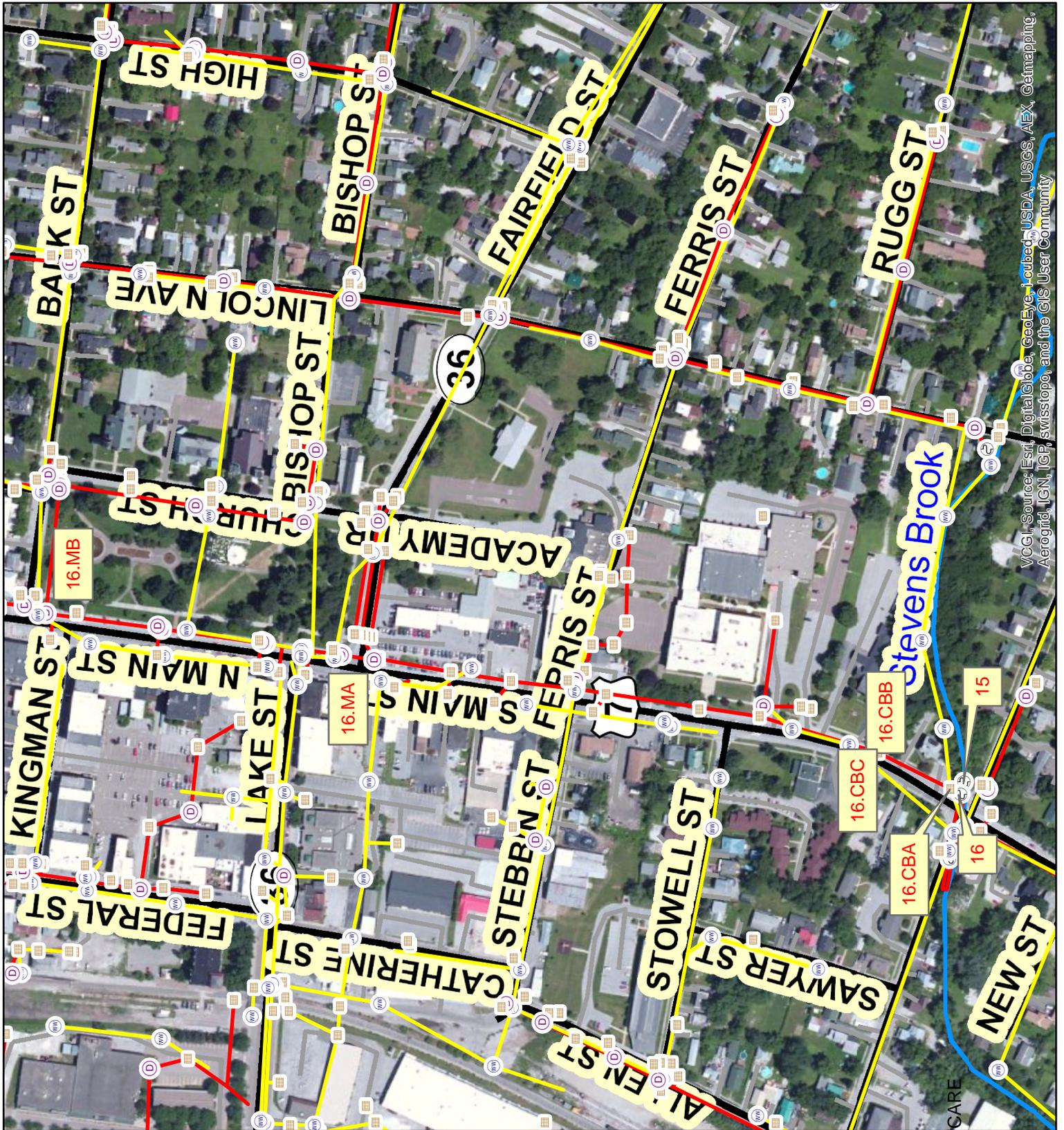
	Catchbasin
	Outfall
	Sanitary Manhole
	Stormwater Manhole
	Sanitary line
	Storm line

**CITY OF ST. ALBANS
OUTFALL 16**

**ADVANCED IDDE
INVESTIGATIONS IN THE
MISSISSQUOI BASIN, VT**

AE
Aldrich + Elliott
WATER RESOURCE ENGINEERS

FIGURE
11



VCGI, Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

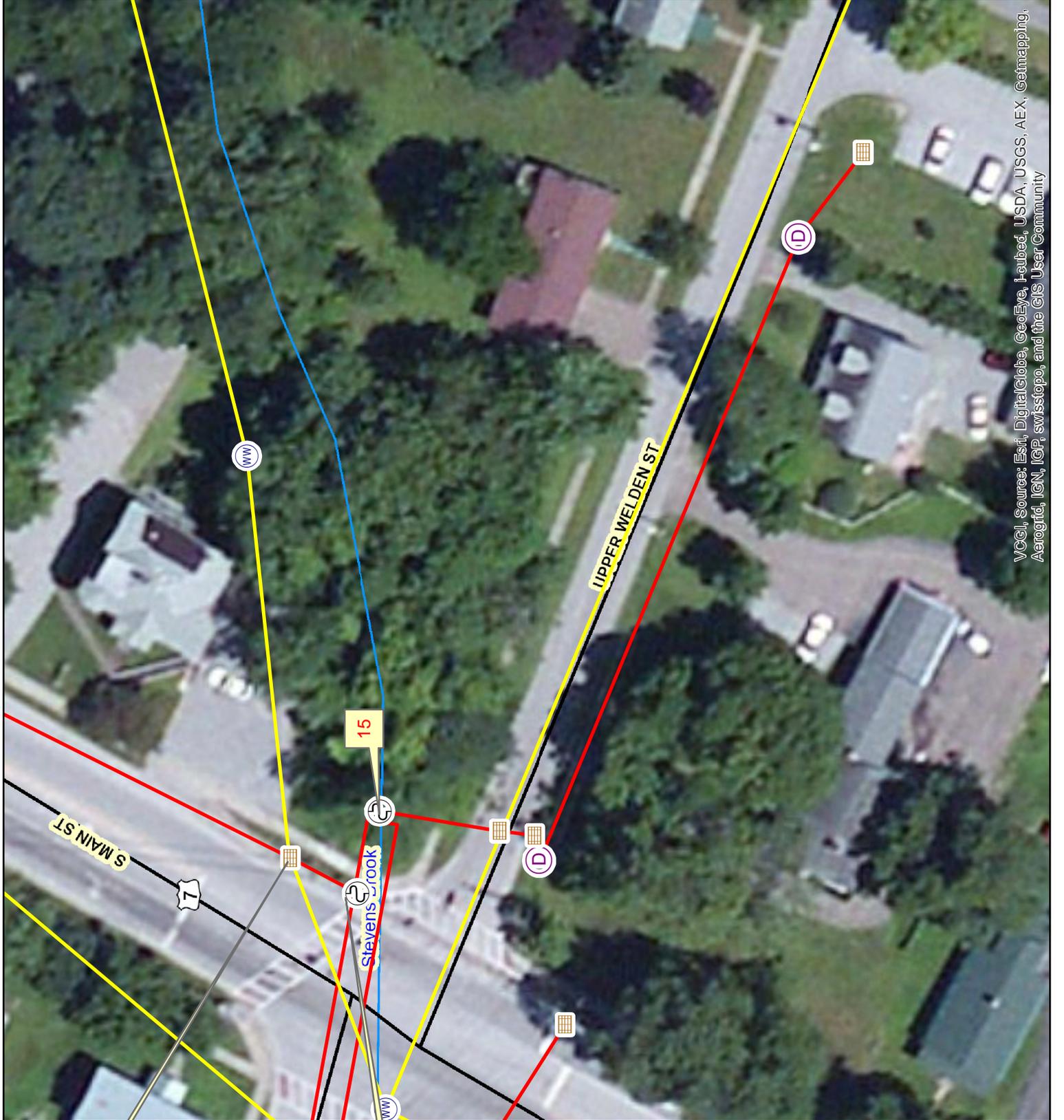


INFRASTRUCTURE LEGEND

	Catchbasin
	Outfall
	Sanitary Manhole
	Stormwater Manhole
	Sanitary line
	Storm line

**CITY OF ST. ALBANS
OUTFALL 15**

**ADVANCED IDDE
INVESTIGATIONS IN THE
MISSISSQUOI BASIN, VT**



VCGI, Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

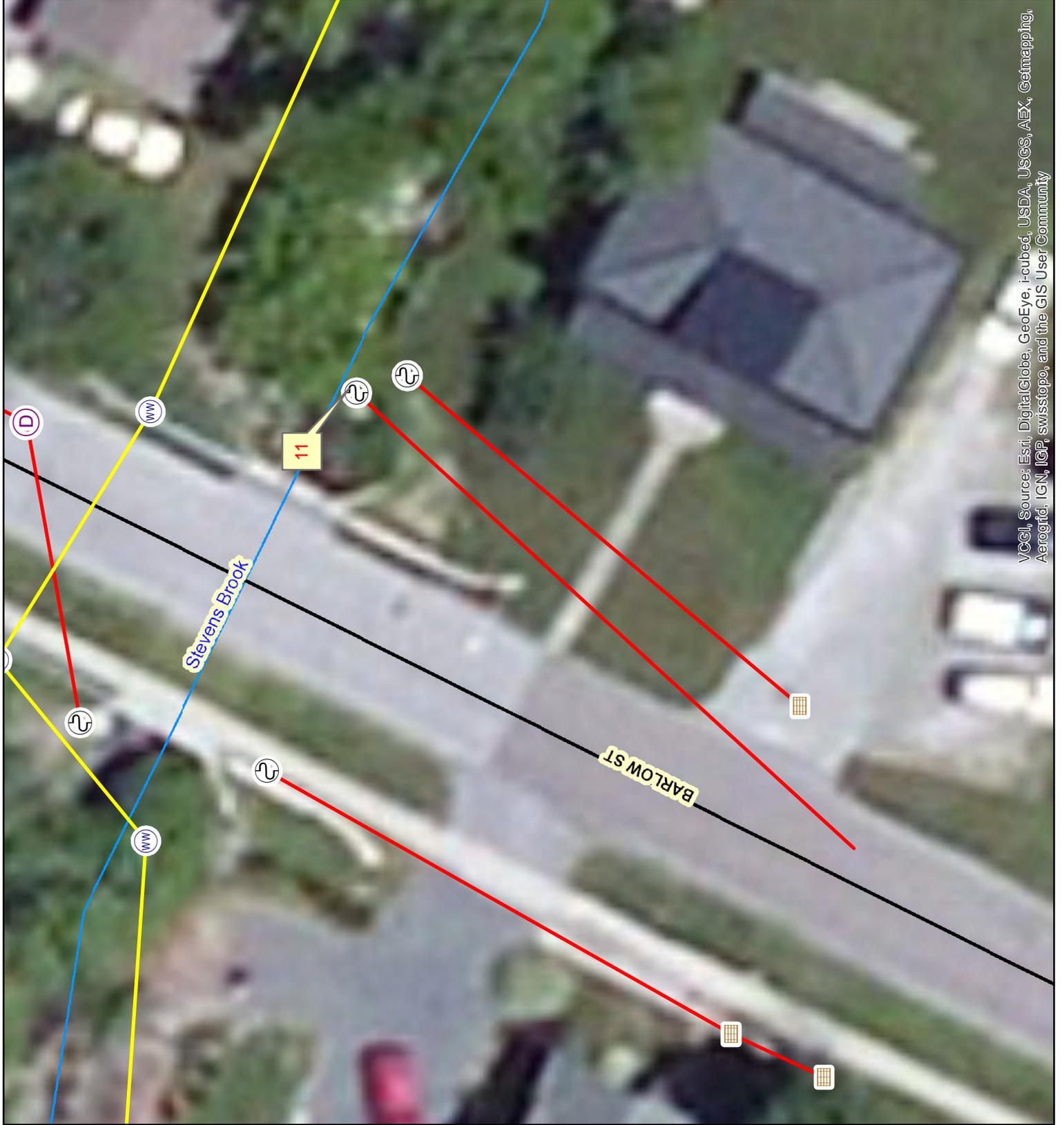


INFRASTRUCTURE LEGEND

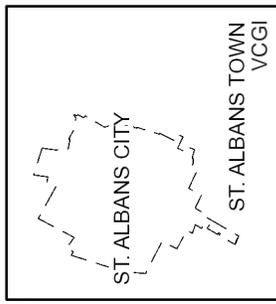
	Catchbasin
	Outfall
	Sanitary Manhole
	Stormwater Manhole
	Sanitary line
	Storm line

**CITY OF ST. ALBANS
OUTFALL 11**

**ADVANCED IDDE
INVESTIGATIONS IN THE
MISSISQUOI BASIN, VT**



VCGL, Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

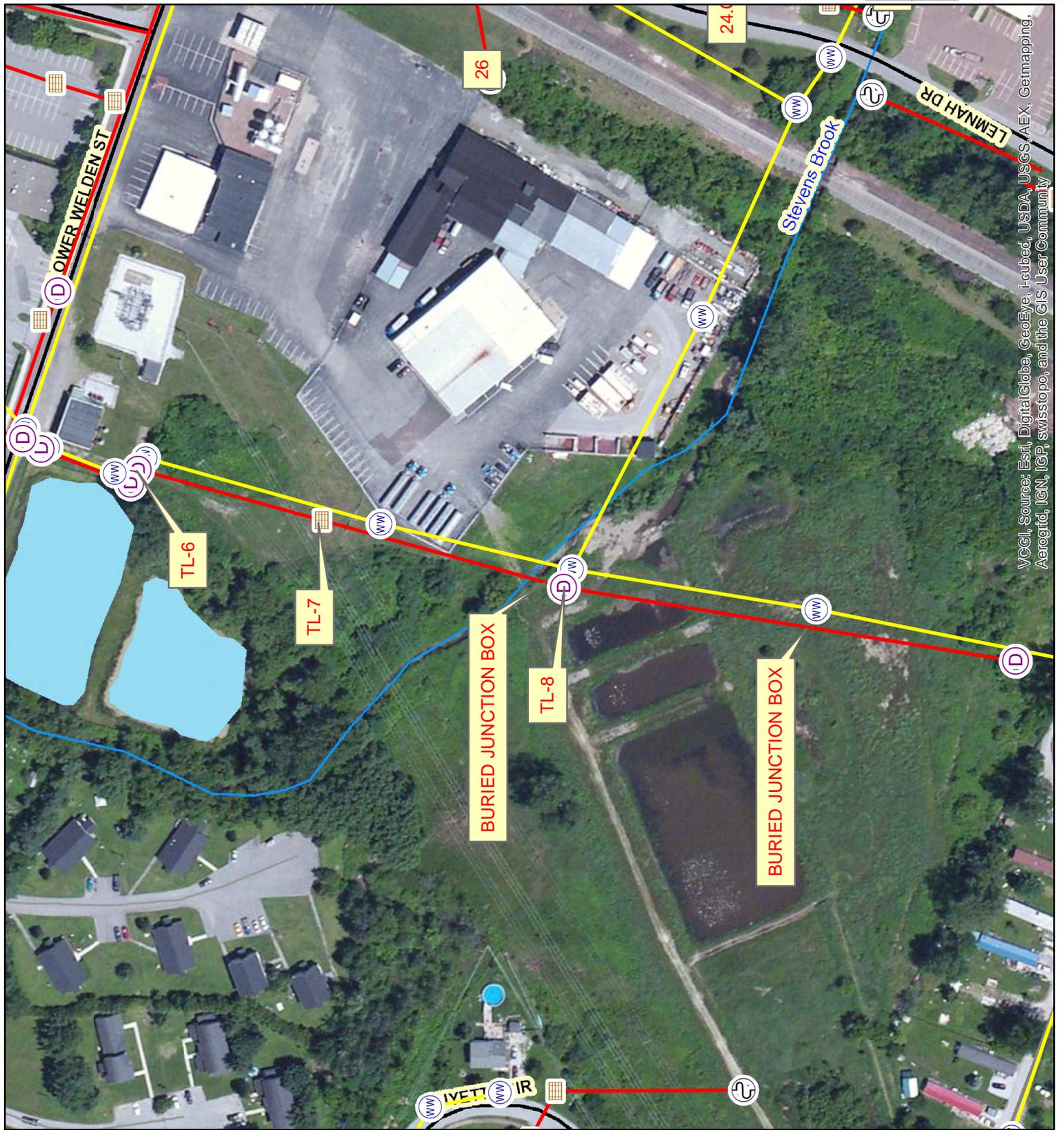


INFRASTRUCTURE LEGEND

	Catchbasin
	Outfall
	Sanitary Manhole
	Stormwater Manhole
	Sanitary line
	Storm line

**CITY OF ST. ALBANS
TRUNKLINE**

**ADVANCED IDDE
INVESTIGATIONS IN THE
MISSISQUOI BASIN, VT**



VCGI, Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

APPENDIX C
IDDE SAMPLE FIELD DATA FORM

IDDE Field Data Form



IDDE ID:		DEC ID Cross Ref.:			
Date:	Time:	Inspector:			
Structure type:		Inner diameter (outfall only) _____ in.			
Material (outfall only):	Corrugated Metal	Concrete	Corrugated HDPE	Smooth Lined HDPE	Other (describe):
Flow depth (outfall only):	Dry	Wet (no flow)	Dripping	Flowing	Depth _____ in.
Pipe position (outfall only):	Free flow	Partially Submerged	Submerged	If partially submerged, surcharged? YES NO	
Erosion at outfall	None	If present, describe:			
Discharge characteristics (observations on Color, Turbidity, and Odor of flow):					
Flotables:	None	Sheen	Sewage	Suds	Other:
Deposits or staining:	None	Sediment	Oily	Iron Staining	Other:
Damage to structure:	None	Cracking, Spauling	Corrosion	Crushed	Other:
Obstructions:	None	Partially Obstructed	Fully Obstructed	Other:	
OB pad set?	YES NO	Date OB pad retrieved:			
Temp.	°C	Specific Conductance	µS/cm	Total Chlorine	mg/l
Sample Collected for <i>E. Coli</i> analysis: YES NO NA			Time:		
Sample Collected for N analysis: YES NO NA			Time:		
Comments:					

(Modified from field form in DEC IDDE Reports)

APPENDIX D
ST. ALBANS IDDE DATA SUMMARY

MISSISQUOI BASIN IDDE STUDY

CITY OF ST. ALBANS

PROJECT NO. 13035

DATE: 7/23/14/13

Location	Outfall ID	Date	Material	Diameter (inches)	Flow Depth	Flow (gpm)	Deposits/Staining	Temp. (Celsius)	Conductivity (uS/cm)	Chlorine (mg/l)	OB pad	E. Coli (MPN/100ml)	Fluoride (mg/L)	Ammonia (mg/L)	Phosphorus (mg/L)	Potassium (mg/L)	MBAS (ug/L)	Notes
	24	10/24/2013	CMP		1		Sheen/Sediment	13.49	3,150	0				2.1				
		7/23/2014	CMP											1.4				
	11	10/24/2013	PVC		1	1.5	None	14.14	2,230	0		610		0.11			<20	
		10/30/2013										435						
	37	10/24/2013	Concrete				None	7.98	940	0		43	0.12	0.07	0.019	5.7	<20	
	16	10/24/2013	Concrete		3	6	None	8.47	6,620	0		>2400	0.11	0.13	0.04	13	27.7	
Pearl/North Elm		10/30/2013	Concrete		Submerged	N/A	None	14.3	1,000	0		>2400	0.1	0.11	0.09	4.5	<20	
Pearl/Walnut		10/30/2013	Concrete	No Measureable Flow			None					---	---	---	---	---	---	Not enough flow to sample.
Pearl/Cedar		10/30/2013	Concrete	No Measureable Flow			None					---	---	---	---	---	---	Not enough flow to sample.
Main/Up Welden		10/30/2013	Concrete		Flowing		None	12.1	2,580	0		225	<0.10	0.19	0.04	8.8	<20	
Main/Fairfield		10/30/2013	Concrete		Flowing		None	12.6	2,470	0		>2400	<0.10	0.16	0.05	8.6	<20	
Main/Bank	Main	10/30/2013	Concrete	30	Flowing	1	None	12.8	1,540	0		>2400	<0.10	0.18	0.04	14	<20	
	Bank	10/30/2013	Concrete	18	Flowing	N/A	None	13	1,880	0		3	<0.10	0.1	0.03	4.9	<20	
Congress/Main		7/23/2014										2	0.1	0.32	<0.01	9.7	<10.0	
Main		7/23/2014										870	<0.10	0.75	0.21	26	19.6	
Bank		7/23/2014										150	<0.10	0.37	0.32	11	37	
Maiden		7/23/2014										3	<0.10	0.3	0.33	8.2	65.3	
Trunkline	TL-6	7/23/2014												0.85				
Trunkline	TL-7	11/20/2013	Concrete											0.39				Catch basin sump sampled for ammonia after cleaning.
		7/23/2014												4.3				
Rewes Dr.	43A	11/20/2013	Ditch									109						

NOTES:

1. N/A is for not accessible outfalls.
2. --- is for no data collected.
3. Potential contaminants were identified from the ANR Environmental Interest Locator.
4. Conductivity Threshold = 1500 us
5. E. Coli Threshold = 77CFU/100 mL
6. Fluoride Threshold = 0.25 mg/L
7. Phosphorus Threshold = 0.10 mg/L
8. Potassium Threshold = 5 ppm (5 gm/100 mL)
9. MBAS Threshold = 0.25 mg/L

APPENDIX F
CITY OF ST. ALBANS TV CAMERA LOGS

Refer to electronic files for video logs

APPENDIX G

HARTIGAN TRUNKLINE TV CAMERA LOGS
AND REPORT



Hartigan Company
31 Welch Park Dr.
Middlesex VT 05602
800-696-0761

Project Summary

US MH	DS MH	Pipe ID	Date	Street	Material	Size	Total	Insp

Pipe Size: 18

Total Ln.: 0

Inspected Ln.: 0

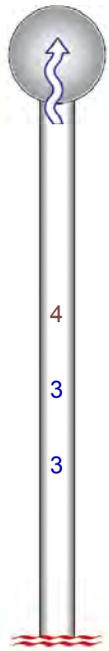
Project Total Ln.: 0.0

Project Inspected Ln.: 0.0



Defect Listing Plot Left

Customer City of St. Albans	City city of st. albans	Street Easement from Cubb ...	Date 20131125	Surveyed B... MLM	Sewer Use Stormwater
Upstream MH Behind SB Collins	DS Manhole Lower Welden St.	Material Vitrified Clay Pipe	Shape Circular	Length surveyed 38.2	
Pre-Cleaning Heavy Cleaning	Date Cleaned	Direction Upstream	Height 18	Width 18	Pipe Joint... 2
SPR N/A	MPR 10	PO Number			
SPRI N/A	MPRI 3.3	Work Order		Purpose	
QSR N/A	QMR 4132			Routine Assessment	
OPR 10	Media label				
OPRI 3.3	Certificate Number U-1106-3842	Pipe Segment Refere...	Location Code Easement/Right of W...	Weather Dry	
Location Details			Additional Info		



Lower Welden St.

Code:	Continuous:	Pos:	Val 1 / 2 :	% :	Gallons:
0.0 ft. Access Point Manhole Lower Welden St.					
0.0 ft. Water Level Used Vector to lower Flow at MH Lower Welden St.				10	
8.6 ft. Water Mark				50	
31.1 ft. Deposits Settled Fine		5 - 7		15	
38.1 ft. Deposits Settled Fine		5 - 7		20	
38.2 ft. Survey Abandoned Due to Heavy Sand In Line Needs Further Cleaning.					

Image Report 4/Page

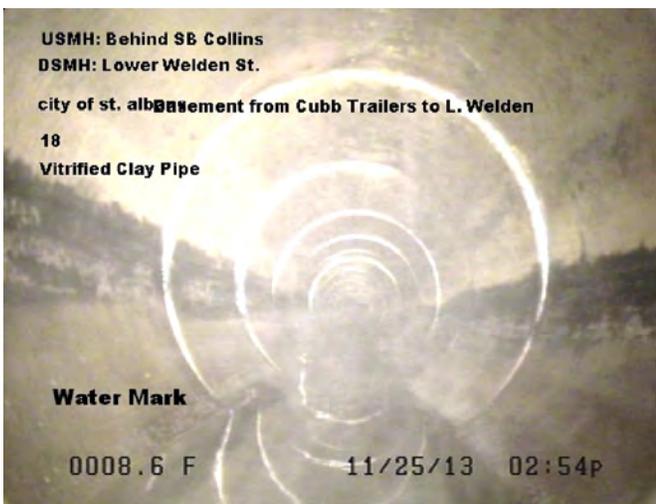
Customer City of St. Albans	City city of st. albans	Street Easement from Cubb ...	Date 20131125	Surveyed B... MLM	Sewer Use Stormwater
Upstream MH Behind SB Collins	DS Manhole Lower Welden St.	Material Vitrified Clay Pipe	Shape Circular	Length surveyed 38.2	
Pre-Cleaning Heavy Cleaning	Date Cleaned	Direction Upstream	Height 18	Width 18	Pipe Joint... 2



Distance: 0.0 ft. Grade: 0
 Condition: Access Point Manhole
 Remarks: Lower Welden St.



Distance: 0.0 ft. Grade: 0
 Condition: Water Level
 Remarks: Used Vector to lower Flow at MH Lower Welden St.



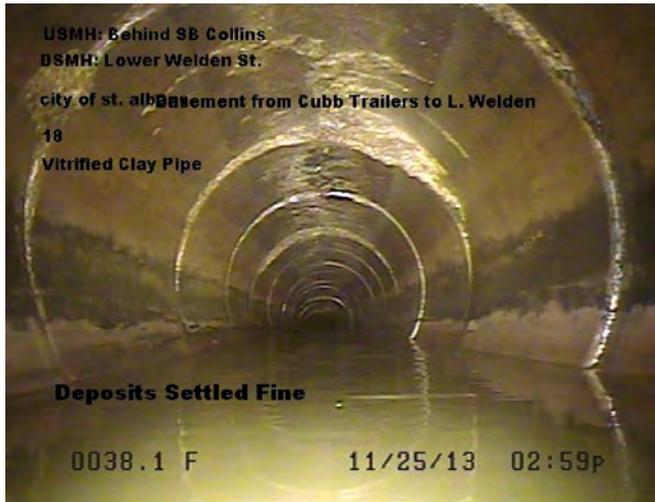
Distance: 8.6 ft. Grade: 4
 Condition: Water Mark
 Remarks: N/A



Distance: 31.1 ft. Grade: 3
 Condition: Deposits Settled Fine
 Remarks: N/A

Image Report 4/Page

Customer City of St. Albans	City city of st. albans	Street Easement from Cubb ...	Date 20131125	Surveyed B... MLM	Sewer Use Stormwater
Upstream MH Behind SB Collins	DS Manhole Lower Welden St.	Material Vitrified Clay Pipe	Shape Circular	Length surveyed 38.2	
Pre-Cleaning Heavy Cleaning	Date Cleaned	Direction Upstream	Height 18	Width 18	Pipe Joint... 2



Distance: 38.1 ft. Grade: 3
 Condition: Deposits Settled Fine
 Remarks: N/A



Distance: 38.2 ft. Grade: 0
 Condition: Survey Abandoned
 Remarks: Due to Heavy Sand In Line Needs Further Cleaning.



Hartigan Company
31 Welch Park Dr.
Middlesex VT 05602
800-696-0761

Project Summary

US MH	DS MH	Pipe ID	Date	Street	Material	Size	Total	Insp

Pipe Size: 18

Total Ln.: 0

Inspected Ln.: 0

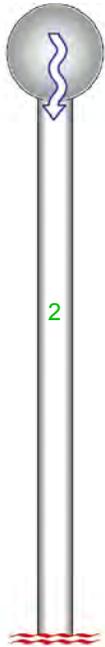
Project Total Ln.: 0.0

Project Inspected Ln.: 0.0



Defect Listing Plot Left

Customer City Of St. Albans	City city of st. albans	Street Easement from Cubb ...	Date 20131125	Surveyed B... MLM	Sewer Use Stormwater
Upstream MH Behind SB Collins	DS Manhole Welden St.	Material Vitrified Clay Pipe	Shape Circular	Length surveyed 9.4	
Pre-Cleaning Heavy Cleaning	Date Cleaned 20131125	Direction Downstream	Height 18	Width 18	Pipe Joint... 2
SPR 2	MPR N/A	PO Number			
SPRI 2	MPRI N/A	Work Order		Purpose	
QSR 2100	QMR N/A			Routine Assessment	
OPR 2	Media label				
OPRI 2	Certificate Number U-1106-3842	Pipe Segment Refere...	Location Code Easement/Right of W...	Weather Dry	
Location Details			Additional Info		



Behind SB Collins

Code:	Continuous:	Pos:	Val 1 / 2 :	% :	Gallons:
0.0 ft. Access Point Manhole Behind SB Collins					
0.0 ft. Water Level				15	
4.0 ft. Fracture Circumferential		11 - 2			
9.4 ft. General Observation Partially abandoned VCP line left side of structure.					
9.4 ft. Material Change Pipe Transitions to Cast Iron within Buried Structure					
9.4 ft. Survey Abandoned Due to bend in Buried Structure					

Image Report 4/Page

Customer City Of St. Albans	City city of st. albans	Street Easement from Cubb ...	Date 20131125	Surveyed B... MLM	Sewer Use Stormwater
Upstream MH Behind SB Collins	DS Manhole Welden St.	Material Vitrified Clay Pipe	Shape Circular	Length surveyed 9.4	
Pre-Cleaning Heavy Cleaning	Date Cleaned 20131125	Direction Downstream	Height 18	Width 18	Pipe Joint... 2



Distance: 0.0 ft. Grade: 0
 Condition: Access Point Manhole
 Remarks: Behind SB Collins



Distance: 0.0 ft. Grade: 0
 Condition: Water Level
 Remarks: N/A



Distance: 4.0 ft. Grade: 2
 Condition: Fracture Circumferential
 Remarks: N/A



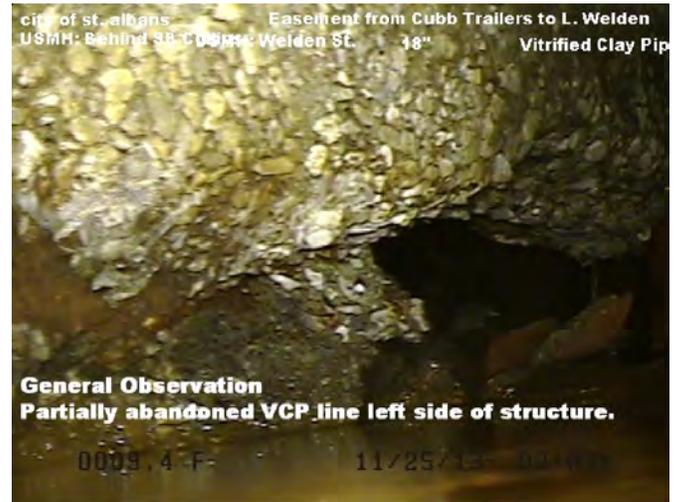
Distance: 4.0 ft. Grade: 2
 Condition: Fracture Circumferential
 Remarks: N/A

Image Report 4/Page

Customer City Of St. Albans	City city of st. albans	Street Easement from Cubb ...	Date 20131125	Surveyed B... MLM	Sewer Use Stormwater
Upstream MH Behind SB Collins	DS Manhole Welden St.	Material Vitrified Clay Pipe	Shape Circular	Length surveyed 9.4	
Pre-Cleaning Heavy Cleaning	Date Cleaned 20131125	Direction Downstream	Height 18	Width 18	Pipe Joint... 2



Distance: 9.4 ft. **Grade:** 0
Condition: General Observation
Remarks: Partially abandoned VCP line left side of structure.



Distance: 9.4 ft. **Grade:** 0
Condition: General Observation
Remarks: Partially abandoned VCP line left side of structure.



Distance: 9.4 ft. **Grade:** 0
Condition: Material Change
Remarks: Pipe Transitions to Cast Iron within Buried Structure



Distance: 9.4 ft. **Grade:** 0
Condition: Survey Abandoned
Remarks: Due to bend in Buried Structure



Hartigan Company
31 Welch Park Dr.
Middlesex VT 05602
800-696-0761

Project Summary

US MH	DS MH	Pipe ID	Date	Street	Material	Size	Total	Insp

Pipe Size: 15

Total Ln.: 0

Inspected Ln.: 0

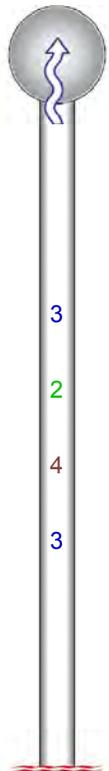
Project Total Ln.: 0.0

Project Inspected Ln.: 0.0



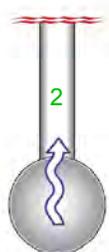
Defect Listing Plot Left

Customer Aldrich & Elliot	City city of st. albans	Street Easement from Cubb ...	Date 20131125	Surveyed B... MLM	Sewer Use Stormwater
Upstream MH Upstream	DS Manhole Behind SB Collins	Material Vitrified Clay Pipe	Shape Circular	Length surveyed 140.1	
Pre-Cleaning Heavy Cleaning	Date Cleaned 20131125	Direction Upstream	Height 15	Width 15	Pipe Joint... 2
SPR 7	MPR 55	PO Number			
SPRI 3.5	MPRI 2	Work Order		Purpose Routine Assessment	
QSR 4131	QMR 312D	Media label			
OPR 62					
OPRI 2.1	Certificate Number U-1106-3842	Pipe Segment Refere...	Location Code Easement/Right of W...	Weather Dry	
Location Details			Additional Info		



Behind SB Collins

Code:	Continuous:	Pos:	Val 1 / 2 :	% :	Gallons:
0.0 ft. Access Point Manhole Behind SB Collins					
0.0 ft. Water Level				5	
0.1 ft. Fracture Longitudinal		9			
10.9 ft. Infiltration Weeper	Start S01	3 - 9			
79.3 ft. Fracture Multiple		12 - 12			
128.1 ft. Obstacle Other Loose Piece of VCP		5 - 7		15	
139.6 ft. General Observation Buried Structure Flat Top of Concrete.					
140.1 ft. Survey Abandoned Due to Buried Structure with pipe material change to DIP					
Uninspected Length: 0 ft.					
140.1 ft. Infiltration Weeper (clock adjusted from 3 - 9 for reverse)	End F01	9 - 3			



Upstream

Image Report 4/Page

Customer Aldrich & Elliot	City city of st. albans	Street Easement from Cubb ...	Date 20131125	Surveyed B... MLM	Sewer Use Stormwater
Upstream MH Upstream	DS Manhole Behind SB Collins	Material Vitrified Clay Pipe	Shape Circular	Length surveyed 140.1	
Pre-Cleaning Heavy Cleaning	Date Cleaned 20131125	Direction Upstream	Height 15	Width 15	Pipe Joint... 2



Distance: 0.0 ft. Grade: 0
 Condition: Access Point Manhole
 Remarks: Behind SB Collins



Distance: 0.0 ft. Grade: 0
 Condition: Water Level
 Remarks: N/A



Distance: 0.1 ft. Grade: 3
 Condition: Fracture Longitudinal
 Remarks: N/A



Distance: 10.9 ft. Grade: 2
 Condition: Infiltration Weeper
 Remarks: N/A

Image Report 4/Page

Customer Aldrich & Elliot	City city of st. albans	Street Easement from Cubb ...	Date 20131125	Surveyed B... MLM	Sewer Use Stormwater
Upstream MH Upstream	DS Manhole Behind SB Collins	Material Vitrified Clay Pipe	Shape Circular	Length surveyed 140.1	
Pre-Cleaning Heavy Cleaning	Date Cleaned 20131125	Direction Upstream	Height 15	Width 15	Pipe Joint... 2



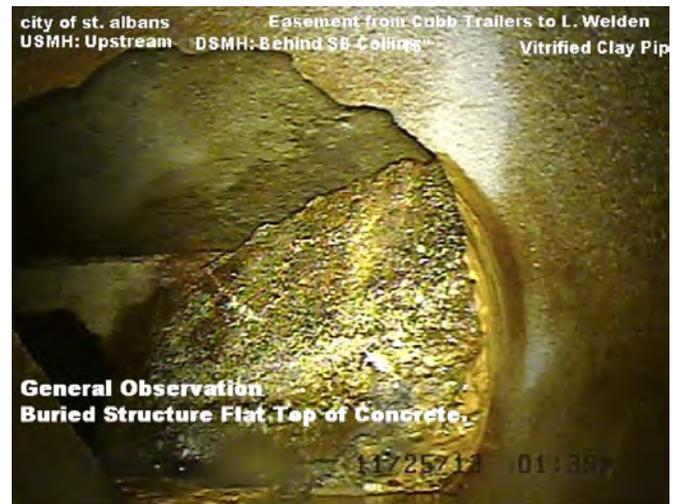
Distance: 10.9 ft. Grade: 2
 Condition: Infiltration Weeper
 Remarks: N/A



Distance: 79.3 ft. Grade: 4
 Condition: Fracture Multiple
 Remarks: N/A



Distance: 128.1 ft. Grade: 3
 Condition: Obstacle Other
 Remarks: Loose Piece of VCP



Distance: 139.6 ft. Grade: 0
 Condition: General Observation
 Remarks: Buried Structure Flat Top of Concrete.

Image Report 4/Page

Customer Aldrich & Elliot	City city of st. albans	Street Easement from Cubb ...	Date 20131125	Surveyed B... MLM	Sewer Use Stormwater
Upstream MH Upstream	DS Manhole Behind SB Collins	Material Vitrified Clay Pipe	Shape Circular	Length surveyed 140.1	
Pre-Cleaning Heavy Cleaning	Date Cleaned 20131125	Direction Upstream	Height 15	Width 15	Pipe Joint... 2



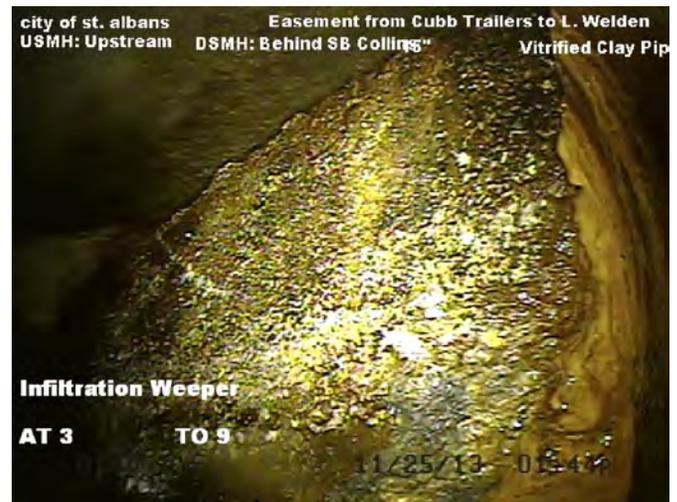
Distance: 139.6 ft. Grade: 0
 Condition: General Observation
 Remarks: Buried Structure Flat Top of Concrete.



Distance: 140.1 ft. Grade: 0
 Condition: Survey Abandoned
 Remarks: Due to Buried Structure with pipe material change to DIP



Distance: 140.1 ft. Grade: 0
 Condition: Survey Abandoned
 Remarks: Due to Buried Structure with pipe material change to DIP



Distance: 140.1 ft. Grade: 2
 Condition: Infiltration Weeper
 Remarks: N/A

Appendix C
Municipal Stormwater Management Rules RFP

**REQUEST FOR PROPOSALS
FOR CONSULTING SERVICES
TO DRAFT MUNICIPAL STORMWATER MANAGEMENT RULES**

CITY AND TOWN OF ST. ALBANS, VERMONT

**PROPOSALS DUE: MARCH 2, 2015
PROJECT COMPLETION: APRIL 28, 2016**

The Town and City of St. Albans, Vermont, (hereafter Town and City or City/Town) are seeking proposals from qualified consultants to develop rules and administration procedures for the regulation of stormwater management in development activities and protection of stream corridors of stormwater impaired waters. The rules will most likely be adopted into land use regulations in the City and Town. The amount of funding available for this project is \$29,000.

BACKGROUND

St. Albans Bay is a recreational asset and important natural resource for the Town and City. However, the water quality of the Bay, as well as the watersheds that run to it, are increasingly degraded. The State has designated portions of the Jewett, Stevens and Rugg Brooks as impaired. The Bay suffers from seasonal toxic algae blooms and in August 2014 the Vermont Department of Health issued a high alert for the Bay warning residents and visitors to avoid contact. Over the summer of 2014, the public fervor over algal blooms in the region's waters increased dramatically.

Various studies have suggested that stormwater from suburban and urban development is a significant contributor to the water quality issues in St. Albans Bay and its contributing watersheds, both for the velocity at which it runs and for the pollutants, namely phosphorus, which it carries. According to a 2005 UVM study, urban and other development make up 15% of the phosphorus sources. With continuing development, this number is expected to increase unless regulated.

The 2009 Total Maximum Daily Load analyses for the impaired Stevens and Rugg Brooks—impaired watersheds within the City and Town—state that “There are no known wastewater or non-stormwater related discharges contributing to the impairments, so the stormwater runoff effectively represents the pollutants of concern.” In other words, stormwater is a pollutant that must be managed by the Town and City.

The two communities propose to create stormwater regulations that fit the needs of current and planned land use development to reduce stormwater impacts at the pre-development, construction, and post-construction stages. These regulations will augment the effects of the State's current stormwater permitting program and cover development that would not otherwise require a State permit, due to size or other factors. Both the City and Town find themselves at a similar starting point in this effort, based on the lack of stormwater management rules contained within each community's current ordinances and land use bylaws.

SCOPE OF WORK & TIMELINE

The selected consultant is expected to use their subject area knowledge and expertise to develop stormwater management rules through assessment of current City/Town rules, understanding of State stormwater regulation and MS4 permit requirements, familiarity with stormwater best management practices, attendance at City/Town board meetings, responses to public input, and understanding of the context of City/Town land use regulation. The stormwater management rules will be designed to regulate development not subject to existing State of Vermont erosion control requirements and post-construction stormwater management permit program. The rules will regulate:

1. Construction-related erosion and sediment;
2. Construction waste that could otherwise cause adverse impacts to water quality;
3. Erosion Control during construction;
4. Prevention or minimization of water quality impacts from post-construction stormwater runoff;
5. Utilization of a combination of structural, non-structural and low impact best management practices (BMPs) which are appropriate for the City/Town, and meet, at a minimum, requirements in the Vermont State Stormwater Management Manual; and
6. Guarantees of adequate long-term operation and maintenance of BMPs.
7. Protection of stream corridors of stormwater impaired waters, including:
 - a. maps of streams with minimum widths of stream channel buffers requiring protection,
 - b. minimum setback requirements,
 - c. rules protecting undeveloped stream corridors
 - d. incentives for relocating existing development outside stream corridors.

The rules developed will be consistent with the requirements of the Secretary of Natural Resources' general permits for stormwater runoff from large and small construction sites and construction erosion guidelines for low impact development and the requirements of the Secretary's rules and general permits regulating post-construction stormwater runoff.

The consultant will also provide recommendations for administrative procedures for:

1. the identification of new development and redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, and
2. for site inspection and enforcement of the stormwater management rules and control measures, both during construction and post-construction.

The intent is for the consultant to produce draft rules and administrative procedures that are substantially identical for the Town and City and only requiring significant customization for either community if all parties are in agreement in light of available time and resources.

The geographic context for these rules will be the areas of the Town and City that are within the impaired watersheds of Rugg and Stevens Brooks

Work Tasks Include:

Task 1. – Kick-off meeting. Team introductions, review project goals and establish access to information and contacts.

Task 1 Deadline: March 31, 2015.

Task 2. – Assessment of current City/Town rules and procedures.

2A. Review existing policies; planning, zoning and subdivision regulations; and ordinances to determine their effectiveness in:

1. managing construction-related erosion and sediment;
2. controlling waste such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste at construction sites that may cause adverse impacts to water quality;
3. managing stormwater runoff that discharges from new development and redevelopment projects to prevent adverse impacts to water quality; and
4. identifying and protecting stream corridors.

2B. The assessment will determine the consistency of current policies, regulations and ordinances with the Secretary of Natural Resources' rules for and general permits regulating:

1. stormwater runoff from large and small construction sites;
2. construction erosion guidelines for low impact development; and
3. post-construction stormwater runoff

2C. The assessment will identify:

1. where changes can be made to such policies, regulations and ordinances to support low impact design options and identify and protect stream corridors; and
2. where changes can be made to current street design and parking lot guidelines and other local requirements that affect the creation of impervious surfaces to support low impact design options.

Task 2 Deadline: See Task 4 below.

Task 3. – Assess Stream Corridor Data. Locate and summarize data on stream corridors in impaired watersheds in the Town and City, including where development exists within the corridors. Review riparian buffer and stream fluvial geomorphological information that exists as a result of the Agency of Natural Resources' preparation of stormwater TMDLs.

Task 3 Deadline: See Task 4 below.

Task 4. – Exploratory Research. Assessment of best practices. Confer with VT Dept. of Environmental Conservation on establishing consistency with State permitting process and establishing protection of stream corridors.

Tasks 2, 3 and 4 Deadline: Submit preliminary report on Task 2, 3 and 4 status by May 4, 2015.

Task 5. – Submit report of assessment and exploratory research and recommendations for scope, outline, and implementation strategy of rules and procedural recommendations for City/Town Staff/Board input. Identify options for stream corridors identification and protection, including information on existing development in stream corridors. Presentation at a public meeting.

Task 5 Deadline: Delivery of materials by Aug. 3, 2015. Presentation by August 31, 2015.

Task 6. – First Draft of proposed rules and procedural recommendations for City/Town Staff/Board input.

Task 6 Deadline: Dec. 7, 2015.

Task 7. – Second Draft of proposed rules for Public meetings and input and procedural recommendations for City/Town Staff input.

Task 7 Deadline: Delivery of second draft on Feb. 1, 2016. Presentation by Feb. 29, 2016.

Task 8. – Final Draft of proposed rules presented at a public meeting and input and procedural recommendations for City/Town Staff input.

Task 8 Deadline: Delivery of final draft on April 4, 2016. Presentation by April 28, 2016.

Note: All materials produced by this project will therefore become public documents. Final drafts shall also be submitted in editable and replicable format.

COMPONENTS OF PROPOSAL

Each proposal shall contain the following:

1. Brief description of consultant (or team with description of firms/individuals), key qualifications, familiarity with project subject matter, target communities, and past work relevant to the project.
2. Proposed methodology for the project and tasks.
3. Estimated hours per task, consultant fees and proposed final cost.
4. Identification of consultant team leader, team members, and individual qualifications and past work.

PROPOSAL SUBMISSION PROCEDURES

Register Intent to Propose:

It is HIGHLY RECOMMENDED that prospective consultants signify their possible intent to submit a proposal by sharing a working email address in an email to the RFP Contacts listed below. The emails submitted will be sent any updates and responses to questions associated with this RFP and project.

Question and Answer Period:

There will be an opportunity for prospective consultants to submit further questions about this RFP and project. All questions must be submitted to the RFP Contacts listed below by Feb. 9, 2015. A response to all questions submitted will be posted by Feb. 16, 2015.

Proposal Submission Deadline:

Proposals must be submitted by **11:59 PM on March 2, 2015** via email to the RFP contacts listed below. **Proposal file sizes must be 5 megabytes or less.**

If a proposing consultant does not receive a receipt on March 3, 2015 that their proposal was received by the City/Town, it is the consultant’s responsibility to make the issue known to the City/Town. The consultant in question may be required to prove beyond a doubt that their proposal was sent on time.

Proposals shall be submitted as PDF files to the email addresses of the RFP Contacts below. **Proposal file sizes must be 5 megabytes or less.** The City and Town are not responsible for technical difficulties on the part of proposing consultants that hinder their ability to submit a proposal on time. It is the responsibility of proposing consultants to ensure that their proposal PDF files are readable by the City and Town.

SELECTION PROCEDURES

The criteria to be used in evaluation of the proposals will include:

1. Understanding of the Scope of Work
2. Knowledge of the Project Subject Matter and familiarity with Town and City context
3. Familiarity with State of Vermont stormwater permitting and standards
4. Qualifications/Experience of Assigned Staff
5. Availability of Technical Resources
6. Reasonableness of Labor Hour Schedule, fees and estimated project cost
7. Proven record of successful completion of similar projects

Representatives from the City and Town will review consultant qualifications and make a selection. The selected consultant will then be contacted via phone or email.

RFP AND SELECTION TIMELINE

- February 2, 2015: RFP Released
- February 9, 2015: Deadline for questions from prospective consultants
- February 16, 2015: Responses to questions posted by City/Town
- March 2, 2015: Proposals Due**
- March 13, 2015: Selected Consultant contacted by City/Town (date subject to change)

OTHER REQUIREMENTS AND PROVISIONS

Contracting:

The selected consultant shall sign a contract with authorized representatives of the Town and City of St. Albans. Project decisions, including contract amendments, will be made with the concurrence of the City and Town’s designees.

Invoicing:

The consultant shall invoice the City of St. Albans for costs incurred for completion of each task. However at least 10% of the total contract amount shall be withheld until Town/City acceptance of the final Task deliverable.

State Contract Requirements:

The attached State of Vermont contract and GIS data standard requirements will be part of the project contract with the consultant and any subconsultants. The consultant and any subconsultants will be required to provide the required insurance coverages and other assurances.

Public Document Requirement:

All proposals will become public documents upon submission to the Town and City.

Reserved Rights:

1. The Town and City assume no responsibility or liability for any cost incurred by proposers in responding to this RFP.
2. The City and Town reserve the right to reject, in whole, or in part, any proposal for any reason.
3. The Town and City reserve the right to supplement, amend or otherwise modify any elements of this RFP without limitation.
4. The City and Town reserve the right to negotiate aspects of the project and costs with any prospective consultant and/or seek additional information from any prospective consultant.

ATTACHMENTS AND LINKS

- The State contract and GIS data standard requirements are attached to this document.
- Most relevant City of St. Albans bylaws and ordinances can be found online at www.StAlbansVT.com/Development and www.StAlbansVT.com/Ordinances
- Most relevant Town of St. Albans bylaws and ordinances can be found online at www.StAlbansTown.com/Departments/Zoning and www.StAlbansTown.com/Documents/Ordinances-Policies
- Previous reviews of stormwater and low impact development elements in existing Town/City bylaws can be found at www.StAlbansVT.com/RFPs

RFP CONTACTS:

Chip Sawyer
Director of Planning & Development

City of St. Albans
PO Box 867, 100 No. Main St.
St. Albans, VT 05478

Email: c.sawyer@stalbansvt.com
Phone: 802-524-1500 x259

Maren Hill
Planner

Town of St. Albans
PO Box 37
St. Albans, VT 05481

Email: satplanner@comcast.net
Phone: 802-524-7589 x108

The City and Town of St. Albans, Vermont, are Equal Opportunity Employers. Proposals from Minority, Disadvantaged and/or Women-Owned Business Enterprises are encouraged.

Attachment. State Contract Requirements

A. This project is funded by a Vermont Municipal Planning Grant. Municipal planning grants are state funds granted to municipalities. Under this contract, all contractors and subcontractors agree to:

1. Comply with the requirements of Title 21 of the Vermont Statutes Annotated, Chapter 5, Subchapter 6, relating to fair employment practices and the requirements of the Americans with Disabilities Act of 1990;
2. Conform to the record keeping requirements of Grant Agreement # *MP-2015-St. Albans City-00002* between the City of St. Albans and the State of Vermont, and;
3. Ensure that all relevant products be compatible with the Vermont Geographic Information System (VGIS) and meet all VGIS standards, which are available from the Vermont Center for Geographic Information.

B. By signing the contract with the City of St. Albans, VT (Grantee) that includes this attachment, the contractor or subcontractor (Contractor) agrees to the following requirements.

1. The Contractor will maintain all books, documents, payrolls, papers, accounting records and other evidence pertaining to costs incurred under this Agreement and make them available at reasonable times to the Grantee and the State during the period of this contract and for three years thereafter for inspection by any authorized representatives of the State. The official records, however, will be maintained by the Grantee. If any litigation claim, or audit is started before the expiration of the three-year period, the records shall be retained until all litigation, claims, or audit findings involving the records have been resolved, including any period for filing an appeal. The Grantee and the State, by any authorized representative, shall have the right at all reasonable times to inspect or otherwise evaluate the work performed or being performed under this contract.
2. The Contractor certifies under the pains and penalties of perjury that he or she is in good standing with respect to, or in full compliance with a plan to pay, any and all taxes due the State of Vermont as of the date the Contractor signs this contract.
3. The Contractor shall not assign or subcontract the performance of this agreement or any portion thereof to any other contractor without the prior written approval of the State. The Contractor also agrees to include in all subcontract agreements a tax certification in form substantially identical to paragraph 2 above.
4. The Contractor agrees to comply with the requirements of Title 21, V.S.A. Chapter 5, Subchapter 6, relating to fair employment practices, to the extent applicable. Contractor shall also ensure, to the full extent required by the Americans with Disabilities Act of 1990, that qualified individuals with disabilities receive equitable access to the services, programs, and activities provided by the contractor. Contractor further agrees to include this provision in all subcontracts.
5. The Contractor states that as of the date the contract is signed, he/she:
 - a. is not under any obligation to pay child support; or

- b. is under such an obligation and is in good standing with respect to that obligation;
or
- c. has agreed to a payment plan with the Vermont Office of Child Support and is in full compliance with that plan. Contractor makes this statement with regard to support owed to any and all children residing in Vermont. In addition, if the Contractor is a resident of Vermont, Contractor makes this statement with regard to support owed to any and all children residing in any other state, territory, or possession of the United States.

C. For any projects including a GIS component:

1. The Contractor shall submit, with the final report, copies of material documents, and copies of digital data produced under this contract. Digital data includes spatial and tabular data attributes, documentation files, and plot files, and must meet applicable standards as to physical media, data format, and documentation of all products using the VGIS metadata standard. (It is not necessary to submit subsets of data layers that are already listed in the VGIS Data Catalog).
2. All data and materials created or collected under this contract – including all digital data – are public records. The parties may utilize the information for their own purposes, but shall not copyright these materials.
3. Digital Spatial Data will be submitted on a single CD or DVD in Vermont State Plane Meters Coordinates, NAD 83 with its accompanied GIS Data Information Form (next page). Any of the following file formats is acceptable:
 - a. .shp (Shapefile – which also consist of files with other extensions such as .dbf and .shx)
 - b. .dwg (CAD file)
 - c. .dxf (CAD file)

[Technical assistance and information on these guidelines and procedures are available from the Vermont Center for Geographic Information, Inc. (<http://www.vcgi.org/standards> or 802-882-3006): Relevant documents include: Municipal Property Mapping Guideline; Contracting with GIS Consultants; Vermont GPS Guidelines.]

Municipal Planning Grant Program

GIS Data Information Form

Project Information:

Project Title:
Contact Name:
Organization:

Address:
Email:
Phone:

Instructions:

Please provide the following information (Core Metadata) for each GIS data layer created as part of the grant project. It is not necessary to provide information for layers that are simply subsets of existing layers (e.g. if you “clip” a VGIS roads layer to the boundaries of the town). This form should be completed by the data creator (consultant or RPC) and placed on the CD/DVD along with other mapping data and mailed to us as part of the final report. Please contact [The Vermont Center for Geographic Information](#) at 802-882-3000 if you have questions.

If **digital parcel data** has been created or updated as part of this project, please refer to and follow the Vermont GIS Parcel Data Standard, located at the VCGI web site, <http://vcgi.vermont.gov/resources/standards>.

Vermont law requires that geospatial data creation funded with public money adhere to existing data standards.

Data Layer Name:

(Note that a separate form should be submitted for each data layer on a CD/DVD)

- Check the box if no new data layers have been created (meaning GIS data used in this project is available in the VCGI data warehouse http://vcgi.vermont.gov/warehouse/search_tools). If so, there is no need to fill out the remainder of this form.
- Check the box if the Metadata for this Data Layer is on the CD/DVD and is FGDC compliant. If so, there is no need to fill out the remainder of this form.

Core Metadata:

Data Layer Name (note that a separate form should be submitted for each data layer):

Description (Examples of Description include, but are not limited to: an abstract, table of contents, reference to a graphical representation of content or a free-text account of the content):

Creator (Name and contact information: an entity primarily responsible for making the content of the data layer, e.g. mapping contractor):

Publisher (An entity responsible for making the resource available for distribution. Examples might include the town, the RPC or VCGI):

Source (If data layer was derived from an existing data layer, name of existing source data layer, source materials, source scale):

Dataset Collection Dates: (Describe first & last day of data collection or earliest/latest date in the data; format is YYYY/MM/DD. The grand list year and date exported for use in parcel map development shall be noted):

Coverage (Geographic extent of the data layer, temporal period if relevant (e.g., data that is purely historical)):

Feature Type (if applicable. Example entries are point, line, polygon, table, raster, and image):

Accuracy (Scale, if known; positional error; any known errors in positional data and attribute data):

Attributes (Include field names, definitions, and code meanings):

Disclaimer (Include this statement in the metadata): This data layer is not a legal survey. It is not a legal conveyance or description of property and is intended for planning purposes only.

Certified by (Signature): _____