

Sprongs Bluff Road Assessment

November 15, 2012

Prepared by:

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Rochester, NY 14625

Prepared for:

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7170 Sprongs Bluff Road
Sodus, New York 14551-9364

Thank you for the opportunity to assist you with evaluating the existing conditions of Sprongs Bluff Road in the Town of Sodus. I offer the following information based on our conversations and site visit on November 1, 2012. This report will provide you with my visual assessment of the road and three culvert crossings. The information will allow you to develop a plan to maintain, improve, repair and potentially replace portions of the road and culverts.

EXISTING CONDITIONS

Sprongs Bluff Road is a private road running approximately 2,900 linear feet north from Lake Road to a fork where approximately 1,200 linear feet runs to the east and 1,400 linear feet to the west, both parallel to Lake Ontario. The width of the road varies but is 20-feet for the majority of its length. This road provides singular access to approximately 40 homes and is maintained by the Sprongs Bluff Land Owners Association.

This report examines approximately 2,500 linear feet of the road from the farm house near Lake Road to the fork. I also visually examined 3 culverts: one located on the main road between the farm house and fork, one under the eastern run of Sprongs Bluff Road and another under the western run. Figure 1 highlights these areas.

Road Pavement

The surface of the road is showing varying degrees of deterioration. The deterioration has been caused by years of exposure to vehicular traffic, water and sunlight. A significant amount of raveling, which occurs when the aggregate particles become dislodged, can be noticed along the road as shown in Photo 1. The raveling has led to larger potholes in the pavement that have been patched as shown in Photo 2. As this cycle continues, the number, size and frequency of potholes will increase to the point where patching the pavement will no longer be feasible.

No signs of significant deformation or rutting were visible at the time of my assessment. This indicates the subbase is in good condition and may be used to support a new road surface with the appropriate preparation work. No cores were taken for this assessment; this is strictly based on a

visual assessment. Over time as the number of potholes increase, the subbase will become compromised and may need to be replaced.

Road Drainage

Roadside ditches border portions of the road. The majority of drainage ditches are filled with vegetation reducing the amount of stormwater that can be conveyed. In some areas, the road has deteriorated to the point where a crown or slope no longer exists and stormwater cannot shed to the drainage ditches.

Raveling, as described earlier, leads to loose aggregate that is then pushed to the sides of the road by normal vehicular traffic and snow plow operations. This aggregate will often gather along the sides of the road or in the drainage ditches. As the vegetation grows and grabs hold of this aggregate, a mound can form along the sides of the road further preventing water from leaving the asphalt surface. An example of this is shown in Photo 3.

Without the proper drainage, water will continue to penetrate the asphalt surface washing out the fine sediment that helps support the asphalt. During the winter months, water in the pavement voids will freeze and expand further damaging the structural integrity of the pavement section.

Main Road Culvert

The culvert under the main portion of the road is a corrugated steel pipe. Some surface corrosion is visible along the bottom of the pipe but has not yet affected its structural integrity. The condition of the culvert should be monitored on an annual basis. See Photo 4.

East Culvert

The east culvert appears to be a steel tank with the ends cut off. Some deformation of the tank can be seen at the south end but it is difficult to say whether that was caused by vehicular traffic or if it was installed that way. Otherwise, the integrity of the tank appears to be sound.

However, the length of the tank is too short to allow for a proper slope away from the road. It is apparent that storm water flows have and will continue to undermine the road. The pavement section directly above the tank is supported by geo-textile fabric and will fail. See Photos 5 – 8.

Catastrophic failure of this portion of the road could take place as early as the next major storm event. This culvert must be replaced immediately with an appropriately designed culvert.

West Culvert

The west culvert is a single walled corrugated steel culvert pipe. It is my understanding stormwater frequently backs up on the south side of the culvert causing flooding. This pipe is likely too small. Some evidence of erosion around the north end of the pipe is shown in Photo 9. Without slope protection, erosion will continue with each storm event leading to undermining of the road. Stone on the south side of the culvert provides some slope protection for that side of the road.

The corrosion in the bottom of the pipe, shown in Photo 10, has produced holes along the entire length and both sides of the pipe. The structural integrity of this culvert is questionable.

RECOMMENDATIONS

Below is a list of recommendations which will allow the Sprongs Bluff Land Owners Association to develop a multi-year plan to accomplish the following goals:

- Provide safe reliable stream crossings
- Re-establish roadside drainage
- Provide a long term serviceable road without full-depth reconstruction

The recommendations in order of priority are as follows:

1. **East Culvert** – I recommend the replacement of this culvert immediately since it is likely to fail in the near future. An appropriate design should be prepared to determine the size. However, for the purposes of this report and assuming the existing pipe is appropriately sized, a new 36-inch diameter smooth interior corrugated polyethylene pipe should be installed. The length of the pipe should be approximately 35-feet and include end sections. This will allow for the installation of large stone rip rap for proper slope protection. Photos of similar culvert installations are shown on page 10.

Approximate construction cost = \$12,000

Please note that a Joint Application Form shall be submitted to the New York State Department of Environmental Conservation and US Army Corps of Engineers for approval of this work. A form is enclosed with this report.

2. **West Culvert** – I also recommend the replacement of this culvert in the near future. It is difficult to predict how long the culvert will last due to the amount of corrosion in the pipe. Due to the flooding that has been described, it is apparent that this pipe is too small. An appropriate design should be prepared to determine the size of a new pipe(s). However, for the purposes of this report and assuming doubling the capacity would provide sufficient flow, two new 36-inch diameter smooth interior corrugated polyethylene pipes should be installed. The length of the pipes should be approximately 35-feet and include end sections. This will allow for the installation of large stone rip rap for proper slope protection. Photos of similar culvert installations are shown on page 10.

Approximate construction cost = \$16,000

Please note that a Joint Application Form shall be submitted to the New York State Department of Environmental Conservation and US Army Corps of Engineers for approval of this work.

3. **Roadside Drainage** – I recommend removing any mounded areas that are preventing storm water from leaving the road and cleaning out the vegetation and reshaping the roadside ditches. Proper erosion control measures such as stone or straw check dams should be temporarily installed until a grass turf has been established.
4. **Road Pavement** – Ideally, the Association would complete a full-depth reconstruction of the road providing an extended service life of 20 plus years. Understanding that this is cost prohibitive and because the subbase appears to be in good condition, I recommend:

- Milling any intact asphalt pavement & laying those millings back down
- Adding subbase material where necessary to provide an appropriately sloped road (1/4-inch per foot). The subbase material should be placed beneath the asphalt millings to avoid trapping water between the asphalt and millings.
- Compacting the subbase to 95% compaction
- Installing a new asphalt pavement surface. The new surface should be a dense binder with a minimum thickness of 2-inches.

Approximate construction cost using \$2.50/Square Foot = 20' x 2,500' x \$2.50 = \$125,000

With proper preparation, installation and maintenance, this will provide a serviceable road of 15 years or more. The maintenance of the road should include routine crack filling and sealing as well as maintaining the drainage ditches.

For comparison, the cost associated with a full depth reconstruction including 9-inches of subbase, 2.5-inches of asphalt binder and 1.5-inches of asphalt top would be approximately \$5.00/SF or \$250,000.

Alternatively, the Association could consider a tar and chip process but due to the condition of this road, I believe that it will provide minimal benefit. Water will continue to pond and find its way into the pavement and subbase further deteriorating the foundation of the road and ultimately leading the Association to complete a full-depth reconstruction.

I appreciate the opportunity to prepare this report for you. I am available to meet with you and your Association if necessary. If you have any questions or need any additional information, please contact me at (585) 749-2655.

Sincerely,



Timothy M. Webber, PE
Civil Engineer



Photo 1



Photo 2



Photo 3



Photo 4



Photo 5



Photo 6



Photo 7



Photo 8



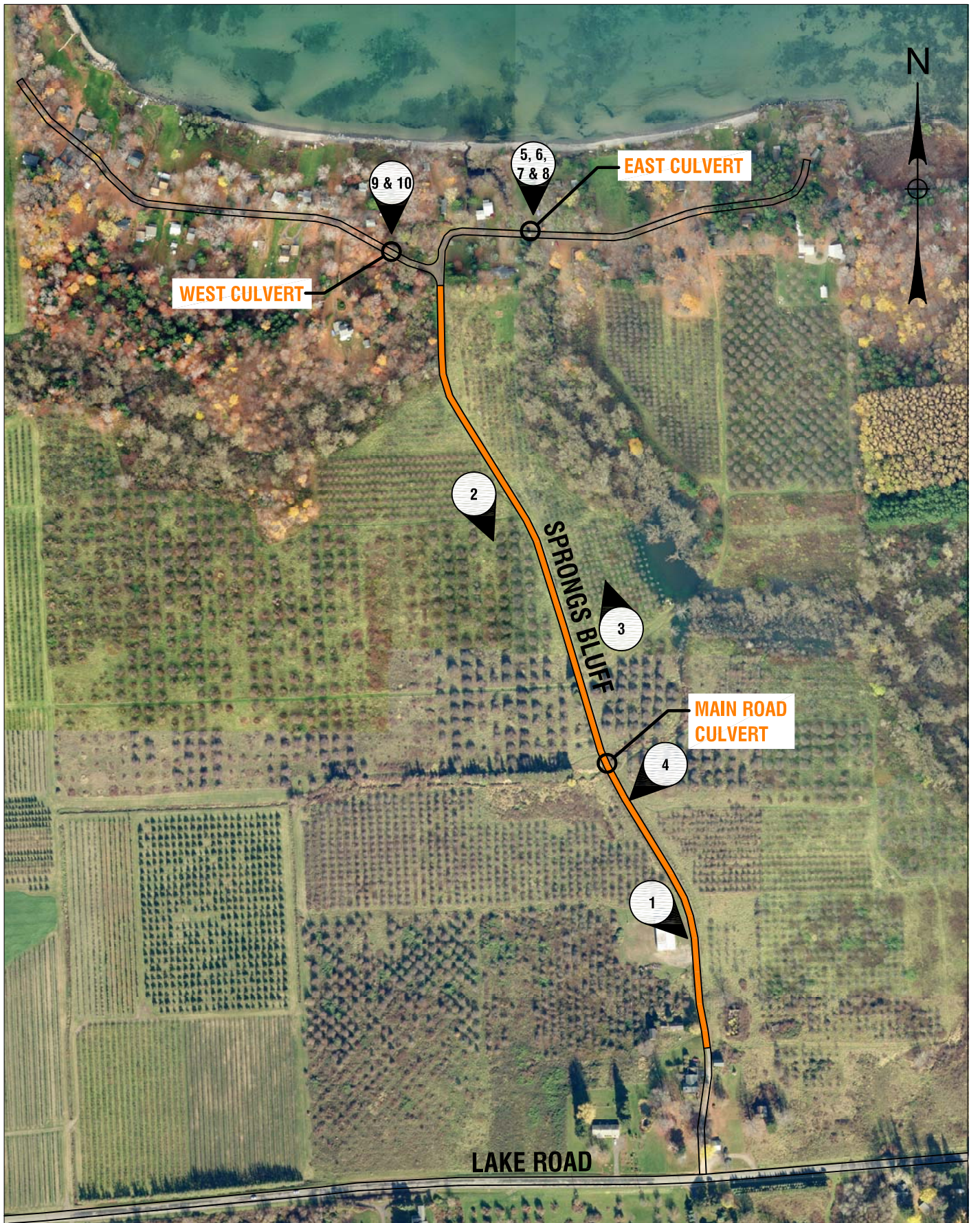
Photo 9



Photo 10

Example Culvert Installations





**SPRONGS BLUFF ROAD ASSESSMENT
SODUS, NY
OVERALL AERIAL LOCATION MAP**

BY: TMW

DATE: 11/13/12

FIGURE 1



JOINT APPLICATION FORM



For Permits/Determinations to undertake activities affecting streams, waterways, waterbodies, wetlands, coastal areas and sources of water supply.

New York State

You must separately apply for and obtain separate Permits/Determinations from each involved agency prior to proceeding with work. Please read all instructions.

US Army Corps of Engineers (USACE)

<p>APPLICATIONS TO</p> <p>1. NYS Department of Environmental Conservation</p> <p>Check all permits that apply:</p> <table border="0"> <tr> <td><input type="checkbox"/> Stream Disturbance</td> <td><input type="checkbox"/> Coastal Erosion Management</td> </tr> <tr> <td><input type="checkbox"/> Excavation and Fill in Navigable Waters</td> <td><input type="checkbox"/> Wild, Scenic and Recreational Rivers</td> </tr> <tr> <td><input type="checkbox"/> Docks, Moorings or Platforms</td> <td><input type="checkbox"/> Water Supply</td> </tr> <tr> <td><input type="checkbox"/> Dams and Impoundment Structures</td> <td><input type="checkbox"/> Long Island Well</td> </tr> <tr> <td><input type="checkbox"/> 401 Water Quality Certification</td> <td><input type="checkbox"/> Aquatic Vegetation Control</td> </tr> <tr> <td><input type="checkbox"/> Freshwater Wetlands</td> <td><input type="checkbox"/> Aquatic Insect Control</td> </tr> <tr> <td><input type="checkbox"/> Tidal Wetlands</td> <td><input type="checkbox"/> Fish Control</td> </tr> <tr> <td></td> <td><input type="checkbox"/> Incidental Take of Endangered/Threatened Species</td> </tr> </table> <p><input type="checkbox"/> I am sending this application to this agency.</p>	<input type="checkbox"/> Stream Disturbance	<input type="checkbox"/> Coastal Erosion Management	<input type="checkbox"/> Excavation and Fill in Navigable Waters	<input type="checkbox"/> Wild, Scenic and Recreational Rivers	<input type="checkbox"/> Docks, Moorings or Platforms	<input type="checkbox"/> Water Supply	<input type="checkbox"/> Dams and Impoundment Structures	<input type="checkbox"/> Long Island Well	<input type="checkbox"/> 401 Water Quality Certification	<input type="checkbox"/> Aquatic Vegetation Control	<input type="checkbox"/> Freshwater Wetlands	<input type="checkbox"/> Aquatic Insect Control	<input type="checkbox"/> Tidal Wetlands	<input type="checkbox"/> Fish Control		<input type="checkbox"/> Incidental Take of Endangered/Threatened Species	<p>2. US Army Corps of Engineers</p> <p>Check all permits that apply:</p> <p><input type="checkbox"/> Section 404 Clean Water Act</p> <p><input type="checkbox"/> Section 10 Rivers and Harbors Act</p> <p><input type="checkbox"/> Nationwide Permit(s) - Identify Number(s): _____</p> <p>Preconstruction Notification - <input type="checkbox"/> Y / <input type="checkbox"/> N</p> <p><input type="checkbox"/> I am sending this application to this agency.</p>	<p>3. NYS Office of General Services</p> <p>Check all permits that apply:</p> <p><input type="checkbox"/> State Owned Lands Under Water</p> <p><input type="checkbox"/> Utility Easement (pipelines, conduits, cables, etc.)</p> <p><input type="checkbox"/> Docks, Moorings or Platforms</p> <p><input type="checkbox"/> I am sending this application to this agency.</p>	<p>4. NYS Department of State</p> <p>Check if this applies:</p> <p><input type="checkbox"/> Coastal Consistency Concurrence</p> <p><input type="checkbox"/> I am sending this application to this agency.</p>
<input type="checkbox"/> Stream Disturbance	<input type="checkbox"/> Coastal Erosion Management																		
<input type="checkbox"/> Excavation and Fill in Navigable Waters	<input type="checkbox"/> Wild, Scenic and Recreational Rivers																		
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<input type="checkbox"/> Tidal Wetlands	<input type="checkbox"/> Fish Control																		
	<input type="checkbox"/> Incidental Take of Endangered/Threatened Species																		

5. Name of Applicant (use full name)		Applicant must be: <input type="checkbox"/> Owner <input type="checkbox"/> Operator <input type="checkbox"/> Lessee (check all that apply)
Mailing Address		
Post Office City		Taxpayer ID (If applicant is NOT an individual):
State	Zip Code	
Telephone (daytime)	Email	

6. Name of Facility or Property Owner (if different than Applicant)	
Mailing Address	
Post Office City	
State	Zip Code
Telephone (daytime)	Email

7. Contact/Agent Name	
Company Name	
Mailing Address	
Post Office City	
State	Zip Code
Telephone (daytime)	
Email	

8. Project / Facility Name		Property Tax Map Section / Block / Lot Number	
Project Location - Provide directions and distances to roads, bridges and bodies of waters:			
Street Address, if applicable		Post Office City	State NY Zip Code
Town / Village / City		County	
Name of USGS Quadrangle Map		Stream/Water Body Name	
Location Coordinates: Enter NYTMs in kilometers, OR Latitude/Longitude			
NYTM-E	NYTM-N	Latitude	Longitude

For Agency Use Only	DEC Application Number:	USACE Number:
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JOINT APPLICATION FORM - PAGE 2 OF 2
 Submit this completed page as part of your Application.

9. Project Description and Purpose: Provide a complete narrative description of the proposed work and its purpose. Attach additional page(s) if necessary. Include: description of current site conditions and how the site will be modified by the proposed project; structures and fill materials to be installed; type and quantity of materials to be used (i.e., square ft of coverage and cubic yds of fill material and/or structures below ordinary/mean high water) area of excavation or dredging, volumes of material to be removed and location of dredged material disposal or use; work methods and type of equipment to be used; pollution control methods and mitigation activities proposed to compensate for resource impacts; and where applicable, the phasing of activities. **ATTACH PLANS ON SEPARATE PAGES.**

Proposed Use: <input type="checkbox"/> Private <input type="checkbox"/> Public <input type="checkbox"/> Commercial	Proposed Start Date:	Estimated Completion Date:
Has Work Begun on Project? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, explain.		
Will Project Occupy Federal, State or Municipal Land? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, please specify.		

10. List Previous Permit / Application Numbers (if any) and Dates:

11. Will this project require additional Federal, State, or Local Permits including zoning changes? Yes No If yes, please list:

12. Signatures. If applicant is not the owner, both must sign the application.
 I hereby affirm that information provided on this form and all attachments submitted herewith is true to the best of my knowledge and belief. False statements made herein are punishable as a Class A misdemeanor pursuant to Section 210.45 of the Penal Law. Further, the applicant accepts full responsibility for all damage, direct or indirect, of whatever nature, and by whomever suffered, arising out of the project described herein and agrees to indemnify and save harmless the State from suits, actions, damages and costs of every name and description resulting from said project. In addition, Federal Law, 18 U.S.C., Section 1001 provides for a fine of not more than \$10,000 or imprisonment for not more than 5 years, or both where an applicant knowingly and willingly falsifies, conceals, or covers up a material fact; or knowingly makes or uses a false, fictitious or fraudulent statement.

Signature of Applicant	Printed Name	Title	Date
Signature of Owner	Printed Name	Title	Date
Signature of Agent	Printed Name	Title	Date

For Agency Use Only	DETERMINATION OF NO PERMIT REQUIRED		
Agency Project Number _____			
_____ has determined that No Permit is required from this Agency for the project described in this application.			
(Agency Name)			
Agency Representative:	Name (printed) _____	Title _____	
	Signature _____	Date _____	