

Vermont Wetland Section Wetland Application Database Form (AFFIX TO THE FRONT OF THE APPLICATION)

Applicant Name: Town of St. Johnsbury **Representative Name:** Dufresne Group

Town where project is located: St. Johnsbury **County:** Caledonia

Project Location Description: Approximately 1500 ft south of 2176 Portland Street along the Moose River
911 Street Address or direction from nearest intersection

Project Summary: Replacement of an existing water main installed in the 1930s that is exposed in the river. The main is the primary supply main from the water treatment plant to the Town of St. Johnsbury.

Permit Type Requested (check all that apply)
 Vermont General Permit Coverage Wetland Determination Vermont Wetland Permit

Impact Calculations: Total up proposed impacts from wetland tables listed below

Total Wetland Impact	7540square feet (s.f.)	Total Buffer Zone Impact	0square feet (s.f.)
Total Wetland Clearing (qualified linear projects only)	6854square feet (s.f.)	Total Buffer Zone Clearing (qualified linear projects only)	0square feet (s.f.)

Permit Fees: Make check payable to - State of Vermont

Wetland Impact Fee: (\$0.75/sf)	\$0.00	Administrative Fee:	\$120
Buffer Impact Fee: (\$0.25/sf)	\$0.00	Total Check Amount:	\$0.00
Clearing Fee: (\$0.25/sf)	\$0.00		

Existing Land Use Type: (check all that apply)
 Forestry Residential (Subdivision) Industrial/ commercial
 Agriculture Transportation Parks/Rec/Trail Residential (Single Family) Institutional Undeveloped

Proposed Land Use Type: (check all that apply)
 Forestry Residential (Subdivision) Industrial/ commercial
 Agriculture Transportation Parks/Rec/Trail Residential (Single Family) Institutional No Change

Proposed Impact Type: (check all that apply)
 Buildings Utilities Parking Septic/Well Stormwater
 Driveway Road Parks/Path Agriculture Pond Lawn
 Dry Hydrant Beaver dam alteration Silviculture Aesthetics Other No Impact

Wetland 1: Wetland 2 (Label using Wetland ID from application if applicable, use supplemental sheets if more than one wetland is being impacted) Location: **West side of Moose River**
POW/PEM - open water WL Size Class : **<1 acre**

Proposed Alterations

Wetland Alteration:	Buffer Zone Alteration:	Wetland Alteration Type (check all that apply)
Wetland Fill: 0s.f.		<input type="checkbox"/> Dredge <input type="checkbox"/> Drain
Temporary: 686s.f.	Temporary: 0 s.f	<input type="checkbox"/> Cut <input type="checkbox"/> Stormwater
Permanent: 0s.f.	Permanent: 0 s.f	Vegetation <input checked="" type="checkbox"/> Trench/Fill <input type="checkbox"/> Other

Wetland 2: Wetland 3 (Label using Wetland ID from application if applicable, use supplemental sheets if more than one wetland is being impacted) Location: **East side of Moose River**
Wetland Type: **POW/PEM/PSS/PFO** WL Size Class : **5-10 acres**

Proposed Alterations

Wetland Alteration:	Buffer Zone Alteration:	Wetland Alteration Type (check all that apply)
Wetland Fill: 0s.f.		<input type="checkbox"/> Dredge <input type="checkbox"/> Drain
Temporary: 6854s.f.	Temporary: 0 s.f	<input checked="" type="checkbox"/> Cut Vegetation <input type="checkbox"/> Stormwater

Permanent: : 0 s.f. Permanent: : 0 s.f



Trench/Fill

Other

Mitigation

Avoidance and Minimization		Wetland:	s.f.	Buffer Zone	s.f.
(s.f. of wetland NOT impacted):					
Wetland Mitigation: (s.f. Gained)			Buffer Zone Mitigation (s.f. Gained):		
Restoration	s.f.	Enhancement	s.f.	Restoration	s.f.
Creation	s.f.	Conservation	s.f.	Creation	s.f.
Reason for Mitigation:	<input type="checkbox"/> Correction of Violation		<input type="checkbox"/> Mitigation to offset permit impacts		<input type="checkbox"/> Voluntary

Vermont Wetland Permit Application/Determination Petition

QUESTION	INSTRUCTIONS AND APPLICANT ANSWER	STAFF NOTE
1. Applicant	If the applicant is someone other than the landowner, the landowner information must also be included below.	
1.1. Applicant Name	Town of St. Johnsbury	
1.2. Applicant Address	51 Depot Square, Suite 3, St. Johnsbury, VT 05819	
1.3. Applicant Phone Number	802-748-3926	
1.4. Applicant Email	cwhitehead@stjvt.com	
1.5. Applicant Signature (original signature required)	<p>By signing this application you are certifying that all the information contained within is true, accurate, and complete to the best of your knowledge.</p> <p>X  Date: 8/19/2015</p>	
2. Representative	Consultant, engineer, or other representative that is responsible for filling out this application, if other than the applicant or landowner	
2.1. Representative Name	Andrea J. Day	
2.2. Representative Address	459 Portland Street, Suite 102, St. Johnsbury, VT 05819	
2.3. Representative Phone Number	802-748-8605	
2.4. Applicant Email	aday@dufresnegroup.com	
2.5. Representative Signature (original signature required)	<p>By signing this application you are certifying that all the information contained within is true, accurate, and complete to the best of your knowledge.</p> <p>X  Date: 8/19/2015</p>	
3. Landowner	Landowner must sign the application. Use this space if landowner is different from the applicant	
3.1. Landowner Name	Richard and Beulah McGinnis	
3.2. Landowner Address	911 Higgins Hill Road St. Johnsbury, VT 05819	
3.3. Landowner Phone Number		
3.4. Landowner Email		
3.5. Landowner Easement	<p>Attach copies of any easements, agreements or other documents conveying permission, and agreement with the landowner stating who will be responsible for meeting the terms and conditions of the permit. List the attachment for this information in this section.</p> <p>See attached easement from Richard and Beulah McGinnis recorded June 10, 2009.</p>	
3.6. Landowner Signature (original signature required)	<p>By signing this application you are certifying that all the information contained within is true, accurate, and complete to the best of your knowledge.</p> <p>X SEE EASEMENT DOCUMENT Date:</p>	
4. Location of Wetland and Project	<p>Location description should include the road the wetland is located on, the compass direction of the wetland in relation to the road, 911 street address if available, and any other distinguishing geographic features.</p> <p>Moose River, approximately 1 mile east of St. Johnsbury, approximately 200 feet southeast of Route 2 and 1,500 feet southwest of Fairbanks Scales.</p>	

There are three separate wetland areas that will be involved in this project. Two small wetlands are on the west side of the Moose River and one larger wetland area is on the east side of the Moose River.

For the purposes of this application, these wetlands will be referred to as wetland 1, wetland 2 and wetland 3.

Wetland 1 is a very narrow margin along an unnamed tributary to the Moose River that is located between US Rt. 2 and the railroad tracks that run parallel to Rt. 2. The wetland is located at the toe of the fill extension for Rt. 2. This wetland area is linear, along the edge of the stream. This wetland is not anticipated to have any disturbance as a result of this project.

Wetland 2 is located along the west edge of the Moose River, just east of the railroad tracks described above. This linear wetland occupies essentially all of the land area between the railroad bed fill extension and the Moose River. This area will experience some disturbance as a result of this project where the new main will be installed and tied in to the existing main. Access for construction may also include travel across this wetland.

Wetland 3 is located on the east side of the Moose River. This area is a relatively large forested floodplain.

For the discussion of wetland functions and values in this application, we focused on wetland 3, as wetlands 1 and 2 are very small areas that do not provide significant levels of wetland functions, primarily due to their small size. Wetland 2 provides a limited amount of flood water storage, but it is nearly insignificant when compared to the flood water storage capacity for wetland 3.

Additional information on Wetland 3 is included in the attached supplement.

<p>5. Site Visit Date and Attendees</p>	<p>Date of visit with District Wetlands Ecologist</p> <p>5/28/2015</p>	<p>List people present for site visits including Ecologist, landowner, and representatives.</p> <p>Shannon Morrison</p>	
<p>6. Wetland Classification</p>	<p>The wetland is a Class II wetland because (Choose one):</p> <p>The wetland is contiguous to a VSWI mapped wetland</p>		
<p>7. Description of Entire Wetland or Wetland Complex</p>	<p>Answer the following questions regarding the entire wetland or wetland complex. A wetland complex is generally defined as two or more wetland types that are contiguous and interrelated. Specific questions about the wetland in the project area will follow.</p>		
<p>7.1. Size of Wetland Complex in Acres</p>	<p>Can be obtained from the Environmental Interest Locator Map for mapped wetlands</p> <p>Adjacent wetland complex is 8.3 acres.</p>		
<p>7.2. Natural Community Types Present</p>	<p>List all wetland types in the wetland or wetland complex and their abundance or relative abundance. For example: 50 acres of softwood forested swamp; or 30% scrub swamp, 70% emergent wetland</p> <p>Wetland 1: 100% emergent vegetation</p> <p>Wetland 2: 100% scrub-shrub floodplain</p>		
<p>7.3. Landscape Position</p>	<p>Where is the wetland located on the landscape? Examples: bottom of a basin, edge of a stream, shore of a lake, etc.</p> <p>All three wetland areas are located along riparian edges.</p>		
<p>7.4. Wetland Hydrology</p>	<p>Describe the main source of wetland hydrology for the wetland complex. List any river, streams, lakes and ponds.</p> <p>Flooding of the Moose River provides a key source of wetland hydrology for wetland 2. Groundwater flowing from higher landscape positions into the</p>		

	wetland areas is also a key hydrology source for wetland 1. Include answers to the following where appropriate:	
7.4.1. Direction of flow	For example: stream flows from north to south through the wetland complex. North - south	
7.4.2. Influence of hydrology on wetland complex	For example: The river provides flood water to the wetland in the spring. Spring runoff and flooding provide water to the wetland.	
7.4.3. Relation to the project area	Distance between the project area and any nearby surface waters. The project is a water main crossing so will cross the Moose River, a surface water.	
7.4.4. Hydroperiod	Discuss frequency and duration of flooding, ponding, and/or soil saturation. Annual spring flooding and soil saturation.	
7.5. Surrounding Landuse of the Wetland Complex	For example: rural residential and forested; agricultural and undeveloped, Agricultural, forested and rural residential	
7.6. Relation to Other Nearby Wetlands	Provide any information on wetlands or wetland complexes that are close enough to contribute to the overall function of the wetland in question. Adjacent to Class II wetland.	
7.7. Pre-project Cumulative Impacts to the Wetland	Identify any cumulative ongoing impacts outside of the project that may influence the wetland. Examples include but are not limited to wetland encroachments off the subject property, land management in or surrounding the wetland, or development that influences hydrology or water quality. None	
8. Description of Subject Wetland	Subject Wetland is defined as the area of wetland in the project area, but not limited to the portion of the wetland to be directly impacted by the project. For the purposes of this application, the subject wetland should encompass any portion of the larger wetland or wetland complex that could be directly or indirectly impacted by the project, as defined by hydrology, vegetation and/or physical characteristics.	
8.1. Context of Subject Wetland	Describe where the subject wetland is in the context of the larger wetland or wetland complex described above. Subject wetland includes a mapped area that will be utilized for staging. The wetland in the area of work is not mapped but is adjacent to, and across the river from a mapped Class II wetland. The mapped wetland is grass, mowed lawn and partially paved while the area where work will occur in the wetland is naturally vegetated.	
8.2. Wetland Landuse	For example: mowed lawn; old field; naturally vegetated. Describe any previous and ongoing disturbance in the subject wetland. Staging area - mowed lawn and paved, project area - naturally vegetated.	
8.3. Wetland Vegetation	List dominant wetland community type and associated dominant plant species. Wetland 1: scrub-shrub/emergent; willow species, meadow sweet, reed canarygrass Wetland 2: scrub-shrub/emergent; willow species, meadow sweet, reed canarygrass	
8.4. Wetland Soils	Use USDA NRCS information where possible and use the ACOE Delineation Manual soil description Wetlands 1 and 2 have similar soils. The textures are gravelly coarse sand with thin silt loam varves. Dominant soil color is gray (5Y 5/1 and 5Y 5/2) They are hydric based on their frequently flooded landscape position (defined as being inundated by flooding during more than 50 out of 100 years) in addition to their morphology.	
8.5. Wetland Hydrology	Use descriptions from the ACOE Delineation Manual. See attached data sheets prepared in accordance with the ACOE requirements.	

8.6. Buffer Zone	Describe the buffer zone of the subject wetland including:	
8.6.1. General landuse	For example: mowed road shoulder; forested; old field; paved road and residential lawns etc. Describe any previous and ongoing disturbance in the buffer zone. On the west side of the Moose River the buffer zone is railroad tracks, mowed lawn and paved areas. On the east side of the Moose River the buffer zone is steeply sloping woodland.	
8.6.2. Buffer vegetation	List community type and dominant plant species On the west side of the Moose River the buffer zone community type is dominantly mowed emergent vegetation; with dominant plant species including a variety of planted grasses and birdsfoot trefoil.	
8.6.3. Buffer soils	Use USDA NRCS information where possible, and the ACOE Delineation Manual soil description The buffer zone soils on the west side of the Moose River are very gravelly sandy fill material that are either roadfill extension from US Route 2 or the railroad bed.	

9. Wetland Determination	If the application involves a wetland determination please answer the following. If not, skip to Section 10.	
9.1. Reason for Petition	Please choose one from the dropdown menu: Add a Section 4.6 presumed wetland to the VSWI map	
9.2. Previous Decisions	Please list all determinations and decisions, if any, issued by the Secretary, Panel or former Water Resources Board, pertaining to the wetland or buffer at issue:	
9.3. Narrative	Please provide any narrative to support the petition for a wetland determination here. This section is not required for petitions to add a Section 4.6 presumed wetland to the VSWI map, but is required for all other petitions.	

If the application is only for a Wetland Determination only, skip to Section 13

10. Project Description		
10.1. Overall Project	Description of the project. For example: six-lot residential subdivision; expansion of an existing commercial building, access drive to a single family residence. A water main replacement of an existing water main that is exposed in the Moose River and at risk of damage. The existing water main is a main trunkline from the water treatment plant to the Town of St. Johnsbury.	
10.2. Project Purpose	For example: To construct a residential subdivision, upgrade existing road to improve access, extend a trail system To replace the existing water main with a buried water main to reduce the risk of damage and compromise of potable water service to the Town of St. Johnsbury.	
10.3. Acres Owned by Applicant	Acres of subject property. Not applicable	
10.4. Acres Involved in the Project	Acres of area involved in the project. 0.212 acres	
11. Project Details	Provide details regarding specific impacts to the wetland and buffer zone	

<p>11.1. Specific Impacts to Wetland and Buffer Zone</p>	<p>List portions of the project that will specifically impact the wetland or buffer zone. Due to existing topography, the water main will be installed by open cut which will temporarily impact the wetland and buffer zone. Staging and access areas will also temporarily impact the wetland.</p>									
<p>11.2. Dimension Details</p>	<p>Square footage of buildings, dimension of roads including fill footprint. Approximately 440 lineal feet of water main will be installed as a result of this project.</p>									
<p>11.3. Bridges and Culverts</p>	<p>Culvert circumference, length, placement and shapes, or bridge details. Not applicable</p>									
<p>11.4. Construction Sequence</p>	<p>Describe any details pertaining to the worked planned in the wetland and buffer in terms of sequence or phasing that is relevant Construction will generally follow the sequence of: excavation of trench, placement of bedding, pipe, backfill, testing of the pipe followed by restoration of the ground surface.</p>									
<p>11.5. Stormwater Design</p>	<p>List any stormwater permits obtained or applied for. Describe any stormwater and/or erosion controls proposed to prevent discharges to the wetland and buffer zone. Erosion control measures will be utilized to prevent discharges outside of the area of disturbance.</p>									
<p>11.6. Permanent Demarcation of Limits of Impact</p>	<p>Describe any plantings, fencing, signage, or other memorialization that provides permanent on-the-ground boundaries for the limits of disturbance for ongoing uses. No ongoing areas of disturbance will be involved with this project.</p>									
<p>12. Wetland and Buffer Zone Impacts</p>										
<p>12.1. Wetland Impacts</p>	<p>Summarize the square footage of impact in the appropriate category. If more than one wetland is impacted, provide that information and use the supplemental wetland sheets.</p> <table border="1"> <tr> <td colspan="2">Totals Wetland 2</td> </tr> <tr> <td>Wetland Fill</td> <td>0 s.f.</td> </tr> <tr> <td>Temporary Wetland Impact</td> <td>686 s.f.</td> </tr> <tr> <td>Other Permanent Wetland Impact</td> <td>0 s.f.</td> </tr> </table> <p>Describe in detail the proposed impact. No changes in elevation are proposed for this project. Existing ground surface elevations will be restored at the conclusion of the project. The proposed impact will be from the excavation of the trench for the water main, travel of equipment and temporary storage of spoils from excavation of the trench.</p>	Totals Wetland 2		Wetland Fill	0 s.f.	Temporary Wetland Impact	686 s.f.	Other Permanent Wetland Impact	0 s.f.	
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<p>12.3. Cumulative Impacts</p>	<p>List any potential cumulative or ongoing, direct and indirect impacts on the</p>									

		functions of the wetland that could result from the proposed project. A portion of the wetland will be temporarily disturbed. No permanent impacts are anticipated.	
12.4.Avoidance and Minimization		Please refer to Section 9.5b of the rules on Mitigation Sequencing for this section.	
12.4.1. Avoidance		Can the proposed activity be practicably located outside the wetland/buffer zone, or on another site owned or controlled by the applicant or reasonably available to satisfy the basic project purpose? If not, indicate why. This answer should include any examination of alternatives that you have explored including using other properties, requesting easements, and altering the project design. Due to the existing topography and infrastructure it is not feasible to locate the improvements elsewhere to avoid impacts to the wetland.	
12.4.2. Minimization		If the proposed activity cannot practicably be located outside the wetland/buffer zone, have all practicable measures have been taken to avoid adverse impacts on protected functions? Please include any information on on-site alternatives that have been examined; minimizing the size and scope of the project to avoid impacts; or relocating portions of the project to avoid impacts Alternate methods of construction such as directional drilling were considered but access to the site is extremely difficult and is not suitable for directional drilling. To avoid disturbances in the future, the main is planned to be replaced within the 100 year floodplain.	
12.4.3. Mitigation		If avoidance of adverse effects on protected functions cannot be practically achieved, has the proposed activity has been planned to minimize adverse impacts on the protected functions and a plan has been developed for the prompt restoration of any adverse impacts on protected functions? Include any information on best management practices to be used for the project both for the initial construction and ongoing use. Also include any proposed restoration of temporary impacts, previously disturbed wetland or buffer zones or proposed conservation that are being used to offset the proposed impacts. The trench excavation will be carried out in a manner that separates the top soil layer (upper 6-12 inches) from the subsoils. The topsoil will be stockpiled separately and will be replaced on the surface of the trench after the water main has been replaced. This will return the existing native vegetation to the surface of the backfilled trench so that the vegetation in place prior to the work will become reestablished as soon as possible after the work is completed. In order to reduce the potential for soil erosion, all areas of exposed soils within the wetlands will be seeded with a wetland conservation seed mix and mulched with weed-free straw as soon as possible after the site work has been completed.	
12.4.4. Compensation		Please refer to Section 9.5c of the rules for compensation, which is appropriate when the project will result in an undue adverse impact. If compensation is proposed please include a summary here. Since the proposed wetland and buffer zone impacts for this project are all temporary in nature, we are not proposing any compensatory measures for this project.	
13. Supporting materials		Where appropriate list the accompanying material by title, author, date and last revision date. Submit these documents and plans with the application.	
13.1. Location map		Provide a project location map that is 8 ½" x 11" and reproducible in black and white. An Environmental Interest Locator Map is appropriate using the USGS topography map base layer, roads, and VSWI wetlands at minimum. See attached ANR Natural Resource Atlas map	
13.2. Site Plans		List by title, author, date and last revision date. Plans should include wetland delineation and buffer zones, limits of disturbance, erosion controls, building	

	<p>envelopes and permanent memorialization.</p> <p>See attached for plans prepared by Dufresne Group, dated June 2015.</p>																																					
<p>13.3.ACOE Delineation Forms</p>	<p>List by author, location, and date. Required only for Individual Permits. See attached COE data forms completed by Brad Wheeler of Wheeler Environmental Services. The field transects were completed on June 9, 2015.</p>																																					
<p>13.4.Other Supporting Documents</p>	<p>Provide any other documentation that supports the application. List photographs; easements; agreements; may include a GIS-compatible wetland submittal for determinations; etc.</p>																																					
<p>13.5.List of Abutters (Neighbors with land adjoining wetland or buffer zone)</p>	<p>Attach list of names and mailing addresses or submit as word mailing document. See attached.</p>																																					
<p>13.5.1. Newspaper Notification</p>	<p>If choosing the option to fulfill the notice requirement with a newspaper notice, list the newspaper to be used here. A list of names and addresses for immediately adjacent landowners (500 foot radius) of the project area is required for the List of Abutters. ***NOTE: The applicant will be billed directly by the newspaper you list here. Use of newspaper notification may extend the notice period, depending on when the notice posts in the newspaper.</p>																																					
<p>14. Check Which Functions are Present in the Subject Wetland and in the Wetland Complex.</p>	<p>Wetland 2 Function Summary: (if more than one wetland use supplemental wetland sheets)</p>																																					
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<p>15. Coverage under Vermont General Wetland Permit</p>	<p>If applying for an Individual Vermont Wetland Permit or Determination, please proceed to number 16 and answer the remaining application questions.</p> <p>If applying for Coverage under the Vermont General Wetland Permit, please complete question 15.1 prior to submitting application.</p>																																					
<p>15.1.VWP Vermont General Permit eligibility checklist</p>	<p>If applying for coverage under the Vermont General Wetland Permit, please verify the following to complete the application:</p> <p><input type="checkbox"/>The activity qualifies as an eligible activity for coverage under the Vermont General Wetland Permit</p> <p><input type="checkbox"/>The proposed project will meet the conditions applicable to the proposed project in the Vermont Wetland General Permit</p>																																					

	<p><input type="checkbox"/> The activity does not qualify as an Allowed Use under Section 6 of the Vermont Wetland Rules.</p> <p><input type="checkbox"/> The activity will not result in an undue adverse impact on protected wetland functions and values, nor does it need additional conditions to protect functions and values.</p> <p><input type="checkbox"/> All impacts have been avoided and minimized to the greatest extent possible.</p> <p><input type="checkbox"/> The wetland complex is not significant for Function 5.5 Exemplary Wetland Natural Community or 5.6 Rare, Threatened and Endangered Species Habitat.</p> <p><input type="checkbox"/> The activity is not located in or adjacent to a vernal pool, fen, or bog.</p> <p><input type="checkbox"/> The wetland is not at or above 2,500' in elevation (headwaters wetland).</p> <p><input type="checkbox"/> The project is not located in a Class I wetland or associated buffer zone.</p> <p><input type="checkbox"/> The activity is not an as-built project that constitutes a violation of the Vermont Wetland Rules.</p>	
<p>Stop here if applying for Coverage under the Vermont General Wetland Permit</p>		

<p>Complete the following Functions and Values checklist if applying for an Individual Wetland Permit and/or a Wetland Determination</p>		
<p style="text-align: center;">Wetland 2</p>		
<p>Functions and Values</p>	<p>For each Function and Value, first evaluate the entire wetland or wetland complex and check all that apply. Secondly, evaluate how the wetland in the project area contributes to that function. Thirdly explain how the project will not result in adverse impacts to this function. Include any information on specific avoidance and minimization measures.</p> <p>If more than one wetland complex is involved, use the Supplemental Wetland Forms.</p>	
<p>16. Storage for Flood Water and Storm Runoff</p>	<p><input checked="" type="checkbox"/> Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Constricted outlet or no outlet and an unconstricted inlet. <input checked="" type="checkbox"/> Physical space for floodwater expansion and dense, persistent, emergent vegetation or dense woody vegetation that slows down flood waters or stormwater runoff during peak flows and facilitates water removal by evaporation and transpiration. <input type="checkbox"/> If a stream is present, its course is sinuous and there is sufficient woody vegetation to intercept surface flows in the portion of the wetland that floods. <input checked="" type="checkbox"/> Physical evidence of seasonal flooding or ponding such as water stained leaves, water marks on trees, drift rows, debris deposits, or standing water. <input type="checkbox"/> Hydrologic or hydraulic study indicates wetland attenuates flooding. <p>If any of the above boxes are checked, the wetland provides this</p>	

	<p>function. Complete the following to determine if the wetland provides this function above or below a moderate level. If none of the following apply, the wetland provides this function at a moderate level.</p> <p><input checked="" type="checkbox"/> Check box if any of the following conditions apply that may indicate the wetland provides this function at a <i>lower</i> level.</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Significant flood storage capacity upstream of the wetland, and the wetland in question provides this function at a negligible level in comparison to upstream storage (unless the upstream storage is temporary such as a beaver impoundment). <input type="checkbox"/> Wetland is contiguous to a major lake or pond that provides storage benefits independently of the wetland. <input type="checkbox"/> Wetland's storage capacity is created primarily by recent beaver dams or other temporary structures. <input type="checkbox"/> Wetland is very small in size, not contiguous to a stream, and not part of a collection of small wetlands in the landscape that provide this function cumulatively. <p><input type="checkbox"/> Check box if any of the following conditions apply that may indicate the wetland provides this function at a <i>higher</i> level.</p> <ul style="list-style-type: none"> <input type="checkbox"/> History of downstream flood damage to public or private property. <input type="checkbox"/> Any of the following conditions present downstream of the wetland, but upstream of a major lake or pond, could be impacted by a loss or reduction of the water storage function. <ul style="list-style-type: none"> <input type="checkbox"/> 1. Developed public or private property. <input type="checkbox"/> 2. Stream banks susceptible to scouring and erosion. <input type="checkbox"/> 3. Important habitat for aquatic life. <input type="checkbox"/> The wetland is large in size and naturally vegetated. <input type="checkbox"/> Any of the following conditions present upstream of the wetland may indicate a large volume of runoff may reach the wetland. <ul style="list-style-type: none"> <input type="checkbox"/> 1. A large amount of impervious surface in urbanized areas. <input type="checkbox"/> 2. Relatively impervious soils. <input type="checkbox"/> 3. Steep slopes in the adjacent areas. 	
<p>16.1. Subject Wetland</p>	<p>Please explain how the subject wetland contributes to the function listed above</p> <p>Wetland 2 is a relatively small area but does provide some relief of the river during flooding.</p>	
<p>16.2. Statement of no undue adverse impact</p>	<p>Please explain how the proposed project will not result in any undue, adverse impact to this function. Include any avoidance and minimization measures relevant to this function.</p> <p>The proposed project will not change the function of the wetlands or any elevations within the wetlands and will therefore not adversely impact its function.</p>	

17. Surface and Ground Water Protection

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
- Constricted or no outlets.
 - Low water velocity through dense, persistent vegetation.
 - Hydroperiod permanently flooded or saturated.
 - Wetlands in depositional environments with persistent vegetation wider than 20 feet.
 - Wetlands with persistent vegetation comprising a defined delta, island, bar or peninsula.
 - Presence of seeps or springs.
 - Wetland contains a high amount of microtopography that helps slow and filter surface water.
 - Position in the landscape indicates the wetland is a headwaters area.
 - Wetland is adjacent to surface waters.
 - Wetland recharges a drinking water source.
 - Water sampling indicates removal of pollutants or nutrients.
 - Water sampling indicates retention of sediments or organic matter.
 - Fine mineral soils and alkalinity not low.
 - The wetland provides an obvious filter between surface water or ground water and land uses that may contribute point or nonpoint sources of sediments, toxic substances or nutrients to the wetland, such as: steep erodible slopes; row crops; dumps; areas of pesticide, herbicide or fertilizer application; feed lots; parking lots or heavily traveled road; and septic systems.

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level. If none of the following apply, the wetland provides this function at a moderate level.

- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.
- Presence of dead forest or shrub areas in sufficient amounts to result in diminished nutrient uptake.
 - Presence of ditches or channels that confine water and restrict contact of water with vegetation.
 - Wetland is very small in size, not contiguous to a stream, and not part of a collection of small wetlands in the landscape that provide this function cumulatively.
 - Current use in the wetland results in disturbance that compromises this function.

	<input type="checkbox"/> Check box if any of the following conditions apply that may indicate the wetland provides this function at a <i>higher</i> level. <ul style="list-style-type: none"> <input type="checkbox"/> The wetland is adjacent to a well head or source protection area, and provides ground water recharge. <input type="checkbox"/> The wetland provides flows to Class A surface waters. <input type="checkbox"/> The wetland contributes to the protection or improvement of water quality of any impaired waters. <input type="checkbox"/> The wetland is large in size and naturally vegetated. 	
<p>17.1.Subject Wetland</p>	<p>Please explain how the subject wetland contributes to the function listed above</p> <p>The subject wetland does not contribute to this function.</p>	
<p>17.2.Statement of no undue adverse impact</p>	<p>Please explain how the proposed project will not result in any undue, adverse impact to this function. Include any avoidance and minimization measures relevant to this function.</p> <p>N/A</p>	
<p>18.Fish Habitat</p>	<input type="checkbox"/> Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function. <ul style="list-style-type: none"> <input type="checkbox"/> Contains woody vegetation that overhangs the banks of a stream or river and provides any of the following: shading that controls summer water temperature; cover including refuges created by overhanging branches or undercut banks; source of terrestrial insects as fish food; or streambank stability. <input type="checkbox"/> Provides spawning, nursery, feeding or cover habitat for fish (documented or professionally judged). Common habitat includes deep marsh and shallow marsh associates with lakes and streams, and seasonally flooded wetlands associated with streams and rivers. <input type="checkbox"/> Documented or professionally judged spawning habitat for northern pike. <input type="checkbox"/> Provides cold spring discharge that lowers the temperature of receiving waters and creates summer habitat for salmonoid species. <input type="checkbox"/> The wetland is located along a tributary that does not support fish, but contributes to a larger body of water that does support fish. The tributary supports downstream fish by providing cooler water, and food sources. 	
<p>18.1.Subject Wetland</p>	<p>Please explain how the subject wetland contributes to the function listed above</p> <p>The subject wetland does not contribute to this function.</p>	
<p>18.2.Statement of no undue adverse impact</p>	<p>Please explain how the proposed project will not result in any undue, adverse impact to this function. Include any avoidance and minimization measures relevant to this function.</p> <p>N/A</p>	
<p>19.Wildlife Habitat</p>	<input type="checkbox"/> Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the <ul style="list-style-type: none"> 	

wetland provides this function.

- Provides resting, feeding staging or roosting habitat to support waterfowl migration, and feeding habitat for wading birds. Good habitats for these species include open water wetlands.
- Habitat to support one or more breeding pairs or broods of waterfowl including all species of ducks, geese, and swans. Good habitats for these species include open water habitats adjacent shallow marsh, deep marsh, shrub wetland, forested wetland, or naturally vegetated buffer zone.
- Provides a nest site, a buffer for a nest site or feeding habitat for wading birds including but not limited to: great blue heron, black-crowned night heron, green-backed heron, cattle egret, or snowy egret. Good habitats for these species include open water or deep marsh adjacent to forested wetlands, or standing dead trees.
- Supports or has the habitat to support one or more breeding pairs of any migratory bird that requires wetland habitat for breeding, nesting, rearing of young, feeding, staging roosting, or migration, including: Virginia rail, common snipe, marsh wren, American bittern, northern water thrush, northern harrier, spruce grouse, Cerulean warbler, and common loon.
- Supports winter habitat for white-tailed deer. Good habitats for these species include softwood swamps. Evidence of use includes deer browsing, bark stripping, worn trails, or pellet piles.
- Provides important feeding habitat for black bear, bobcat, or moose based on an assessment of use. Good habitat for these types of species includes wetlands located in a forested mosaic.
- Has the habitat to support muskrat, otter or mink. Good habitats for these species include deep marshes, wetlands adjacent to bodies of water including lakes, ponds, rivers and streams.
- Supports an active beaver dam, one or more lodges, or evidence of use in two or more consecutive years by an adult beaver population.
- Provides the following habitats that support the reproduction of Uncommon Vermont amphibian species including:
 - 1. Wood Frog, Jefferson Salamander, Blue-spotted Salamander, or Spotted Salamander. Breeding habitat for these species includes vernal pools and small ponds.
 - 2. Northern Dusky Salamander and the Spring Salamander. Habitat for these species includes headwater seeps, springs, and streams.
 - 3. The Four-toed salamander; Fowler's Toad; Western

or Boreal Chorus frog, or other amphibians found in Vermont of similar significance.

- Supports or has the habitat to support significant populations of Vermont amphibian species including, but not limited to Pickerel Frog, Northern Leopard Frog, Mink Frog, and others found in Vermont of similar significance. Good habitat for these types of species includes large marsh systems with open water components.
- Supports or has the habitat to support populations of uncommon Vermont reptile species including: Wood Turtle, Northern Map Turtle, Eastern Musk Turtle, Spotted Turtle, Spiny Softshell, Eastern Ribbonsnake, Northern Watersnake, and others found in Vermont of similar significance.
- Supports or has the habitat to support significant populations of Vermont reptile species, including Smooth Greensnake, DeKay's Brownsnake, or other more common wetland-associated species.
- Meets four or more of the following conditions indicative of wildlife habitat diversity:
 - 1. Three or more wetland vegetation classes (greater than 1/2 acre) present including but not limited to: open water contiguous to, but not necessarily part of, the wetland, deep marsh, shallow marsh, shrub swamp, forested swamp, fen, or bog;
 - 2. The dominant vegetation class is one of the following types: deep marsh, shallow marsh, shrub swamp or, forested swamp;
 - 3. Located adjacent to a lake, pond, river or stream;
 - 4. Fifty percent or more of surrounding habitat type is one or more of the following: forest, agricultural land, old field or open land;
 - 5. Emergent or woody vegetation occupies 26 to 75 percent of wetland, the rest is open water;
 - 6. One of the following:
 - i. hydrologically connected to other wetlands of different dominant classes or open water within 1 mile;
 - ii. hydrologically connected to other wetlands of same dominant class within 1/2 mile;
 - iii. within 1/4 mile of other wetlands of different dominant classes or open water, but not hydrologically connected;
- Wetland or wetland complex is owned in whole or in part by state or federal government and managed for wildlife and habitat conservation; and
- Contains evidence that it is used by wetland dependent

	<p>wildlife species.</p> <p>If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level. If none of the following apply, the wetland provides this function at a moderate level.</p> <p><input type="checkbox"/> Check box if any of the following conditions apply that may indicate the wetland provides this function at a <i>lower</i> level.</p> <ul style="list-style-type: none"> <input type="checkbox"/> The wetland is small in size for its type and does not represent fugitive habitat in developed areas (vernal pools and seeps are generally small in size, so this does not apply). <input type="checkbox"/> The surrounding land use is densely developed enough to limit use by wildlife species (with the exception of wetlands with open water habitat). Can be negated by evidence of use. <input type="checkbox"/> The current use in the wetland results in frequent cutting, mowing or other disturbance. <input type="checkbox"/> The wetland hydrology and character is at a drier end of the scale and does not support wetland dependent species. <p><input type="checkbox"/> Check box if any of the following conditions apply that may indicate the wetland provides this function at a <i>higher</i> level.</p> <ul style="list-style-type: none"> <input type="checkbox"/> The wetland complex is large in size and high in quality. <input type="checkbox"/> The habitat has the potential to support several species based on the assessment above. <input type="checkbox"/> Wetland is associated with an important wildlife corridor. <input type="checkbox"/> The wetland has been identified as a locally important wildlife habitat by an ANR Wildlife Biologist. 	
<p>19.1. Subject Wetland</p>	<p>Please explain how the subject wetland contributes to the function listed above</p> <p>The subject wetland does not contribute to this function.</p>	
<p>19.2. Statement of no undue adverse impact</p>	<p>Please explain how the proposed project will not result in any undue, adverse impact to this function. Include any avoidance and minimization measures relevant to this function.</p> <p>N/A</p>	
<p>20. Exemplary Wetland Natural Community</p>	<p><input type="checkbox"/> Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Wetlands that are identified as high quality examples of Vermont's natural community types recognized by the Natural Heritage Information Project of the Vermont Fish and Wildlife Department, including rare types such as dwarf shrub bogs, rich fens, alpine peatlands, red maple-black gum swamps and the more common types including deep bulrush marshes, cattail marshes, northern white cedar swamps, spruce-fir-tamarack swamps, and red maple-black ash seepage swamps are automatically significant for this function. 	

	<p>The wetland is also likely to be significant if any of the following conditions are met:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Is an example of a wetland natural community type that has been identified and mapped by, or meets the ranking and mapping standards of, the Natural Heritage Information Project of the Vermont Fish and Wildlife Department. <input type="checkbox"/> Contains ecological features that contribute to Vermont's natural heritage, including, but not limited to: <ul style="list-style-type: none"> <input type="checkbox"/> Deep peat accumulation reflecting a long history of wetland formation; <input type="checkbox"/> Forested wetlands displaying very old trees and other old growth characteristics; <input type="checkbox"/> A wetland natural community that is at the edge of the normal range for that type; <input type="checkbox"/> A wetland mosaic containing examples of several to many wetland community types; or <input type="checkbox"/> A large wetland complex containing examples of several wetland community types. <p>List species or communities of concern:</p>	
<p>20.1. Subject Wetland</p>	<p>Please explain how the subject wetland contributes to the function listed above</p> <p>The subject wetland is not significant for this function.</p>	
<p>20.2. Statement of no undue adverse impact</p>	<p>Please explain how the proposed project will not result in any undue, adverse impact to this function. Include any avoidance and minimization measures relevant to this function.</p> <p>N/A</p>	
<p>21. Rare, Threatened, and Endangered Species Habitat</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function. <input type="checkbox"/> Wetlands that contain one or more species on the federal or state threatened or endangered lists, as well as species that are rare in Vermont, are automatically significant for this function. <p>The wetland is also likely to be significant if any of the following apply:</p> <ul style="list-style-type: none"> <input type="checkbox"/> There is credible documentation that the wetland provides important habitat for any species on the federal or state threatened or endangered species lists; <input type="checkbox"/> There is credible documentation that threatened or endangered species have been present in past 10 years; <input type="checkbox"/> There is credible documentation that the wetland provides important habitat for any species listed as rare in Vermont (S1 or S2 ranks), state historic (SH rank), or rare to uncommon globally (G1, G2, or G3 ranks) by the Natural Heritage Information Project of the Vermont Fish and Wildlife Department; 	

	<input type="checkbox"/> There is credible documentation that the wetland provides habitat for multiple uncommon species of plants or animals (S3 rank). List name of species and ranking:	
21.1.Subject Wetland	Please explain how the subject wetland contributes to the function listed above The subject wetland is not significant for this function.	
21.2.Statement of no adverse impact	Please explain how the proposed project will not result in any undue, adverse impact to this function. Include any avoidance and minimization measures relevant to this function. N/A	
22.Education and Research in Natural Sciences	<input type="checkbox"/> Function is present and likely to be significant: Any of the following characteristics indicate the wetland provides this function. <input type="checkbox"/> Owned by or leased to a public entity dedicated to education or research. <input type="checkbox"/> History of use for education or research. <input type="checkbox"/> Has one or more characteristics making it valuable for education or research.	
22.1.Subject Wetland	Please explain how the subject wetland contributes to the function listed above The subject wetland is not significant for this function.	
22.2.Statement of no undue adverse impact	Please explain how the proposed project will not result in any undue, adverse impact to this function. Include any avoidance and minimization measures relevant to this function. N/A	
23.Recreational Value and Economic Benefits	<input type="checkbox"/> Function is present and likely to be significant: Any of the following characteristics indicate the wetland provides this function. <input type="checkbox"/> Used for, or contributes to, recreational activities. <input type="checkbox"/> Provides economic benefits. <input type="checkbox"/> Provides important habitat for fish or wildlife which can be fished, hunted or trapped under applicable state law. <input type="checkbox"/> Used for harvesting of wild foods. Comments:	
23.1.Subject Wetland	Please explain how the subject wetland contributes to the function listed above The subject wetland is not significant for this function.	
23.2.Statement of no undue adverse impact	Please explain how the proposed project will not result in any undue, adverse impact to this function. Include any avoidance and minimization measures relevant to this function. N/A	
24.Open Space and Aesthetics	<input type="checkbox"/> Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the	

	<p>wetland provides this function.</p> <p><input type="checkbox"/> Can be readily observed by the public; and</p> <p style="padding-left: 40px;"><input type="checkbox"/> Possesses special or unique aesthetic qualities; or</p> <p style="padding-left: 40px;"><input type="checkbox"/> Has prominence as a distinct feature in the surrounding landscape;</p> <p><input type="checkbox"/> Has been identified as important open space in a municipal, regional or state plan.</p> <p>Comments:</p>	
<p>24.1. Subject Wetland</p>	<p>Please explain how the subject wetland contributes to the function listed above</p> <p>The subject wetland is not significant for this function.</p>	
<p>24.2. Statement of no undue adverse impact</p>	<p>Please explain how the proposed project will not result in any undue, adverse impact to this function. Include any avoidance and minimization measures relevant to this function.</p> <p>N/A</p>	
<p>25. Erosion Control through Binding and Stabilizing the Soil</p>	<p><input checked="" type="checkbox"/> Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.</p> <p><input checked="" type="checkbox"/> Erosive forces such as wave or current energy are present and any of the following are present as well:</p> <p style="padding-left: 40px;"><input checked="" type="checkbox"/> Dense, persistent vegetation along a shoreline or stream bank that reduces an adjacent erosive force.</p> <p style="padding-left: 40px;"><input type="checkbox"/> Good interspersion of persistent emergent vegetation and water along course of water flow.</p> <p style="padding-left: 40px;"><input type="checkbox"/> Studies show that wetlands of similar size, vegetation type, and hydrology are important for erosion control.</p> <p>What type of erosive forces are present:</p> <p style="padding-left: 40px;"><input type="checkbox"/> Lake fetch and waves</p> <p style="padding-left: 40px;"><input checked="" type="checkbox"/> High current velocities:</p> <p style="padding-left: 40px;"><input type="checkbox"/> Water level influenced by upstream impoundment</p> <p>If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level. If none of the following apply, the wetland provides this function at a moderate level.</p> <p><input type="checkbox"/> Check box if any of the following conditions apply that may indicate the wetland provides this function at a <i>lower</i> level.</p> <p style="padding-left: 40px;"><input type="checkbox"/> The stream is artificially channelized and/or lacks vegetation that contributes to controlling the erosive force.</p> <p><input type="checkbox"/> Check box if any of the following conditions apply that may indicate the wetland provides this function at a <i>higher</i> level.</p> <p style="padding-left: 40px;"><input type="checkbox"/> The stream contains high sinuosity.</p> <p style="padding-left: 40px;"><input type="checkbox"/> Has been identified through fluvial geomorphic assessment</p>	

	to be important in maintaining the natural condition of the stream or river corridor.	
25.1. Subject Wetland	<p>Please explain how the subject wetland contributes to the function listed above</p> <p>Woody vegetation along the banks of the Moose River help to stabilize the bank during flooding episodes.</p>	
25.2. Statement of no undue adverse impact	<p>Please explain how the proposed project will not result in any undue adverse impact to this function. Include any avoidance and minimization measures relevant to this function.</p> <p>This project will cut through a narrow section of stream bank on both sides of the river. Existing vegetation will be replaced as described in Section 12.4.3 of this application and stone fill will be used on the banks to stabilize the banks until vegetation is restored. The preexisting conditions will be restored as soon as the water line replacement is completed.</p>	

All Applications Should be Mailed To:

**Vermont Wetlands Program
 Watershed Management Division
 One National Life Drive, Main 2
 Montpelier, VT 05620-3522**

Staff To Complete

Wetland Project Number:			
Wetland Project Name:		DEC ID#:	
Date Application Received:			
Request for Information Date:		Information Received Date:	
Request for Information Date:		Information Received Date:	
Date Application Complete:		Distribution Complete Date:	
Notice Begin Date:		Notice End Date:	
Final Action Date:		Public Meeting Date:	
Check#	Check Amount	Date Check Received	
Check#	Check Amount	Date Check Received	

Vermont Wetland Permit Application/Determination Petition

QUESTION	INSTRUCTIONS AND APPLICANT ANSWER		STAFF NOTE
1.1. Applicant Name	Town of St. Johnsbury		
4. Location of Wetland and Project	<p>Location description should include the road the wetland is located on, the compass direction of the wetland in relation to the road, 911 street address if available, and any other distinguishing geographic features.</p> <p>Moose River, approximately 1 mile east of St. Johnsbury, approximately 200 feet southeast of Route 2 and 1,500 feet southwest of Fairbanks Scales. There are three separate wetland areas that will be involved in this project. Two small wetlands are on the west side of the Moose River and one larger wetland area is on the east side of the Moose River.</p> <p>For the purposes of this application, these wetlands will be referred to as wetland 1, wetland 2 and wetland 3.</p> <p>Wetland 1 and Wetland 2 were covered in the previous section this supplement covers Wetland 3. Wetland 3 is located on the east side of the Moose River. This area is a relatively large forested floodplain.</p>		
5. Site Visit Date and Attendees	Date of visit with District Wetlands Ecologist	List people present for site visits including Ecologist, landowner, and representatives.	
	5/28/2015	Shannon Morrison	
6. Wetland Classification	<p>The wetland is a Class II wetland because (Choose one):</p> <p>The wetland is contiguous to a VSWI mapped wetland</p>		
7. Description of Entire Wetland or Wetland Complex	Answer the following questions regarding the entire wetland or wetland complex. A wetland complex is generally defined as two or more wetland types that are contiguous and interrelated. Specific questions about the wetland in the project area will follow.		
7.1. Size of Wetland Complex in Acres	<p>Can be obtained from the Environmental Interest Locator Map for mapped wetlands</p> <p>Adjacent wetland complex is 8.3 acres.</p>		
7.2. Natural Community Types Present	<p>List all wetland types in the wetland or wetland complex and their abundance or relative abundance. For example: 50 acres of softwood forested swamp; or 30% scrub swamp, 70% emergent wetland</p> <p>Wetland 3: 80% hardwood forested floodplain, 20% scrub-shrub floodplain</p>		
7.3. Landscape Position	<p>Where is the wetland located on the landscape? Examples: bottom of a basin, edge of a stream, shore of a lake, etc.</p> <p>All three wetland areas are located along riparian edges.</p>		
7.4. Wetland Hydrology	<p>Describe the main source of wetland hydrology for the wetland complex. List any river, streams, lakes and ponds.</p> <p>Flooding of the Moose River provides a key source of wetland hydrology for wetland 3. Groundwater flowing from higher landscape positions into the wetland areas is also a key hydrology source for wetland 3. Include answers to the following where appropriate:</p>		
7.4.1. Direction of flow	<p>For example: stream flows from north to south through the wetland complex.</p> <p>North - south</p>		
7.4.2. Influence of hydrology on wetland complex	<p>For example: The river provides flood water to the wetland in the spring.</p> <p>Spring runoff and flooding provide water to the wetland.</p>		
7.4.3. Relation to the project area	<p>Distance between the project area and any nearby surface waters.</p> <p>The project is a water main crossing so will cross the Moose River, a surface water.</p>		
7.4.4. Hydroperiod	<p>Discuss frequency and duration of flooding, ponding, and/or soil saturation.</p> <p>Annual spring flooding and soil saturation.</p>		

7.5. Surrounding Landuse of the Wetland Complex	For example: rural residential and forested; agricultural and undeveloped, Agricultural, forested and rural residential	
7.6. Relation to Other Nearby Wetlands	Provide any information on wetlands or wetland complexes that are close enough to contribute to the overall function of the wetland in question. Adjacent to Class II wetland.	
7.7. Pre-project Cumulative Impacts to the Wetland	Identify any cumulative ongoing impacts outside of the project that may influence the wetland. Examples include but are not limited to wetland encroachments off the subject property, land management in or surrounding the wetland, or development that influences hydrology or water quality. None	
8. Description of Subject Wetland	Subject Wetland is defined as the area of wetland in the project area, but not limited to the portion of the wetland to be directly impacted by the project. For the purposes of this application, the subject wetland should encompass any portion of the larger wetland or wetland complex that could be directly or indirectly impacted by the project, as defined by hydrology, vegetation and/or physical characteristics.	
8.1. Context of Subject Wetland	Describe where the subject wetland is in the context of the larger wetland or wetland complex described above. Subject wetland includes a mapped area that will be utilized for staging. The wetland in the area of work is not mapped but is adjacent to, and across the river from a mapped Class II wetland. The mapped wetland is grass, mowed lawn and partially paved while the area where work will occur in the wetland is naturally vegetated.	
8.2. Wetland Landuse	For example: mowed lawn; old field; naturally vegetated. Describe any previous and ongoing disturbance in the subject wetland. Staging area - mowed lawn and paved, project area - naturally vegetated.	
8.3. Wetland Vegetation	List dominant wetland community type and associated dominant plant species. Wetland 3: forested floodplain; ostrich fern, green ash	
8.4. Wetland Soils	Use USDA NRCS information where possible and use the ACOE Delineation Manual soil description Wetland 3 soils are medium sand and silt loam textures, with gray (5Y 5/2) matrix colors and reddish brown (7.5YR 5/4) redoximorphic features.	
8.5. Wetland Hydrology	Use descriptions from the ACOE Delineation Manual. See attached data sheets prepared in accordance with the ACOE requirements.	
8.6. Buffer Zone	Describe the buffer zone of the subject wetland including:	
8.6.1. General landuse	For example: mowed road shoulder; forested; old field; paved road and residential lawns etc. Describe any previous and ongoing disturbance in the buffer zone. On the west side of the Moose River the buffer zone is railroad tracks, mowed lawn and paved areas. On the east side of the Moose River the buffer zone is steeply sloping woodland.	
8.6.2. Buffer vegetation	List community type and dominant plant species The buffer zone for Wetland 3 is steeply sloping forestland, with dominant plant species including christmas fern, white ash, aster species, sugar maple, thimble berry.	
8.6.3. Buffer soils	Use USDA NRCS information where possible, and the ACOE Delineation Manual soil description The buffer zone soils on the east side of the Moose River are steeply sloping very fine sandy loam soils with dominant grayish brown colors (2.5Y 4/3) to a depth of at least 17 inches.	
11. Project Details	Provide details regarding specific impacts to the wetland and buffer zone	

<p>11.1. Specific Impacts to Wetland and Buffer Zone</p>	<p>List portions of the project that will specifically impact the wetland or buffer zone. Due to existing topography, the water main will be installed by open cut which will temporarily impact the wetland and buffer zone. Staging and access areas will also temporarily impact the wetland.</p>									
<p>11.2. Dimension Details</p>	<p>Square footage of buildings, dimension of roads including fill footprint. Approximately 440 lineal feet of water main will be installed as a result of this project.</p>									
<p>11.3. Bridges and Culverts</p>	<p>Culvert circumference, length, placement and shapes, or bridge details. Not applicable</p>									
<p>11.4. Construction Sequence</p>	<p>Describe any details pertaining to the worked planned in the wetland and buffer in terms of sequence or phasing that is relevant Construction will generally follow the sequence of: excavation of trench, placement of bedding, pipe, backfill, testing of the pipe followed by restoration of the ground surface.</p>									
<p>11.5. Stormwater Design</p>	<p>List any stormwater permits obtained or applied for. Describe any stormwater and/or erosion controls proposed to prevent discharges to the wetland and buffer zone. Erosion control measures will be utilized to prevent discharges outside of the area of disturbance.</p>									
<p>11.6. Permanent Demarcation of Limits of Impact</p>	<p>Describe any plantings, fencing, signage, or other memorialization that provides permanent on-the-ground boundaries for the limits of disturbance for ongoing uses. No ongoing areas of disturbance will be involved with this project.</p>									
<p>12. Wetland and Buffer Zone Impacts</p>										
<p>12.1. Wetland Impacts</p>	<p>Summarize the square footage of impact in the appropriate category. If more than one wetland is impacted, provide that information and use the supplemental wetland sheets.</p> <table border="1"> <tr> <td colspan="2">Totals Wetland 3</td> </tr> <tr> <td>Wetland Fill</td> <td>0 s.f.</td> </tr> <tr> <td>Temporary Wetland Impact</td> <td>6536 s.f.</td> </tr> <tr> <td>Other Permanent Wetland Impact</td> <td>0 s.f.</td> </tr> </table> <p>Describe in detail the proposed impact. No changes in elevation are proposed for this project. Existing ground surface elevations will be restored at the conclusion of the project. The proposed impact will be from the excavation of the trench for the water main, travel of equipment and temporary storage of spoils from excavation of the trench.</p>	Totals Wetland 3		Wetland Fill	0 s.f.	Temporary Wetland Impact	6536 s.f.	Other Permanent Wetland Impact	0 s.f.	
Totals Wetland 3										
Wetland Fill	0 s.f.									
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<p>12.2. Buffer Zone Impacts</p>	<p>Summarize the square footage of impact in the appropriate category. If more than one wetland is impacted, provide that information and use the supplemental wetland sheets.</p> <table border="1"> <tr> <td colspan="2">Totals Wetland 3</td> </tr> <tr> <td>Temporary Buffer Impact</td> <td>0 s.f.</td> </tr> <tr> <td>Permanent Buffer Impact</td> <td>0 s.f.</td> </tr> </table> <p>Describe in detail the proposed impact. No changes in elevation are proposed for this project. Existing ground surface elevations will be restored at the conclusion of the project. The</p>	Totals Wetland 3		Temporary Buffer Impact	0 s.f.	Permanent Buffer Impact	0 s.f.			
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	<p>proposed impact will be from the excavation of the trench for the water main, travel of equipment and temporary storage of spoils from excavation of the trench.</p>							
<p>12.3.Cumulative Impacts</p>	<p>List any potential cumulative or ongoing, direct and indirect impacts on the functions of the wetland that could result from the proposed project. A portion of the wetland will be temporarily disturbed. No permanent impacts are anticipated.</p>							
<p>12.4.Avoidance and Minimization</p>	<p>Please refer to Section 9.5b of the rules on Mitigation Sequencing for this section.</p>							
<p>12.4.1. Avoidance</p>	<p>Can the proposed activity be practicably located outside the wetland/buffer zone, or on another site owned or controlled by the applicant or reasonably available to satisfy the basic project purpose? If not, indicate why. This answer should include any examination of alternatives that you have explored including using other properties, requesting easements, and altering the project design. Due to the existing topography and infrastructure it is not feasible to locate the improvements elsewhere to avoid impacts to the wetland.</p>							
<p>12.4.2. Minimization</p>	<p>If the proposed activity cannot practicably be located outside the wetland/buffer zone, have all practicable measures have been taken to avoid adverse impacts on protected functions? Please include any information on on-site alternatives that have been examined; minimizing the size and scope of the project to avoid impacts; or relocating portions of the project to avoid impacts Alternate methods of construction such as directional drilling were considered but access to the site is extremely difficult and is not suitable for directional drilling. To avoid disturbances in the future, the main is planned to be replaced within the 100 year floodplain.</p>							
<p>12.4.3. Mitigation</p>	<p>If avoidance of adverse effects on protected functions cannot be practically achieved, has the proposed activity has been planned to minimize adverse impacts on the protected functions and a plan has been developed for the prompt restoration of any adverse impacts on protected functions? Include any information on best management practices to be used for the project both for the initial construction and ongoing use. Also include any proposed restoration of temporary impacts, previously disturbed wetland or buffer zones or proposed conservation that are being used to offset the proposed impacts. The trench excavation will be carried out in a manner that separates the top soil layer (upper 6-12 inches) from the subsoils. The topsoil will be stockpiled separately and will be replaced on the surface of the trench after the water main has been replaced. This will return the existing native vegetation to the surface of the backfilled trench so that the vegetation in place prior to the work will become reestablished as soon as possible after the work is completed. In order to reduce the potential for soil erosion, all areas of exposed soils within the wetlands will be seeded with a wetland conservation seed mix and mulched with weed-free straw as soon as possible after the site work has been completed.</p>							
<p>12.4.4. Compensation</p>	<p>Please refer to Section 9.5c of the rules for compensation, which is appropriate when the project will result in an undue adverse impact. If compensation is proposed please include a summary here. Since the proposed wetland and buffer zone impacts for this project are all temporary in nature, we are not proposing any compensatory measures for this project.</p>							
<p>14. Check Which Functions are Present in the Subject Wetland and in the Wetland</p>	<p>Wetland 3 Function Summary: (if more than one wetland use supplemental wetland sheets)</p> <table border="1"> <tr> <td>Functions & Values</td> <td>Subject Wetland</td> <td>Wetland Complex</td> <td>Functions & Values</td> <td>Subject Wetland</td> <td>Wetland Complex</td> </tr> </table>	Functions & Values	Subject Wetland	Wetland Complex	Functions & Values	Subject Wetland	Wetland Complex	
Functions & Values	Subject Wetland	Wetland Complex	Functions & Values	Subject Wetland	Wetland Complex			

Complex.	Flood/Storm Storage	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	RTE Species	<input type="checkbox"/>	<input type="checkbox"/>
	Surface & Groundwater Protection	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Education & Research	<input type="checkbox"/>	<input type="checkbox"/>
	Fish Habitat	<input type="checkbox"/>	<input type="checkbox"/>	Recreation/Economic	<input type="checkbox"/>	<input type="checkbox"/>
	Wildlife Habitat	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Open Space/Aesthetics	<input type="checkbox"/>	<input type="checkbox"/>
	Exemplary Natural Community	<input type="checkbox"/>	<input type="checkbox"/>	Erosion Control	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Wetland 3

Functions and Values

For each Function and Value, first evaluate the entire wetland or **wetland complex** and check all that apply. Secondly, evaluate how the wetland in the project area contributes to that function. Thirdly explain how the project will not result in adverse impacts to this function. Include any information on specific avoidance and minimization measures.

If more than one wetland complex is involved, use the Supplemental Wetland Forms.

16. Storage for Flood Water and Storm Runoff

Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.

- Constricted outlet or no outlet and an unconstricted inlet.
- Physical space for floodwater expansion and dense, persistent, emergent vegetation or dense woody vegetation that slows down flood waters or stormwater runoff during peak flows and facilitates water removal by evaporation and transpiration.
- If a stream is present, its course is sinuous and there is sufficient woody vegetation to intercept surface flows in the portion of the wetland that floods.
- Physical evidence of seasonal flooding or ponding such as water stained leaves, water marks on trees, drift rows, debris deposits, or standing water.
- Hydrologic or hydraulic study indicates wetland attenuates flooding.

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level. If none of the following apply, the wetland provides this function at a moderate level.

- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.
 - Significant flood storage capacity upstream of the wetland, and the wetland in question provides this function at a negligible level in comparison to upstream storage (unless the upstream storage is temporary such as a beaver impoundment).
 - Wetland is contiguous to a major lake or pond that provides storage benefits independently of the wetland.

	<ul style="list-style-type: none"> <input type="checkbox"/> Wetland's storage capacity is created primarily by recent beaver dams or other temporary structures. <input type="checkbox"/> Wetland is very small in size, not contiguous to a stream, and not part of a collection of small wetlands in the landscape that provide this function cumulatively. <input checked="" type="checkbox"/> Check box if any of the following conditions apply that may indicate the wetland provides this function at a <i>higher</i> level. <ul style="list-style-type: none"> <input type="checkbox"/> History of downstream flood damage to public or private property. <input type="checkbox"/> Any of the following conditions present downstream of the wetland, but upstream of a major lake or pond, could be impacted by a loss or reduction of the water storage function. <ul style="list-style-type: none"> <input type="checkbox"/> 1. Developed public or private property. <input type="checkbox"/> 2. Stream banks susceptible to scouring and erosion. <input type="checkbox"/> 3. Important habitat for aquatic life. <input checked="" type="checkbox"/> The wetland is large in size and naturally vegetated. <input type="checkbox"/> Any of the following conditions present upstream of the wetland may indicate a large volume of runoff may reach the wetland. <ul style="list-style-type: none"> <input type="checkbox"/> 1. A large amount of impervious surface in urbanized areas. <input type="checkbox"/> 2. Relatively impervious soils. <input type="checkbox"/> 3. Steep slopes in the adjacent areas. 	
<p>16.1. Subject Wetland</p>	<p>Please explain how the subject wetland contributes to the function listed above</p> <p>Wetland 3 is a relatively large area for flood waters to disperse and slow.</p>	
<p>16.2. Statement of no undue adverse impact</p>	<p>Please explain how the proposed project will not result in any undue, adverse impact to this function. Include any avoidance and minimization measures relevant to this function.</p> <p>The proposed project will not change the function of the wetlands or any elevations within the wetlands and will therefore not adversely impact its function.</p>	
<p>17. Surface and Ground Water Protection</p>	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function. <ul style="list-style-type: none"> <input type="checkbox"/> Constricted or no outlets. <input type="checkbox"/> Low water velocity through dense, persistent vegetation. <input type="checkbox"/> Hydroperiod permanently flooded or saturated. <input type="checkbox"/> Wetlands in depositional environments with persistent vegetation wider than 20 feet. <input checked="" type="checkbox"/> Wetlands with persistent vegetation comprising a defined delta, island, bar or peninsula. <input type="checkbox"/> Presence of seeps or springs. 	

	<ul style="list-style-type: none"> <input type="checkbox"/> Wetland contains a high amount of microtopography that helps slow and filter surface water. <input type="checkbox"/> Position in the landscape indicates the wetland is a headwaters area. <input checked="" type="checkbox"/> Wetland is adjacent to surface waters. <input type="checkbox"/> Wetland recharges a drinking water source. <input type="checkbox"/> Water sampling indicates removal of pollutants or nutrients. <input type="checkbox"/> Water sampling indicates retention of sediments or organic matter. <input type="checkbox"/> Fine mineral soils and alkalinity not low. <input type="checkbox"/> The wetland provides an obvious filter between surface water or ground water and land uses that may contribute point or nonpoint sources of sediments, toxic substances or nutrients to the wetland, such as: steep erodible slopes; row crops; dumps; areas of pesticide, herbicide or fertilizer application; feed lots; parking lots or heavily traveled road; and septic systems. <p>If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level. If none of the following apply, the wetland provides this function at a moderate level.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Check box if any of the following conditions apply that may indicate the wetland provides this function at a <i>lower</i> level. <ul style="list-style-type: none"> <input type="checkbox"/> Presence of dead forest or shrub areas in sufficient amounts to result in diminished nutrient uptake. <input type="checkbox"/> Presence of ditches or channels that confine water and restrict contact of water with vegetation. <input type="checkbox"/> Wetland is very small in size, not contiguous to a stream, and not part of a collection of small wetlands in the landscape that provide this function cumulatively. <input type="checkbox"/> Current use in the wetland results in disturbance that compromises this function. <input checked="" type="checkbox"/> Check box if any of the following conditions apply that may indicate the wetland provides this function at a <i>higher</i> level. <ul style="list-style-type: none"> <input type="checkbox"/> The wetland is adjacent to a well head or source protection area, and provides ground water recharge. <input type="checkbox"/> The wetland provides flows to Class A surface waters. <input type="checkbox"/> The wetland contributes to the protection or improvement of water quality of any impaired waters. <input checked="" type="checkbox"/> The wetland is large in size and naturally vegetated. 	
<p>17.1.Subject Wetland</p>	<p>Please explain how the subject wetland contributes to the function listed above</p> <p>Wetland 3 provides areas for sediment deposition during higher flows.</p>	

<p>17.2.Statement of no undue adverse impact</p>	<p>Please explain how the proposed project will not result in any undue, adverse impact to this function. Include any avoidance and minimization measures relevant to this function.</p> <p>Impacts from the project will be temporary and the function of the wetlands will not be diminished.</p>	
<p>18. Fish Habitat</p>	<p><input type="checkbox"/> Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.</p> <p><input type="checkbox"/> Contains woody vegetation that overhangs the banks of a stream or river and provides any of the following: shading that controls summer water temperature; cover including refuges created by overhanging branches or undercut banks; source of terrestrial insects as fish food; or streambank stability.</p> <p><input type="checkbox"/> Provides spawning, nursery, feeding or cover habitat for fish (documented or professionally judged). Common habitat includes deep marsh and shallow marsh associates with lakes and streams, and seasonally flooded wetlands associated with streams and rivers.</p> <p><input type="checkbox"/> Documented or professionally judged spawning habitat for northern pike.</p> <p><input type="checkbox"/> Provides cold spring discharge that lowers the temperature of receiving waters and creates summer habitat for salmonoid species.</p> <p><input type="checkbox"/> The wetland is located along a tributary that does not support fish, but contributes to a larger body of water that does support fish. The tributary supports downstream fish by providing cooler water, and food sources.</p>	
<p>18.1.Subject Wetland</p>	<p>Please explain how the subject wetland contributes to the function listed above</p> <p>The subject wetland does not contribute to this function.</p>	
<p>18.2.Statement of no undue adverse impact</p>	<p>Please explain how the proposed project will not result in any undue, adverse impact to this function. Include any avoidance and minimization measures relevant to this function.</p> <p>N/A</p>	
<p>19. Wildlife Habitat</p>	<p><input checked="" type="checkbox"/> Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.</p> <p><input type="checkbox"/> Provides resting, feeding staging or roosting habitat to support waterfowl migration, and feeding habitat for wading birds. Good habitats for these species include open water wetlands.</p> <p><input type="checkbox"/> Habitat to support one or more breeding pairs or broods of waterfowl including all species of ducks, geese, and swans. Good habitats for these species include open water habitats adjacent shallow marsh, deep marsh, shrub wetland, forested wetland, or naturally vegetated buffer zone.</p> <p><input type="checkbox"/> Provides a nest site, a buffer for a nest site or feeding habitat for wading birds including but not limited to: great</p>	

blue heron, black-crowned night heron, green-backed heron, cattle egret, or snowy egret. Good habitats for these species include open water or deep marsh adjacent to forested wetlands, or standing dead trees.

- Supports or has the habitat to support one or more breeding pairs of any migratory bird that requires wetland habitat for breeding, nesting, rearing of young, feeding, staging roosting, or migration, including: Virginia rail, common snipe, marsh wren, American bittern, northern water thrush, northern harrier, spruce grouse, Cerulean warbler, and common loon.
- Supports winter habitat for white-tailed deer. Good habitats for these species include softwood swamps. Evidence of use includes deer browsing, bark stripping, worn trails, or pellet piles.
- Provides important feeding habitat for black bear, bobcat, or moose based on an assessment of use. Good habitat for these types of species includes wetlands located in a forested mosaic.
- Has the habitat to support muskrat, otter or mink. Good habitats for these species include deep marshes, wetlands adjacent to bodies of water including lakes, ponds, rivers and streams.
- Supports an active beaver dam, one or more lodges, or evidence of use in two or more consecutive years by an adult beaver population.
- Provides the following habitats that support the reproduction of Uncommon Vermont amphibian species including:
 - 1. Wood Frog, Jefferson Salamander, Blue-spotted Salamander, or Spotted Salamander. Breeding habitat for these species includes vernal pools and small ponds.
 - 2. Northern Dusky Salamander and the Spring Salamander. Habitat for these species includes headwater seeps, springs, and streams.
 - 3. The Four-toed salamander; Fowler's Toad; Western or Boreal Chorus frog, or other amphibians found in Vermont of similar significance.
- Supports or has the habitat to support significant populations of Vermont amphibian species including, but not limited to Pickerel Frog, Northern Leopard Frog, Mink Frog, and others found in Vermont of similar significance. Good habitat for these types of species includes large marsh systems with open water components.
- Supports or has the habitat to support populations of uncommon Vermont reptile species including: Wood Turtle, Northern Map Turtle, Eastern Musk Turtle, Spotted Turtle, Spiny Softshell, Eastern Ribbonsnake, Northern Watersnake, and others found in Vermont of similar

significance.

- Supports or has the habitat to support significant populations of Vermont reptile species, including Smooth Greensnake, DeKay's Brownsnake, or other more common wetland-associated species.
- Meets four or more of the following conditions indicative of wildlife habitat diversity:
 - 1. Three or more wetland vegetation classes (greater than 1/2 acre) present including but not limited to: open water contiguous to, but not necessarily part of, the wetland, deep marsh, shallow marsh, shrub swamp, forested swamp, fen, or bog;
 - 2. The dominant vegetation class is one of the following types: deep marsh, shallow marsh, shrub swamp or, forested swamp;
 - 3. Located adjacent to a lake, pond, river or stream;
 - 4. Fifty percent or more of surrounding habitat type is one or more of the following: forest, agricultural land, old field or open land;
 - 5. Emergent or woody vegetation occupies 26 to 75 percent of wetland, the rest is open water;
 - 6. One of the following:
 - i. hydrologically connected to other wetlands of different dominant classes or open water within 1 mile;
 - ii. hydrologically connected to other wetlands of same dominant class within 1/2 mile;
 - iii. within 1/4 mile of other wetlands of different dominant classes or open water, but not hydrologically connected;
- Wetland or wetland complex is owned in whole or in part by state or federal government and managed for wildlife and habitat conservation; and
- Contains evidence that it is used by wetland dependent wildlife species.

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level. If none of the following apply, the wetland provides this function at a moderate level.

- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.
 - The wetland is small in size for its type and does not represent fugitive habitat in developed areas (vernal pools and seeps are generally small in size, so this does not apply).
 - The surrounding land use is densely developed enough to

	<p>limit use by wildlife species (with the exception of wetlands with open water habitat). Can be negated by evidence of use.</p> <ul style="list-style-type: none"> <input type="checkbox"/> The current use in the wetland results in frequent cutting, mowing or other disturbance. <input type="checkbox"/> The wetland hydrology and character is at a drier end of the scale and does not support wetland dependent species. <input type="checkbox"/> Check box if any of the following conditions apply that may indicate the wetland provides this function at a <i>higher</i> level. <ul style="list-style-type: none"> <input type="checkbox"/> The wetland complex is large in size and high in quality. <input type="checkbox"/> The habitat has the potential to support several species based on the assessment above. <input type="checkbox"/> Wetland is associated with an important wildlife corridor. <input type="checkbox"/> The wetland has been identified as a locally important wildlife habitat by an ANR Wildlife Biologist. 	
<p>19.1. Subject Wetland</p>	<p>Please explain how the subject wetland contributes to the function listed above</p> <p>The subject wetland is a forested floodplain with a thick understory of ferns and other herbaceous and shrubby vegetation. Use by wetland dependent birds and small mammals is very likely.</p>	
<p>19.2. Statement of no undue adverse impact</p>	<p>Please explain how the proposed project will not result in any undue, adverse impact to this function. Include any avoidance and minimization measures relevant to this function.</p> <p>The disturbance to the wetland will be temporary. The potential for use by any wildlife species that currently use the wetland will not be reduced by this project, except during the short duration of construction.</p>	
<p>20. Exemplary Wetland Natural Community</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function. <ul style="list-style-type: none"> <input type="checkbox"/> Wetlands that are identified as high quality examples of Vermont's natural community types recognized by the Natural Heritage Information Project of the Vermont Fish and Wildlife Department, including rare types such as dwarf shrub bogs, rich fens, alpine peatlands, red maple-black gum swamps and the more common types including deep bulrush marshes, cattail marshes, northern white cedar swamps, spruce-fir-tamarack swamps, and red maple-black ash seepage swamps are automatically significant for this function. <p>The wetland is also likely to be significant if any of the following conditions are met:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Is an example of a wetland natural community type that has been identified and mapped by, or meets the ranking and mapping standards of, the Natural Heritage Information Project of the Vermont Fish and Wildlife Department. <input type="checkbox"/> Contains ecological features that contribute to Vermont's natural heritage, including, but not limited to: <ul style="list-style-type: none"> <input type="checkbox"/> Deep peat accumulation reflecting a long history of wetland formation; 	

	<ul style="list-style-type: none"> <input type="checkbox"/> Forested wetlands displaying very old trees and other old growth characteristics; <input type="checkbox"/> A wetland natural community that is at the edge of the normal range for that type; <input type="checkbox"/> A wetland mosaic containing examples of several to many wetland community types; or <input type="checkbox"/> A large wetland complex containing examples of several wetland community types. <p>List species or communities of concern:</p>	
<p>20.1.Subject Wetland</p>	<p>Please explain how the subject wetland contributes to the function listed above</p> <p>The subject wetland is not significant for this function.</p>	
<p>20.2.Statement of no undue adverse impact</p>	<p>Please explain how the proposed project will not result in any undue, adverse impact to this function. Include any avoidance and minimization measures relevant to this function.</p> <p>N/A</p>	
<p>21. Rare, Threatened, and Endangered Species Habitat</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function. <ul style="list-style-type: none"> <input type="checkbox"/> Wetlands that contain one or more species on the federal or state threatened or endangered lists, as well as species that are rare in Vermont, are automatically significant for this function. <p>The wetland is also likely to be significant if any of the following apply:</p> <ul style="list-style-type: none"> <input type="checkbox"/> There is credible documentation that the wetland provides important habitat for any species on the federal or state threatened or endangered species lists; <input type="checkbox"/> There is credible documentation that threatened or endangered species have been present in past 10 years; <input type="checkbox"/> There is credible documentation that the wetland provides important habitat for any species listed as rare in Vermont (S1 or S2 ranks), state historic (SH rank), or rare to uncommon globally (G1, G2, or G3 ranks) by the Natural Heritage Information Project of the Vermont Fish and Wildlife Department; <input type="checkbox"/> There is credible documentation that the wetland provides habitat for multiple uncommon species of plants or animals (S3 rank). <p>List name of species and ranking:</p>	
<p>21.1.Subject Wetland</p>	<p>Please explain how the subject wetland contributes to the function listed above</p> <p>The subject wetland is not significant for this function.</p>	
<p>21.2.Statement of no adverse impact</p>	<p>Please explain how the proposed project will not result in any undue, adverse impact to this function. Include any avoidance and minimization measures relevant to this function.</p>	

	N/A	
22. Education and Research in Natural Sciences	<input type="checkbox"/> Function is present and likely to be significant: Any of the following characteristics indicate the wetland provides this function. <ul style="list-style-type: none"> <input type="checkbox"/> Owned by or leased to a public entity dedicated to education or research. <input type="checkbox"/> History of use for education or research. <input type="checkbox"/> Has one or more characteristics making it valuable for education or research. 	
22.1. Subject Wetland	Please explain how the subject wetland contributes to the function listed above The subject wetland is not significant for this function.	
22.2. Statement of no undue adverse impact	Please explain how the proposed project will not result in any undue, adverse impact to this function. Include any avoidance and minimization measures relevant to this function. N/A	
23. Recreational Value and Economic Benefits	<input type="checkbox"/> Function is present and likely to be significant: Any of the following characteristics indicate the wetland provides this function. <ul style="list-style-type: none"> <input type="checkbox"/> Used for, or contributes to, recreational activities. <input type="checkbox"/> Provides economic benefits. <input type="checkbox"/> Provides important habitat for fish or wildlife which can be fished, hunted or trapped under applicable state law. <input type="checkbox"/> Used for harvesting of wild foods. Comments:	
23.1. Subject Wetland	Please explain how the subject wetland contributes to the function listed above The subject wetland is not significant for this function.	
23.2. Statement of no undue adverse impact	Please explain how the proposed project will not result in any undue, adverse impact to this function. Include any avoidance and minimization measures relevant to this function. N/A	
24. Open Space and Aesthetics	<input type="checkbox"/> Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function. <ul style="list-style-type: none"> <input type="checkbox"/> Can be readily observed by the public; and <ul style="list-style-type: none"> <input type="checkbox"/> Possesses special or unique aesthetic qualities; or <input type="checkbox"/> Has prominence as a distinct feature in the surrounding landscape; <input type="checkbox"/> Has been identified as important open space in a municipal, regional or state plan. Comments:	

<p>24.1. Subject Wetland</p>	<p>Please explain how the subject wetland contributes to the function listed above The subject wetland is not significant for this function.</p>	
<p>24.2. Statement of no undue adverse impact</p>	<p>Please explain how the proposed project will not result in any undue, adverse impact to this function. Include any avoidance and minimization measures relevant to this function. N/A</p>	
<p>25. Erosion Control through Binding and Stabilizing the Soil</p>	<p><input checked="" type="checkbox"/> Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.</p> <p><input checked="" type="checkbox"/> Erosive forces such as wave or current energy are present and any of the following are present as well:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Dense, persistent vegetation along a shoreline or stream bank that reduces an adjacent erosive force. <input type="checkbox"/> Good interspersion of persistent emergent vegetation and water along course of water flow. <input type="checkbox"/> Studies show that wetlands of similar size, vegetation type, and hydrology are important for erosion control. <p>What type of erosive forces are present:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lake fetch and waves <input checked="" type="checkbox"/> High current velocities: <input type="checkbox"/> Water level influenced by upstream impoundment <p>If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level. If none of the following apply, the wetland provides this function at a moderate level.</p> <p><input type="checkbox"/> Check box if any of the following conditions apply that may indicate the wetland provides this function at a <i>lower</i> level.</p> <ul style="list-style-type: none"> <input type="checkbox"/> The stream is artificially channelized and/or lacks vegetation that contributes to controlling the erosive force. <p><input type="checkbox"/> Check box if any of the following conditions apply that may indicate the wetland provides this function at a <i>higher</i> level.</p> <ul style="list-style-type: none"> <input type="checkbox"/> The stream contains high sinuosity. <input type="checkbox"/> Has been identified through fluvial geomorphic assessment to be important in maintaining the natural condition of the stream or river corridor. 	
<p>25.1. Subject Wetland</p>	<p>Please explain how the subject wetland contributes to the function listed above Woody vegetation along the banks of the Moose River help to stabilize the bank during flooding episodes.</p>	
<p>25.2. Statement of no undue adverse impact</p>	<p>Please explain how the proposed project will not result in any undue adverse impact to this function. Include any avoidance and minimization measures relevant to this function. This project will cut through a narrow section of stream bank on both sides of the river. Existing vegetation will be replaced as described in Section 12.4.3 of this application and stone fill will be used on the banks to stabilize the banks until vegetation is restored. The preexisting conditions will be restored</p>	

as soon as the water line replacement is completed.

Vermont Wetland Section Wetland Application Database Form (AFFIX TO THE FRONT OF THE APPLICATION)

Applicant Name: Town of St. Johnsbury		Representative Name: Dufresne Group	
Existing Land Use Type: (check all that apply)			
<input checked="" type="checkbox"/> Agriculture	<input type="checkbox"/> Transportation	<input type="checkbox"/> Forestry	<input type="checkbox"/> Parks/Rec/Trail
<input type="checkbox"/> Residential (Single Family)	<input type="checkbox"/> Residential (Subdivision)	<input type="checkbox"/> Industrial/ commercial	<input checked="" type="checkbox"/> Undeveloped
Proposed Land Use Type: (check all that apply)			
<input type="checkbox"/> Agriculture	<input type="checkbox"/> Transportation	<input type="checkbox"/> Forestry	<input type="checkbox"/> Parks/Rec/Trail
<input type="checkbox"/> Residential (Single Family)	<input type="checkbox"/> Residential (Subdivision)	<input type="checkbox"/> Industrial/ commercial	<input checked="" type="checkbox"/> No Change
Proposed Impact Type: (check all that apply)			
<input type="checkbox"/> Buildings	<input checked="" type="checkbox"/> Utilities	<input type="checkbox"/> Parking	<input type="checkbox"/> Septic/Well
<input type="checkbox"/> Stormwater	<input type="checkbox"/> Driveway	<input type="checkbox"/> Road	<input type="checkbox"/> Parks/Path
<input type="checkbox"/> Agriculture	<input type="checkbox"/> Pond	<input type="checkbox"/> Lawn	<input type="checkbox"/> Dry Hydrant
<input type="checkbox"/> Beaver dam alteration	<input type="checkbox"/> Silviculture	<input type="checkbox"/> Aesthetics	<input type="checkbox"/> Other
<input type="checkbox"/> No Impact			
Wetland #: Wetland 3 (Label using Wetland ID from application if applicable, use supplemental sheets if more than one wetland is being impacted)		Location: East side of Moose River	
Wetland Type: POW/PEM/PSS/PFO		WL Size Class : 5-10 acres	
Proposed Alterations			
Wetland Alteration:	Buffer Zone Alteration:	Wetland Alteration Type (check all that apply)	
Wetland Fill: 0s.f.		<input type="checkbox"/> Dredge	<input type="checkbox"/> Drain
Temporary: 6536s.f.	Temporary: 0 s.f.	<input checked="" type="checkbox"/> Cut Vegetation	<input type="checkbox"/> Stormwater
Permanent: 0 s.f.	Permanent: 0 s.f.	<input checked="" type="checkbox"/> Trench/Fill	<input type="checkbox"/> Other
Mitigation			
Avoidance and Minimization (s.f. of wetland NOT impacted):		Wetland: s.f.	Buffer Zone s.f.
Wetland Mitigation: (s.f. Gained)		Buffer Zone Mitigation (s.f. Gained):	
Restoration s.f.	Enhancement s.f.	Restoration s.f.	Enhancement s.f.
Creation s.f.	Conservation s.f.	Creation s.f.	Conservation s.f.
Reason for Mitigation:		<input type="checkbox"/> Correction of Violation	<input type="checkbox"/> Mitigation to offset permit impacts
		<input type="checkbox"/> Voluntary	

Vermont Wetland Permit Application/Determination Petition

QUESTION	INSTRUCTIONS AND APPLICANT ANSWER		STAFF NOTE
1.1. Applicant Name	Town of St. Johnsbury		
4. Location of Wetland and Project	<p>Location description should include the road the wetland is located on, the compass direction of the wetland in relation to the road, 911 street address if available, and any other distinguishing geographic features.</p> <p>Moose River, approximately 1 mile east of St. Johnsbury, approximately 200 feet southeast of Route 2 and 1,500 feet southwest of Fairbanks Scales. There are three separate wetland areas that will be involved in this project. Two small wetlands are on the west side of the Moose River and one larger wetland area is on the east side of the Moose River.</p> <p>For the purposes of this application, these wetlands will be referred to as wetland 1, wetland 2 and wetland 3.</p> <p>Wetland 1 and Wetland 2 were covered in the previous section this supplement covers Wetland 3. Wetland 3 is located on the east side of the Moose River. This area is a relatively large forested floodplain.</p>		
5. Site Visit Date and Attendees	Date of visit with District Wetlands Ecologist	List people present for site visits including Ecologist, landowner, and representatives.	
	5/28/2015	Shannon Morrison	
6. Wetland Classification	<p>The wetland is a Class II wetland because (Choose one):</p> <p>The wetland is contiguous to a VSWI mapped wetland</p>		
7. Description of Entire Wetland or Wetland Complex	Answer the following questions regarding the entire wetland or wetland complex. A wetland complex is generally defined as two or more wetland types that are contiguous and interrelated. Specific questions about the wetland in the project area will follow.		
7.1. Size of Wetland Complex in Acres	<p>Can be obtained from the Environmental Interest Locator Map for mapped wetlands</p> <p>Adjacent wetland complex is 8.3 acres.</p>		
7.2. Natural Community Types Present	<p>List all wetland types in the wetland or wetland complex and their abundance or relative abundance. For example: 50 acres of softwood forested swamp; or 30% scrub swamp, 70% emergent wetland</p> <p>Wetland 3: 80% hardwood forested floodplain, 20% scrub-shrub floodplain</p>		
7.3. Landscape Position	<p>Where is the wetland located on the landscape? Examples: bottom of a basin, edge of a stream, shore of a lake, etc.</p> <p>All three wetland areas are located along riparian edges.</p>		
7.4. Wetland Hydrology	<p>Describe the main source of wetland hydrology for the wetland complex. List any river, streams, lakes and ponds.</p> <p>Flooding of the Moose River provides a key source of wetland hydrology for wetland 3. Groundwater flowing from higher landscape positions into the wetland areas is also a key hydrology source for wetland 3. Include answers to the following where appropriate:</p>		
7.4.1. Direction of flow	<p>For example: stream flows from north to south through the wetland complex.</p> <p>North - south</p>		
7.4.2. Influence of hydrology on wetland complex	<p>For example: The river provides flood water to the wetland in the spring.</p> <p>Spring runoff and flooding provide water to the wetland.</p>		
7.4.3. Relation to the project area	<p>Distance between the project area and any nearby surface waters.</p> <p>The project is a water main crossing so will cross the Moose River, a surface water.</p>		
7.4.4. Hydroperiod	<p>Discuss frequency and duration of flooding, ponding, and/or soil saturation.</p> <p>Annual spring flooding and soil saturation.</p>		

7.5. Surrounding Landuse of the Wetland Complex	For example: rural residential and forested; agricultural and undeveloped, Agricultural, forested and rural residential	
7.6. Relation to Other Nearby Wetlands	Provide any information on wetlands or wetland complexes that are close enough to contribute to the overall function of the wetland in question. Adjacent to Class II wetland.	
7.7. Pre-project Cumulative Impacts to the Wetland	Identify any cumulative ongoing impacts outside of the project that may influence the wetland. Examples include but are not limited to wetland encroachments off the subject property, land management in or surrounding the wetland, or development that influences hydrology or water quality. None	
8. Description of Subject Wetland	Subject Wetland is defined as the area of wetland in the project area, but not limited to the portion of the wetland to be directly impacted by the project. For the purposes of this application, the subject wetland should encompass any portion of the larger wetland or wetland complex that could be directly or indirectly impacted by the project, as defined by hydrology, vegetation and/or physical characteristics.	
8.1. Context of Subject Wetland	Describe where the subject wetland is in the context of the larger wetland or wetland complex described above. Subject wetland includes a mapped area that will be utilized for staging. The wetland in the area of work is not mapped but is adjacent to, and across the river from a mapped Class II wetland. The mapped wetland is grass, mowed lawn and partially paved while the area where work will occur in the wetland is naturally vegetated.	
8.2. Wetland Landuse	For example: mowed lawn; old field; naturally vegetated. Describe any previous and ongoing disturbance in the subject wetland. Staging area - mowed lawn and paved, project area - naturally vegetated.	
8.3. Wetland Vegetation	List dominant wetland community type and associated dominant plant species. Wetland 3: forested floodplain; ostrich fern, green ash	
8.4. Wetland Soils	Use USDA NRCS information where possible and use the ACOE Delineation Manual soil description Wetland 3 soils are medium sand and silt loam textures, with gray (5Y 5/2) matrix colors and reddish brown (7.5YR 5/4) redoximorphic features.	
8.5. Wetland Hydrology	Use descriptions from the ACOE Delineation Manual. See attached data sheets prepared in accordance with the ACOE requirements.	
8.6. Buffer Zone	Describe the buffer zone of the subject wetland including:	
8.6.1. General landuse	For example: mowed road shoulder; forested; old field; paved road and residential lawns etc. Describe any previous and ongoing disturbance in the buffer zone. On the west side of the Moose River the buffer zone is railroad tracks, mowed lawn and paved areas. On the east side of the Moose River the buffer zone is steeply sloping woodland.	
8.6.2. Buffer vegetation	List community type and dominant plant species The buffer zone for Wetland 3 is steeply sloping forestland, with dominant plant species including christmas fern, white ash, aster species, sugar maple, thimble berry.	
8.6.3. Buffer soils	Use USDA NRCS information where possible, and the ACOE Delineation Manual soil description The buffer zone soils on the east side of the Moose River are steeply sloping very fine sandy loam soils with dominant grayish brown colors (2.5Y 4/3) to a depth of at least 17 inches.	
11. Project Details	Provide details regarding specific impacts to the wetland and buffer zone	

<p>11.1. Specific Impacts to Wetland and Buffer Zone</p>	<p>List portions of the project that will specifically impact the wetland or buffer zone. Due to existing topography, the water main will be installed by open cut which will temporarily impact the wetland and buffer zone. Staging and access areas will also temporarily impact the wetland.</p>									
<p>11.2. Dimension Details</p>	<p>Square footage of buildings, dimension of roads including fill footprint. Approximately 440 lineal feet of water main will be installed as a result of this project.</p>									
<p>11.3. Bridges and Culverts</p>	<p>Culvert circumference, length, placement and shapes, or bridge details. Not applicable</p>									
<p>11.4. Construction Sequence</p>	<p>Describe any details pertaining to the worked planned in the wetland and buffer in terms of sequence or phasing that is relevant Construction will generally follow the sequence of: excavation of trench, placement of bedding, pipe, backfill, testing of the pipe followed by restoration of the ground surface.</p>									
<p>11.5. Stormwater Design</p>	<p>List any stormwater permits obtained or applied for. Describe any stormwater and/or erosion controls proposed to prevent discharges to the wetland and buffer zone. Erosion control measures will be utilized to prevent discharges outside of the area of disturbance.</p>									
<p>11.6. Permanent Demarcation of Limits of Impact</p>	<p>Describe any plantings, fencing, signage, or other memorialization that provides permanent on-the-ground boundaries for the limits of disturbance for ongoing uses. No ongoing areas of disturbance will be involved with this project.</p>									
<p>12. Wetland and Buffer Zone Impacts</p>										
<p>12.1. Wetland Impacts</p>	<p>Summarize the square footage of impact in the appropriate category. If more than one wetland is impacted, provide that information and use the supplemental wetland sheets.</p> <table border="1"> <tr> <td colspan="2">Totals Wetland 3</td> </tr> <tr> <td>Wetland Fill</td> <td>0 s.f.</td> </tr> <tr> <td>Temporary Wetland Impact</td> <td>6854 s.f.</td> </tr> <tr> <td>Other Permanent Wetland Impact</td> <td>0 s.f.</td> </tr> </table> <p>Describe in detail the proposed impact. No changes in elevation are proposed for this project. Existing ground surface elevations will be restored at the conclusion of the project. The proposed impact will be from the excavation of the trench for the water main, travel of equipment and temporary storage of spoils from excavation of the trench. Of the total temporary wetland impact, the area anticipated to be disturbed by the trench is 1,620 sf with the remaining area anticipated to be cleared to allow for construction is 5,234 sf.</p>	Totals Wetland 3		Wetland Fill	0 s.f.	Temporary Wetland Impact	6854 s.f.	Other Permanent Wetland Impact	0 s.f.	
Totals Wetland 3										
Wetland Fill	0 s.f.									
Temporary Wetland Impact	6854 s.f.									
Other Permanent Wetland Impact	0 s.f.									
<p>12.2. Buffer Zone Impacts</p>	<p>Summarize the square footage of impact in the appropriate category. If more than one wetland is impacted, provide that information and use the supplemental wetland sheets.</p> <table border="1"> <tr> <td colspan="2">Totals Wetland 3</td> </tr> <tr> <td>Temporary Buffer Impact</td> <td>0 s.f.</td> </tr> <tr> <td>Permanent Buffer Impact</td> <td>0 s.f.</td> </tr> </table> <p>Describe in detail the proposed impact.</p>	Totals Wetland 3		Temporary Buffer Impact	0 s.f.	Permanent Buffer Impact	0 s.f.			
Totals Wetland 3										
Temporary Buffer Impact	0 s.f.									
Permanent Buffer Impact	0 s.f.									

	<p>No changes in elevation are proposed for this project. Existing ground surface elevations will be restored at the conclusion of the project. The proposed impact will be from the excavation of the trench for the water main, travel of equipment and temporary storage of spoils from excavation of the trench.</p>	
<p>12.3.Cumulative Impacts</p>	<p>List any potential cumulative or ongoing, direct and indirect impacts on the functions of the wetland that could result from the proposed project. A portion of the wetland will be temporarily disturbed. No permanent impacts are anticipated.</p>	
<p>12.4.Avoidance and Minimization</p>	<p>Please refer to Section 9.5b of the rules on Mitigation Sequencing for this section.</p>	
<p>12.4.1. Avoidance</p>	<p>Can the proposed activity be practicably located outside the wetland/buffer zone, or on another site owned or controlled by the applicant or reasonably available to satisfy the basic project purpose? If not, indicate why. This answer should include any examination of alternatives that you have explored including using other properties, requesting easements, and altering the project design. Due to the existing topography and infrastructure it is not feasible to locate the improvements elsewhere to avoid impacts to the wetland.</p>	
<p>12.4.2. Minimization</p>	<p>If the proposed activity cannot practicably be located outside the wetland/buffer zone, have all practicable measures have been taken to avoid adverse impacts on protected functions? Please include any information on on-site alternatives that have been examined; minimizing the size and scope of the project to avoid impacts; or relocating portions of the project to avoid impacts Alternate methods of construction such as directional drilling were considered but access to the site is extremely difficult and is not suitable for directional drilling. To avoid disturbances in the future, the main is planned to be replaced within the 100 year floodplain.</p>	
<p>12.4.3. Mitigation</p>	<p>If avoidance of adverse effects on protected functions cannot be practically achieved, has the proposed activity has been planned to minimize adverse impacts on the protected functions and a plan has been developed for the prompt restoration of any adverse impacts on protected functions? Include any information on best management practices to be used for the project both for the initial construction and ongoing use. Also include any proposed restoration of temporary impacts, previously disturbed wetland or buffer zones or proposed conservation that are being used to offset the proposed impacts. The trench excavation will be carried out in a manner that separates the top soil layer (upper 6-12 inches) from the subsoils. The topsoil will be stockpiled separately and will be replaced on the surface of the trench after the water main has been replaced. This will return the existing native vegetation to the surface of the backfilled trench so that the vegetation in place prior to the work will become reestablished as soon as possible after the work is completed. In order to reduce the potential for soil erosion, all areas of exposed soils within the wetlands will be seeded with a wetland conservation seed mix and mulched with weed-free straw as soon as possible after the site work has been completed.</p>	
<p>12.4.4. Compensation</p>	<p>Please refer to Section 9.5c of the rules for compensation, which is appropriate when the project will result in an undue adverse impact. If compensation is proposed please include a summary here. Since the proposed wetland and buffer zone impacts for this project are all temporary in nature, we are not proposing any compensatory measures for this project.</p>	
<p>14. Check Which Functions are</p>	<p>Wetland 3 Function Summary: (if more than one wetland use supplemental wetland sheets)</p>	

Present in the Subject Wetland and in the Wetland Complex.	Functions & Values	Subject Wetland	Wetland Complex	Functions & Values	Subject Wetland	Wetland Complex
	Flood/Storm Storage	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	RTE Species	<input type="checkbox"/>	<input type="checkbox"/>
Surface & Groundwater Protection	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Education & Research	<input type="checkbox"/>	<input type="checkbox"/>	
Fish Habitat	<input type="checkbox"/>	<input type="checkbox"/>	Recreation/Economic	<input type="checkbox"/>	<input type="checkbox"/>	
Wildlife Habitat	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Open Space/Aesthetics	<input type="checkbox"/>	<input type="checkbox"/>	
Exemplary Natural Community	<input type="checkbox"/>	<input type="checkbox"/>	Erosion Control	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

Wetland 3	
Functions and Values	<p>For each Function and Value, first evaluate the entire wetland or wetland complex and check all that apply. Secondly, evaluate how the wetland in the project area contributes to that function. Thirdly explain how the project will not result in adverse impacts to this function. Include any information on specific avoidance and minimization measures.</p> <p>If more than one wetland complex is involved, use the Supplemental Wetland Forms.</p>
16. Storage for Flood Water and Storm Runoff	<p><input checked="" type="checkbox"/> Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Constricted outlet or no outlet and an unconstricted inlet. <input checked="" type="checkbox"/> Physical space for floodwater expansion and dense, persistent, emergent vegetation or dense woody vegetation that slows down flood waters or stormwater runoff during peak flows and facilitates water removal by evaporation and transpiration. <input type="checkbox"/> If a stream is present, its course is sinuous and there is sufficient woody vegetation to intercept surface flows in the portion of the wetland that floods. <input checked="" type="checkbox"/> Physical evidence of seasonal flooding or ponding such as water stained leaves, water marks on trees, drift rows, debris deposits, or standing water. <input type="checkbox"/> Hydrologic or hydraulic study indicates wetland attenuates flooding. <p>If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level. If none of the following apply, the wetland provides this function at a moderate level.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Check box if any of the following conditions apply that may indicate the wetland provides this function at a <i>lower</i> level. <ul style="list-style-type: none"> <input type="checkbox"/> Significant flood storage capacity upstream of the wetland, and the wetland in question provides this function at a negligible level in comparison to upstream storage (unless the upstream storage is temporary such as a beaver impoundment). <input type="checkbox"/> Wetland is contiguous to a major lake or pond that provides

	<p>storage benefits independently of the wetland.</p> <p><input type="checkbox"/> Wetland's storage capacity is created primarily by recent beaver dams or other temporary structures.</p> <p><input type="checkbox"/> Wetland is very small in size, not contiguous to a stream, and not part of a collection of small wetlands in the landscape that provide this function cumulatively.</p> <p><input checked="" type="checkbox"/> Check box if any of the following conditions apply that may indicate the wetland provides this function at a <i>higher</i> level.</p> <p><input type="checkbox"/> History of downstream flood damage to public or private property.</p> <p><input type="checkbox"/> Any of the following conditions present downstream of the wetland, but upstream of a major lake or pond, could be impacted by a loss or reduction of the water storage function.</p> <p><input type="checkbox"/> 1. Developed public or private property.</p> <p><input type="checkbox"/> 2. Stream banks susceptible to scouring and erosion.</p> <p><input type="checkbox"/> 3. Important habitat for aquatic life.</p> <p><input checked="" type="checkbox"/> The wetland is large in size and naturally vegetated.</p> <p><input type="checkbox"/> Any of the following conditions present upstream of the wetland may indicate a large volume of runoff may reach the wetland.</p> <p><input type="checkbox"/> 1. A large amount of impervious surface in urbanized areas.</p> <p><input type="checkbox"/> 2. Relatively impervious soils.</p> <p><input type="checkbox"/> 3. Steep slopes in the adjacent areas.</p>	
<p>16.1.Subject Wetland</p>	<p>Please explain how the subject wetland contributes to the function listed above</p> <p>Wetland 3 is a relatively large area for flood waters to disperse and slow.</p>	
<p>16.2.Statement of no undue adverse impact</p>	<p>Please explain how the proposed project will not result in any undue, adverse impact to this function. Include any avoidance and minimization measures relevant to this function.</p> <p>The proposed project will not change the function of the wetlands or any elevations within the wetlands and will therefore not adversely impact its function.</p>	
<p>17. Surface and Ground Water Protection</p>	<p><input checked="" type="checkbox"/> Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.</p> <p><input type="checkbox"/> Constricted or no outlets.</p> <p><input type="checkbox"/> Low water velocity through dense, persistent vegetation.</p> <p><input type="checkbox"/> Hydroperiod permanently flooded or saturated.</p> <p><input type="checkbox"/> Wetlands in depositional environments with persistent vegetation wider than 20 feet.</p> <p><input checked="" type="checkbox"/> Wetlands with persistent vegetation comprising a defined delta, island, bar or peninsula.</p>	

	<ul style="list-style-type: none"> <input type="checkbox"/> Presence of seeps or springs. <input type="checkbox"/> Wetland contains a high amount of microtopography that helps slow and filter surface water. <input type="checkbox"/> Position in the landscape indicates the wetland is a headwaters area. <input checked="" type="checkbox"/> Wetland is adjacent to surface waters. <input type="checkbox"/> Wetland recharges a drinking water source. <input type="checkbox"/> Water sampling indicates removal of pollutants or nutrients. <input type="checkbox"/> Water sampling indicates retention of sediments or organic matter. <input type="checkbox"/> Fine mineral soils and alkalinity not low. <input type="checkbox"/> The wetland provides an obvious filter between surface water or ground water and land uses that may contribute point or nonpoint sources of sediments, toxic substances or nutrients to the wetland, such as: steep erodible slopes; row crops; dumps; areas of pesticide, herbicide or fertilizer application; feed lots; parking lots or heavily traveled road; and septic systems. <p>If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level. If none of the following apply, the wetland provides this function at a moderate level.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Check box if any of the following conditions apply that may indicate the wetland provides this function at a <i>lower</i> level. <ul style="list-style-type: none"> <input type="checkbox"/> Presence of dead forest or shrub areas in sufficient amounts to result in diminished nutrient uptake. <input type="checkbox"/> Presence of ditches or channels that confine water and restrict contact of water with vegetation. <input type="checkbox"/> Wetland is very small in size, not contiguous to a stream, and not part of a collection of small wetlands in the landscape that provide this function cumulatively. <input type="checkbox"/> Current use in the wetland results in disturbance that compromises this function. <input checked="" type="checkbox"/> Check box if any of the following conditions apply that may indicate the wetland provides this function at a <i>higher</i> level. <ul style="list-style-type: none"> <input type="checkbox"/> The wetland is adjacent to a well head or source protection area, and provides ground water recharge. <input type="checkbox"/> The wetland provides flows to Class A surface waters. <input type="checkbox"/> The wetland contributes to the protection or improvement of water quality of any impaired waters. <input checked="" type="checkbox"/> The wetland is large in size and naturally vegetated. 	
<p>17.1.Subject Wetland</p>	<p>Please explain how the subject wetland contributes to the function listed above</p>	

	Wetland 3 provides areas for sediment deposition during higher flows.	
17.2.Statement of no undue adverse impact	Please explain how the proposed project will not result in any undue, adverse impact to this function. Include any avoidance and minimization measures relevant to this function. Impacts from the project will be temporary and the function of the wetlands will not be diminished.	
18. Fish Habitat	<input type="checkbox"/> Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function. <ul style="list-style-type: none"> <input type="checkbox"/> Contains woody vegetation that overhangs the banks of a stream or river and provides any of the following: shading that controls summer water temperature; cover including refuges created by overhanging branches or undercut banks; source of terrestrial insects as fish food; or streambank stability. <input type="checkbox"/> Provides spawning, nursery, feeding or cover habitat for fish (documented or professionally judged). Common habitat includes deep marsh and shallow marsh associates with lakes and streams, and seasonally flooded wetlands associated with streams and rivers. <input type="checkbox"/> Documented or professionally judged spawning habitat for northern pike. <input type="checkbox"/> Provides cold spring discharge that lowers the temperature of receiving waters and creates summer habitat for salmonoid species. <input type="checkbox"/> The wetland is located along a tributary that does not support fish, but contributes to a larger body of water that does support fish. The tributary supports downstream fish by providing cooler water, and food sources. 	
18.1.Subject Wetland	Please explain how the subject wetland contributes to the function listed above The subject wetland does not contribute to this function.	
18.2.Statement of no undue adverse impact	Please explain how the proposed project will not result in any undue, adverse impact to this function. Include any avoidance and minimization measures relevant to this function. N/A	
19. Wildlife Habitat	<input checked="" type="checkbox"/> Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function. <ul style="list-style-type: none"> <input type="checkbox"/> Provides resting, feeding staging or roosting habitat to support waterfowl migration, and feeding habitat for wading birds. Good habitats for these species include open water wetlands. <input type="checkbox"/> Habitat to support one or more breeding pairs or broods of waterfowl including all species of ducks, geese, and swans. Good habitats for these species include open water habitats adjacent shallow marsh, deep marsh, shrub wetland, forested wetland, or naturally vegetated buffer zone. <input type="checkbox"/> Provides a nest site, a buffer for a nest site or feeding 	

habitat for wading birds including but not limited to: great blue heron, black-crowned night heron, green-backed heron, cattle egret, or snowy egret. Good habitats for these species include open water or deep marsh adjacent to forested wetlands, or standing dead trees.

- Supports or has the habitat to support one or more breeding pairs of any migratory bird that requires wetland habitat for breeding, nesting, rearing of young, feeding, staging roosting, or migration, including: Virginia rail, common snipe, marsh wren, American bittern, northern water thrush, northern harrier, spruce grouse, Cerulean warbler, and common loon.
- Supports winter habitat for white-tailed deer. Good habitats for these species include softwood swamps. Evidence of use includes deer browsing, bark stripping, worn trails, or pellet piles.
- Provides important feeding habitat for black bear, bobcat, or moose based on an assessment of use. Good habitat for these types of species includes wetlands located in a forested mosaic.
- Has the habitat to support muskrat, otter or mink. Good habitats for these species include deep marshes, wetlands adjacent to bodies of water including lakes, ponds, rivers and streams.
- Supports an active beaver dam, one or more lodges, or evidence of use in two or more consecutive years by an adult beaver population.
- Provides the following habitats that support the reproduction of Uncommon Vermont amphibian species including:
 - 1. Wood Frog, Jefferson Salamander, Blue-spotted Salamander, or Spotted Salamander. Breeding habitat for these species includes vernal pools and small ponds.
 - 2. Northern Dusky Salamander and the Spring Salamander. Habitat for these species includes headwater seeps, springs, and streams.
 - 3. The Four-toed salamander; Fowler's Toad; Western or Boreal Chorus frog, or other amphibians found in Vermont of similar significance.
- Supports or has the habitat to support significant populations of Vermont amphibian species including, but not limited to Pickerel Frog, Northern Leopard Frog, Mink Frog, and others found in Vermont of similar significance. Good habitat for these types of species includes large marsh systems with open water components.
- Supports or has the habitat to support populations of uncommon Vermont reptile species including: Wood Turtle, Northern Map Turtle, Eastern Musk Turtle, Spotted Turtle, Spiny Softshell, Eastern Ribbonsnake, Northern Watersnake, and others found in Vermont of similar

significance.

- Supports or has the habitat to support significant populations of Vermont reptile species, including Smooth Greensnake, DeKay's Brownsnake, or other more common wetland-associated species.
- Meets four or more of the following conditions indicative of wildlife habitat diversity:
 - 1. Three or more wetland vegetation classes (greater than 1/2 acre) present including but not limited to: open water contiguous to, but not necessarily part of, the wetland, deep marsh, shallow marsh, shrub swamp, forested swamp, fen, or bog;
 - 2. The dominant vegetation class is one of the following types: deep marsh, shallow marsh, shrub swamp or, forested swamp;
 - 3. Located adjacent to a lake, pond, river or stream;
 - 4. Fifty percent or more of surrounding habitat type is one or more of the following: forest, agricultural land, old field or open land;
 - 5. Emergent or woody vegetation occupies 26 to 75 percent of wetland, the rest is open water;
 - 6. One of the following:
 - i. hydrologically connected to other wetlands of different dominant classes or open water within 1 mile;
 - ii. hydrologically connected to other wetlands of same dominant class within 1/2 mile;
 - iii. within 1/4 mile of other wetlands of different dominant classes or open water, but not hydrologically connected;
- Wetland or wetland complex is owned in whole or in part by state or federal government and managed for wildlife and habitat conservation; and
- Contains evidence that it is used by wetland dependent wildlife species.

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level. If none of the following apply, the wetland provides this function at a moderate level.

- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.
 - The wetland is small in size for its type and does not represent fugitive habitat in developed areas (vernal pools and seeps are generally small in size, so this does not apply).
 - The surrounding land use is densely developed enough to

	<p>limit use by wildlife species (with the exception of wetlands with open water habitat). Can be negated by evidence of use.</p> <ul style="list-style-type: none"> <input type="checkbox"/> The current use in the wetland results in frequent cutting, mowing or other disturbance. <input type="checkbox"/> The wetland hydrology and character is at a drier end of the scale and does not support wetland dependent species. <input type="checkbox"/> Check box if any of the following conditions apply that may indicate the wetland provides this function at a <i>higher</i> level. <ul style="list-style-type: none"> <input type="checkbox"/> The wetland complex is large in size and high in quality. <input type="checkbox"/> The habitat has the potential to support several species based on the assessment above. <input type="checkbox"/> Wetland is associated with an important wildlife corridor. <input type="checkbox"/> The wetland has been identified as a locally important wildlife habitat by an ANR Wildlife Biologist. 	
<p>19.1. Subject Wetland</p>	<p>Please explain how the subject wetland contributes to the function listed above</p> <p>The subject wetland is a forested floodplain with a thick understory of ferns and other herbaceous and shrubby vegetation. Use by wetland dependent birds and small mammals is very likely.</p>	
<p>19.2. Statement of no undue adverse impact</p>	<p>Please explain how the proposed project will not result in any undue, adverse impact to this function. Include any avoidance and minimization measures relevant to this function.</p> <p>The disturbance to the wetland will be temporary. The potential for use by any wildlife species that currently use the wetland will not be reduced by this project, except during the short duration of construction.</p>	
<p>20. Exemplary Wetland Natural Community</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function. <ul style="list-style-type: none"> <input type="checkbox"/> Wetlands that are identified as high quality examples of Vermont's natural community types recognized by the Natural Heritage Information Project of the Vermont Fish and Wildlife Department, including rare types such as dwarf shrub bogs, rich fens, alpine peatlands, red maple-black gum swamps and the more common types including deep bulrush marshes, cattail marshes, northern white cedar swamps, spruce-fir-tamarack swamps, and red maple-black ash seepage swamps are automatically significant for this function. <p>The wetland is also likely to be significant if any of the following conditions are met:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Is an example of a wetland natural community type that has been identified and mapped by, or meets the ranking and mapping standards of, the Natural Heritage Information Project of the Vermont Fish and Wildlife Department. <input type="checkbox"/> Contains ecological features that contribute to Vermont's natural heritage, including, but not limited to: <ul style="list-style-type: none"> <input type="checkbox"/> Deep peat accumulation reflecting a long history of wetland formation; 	

	<ul style="list-style-type: none"> <input type="checkbox"/> Forested wetlands displaying very old trees and other old growth characteristics; <input type="checkbox"/> A wetland natural community that is at the edge of the normal range for that type; <input type="checkbox"/> A wetland mosaic containing examples of several to many wetland community types; or <input type="checkbox"/> A large wetland complex containing examples of several wetland community types. <p>List species or communities of concern:</p>	
<p>20.1. Subject Wetland</p>	<p>Please explain how the subject wetland contributes to the function listed above</p> <p>The subject wetland is not significant for this function.</p>	
<p>20.2. Statement of no undue adverse impact</p>	<p>Please explain how the proposed project will not result in any undue, adverse impact to this function. Include any avoidance and minimization measures relevant to this function.</p> <p>N/A</p>	
<p>21. Rare, Threatened, and Endangered Species Habitat</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function. <ul style="list-style-type: none"> <input type="checkbox"/> Wetlands that contain one or more species on the federal or state threatened or endangered lists, as well as species that are rare in Vermont, are automatically significant for this function. <p>The wetland is also likely to be significant if any of the following apply:</p> <ul style="list-style-type: none"> <input type="checkbox"/> There is credible documentation that the wetland provides important habitat for any species on the federal or state threatened or endangered species lists; <input type="checkbox"/> There is credible documentation that threatened or endangered species have been present in past 10 years; <input type="checkbox"/> There is credible documentation that the wetland provides important habitat for any species listed as rare in Vermont (S1 or S2 ranks), state historic (SH rank), or rare to uncommon globally (G1, G2, or G3 ranks) by the Natural Heritage Information Project of the Vermont Fish and Wildlife Department; <input type="checkbox"/> There is credible documentation that the wetland provides habitat for multiple uncommon species of plants or animals (S3 rank). <p>List name of species and ranking:</p>	
<p>21.1. Subject Wetland</p>	<p>Please explain how the subject wetland contributes to the function listed above</p> <p>The subject wetland is not significant for this function.</p>	
<p>21.2. Statement of no adverse impact</p>	<p>Please explain how the proposed project will not result in any undue, adverse impact to this function. Include any avoidance and minimization measures relevant to this function.</p>	

	N/A	
22. Education and Research in Natural Sciences	<input type="checkbox"/> Function is present and likely to be significant: Any of the following characteristics indicate the wetland provides this function. <ul style="list-style-type: none"> <input type="checkbox"/> Owned by or leased to a public entity dedicated to education or research. <input type="checkbox"/> History of use for education or research. <input type="checkbox"/> Has one or more characteristics making it valuable for education or research. 	
22.1. Subject Wetland	Please explain how the subject wetland contributes to the function listed above The subject wetland is not significant for this function.	
22.2. Statement of no undue adverse impact	Please explain how the proposed project will not result in any undue, adverse impact to this function. Include any avoidance and minimization measures relevant to this function. N/A	
23. Recreational Value and Economic Benefits	<input type="checkbox"/> Function is present and likely to be significant: Any of the following characteristics indicate the wetland provides this function. <ul style="list-style-type: none"> <input type="checkbox"/> Used for, or contributes to, recreational activities. <input type="checkbox"/> Provides economic benefits. <input type="checkbox"/> Provides important habitat for fish or wildlife which can be fished, hunted or trapped under applicable state law. <input type="checkbox"/> Used for harvesting of wild foods. Comments:	
23.1. Subject Wetland	Please explain how the subject wetland contributes to the function listed above The subject wetland is not significant for this function.	
23.2. Statement of no undue adverse impact	Please explain how the proposed project will not result in any undue, adverse impact to this function. Include any avoidance and minimization measures relevant to this function. N/A	
24. Open Space and Aesthetics	<input type="checkbox"/> Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function. <ul style="list-style-type: none"> <input type="checkbox"/> Can be readily observed by the public; and <ul style="list-style-type: none"> <input type="checkbox"/> Possesses special or unique aesthetic qualities; or <input type="checkbox"/> Has prominence as a distinct feature in the surrounding landscape; <input type="checkbox"/> Has been identified as important open space in a municipal, regional or state plan. Comments:	

<p>24.1. Subject Wetland</p>	<p>Please explain how the subject wetland contributes to the function listed above The subject wetland is not significant for this function.</p>	
<p>24.2. Statement of no undue adverse impact</p>	<p>Please explain how the proposed project will not result in any undue, adverse impact to this function. Include any avoidance and minimization measures relevant to this function. N/A</p>	
<p>25. Erosion Control through Binding and Stabilizing the Soil</p>	<p><input checked="" type="checkbox"/> Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.</p> <p><input checked="" type="checkbox"/> Erosive forces such as wave or current energy are present and any of the following are present as well:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Dense, persistent vegetation along a shoreline or stream bank that reduces an adjacent erosive force. <input type="checkbox"/> Good interspersion of persistent emergent vegetation and water along course of water flow. <input type="checkbox"/> Studies show that wetlands of similar size, vegetation type, and hydrology are important for erosion control. <p>What type of erosive forces are present:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lake fetch and waves <input checked="" type="checkbox"/> High current velocities: <input type="checkbox"/> Water level influenced by upstream impoundment <p>If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level. If none of the following apply, the wetland provides this function at a moderate level.</p> <p><input type="checkbox"/> Check box if any of the following conditions apply that may indicate the wetland provides this function at a <i>lower</i> level.</p> <ul style="list-style-type: none"> <input type="checkbox"/> The stream is artificially channelized and/or lacks vegetation that contributes to controlling the erosive force. <p><input type="checkbox"/> Check box if any of the following conditions apply that may indicate the wetland provides this function at a <i>higher</i> level.</p> <ul style="list-style-type: none"> <input type="checkbox"/> The stream contains high sinuosity. <input type="checkbox"/> Has been identified through fluvial geomorphic assessment to be important in maintaining the natural condition of the stream or river corridor. 	
<p>25.1. Subject Wetland</p>	<p>Please explain how the subject wetland contributes to the function listed above Woody vegetation along the banks of the Moose River help to stabilize the bank during flooding episodes.</p>	
<p>25.2. Statement of no undue adverse impact</p>	<p>Please explain how the proposed project will not result in any undue adverse impact to this function. Include any avoidance and minimization measures relevant to this function. This project will cut through a narrow section of stream bank on both sides of the river. Existing vegetation will be replaced as described in Section 12.4.3 of this application and stone fill will be used on the banks to stabilize the banks until vegetation is restored. The preexisting conditions will be restored</p>	

as soon as the water line replacement is completed.

PERMANENT EASEMENT DEED

KNOW ALL MEN BY THESE PRESENTS that **Richard H. McGinnis & Beulah McGinnis**, of St. Johnsbury in the County of Caledonia and State of Vermont, Grantors, in the consideration of ONE DOLLAR AND OTHER GOOD AND VALUABLE CONSIDERATION, paid to their satisfaction by the **Town of St. Johnsbury**, a municipal corporation, having its situs in the County of Caledonia and State of Vermont, Grantee, the receipt whereof is hereby acknowledged, do hereby Give, Grant, Bargain, Sell, Convey and Confirm unto the Town of St. Johnsbury, its successors and assigns, the following easement:

PERMANENT EASEMENT

Being rights-of-way and permanent easements thirty (30) feet in width running across land and premises of the Grantors described below (the "Property") for the constructing, maintaining, operating, altering, repairing, removing, changing the size of and replacing lines of pipe for the transmission and carrying of water in connection with water system improvement projects (the "Projects") more particularly described as follows:

Slip Lining Project. Water system improvements depicted upon a plan entitled "Water System Improvements, Water Main Slip Lining, St. Johnsbury, Vermont Contract #2008-5, April 30, 2009" prepared by Dufresne and Associates, Sheets G2 and C2-C3 inclusive, the centerline of the easement for the Slip Lining Project is the centerline of the existing ten inch (10") water main running across the Property.

Cleaning and Lining Project. Water system improvements depicted upon a plan entitled "Water Main Cleaning and Lining, St. Johnsbury, Vermont, Contract #2008-03, July 18, 2008" as modified by Field Order #1 prepared by Dufresne and Associates, Sheets G2 and C2-C3 inclusive, the centerline of the easement for the Cleaning and Lining Project is the centerline of the exiting fourteen inch (14") water main running across the Property.

PROPERTY DESCRIPTION

The foregoing easements are located upon, over and through the lands of the Grantors situated in the Town of St. Johnsbury, in the County of Caledonia and State of Vermont described as follows:

Being a portion of all and the same land and premises conveyed to the Grantors herein Warranty Deed of Elmer J. Morrison and Winona E. Morrison dated November 23, 1993 and recorded in Book 223 Page 608 of St. Johnsbury Land Records.

Reference may be had to the above-mentioned deed and its record and to the deeds therein referred to for a more complete and particular description of the property subject to the easements hereby conveyed.

TO HAVE AND TO HOLD the said rights-of-way and easements with all the privileges and appurtenances thereof, unto the said Town of St. Johnsbury, its successors and assigns, so long as a line of pipe is maintained within the easement area. The Grantors reserve for themselves and their heirs, administrators, successors and assigns, the right to fully use and enjoy the easement area and the remainder of its premises, except as the same may be necessary or convenient for the purpose herein granted to the said Town of St. Johnsbury, its successors and assigns. The Grantors covenant with the Grantee, its successors and assigns, that the Grantors are the sole owners of the Property and have good right, title and capacity to convey, in the manner aforesaid, the rights-of-way and easements hereby granted, and that the Property is free from all encumbrances.

The said Town of St. Johnsbury, for itself, its successors and assigns, by the acceptance hereof, agrees to exercise its rights hereunder without doing any unnecessary damage to the Property of the Grantors, and shall at the conclusion of the work, restore the ground to its pre-existing grade, and to a condition at least equal to its condition before the work commenced. Any damage done to the property of the Grantor, caused by the Town of St. Johnsbury shall be borne by the Town of St. Johnsbury.

The Grantors, for themselves and their heirs, administrators, successors and assigns, covenant and agree with the Town of St. Johnsbury, that no building, excavation, and/or refill or other construction which would affect the stability of the pipes, and/or interfere with the repairs

and maintenance of said pipes and appurtenances shall be placed over the same without the specific approval of the Town of St. Johnsbury; but, otherwise, the Grantors reserve for themselves and their heirs, administrators, successors and assigns the right to use the land above said pipe and appurtenances in any way they desire.

It is understood and agreed by the parties hereto, that this written instrument contains the entire agreement between them.

IN WITNESS WHEREOF, the Grantors hereunto set their hands and seals this 10 day of June, 2009.

Richard H. McGinnis
Richard H. McGinnis

Beulah E. McGinnis
Beulah McGinnis

STATE OF VERMONT
COUNTY OF CALEDONIA: ss

At St. Johnsbury, Vermont this 10 day of June, 2009, **Richard H. McGinnis & Beulah McGinnis**, personally appeared and they acknowledged that this instrument, sealed and subscribed by them, is their free act and deed.



Before me Ida Rainville
Notary Public

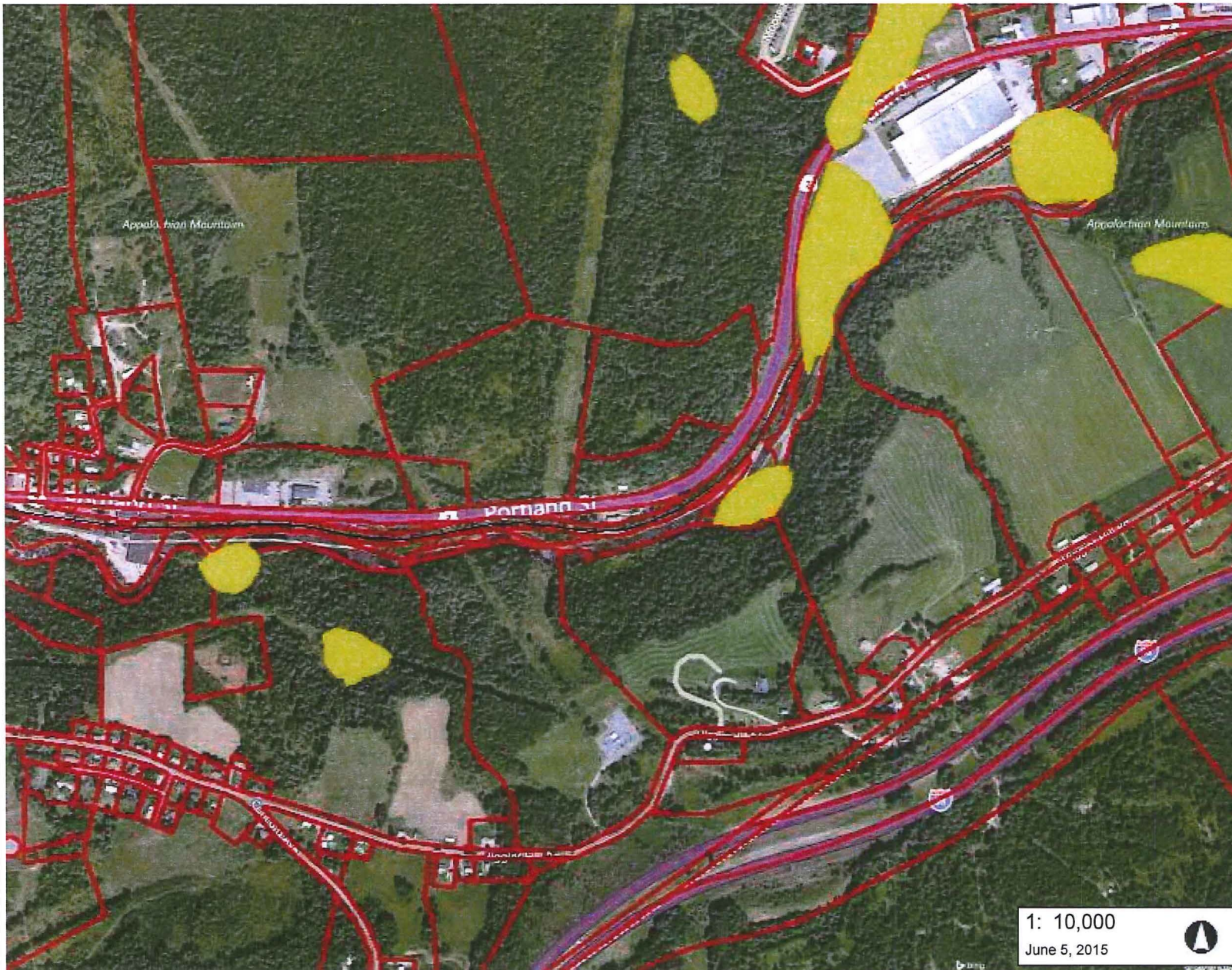
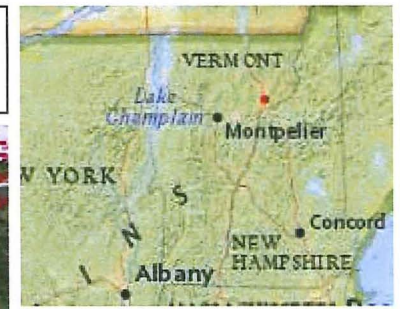
ST. JOHNSBURY, VT. TOWN CLERK'S OFFICE

RECD. June 10, 2009 at 10:00 AM

OF WHICH THE FOREGOING IS A TRUE RECORD.

ATTEST: Ida Rainville, TOWN CLERK

PARCELNUM	NEW_ID	DESCRIPTION	STREET LOCATION	OWNER	MAILING ADDRESS	CITY	STATE	ZIP
011-001-076-000	006057006	LAND ONLY 112.00A	0 US RTE 2 E	GRAY, ARTHUR H	420 TOWNE HILL RD	MONTPELIER	VT	05602
011-002-013-000	006057005	LAND AND BUILDINGS 27 A	2176 PORTLAND ST	FAIRBANKS INC	821 LOCUST	KANSAS CITY	MO	64106
011-002-020-000	015078010	MOBILE HOME 167.41	1479 HIGGINS HILL RD	GINGUE, PAUL E & ROSEMARY	1479 HIGGINS HILL RD	ST JOHNSBURY	VT	05819
011-001-082-001		LAND ONLY 39.08A	0 PORTLAND ST	YOUNG, STEVEN W & ROBIN L	PO BOX 362	LYNDONVILLE	VT	05851
011-002-042-013	015078021	1 FAM HOUSE GARAGE 36.91 A	911 HIGGINS HILL RD	MCGINNIS, RICHARD & BEULAH	911 HIGGINS HILL RD	ST JOHNSBURY	VT	05819
011-001-082-002	006057003002	MODULAR HOME 5.01 A	1595 PORTLAND ST	CALLANAN CAROL A	PO BOX 4216	ST JOHNSBURY	VT	05819
011-002-042-012	015078021003	1 FAM HOUSE GARAGE 30.24 A	659 HIGGINS HILL RD	HORVATICH, JOHN T & PATRICIA L	PO BOX 466	ST JOHNSBURY	VT	05819-9203



LEGEND

Wetlands - VSWI

- Class 1 Wetland (Red square)
- Class 2 Wetland (Yellow square)

Rare Threatened Endangered

- Threatened or Endangered (Red hatched square)
- Rare (Green hatched square)

Uncommon Species and Other

- Animal (Blue hatched square)
- Plant (Yellow hatched square)
- Natural Community (Purple hatched square)

- Railroads (Black line with cross-ticks)
- Parcels (where available) (Red outline)
- Town Boundary (Black outline)

1: 10,000
June 5, 2015

508.0 0 254.00 508.0 Meters

WGS_1984_Web_Mercator_Auxiliary_Sphere 1" = 833 Ft. 1cm = 100 Meters

© Vermont Agency of Natural Resources THIS MAP IS NOT TO BE USED FOR NAVIGATION

DISCLAIMER: This map is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. ANR and the State of Vermont make no representations of any kind, including but not limited to, the warranties of merchantability, or fitness for a particular use, nor are any such warranties to be implied with respect to the data on this map.

NOTES

Map created using ANR's Natural Resources Atlas

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Moose River Crossing City/County: St. Johnsbury/Caledonia Sampling Date: 6/9/15
 Applicant/Owner: Town of St. Johnsbury State: VT Sampling Point: T-1-U
 Investigator(s): Brad Wheeler Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): hillslope-US Rt. 2 fill extension Local relief (concave, convex, none): convex
 Slope (%): 40-50% Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: Adams Ifs, 25-60% slopes (NRCS Soil Survey) NWI classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) → fill extension for US Rt. 2; mowed periodically	

HYDROLOGY

Wetland Hydrology Indicators: <u>None</u> Primary Indicators (minimum of one is required; check all that apply) ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: T-1-4

<u>Tree Stratum</u> (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
	_____ = Total Cover			
<u>Sapling/Shrub Stratum</u> (Plot size: _____)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
	_____ = Total Cover			
<u>Herb Stratum</u> (Plot size: _____)				
1. <u>planted grass mix</u>	<u>100</u>	<u>X</u>	<u>—</u>	
2. <u>birdstoot trefoil</u>	<u>30</u>	<u>X</u>	<u>UPL</u>	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	_____ = Total Cover			
<u>Woody Vine Stratum</u> (Plot size: _____)				
1. _____				
2. _____				
3. _____				
4. _____				
	_____ = Total Cover			
Remarks: (Include photo numbers here or on a separate sheet.)				

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)
Prevalence Index = B/A = _____	

Hydrophytic Vegetation Indicators:

Rapid Test for Hydrophytic Vegetation

Dominance Test is >50%

Prevalence Index is ≤3.0¹

Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No X

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Moose River Crossing City/County: St. Johnsbury/Caledonia Sampling Date: 6/9/15
 Applicant/Owner: Town of St. Johnsbury State: VT Sampling Point: T-1-W
 Investigator(s): Brad Wheeler Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): riparian edge Local relief (concave, convex, none): convex
 Slope (%): 1-3% Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: Adams f/s 25-60% slopes (NRCS Soil Survey) NWI classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.)	

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input checked="" type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>14"</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>11"</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: T-1-W

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Willow species - <i>Salix</i> x	40	X	FAC-OBL
2. Meadow sweet - <i>Spiraea alba</i>	30	X	FACW
3. Reed Canarygrass - <i>Phalaris arundinacea</i>	30	Y	FACW
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

Herb Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. → Reed Canarygrass - <i>Phalaris arundinacea</i>	30	X	FACW
2. <i>Solidago</i> species (not flowering)	25		
3. Swamp milkweed - <i>Asclepias incarnata</i>	20	X	OBL
4. Virginia creeper - <i>Parthenocissus quinquefolia</i>	10		FACU
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____

Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____	(A) _____ (B) _____

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

Rapid Test for Hydrophytic Vegetation

Dominance Test is >50%

Prevalence Index is ≤3.0¹

Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet.)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Moose River Crossing City/County: St. Johnsbury/Caledonia Sampling Date: 6/9/15
 Applicant/Owner: Town of St. Johnsbury State: VT Sampling Point: J-3-U
 Investigator(s): Brad Wheeler Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): steep hillslope Local relief (concave, convex, none): convex
 Slope (%): 40% Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: Dummerston vfst, 35-60% slopes (NRCS Soil Survey) NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>None</u> Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: T-3-U

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Sugar maple - <i>Acer saccharum</i></u>	<u>25</u>	<u>X</u>	<u>FACU</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
2. <u>White birch - <i>Betula papyrifera</i></u>	<u>10</u>		<u>FACU</u>	
3. <u>White ash - <i>Fraxinus americana</i></u>	<u>30</u>	<u>X</u>	<u>FACU</u>	
4. _____				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
5. _____				
6. _____				
7. _____				
_____ = Total Cover				
Sapling/Shrub Stratum (Plot size: _____)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
_____ = Total Cover				
Herb Stratum (Plot size: _____)				
1. <u>Christmas fern - <i>Polystichum acrostichoides</i></u>	<u>30</u>	<u>X</u>	<u>FACU</u>	Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Asteracea species</u>	<u>25</u>			
3. <u>Thimbleberry - <i>Rubus parviflorus</i></u>	<u>15</u>	<u>X</u>	<u>FACU</u>	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				
1. _____				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
2. _____				
3. _____				
4. _____				
_____ = Total Cover				
Hydrophytic Vegetation Present? Yes _____ No <u>X</u>				
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: T-3-4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR 3/2						vfs1	
6-17	2.5Y 4/3						vfs1	
17-20+	2.5Y 4/2		10YR 4/4	<2	C	M	vfs1	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Moose River Crossing City/County: St. Johnsbury/Caledonia Sampling Date: 6/9/15
 Applicant/Owner: Town of St. Johnsbury State: VT Sampling Point: T-3-W
 Investigator(s): Brad Wheeler Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): nearly level
 Slope (%): 0-1% Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: Dummerston vfst, 35-60% slopes (NPCS Soil Survey) NWI classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input checked="" type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input checked="" type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>6"</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0"</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: 	

VEGETATION – Use scientific names of plants.

Sampling Point: T-3-W

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Green Ash - Fraxinus pennsylvanica</u>	<u>30</u>	<u>X</u>	<u>FACW</u>
2. <u>American Elm - Ulmus americana</u>	<u>10</u>		<u>FACW</u>
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Sapling/Shrub Stratum (Plot size: _____)

1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			

_____ = Total Cover

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Herb Stratum (Plot size: _____)

1. <u>Ostrich fern - Matteuccia struthiopteris</u>	<u>90</u>	<u>X</u>	<u>FAC</u>
2. <u>Sensitive fern - Onoclea sensibilis</u>	<u>10</u>		<u>FACW</u>
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			
12. _____			

_____ = Total Cover

Hydrophytic Vegetation Indicators:

Rapid Test for Hydrophytic Vegetation

Dominance Test is >50%

Prevalence Index is ≤3.0¹

Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Woody Vine Stratum (Plot size: _____)

1. _____			
2. _____			
3. _____			
4. _____			

_____ = Total Cover

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: T-3-W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR 3/2						sil	
3-18	5Y 5/2		10YR 4/6	2-20	C	m	S*	
18-20+	5Y 4/2		7.5YR 5/4	2-20	C	m	sil	
* there were 3 thin (1/2"-1") varves of sil in this horizon								

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)
- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

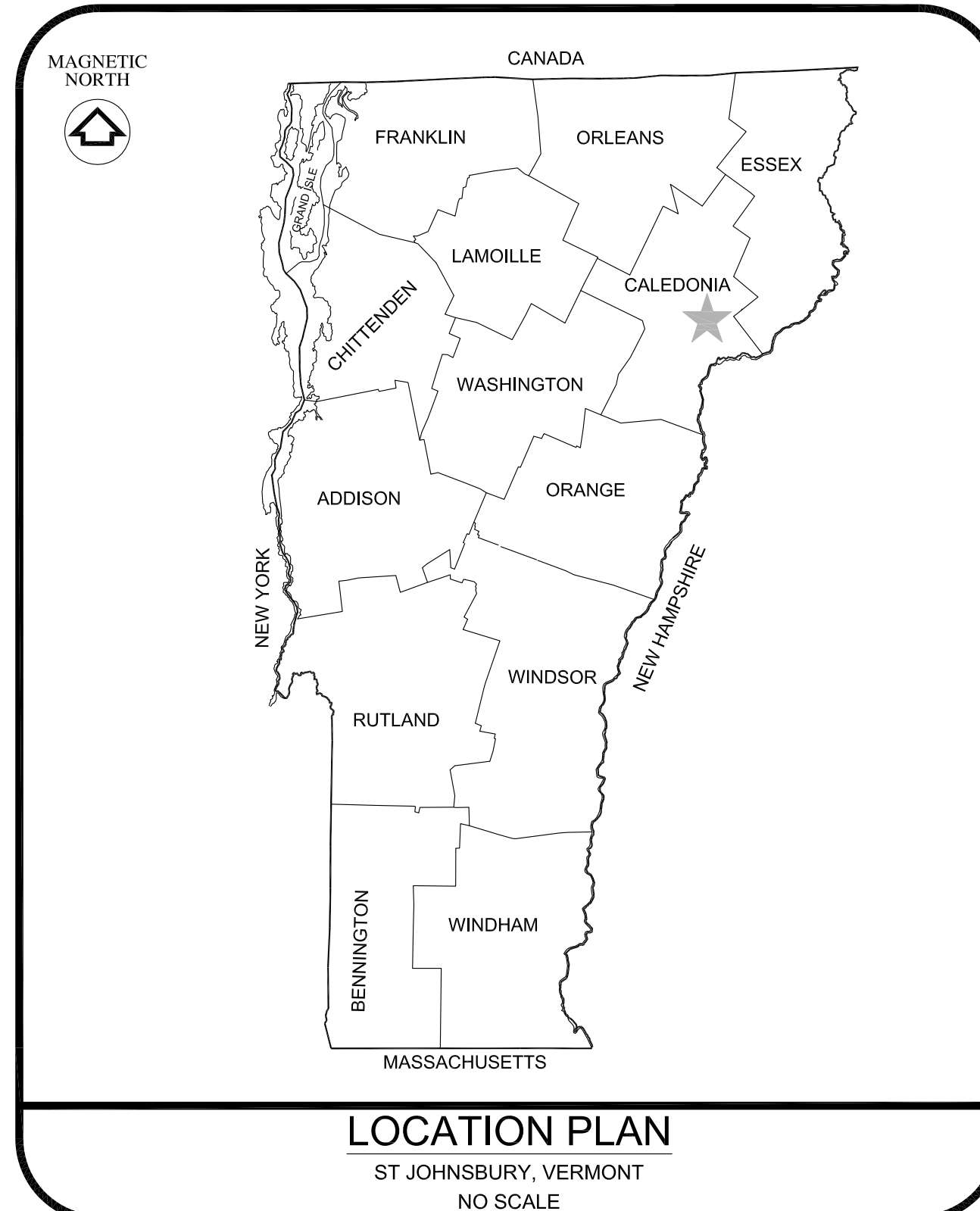
Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

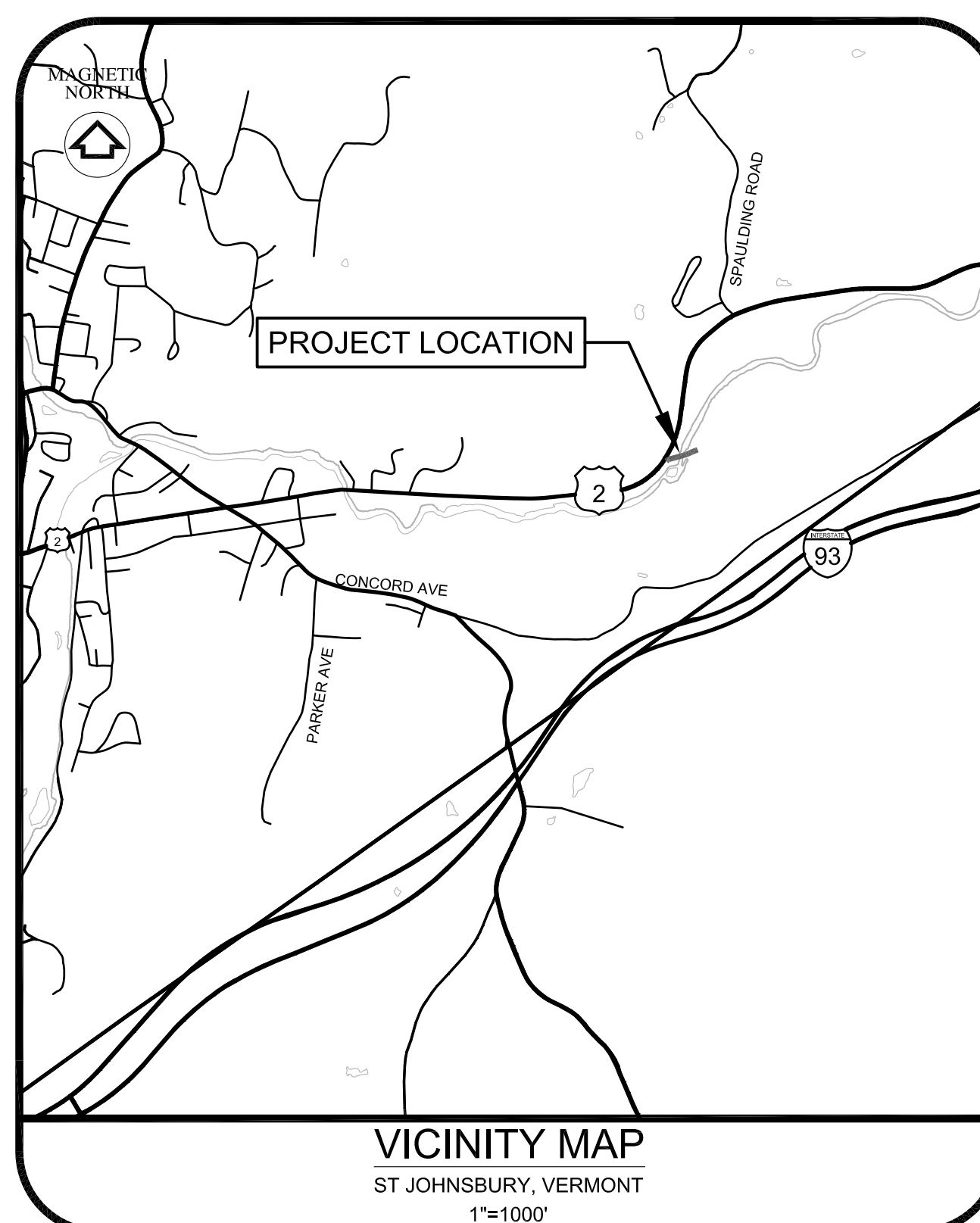
Remarks:

MOOSE RIVER WATER MAIN CROSSING ST. JOHNSBURY, VERMONT CONTRACT 2015-1

JULY 14, 2015



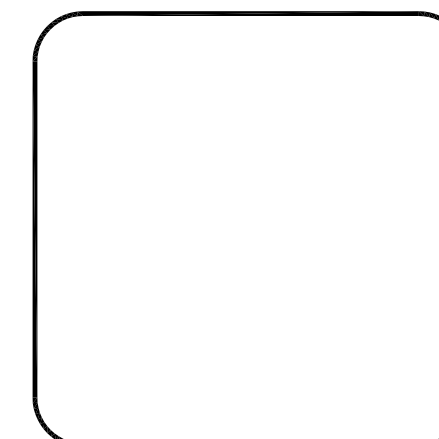
NO.	SHEET	DESCRIPTION
GENERAL:		
1	G1	GENERAL NOTES, LEGEND, AND ABBREVIATIONS
2	C1	WATER MAIN PLAN AND PROFILE
3	C2	STANDARD DETAILS



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GENERAL NOTES

- TOPOGRAPHIC SURVEY WAS COMPLETED BY DUFRESNE GROUP BASED ON AN ASSUMED DATUM.
- EXISTING WATER MAIN IS THE PRIMARY SOURCE WATER TRANSMISSION MAIN TO THE TOWN OF ST. JOHNSBURY. CONTRACTOR SHALL COORDINATE WITH THE TOWN PUBLIC WORKS DEPARTMENT AND WATER TREATMENT PLANT OPERATOR A MINIMUM OF 48 HOURS PRIOR TO ANY REQUIRED SHUT DOWN. WATER SERVICE SHALL NOT BE INTERRUPTED FOR MORE THAN (4) FOUR HOURS. WATER MAIN SHALL NOT BE SHUT DOWN WITHOUT WRITTEN CONSENT FROM THE OWNER.
- ALL CONSTRUCTION ACTIVITIES SHALL BE CONFINED TO THE RIGHT-OF-WAY, LANDS OWNED BY THE TOWN OF ST. JOHNSBURY OR IN EASEMENT AREAS AVAILABLE TO THE TOWN. CONTRACTOR IS NOT TO DISTURB LAND WITHIN THE RIGHT-OF-WAY BELONGING TO MAINE CENTRAL RAILROAD UNLESS WRITTEN PERMISSION IS OBTAINED.
- CONTRACTOR SHALL TAKE NECESSARY MEASURES TO PROTECT THE WATERWAY. NO DEBRIS OR SEDIMENT FROM THE CONSTRUCTION SITE SHALL BE ALLOWED TO ENTER THE WATERWAY AT ANY TIME DURING THE CONSTRUCTION OF THE PROJECT. CONTRACTOR SHALL BE REQUIRED TO PROTECT AND/OR DIVERT THE MOOSE RIVER PRIOR TO ANY CONSTRUCTION ACTIVITY WITHIN THE WATERWAY. THIS WORK SHALL BE APPROVED BY THE STATE OF VERMONT AGENCY OF NATURAL RESOURCES RIVER MANAGEMENT DIVISION PRIOR TO COMMENCEMENT OF THE WORK. CONTRACTOR IS RESPONSIBLE FOR FOLLOWING ALL RULES, REGULATIONS, AND DIRECTIONS PROVIDED BY THE STATE ON THIS MATTER.
- THERE ARE BURIED UTILITIES ON THIS SITE. THE LOCATION OF PIPES, DUCTS, CONDUITS, AND OTHER UNDERGROUND STRUCTURES SHOWN IN THESE PLANS ARE NOT WARRANTED TO BE EXACT, NOR IS IT WARRANTED THAT ALL UNDERGROUND STRUCTURES ARE SHOWN. THESE UTILITIES ARE SHOWN BASED ON BEST AVAILABLE FIELD EVIDENCE AND INFORMATION PROVIDED BY THE TOWN OF ST. JOHNSBURY, VERMONT AND OTHER LOCAL UTILITY COMPANIES. ALL UNDERGROUND UTILITIES MUST BE LOCATED, RECORDED AND MARKED DURING THE PROJECT. ALL REPAIRS TO DAMAGED UTILITIES SHALL BE MADE BY THE CONTRACTOR USING MATERIALS APPROVED BY THE ENGINEER PRIOR TO INSTALLATION AND AT NO ADDITIONAL EXPENSE TO THE OWNER.
- THE CONTRACTOR SHALL PERFORM EXPLORATORY EXCAVATION TO VERIFY LOCATIONS AND SIZES OF EXISTING WATER MAINS, PRIOR TO INSTALLATION OF NEW MAIN. CONTRACTOR SHALL USE EXTREME CAUTION TO PREVENT DAMAGE TO EXISTING UTILITIES. CONTRACTOR IS RESPONSIBLE FOR PROTECTION OF ALL UTILITIES WHETHER OR NOT THEY ARE SHOWN ON THE PLANS.
- CONTRACTOR SHALL VERIFY LOCATION OF ALL OVERHEAD AND UNDERGROUND ELECTRIC, CABLE AND TELEPHONE LINES AND TAKE NECESSARY PRECAUTIONS IN STRICT ACCORDANCE WITH OSHA STANDARDS DURING CONSTRUCTION. CONTRACTOR SHALL CONTACT THE LOCAL POWER UTILITY AND TELEPHONE UTILITY REGARDING ANY NECESSARY SUPPORT OF ANY UTILITY POLES DURING CONSTRUCTION. LOCAL ELECTRIC UTILITY IS GREEN MOUNTAIN POWER. LOCAL PHONE UTILITY IS FAIRPOINT COMMUNICATIONS.
- CONTRACTOR TO USE EXTREME CAUTION WHEN EXCAVATING NEAR BUILDINGS AND OTHER STRUCTURES.
- CONTRACTORS SHALL COORDINATE WITH DIG SAFE (1-888-DIG SAFE) A MINIMUM OF 72 HOURS PRIOR TO ANY EXCAVATION.
- STATE AND FEDERAL PERMITS ISSUED FOR THIS PROJECT ARE CONTAINED IN THE SPECIFICATIONS. THE CONTRACTOR SHALL COMPLY WITH ALL PERMIT CONDITIONS AS CONTAINED IN THESE PERMITS. COSTS FOR PERMIT COMPLIANCE WILL BE PAID FOR UNDER MISCELLANEOUS WORK AND CLEANUP IN THE BID SCHEDULE.
- CONTRACTOR WILL BE RESPONSIBLE TO COORDINATE WITH THE PROPER UTILITY IF IT IS NECESSARY TO HOLD POLES THAT SUPPORT THEIR WIRE DURING ANY EXCAVATION NEAR THE BASE OF THE POLES. THIS WORK WILL NEED TO BE SCHEDULED BY THE CONTRACTOR A MINIMUM OF FIVE DAYS IN ADVANCE. THIS WORK WILL BE PAID FOR UNDER MISCELLANEOUS WORK AND CLEANUP IN THE BID SCHEDULE.
- TECHNICAL SPECIFICATIONS PROVIDE NECESSARY INFORMATION AND ARE PART OF THE CONTRACT DOCUMENTS FOR THIS PROJECT.
- ALL DISTURBED VEGETATED AREAS SHALL BE SEEDED AND MULCHED WITH APPROPRIATE WETLAND SEED MIXES WITHIN 48-HOURS OF FINAL GRADING. ALL AREAS SHALL BE STABILIZED WITHIN WETLANDS AND MULCHED WITH STRAW OR WEED FREE HAY TO LIMIT THE SPREAD OF INVASIVE SPECIES. REMOVAL OF SHRUBS, TREES AND VEGETATION SHOULD BE LIMITED TO THE LIMITS OF DISTURBANCE AND MINIMIZED TO THE GREATEST EXTENT POSSIBLE.
- GENERALLY DARK OR HEAVY LINE WEIGHT REFERS TO PROPOSED IMPROVEMENTS INCLUDED IN THIS CONTRACT, NORMAL FONT OR LIGHT LINE WORK GENERALLY REFERS TO EXISTING FACILITIES AND FEATURES.
- LISTING OF ADAPTERS, FITTINGS, NIPPLES, ETC IS FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. ADDITIONAL MATERIAL MAY BE REQUIRED. SOLID SLEEVES OR TRANSITION COUPLINGS WILL BE REQUIRED FOR CONNECTION TO EXISTING MAINS OR SERVICES.
- ALL BURIED WATER MAINS SHALL UTILIZE CONCRETE THRUST BLOCK RESTRAINTS. PRECAST CONCRETE THRUST BLOCKS ARE NOT ALLOWED. REFER TO THRUST BLOCK DETAILS SHOWN ON SHEET C2.
- WATER MAINS TO HAVE 5.0 FEET MINIMUM COVER UNLESS OTHERWISE STATED OR SHOWN ON THE PROFILES. WHEN 5.0 FEET OF COVER CANNOT BE MAINTAINED, 4" RIGID BOARD INSULATION SHALL BE USED. DEPTH OF COVER SHALL NOT BE LESS THAN 4.0 FEET EVEN WITH INSULATION. WHEN PROPOSED WATER MAIN COVER DEPTH IS LESS THAN 5.0 FEET, NEW COVER DEPTH SHALL BE DISCUSSED AND APPROVED BY THE ENGINEER. EXPLORATORY EXCAVATION AT POINTS OF INTERCONNECTION IS WARRANTED.
- WATER MAINS WITHIN RIVER BANKS TO HAVE A MINIMUM DEPTH OF 3.0 FEET, AS SHOWN ON THE PROFILE.
- MECHANICAL JOINT RESTRAINTS AND THRUST BLOCKS SHALL BE USED WHERE WATER MAIN VALVES WILL BE SUBJECTED TO SERVICE PRESSURES ON ONE SIDE BEFORE BEING FULLY INCORPORATED INTO THE DISTRIBUTION SYSTEM. ANY ADJACENT PUSH ON JOINTS SHALL BE FULLY RESTRAINED, AS NECESSARY.
- ALL MECHANICAL JOINT FITTINGS, VALVES, AND HYDRANTS SHALL INCORPORATE A WEDGE TYPE RETAINER GLAND INSTEAD OF THE COMMON FOLLOWER GLAND.
- MINIMUM VERTICAL CLEARANCE BETWEEN NEW WATER MAINS AND ALL EXISTING UTILITIES, EXCEPT SEWERS AND STORM DRAINS TO BE SIX (6) INCHES AT CROSSING LOCATIONS.

- CONTRACTOR SHALL BE FULLY AWARE OF THE INSTRUCTIONS AND GUIDELINES FOR SEQUENCE OF WORK AS DESCRIBED IN THE SPECIFICATIONS.
- BALL AND SOCKET PIPE IS REQUIRED WHERE SHOWN ON THE PLANS WITHOUT EXCEPTION.
- THE CONTRACTOR IS RESPONSIBLE FOR FLUSHING, PRESSURE TESTING, AND DISINFECTING ALL NEW WATER MAINS IN ACCORDANCE WITH AWWA C600 AND C651 AND THE SPECIFICATIONS. CHLORINE INJECTION POINTS SHALL BE INSTALLED WHERE REQUIRED AND APPROVED BY THE ENGINEER PRIOR TO INSTALLATION AND REMOVED UPON COMPLETION OF TESTING. CONTRACTOR TO DISCUSS PROCEDURES WITH ENGINEER PRIOR TO COMMENCEMENT OF TESTING ACTIVITIES. ALL CHLORINATION INJECTION POINTS SHALL BE WITHIN 10 FEET FROM THE SOURCE OF WATER. REFER TO THE SPECIFICATIONS FOR ADDITIONAL INFORMATION.
- ALL CHLORINATED WATER FROM DEWATERING, TESTING, OR ANY OTHER CONSTRUCTION ACTIVITIES SHALL BE DECHLORINATED AND ALLOWED TO FLOW ACROSS A MINIMUM OF 50- FEET OF VEGETATIVE LAND PRIOR TO ENTERING THE WATERS OF THE STATE. METHODS TO PROVIDE DECHLORINATION SHALL BE IN PLACE TO INSURE HEAVILY CHLORINATED WATER DOES NOT REACH WATERS OF THE STATE. THE CONTRACTOR SHALL NOTIFY THE AGENCY OF NATURAL RESOURCES RIVER MANAGEMENT DIVISION IN ADVANCE OF ANY FLUSHING ACTIVITIES. NO CHLORINATED WATER SHALL BE DISCHARGED TO WATERS OF THE STATE.
- WHENEVER A SOLID SLEEVE IS INDICATED ON THE DRAWINGS, THE CONTRACTOR MAY BE REQUIRED TO USE A TRANSITION COUPLING DEPENDING ON THE MATERIAL OF THE EXISTING PIPE. THE CONTRACTOR SHALL CONFIRM THE EXISTING MATERIAL. SHOULD A TRANSITION COUPLING BE REQUIRED IN LIEU OF A SOLID SLEEVE, THE TRANSITION COUPLING SHALL BE PAID FOR AS A SOLID SLEEVE AT THE UNIT PRICE IN THE BID.
- CONSTRUCTION SHALL BE COORDINATED WITH THE AGENCY OF NATURAL RESOURCES RIVER MANAGEMENT DIVISION.
- ALL EQUIPMENT SHALL BE CLEANED SO AS TO CONTAIN NO OBSERVABLE SOIL OR VEGETATION PRIOR TO WORK IN WETLANDS, BUFFER ZONES OR THE RIVER. EQUIPMENT SHALL BE IN GOOD OPERATING CONDITION WITH NO FLUID LEAKS.
- ACCESS TO THE SITE ACROSS THE RAILROAD RIGHT-OF-WAY OR FROM THE EAST ACROSS THE FIELD FROM HIGGINS HILL MUST BE APPROVED WITH WRITTEN PERMISSION OBTAINED FROM THE PROPERTY OWNER. ACCESS FROM HIGGINS HILL MAY REQUIRE A WETLAND PERMIT TO BE OBTAINED AT THE CONTRACTOR'S EXPENSE.
- ALL CONSTRUCTION MUST OCCUR BETWEEN JULY 15 AND OCTOBER 1.
- ALL WORK IN THE RIVER OR WETLANDS MUST BE IN COMPLIANCE WITH THE DEPARTMENT OF THE ARMY GENERAL PERMIT FOR THE STATE OF VERMONT.

EROSION CONTROL AND SEDIMENT PREVENTION NOTES:

- THE CONTRACTOR SHALL BE RESPONSIBLE FOR EROSION PREVENTION AND SEDIMENTATION CONTROL IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, INCLUDING, ALL STATE AND FEDERAL PERMITS AND GUIDELINES.

LOCAL VALVE OPERATION:

- PROPOSED MAIN LINE VALVES SHALL OPEN LEFT OR COUNTER CLOCKWISE. OPERATION OF ALL VALVES WILL BE PERFORMED BY THE UTILITY OWNER'S STAFF ONLY.
- ALL INTERCONNECTIONS TO THE EXISTING SYSTEM CAN ONLY BE MADE WITH THE WRITTEN PERMISSION OF THE FIELD ENGINEER.

LEGEND	
EXISTING:	PROPOSED:
— W — WATER MAIN PIPE	— W — WATER MAIN PIPE
— FM — FORCE MAIN PIPE	— BV — BUTTERFLY VALVE
— C — CULVERT PIPE	— PF — PIPE FITTINGS
— M — MAJOR CONTOUR	— PC — PIPE CAP
— m — MINOR CONTOUR	— SS — SOLID SLEEVE
— P — PAVED ROAD OUTLINE	— SF — SILT FENCE
— G — GRAVEL ROAD OUTLINE	— X — LIMITS OF DISTURBANCE
— R — RIGHT OF WAY	— DB — DEWATERING BASIN
— PL — PROPERTY LINE	
— 100 — 100-YEAR FLOOD PLAIN	
— SW — STONE WALL	
— GR — GUARD RAIL	
— RT — RAILROAD TRACKS	
— RE — RIVER EDGE	
— SW — SWALE	
— TL — TREE LINE	
— WV — WATER VALVE	
— PF — PIPE FITTINGS	
— PC — PIPE CAP	
— SS — SOLID SLEEVE	
— OHW — OVERHEAD WIRES	
— UP — UTILITY POLE/GUY WIRE	
— DT — DECIDUOUS TREE	
— CT — CONIFEROUS TREE	
— TP — TRAVERSE POINT	
— MH — METERING MANHOLE	
— B-1 — SOIL BORING	
— WL — WETLAND BOUNDARY	
— 50 — 50-FOOT WETLAND BUFFER	

ABBREVIATION LIST

ABB	DESCRIPTION	ABB	DESCRIPTION
APPROX	APPROXIMATE	MH	MANHOLE
ASP	ASPHALT	MJ	MECHANICAL JOINT
BGN	BEGIN	MON	MONUMENT
BL	BREAK LINE	OHW	OVERHEAD WIRE
BM	BENCH MARK	PL	PROPERTY LINE
BNK	BANK	POC	POINT ON CURVE
BOT	BOTTOM	POR	PORCH
BRK	BROOK	POT	POINT OF TANGENCY
BS	BACK SITE	PPC	PLASTIC PIPE CULVERT
CI	CAST IRON	PT	POINT
CL	CENTER LINE	PVMT	PAVEMENT
CMP	CORRUGATED METAL PIPE	RCP	REINFORCED CONCRETE PIPE
CON	CONCRETE	STA	STATION
COR	CORNER	TBM	TEMPORARY BENCH MARK
CPP	CORRUGATED PLASTIC PIPE	TYP	TYPICAL
CT	CONIFEROUS TREE	WSO	WATER SHUTOFF
CU	COPPER	WSUR	WATER SURFACE
DI	DUCTILE IRON		
DIA	DIAMETER		
DIST	DISTANCE		
ED	EDGE		
EL	ELEVATION		
FX	FENCE		
GND	GROUND		
GV	GATE VALVE		
INV	INVERT		
IP	IRON PIPE		
IPF	IRON PIPE FOUND		
IRF	IRON ROD FOUND		



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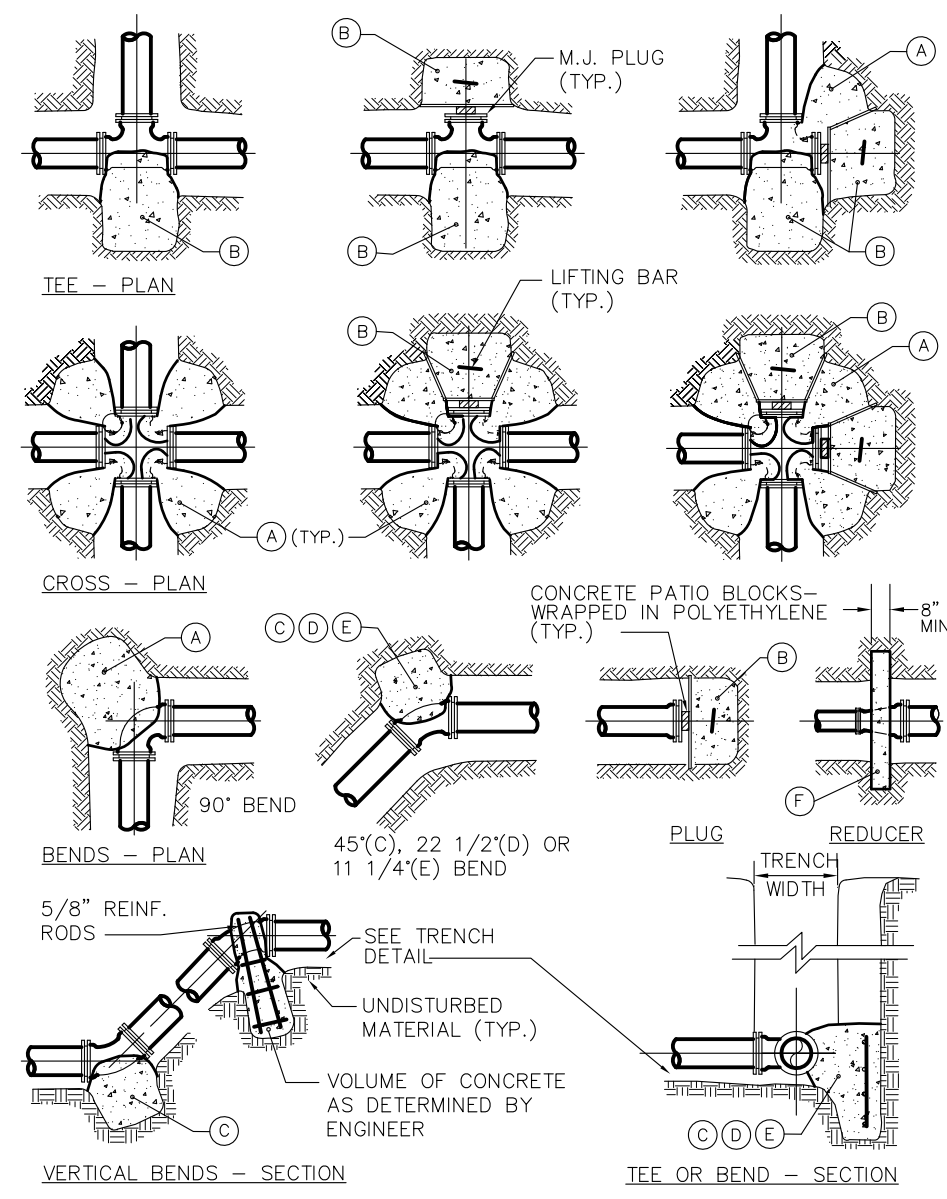
MOOSE RIVER WATER MAIN CROSSING
CONTRACT 2015-1

**GENERAL NOTES,
LEGEND, AND ABBREVIATIONS**

SAINT JOHNSBURY, VERMONT

Project #	4140007
Project Mgr.	AJD
Design by	AJD
Drawn by	EAE
Reviewed by	RED
Approved by	RED
Date	JULY 14, 2015
Scale	AS SHOWN

G1



THRUST BLOCK SCHEDULE
SQUARE FEET OF CONCRETE THRUST BLOCKING BEARING ON UNDISTURBED MATERIAL

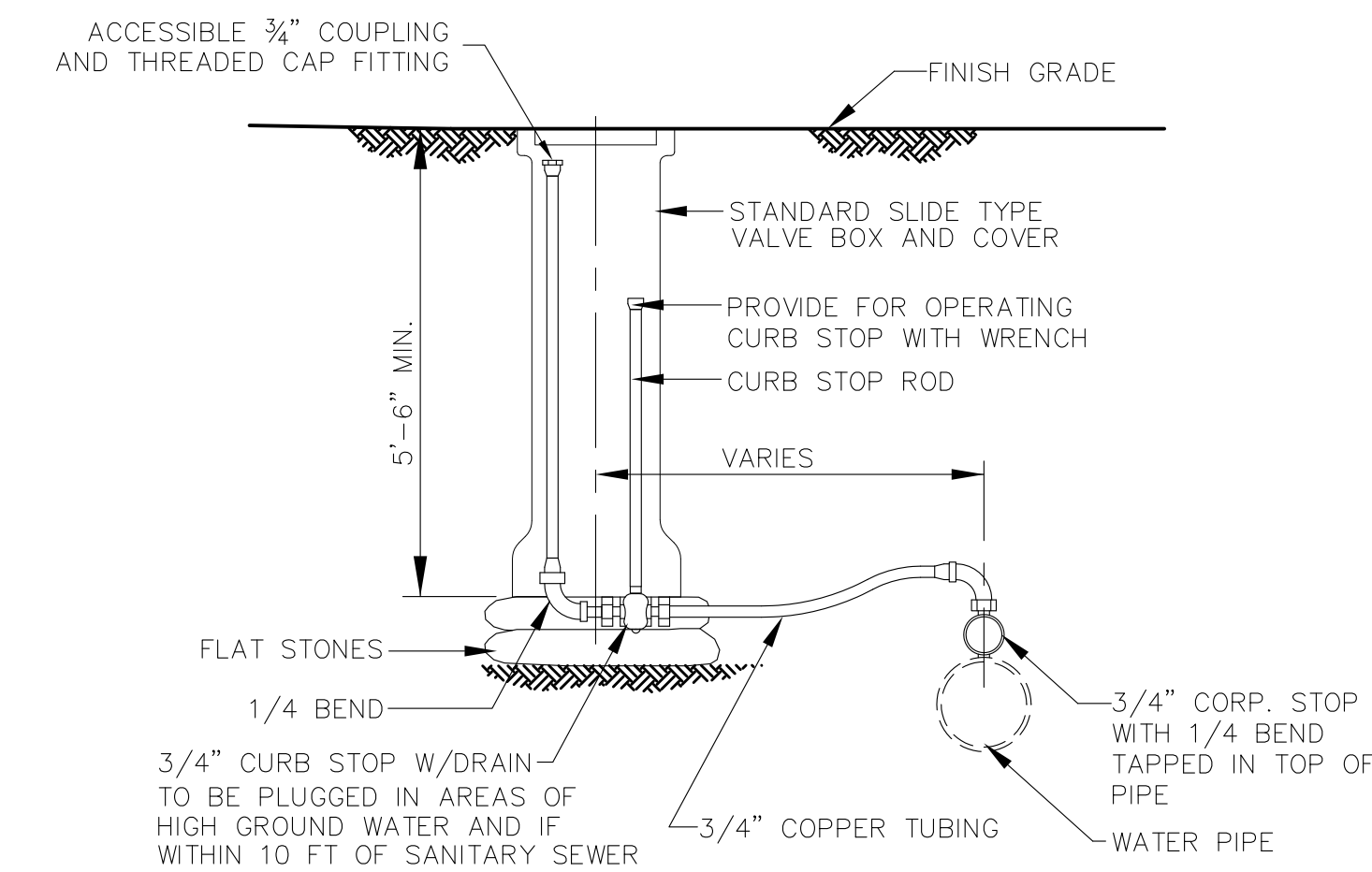
REACTION TYPE	PIPE SIZE										
	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	
①	5.12	10.58	18.19	27.37	38.71	52.00	67.26	84.47	103.64	147.87	
②	3.62	7.48	12.87	19.35	27.37	36.77	47.56	59.73	73.29	104.56	
③	2.77	5.72	9.85	14.81	20.95	28.14	36.40	45.72	56.09	80.03	
④	1.41	2.92	5.02	7.55	10.68	14.35	18.56	23.31	28.60	40.80	
⑤	0.71	1.47	2.52	3.79	5.37	7.21	9.32	11.71	14.37	20.50	
⑥	-	3.86	9.25	15.73	23.75	29.29	40.08	46.86	53.93	77.19	

- NOTES:**
- THRUST RESTRAINT IS REQUIRED FOR ALL TEES, BENDS, REDUCERS, CAPS, PLUGS, OR CROSSES.
 - POUR THRUST BLOCKS AGAINST UNDISTURBED MATERIAL. WHERE TRENCH WALL HAS BEEN DISTURBED, EXCAVATE LOOSE MATERIAL AND EXTEND THRUST BLOCK TO UNDISTURBED MATERIAL. NO JOINTS SHALL BE COVERED WITH CONCRETE.
 - ON BENDS AND TEES, EXTEND THRUST BLOCKS FULL LENGTH OF FITTING.
 - PLACE CONCRETE PATIO BLOCKS IN FRONT OF ALL PLUGS BEFORE POURING THRUST BLOCK.
 - PRE-FORMED AND PRE-POURED THRUST BLOCKS ARE NOT ACCEPTABLE.
 - THE USE OF A MECHANICAL JOINT RESTRAINT SYSTEM DOES NOT REDUCE THE REQUIREMENTS SHOWN IN THIS DETAIL.
 - ALL FITTINGS SHALL BE WRAPPED IN POLYETHYLENE OR BUILDING PAPER PRIOR TO INSTALLATION OF CONCRETE RESTRAINT.
 - IF THREADED ROD IS USED, IT SHALL BE ANSI A242 F550 PIPE RESTRAINT NUTS TO MATCH AWWA C111.
 - SIZES FOR REDUCERS SHOWN ARE BASED ON THE SMALLEST AVAILABLE RUN SIZE FOR A GIVEN PIPE SIZE.
 - INSTALL LIFT HOOKS INTO THRUST BLOCKS AT END CAPS AND PLUGS.
 - TEST PRESSURE TO BE 200 PSI MIN. AT LOW END OF THE TEST SECTION. SQUARE FEET OF CONCRETE THRUST BLOCKING FOR OTHER TEST PRESSURES IS DIRECTLY PROPORTIONAL TO THE ABOVE TABLE. FOR INSTANCE, AT 300 PSI TEST PRESSURE, THE NUMBERS SHOWN IN THE ABOVE TABLE ARE MULTIPLIED BY 1.5. SEE BELOW FOR EXAMPLE CALCULATION.
 - THRUST BLOCK AREA IS BASED ON A SOIL BEARING STRENGTH OF 1500 LBS/SF AND A SAFETY FACTOR OF 1.5. MULTIPLY THE BEARING AREA FROM ABOVE (WITH CONSIDERATION OF TEST PRESSURE) AND MULTIPLY BY THE FOLLOWING FACTORS TO DETERMINE BEARING AREA REQUIRED FOR VARIOUS SOIL CONDITIONS:

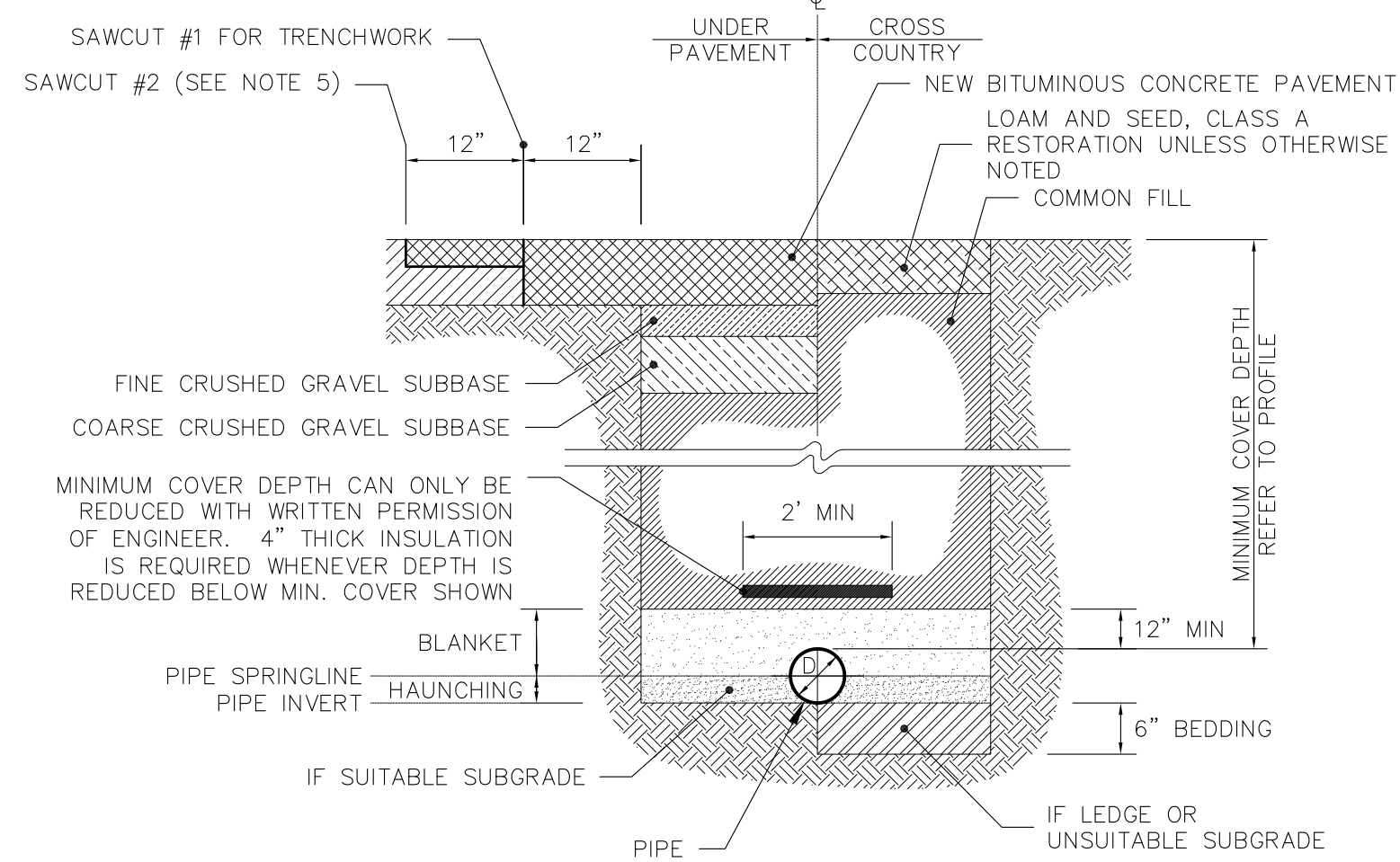
SOIL TYPE	BEARING CAPACITY (LB/SF)	FACTOR
SOFT CLAY	1,000	1.50
SILT	1,500	1.00
SANDY SILT	3,000	0.50
SAND	4,000	0.38
SANDY GRAVEL	5,000	0.30
SANDY CLAY	6,000	0.25
GRAVEL W/ ROCK	7,000	0.21
HARD CLAY	9,000	0.17

EXAMPLE: AN 8-INCH 90° BEND IN SANDY GRAVEL SOILS, TEST PRESSURE OF 200 PSI:
 AREA REQUIRED = 18.19SF x 1 x 0.30 = 5.46SF

THRUST BLOCK DETAILS AND NOTES
NOT TO SCALE



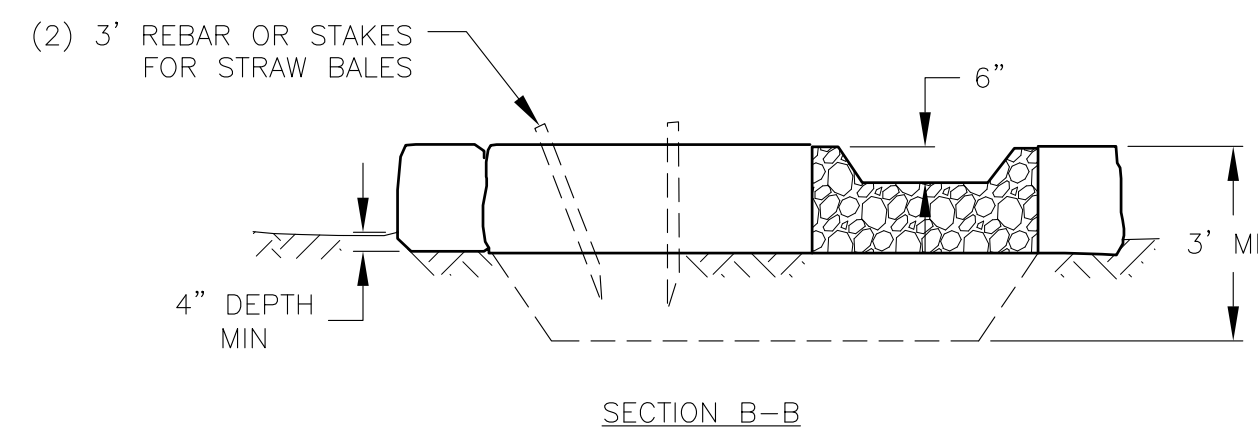
CHLORINATION INJECTION DETAIL
NOT TO SCALE



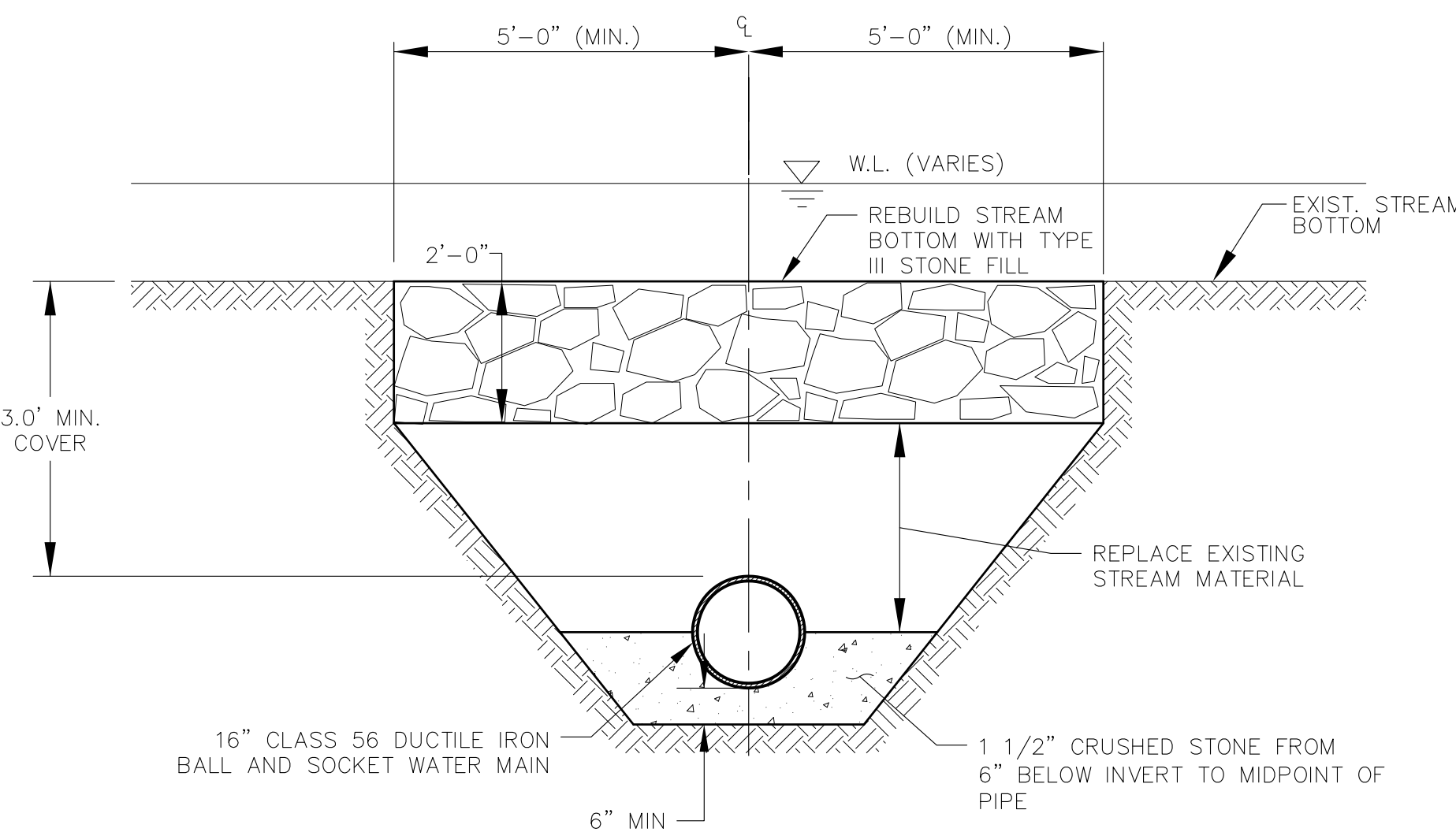
- BEDDING** - EXCAVATE BELOW PIPE AND REFILL ONLY WHEN SPECIFICALLY ORDERED. MATERIALS AND COMPACTION AS SPECIFIED.
- HAUNCHING** - FROM INVERT OF PIPE TO SPRINGLINE OF PIPE. HAND PLACE AND HAND TAMP TO REMOVE ALL VOIDS FROM UNDER PIPE. MATERIAL AND COMPACTION AS SPECIFIED.
- BLANKET** - FROM SPRINGLINE TO 12" MIN. ABOVE PIPE. MATERIAL AND COMPACTION AS SPECIFIED.

WATER MAIN TYPICAL TRENCH DETAIL
NOT TO SCALE

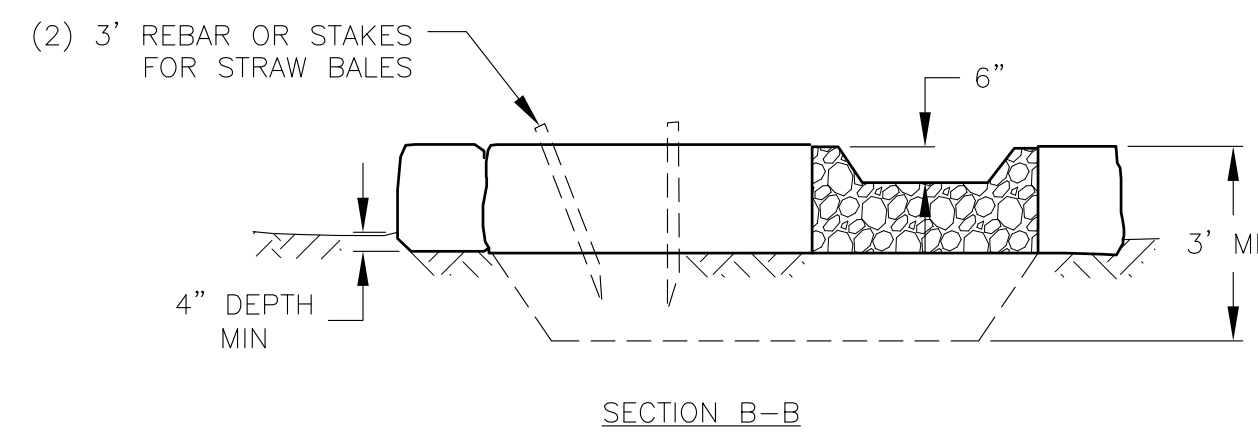
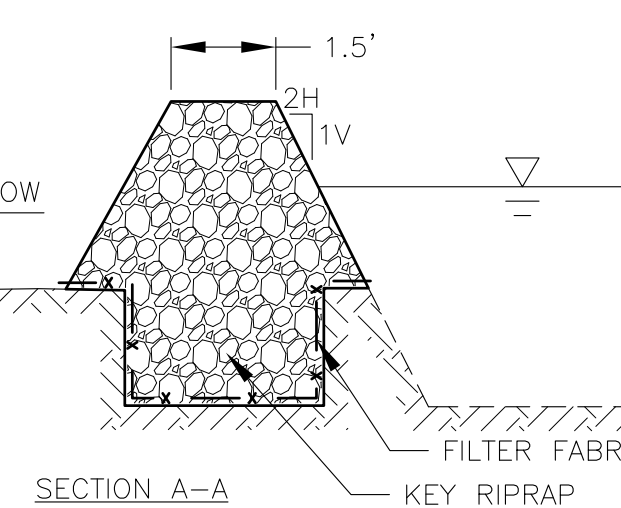
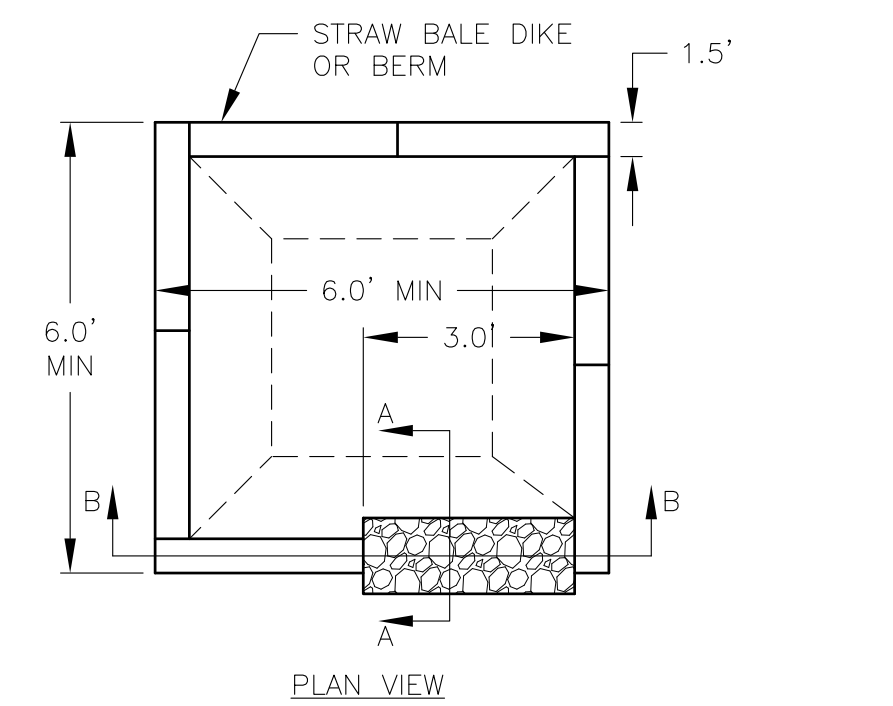
- NOTES:**
- REFER TO SPECIFICATIONS FOR PAVEMENT THICKNESS REQUIREMENTS.
 - REFER TO THE SPECIFICATIONS FOR COMPACTION, PAY LIMITS, AND SPECIALTY MATERIALS FOR BLANKET, HAUNCHING, BEDDING, AND GRAVELS.
 - NORMALLY, EXCAVATED MATERIAL FROM THE TRENCH CAN BE USED AS COMMON FILL BACKFILL AND COMPACTION AS NECESSARY TO ACHIEVE COMPLIANCE WITH THE SPECIFICATIONS. IF IN THE OPINION OF THE ENGINEER, THE EXCAVATED MATERIAL WHEN REMOVED IS TOO WET TO BE USED AS BACKFILL TO ACHIEVE THE MINIMUM SPECIFIED COMPACTION, MATERIAL MEETING THE COMMON FILL SPECIFICATION WILL BE FURNISHED AND INSTALLED AT THE UNIT PRICE PROVIDED.
 - IF THE EXCAVATED MATERIAL BECOMES TOO WET DUE TO WEATHER CONDITIONS OR DUE TO IMPROPER HANDLING PROCEDURES AND CANNOT BE REUSED FOR BACKFILL, THE MATERIAL SHALL BE SUFFICIENTLY DRIED OR MIXED WITH DRY MATERIAL TO OBTAIN PROPER MOISTURE CONTENT AT NO ADDITIONAL CHARGE TO THE OWNER.
 - SAWCUT #2 FOR PERMANENT TRENCH PAVEMENT: CUT EXISTING PAVEMENT IN A STRAIGHT LINE TO A DEPTH EQUAL TO NEW WEARING COURSE PAVEMENT THICKNESS AND REMOVE EXISTING PAVEMENT. CLEAN SURFACES AND TACK COAT ALL EDGES OF EXISTING PAVEMENT.
 - TRENCH WIDTH SHALL BE SUFFICIENT TO ALLOW PIPE TO BE LAID AND JOINED PROPERLY AND FOR PLACEMENT AND COMPACTION OF BEDDING. TRENCH SUPPORT SHALL BE ADEQUATE TO PERMIT SAFE ACCESS BY INSPECTOR FOR COMPACTION SAMPLES.
 - WHERE PIPE IS INSTALLED IN GRAVEL SHOULDER OR IN GRAVELED ROAD, GRAVEL SUBBASE MATERIAL AND COMPACTION SHALL BE AS SPECIFIED.



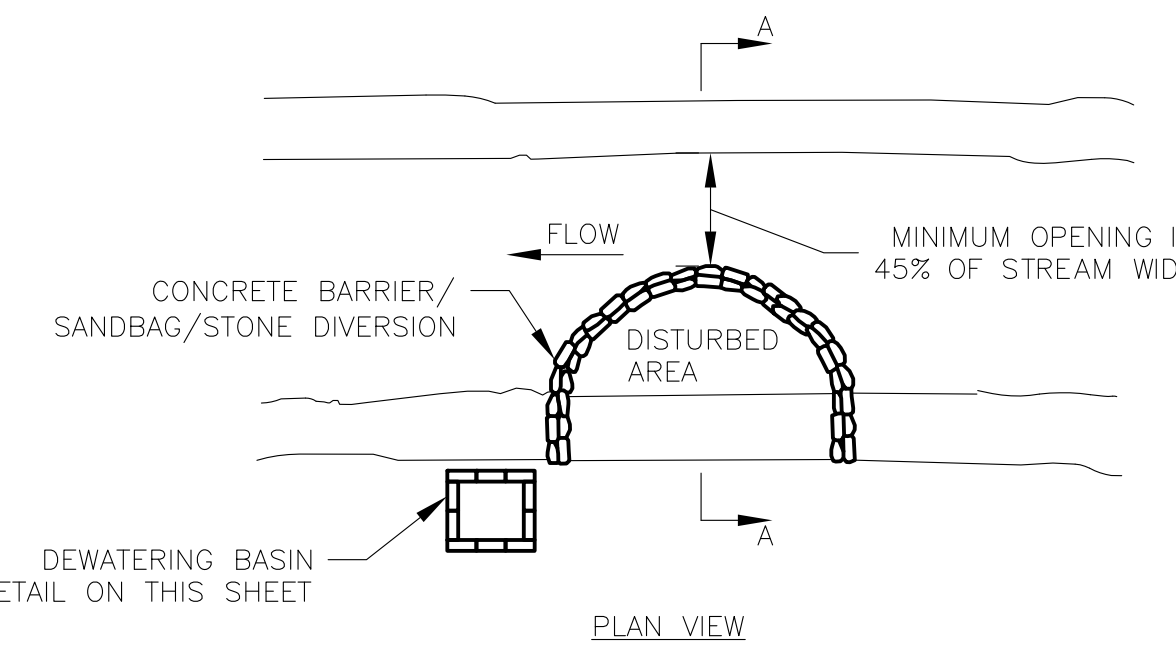
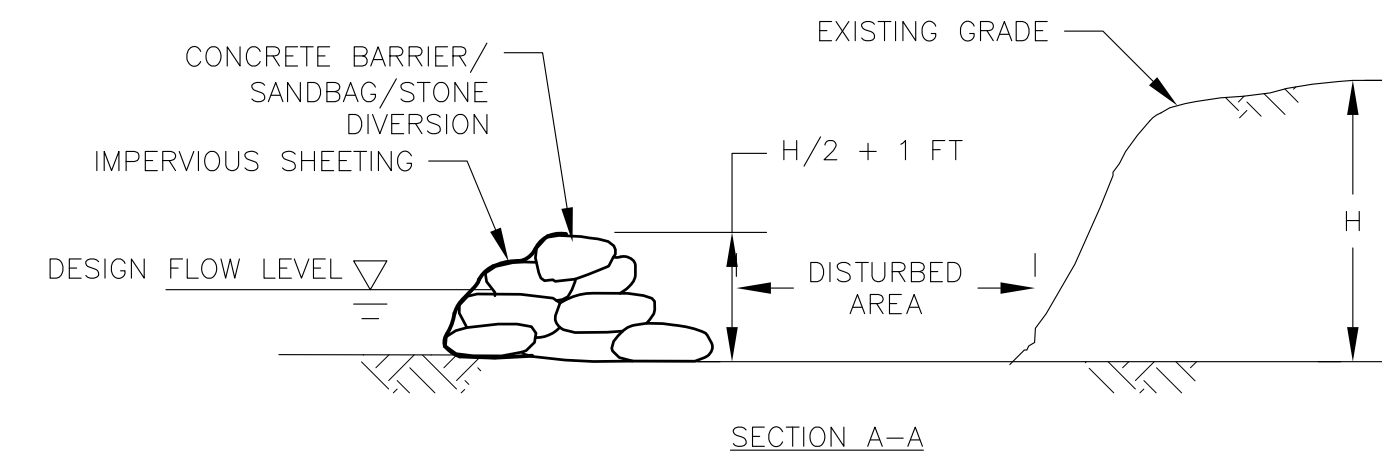
DEWATERING BASINS DETAIL
NOT TO SCALE



WATER MAIN TRENCH WITHIN STREAM DETAIL
NOT TO SCALE

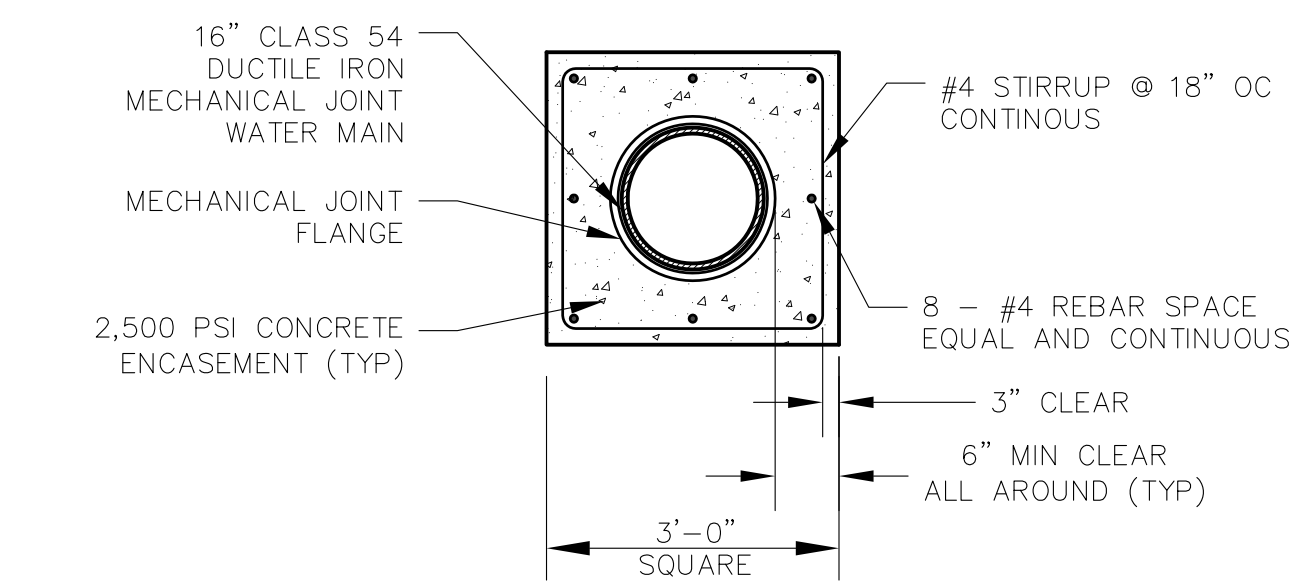


DEWATERING BASINS DETAIL
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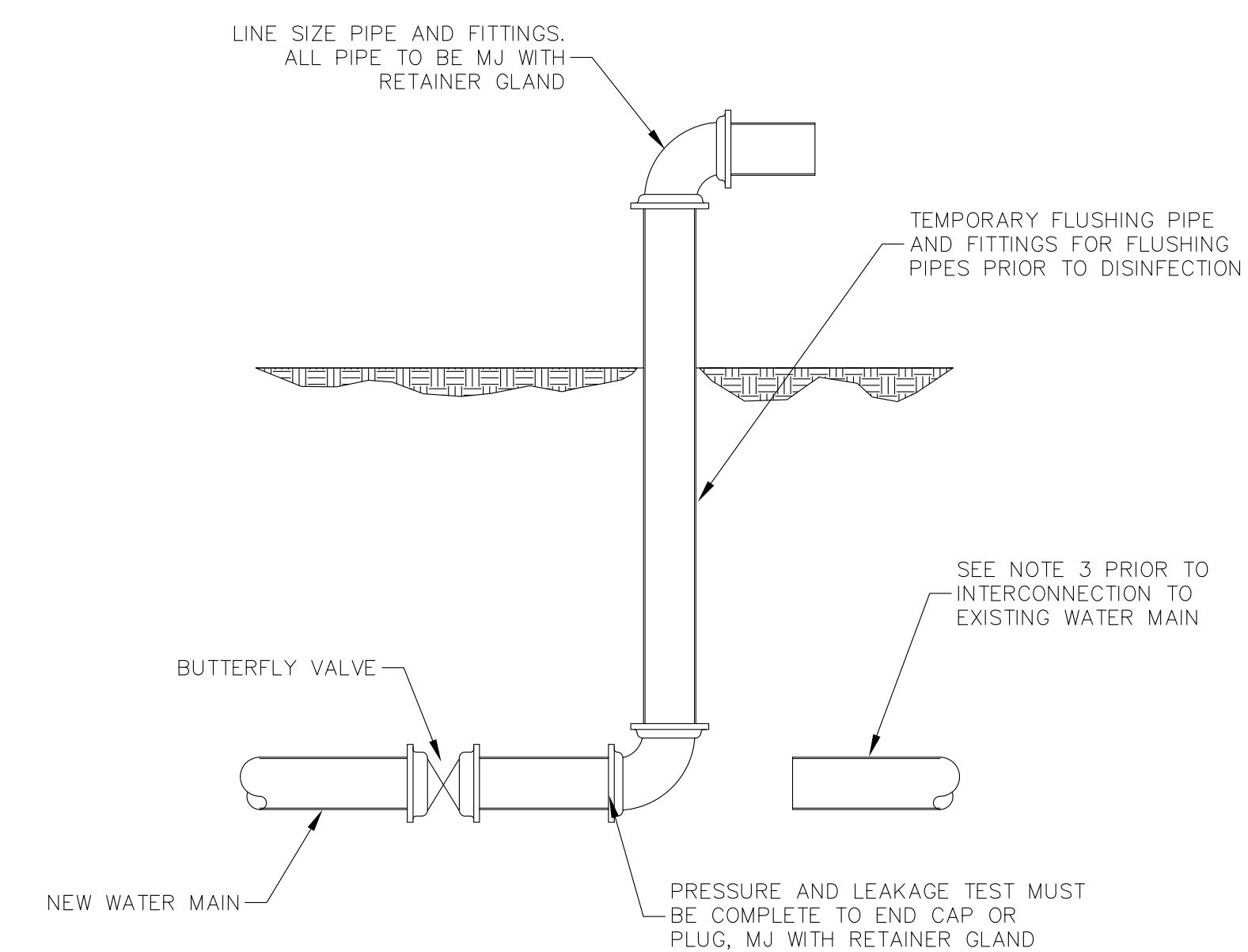


SANDBAG/STONE DIVERSION DETAIL
NOT TO SCALE

- NOTE:**
CONTRACTOR MAY PROPOSE ALTERNATIVE METHODS FOR REVIEW BY THE ENGINEER AND THE STATE OF VERMONT.



CONCRETE ENCASED WATER MAIN DETAIL
NOT TO SCALE



TEMPORARY FLUSHING CONNECTION
SCALE: NOT TO SCALE

- NOTES:**
- MINIMUM FLUSHING VELOCITY IS 3 FEET PER SECOND.
 - CONTRACTOR TO INSURE ALL FLUSHING WATER IS CONTROLLED IN ACCORDANCE WITH CONSTRUCTION GENERAL PERMIT AND DECHLORINATED PRIOR TO DISCHARGE.
 - CONTRACTOR TO SWAB CHLORINATE FITTINGS AND CONNECTORS NOT INCLUDED IN INITIAL DISINFECTION PROCEDURE IF CONNECTING TO AN EXISTING WATER MAIN.



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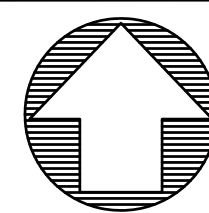
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STANDARD DETAILS

SAINT JOHNSBURY, VERMONT

Project #	4140007
Project Mgr.	AJD
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Drawn by	EAE
Reviewed by	REVIEWED BY
Approved by	NAME
Date	JULY 14, 2015
Scale	AS SHOWN

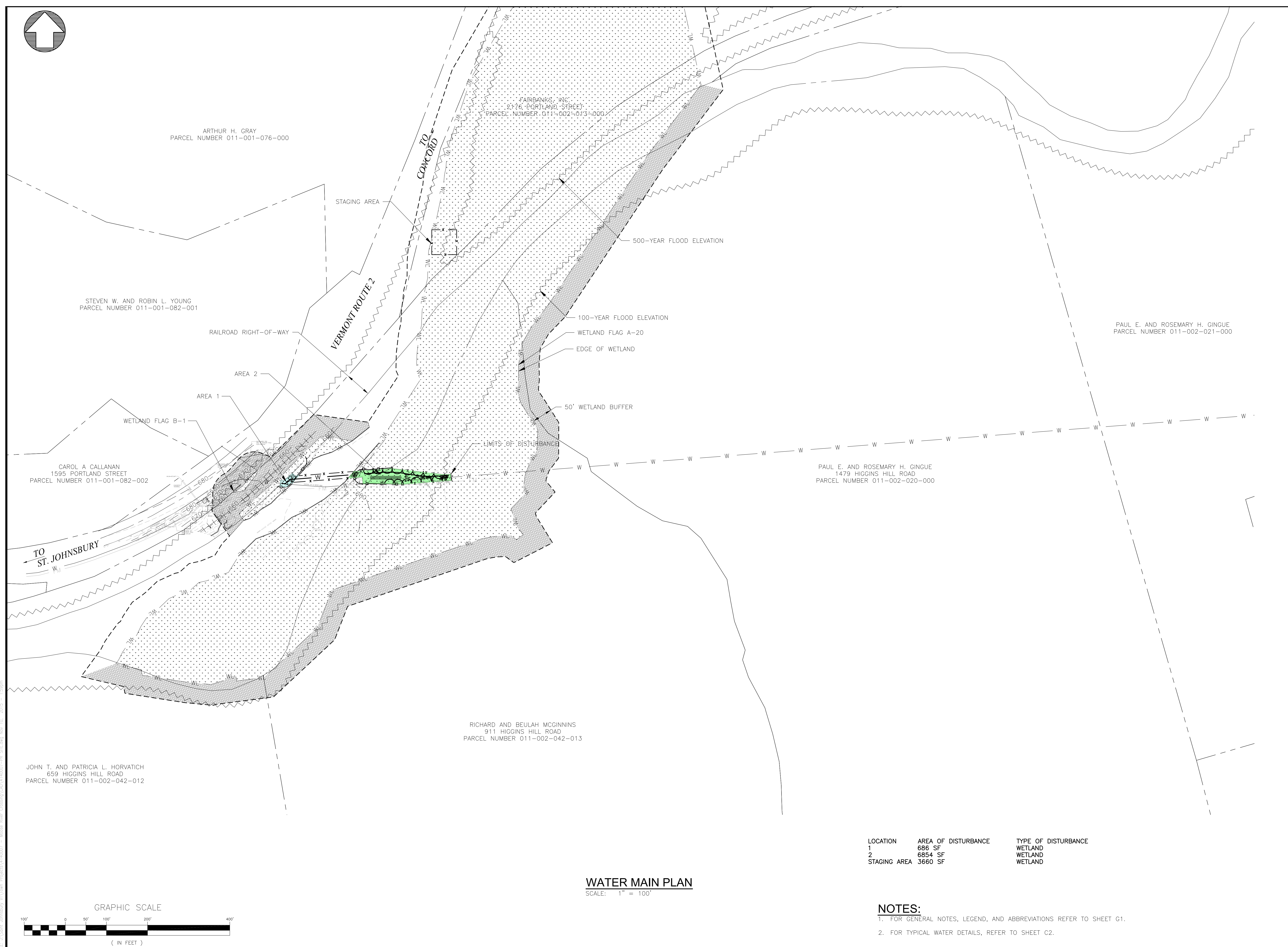
C2



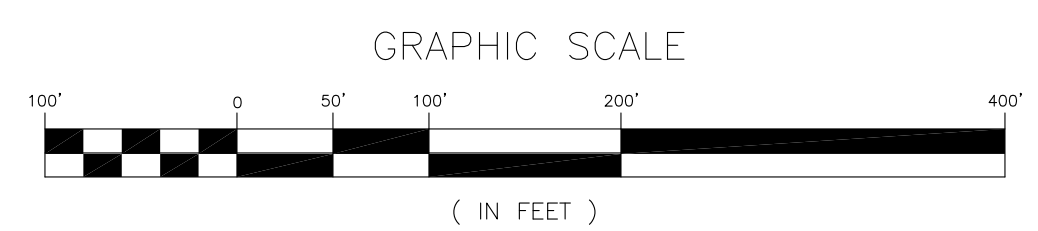
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WATER MAIN PLAN
 SCALE: 1" = 100'



LOCATION	AREA OF DISTURBANCE	TYPE OF DISTURBANCE
1	686 SF	WETLAND
2	6854 SF	WETLAND
STAGING AREA	3660 SF	WETLAND

- NOTES:**
- FOR GENERAL NOTES, LEGEND, AND ABBREVIATIONS REFER TO SHEET G1.
 - FOR TYPICAL WATER DETAILS, REFER TO SHEET C2.

REVISIONS	DATE	COMMENTS	BY

MOOSE RIVER WATER MAIN CROSSING
 CONTRACT 2015-1

FIGURE 1
ADJOINING PROPERTY OWNER PLAN

SAINT JOHNSBURY, VERMONT

Project #	4140007
Project Mgr.	AJD
Design by	AJD
Drawn by	EAE
Reviewed by	REVIEWED BY
Approved by	NAME
Date	JULY 14, 2015
Scale	AS SHOWN

FILE: \\A:\Data\Johnsbury_VT\Draws\Projects\4140007-RP_Site\Map\Box_10_2015_1.dwg
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