

**Stream Status**

**Overall Strategy:** Routine Watershed Management

**Water Quality Rating:** B

**Stream Class:** Groundwater Small Watershed Nonurban (GWS)

**Stream Type:** Unstable, incised, highly erodible channel primarily comprised of an unconsolidated, heterogeneous mixture of gravel, some small cobble, and sand.

**Subwatershed Land Cover:**

3% developed, 72% forests and woodlands, 25% wetlands.



**Macroinvertebrate Data (2002-2003)\***

Metric	Score	Mean of Spring Creeks
Chironomidae Species Richness	20	21
Invertebrate Taxa Richness	32	31.75
HBI	4.5	4.4
% EPT	36.5	36.9
% Dominance	25.8	35.5
Most Common Families	Midges, Black Flies and Small Minnow Mayfly	

**Water Chemistry (2000-2002)\***

Parameter	Site Mean	Site $\sigma$	MPCA NCHF Benchmark MIS/St. Croix River		Mean of Spring Creeks
TP [ $\mu\text{g/L}$ ]	21.69	6.33	90	55	42.47
NO <sub>2</sub> +NO <sub>3</sub> [mg/L]	3.30	1.81	0.1	0.203	2.15
TSS [mg/L]	20.74	28.92	8.8	7.50	15.96
Temperature [C]	11.35	5.53	13.0	10.30	9.95

\*Refer to 2010 Watershed Management Plan Section V, Stream Management Plans for definitions of macroinvertebrate metrics and water chemistry parameters.

**BASIC FACTS**

<b>Section</b>	6
<b>Township</b>	31
<b>Range</b>	19
<b>Stream Length</b>	0.1 miles
<b>Subwatershed Area</b>	27 acres
<b>Baseflow</b>	0.68 cfs
<b>Bankfull Flow</b>	3.09 cfs
<b>Entrenchment Ratio</b>	1.10
<b>Width:Depth Ratio</b>	12.00
<b>Sinuosity</b>	1.16
<b>Slope</b>	0.12
<b>Rosgen Class</b>	A4
<b>DNR Trout Stream</b>	No

**Fish Species:** N/A

**CMSCWD References:**  
Lower St. Croix River Spring Creek Stewardship Plan ('03)

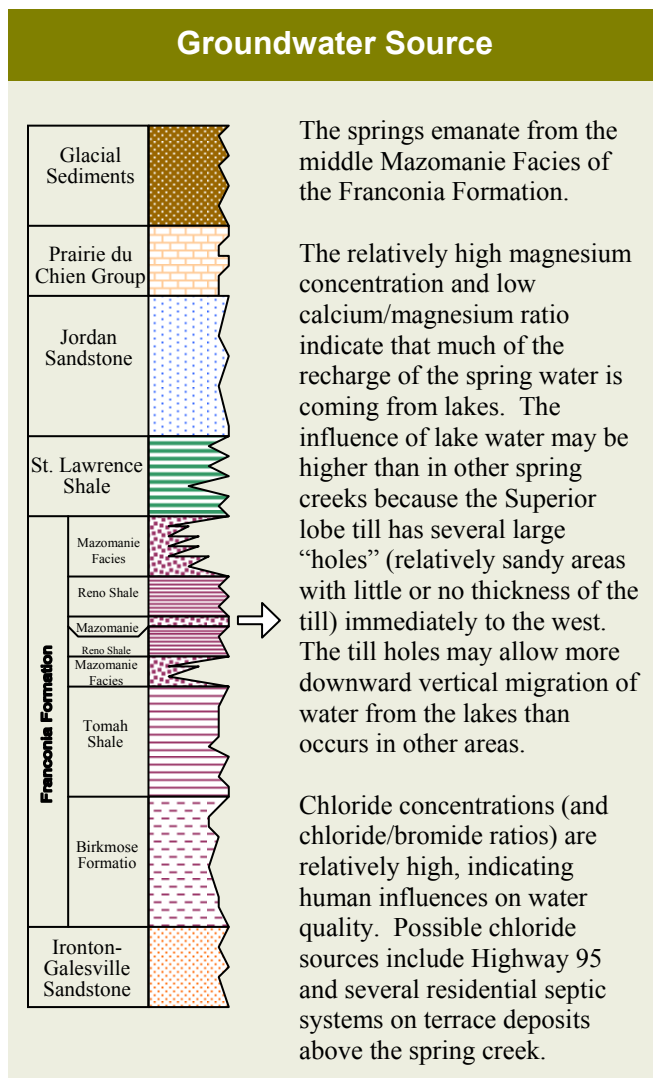
## Overall Assessment: Dunn's Creek

Most of Dunn's Creek is located on the Pine Needles Land Preserve, which was originally the property of James Dunn and today is owned by the St. Croix Watershed Research Station. The 27-acre watershed draining to Dunn's Creek is located within the northern limits of the village of Marine-on-St. Croix. The upper one-third of this watershed includes the Highway 95 right-of-way and several residential homes on large lots, set above the bluff line. The lower two-thirds of this watershed is completely forested and undeveloped, with the exception of a small cabin and access road to a rustic cabin. Dunn's Creek begins at the confluence of two large springs discharging midway between the middle and lower terraces of the St. Croix River. A third spring-fed tributary joins the creek as it flows along the base of the bluff within a mixed hardwood seepage swamp before discharging to the St. Croix River.

The lower portion of Dunn's Creek watershed encompasses the northerly portion of a large mixed hardwood seepage swamp extending, more or less, from the south boundary of the village of Marine-on-St. Croix, to William O'Brien State Park. This mixed hardwood seepage swamp includes numerous, small inclusions of tamarack swamp, rich fen and spring discharge points that support, in addition to Dunn's Creek, several other spring creeks.

This diverse, groundwater-dependent wetland complex is at its highest quality in the vicinity of Dunn's Creek. An excellent quality white pine-mesic hardwood forest is also present along a narrow rock outcrop that borders the bank of the St. Croix River. Although no rare feature records are specific to this area, many of the species of birds noted elsewhere along the river are likely present here. In addition, the Blanding's turtle (*Emydoidea blandingii*) is a state-listed threatened species that may be encountered throughout the watershed. In-stream conditions would support cold water fish species; however none are documented for this stream.

Based on macroinvertebrate data from the 2003 *Lower St. Croix River Spring Creek Stewardship Plan*, Dunn's Creek has a water quality rating of 'B.' Hilsenhoff's biotic index (HBI) is good, and the data show a decent percent EPT (percent of pollutant intolerant mayflies, stoneflies and caddisflies in the sample) and low dominance of any single species.



## Key Management Recommendations

- All existing and new development along the bluffline above Dunn's Creek should limit stormwater runoff to pre-development levels.
- Landowners along the bluffline above the groundwater discharge areas should retain a generous buffer of native vegetation.
- Elevated nitrate and chloride levels in Dunn's Creek suggest that local runoff (from the Marine-on-St. Croix Wastewater Treatment Facility) and impervious roadway surfaces may be impacting water quality. The Watershed (Research Station) may want to monitor water quality in this stream.

\* See *2010 Watershed Management Plan* Section V, *Stream Management Plans* for additional information on District stream management activities.

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