

Spring Creek Name : Marine Landing Creek 4Mb

General Watershed Description

Marine Landing Creek is located just north of Marine-on-St. Croix and outlets to the south of Marine Landing. The stream originates from a series of seeps located at the ridge line along Highway 95. The watershed area is about 36 acres in size, of which approximately 50% is residential land use. The remaining area of the watershed is forested with some areas of open wetland/old field. Marine Landing Creek is one of the shorter streams in the study area, extending approximately 300 feet from its start, just north of the driveway into the Marina to the St. Croix River.

Significant Features

Marine Landing Creek outlets from a 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 several other spring creeks. 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.

Key Management Recommendations

1. For residential areas draining to Marine Landing Creek, encourage the use of residential rain gardens and vegetated swales to store and convey stormwater.
2. Establish stormwater demonstration sites to educate residents on stormwater management BMPs.
3. Work with Mn/DOT and the City to control stormwater runoff from residential area and Highway 95. Several areas to the north of Marine-on- St. Croix along Highway 95 could potentially serve as regional infiltration basins.
4. The inslope of Highway 95 is severely eroded in several places. Once #3 is addressed, these areas should be stabilized and restored cooperatively with Mn/DOT and the City of Marine-on-St. Croix.

Key Policy Recommendations

1. Require phosphorus concentration standard of 50 µg/L for stormwater discharges to tributaries of the St. Croix River.
2. Where infiltration functions are lost due to creation of impervious surfaces, reintroduce through practices that replace these functions.
3. Where private or public infrastructure is upgraded, retrofit or incorporate improvements to hydrologic and water quality conditions.
4. Require an erosion control plan, consistent with the specifications of the MPCA manual "*Protecting Water Quality in Urban Areas*" for all projects that result in 10,000 ft² of disturbance.
5. Establish protective riparian corridors along streams, and buffers around wetlands.
6. Initiate a citizen monitoring program.

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Watershed Size 361.77 acres
Total Stream Length 0.74 miles
Stream Type
 Unstable, incised, highly erodible channel primarily comprised of an unconsolidated, heterogeneous mixture of gravel, some small cobble, and sand.

Land Cover Category	%
Grassland	1.2
Agricultural Land	0
Forest and Woodlands	25.7
Lakes and Open Water Wetlands	36.8
Maintained Natural Areas	0
Wetlands	0
0%-10% Impervious Cover	0
11%-25% Impervious Cover	30.9
26%- 50% Impervious Cover	0
51%-75% Impervious Cover	0
76%-100% Impervious Cover	5.4

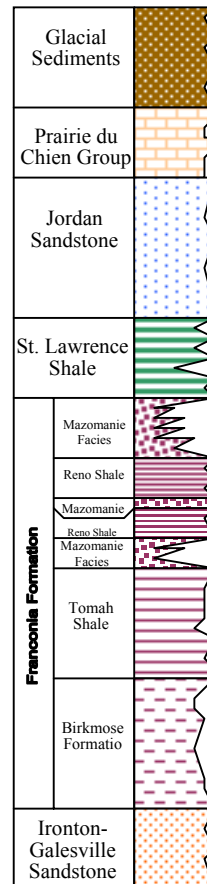
Macroinvertebrate Summary

Metric	Score	Among Springs Mean ^c
Chironomidae Species Richness	10	21
Invertebrate Taxa Richness	32	31.75
HBI	4.26	4.4
%EPT	46.4	36.9
% Dominance	26.17	35.5
Most Common Families	Scuds, Nemourid Broadbacks and Small Minnow Mayfly	

Hydrology

Base flow 0.48 cfs
 Estimated Bank full flow 4.18 cfs

Groundwater source



The springs emanate from the middle Mazomanie Facies of the Franconia Formation. The stream also receives surface runoff from the river terraces above.

The water is has a low calcium/magnesium ratio, indicating that recharge of the water could be coming from a nearby lake or lakes, possibly in the area of Big Marine Lake.

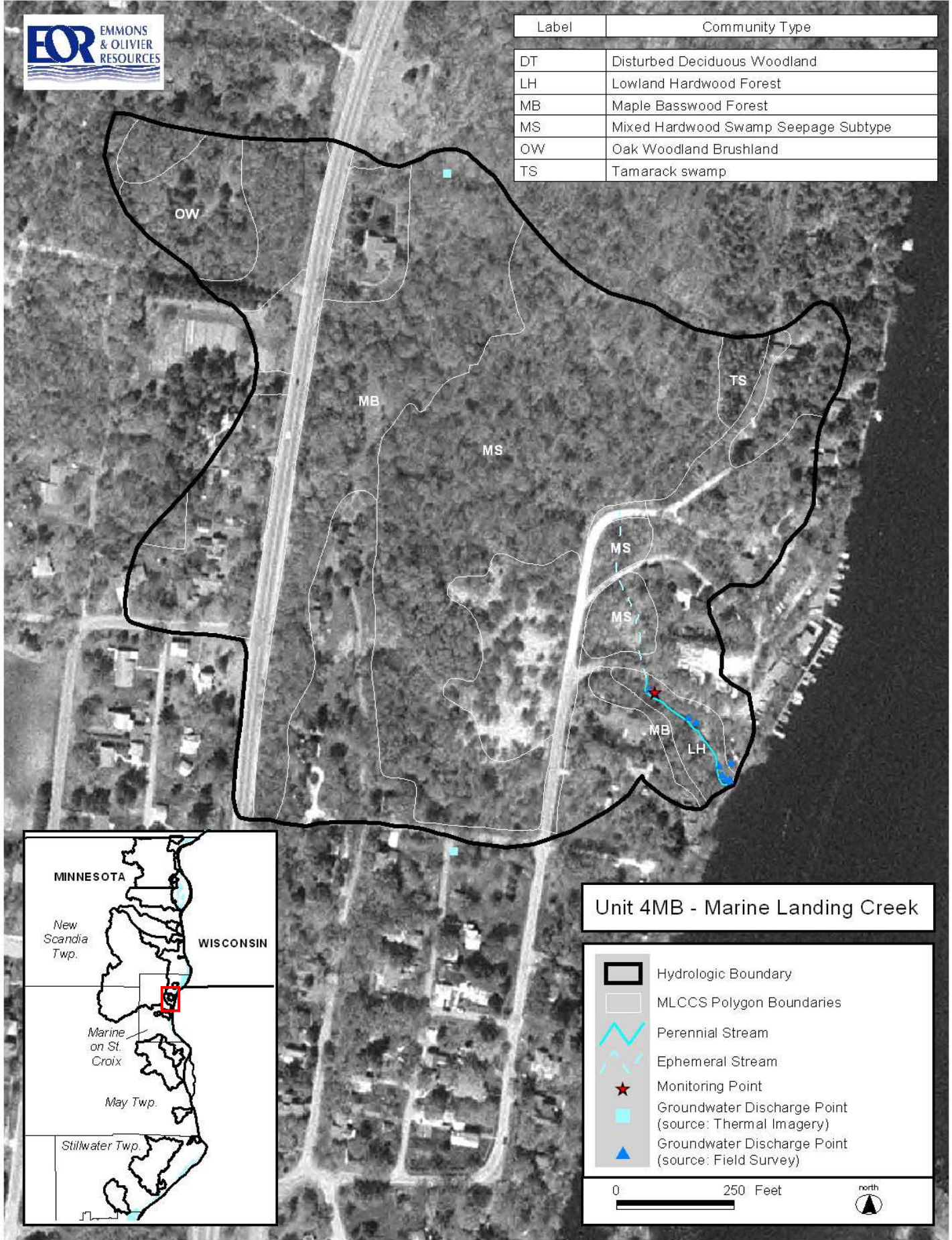
Chloride concentrations are relatively high, indicating human impacts. Possible sources for the chlorides include Highway 95 and discharge from the William O'Brien state park waste treatment system.

Water Chemistry

Parameter	Site Mean	Site σ	MPCA NCHF Benchmark MIS ^a /St. Croix River ^b		Among Springs Mean ^c
TP [$\mu\text{g/L}$]	32.94	8.38	90	55	42.47
NO ₂ +NO ₃ [mg/L]	1.24	0.67	0.1	0.203	2.15
TSS [mg/L]	8.43	10.71	8.8	7.50	15.96
Temperature [C]	9.56	4.37	13.0	10.30	9.95



Label	Community Type
DT	Disturbed Deciduous Woodland
LH	Lowland Hardwood Forest
MB	Maple Basswood Forest
MS	Mixed Hardwood Swamp Seepage Subtype
OW	Oak Woodland Brushland
TS	Tamarack swamp



Unit 4MB - Marine Landing Creek

- Hydrologic Boundary
- MLCCS Polygon Boundaries
- Perennial Stream
- Ephemeral Stream
- Monitoring Point
- Groundwater Discharge Point (source: Thermal Imagery)
- Groundwater Discharge Point (source: Field Survey)

