WATER RESOURCES

Introduction

Maintaining water quality is essential for the health of Union, its residents, businesses and environment. This chapter describes Union's water resources and offers strategies to maintain and enhance them.

Goal

To protect the quality and manage the quantity of the State's water resources, including lakes, aquifers, great ponds, estuaries, rivers, and coastal areas.

Analyses

(1) Are there point sources (direct discharges) of pollution in the community? If so, is the community taking steps to eliminate them?

There are no licensed locations with direct discharge into Union waterways.

(2) Are there non-point sources of pollution? If so, is the community taking steps to eliminate them?

Runoff from rain falling on impervious surfaces, like buildings, pavement and bare ground, picks up and carries pollutants, and is defined as non-point source pollution. Most non-point pollution is residential in nature such as fertilizers and dumping on private land. In such runoff, pollutants occurring naturally like phosphorous, or from petroleum (motor vehicles and storage tanks), fertilizers and pesticides, in addition to untreated or insufficiently treated wastewater and sewage, can be transported into wetlands and waterbodies. Impervious surface percentage maximums, as set in shoreland zoning provisions, can reduce the amount of runoff into waterbodies. In especially sensitive areas, resource protection designations limit or prohibit development. Stormwater best management practices (erosion and sediment control) are found in the shoreland zoning and the subdivision ordinances. It is believed that shoreland zoning and related provisions are effective overall. They promote retention of stormwater on the property to minimize runoff off-site. Flooding is of concern especially in the Union Fairgrounds. Increased storm events have exacerbated flooding within portions of the Town, and so recommendations are made to enhance standards. See the **Strategies** section in this chapter and in the Future Land Use Plan Chapter.

(3) How are groundwater and surface water supplies and their recharge areas protected?

Town wide, shoreland zoning provides protection around waterbodies and wetlands limiting impervious surfaces, pollution runoff, and certain uses within setbacks and districts that help to protect groundwater, surface waters and their recharge areas, as does the Maine Plumbing Code regulations pertaining to subsurface wastewater disposal (septic) systems.

The Code Enforcement Officer/Licensed Plumbing Inspector issue permits for subsurface waste/septic systems and drinking water wells following State and local regulations. Additional protections, like increasing the amount of areas under conservation easements, and/or expanding resource protection zoning should be considered for groundwater protection.

(4) Do public works crews and contractors use best management practices to protect water resources in their daily operations (e.g. salt/sand pile maintenance, culvert replacement, street sweeping, public works garage operations)?

The Town and contractors are aware of the need to use best management practices to protect water resources. The Town recently built new sand and salt storage buildings in compliance with Maine DEP regulations. The Town realizes that it needs to do more with culvert replacement and storm drainage repairs and replacement, but is currently constrained by budget pressures. The Town is attempting to deal with storm water runoff during the permitting process for new construction as well as trying to manage existing conditions.

(5) Are there opportunities to partner with local or regional advocacy groups that promote water resource protection?

The Town has been working with the Georges River Land Trust and Medomak Valley Land Trust on several issues and plans to continue an ongoing relationship with the Knox-Lincoln Soil & Water Conservation District to improve the Town's water resource protection through water quality monitoring, education and conservation efforts.

Conditions and Trends

(1) The community's Comprehensive Planning Water Resources Data Set prepared and provided to the community by the Department of Inland Fisheries and Wildlife, the Department of Environmental Protection and the Office, or their designees.

The data set has been incorporated into the maps titled: Water Resources and Fish Passage Barriers, and in the data that follows.

Maine has four water quality classes of rivers and streams: AA, A, B, and C (Title 38 M.R.S.A. Section 465). Each classification assigns designated uses and water quality criteria (narrative and numeric), and may place specific restrictions on certain activities such that the goal conditions of each class may be achieved or maintained. Class AA waters are managed for their outstanding natural ecological, recreational, social, and scenic qualities. Direct discharge of wastewater, dams, and other significant human disturbances are prohibited. Class A waters must be of such quality that they are suitable for the designated uses of drinking water after disinfection; fishing; agriculture; recreation in and on the water; industrial process and cooling water supply; hydroelectric power generation, except as prohibited under Title 12, section 403; navigation; and as habitat for fish and other aquatic life. The habitat must be characterized as natural. Limited direct discharges are permitted. Class B waters are general-purpose water and are managed to attain good quality water; aquatic life use goal approximately Tier 3 on the Biological Condition

Gradient. Well-treated discharges with ample dilution are allowed. Union has both Class A and Class B waterways.

As of 2016, the Maine Department of Health and Human Services indicated that there are five public water systems (PWS) in Union as shown in the next table. The Maine Water Company, Union Division, serves much of the village area, about 113 houses. Nearly all other residents and businesses in the Town outside of the village area depend upon private wells for drinking water.

Union Public Water Systems				
Name/Owner	**ID-Type**	**Source**	**Depth**	**Type**
Crawford Commons/ Seven Tree Manor	ME0095190	drilled well	NA	C
Maine Water Company - Union Division	ME0091537-101	bedrock well (farthest from road)	306 feet	C
	ME0091537-102	bedrock well (nearest to road)	307 feet	C
	ME0091537-103	bedrock well (middle)	400 feet	C
	ME0091537-504	cannery well (emergency use)	NA	C
Mic Mac Cove Campground	ME0003551	drilled well	125 feet	NC
RSU 40 Union Elementary and-Middle Schools	ME0000640	drilled well	220 ft	NTNC
Thompson Community Center and Town Office	ME0092377	well	NA	NC

Source: Maine Department of Health and Human Services, Drinking Water Program
Notes: C=Community, NC=Non-Community, NTNC=non-transient non-community

The next two tables show state assessments of public water systems in Union, for the most recent year(s) that the state provided.

Assessment of Maine Water Company - Union Division ME0091537 (4 wells)				
Categories/ID #	**91537-101**	**91537-102**	**91537-103**	**91537-504**
Type	360' Bedrock Well	205' Bedrock Well	380' Bedrock Well	Blueberry Cannery Well-emergency
Wellhead protection radius around the well	500’	500’	500’	500’
Wellhead Protection Ordinance in effect	No	No	No	No
Existing risk of contamination based on well type & site geology	Moderate risk	Moderate risk	Moderate risk	Low risk
Positive coliform test	No	No	No	No
Nitrate test greater than 5 ppm	No	No	No	No
Septic system within 300 feet of the well	Yes	Yes	Yes	No
Existing risk of acute contamination	Moderate risk	Moderate risk	Moderate risk	Low risk
No legal land control or legal control radius around well of less than 500’	Yes	Yes	Yes	--
Future risk of acute contamination	High risk	High risk	High risk	High risk
Detection of Chronic Chemical Contaminant	No	No	No	No
Name(s) of Chronic Chemical Contaminant(s) Detected	None	None	None	None
Total No. Potential Sources of Contamination within WHPA	10	11	11	None reported
Distance to nearest “Significant Potential Source of Contamination”	NA	300’	300’	None reported
Name of nearest “Significant Potential Source of Contamination	Unknown	Septic system, septic waste disposal	Septic system, septic waste disposal	None or None Reported
Existing risk of chronic contamination	Moderate risk	Moderate risk	Moderate risk	Low risk
Legal control of Entire Wellhead Protection Area	No	No	No	No
Legal control of 2500 Phase II/V Waiver Radius	No	No	No	No
Future risk of chronic contamination	High risk	High risk	High risk	High risk

Source: Maine Department of Health and Human Services, Drinking Water Program
Note: Date of Assessment May 1, 2003

Assessment of Other Union Wells				
Name/Categories	**RSU 40 Union Elementary and Middle Schools**	**Thompson Community Center/ Union Town Office**	**Mic Mac Cove Campground**	**Seven Tree Manor**
ID	640101	92377101	3551101	95190101
Type	220' Bedrock Well	Unknown	125' Bedrock Well	Bedrock well
Wellhead protection radius around the well	900			300
Wellhead Protection Ordinance in effect	No			No
Existing risk of contamination based on well type & site geology	Moderate risk	Moderate risk	Low risk	Moderate risk
Positive coliform test	Yes	No	No	No
Nitrate test greater than 5 ppm	No	No	No	No
Septic system within 300'of the well	Yes	No	Yes	Yes
Existing risk of acute contamination	High risk	Low risk	Moderate risk	Moderate risk
No legal land control or legal control radius around well of less than 500'	Yes	Unknown	The proprietor owns or controls all land within 300' of well	Yes
Future risk of acute contamination	High risk	High risk	Low risk	High risk
Detection of Chronic Chemical Contaminant	No	--	--	Yes
Name(s) of Chronic Chemical Contaminant(s) Detected	None	--	--	Cadmium
Total No. Potential Sources of Contamination within WHPA	7	--	--	6
Distance to nearest "Significant Potential Source of Contamination"	300'	--	--	120'
Name of nearest "Significant Potential Source of Contamination	Underground oil storage tank	--	--	Aboveground oil storage tank
Existing risk of chronic contamination	Moderate risk	--	--	High risk
Legal control of Entire Wellhead Protection Area	No	--	--	No
Legal control of 2500 Phase II/V Waiver Radius	No	--	--	No
Future risk of chronic contamination	High risk	--	--	High risk
Date of Assessment	April 15, 2003	June 3, 2010	May 8, 2003	May 1, 2003

Source: Maine Department of Health and Human Services, Drinking Water Program (DWP)

In order to reduce the potential for activity and development that may degrade water quality, the Maine Drinking Water Program encourages suppliers to develop an active wellhead protection program including acquisition of land or easements on land that is currently undeveloped within their contributing area. They also strongly recommend that they work with municipalities to adopt and enforce a wellhead protection ordinance or equivalent provisions within a land use ordinance.

(2) A description of each great pond, river, surface drinking water supply, and other water bodies of local interest including:

a. ecological value;

b. threats to water quality or quantity;

c. documented water quality and/or invasive species problems.

A great pond is defined in Maine statute as "any inland body of water which in a natural state has a surface area in excess of 10 acres…." Using that definition, there are six identified great ponds in Union: Crawford Pond (shared with Warren), Lermond Pond (shared with Hope), Mud Pond, Round Pond, Sennebec Pond (shared with Appleton), and Seven Tree Pond (shared with Warren).

Rivers and streams in Union include the St. George River, Meduncook River, Pettengill Stream, Mill Stream, Quiggle Brook, and several unnamed smaller/intermittent streams. See the maps titled: Water Resources for the locations of these waterways. Most of Union's rivers and streams are Class A, with the exception of portions of Quiggle Brook, which are Class B.

Note: For Union residents, drinking water comes entirely from wells, not from surface waters.

The Maine Department of Environmental Protection (ME-DEP) and the Volunteer Lake Monitoring Program (VLMP) have collected lake data to evaluate water quality, track algal blooms and determine water quality trends. This dataset does not include bacteria, mercury, or nutrients other than phosphorus.

Water quality monitoring datasets for Lermond Pond have been collected since 1984. During this period, 4 years of basic chemical information were collected in addition to Secchi Disk Transparencies (SDT). In summary, the water quality of Lermond Pond is considered above average based on measures of SDT, total phosphorus (TP), and Chlorophyll-a (Chla). The potential for nuisance algal blooms on Lermond Pond is low. It is a non-colored lake. Dissolved oxygen (DO) profiles show little DO depletion in deep areas of the lake. The potential for phosphorus to leave the bottom sediments and become available to algae in the water column (internal loading) is low.

Water quality monitoring datasets for Sennebec Pond have been collected since 1982. During this period, 5 years of basic chemical information was collected in addition to Secchi Disk Transparencies (SDT). In summary, the water quality of Sennebec Pond is considered slightly below average based on measures of SDT, total phosphorus (TP), and Chlorophyll-a (Chla). The potential for nuisance algal blooms on Sennebec Pond is moderate to high. It is moderately colored. Dissolved oxygen (DO) profiles show high DO depletion in deep areas of the lake. The potential for phosphorus to leave the bottom sediments and become available to algae in the water column (internal loading) is high.

Water quality monitoring datasets for Seven Tree Pond has been collected since 1981. During this period, 7 years of basic chemical information was collected, in addition to Secchi Disk Transparencies (SDT). In summary, the water quality of Seven Tree Pond is considered to be below average, based on measures of SDT, total phosphorus (TP), and Chlorophyll-a (Chla). The potential for nuisance algal blooms on Seven Tree Pond is moderate to high. It is a moderately

colored lake. Dissolved oxygen (DO) profiles show high DO depletion in deep areas of the lake. The potential for TP to leave the bottom sediments and become available to algae in the water column (internal loading) is high.

Great Ponds in Union						
Name (shared with)	**Crawford Pond** (Warren)	**Lermond Pond** (Hope)	**Mud Pond**	**Round Pond**	**Sennebec Pond** (Appleton)	**Seven Tree Pond** (Warren)
ID	4810	4800	5680	5684	5682	5686
Area (acres)	596	173	8	255	537	528
Perimeter (miles)	10.9	5.1	0.5	7	5.5	6.9
Mean Depth (feet)	20	14	N/A	17	19	24
Maximum Depth (feet)	57	30	N/A	34	57	45
Fishery Type	Coldwater, Warmwater	Warmwater	N/A	Warmwater	Warmwater	Coldwater, Warmwater
Invasive Aquatic Infestation	None known	None known	None known	None known	None known	None known
Water Quality	Above average	Above average	N/A	N/A	Below Average	Below Average
Flushing Rate per year	3.84	5.40	N/A	N/A	N/A	18.77
Total Phosphorus Overall Average	9 ug/L	6 ug/L	N/A	16 ug/L	16 ug/L	14 ug/L
Chlorophyll a Overall Average	4 ug/L	2.6 ug/L	N/A	6.4 ug/L	5.6 ug/L	6 ug/L
Color Overall Average	28 SPU	20 SPU	N/A	50 SPU	89 SPU	55 SPU
Conductivity Overall Average	45 uS	36 uS	N/A	46 uS	44 uS	44 uS
pH Overall Average	6.82 pH	6.96 pH	N/A	7.23 pH	6.96 pH	6.63 pH
Total Alkalinity Overall Average	8.4 mg/L	7.1 mg/L	N/A	10.5 mg/L	9.8 mg/L	9.7 mg/L
Adult Loons (in 2004)	13	4	N/A	2	3	2

Sources: Maine Dept. Environmental Protection, Maine Dept. Inland Fisheries & Wildlife
Note: N/A = Not Available

Fish

Fish species known to be present in Union ponds:

1. Alewife, *searun Alosa pseudoharengus* (Round Pound, Sennebec Pond, and Seven Tree Pond)
2. American eel *Anguilla rostrata*
3. Banded killifish *Fundulus diaphanus*
4. Brook trout *Salvelinus fontinalis*
5. Brown bullhead *Ameiurus nebulosus*
6. Brown trout *Salmo trutta*
7. Chain pickerel *Esox*
8. Creek chub *Semotilus atromaculatus*
9. Golden shiner *Notemigonus crysoleucas* (Sennebec Pond)
10. Largemouth bass *Micropterus salmoides*
11. Landlocked salmon *Salmo salar sebago*
12. Minnows-carps *Cyprinidae*
13. Pumpkinseed *Lepomis gibbosus*
14. Rainbow smelt *Osmerus mordax*
15. Smallmouth bass *Micropterus dolomieu*
16. Sunfish *Lepomis*
17. White perch *Morone americana*
18. White sucker *Catostomus commersoni*
19. Yellow perch *Perca flavescens*

The following fish species are of greatest conservation need as determined by the Maine Department of Environmental Protection for the region including Union.

1. American eel *Anguilla rostrata*
2. Atlantic salmon *Salmo salar*
3. Brook trout *Salvelinus fontinalis*

Crayfish and mussels known to be present in Union ponds:

1. No crayfish recorded (but may be present)
2. Eastern elliptio *Elliptio complanata*
3. Eastern floater *Pyganodon cataracta*
4. Tidewater mucket *Leptodea ochracea*
5. Triangle floater *Alasmidonta undulata*
6. Yellow lampmussel *Lampsilis cariosa*

Aquatic plant species known to be present in Union ponds:

1. aquatic moss spp. *aquatic moss spp.*
2. arrowhead, spp. *Sagittaria spp.*
3. bladderwort, common *Utricularia vulgaris*

4. bladderwort, floating *Utricularia radiate*
5. bladderwort, hiddenfruit *Utricularia geminiscapa*
6. bladderwort, large purple *Utricularia purpurea*
7. bulrush, Torrey's *Schoenoplectus torreyi*
8. bulrush, hardstemmed *Schoenoplectus acutus*
9. bur-reed, floating leaf *Sparganium fluctuans*
10. bur-reed, narrow floating-leaf *Sparganium angustifolium*
11. bryozoan colony (ectoprocta) *Bryozoa*
12. coontail *Ceratophyllum demersum*
13. golden pert *Gratiola aurea*
14. mannagrass, *boreal Glyceria borealis*
15. naiad, slender *Najas flexilis*
16. pickerel weed *Pontedaria cordata*
17. pipewort *Eriocaulon aquaticum*
18. pondweed, clasping-leaf *Potamogeton perfoliatus*
19. pondweed, fern *Potamogeton robbinsii*
20. pondweed, red-head *Potamogeton richardsonii*
21. pondweed, ribbon-leaf *Potamogeton epihydrous*
22. pondweed, spiral-fruited *Potamogeton spirillus*
23. quillwort *Isoetes spp.*
24. rush, bayonet *Juncus militaris*
25. rush, brown-fruited *Juncus pelocarpus*
26. rush, spp. *Juncus spp.*
27. sedge, nodding *Carex gynandra*
28. spatterdock *Nuphar variegate*
29. spikerush, creeping *Eleocharis palustris*
30. spikerush, needle *Eleocharis acicularis*
31. sponge, freshwater spp. *sponge, freshwater*
32. stonewort spp. *Nitella spp.*
33. swamp candles *Lysimachia terrestris*
34. sweetflag *Acorus americanus*
35. threeway sedge *Dulichium arundinaceum*
36. water lily, fragrant *Nymphaea odorata*
37. water lobelia *Lobelia dortmanna*
38. water marigold *Bidens beckii*
39. water-milfoil, whorled *Myriophyllum verticillatum*
40. waterweed, slender *Elodea nutallii*
41. watershield *Brasenia schreberi*
42. waterwort *Elatine minima*
43. wild celery (eel grass) *Vallisneria americana*

Invasive Species

Maine DEP has recorded no invasive species in Union (exclusively, the eleven invasive aquatic plants that are listed by Maine law as imminent threats to Maine waters and Chinese mystery snails). Purple loosestrife is a known wetland invader and increasingly common along the

shoreline of Maine lakes and rivers. To date, occurrences of this invader has not been systematically inventoried or mapped by the State.

Aquifers

According to the Maine Geological Survey, there are no areas of significant aquifers in Union. A "significant aquifer" is defined as one "capable of yielding 10 gallons or more of ground water per minute to a properly installed well."

Wetlands

Wetlands help to control erosion, store floodwaters, recycle nutrients, filter pollutants, and recharge groundwater. Union has several large wetlands and numerous smaller ones. Wetlands are habitat for fisheries, wildlife and plants. See the map titled Water Resources for the location of wetlands. See the Natural Resources Chapter for more information on wetland habitats.

Stream Crossing Barriers

Barriers to fish and other aquatic animals occur where roadways cross over streams. The State has analyzed stream crossings on public roads: bridges, struts and culverts. Eight of these types of barriers was identified for Union, with an additional 14 potential barriers. Dams can also limit the passage of fish, and measures can be taken to remediate this impact. Two dams have been identified as barriers to aquatic habitat in Union. See the map titled Fish Passage Barriers for the location of barriers and potential barriers in Union. Replacing existing culverts and struts with adequately sized ones can improve fish passage and can reduce flooding in adjacent areas. Accordingly resizing should be considered when culverts need replacement. Likewise, dams can be designed to improve habitat movement.

Flooding

Flooding is a concern in low-lying areas generally and in the Union Fairgrounds especially, as it floods on an annual basis. Increased storm events have exacerbated flooding within portions of the Town. See the Land Use Chapter and Future Land Use Plan Chapter for information on the floodplain management ordinance and recommended best management practices that better account for increased storm events.

(3) A summary of past and present activities to monitor, assess, and/or improve water quality, mitigate sources of pollution, and control or prevent the spread of invasive species.

The Town, through its ordinances is working on controlling stormwater runoff. The Town has worked cooperatively with private owners to manage stormwater runoff through improvements to drainage systems. Monitoring of waterbodies has previously taken place through the efforts of state and regional conservation groups.

(4) A description of the location and nature of significant threats to aquifer drinking water supplies.

A threat to water quality is non-point source pollution, primarily stormwater runoff. As mentioned, town ordinances have partially addressed this issue. The town may want to consider other measures such as implementing low impact development techniques that focus on catching stormwater before it leaves individual properties. A potential threat to water quality is from individual septic systems that fail. The Code Enforcement Officer reports two known failed septic systems in the past three years. The Town issues notices of violation and can provide assistance with remediation for low-income individuals.

(5) A summary of existing lake, pond, river, stream, and drinking water protection and preservation measures, including local ordinances.

Municipal shoreland zoning provisions protect water quality in the shoreland zone along streams, ponds and wetlands. The floodplain management ordinance limits development in floodplains. See the Land Use Chapter for more information. Best Management Practices are required for development activities during and after construction, and for timber harvesting related to erosion and sediment control to protect waterbodies. State and federal laws that protect water resources are summarized below. Enforcement of these laws by State agencies can be limited due to agency staffing levels. Compliance with most State and federal environmental regulations is often left to individual landowners. Some of the most significant State laws affecting water resources, and other natural resources, include the following:

- Maine Erosion and Sedimentation Control Law – requires basic controls and stabilization when a project involves filling, displacing, or exposing earthen material. No permit is required, but the law sets minimum across-the-board standards that help prevent harm to surface waters.
- Maine Forest Practices Act – requires that landowners notify the Maine Bureau of Forestry of any commercial timber harvesting activities, and that commercial harvest activities meet specific standards for timber harvesting adjacent to waterbodies, clearcutting and forest regeneration following the timber harvest. If harvesting activities result in a clear-cut larger than five acres, there must be a separation zone between clearcuts, and regeneration standards must be met. This rule requires a harvest management plan developed by a licensed forester for clearcuts greater than 20 acres. The rules prohibit clearcuts greater than 250 acres.
    - Maine Natural Resource Protection Act (NRPA) – regulates activities in, on, over or adjacent to natural resources, such as lakes, wetlands, streams, rivers, fragile mountain areas, high and moderate value waterfowl and wading bird habitats, shorebird areas, high and moderate value deer wintering areas, significant vernal pools, and sand dune systems. Standards focus on the possible impacts to the resources and to existing uses.
- Maine Plumbing Code – rules pertain to materials, fixtures, vent and waste piping potable water supply piping, and approved subsurface wastewater disposal (septic) systems necessary to protect the public health, safety, and welfare of the citizens of Maine.

- Maine Site Location of Development Law (Site Law) – regulates developments that may have a substantial impact on the environment (i.e., large subdivisions and/or structures, 20-acre-plus developments, and metallic mineral mining operations). Standards address a range of environmental impacts.
- Maine Storm Water Management Law – regulates activities creating impervious or disturbed areas (of size and location) because of their potential impacts to water quality. In effect, this law extends storm water standards to smaller-than Site Location of Development Law–sized projects. It requires quantity standards for storm water to be met in some areas, and both quantity and quality standards to be met in others.

Policies

(1) To protect current and potential drinking water sources.
(2) To protect significant surface water resources from pollution and improve water quality where needed.
(3) To protect water resources in growth areas while promoting more intensive development in those areas.
(4) To minimize pollution discharges through the monitoring of existing septic system & education of the public.
(5) To cooperate with neighboring communities and regional/local advocacy groups to protect water resources.

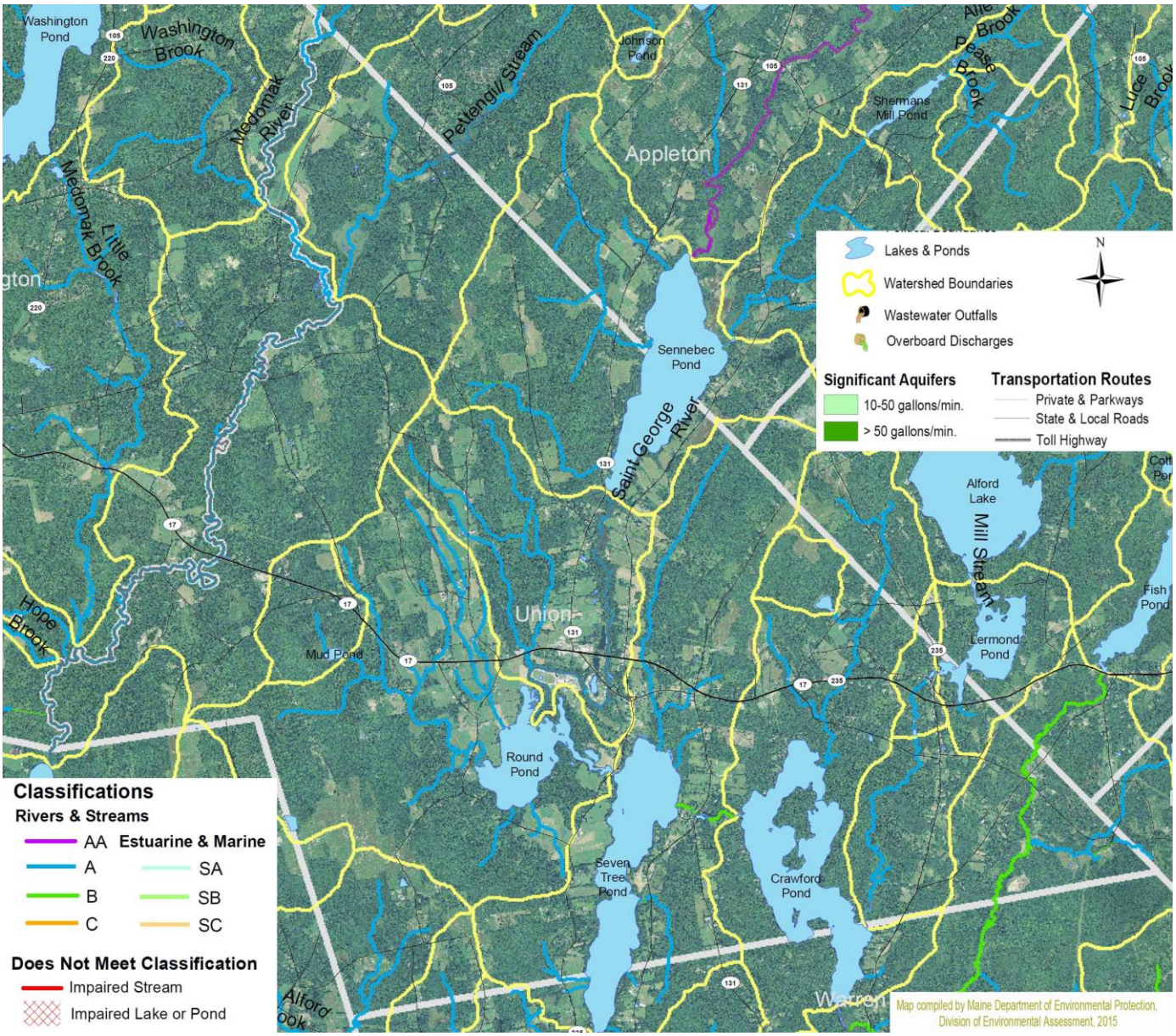
Strategies

Water Resources: Strategies	Responsible Parties	Timeframe
(1) Adopt or amend local land use ordinances as applicable to incorporate storm water runoff performance standards consistent with: *a. Maine Stormwater Management Law and Maine Stormwater regulations (Title 38 M.R.S.A. §420-D and 06-096 CMR 500 and 502).* *b. Maine Department of Environmental Protection's allocations for allowable levels of phosphorus in lake/pond watersheds.* *c. Maine Pollution Discharge Elimination System Stormwater Program* d. Amend regulations for construction and development, which better protect against runoff on adjoining lands and roads through erosion control methods.	Selectmen, Planning Board, Code Enforcement Officer, and Town Meeting Vote	Midterm
(2) Consider amending local land use ordinances, as applicable, to incorporate low impact development standards to reduce flooding on properties and on public roadways.	Selectmen, Planning Board, Code Enforcement Officer, and Town Meeting Vote	Midterm
(3) Where applicable, develop an urban impaired stream watershed management or mitigation plan that will promote continued development or redevelopment without further stream degradation.	NA	
(4) Maintain, enact or amend public wellhead and aquifer recharge area protection mechanisms in land use ordinances, remove nearby underground oil tanks, conduct hydro-geologic studies to delineate protection areas, and use conservation easements, if *necessary* for: • Maine Water Company-Union Division (4 wells) • RSU 40 Union Elementary and Middle Schools (1 well) • Thompson Community Center/ Town of Union Office (1 well)	Selectmen, Planning Board, Code Enforcement Officer, and Town Meeting Vote	Midterm and Ongoing

Water Resources: Strategies	Responsible Parties	Timeframe
(5) The Town will continue to *encourage landowners to protect water quality.* Union provides *local contact information at the municipal office for water quality best management practices from resources such as the Natural Resource Conservation Service, University of Maine Cooperative Extension, Soil and Water Conservation District, Maine Forest Service, and/or Small Woodlot Association of Maine.* • Inform residents concerning the proper maintenance of septic systems.	Selectmen, Planning Board and Code Enforcement Officer	Immediate and Ongoing
(6) The Town will continue to *adopt water quality protection practices and standards for construction and maintenance of public and private roads and public properties and requires their implementation by contractors, owners, and community officials and employees* that better account for the increased storm events observed.	Selectmen, Planning Board, Code Enforcement Officer, and Town Meeting Vote	Immediate and Ongoing
(7) The Town will continue to *participate in local and regional efforts to monitor, protect and, where warranted, improve water quality.*	Selectmen, Maine DEP, Conservation District, University of Maine	Midterm
(8) The Town will *provide educational materials at appropriate locations regarding aquatic invasive species.*	Town Clerk, Code Enforcement Officer	Ongoing
(9) The Town will evaluate the replacement of potentially substandard culverts that are subject to increased flooding and that might limit the movement of aquatic habitat. Dependent upon funding availability, the Town will seek to install stream smart crossings where appropriate to reduce flooding and improve habitats, and consider improvements to existing dams to facilitate the movement of aquatic habitat.	Selectmen, Maine DEP	Long Term

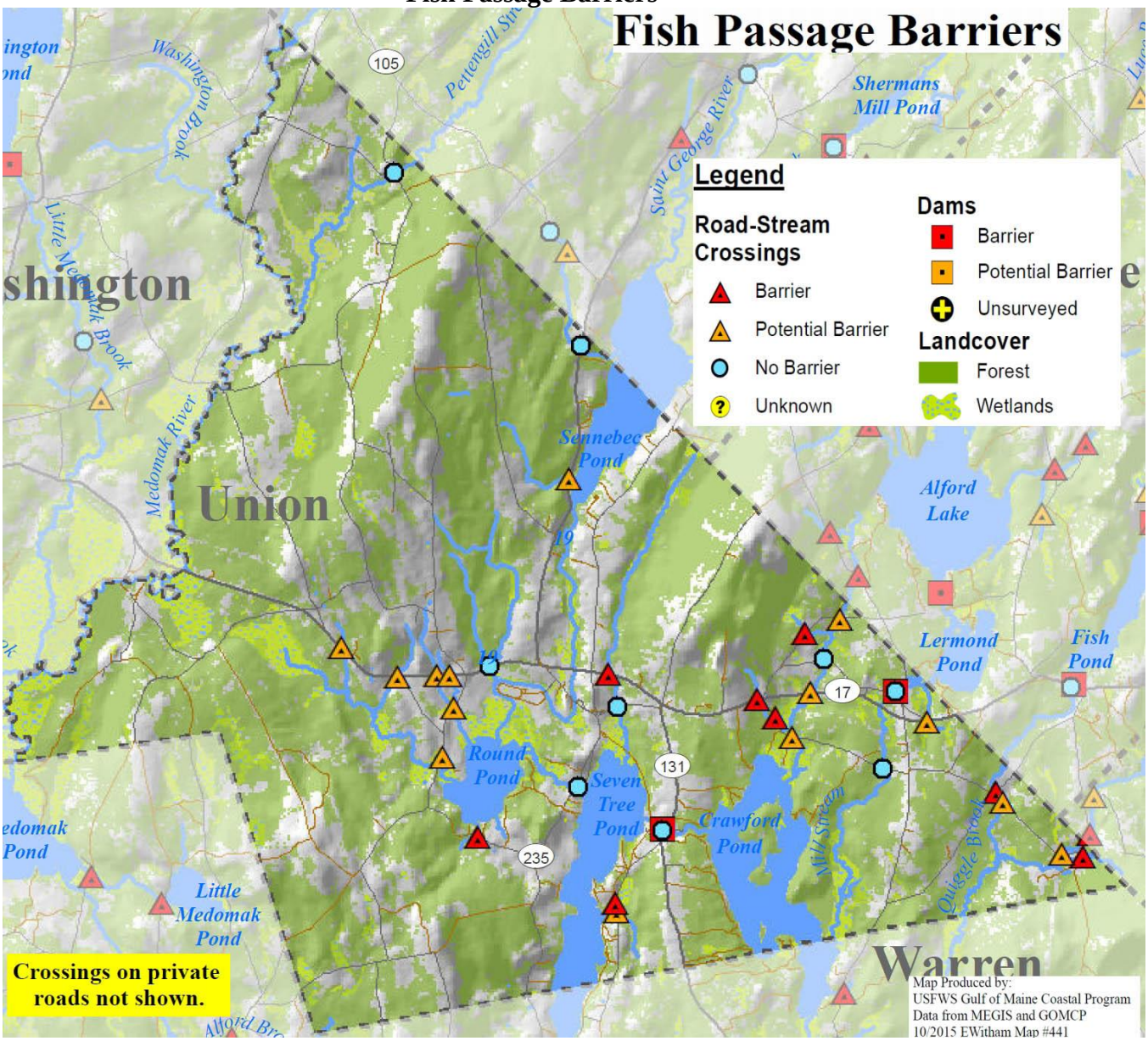
Note: Strategies proposed in this Comprehensive Plan are assigned responsible parties and a timeframe in which to be addressed. Immediate is assigned for strategies to be addressed within two years after the adoption of this Comprehensive Plan, Midterm for strategies to be addressed within five years, and Long Term for strategies to be addressed within ten years. In addition, Ongoing is used for regularly recurring activities.

Water Resources



Source: Maine DEP, 2015 (excerpt of state-prepared map)

Fish Passage Barriers



Source: Maine DACF, 2015 (excerpt of state-prepared map)