

15. Natural Resources

(including Critical Natural Resources)

Introduction

The natural environment of Brewer provides a backdrop to life in the community. The topography, the soils, plants, wildlife and wetlands have an intrinsic value themselves and help shape the City's economy, future growth and development patterns and quality of life.

Note: Critical natural resources, as defined in the state comprehensive plan rule, includes:

- *Resource Protection District areas;*
- *Wetlands of special significance defined in Maine Department of Environmental Protection wetlands and water bodies protection rules;*
- *Significant wildlife habitat as defined in the Natural Resources Protection Act;*
- *Threatened, endangered and special concern animal species habitat identified and mapped by Maine Department of Inland Fisheries and Wildlife (MIFW);*
- *Significant freshwater fisheries spawning habitat as identified and mapped by MIFW or the Department of Maine Resources;*
- *Natural communities that are critically imperiled or rare as defined and mapped by the Maine Natural Areas Program; and*
- *Areas containing plant species declared to be threatened or endangered by the Maine Department of Conservation.*
- *National Natural Landmarks designated by the National Park Service pursuant to its National Natural Landmark Program.*

Topography

Brewer's 18 square miles of area (10,106 acres) is relatively flat with few high hills. The predominant topographical features are the fairly steep sided brooks (Eaton, Felts and Sedgeunkedunk) and the steep slopes north of downtown on the banks of the Penobscot River. Elevations in the community range from 35 feet above sea level to 225 feet.

There are an estimated 1,000 acres of steep slopes in excess of 15% in Brewer. This largely undeveloped land, much of which is in the Shoreland Zoning Protection District, is stabilized by forest cover which generally prevents erosion and filters run-off before it enters adjacent brooks or the Penobscot.

About 70% of the community (roughly 7,300 acres) consists of land with slopes less than 15%. However, many of the flattest areas are poorly drained, wet and generally unsuitable for development.

Soils

Soils are extremely important to community development. They are the underlying material upon which roads, buildings, and other uses occur. Development upon or in soils that are unsuitable for the proposed uses will likely increase development and construction costs, and may cause environmental degradation.

Three major types of soils overlie Brewer's bedrock: glacial outwash soils, found in large areas along the Penobscot River; marine silts and clays, which are present in the central area and are by far the most widespread deposits, and glacial tills, which are found primarily in the hilly areas. Minor alluvial materials are found along the three streams which flow across the City to the Penobscot.

The City of Brewer requires site specific soil tests as part of its development review process to ensure that soils are suitable for the proposed use.

Agriculture

The Maine Department of Agriculture, Conservation and Forestry has prepared a map showing prime farmland and farmland of statewide significance. The two designations are based on generalized soil types, rather than existing farming operations. There are no state or local regulations limiting the use of these farmland soils for non-farming purposes. Extensive areas of prime farmland and farmland of statewide significance underlie most of the built-up areas of the city, land areas along the three major streams, an area between outer Wilson Street and Eastern Avenue, and an area of land between Wiswell Road and I-395. As of this writing, there are no large farms in Brewer.

Forestry

Based on a review of a recent aerial photograph, approximately 80% of the rural areas of Brewer are forested. The other 20% includes open fields, non-forested wetlands and roads. Forest harvesting records from the Department of Agriculture, Conservation and Forestry indicate that there have been very few commercial harvesting operations in recent years.

Wetlands

Wetlands perform a variety of functions. They serve as "natural sponges" that control water runoff by providing a buffer for excess water while allowing a steady, even release of that excess to both the surface and ground water. Wetlands perform a cleansing function by absorbing some physical and chemical pollutants from the runoff. Wetlands can also be important wildlife habitats.

Brewer's topography and soils are conducive to wetlands which range in size from small forested wetlands to large wetland areas. Major wetlands identified by the National Wetlands Inventory NWI are located:

- North of Eaton Brook just south of the Brewer/Eddington line;
- South of Day Road;
- Along portions of Eaton Brook;
- Along Felts Brook near the Brewer/Holden line including an area of outer Wilson Street;
- In the vicinity of Wilson Street and Dirigo Drive;
- South of I-395 and west of Green Point Road;
- South of Wiswell Road in the southeastern corner of the City.

Wetland protection. Brewer's wetlands are protected by a number of regulatory agencies including the Army Corps of Engineers and the Maine Department of Environmental Protection, both of which require

that permits be obtained prior to altering designated wetland areas. In addition, Brewer has enacted the Shoreland Zoning Protection District (Section 308 of the Land Use Code) in accordance with state shoreland zoning requirements.

The Shoreland Zoning Protection District applies to all land areas within 250 feet, horizontal distance, of the upland edge of the normal high-water line of the Penobscot River; within 250 feet, horizontal distance, of the upland edge of a state designated coastal or inland wetland, and within 85/75 feet, horizontal distance, of the normal high-water line of a qualifying stream. There are three sub-districts:

1. The Resource Protection District (residential, commercial and industrial structures are prohibited);
2. The Stream Protection District (applies to all land within 85 feet, horizontal distance, of the normal high water line of Eaton Brook and Felts Brook, and 75 feet, horizontal distance, of Sedgeunkedunk Stream, exclusive of lands areas within 250 feet of the Penobscot River or inland coastal wetlands; and
3. The Overlay Protection District (underlying uses are permitted, subject to shoreland zoning standards).

The Resource Protection District applies to areas within 250 feet, horizontal distance, of all City wetlands rated “moderate” or “high” value by the Maine Department of Inland Fisheries and wildlife.

High Value Plant and Animal Habitats

Wildlife can be considered a natural resource similar to surface waters or forests. Brewer’s wildlife species are a product of the land, and are thus directly dependent on the land base for habitat. According to “Beginning with Habitat,” Map 2, published by Maine’s Beginning with Habitat Program, there are a number of high value plant and animal habitats in Brewer.

- **Rare, Threatened or Endangered Wildlife.** These include bald eagle habitats (based on species sightings) along the Penobscot River near the northern and southern boundaries of the City, as well as a Great Blue Heron habitat just south of Wiswell Road between its intersection with Green Point Road and the Brewer/Holden line. The Resource Protection District described above applies to “Class C” focal points for wintering bald eagles.
- **Rare or Exemplary Plants and Natural Communities.** There are several sites along the Penobscot River just north of I-395 which contain the following plants: Estuary Bur-marigold, Parker’s Pipewort, Pygmyweed and Mudwort. These plants are rare because of the narrow zone of freshwater habitat that exists in this section of the Penobscot River. These habitats are marginal based on the long history of adjacent development along the waterfront.
- **Significant Wildlife Habitats.** Significant wildlife habitats in Brewer include:

Deer wintering area – these are forested areas used by deer to avoid deep snow/cold. There is one such area along Eaton Brook north of Day Road and south of the Brewer/Eddington line.

Inland waterfowl/wading bird habitat – these include freshwater breeding, migration/staging, and wintering habitats for inland waterfowl or breeding, feeding, loafing, migration, or roosting habitats

for inland wading birds. Areas in Brewer include Eaton Brook at the Brewer/Holden line; Felts Brook at the Brewer/Holden line; an area south of I-395 and west of Green Point Road; and an area along and south of Wiswell Road midway between the Green Point road intersection and the Brewer/Holden line.

Tidal waterfowl/wading bird habitat - these include breeding, migration/staging, or wintering habitats for coastal waterfowl or breeding, feeding, loafing, migrating, or roosting areas for coastal wading birds. Tidal waterfowl/wading bird habitats include aquatic beds, eelgrass, emergent wetlands, mudflats, seaweed communities, and reefs. Areas in Brewer include most of the shoreland along the Penobscot River from an area just north of I-395 south to the Brewer/Orrington line.

Atlantic Salmon rearing habitat – there is one area in Brewer consisting of about a half-mile of Felts Brook adjacent to the Penobscot River.

Atlantic Salmon spawning habitat – there are two areas in Brewer including the Penobscot River between Eaton Brook and the Brewer/Eddington line, and approximately a half-mile of Felts Brook adjacent to the Penobscot River.

Significant vernal pools – these are ephemeral wetlands that generally fill with water in the spring and dry out by late summer. They serve as essential breeding habitat for certain species of wildlife, including salamanders and frogs.

- **Undeveloped habitat blocks.** These are natural areas likely to provide core habitat blocks and habitat connections that facilitate species movements between blocks. Undeveloped habitat blocks provide relatively undisturbed habitat conditions required by many of Maine’s species. In Brewer, undeveloped habitat blocks include the following areas exclusive of land within 250-500 feet of existing roads:

- 508 acres between Day Road and the Brewer/Eddington line;
- 1,259 acres south of Day Road and west of Lambert Road;
- 717 acres bounded by Lambert Road, and Eastern Avenue extending into Holden;
- 3,345 acres bounded by 1A, Eastern Avenue, Pierce Road extending into Holden;
- 117 acres bounded by Wilson Street, Pierce Road, Eastern Avenue;
- 976 acres south of I-395 and east of Green Point Road extending into Holden; and
- 1,673 acres south of Wiswell Road extending into Orrington and Holden.

There are no state or local regulations that specifically address development in undeveloped habitat blocks.

Inland Fishery

Beginning with Habitat Map 1 shows that Eaton Brook, Felts Brook and Sedgeunkedunk Stream provide suitable habitat for brook trout. There are no great ponds in Brewer.

Marine Fishery

Removal of the Great Works Dam in 2012, and the Veazie Dam in 2013, and the projected bypass of the Howland Dam, will likely impact the marine fishery in Brewer. The Penobscot River Restoration Trust anticipates that the dam removal/bypass effort will significantly improve access to nearly 1,000 miles of habitat for sea-run fish including alewife, striped bass, Atlantic salmon, rainbow smelt, blueback herring, American shad, sea lamprey, Atlantic sturgeon, and brook trout.

Analysis

1. Are any of the community’s critical natural resources threatened by development, overuse, or other activities?

Section 417 of the City’s Land Use Code stipulates that no more than 50% of the required minimum lot area shall be met by including one or a combination of flood plain areas and/or wetlands. Section 435 requires that any project involving a significant wildlife or fisheries habitat or a unique natural areas shall include mitigation measures aimed at minimizing the adverse impact of development on those resources.

2. Are local shoreland zone standards consistent with state guidelines and with the standards placed on adjacent shorelands in neighboring communities?

Section 308 of the City’s Land Use Code (Shoreland Zoning Protection District,) does not comply with the state’s shoreland zoning guidelines, but the City is taking steps to bring its Land Use Code into compliance.

3. What regulatory and non-regulatory measures has the community taken or can the community take to protect critical natural resources and important natural resources?

As described above, Brewer has implemented ordinance provisions aimed at protecting critical natural resources. Non-regulatory measures include public education, the incentives contained in the tree growth tax law and farm and open space tax law, and best practices for stream crossings.

4. Is there current regional cooperation or planning underway to protect shared critical natural resources? Are there opportunities to partner with local or regional groups?

The City supports the efforts of the Brewer Land Trust, the Bangor Area Stormwater Group, and the Lower Penobscot Watershed Coalition. In addition, the Penobscot River Restoration Trust has been active in restoring a number of sea-run fish species in the Penobscot River by eliminating several dams and increasing power production at others.

Analysis - Marine Resources

1. Is coastal water quality being monitored on a regular basis?

The Maine Department of Environmental Protection monitors the quality of the Penobscot River on a regular basis.

2. Is there a local or regional plan in place to identify and eliminate pollution sources?

As described in the sanitary sewer system inventory, the City of Brewer has separated its storm and sanitary sewers and has an active program aimed at identifying and eliminating pollution sources. In addition, every street is swept every spring and all 1600+- catch basins are cleaned yearly.

The City of Brewer has partnered with local citizen volunteers in its annual cleanup of stream corridors, which has now expanded to City-wide locations. In addition, the Water Department has worked closely with landowners to help protect the quality of Hatcase Pond. The City also participates with the Brewer Land Trust, the Bangor Area Stormwater Group, and the Lower Penobscot Watershed Coalition for education resources.

3. Has closing of clam or worm flats threatened the shellfishing industry, and are sources of contamination known? If so, are sources point (direct discharge) or nonpoint sources?

Not applicable to Brewer.

4. Are traditional water-dependent uses thriving or in decline? What are the factors affecting these uses? If current trends continue, what will the waterfront look like in 10 years?

There are several water-dependent uses along Brewer's waterfront including Cianbro's Eastern Manufacturing Facility which depends on the Penobscot River for shipping large industrial modules, and a local boatyard business. Other uses include a boat launch for motorized watercraft, and a carry-in launch for kayaks and canoes near the Chamberlain Bridge. There are a number of moorings for watercraft, and Brewer shares a harbormaster with the City of Bangor. Cruise ships are able to come up the river as far as the Chamberlain Bridge. The importance of the River to the economy of the region has declined in recent years as the movement of fuel, raw materials and products have moved away from Maine's coast and inland rivers to trucks, rail lines, and pipelines.

5. Is there reasonable balance between water-dependent and other uses, and between commercial and recreational uses? If there have been recent conversions of uses, have they improved or worsened the balance?

There has been very little development along the river, so there have not been conflicts between water-dependent uses and other uses. Brewer is reviving its waterfront through efforts such as the construction of the waterfront trail system and a recent change to the Land Use Code aimed at encouraging private investment in the downtown/waterfront area.

A private company, Cianbro, has redeveloped the former Eastern Fine Paper mill site into a modular construction facility. The Eastern Manufacturing Facility features a deep water bulkhead that will accommodate large ocean-going barges for transporting 1,000 ton modules for industrial process plants. Cianbro has also constructed a smaller commercial dock system located immediately upriver of the deep water bulkhead which will be available to meet the marine shipping needs of other area businesses.

6. How does local zoning treat land around working harbors?

There are a number of residential and non-residential zoning district that govern the uses of land along the Penobscot River. The non-residential districts include Convenience Business (CB) and Industrial (IND). Neither district specifically allows for water-dependent uses. As described above, Brewer made a recent ordinance change aimed at encouraging more private investment in the downtown/waterfront area.

7. Is there a local or regional harbor or bay management plan? If not, is one needed?

Not applicable to Brewer.

8. Are there local dredging needs? If so, how will they be addressed?

There is a federal navigational channel on the Penobscot river which extends to the Joshua Chamberlain Bridge. There does not appear to be a dredging need at this time. The Penobscot River's controlling depth in the marked channel is 13 feet between Winterport and Bangor/Brewer. Navigation for commercial vessels is immediately downstream of the Joshua Chamberlain Bridge.

9. Is there adequate access, including parking, for commercial fishermen and members of the public? Are there opportunities for improved access?

There is a great deal of recreational fishing in Brewer. There is one boat launch for the general public. Located on North Main Street, this site serves as access to the Penobscot River. Picnic tables and benches are also on the site. The City has recently constructed a kayak/canoe carry-in facility on the river below the Joshua Chamberlain Bridge and the remains of the Bangor Dam.

10. Are important points of visual access identified and protected?

There are a number of important points of visual access along the Penobscot River that have been identified and protected. These include views along the river at Indian Trail Park and at Fishermens' Park and the Penobscot Landing trail. The remains of the former Bangor Dam are now owned by the Brewer Land Trust. One potential use of this site is to construct a deck on the wing wall that would allow more recreational fishing access to the river.