

# I. NATURAL RESOURCES

## 1. Purpose

Natural resources are important to the town in two ways. First, they provide critical wildlife and fisheries habitats. Second, inappropriate development in environmentally fragile areas could be costly to the entire town. For example, disruption of natural drainage patterns could increase the chances of flooding. The purpose of this section is:

- a. to describe Bucksport's critical natural and scenic resources;
- b. to predict whether these resources will be threatened by the impacts of future growth and development; and
- c. to assess the effectiveness of existing efforts to protect and preserve these resources.

## 2. Key Findings and Issues

- ❖ About half the soils in town are rated as suitable for subsurface disposal systems.
- ❖ There is a diversity of fish and wildlife in town.
- ❖ Vasey's Pondweed and Water Stargrass are two threatened plant species known to be in Bucksport. Both are found along Hancock Pond.
- ❖ Due to limited information on critical natural resources, unintentional damage during land development could occur.
- ❖ Land use regulations have increased the level of protection, but further revisions could focus on more specific requirements to protect key natural resources.

## 3. Topography and Slope

The town of Bucksport consists of approximately 33,293 acres of land and 1,406 acres of inland water, for a total of 34,699 acres or 54.22 square miles. The topography is characterized by gently rolling hills and small mountains, interspersed with numerous lakes, streams, and wetlands. The Penobscot River forms the western boundary of the town. The elevations in Bucksport range from zero feet along the Penobscot River, to over 740 feet at the top of Orcutt Mountain. In general, the north and northeast sections of town contain more hills and varied terrain than the flatter and lower southwestern section of town. The town's four mountains with elevations over 500 feet include Jacob Buck Mountain (707 feet), Cobb Hill (560+ feet), Orcutt Mountain (740+ feet) and Stricklen Ridge (555 feet). Bucksport is bordered on the north by Orrington and Holden, on the east/northeast by Dedham, on the east/southeast by Orland and on the west/southwest/south by the Penobscot River.

Slopes greater than 25 percent are found on portions of Jacob Buck Mountain, Orcutt Mountain, Dresser Mountain, Blood Mountain, and Cobb Hill. Slopes of between 15 and 25 percent are found in these areas as well as in the vicinity of Stricklen Ridge, Swasey Ledge, and along the shores of the Penobscot River. Slopes in the range of 8 to 15 percent are commonly found throughout town, while slopes less than 8 percent are most prevalent in the southwestern section of town.

Topography has influenced the town's settlement patterns, and will undoubtedly continue to do so. In general, the flatter areas in the southern portion of town have been more accessible to development, while the areas of high elevation have remained relatively undeveloped. The town's southern areas continue to be subject to greater development than the

interior and northern sections of the community. Map 2 shows the topography of the town and the major watershed areas. Map 3 shows a summary of major development constraints.

Bedrock is at or near the surface of the land in many parts of Bucksport, particularly in the northern part of the community. Formation of the town's bedrock resources began more than 350 million years ago when marine sediments accumulated offshore from an ancient landmass. As the thickness of the sediments increased, increasing pressures and temperatures caused the sediments to change into metamorphic rocks. All of this rock-forming activity occurred many thousands of feet beneath the surface. After millions of years of uplift and erosion, the rock either lies just below the surface or has been exposed. According to The Preliminary Bedrock Geology of Maine (Doyle, 1985), all of the bedrock in Bucksport is hard, dense and impermeable.

#### **4. Surficial Geology**

The topography of the town has been modified by events that occurred during the last ice age, at a time when ancient oceans extended over parts of the state and glaciers scraped, scoured and coated other areas with tills, sands and clay. In Bucksport, glaciers deposited material on top of the bedrock. The surficial deposits in town include till (the dominant surficial deposit), marine deposits, glacial meltwater deposits, and alluvial (stream) deposits.

Throughout town, till typically provides only a thin covering over the bedrock. Marine deposits are found in the vicinity of North Bucksport and to the north of the Narramissic River. Glacial meltwater deposits are found northeast and southeast of Long Pond along State Route 46 (the majority of sand and gravel pits in town are located in these deposits). Alluvial deposits are found in floodplains along the larger brooks.

#### **5. Soils**

Knowledge of the types of soils that exist in a community helps in planning land use activities. The various characteristics of soil types present different limitations for development, some of which can be overcome through special planning, design and construction. Soil types also affect agricultural practices and influence rates of timber growth.

Various soil characteristics, such as depth to water table, depth to bedrock, flooding potential, and erosion potential can present serious limitations to development. For example, roads, utilities, and cellar foundations are difficult and expensive to construct when bedrock is present.

Moderately well-drained soils (18 to 30 inches to water table) have less severe limitations on land uses, and deep well-drained soils that have a depth greater than 30 inches to water table present few problems.

Map 4 shows the approximate location of soils, which may be suitable for septic systems. This composite map is based on the interim soil survey maps for the town of Bucksport and the minimum design requirements of the State's Subsurface Wastewater Disposal Rules. Based on this information, approximately 50 percent of Bucksport's soils are suitable for subsurface sewage disposal systems.

#### **6. Wetlands**

The U.S. Fish and Wildlife Service defines wetlands as follows:

“Wetlands are lands transitional between terrestrial and aquatic systems where the water table, usually at or near the surface of the land, is covered by shallow water. For purposes of this classification, wetlands must have one or more of the following three attributes: 1) at least periodically, the land supports predominantly hydrophytes (wetland vegetation); 2) the substrate is predominantly undrained hydric (waterlogged) soil; and 3) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season of each year.” (Cowardin, et al. 1979)

Historically, wetlands were only considered as a breeding habitat for mosquitoes and areas that need to be drained or filled for agricultural purposes or to create land to be developed. More recently, there has been a growing awareness of the value of wetlands. In a study of the impacts of development in southern Maine, the State Planning Office examined the functions of wetlands and the implications of the loss of these areas. The state study identified the following features:

1. Ground water recharge. Wetlands may serve to replenish and cleanse aquifers.
2. Ground water discharge. Ground water may discharge into wetlands, replenishing public water supplies, wildlife habitats, and maintaining lake and river quality.
3. Flood flow alteration. Wetlands serve as temporary storage areas during high water flows, helping to reduce peak flows and potentially damaging floods.
4. Sediment and toxicant retention. In agricultural areas, wetlands can retain and stabilize sediments and toxic materials.
5. Nutrient retention and removal. Wetlands can retain or transform inorganic phosphorus and/or nitrogen into their organic form and may save downstream lakes and ponds from eutrophication.
6. Productivity export. Wetlands provide nutrients for new generations of plant and animal life.
7. Aquatic diversity. Certain wetlands provide habitat for fish, including breeding grounds and nurseries.
8. Wildlife diversity and abundance. Wetlands serve as habitat and a food source for birds, deer, and other animals.
9. Uniqueness. A number of rare plant and animal species can be found in wetlands. Approximately 43% of the 230 rare plants that occur in Maine are found exclusively in wetlands.

There are approximately 1003 acres of freshwater wetlands in Bucksport. The Maine Geological Survey of the Maine Department of Conservation identified 25 freshwater wetlands in Bucksport of ten acres or more on a map prepared in 1983. This map has been replaced by the National Wetlands Inventory (NWI) Map, which is considered today to be the most effective

tool for identifying wetlands, next to an on-site survey. The wetlands shown on this map were identified using stereoscopic analysis of high altitude aerial photographs that depict the limits of the wetlands at the time the photographs were taken. Actual areas of the wetland will vary seasonally. The two largest freshwater (Palustrine) wetlands identified on the NWI map are adjacent to Mud Pond, and the Narramissic River. Other freshwater wetlands are found around McGann Bog, along Copeland Brook, Whites Brook, Stubbs Brook, Moosehorn Stream, northeast of Long Pond, northwest and east of Silver Lake, and south of Williams Pond.

The Mandatory Shoreland Act, Title 38 M.R.S.A. §435-448, requires that municipalities regulate the area of land around coastal and freshwater wetlands. The Department of Environmental Protection's Shoreland Zoning guidelines stipulate that the Resource Protection District must be applied to medium to high value wetlands identified by the Maine Department of Inland Fisheries and Wildlife as of 1973. This rating is primarily associated with the value of the wetland as waterfowl habitat. There are 3 medium value freshwater wetlands in Bucksport (#104 adjacent to Mill Stream, #106 at McGann Bog and #107 adjacent to Mud Pond). Of these three, #104 is not currently located in the Resource

Protection District. Wetlands #103 and #124 have been rated low value, while the remaining 20 freshwater wetlands have not been rated.

Map 5 shows the location of wetlands and water bodies that are subject to shoreland zoning.

## **7. Fishery Resources**

Coastal waters and tidal flats are important habitats for many fish species. The Penobscot River is a major fish run for salmon, alewives, smelts, striped bass, and eels. There is an abundance of both warmwater and coldwater species in the lakes and streams of the town.

The Department of Inland Fisheries and Wildlife has rated various water bodies in Bucksport from the standpoint of their importance to fisheries. IFW's rating of water bodies, including the species responsible for the designations, is listed below:

### **7.1 High Value Fisheries Habitat**

1. Jacob Buck Pond (stocked slake and periodic stocking of salmon, native brook trout, white perch)
2. Brewer Lake (stocked salmon, white perch)
3. Copeland Brook (brook trout)
4. Pinkham's Brook (spring fishery for rainbow smelts, and produces wild brook trout)
5. White's Brook (native salmon)
6. Stubbs Brook (important contribution of native brown trout to the Narramissic River)

### **7.2 Moderate to High Value Fisheries Habitat**

1. Silver Lake (small mouth bass)

2. Moosehorn Stream (average to above average brook trout and brown trout)
3. Dane Brook (average to above average brook trout)
4. Hancock Pond (average fishery for native brook trout, brown trout and a fishery for rainbow smelts)

### **7.3 Moderate Value Fisheries Habitat**

1. Long Pond (average fishery for the species it contains)
2. Colby Brook (average brook trout)
3. Mill Stream (native landlocked salmon, brown trout, brook trout; important passageway for spawning American alewives to lakes farther up the drainage way)

### **7.4 Low Value Fisheries Habitat**

1. Williams Pond
2. Mud Pond
3. Thurston Pond

## **8. Wildlife Resources**

The tidal flats along the Penobscot are important waterfowl wintering areas. Birds found in this area include Bufflehead, Goldeneye, Black Duck, and Scaup. Bucksport's wetlands are important breeding areas for waterfowl and habitat for other wildlife including beaver, muskrat and mink. The interior of Bucksport includes a diversity of habitat ranging from spruce forests to hardwood stands, open fields and granite-topped mountains. These habitats support big game, including deer, black bear and moose, as well as other animals such as ruffed grouse, pheasant, woodchuck, hare and squirrel.

The Maine Department of Inland Fisheries and Wildlife (DIFW) has identified an Essential Habitat in Bucksport in accordance with the Maine Endangered Species Act (12 MRSA, §7755-A). The area, which is located along the Penobscot River in north Bucksport, contains a bald eagle nest site. Proposed projects in or adjacent to the designated area that may significantly alter the habitat must be evaluated by DIFW before local approval and permitting may be given. Some examples of projects requiring DIFW evaluation are: subdivisions, buildings, septic systems, roads, utilities, mineral extraction and wetland alteration.

## **9. Updated Natural Resource Information**

The Natural Areas Division of the Maine Department of Conservation data show that there are two threatened plants in Bucksport. The term “threatened” is an official state determination for rare species.

The first is Vasey’s Pondweed (*potamogeton vaseyi*). This is an aquatic, perennial herb with reduced, inconspicuous flowers. Its habitat is quiet, muddy or calcareous waters and is found along the shores of Hancock Pond. The plant has small floating leaves between 0.6- 1.5 cm long and small spikes that are 3-8 cm long. It is ranked as S-1 for its rarity and has been found in seven towns in Maine. The S-1 ranking refers to species that are critically imperiled in Maine because of extreme rarity or vulnerability to extirpation. There are fewer than 20 occurrences throughout New England. It presently has a threatened status. With further decline, it could become an endangered species.

The second threatened plant is Water Stargrass (*Zosterella dubia*). Its habitat is damp sands and it is often submerged in quiet waters. It too is found along the shores of Hancock Pond. This perennial aquatic plant usually grows in shallow water with its stem submersed. The leaves are grass-like, up to 15 cm long. Its flowers are pale yellow and the fruits are black. It too is ranked as S-1 and can be found along the shores of Hancock Pond. It has been found in six towns in Maine. It also could become endangered.

Information about the location of these plants can be obtained from the Department of Conservation. If the planning board believes that a rare plant might be threatened by a proposed development, it can send a map of the area to the department. It could also have the applicant hire a botanist to do a survey of the area. Land use changes in the general area where the plant is located may threaten its existence. It is thus important not only to protect the specific site, but the surrounding area as well.

Since there is no record of a systematic inventory having been conducted of the town’s natural features, it is possible that there are other environmentally valuable areas that have not been identified. An inventory could be conducted by interested citizens under the guidance of the Natural Areas Program.

## **10. Threats to Natural Resources**

The major threat is that resources could be damaged through on-going development patterns, especially in rural areas. Due to limited information on critical natural resources, there could be unintentional damage during the land development process.

## **11. Adequacy of Existing Measures**

Natural resources are primarily protected through the subdivision and zoning ordinances. The level of protection has increased significantly with the enactment of town-wide zoning. Further revisions to the subdivision ordinance could focus on more specific requirements designed to protect natural resources