CHAPTER 3
NATURAL RESOURCES

Natural resources are interrelated biological systems that are vital to the region's sense of place, and the health and well-being of its residents and visitors. Although these resources provide tangible benefits and influence the suitability of land for various types of development, they also make the region and township unusually attractive for development.

Lakes, streams, woodlands, meadows, wetlands, hydric soils, floodplains, topographic features, and irreplaceable scenic viewscapes, as well as environmental, economic, and recreational resources that are essential to the region's economic base.

- Wetlands provide important wildlife habitat and play an important role in the hydrologic cycle. Wetlands store and filter storm and flood waters.
- Woodlands provide renewable timber resources, important wildlife habitat, passive and active recreational opportunities, and help purify the air we breathe and the water we drink.
- Lakes and streams support aquatic and littoral habitat, serve as a source of water for many lakefront community's water supply systems, and provide a wide variety of recreational opportunities.
- Scenic viewscapes and roadway corridors establish regional and local identity.
- Prime and unique farmlands provide food and fiber, and are an integral element of the township's historic and visual character.
- Groundwater serves as the sole source of drinking water for the majority of residents of the township and region.
- Soil influences the suitability of land for a variety of land uses and types of development.
- Mineral deposits are essential to the construction and maintenance of area and regional infrastructure.

Historically, natural resources have been utilized for short-term economic gain with little consideration for long-term impacts on regional and local quality of life. Poorly managed utilization or exploitation of renewable resources will degrade their tangible value, and result in irreparable impacts on future quality of life.

If managed over the long-term, natural resources will continue to benefit regional and local economies, and local and regional quality of life. Examples of effective management include:

- Retaining adequate contiguous tracts of prime and important farmland for the production of crops.
- Developing clustered home sites while retaining crop or forestlands.
- Retaining woodlands for timber production, hunting, wildlife habitat and recreation; retaining stream bank and shoreline vegetation to provide a low-cost means of treating stormwater and maintaining the quality of surface water.
- Protecting wetlands to retain their function in the hydrologic cycle over the long-term and retaining wooded slopes as a means of reducing the potential for slope failure and soil erosion.

A narrative overview of natural resources is provided below.

Wetlands

Wetlands are found along streams, creeks, at the bottom of natural drainageways, and along the shorelines of Lake Michigan, Susan Lake and Lake Charlevoix. Wetlands play a significant role in the hydrologic cycle, and make an essential contribution to the quality of the area's surface waters. Wetlands are natural retention and filtration systems that hold and filter sediment, nutrients, and other pollutants from stormwater runoff that would impact surface water quality if untreated. Wetlands provide habitat for a variety of plant and animal life, and are a visually pleasing element of the Township's character.

The Tip of the Mitt Watershed Council identified three high-value wetlands encompassing a total land area of 523 acres. These high-value wetlands are located along and adjacent to Susan Creek north of Susan Lake, east of Oyster Bay, and along, adjacent to and north of Mud Creek and Mud Lake.

Wetlands also occur throughout the township in areas of hydric soils.

Woodlands

Woodlands provide wildlife habitat for a wide variety of plant and animal life, contribute to hydrologic and groundwater recharge cycles, serve as holding and filtration areas for stormwater runoff, prevent soil erosion, afford a variety of recreational opportunities, and provide renewable timber resources.

The Township's forested areas contribute to the community's historic rural character. Most are found on steep slopes and hillsides, creek valleys, and in or adjoining wetland areas. For the most part, forested areas occur as large, contiguous tracts of land consisting of mixed hardwood trees, including maple, beech, ash, oak and birch, and conifers such as white pine, cedar, balsa, and tamarack.

Lakes & Streams

Lakes and streams support aquatic, shoreline, and streambank wildlife habitats. Poor land development practices adversely impact the quality of surface waters, damage sensitive shoreline and streambank ecosystems.

There are two small lakes and three creeks found in the township. Horton Creek flows from the higher elevations in Bay and Hayes Township. The creek traverses the township to a point where it runs through Bay Township and empties into Horton Bay on Lake Charlevoix. Mud Creek flows from Mud Lake to Susan Lake. Susan Creek flows from Susan Lake into Lake Michigan at Kennedy Park north of Big Rock Point.

Each creek is bordered by wetlands that encompass significant acreage. Horton Creek provides habitat for salmon and trout. Susan Lake is a shallow, extremely sensitive body of water well along in the aging or eutrophication process. This aging process has likely been aided by nutrient-laden runoff from upland agricultural areas. Mud Lake has no public access because land surrounding it is privately owned.

Open Space

Undeveloped open space contributes to the Township's rural character and visual appeal. Open space includes woodlands, farm fields, shrub and herbaceous fields, wetlands and rolling hillsides. Portions of the U.S. 31 corridor afford unobstructed views of Lake Michigan and Little Traverse Bay. Rolling farm fields and shrub and herbaceous fields establish the Township's rich visual character and sense of place.

Topography

The township's topography is characterized by rolling hills, beach ridges, dunes, and rocky beaches along the Lake Michigan shoreline. Steep hills and high elevations in the central portion of the township afford views of Lake Michigan, Lake Charlevoix and the surrounding countryside. The highest elevation in the township occurs in Section 23 at a point approximately 404 feet above Lake Michigan, or 984 feet above sea level.

Glacial movement during the Ice Age produced the township's geological features. Horton Valley along Pincherry Road is the result of glacial movement. Gravel along Old US 31 was deposited during that period.

Soils

Soil characteristics present opportunities for the development of certain land uses, and limitations for others. Permeability, filtration capability, load bearing capacity, shrink-swell potential, and slope influence the ability of land to accommodate septic systems, building foundations and roadways. Other features influence productivity of agricultural and forestry operations, wildlife habitat, recreational uses, and the potential for surface and groundwater contamination.

Small portions of Hayes Township may have access to municipal sewer systems (to the East in Charlevoix Township at the Charlevoix Country Club, and to the West in the Bay Harbor development) at some point over the long-term. It is impractical to assume, however, that such systems can or should be available to larger areas of the Township within the next ten years. Accordingly, future development will remain dependent on the capability of soils to accommodate a variety of land uses.

Descriptions of soil characteristics that influence the suitability of land for intensive development appear below.

Hydric/Wetland Soils

Hydric/wetland soils are generally unsuited for septic system installations, road construction, and building site development. These soils tend to be of insufficient strength to support building foundations. Shrinking and swelling of soils during freeze/thaw cycles can damage building foundations unless soils are modified with appropriate fill material.

Septic Limitations

The Septic Limitations Map, Figure 3-1, delineates the suitability of soils for conventional residential on-site septic systems within the township. This map is based on soil interpretation reports published by the USDA Natural Resources Conservation Service (formally the Soil Conservation Service) and is valid as a general planning tool.

Soils with slight limitations are well suited for conventional septic systems. When systems are sited and maintained properly there are few long-term problems. Soils in this category are usually suitable for moderate intensity residential development.

Slow percolation rates and/or moderate slopes (6% - 12%) are the main problems with soils having Moderate limitations. Usually greater care in locating systems in these areas and good maintenance of installed systems can overcome most of these limitations. Soils in this category are usually well suited for low density residential development.

Hayes Township
Septic Limitations Map

Figure 3-1

Sources:
Michigan Department of Natural Resources,
Charlevoix County GIS Department,
and M.C. Planning & Design

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