2. NATURAL RESOURCES

Life depends on natural resources such as air, land, water, vegetation and wildlife. The local economy depends on both use and conservation of these resources. Continued development can have serious and cumulative adverse impacts on the natural resources and systems that support the economy and quality of life in Raymond. These resources include slopes, soils, water resources, wetlands, floodplains, and wildlife habitats.

Soils

Soils are a basic resource of major importance to land use activities. They are the underlying material upon which roads, buildings, and septic systems are developed. And, they are the essential medium for agriculture and forestry. There are many different soil types, each with differing opportunities and limitations for any given land use.

Introduction to Soil Types. Over thousands of years, the soils in Raymond have been formed through the action of climate, slopes and vegetation on glacial outwash, glacial till, and ledge. Variations in these factors cause soil properties to vary from place to place on the landscape. These variable properties include color, texture, structure, drainage characteristics, erodibility, depth to bedrock, and depth to water table, among other characteristics. Because of these variations, there are many different soil types, sometimes called soil series, which have been identified, described in terms of their properties, and mapped by the U.S. Department of Agriculture's Soil Conservation Service (now known as the Natural Resource Conservation Service, or NRCS).

Each soil type or series has a different suitability for any of the many possible land uses for which it might be used or developed. For instance, some soils are well suited for septic systems, while others are marginally suitable and still others are not at all suitable. Similarly, different soil types have varying fertility for agriculture and forestry.

Soils and Their Role in Supporting Development. The Natural Resources Conservation Service (NRCS) has developed a system to assess the relative suitability of each soil type for development. The Soil Development Potentials Rating System for Low Density Urban Development in Cumberland County, Maine, rates all soil types found in Raymond for dwellings with basements, for roads, and for septic systems. The three potential categories have been combined into five composite development potential ratings: Very High, High, Medium, Low, and Very Low.

A rating of Very Low does not necessarily mean that the intended use cannot occur on that soil. It does mean, however, that severe limitations may exist and corrective treatment may be necessary to overcome them. The fewest limitations apply to development with soils rated Very High or High. The Soil Development Potentials map for the Town of Raymond shows the distribution the different ratings within the Town.

These town-wide map interpretations do not eliminate the need for on-site sampling, testing and study of other relevant conditions when development is proposed. Pockets of suitable or unsuitable soils may be present even though the town-wide medium intensity soil survey that is the source information for the town wide maps, and may indicate no suitable soils are present.

Prime Agricultural Soils and Additional Agricultural Soils of Statewide Importance. The Agricultural Soils map for the Town of Raymond shows soils which are rated by the NRCS as Prime Agricultural Soils and Additional (agricultural) Soils of Statewide Importance. These soils, within Raymond and the nation, are irreplaceable, finite and dwindling resources. They have evolved over thousands of years. Once they have been developed, they cannot be reclaimed for agricultural production. In an age when the economics of agricultural production make farming a marginal and struggling operation, it makes little sense to sacrifice such soils to development when less productive soils are available for development. We may need our best agricultural soils for their fertility and productivity over the long term.

Prime Agricultural Soils are often located on gently sloping upland areas, principally in the area near the geographic center of the town near the schools and the Town Offices. These Agricultural Soils located on uplands are also the least expensive to develop. There are also some areas of Prime Agricultural Soils located in and adjacent to the floodplains in low-lying areas. These latter Prime Agricultural Soils, in contrast to upland Prime Agricultural Soils, have Low or Very Low soil development potential for septic systems, and may therefore be less subject to development pressures.

Currently the Town has no mechanism or program in place that is designed to help protect these soils as an important natural resource from being lost to development. There are a variety of regulatory and non-regulatory options for protecting Prime Agricultural and Additional Soils of Statewide Importance. The Town of Raymond will need to decide in its planning process whether and to what degree it wishes to exercise these options to protect these soils.

Erosion and Sedimentation. Common land use and development practices, including agriculture, site development and timber harvesting, can often increase erosion, with consequent increases in sedimentation and the loss of valuable topsoil. Eroded sediment and topsoil can clog culverts, storm drains and ditches. It also contains phosphorus that will ultimately raise the phosphorus concentration and contribute to decline of lake water quality. For agricultural soils, poor soil conservation practices allow excessive erosion of both topsoil and with it, fertility.

To help minimize erosion and sedimentation, the Town of Raymond has adopted erosion and sedimentation control requirements in its Site Plan Review, Shoreland Zoning, and Subdivision ordinances.

Groundwater Resources

One major source of Raymond's water is in the ground. Precipitation that does not run off as surface water infiltrates the soil. Some may remain near the surface as soil moisture, where it becomes available for plants, but much of it continues to percolate downward, becoming

groundwater. Because much of Raymond's drinking water is drawn from groundwater sources, this is a particularly important resource.

From wells drilled in bedrock there is usually a relatively low yield and sometimes wells must be drilled to depths of several hundred feet to obtain adequate yields for household use. Typically, yields are below 10 gallons per minute (gpm). Occasionally, there are high yield bedrock wells but these are rare.

Sand and Gravel Aquifers. In a few locations, however, groundwater is available in higher yields from sand and gravel deposits that lie below the ground surface, but above the bedrock. These deposits, known as aquifers, are highly porous and allow for both storage and release of greater volumes of water through shallower wells that do not need to penetrate bedrock. Sand and gravel aquifers are important resources for large-scale community, agricultural and industrial water supplies, as well as an economical water source for individual homeowners.

In Raymond there are two categories of estimated yield: 10-50gpm, and 50+gpm. The extent of Raymond's sand and gravel aquifers appears on the Aquifers map for the Town of Raymond, page 2-23. The largest is the northern extension along Route 302 of the large aquifer that underlies North Windham as far as Panther Run. It also extends to the eastern shore of Jordan Bay. The northern section of this aquifer has high estimated yields, in excess of 50 gallons per minute.

Public Water Suppliers. Approximately 30 privately owned public water suppliers in Raymond, licensed by the Department of Human Services, draw on sand and gravel aquifers for their water supply. Public water suppliers are defined as serving 25 or more people and/or having 15 or more service connections. Only about one half of these are located above a sand and gravel aquifer. Some of these wells may draw directly on the aquifer. However, even where they are located over an aquifer, some wells may be drilled and cased well beyond the aquifer to a deep, bedrock fissure-supplied intake point.

The aquifer along the Rte 302 corridor is very likely a supply source for Sebago Lake, the source waters for the largest public water supplier in Maine, which now serves portions of Portland, South Portland, Westbrook, Gorham, Windham, Cape Elizabeth, Scarborough, Falmouth, Cumberland and now, with the installation of the new water main along Route 302, parts of Raymond.

Under State rules adopted pursuant to the federal Safe Drinking Water Act, public water suppliers in Maine must periodically test their water for a long list of chemical and biological contaminants. Maine's Water Quality Classification System requires that all of the State's groundwater be Class GW-A in order to be used for public water supplies. Water quality standards used to assess whether groundwater meets federal safe drinking water standards are those of the federal Safe Drinking Water Act.

Threats to Groundwater Quality. Because sand and gravel aquifers are porous and transmit water rapidly, they are also susceptible to pollution. According to the Maine DEP, there are no current serious groundwater contamination problems in Raymond that have manifested in the

form of contaminated drinking water wells. Existing or potential sources of aquifer pollution can include: septic tank effluent, landfill effluent, leakage from ruptured and/or abandoned above ground or underground storage tanks, controlled or uncontrolled hazardous materials used or stored at industrial sites, floor drains in garages or other work areas, road salt, sand-salt storage piles, and fertilizers and pesticides.

Historically, according to the DEP, there has been a documented leak from an underground storage tank at the Jordan Bay Mobil Station, opposite the intersection of Route 302 and 121, which is alluded to in the 1991 Comprehensive Plan. The leak probably occurred in the 1980s or earlier, and the leaking tank has long since been replaced. Since the early 1990s, the DEP has been monitoring whether the leaked material is migrating or not using neighboring wells. Gasoline in groundwater tends to float on the surface of the water table and slowly breaks down over a period of years. Over the last two years, DEP has seen no product in neighboring wells.

One of the federal Safe Drinking Water Standards relates to the permissible concentration of nitrates in groundwater. Nitrates are a significant health hazard because they inhibit the ability of human blood to transport oxygen throughout the body. In infants, an excessive level of nitrate consumption can cause what is commonly known as "blue baby syndrome", in which the baby's skin actually appears to have a bluish hue. In fact it is an indication that the child's tissues and organs are seriously deprived of needed levels of oxygen.

Nitrates are normally present in very low concentrations in groundwater. They are also present in human waste, and higher nitrate concentrations become distributed into groundwater through underground plumes of septic system effluent. Because nitrates are also present in fertilizer, including manure and synthetic fertilizers, agriculture is another significant source. In Raymond, agriculture and residential development are the most abundant source of potentially excessive nitrate concentrations.

Nitrates in groundwater from residential development can be problematic due to two causes. First, older developments and densely developed areas may contain a high proportion of homes with inadequately designed septic systems which have inadequately functioning septic systems, or cesspools or some other poorly designed and/or maintained systems. These systems may be located too close to adjacent wells. Second, the septic systems may meet the Maine State Plumbing Code standards, but also may be located on such marginal soils that they are still too densely located to prevent excessive nitrate levels. The Maine State Plumbing Code is designed to protect against bacterial and viral heath hazards; its standards do not address nitrate levels.

Threats to Groundwater Quantity. The productivity of an aquifer can be limited by covering the ground surface above it with impervious surfaces such as roads, large buildings and parking lots, which can prevent water from entering the ground and replenishing the groundwater supply. Because Raymond's aquifers occur in an area which is primarily flat or gently sloping and has soils suitable for septic systems, the area may be easily developed and may be in demand for many uses.

In addition to existing conditions that may pose a threat to ground water quality and potential conditions that could inadvertently limit recharge and affect available volumes in storage, the

town should also consider the full range of potential future land uses that are expected to occur or could occur in the future.

Current Groundwater Protection Measures and Policy Issues. Raymond's current ordinances require plans for any proposed subdivision over 4 lots to include a hydrogeologic assessment that models and predicts nitrate-nitrogen concentrations to help the Planning Board determine whether federal standards for nitrate-nitrogen will be met. A similar requirement is not in effect for proposed site plans, which can place high subsurface wastewater disposal demands on groundwater, depending on the nature of the proposed use.

A new state law now requires each town in Maine to notify public water suppliers of proposed developments that would be located within the area that their well uses to obtain its source water. This area is known as a source water protection area. To assist towns with determining where the source water protection areas of each public water supplier in their town is located, the Maine Drinking Water Program has provided a map (available at the Town Office) that delineates these areas.

At the same time, public water suppliers are eligible to voluntarily participate in the Maine Wellhead Protection Program. Under this program, a public water supplier, sometimes with technical assistance from the Drinking Water Program, delineates the area contributing to its well, takes inventory of any existing and potential threats within this area, and works with neighboring property owners, and sometimes, with the Town, to develop management and contingency plans that will help limit hazards from existing of potential land uses and activities within the wellhead protection area.

According to the Maine Drinking Water Program, all 30 of Raymond's public water suppliers are nominal participants in the wellhead protection program. They're mostly at a very early stage, with data on threats collected and submitted to the state. Few, if any, have a formal wellhead protection program in place at this writing.

The new public water supply main in Route 302 and the possibility of eventual extensions of this main further up the corridor and connections to existing and potential uses on either side of the corridor poses new land use planning policy issues for the Town and property owners. The new main may bring the opportunity for higher density development than has been previous feasible in this area of Raymond. It may also bring pressures to allow a broader range of land uses that pose new aquifer protection challenges. Accommodation of projected growth in higher densities can have potential advantages in helping to keep the incremental costs of community services lower on a per unit basis.

At the same time, as noted above, not all existing wells that are driven into the aquifer actually draw water from it, drawing instead from the deep bedrock. But it is very likely that some wells do draw directly from the aquifer. For them, and for Sebago Lake and the Portland Water District, continued clean water in the aquifer remains important.

At present, Raymond's ordinances do not apply special aquifer protection standards to proposed development when it is proposed over or in the recharge area for a sand and gravel aquifer. No

study has been conducted to determine whether and to what extent this may be important to protecting existing water quality in any of the town's aquifers. Before the arrival of the new public water supply main, the increasing intensity and variety of commercial uses made the Route 302 corridor a reasonable candidate for such a study. Now that public water is available in the area, the need for such a study to evaluate whether more effective groundwater protection measures are needed is greater, not just for protection of water quality but as an important component of evaluating a broader range of density and permitted use options that could be supported due to the presence of public water.

Surface Water Resources

Surface Water Resources include lakes, ponds, streams, rivers, and wetlands. To Raymond's year round and seasonal residents, and to visitors, these resources provide substantial recreational, aesthetic, economic and ecological benefits. For some, the lakes and ponds also serve as household water supplies. All of these water bodies are amenities and vital resources on which tourism and vacation home-related businesses have historically depended. The growing trend toward year round residency also is driven to a large extent by these amenities.

Lakes. There are several lakes and ponds within Raymond's borders. A portion of Raymond is located along Sebago Lake. Sebago Lake is rated as one of the State's most outstanding lakes by the Maine State Planning Office's "Maine's Finest Lakes" study (October 1989). It is the largest (28,771 acres), deepest (with a maximum depth of 316 feet), and most heavily used lake in Maine. Other municipalities with shorefront along Sebago Lake include Casco, Frye Island, Naples, Sebago, Standish and Windham. This lake is intensively used for recreational purposes throughout the year, with the highest level of use during the summer months. In addition to its use by these towns' year-round residents, Sebago Lake is greatly used by seasonal visitors to the Lake Region. Sebago Lake has significant fisheries, scenic shore character, geological (including Frye's Leap), botanical, and cultural features, according to the "Maine's Finest Lakes" study. The Lake also serves as the major public water supply source for several communities in the Greater Portland area, and is managed as such by the Portland Water District.

The other water bodies in Raymond include Panther Pond, Crescent Lake (which extends into Casco), Raymond Pond, Thomas Pond (which extends into Casco), Notched Pond (which extends into Gray and borders New Gloucester), and Nubble Pond.

The "Maine's Finest Lakes" study analyzed all water bodies of 10 acres or more for the entire State of Maine, and included several observations about Raymond's lakes and ponds. Panther Pond was one of 13 lakes and ponds in Maine to receive an "outstanding" rating for cultural features, which is due to the presence of archeological sites along its shoreline. Crescent Lake and Panther Pond were designated as possessing significant physical features. Sand beaches, rock outcrops, fossil localities, and caves are examples of noteworthy physical and geological features.

Water bodies in Raymond with significant fisheries include Crescent Lake, Notched Pond, Nubble Pond, Panther Pond and Raymond Pond. Nubble Pond was identified as having a significant hydrological feature, which is that it is naturally eutrophic (this is a very rare

occurrence). Thomas Pond, which extends into Casco, was rated as having significant fisheries and cultural features.

Lake Watersheds. Sebago Lake and its watershed make up the northern portion of the Casco Bay watershed. Sebago Lake empties into the Presumpscot River, which enters into Casco Bay between Portland and Falmouth. The watershed of Sebago Lake is the largest by far and includes all or part of 23 towns, of which Raymond is just one.

The surface water system within Raymond is complex and diverse. The streams, ponds, lakes, wetlands, and drainage basins that make up this system are shown on the Floodplains and Watershed map for the Town of Raymond, page 2-24.

Most of the Town's land area, including the Raymond Pond, Crescent Lake, Panther Pond, Nubble Pond and Thomas Pond watersheds, drain to Sebago Lake. Eastern portions of Raymond drain to Little Sebago Lake in Gray, which is also part of the Casco Bay watershed. Notched Pond's watershed and small portions of North Raymond along the North Raymond Road are in the upper reaches of the Royal River watershed, which is also part of the Casco Bay watershed. Only the northernmost portions of Raymond, along northern parts the North Raymond Road are not within of the Casco Bay or Sebago Lake watersheds. These are southern parts of the Upper Range Pond and Thompson Lake watersheds, which drain northward into Poland.

Maine's Water Quality Goals for Lakes and Streams. The Maine Water Quality Classification System currently classifies all lakes and ponds in Raymond as GPA. This means it is the State's goal that these waters will remain Class GPA. GPA waters "shall be of such quality that they are suitable for.... drinking water after disinfection, recreation in and on the water, fishing, industrial process and cooling water supply, hydroelectric power generation and navigation and as habitat for fish and other aquatic life. The habitat shall be characterized as natural." (38 MRSA Section 465-A.)

The State also has established Water Quality classifications for streams in Raymond. Most of Raymond's streams are classified as "A" including all streams flowing to Sebago Lake or into the lakes that flow to Sebago Lake. Only those streams flowing to Little Sebago Lake are classified as "B". Class A is defined as water quality capable of supporting "Drinking water supply, recreation in or on the water, fishing, industrial process and cooling water supply, hydroelectric power generation, navigation and a natural habitat for fish and other aquatic life." Class B is defined as being capable of supporting all Class A uses, except that it is capable of supporting "unimpaired" habitat, as opposed to the "natural" habitat of Class A.

The following table shows the Maine DEP's Water Quality Classifications for each named stream and all the lakes in Raymond, and what the DEP has found or assumes concerning whether those goals are being attained presently. The streams and lakes are listed by watershed in an order that approximates their position in the watershed, moving from the headwaters downstream.

Streams and Lakes by Lake Watersheds	State Water Quality Classification (Goal)	State Water Quality Attainment Status
Raymond Pond / Crescent Lake / Panther Pond / Sebago Lake Watershed		
Valley Brook	A	No data, but A is Likely
Gay Brook	A	No data, but A is Likely
Raymond Pond	GPA	2*
Bartlett Brook	A	No data, but A is Likely
Edwards Brook (Casco)	A	No data, but A is Likely
Robinson Brook (Casco)	A	No data, but A is Likely
Crescent Lake	GPA	2*
Tenny's River	A	A
Rolfe/Meadow Brook	A	No data, but A is Likely
Nubble Pond	GPA	2*
Nubble Brook	A	No data, but A is Likely
Ai Brook	A	No data, but A is Likely
Hayden Brook	A	No data, but A is Likely
Panther Pond	GPA	2*
Panther Run	A	A
Sebago Lake	GPA	2*
Thomas Pond Watershed		
Rolfe Brook (Casco)	A	No data, but A is Likely
Thomas Pond	GPA	3**
Dingley Brook	A	No data, but A is Likely
Sebago Lake	GPA	2*
Notched Pond Watershed		
Westcott Brook (New Gl.)	B	No data, but A is Likely
Notched Pond	GPA	2*
Little Sebago Lake Watershed in Raymond		
Meadow Brook	B	No data, but A is Likely
Sucker Brook	B	No data, but A is Likely
Sand Brook	B	No data, but A is Likely
Farwell Brook	B	No data, but A is Likely
Hayden Brook	B	No data, but A is Likely
Little Sebago Lake	GPA	3**

2* Attaining some standards, assumed to attain others
3** Attaining some standards, insufficient data/info.
Source: Maine DEP

Note that the Crescent Lake is listed as partially attaining its water quality classification in the preceding table. This is because its water quality is fully supporting for swimming, but is only partially supporting for "trophic stability", (a measure of continuing biological productivity), according to the 2001 Annual Report of the Maine Volunteer Monitoring Program. This means that its ability to support aquatic life is in some degree threatened at present, and that lake water quality monitoring should continue.

The Crescent Lake Watershed Survey report states that, in its water quality monitoring of Crescent Lake, the Raymond Waterways Protective Association found "very low concentrations of dissolved oxygen in the bottom of the lake in late summer (See Appendix A [of the report]). The lake's cold water fishery cannot tolerate these low dissolved oxygen levels and the low dissolved oxygen also presents a risk for the development of more serious water quality problems."

Threats to Lake Water Quality. Development within lake watersheds and the use of the lakes themselves pose several kinds of threats to stream and lake water quality. The threats to groundwater listed above are also threats to stream and lake water quality in that lakes and streams are fed partially by groundwater flow. Beyond this however, there are several kinds of land use and development impacts that can have an adverse effect on both streams and lakes. Erosion and sedimentation from agriculture, timber harvesting, existing and new roads, ditches, building sites and driveways can add to both the sediment loading and phosphorus loading of lake waters. Failing, poorly designed and/or maintained septic systems can add unacceptable nitrate and other nutrient loads plus bacterial and/or viral contaminants to surface waters. Pesticides and fertilizers in storm water runoff can pose a hazard to lake water quality. Gas and oil, and human waste discharges from boats on lakes can also pollute lake waters. And heavy powerboat use and/or poor regulation of water levels in lakes can erode shorelines and beaches. In recent years, a new threat has been added to the list: Invasive aquatic (plant) species. This threat includes milfoil and several other species.

Lake Phosphorus. One of the most potentially serious impacts on lake water quality is the gradual increase in phosphorus concentrations in lake water due to additional phosphorus loading from development in lake watersheds. Relatively small additions of phosphorus essentially "fertilize" a lake and cause more of the microscopic algae to grow. Increased algae reduces water clarity, uses up oxygen at the bottom of the lake as it decomposes and can eventually lead to nuisance algae blooms. In the absence of oxygen at the bottom of a lake, a chemical reaction can also occur than can cause additional phosphorus to be released from the bottom sediments. If a lake is allowed to reach this stage, it can be very difficult and expensive to restore. Lake decline can also damage a lake's cold water fishery and cause shorefront property values to plummet.

The experience of China Lake in Maine is instructive in this regard. The lake historically supported trout, togue and lake salmon, but these cold water fisheries were lost over the course of about three years when the cumulative increase in lake phosphorus concentration suddenly made itself apparent. According to the current China Region Lakes Alliance web site, "In the mid-1980's, China Lake gained national notoriety as the lake with the most rapidly declining water quality ever documented in the State of Maine. The cause of the problem was over-enrichment from phosphorus-laden runoff to this 3850-acre lake from its 32 square mile watershed. Rapid population growth and increased land use activities during the last two decades caused increased runoff to the lake with a resultant increased growth of algae. Internal recycling of phosphorus from the sediments was triggered, causing annual nuisance algae blooms and resulting in a devastating commercial and recreational loss to the area. The once healthy population of salmon lake trout has been replaced by the odor of decay from floating mats of algae."

Invasive Aquatic Species. Lake ecosystems in the United States and Canada face threats from at least 11 "invasive aquatic species" of plants, only one of which has yet appeared in any Maine lakes. That one species is called variable milfoil. The other ten invasive plant species, not yet established in Maine, include Eurasian milfoil, parrot feather, Brazilian elodea, hydrills, fanwort, water chestnut, curly leaf pond weed, European naiad, European frog-bit, and yellow floating heart. Each of these species is established in at least one state or province adjacent or near to Maine.

Invasive plants, alien to local lake ecosystems, where they become established, grow rapidly and can be spread by boaters who may unknowingly, or even knowingly, carry plant fragments on boats, trailers or fishing equipment from one lake to another. They can have severe impacts on lake ecosystems by displacing similar species, decreasing biological diversity, changing habitat and biotic communities and disruption of the food chain. Theses changes can have socioeconomic consequences, such as the impairment of fishing and other forms of recreation.

State and Local Actions and Regulation of Water Quality

Watershed Surveys. To date, watershed surveys have been completed on Raymond Pond, Crescent Lake, Thomas Pond and Panther Pond. These surveys used volunteer labor and cooperation from property owners to canvas the watershed looking for sources of non-point source pollution, and carefully documenting any sources found within each watershed. Each report documents these non-point source pollution sources on a map.

Crescent Lake Watershed Survey Results. The Crescent Lake watershed survey found, documented and mapped a total of 139 erosion sites within the watershed. The total combined area of these erosion sites added up to 13 ½ acres. On an annual basis these sites lose the equivalent of about 1 dump truck full of soil. Contained within this amount of soil is about 13 pounds of phosphorus. To quote the watershed survey report, "Because the lake is sensitive to very low concentrations of phosphorus (parts per billion levels), **13 pounds** of "extra" phosphorus is a **BIG PROBLEM!"** (emphasis in original).

Sites by Land Use	**Number of Sites**	**% of Total**	**Acres of Eroding Soil**
Residential	65	46%	6.1
Commercial	10	8%	3.1
Private Road	23	16%	3.1
Driveway	19	14%	0.8
State and Town Roads	14	10%	0.3
Public Beach	7	5%	0.1
Boat Launch	1	1%	0.01
Totals	**139**	**100%**	**13.51 Acres**

Source: Crescent Lake Watershed Survey report, April 2000.

Raymond Pond Watershed Survey Results. This survey, the earlier of the two, did not include acreages for land use types or in total. However, the report appendix details square footages on a

site-by-site basis. According to the Raymond Pond watershed survey report summary page, "Volunteers and technical staff identified 71 sites that are currently impacting or have high potential to impact the water quality of Raymond Pond (see Fig. 2 and Appendix C [of the report])." Figure 2 of the report contains a map showing the locations of all 71 erosion sites identified by the survey volunteers. Here is a breakdown of the number and percentage of sites by land use.

Sites by Land Use	Number of Sites	% of Total Sites
Residential	29	41%
Driveways	14	20%
Private Roads	13	18%
Town Roads	7	10%
Beach	3	4%
Shore Access	2	3%
Foot Path and Other	1	1%
Other	2	3%
Totals	**71**	**100%**

Source: Raymond Pond Watershed Survey Results, December 1999.

Thomas Pond Watershed Survey Results. The Thomas Pond Improvement Association completed a watershed survey in 1998 with help from the DEP and Cumberland County SWCD. This project identified 125 sites in the watershed. Residential sites (59%) and private roads (22%) accounted for the majority of the identified sites. In total, the eroding areas covered 17 acres, 14 of which were associated with the residential sites.

Sites by Land Use	Number of Sites	% of Total Sites
Residential	74	59%
Private Road	28	22%
Town Road	7	6%
Driveway	5	4%
Beach	5	4%
Commercial	3	2&
Trail/Path-4wd	2	2%
Boat Access	1	1%
Totals	**125**	**100%**

Source: Thomas Pond Watershed Survey Report, February, 2001.

Panther Pond Watershed Survey Results. In 2003 the Panther Pond Association conducted a survey with help from the DEP, Cumberland County SWCD and Raymond Waterways Protective Association. This survey identified 84 erosion sites in the watershed – a comparatively small number considering the large watershed. As with the other surveys, residential uses account for the largest number of problems. Based on rough estimates, over 84 tons of soil – or about four dump truck loads – wash into the pond each year from the high and medium impact sites in the survey.

Sites by Land Use	Number of Sites	% of Total Sites
Residential	38	45%
Boat Access	9	11%
Private Road	7	8%
State Road	7	8%
Town Road	6	7%
Youth Summer Camp	6	7&
Driveway	5	6%
Beach	4	5%
ATV Trail	3	4%
Totals	**84**	**100%**

Source: Thomas Pond Watershed Survey Report, February, 2001

Non-point Source Control Demonstration Project. In response to the Raymond Pond and Crescent Lake watershed survey results, the Conservation Commission, worked to develop a grant proposal to pay for several demonstration erosion control projects identified in the surveys. The Maine DEP awarded grant funds, secured and administered by the Cumberland County Soil and Water Conservation District, for this purpose. At least three projects were completed in 2001. At this point, the project is nearly complete. The project completed a total of 14 erosion control projects and over 20 technical assistance visits for watershed landowners.

Town Ordinance Non-point Source Pollution Controls. Phosphorus controls have been implemented through the subdivision ordinance, site plan review ordinance and shoreland zoning. While this is an important step toward keeping long-term phosphorus concentrations in lake water within biologically acceptable limits, they do not control phosphorus from individual lot development outside the shoreland zone that is not subject to subdivision review. Since this amounts to about three fourths of all new residential development, and since phosphorus runoff from everywhere within a lake's watershed eventually reaches the lake, future phosphorus runoff from this kind of future development still may pose a significant hazard to lake ecosystems over the long term.

Raymond's shoreland zone goes beyond the minimum zone width on streams and around lakes and wetlands, from the 250 feet state minimum to a zone that extends 600 feet inland from the normal high water mark.

Raymond's shoreland zone includes protection for streams below the juncture of two perennial streams shown on a USGS topographic map. A new rule recently adopted by the Maine DEP, that is not part of shoreland zoning, now extends this protection to headwaters of these streams. The new rule, effective September 1, 2002, requires a 75-foot buffer on streams *above* the juncture where shoreland zoning stops.

Raymond's site plan review ordinance, subdivision ordinance and shoreland zoning ordinance all require written erosion and sedimentation control plans as a condition of approval for new development plans.

State Non-point Source Pollution Controls. Larger development projects are subject to a permit requirement under Maine's Stormwater Management Law. As noted above, for those projects that are subject to the law, the requirements are more stringent in watersheds that are 'most at risk from new development.' Smaller projects are not subject to the law, but are subject to Maine's Erosion Control Law. Nearly all of the land in Raymond is within a watershed "Most at Risk from New Development."

DEP List of Watersheds 'Most at Risk from New Development.' Maine's Stormwater Management Law, which regulates both stormwater volume and quality from new development to which it applies, uses a two-tier level of regulation. The more restrictive standards applied under this law apply in watersheds that the DEP has classified as "Most at Risk from New Developmen.t"

DEP Nonpoint Source Priority Watersheds List. The Maine DEP also maintains a list of lake watersheds throughout the State that are high priority for financial and technical assistance related to nonpoint source pollution control. This is called the Nonpoint Source Priority Watersheds List. There is also a subsection of this list that includes 180 "highest priority" lakes.

The following table shows the listings of each lake within Raymond or outside Raymond but impacted by drainage from within Raymond.

Lakes	**On 'Most at Risk from New Development' List**	**On NPS Priority Watersheds List**	**On Highest Priority Subsection of NPS Priority Watersheds List**
Within Raymond			
Raymond Pond	x	x	
Crescent Lake	x		
Nubble Pond	x		
Panther Pond	x	x	
Thomas Pond	x	x	
Sebago Lake	x	x	x
Notched Pond	x	x	
Farwell Bog			
Outside Raymond			
Little Sebago Lake	x		x
Sabbathday Lake	x	x	x
Thompson Lake	x	x	x
Turtle Pond			
Upper Range Pond	x	x	x

State, Regional and Local Actions to Control Invasive Aquatic Species. In the last two years the State of Maine has adopted several measures to prevent the spread of invasive aquatic species

into Maine. These include a sticker program that collects fees from boat owners at registration, provides stickers, and collects funds for further work on invasive aquatic species and lake protection, a program of inspections of boats and trailers by Maine Inland Fisheries and Wildlife wardens at the most heavily used boat launches and near border crossings, penalties for possessing, keeping or spreading invasive aquatic species, the creation of an interagency task force charged with reporting to the Land and Water Resources Council (LWRC) and the requirement that the LWRC develop an invasive species management plan.

The Portland Water District has been actively monitoring and mapping variable milfoil in sightings and populations in Sebago Lake, including Jordan Bay. They have also developed various outreach educational materials and programs for boaters and the general public, including school-based education programs.

The Town, meanwhile, has been taking its own actions. According to the 2001 Town Report by the Conservation Commission, "In the summer of 2001, the Conservation Commission teamed with the Raymond Waterways Protective Association to develop strategies for protecting our lakes from Milfoil and other invasive Aquatic Species (IAS). The resulting Committee provided educational materials through the Roadrunner, Town Office and other public outlets, and drafted a proposal to the Town for a Milfoil/IAS Ranger position. The proposed Ranger's duties will include inspecting boats and trailers at the Crescent Beach launch site (and at other lakes), educating boaters about the Mifoil/IAS threat, and monitoring the lakes for plant colonies. The Committee has asked the Town to provide some funding for this position. Additional funds may come from other partners (Maine DEP, Town of Casco, Portland Water District), and a substantial portion will need to be raised through donations from Raymond property owners and others interested in preventing IAS from severely impacting our lakes." In the summer of 2002, the Town and the DEP hired two rangers who, in addition to inspecting and educating, initiated an aquatic plant survey.

Wetlands

Wetlands are vital natural resources that have both ecological and economic importance. Common names for wetlands include swamps, marshes and bogs. Wetlands provide a unique habitat for a broad spectrum of plants, animals and fish, including waterfowl, shellfish, fish, insects, reptiles, amphibians, and many mammals. Wetlands are important in the hydrologic cycle because they slow down and store storm water runoff, which is then slowly released into brooks and other surface waters, reducing flood hazard downstream. Wetlands also serve as water purifiers, absorbing nutrients and sediment carried into them by storm water and helping to protect water quality in streams and lakes downstream.

The Casco Bay Watershed Wetlands Functional Assessment. The locations of wetlands in Raymond are shown on the Wetlands map, page 2-25. In 1999 and 2000, the State Planning Office developed a new method of characterizing wetlands in Raymond and other towns within the Casco Bay Watershed. This new method provides a functional assessment of each wetland to rate its relative importance in each of five wetland function categories. These categories include: plant and animal habitat, sediment retention, flood flow alteration, fisheries habitat, and cultural and educational value. A wetland that meets the rating system's threshold characteristics in any

of these categories receives a "1". If it does not meet the threshold it receives a "0" for that category. Each time a wetland receives a ''1", it is called a "hit". In Raymond, each wetland has received between 0 and 5 hits, depending on how many categories' threshold requirements for a hit it meets.

It is important to note that all wetlands perform valuable ecological functions in all or most of the five categories above. Stated another way,"0" hits in any given category do not mean a wetland has no functional value in that category. It only means the wetland is performing that important wetland function at a level below the threshold for receiving a hit for that category. All wetlands are important. This new rating system provides a systematic approach to determining which wetlands are most important for providing each type of wetland function. It also lets us see which function or combination of functions each wetland is playing an especially important part in providing for the ecosystem as a whole.

Raymond's Wetland and their Ratings. In Raymond, the only wetland that has received 5 hits is the marsh between Rte 302 and Main Street on the northern shore of Jordan Bay and adjacent to Jones Beach. It is approximately 9.4 acres in size. It is adjacent to a 26.4-acre wetland immediately to the east, and just south of Rte 302 that received 4 hits. Before Route 302 was relocated to bypass the village and bisected the marsh, these two wetlands were one.

There are 10 other wetlands in Raymond that received 4 hits each. These include 4 wetlands, totaling about 161 acres, that are part of the Morgan Meadow wetland complex in northern Raymond that drains into Little Sebago Lake, a 20.7-acre wetland on Gay Brook, which drains to Raymond Pond, a 20.4-acre wetland straddling the Casco/Raymond town line on a brook flowing into Nubble Pond, a 12.9-acre wetland on Ai Brook just above its entry point into Panther Pond, a 2.1-acre portion of the wetland on Bartlett Brook between Raymond Pond and Crescent Lake, a 24.1-acre wetland on the north end of Raymond Neck, west of the Raymond Neck Road, and a 2.1-acre wetland on the eastern shore of the north end of Jordan Bay.

There are only five 3-hit wetlands in Raymond. There is a 20.6-acre wetland on Valley Brook, which drains to Raymond Pond. Two others are along Hayden Brook flowing into Panther Pond, 7.2 acres, and along Panther Run flowing into Sebago Lake, which has 14.2 acres. There is an 8.4-acre 3-hit wetland just west of Raymond Neck Road. The largest 3-hit wetland in Raymond is 46.7 acres in size. It is located on a stream flowing off the north end of Raymond Neck into Jordan Bay.

There are a total of 23 2-hit wetlands. Some notable ones include most of the large wetland along Bartlett Brook, Farwell Bog, and a small wetland to the immediate north of Thomas Pond.

Wetlands receiving 1 hit or 0 hits are far more numerous, including about 126 1-hit wetlands, and 146 0-hit wetlands. They are, generally small, although a few are more than 10 acres in size, and they are more often not associated with streams or lakes.

Wetland Regulations. Because wetlands are ecologically important in all the ways described above, and because they are vulnerable to filling, dredging, draining or other alterations in order to make them suitable for or supportive of development, these activities are regulated at federal,

state and local levels of government. The Army Corps of Engineers (ACE) and the Maine Department of Environmental Protection (DEP) regulate activities in wetlands of all sizes.

At the local level, the State's subdivision statute requires that all wetlands regardless of size must be shown on proposed subdivision plans. And the Town, pursuant to the State shoreland zoning statute, has placed a shoreland zone around unforested wetlands of 10 acres or more or associated with lakes, rivers or streams. If the wetland is high or moderate value habitat as determined by the Maine Dept. of Inland Fisheries and Wildlife (IFW) the land in this shoreland zone must be in Resource Protection. Where wetland habitat values are low or "indeterminate" according to the IFW, a minimum setback and buffer of 75 feet is required for new development.

Under State and federal wetland regulations, sometimes a developer is allowed to fill, drain or otherwise alter a wetland, provided that the same developer compensates for this activity by restoring, creating, enhancing or preserving wetland(s) on the same site or elsewhere on another property. That property may or may not be located in Raymond, or in the same watershed. This means that while the ecosystem as a whole is receiving the benefit of compensation, Raymond may not be.

Raymond does not presently have any substantial influence over what choices off-site are acceptable to state or federal authorities. State and federal regulators generally recognize that local concerns and wetland protection priorities are not taken into account in any systematic way. The State Planning Office is currently working to develop a model local ordinance for interested municipalities to use for this and other purposes that can complement state and federal regulatory activities to cooperatively achieve more effective protection of local wetland resources.

Vernal Pools. There is one type of wetland that is not shown on the Wetland map because there is no published source of information to document its locations. That type of wetland is called a vernal pool. Vernal pools occur on the forest floor in the early to middle weeks of spring. They are inherently temporary, lasting for only a few weeks each year. These pools are fed by melting snow at the time of year when the water table is generally at its highest. They play critical roles in the life cycles of many species including the wood frog, the spotted salamander, the blue-toed salamander and the spotted turtle.

It is theoretically possible for developers and planning boards that know where vernal pools are located to prevent them from being lost to development. The main difficulty is that for all but a few weeks of the year their location is undetectable. Other wetlands are distinguished by wetland vegetation for all or part of the development season. But unless a vernal pool is found and its location delineated during its brief spring time existence, its need to occupy that space, which looks like any other low-lying area of forest floor, will go unnoticed and unprotected as a result.

The Maine IFW is gradually creating an inventory of vernal pools. And the Maine Audubon Society has created a manual for volunteers, possibly including classes of school children, to use for creating a local inventory of vernal pools.

Floodplains

Some portion of the shoreland adjacent to ponds, lakes, wetlands and streams is inundated when these water bodies flood during storms and in the spring during the spring flood. This area is the floodplain. Weather records show that the larger the flood, the less frequently it occurs. A storm severe enough to occur only once in 100 years on the average, floods an area referred to as the 100-year floodplain. The land within the 100-year floodplain that is above the normal high water mark of adjacent water bodies is shown on the Floodplains and Watersheds map, page 2-24

This narrow strip of land is both a desirable and, over the long run, a dangerous location in which to construct dwellings or other structures. Recently, the enactment of shoreland zoning has limited the ability of landowners to build close to the water, whether within the 100-year floodplain or not. Still, many older buildings predating shoreland zoning and some of the more recently constructed waterfront homes are subject to possible inundation, damage, or even loss of life in floods of 100-year or more frequent floods, depending on how near the water they have been located.

Because private insurance companies have not seen fit to offer flood hazard insurance to insure against property damage to structures located in the 100-year floodplain, the federal government created the National Flood Insurance Program (NFIP). This allows floodplain property owners in Raymond to obtain affordable flood insurance. A necessary precondition of NFIP insurance being available in Raymond is that the Town must adopt and administer a local floodplain management ordinance that controls construction techniques and requires flood-proofing in the 100-year floodplain. Raymond has adopted a local ordinance that meets applicable federal standards. Over time those federal standards have historically been subject to change and local floodplain management ordinance standards have had to be adjusted accordingly. This is an ongoing process and the Town will need to monitor its compliance to continue to meet the requirements for eligibility for NFIP coverage to property owners.

Wildlife Habitats And Critical Natural Resources

Raymond has always had an abundance of wildlife and a diverse range of habitats for plants and animals. This level of abundance and diversity have historically been supported by the large areas of undeveloped land and the many riparian and wetland habitats that link these larger undeveloped blocks. With the rapid development of the last decade, including new roads to support the new residential development in Raymond and surrounding towns, a phenomenon known as habitat fragmentation has gradually been taking place. The size of the large blocks of unbroken habitat has decreased as new roads have extended into or crossed them. Similarly, the links between such blocks, the riparian areas along streams, lakeshores, and associated wetlands have become more narrowed or interrupted and less able to function effectively as wildlife travel corridors between habitat areas.

Habitat Blocks, Riparian Areas, and Habitat Fragmentation. The table on the next page shows the typical effects of shrinking undeveloped habitat block size on the diversity of wildlife species supported in Maine.

Of course, occasional instances of seeing wildlife species on smaller undeveloped habitat blocks do occur. This is often due to the presence of undeveloped riparian areas or other wildlife travel corridors linking smaller blocks to larger blocks beyond the area of the sighting. Various species of wildlife typically only found in large undeveloped habitat blocks, do occasionally venture into more densely developed areas than indicated on the chart. As the density of development moves from Tier 1 to Tier 5 over time, it shows the typical effects of habitat fragmentation on the diversity and composition of species remaining.

The "Beginning With Habitat" Project, a joint partnership of several state agencies, including the Maine Department of Inland Fisheries and Wildlife, the Maine Natural Areas Program, and the Maine State Planning Office, with the US Fish & Wildlife Service, and the Maine Audubon Society, has mapped large habitat blocks remaining in Raymond, many of which extend into neighboring towns. These areas are shown on the Habitat Blocks Map for the Town of Raymond, on file in the Town Office.

Habitat Block Size Requirements for Wildlife in Maine

Tier 5	Tier 4	Tier 3	Tier 2	Tier 1
1-19 Acres	**20-99 Acres**	**100-499 Acres**	**500-2500 Acres**	**Undeveloped**
raccoon	racoon	racoon	racoon	racoon
	hare	hare	hare	hare
				coyote
small rodent	small rodent	small rodent	small rodent	small rodent
	porcupine	porcupine	porcupine	porcupine
				bobcat
cottontail	cottontail	cottontail	cottontail	cottontail
	beaver	beaver	beaver	beaver
squirrel	squirrel	squirrel	squirrel	squirrel
	weasel	weasel	weasel	weasel
		mink	mink	mink
				fisher
	woodchuck	woodchuck	woodchuck	woodchuck
		deer	deer	deer
muskrat	muskrat	muskrat	muskrat	muskrat
			moose	moose
red fox	red fox	red fox	red fox	red fox
songbirds	songbirds	songbirds	songbirds	songbirds
		sharp-shinned hawk	sharp-shinned hawk	sharp-shinned hawk
			bald eagle	bald eagle
skunk	skunk	skunk	skunk	skunk
		cooper's hawk	cooper's hawk	cooper's hawk
		harrier	harrier	harrier
		broad-winged hawk	broad-winged hawk	broad-winged hawk
		kestrel	kestrel	kestrel
		horned owl	horned owl	horned owl
		barred owl	barred owl	barred owl
		osprey	osprey	osprey
		turkey vulture	turkey vulture	turkey vulture
		turkey	turkey	turkey
most reptiles	most reptiles	reptiles	reptiles	reptiles
	garter snake	garter snake	garter snake	garter snake
	ring-necked snake	ring-necked snake	ring-necked snake	ring-necked snake
most amphibians	most amphibians	most amphibians	amphibians	amphibians
		wood frog	wood frog	wood frog

Source: A Response to Sprawl: Designing Communities to Protect Wildlife Habitat and Accommodate Development, Maine Environmental Priorities Project, July 1997.

Conservation Lands. Morgan Meadows Wildlife Management Area (WMA) is a large game management area owned and managed the by the Maine Department of Inland Fisheries and

Wildlife. Approximately 1,000 acres in size, hunters make heavy use of the area during hunting season. It contains a deer wintering area and a large area of waterfowl and wading bird habitat. The whole area drains toward Little Sebago Lake in Gray.

Tasseltop is a 35-acre site south of Route 302 that includes 980 feet of sand beach on Jordan Bay. It is owned by the State's Bureau of Parks and Recreation, but has been managed by the Town of Raymond since 1992.

There may be other lands in Raymond that are effectively removed from the possibility of further development. These could include large or small land holdings that have been placed under conservation easements or otherwise dedicated as permanent open space. There is currently no town-wide inventory of such properties.

Plant and Wildlife Habitat of Statewide Significance. The Beginning With Habitat project has compiled a High Value Plant and Animal Habitat map for the Town of Raymond. This map includes the locations of two types of Significant Wildlife Habitat: Deer Wintering Areas and Waterfowl / Wading Bird Habitat. The map also shows habitat locations for species of rare plants and wildlife that are endangered, threatened or of special concern (see Habitat map, page 2-26).

Significant Wildlife Habitat. Significant Wildlife Habitat is defined by the Maine Natural Resources Protection Act (NRPA), which became effective in 1988. It was intended to define, designate and protect Significant Wildlife Habitats from adverse effects of development. In the years since the Act's adoption, various state agencies have been developing statewide maps of the many types of Significant Wildlife Habitats. Those present in Raymond are described below and shown on the Habitat map.

Deer Wintering Areas are areas of forest in which the combination of cover, remoteness, and availability of food are optimal for deer to gather and survive the winter. There are seven deer wintering areas in Raymond shown on the map, including two that straddle the town lines, one with Casco near Rattlesnake Mountain, and one with Gray on Mount Hunger. Deer Wintering Areas as mapped have not been adopted as an NRPA-regulated habitat. Except for the deer wintering area that is part of the Morgan Meadows WMA, none of the deer wintering areas are protected from potential development under current state or local rules.

Waterfowl/Wading Bird Habitat are areas used by waterfowl and/or wading birds for breeding, feeding, roosting, loafing and migration. The areas are shown on the map and generally occupy portions of streams and wetlands associated with those streams. Portions of Gay Brook, Sucker Brook, Farwell Bog, Bartlett Brook, Ai Brook, and Nubble Brook, as well as two wetlands on Raymond Cape are designated as Significant Wildlife Habitat. While these areas are not adopted as NRPA-regulated Significant Wildlife Habitat, they are protected to some degree by Raymond's shoreland zoning and by state wetland and stream regulations. The waterfowl/ wading bird habitat on Sucker Brook is completely contained in the Morgan Meadow WMA and therefore protected from development.

Rare Plants. The Maine Natural Areas Program tracks plant species that are rare in Maine. Rare plant species and their locations in Raymond are listed below. These locations have been field verified within the last 20 years.

Map Number	Plant Name	State Rarity	State Status
1.	Back's Sedge	S3 – Rare in Maine (on the order of 20-100 occurrences)	Endangered
2.	Fern-Leaved False Foxglove	S2 – Imperiled in Maine.	Special Concern
3.	Summer Grape	S1 – Critically imperiled in Maine.	Endangered
4.	Water Awlwort	S2 – Imperiled in Maine.	Special Concern
5.	Sea-Beach Sedge	S3 – Rare in Maine (on the order of 20-100 occurrences)	Special Concern
6.	Nodding Pogonia	S1 – Critically imperiled in Maine.	Threatened

Rare Animals. The Maine Department of Inland Fisheries and Wildlife tracks the status, life history, conservation needs, and occurrences for animal species that are Endangered, Threatened or otherwise rare. Rare Animal species and their habitat or locations in Raymond are listed below. Rare Animal habitat locations need field verification.

Map Number	Animal Name	State Rarity	State Status
7.	Spring Salamander	S3 – Rare in Maine (on the order of 20-100 occurrences)	Special Concern
8.	Eastern Box Turtle	S1 – Critically imperiled in Maine.	Endangered
9.	Least Bittern	S2B – Imperiled in Maine, breeding population	Special Concern

High Value Habitat for USFWS Priority Trust Wildlife Species. The US Fish & Wildlife Service (USFWS) has responsibility under federal law for tracking and protecting migratory birds and federally listed endangered species. There are 64 Priority Trust Species in all, and the USFWS Gulf of Maine office has produced a map that identifies a composite of the top 25% of high value habitats for these species. There are three inland categories of these habitats. They include non-forested freshwater wetlands, lakes and rivers; grass shrub and bare ground; and forest, including forested wetlands. In Raymond most of the forest habitat areas are included in riparian areas. Not included in any category of habitat already listed in this section are grass, shrub and bare ground. These areas correspond with many of the open fields on the North Raymond Road, in

the Raymond Hill area, and along Rte 85 near the schools and near the Raymond-Casco town line.

Other Wildlife Resources. The Maine Audubon Society has conducted an annual loon inventory in Raymond since 1984. In 1989, according to the 1991 Comprehensive Plan, there were confirmed loon nesting sites on both Panther Pond and Crescent Lake. In addition, adult loons and loon chicks were sighted on both these water bodies, including four adults on Crescent Lake and six adults on Panther Pond. Loons were also sighted during the previous four years on Thomas Pond, Raymond Pond, and Sebago Lake within Raymond although no nesting sites were found. In 2001, the Maine Audubon Society loon survey counted nine adult loons, zero loon chicks on Crescent Lake, five adults, zero chicks on Panther Pond, eight adults, zero chicks on Thomas Pond, and six adults, zero chicks on Raymond Pond.

According to the 1991 Comprehensive Plan, Panther Run is an important coldwater fishery and Sebago Lake salmon spawning area, and several of Raymond's other streams also are significant fisheries areas. According to the Maine Department of Inland Fisheries and Wildlife, box turtles have been sighted in Deep Cove, and rattlesnakes have allegedly been sighted on Pismire Mountain and Rattlesnake Mountain, which are supposed to be the last rattlesnake habitat areas in Maine.

Slopes And Scenic Resources

High Elevation Points and Steep Slope Areas. There are a large number of mountaintops and ridges in Raymond and the surrounding towns. These areas are important scenic areas for the Town. These points of high elevation also serve as vista points from which views of the region's lakes and the White Mountains can be obtained.

Areas above 600 feet in elevation include Tarkiln Hill, Raymond Hill, Ledge Hill, Pismire Mountain, Tenny Hill, and a portion of the hills leading up to Rattlesnake Mountain. Even though most of it is situated in Casco, Rattlesnake Mountain is a prominent feature that is visible from many areas within Raymond.

Given Raymond's varied topography, it is no surprise that there are areas with steep slopes in excess of 15 to 20 percent. Currently, the Maine Plumbing Code prohibits new septic systems on slopes of 20% or more. Steep slopes pose severe constraints to building construction and are therefore generally unsuitable for development. Sections of Raymond with very steep slopes include the southwestern side of Pismire Mountain, the southeastern side of Tenny Hill, the eastern shoreline of Raymond Pond, the Raymond section of Rattlesnake Mountain, the eastern and western slopes of Tarkiln Hill, certain sections of Raymond Hill (especially the slope down to Panther Pond), sections of Brown Hill, and Nubble Hill.

Areas with Visual Significance. There are several scenic views and vista points in Raymond. There are many high elevation points with dramatic views of nearby lakes and mountains and of the White Mountains. Significant views and vista points identified by the 1989 Community Attitude Survey include the view of Sebago Lake from the Jones Beach, mountain and lake views from Raymond Hill, mountain views from the Valley Road/Spiller Hill area, Rattlesnake

Mountain, Nubble Pond, and Tenny Hill. Some of Raymond's other important vistas may be viewed from the Frances Small property (East Raymond), "the ledges" (Ledge Hill in North Raymond), the Town Landfill site, the Alicia Ash Beach area, (Raymond Cape), and Brown Hill (between Panther Pond and Thomas Pond).

Insert Aquifer map

Insert Floodplains and Watersheds map

Insert Wetlands map

Insert Habitat map