Concept Plan *for* Plum Creek's Lands *in the* Moosehead Lake Region

April 2007

Appendix A-D

Plum Creek

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Prepared by:
Eastern Maine Development Corporation
April 2007

Eastern Maine Development Corporation
Statement of Credentials

Eastern Maine Development Corporation (EMDC) serves as one of the six (6) designated development districts in the state as defined by the U.S. Department of Commerce Economic Development Administration (EDA) and the State of Maine. Under the guidelines established by EDA, EMDC is responsible for conducting the Comprehensive Economic Development Strategy for the region.

The Corporation is divided into three distinct divisions:

-Administrative Services – Responsible for providing administrative support to all programs at EMDC.

- Finance/Administration
- Information Services
- GIS/Data Center

-Community Services – Responsible for working with communities within the district to identify specific planning and development needs.

- Community and Economic Development
- Community Planning, including two regional planning commissions
- Bangor Area Comprehensive Transportation System (BACTS) and Transportation Services
- Greater Bangor Convention and Visitors Bureau (CVB)

-Business Services – Responsible for working with business interests to link them with market opportunities.

- Maine Small Business Development Center (Maine SBDC)
- Maine Procurement Technical Assistance Center (Maine PTAC)
- Business Development
- Workforce Development
- Lending

The Corporation has nearly four (4) decades of experience working with communities and businesses throughout the development district and the State of Maine. Regional work has been

conducted within the Moosehead Lake Region which makes the organization intimately familiar with the area.

Such studies conducted include:

- "Town of Greenville: Downtown Revitalization Action Plan"
- "Moosehead Lake Region Economic Profile"
- "Katahdin Region Economic Base Analysis"

Additional studies of regional significance include:

- "Coastal Washington County Housing Assessment"
- "Midcoast Housing Assessment"
- "Eastern Maine Economic Development Strategy"
- "Penobscot River Asset Inventory"
- "Economic Impact Study: Hancock County-Bar Harbor Airport"

EMDC has also drafted land use ordinances for the following communities:

- Corinna
- Newport
- Milford
- East Millinocket
- Greenbush

The following members of the staff at Eastern Maine Development Corporation participated in the Community Impact and Infrastructure Analysis:

Don Cooper - Transportation Planner, Bangor Area Comprehensive Transportation System

- Don joined EMDC in 1996, to provide the Bangor Area Comprehensive Transportation System (BACTS) with transportation planning support, particularly in the fields of transit, alternative modes, public involvement, and travel demand modeling. In addition to his duties for BACTS, he also supplies transportation planning assistance outside the Greater Bangor Urbanized Area. Don holds a B.SC. in Civil Engineering from London

University in the United Kingdom and a M.Eng. in Traffic Engineering and Transportation Planning from Sheffield University. He is also a Chartered Engineer, Member of the Institution of Civil Engineers in the UK.

Jonathan Daniels - President/CEO, Eastern Maine Development Corporation

- Jonathan serves as the President and CEO of Eastern Maine Development Corporation. In this role he oversees the community and economic development functions of the agency. He has over a decade of experience in domestic and international economic and transportation development. Jonathan has served as the Port Director of the Port of Eastport, Maine, and as the Managing Director of the Greater Baton Rouge Port Commission and the Port of Greater Baton Rouge, Louisiana. He is a 1991 graduate of The Citadel in Charleston, South Carolina with a degree in International Politics and Military Affairs and has completed graduate work toward a Master of Science degree from Maine Maritime Academy.

Eric Galant – Planner, Mid Coast Regional Planning Commission

Eric is the Planning Director of the Mid-Coast Regional Planning Commission (MCRPC). He works with coastal and rural communities on land use and transportation planning in Knox and Waldo Counties. Eric was principal planner for the Washington County Council of Governments in Machias, and before that he worked for the Bureau of Planning of the Maine Department of Transportation. He earned a B.S. degree in Urban and Regional Planning from Cornell University and a M.Sc. in Urban and Regional Planning from the London School of Economics. Eric is a member of the Maine Association of Planners and other similar organizations.

Rob Kenerson - Director, Bangor Area Comprehensive Transportation System

Study Responsibility: Transportation

- Rob became the BACTS Director at EMDC in 1995. He has over 25 years of transportation engineering and planning experience with both public agencies and private consulting firms in Maine. Rob has conducted numerous traffic studies and designed transportation projects throughout all the New England states and Florida. Rob received

his B.S. degree in Civil Engineering from the University of Maine and has been a registered Professional Engineer in the State of Maine since 1989. He is an active member of the Institute of Transportation Engineers at both the state and national level.

Greg Lounder – Senior Planner, Municipal Review Committee

- Greg is responsible for the implementation of the Eastern Maine Development Corporation's Solid Waste Grant to communities within the PVCOG and EMDC region. Greg works with PVCOG communities in the delivery of solid waste technical assistance regarding demolition debris, recycling, landfill closures, hazardous waste collection, composting programs, etc. Greg also serves as Executive Director of the Municipal Review Committee and provides administrative support to the Penobscot Valley Refuse Disposal District. Prior to serving PVCOG communities, Greg was Senior Planner for the Northern Maine Development Commission and a Land Use Planner with the Hancock County Planning Commission. Greg received his Bachelor of Arts Degree in Geography and Land Use Planning from the University of Maine.

John Noll – Transportation Planner.

- John provides planning and technical assistance to the Maine Department of Transportation, municipal officials, and locally appointed boards. He has also worked on the development of municipal comprehensive plans, land use ordinances and has assisted in the delivery of solid waste technical assistance to Maine towns. Prior to joining EMDC, John worked as an environmental consultant with BCM Engineers located in Plymouth Meeting, Pennsylvania. While at BCM, John prepared environmental clearance documents for local and state road and bridge construction projects, wetlands delineation reports, and performed environmental reviews of proposed development projects for several municipal planning boards in New Jersey and Pennsylvania. He is a graduate of West Chester University, West Chester, Pennsylvania where he received a Bachelor of Arts Degree in Geography and Planning.

Cindy Pellett – Information Systems – Mapping/GIS

Study Responsibility: Mapping/GIS/Data

- Cindy is responsible for managing EMDC's data and mapping needs with her primary duties including developing maps for publications, presentations and general in-house use and also collecting various socio-economic data from different sources. Prior to joining EMDC in 2002, Cindy, a native Pennsylvanian, worked for nearly eight years as a Geographic Information Systems (GIS) research technologist at The Pennsylvania State University. A two-time Penn State graduate, she received her B.S in Environmental Resource Management and her M.E.P.C in Environmental Pollution Control.

Infrastructure and Community Impact Analysis

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Identification of Tasks

Plum Creek contracted with Eastern Maine Development Corporation to provide an infrastructure and community impact analysis associated with its Concept Plan for property owned by the company in Piscataquis and Somerset Counties. Eastern Maine Development Corporation was asked to analyze the potential impacts on infrastructure and communities within the Plan Area. In addition, EMDC evaluated potential effects that may occur in the Impact Area, which includes the service centers of Greenville and Jackman, and the immediate surrounding area.

Plum Creek is only seeking rezoning of the subject land. Before any development can occur, site plan and subdivision applications will have to be filed and approved by the Maine Land Use Regulation Commission (LURC).

The Study includes an inventory of the region's current assets and infrastructure, including:

- Housing
- Government Services
- Solid Waste Management
- Education
- Police and Law Enforcement
- Fire Services
- Health Care
- Transportation

The region's current inventory and conditions, coupled with the anticipated population impacts from the proposed tourism infrastructure and new housing were the basis for the impact analysis. Impacts will be both negative and positive. Some impacts will draw on existing services, while other impacts will enhance opportunities for the region.

Assumptions

The anticipated impacts will come from four types of development and two types of conservation:

- A nature-based recreation facility, within a 2,600 acre resort planning envelope at Big Moose Mountain in Big Moose Township;
- A lodge facility within a 500 acre resort planning envelope near the shore in Lily Bay Township;

- Creation of up to 975 residential house lots on shorefront and backland property;
- The potential for up to 390 households developed through induced development;
- Donation of 100 acres by Plum Creek for the development of 100 affordable housing units throughout the housing impact area;
- Resort development at Big Moose Mountain on a 4,700 acre parcel; and
- Resort development at Lily Bay on an 800 acre parcel

For the purposes of this Study, it is assumed that all of the Plum Creek Plan's development components will be implemented and phased in over 8 to 15 years, in accordance with provisions of the Plan. It is anticipated, however, that no impact, positive or negative, will occur until 2008 at the earliest.

Summary of Existing Conditions

The Study's estimates of the Plan's impacts are made within the context of the Plan Impact Area's existing conditions. A summary of those existing conditions is given below:

Existing School Conditions

From 1995-2005, enrollment in School Union #60 (Greenville, Shirley, Beaver Cove, Willimantic, Kingsbury Plantation) declined by 40% in grades K-12 (from 449 to 271 students).

Enrollment from the seven unorganized townships and plantations has also decreased 42% from over the last ten years.

From 1995-2005, enrollment in SAD #12 (Jackman and Moose River) declined 22.82% (from 241 to 186 students) in grades K-12.years.

Rockwood Elementary School was originally built to hold 40 students; as of October 2005, 16 students were enrolled.

Existing Housing/Population Conditions

Between 1980 and 2000, the year-round population dramatically declined in the service centers of Greenville and Jackman. Population decline in Greenville, Jackman and within Piscataquis County, is due mainly to the out-migration of residents, rather than through natural change (births and deaths). In Somerset County, modest population growth has been due, on average, to natural increase, not in-migration. More people are working outside of their town of residence. Between 1990 and 2000, the number of workers living and working in the Town of Greenville declined by over 12%. The Town of Jackman shows a similar but more dramatic decline. Presumably, a slower local economy is forcing more workers to commute outside of town to work. This would indicate that some workers would choose to work locally if jobs were available.

Household trends indicate the presence of more retiree, single person and single-parent households. The trend toward smaller household size, along with the increase in demand in

seasonal housing, is largely responsible for keeping the demand for housing high, despite the loss of population. The region's aging population, loss of the young, and in-migration of retirees into the area, is causing concern among Greenville officials and business owners about the future of the area's work force.

Between 1990 and 2000, seasonal housing and seasonal housing demand grew dramatically. Despite population out-migration, seasonal housing continues to grow in proportion to year-round housing.

There is a demand for seasonal housing in natural settings. Greenville, Jackman and the Unorganized Territories have a small number of for sale units, indicating a relatively strong housing market. (Vacancy rates as determined through the US Census are somewhat suspect in the Impact Area. Census takers are likely to record a seasonal unit with a 'for sale/for rent' sign as such, and not account for the fact that it may be seasonal. This has the effect of driving the vacancy rates higher than it would show otherwise.)

Existing Health Care Facility Conditions:

The decline in the area's population has caused the area's medical facilities, principally C.A. Dean Hospital and the Jackman Region Health Center, to be underutilized, and at risk of being downsized. C.A. Dean can accommodate a 60% increase in acute or critical care patients, and a 70% increase in emergency care. The loss or downgrading of either of these facilities can have a profound negative effect on employment and income in the community (as the hospital is one of the major employers in the region). Between the two facilities, there were 2,834 emergency room visits in 2006.

Existing Conditions of Fire Services:

The greatest challenge to Greenville, the Jackman-Moose River, and the Rockwood Fire Departments, is to maintain an available volunteer fire fighter force, as many volunteers commute to distant jobs. There are no substations or other departments in the Plan Area on the east side of Moosehead Lake.

Structure fires are accommodated from the three regional fire departments, while forest fires and the protection at the wildland urban interface are handled by the Maine Forest Service. Forest fire calls within the Concept Plan area have shown a decline since 2003.

Levels of calls handled by the fires departments and the Maine Forest Service have remained consistent since 2001. An average of 169 fire/emergency calls have been issued annually since 2001 for the three fire departments.

Existing Transportation and Traffic Conditions:

The Plan Impact Area includes the following transportation facilities: 1,400 miles of privately owned roads; 2 rural airports; a small, private seaplane base in Jackman; 2 arterials (Route 6/15; SR 201); one major collector (Lily Bay Road) and local roads; a trans-Maine freight rail line

through the Greenville and Jackman areas, connecting New Brunswick to the east, through Maine, to Quebec to the west (the vacation excursion train last passed through Greenville in 2001)

Existing Law Enforcement Conditions

Law enforcement protection is rendered by the Maine State Police, County Sheriffs, and the Town of Greenville, and the Maine Warden Service.

The Sherriff Departments in Somerset and Piscataquis Counties both indicated a difficulty in meeting response needs to the Concept Plan area based on available manpower.

Maine State Police is moving away from response and patrol activities in the region and are more involved in specialized investigative services.

Existing Government Services Conditions

The Maine Land Use Regulation Commission fulfills an average of 400 permit applications requests annually with four staff members within their Greenville office.

Shaw Public Library services approximately 3,000 library card holders, with the majority residing in the Impact Area from Jackman to Shirley. Approximately 50 percent of the card holders reside outside the Town of Greenville.

What are the Impacts?

As described above, the Moosehead Lake Region has seen a steady decline in population over the past few decades. The Region was once a thriving tourist destination, but the anchors have since closed. The changing economy of the region, like many other parts of the state, has forced a shift in population out of the area that has stressed the remaining systems to provide a sufficient level of service to fewer users. The existence of substantial, but underutilized, infrastructure means that the proposed Plan development will require much less infrastructure investment than would be required in a totally undeveloped area.

All impacts identified in this Report arise from population increases associated with new construction, an increased number of visitors (once new tourism infrastructure is completed) increases in year round and seasonal residents, including people moving into the area to secure employment, and industrial development associated with a proposed sawmill or similar facility.
This Report makes conservative assumptions in estimating the Plum Creek Plan's potential impacts, in order to maximize impact estimates. Thus, some of the estimated impacts may not actually occur unless the Plan is fully built-out, or may not occur to the extent predicted. It is anticipated, however, that the Plan development would help restore the formerly robust tourism economy.

The principal impacts on infrastructure systems are summarized below:

Housing Impacts

1. Up to an estimated 160 affordable housing units will be needed due to households moving to, or back to, the area to take jobs that the Plan development will bring at full build-out.
2. Construction jobs will bring temporary workers and the need for rental housing.
3. There is a potential for the construction of 190 employee housing units associated with the resorts. If developed, this could help alleviate some of the affordable housing issue.
4. The house lots in the Plan Area will help address the high market demand for seasonal housing in nature-based settings.

Government Services Impacts

1. The increase in population within the Plan Area should not have a significant impact on government services in Jackman. Greenville may experience greater impacts due to the larger numbers of people who would be served by Greenville Town Office staff. However, the Town staff in Greenville is not obligated to serve residents of the Unorganized Territories.
2. Existing services, such as library services provided in Greenville, could see an additional 668.85 new card holders due to new residents from plan and induced development.
3. LURC staff would see a 14 percent increase in permit applications based on the new residential development aspect of the Concept Plan. This is only reflective of the 65 residential structures per year associated with the phase-in of residential development; the resorts would place additional demands during the time they are permitted and built.

Solid Waste Management Impacts

1. There is no foreseeable reason that the three existing transfer stations would not be available indefinitely. The projected quantities of waste which may be delivered to these facilities in the future due to implementation of the Plum Creek Plan will have no appreciable impact on future capacity or service capability.
2. The Greenville and Caratunk landfills may be closed before or during the time the Plan is implemented. If the existing landfill facilities in Caratunk and Greenville become unavailable, the statewide system could absorb current and projected waste quantities without any material impact on disposal capacity or market conditions, although the per ton cost of solid waste disposal is likely to increase.
3. Construction and demolition debris will increase be approximately 11,575 tons from residential and resort development.

Education Impacts

1. The overwhelming attitude of the school system administrators within the Plan Impact Area is that, with the dramatic enrollment decline over the past decade, enrollment increases caused by the Plan development would be assimilated quite easily, and would help stabilize the school systems.

2. It is anticipated at full build out that an additional 241.16 students could enter the education system due to impacts from both plan development and induced development.

Law Enforcement Impacts

1. Law enforcement services in the region are currently stressed, but meet the expectations of the current residents. An increase in population, homes, and resorts due to Plan implementation may stress these services further.
2. Sheriff Departments in the Somerset and Piscataquis Counties could see an additional 282.2 calls from residential and resort development.
3. There is concern that new residents will expect a higher level of service than existing residents have, increasing pressure for improvements.
4. Crimes of opportunity will likely increase as more transient visitors are in the region to take advantage of the increased tourism facilities.

Fire Services

1. Regional fire departments could see an additional 78.15 calls annually at full build out due to residential, resort and induced development.
2. With increased population and more people involved with brush and debris burning, the Maine Forest Service could see additional calls to the Plan Area.

Health Care Impacts

1. The increase in population from the Plan development will provide a broader client base for the Impact Area's health care system. This may ensure more use and therefore a more cost-effective and improved delivery system.
2. An additional 1,197.9 additional emergency room visits could be expected from residential, resort and induced development.
3. Ambulance calls could go up by a projected 161.4 calls per year.

Transportation Impacts

1. A change in traffic flow and increased roadway utilization is expected as the Plan is implemented. Increased traffic will be primarily centralized in four areas: at the intersection of Rte. 6/15 North in Greenville; near the entrances to the two resort areas; and at the entrance to the industrial site.
2. There are no significant impacts expected on the municipal airports, bridges, or railroad from the Plum Creek Plan.
3. It is likely that new residents and tourists in the region will increase bicycle traffic on public roads.

Impacts on the Northern Forest Region

While this Study focuses on the Moosehead Lake Region the proposed Plan warrants consideration within the context of the larger *Northern Forest Regional Strategy*. The Northern Forest Center recently completed *"Communities, Economy and Land: A Regional Strategy for the Northern Forest."* This "call to action" was endorsed by 30 development and conservation groups as well as the Governors of Maine, New York and New Hampshire. Ten strategies are proposed, with the following priorities:

The priorities include:

- Community and Economic Development
- Forest and Agricultural Enterprise
- Land Conservation
- Culture and Heritage
- Recreation and Tourism
- Energy
- Transportation
- Telecommunications

The Northern Forest Lands Council's final report states that "…the east-west connection between forest lands and communities of the four states of New York, Vermont, New Hampshire and Maine point to the future where bold new strategies can be developed to link economic and community opportunities to forest stewardship, conservation and industrial uses." Much of what is being proposed by Plum Creek fits within the strategies outlined by the Northern Forest Council and the Northern Forest Lands Council and their endorsing partners.

1.0 Introduction and Project Overview

This Report estimates impacts associated with development that could occur as a result of development from the proposed Plum Creek Concept Plan submitted to the Land Use Regulation Commission (LURC), to re-zone 408,000 acres owned by Plum Creek Maine Timberlands, LLC located in Somerset and Piscataquis Counties. This is not a market feasibility study to determine the viability of the development that could occur based on a rezoning change, and therefore it is not based on market conditions or the feasibility of actions to be undertaken by the developer. Instead, the Report assumes the development will take place as proposed, and estimates the resulting impact on infrastructure and services in the area. Impacts evaluated are based on the best possible information available at the time studied.

While economic impact data are cited in the Report, this study is not an *economic* impact analysis. Such an analysis by Dr. Charles Colgan entitled *"Estimated Economic Impacts of Implementing the Proposed Plum Creek Rezoning Plan in the Moosehead Lake Area."* The community and infrastructure impacts discussed in this Report complement the economic impact analysis. The assumptions used in this Report mirror, to a considerable degree, the assumptions in the economic impact study, to maintain continuity. In cases where there are disparities, they are noted. The Colgan Economic Impact Study, in order to provide a realistic but conservative estimate, assumes lower figures in estimating the ultimate economic impact. This Report, on the other hand, assumes a higher impact to avoid understating the effect on infrastructure.

While development in the region is projected to create economic benefits, it is equally important to anticipate the Plan's long-term infrastructure impact. This report endeavors to quantify the existing capacity and expected impact on a variety of services and facilities.

Assumptions

To properly estimate the Plan's impact on area infrastructure, the Report necessarily makes some assumptions. Where the Plum Creek Plan sets limits on development, this analysis assumes the maximum amount of development will occur. Economic impact assumptions correspond to Dr. Colgan's Economic Impact Study.

The Concept Plan includes both conservation and development components. The Plan's conservation components consist of the Balance Conservation Easement (offered as balance for development zones), the Moosehead Legacy Easement, the Number Five Bog fee sale, and the Roach Pond Acquisition Area (the latter three offered as an additional public benefit). The development component consists of zones to accommodate residential, nonresidential and resort development.

The development zones in the Plan define areas wherein specific types of development, meeting specific standards, are allowed.
Generally, the types of development that are allowed include:

- Residential development;
- Small-scale commercial development;

- Resort development; and
- Large-scale commercial/industrial development.

The Plan limits the number of residential units created to 975. There are two resort zones, one at Big Moose Mountain, and one at Lily Bay. The Big Moose Mountain resort is limited to 800 resort accommodations, while the Lily Bay resort is limited to 250 such units. Allowed commercial uses include motels, bed and breakfasts, offices, restaurants, retail stores, and campgrounds. Finally, there is one commercial/industrial zone where a wood products or other type of industrial facility could be located. Other types of development allowed by the Plan include affordable housing, resort employee housing,

Based on these Plan terms, the following assumptions are used to estimate infrastructure impacts:

- Residential units: 975; this report assumes development will be at a rate of 125 units per year, for 7 years, with an additional 100 units sold in the eighth year.
- Affordable housing units: 100 units, with 15 in Greenville, 10 in Jackman, and 75 in Rockwood;
- Big Moose Resort accommodations: 800
- Lily Bay Resort accommodations: 275
- Resort employee accommodations: 190

Residential Development

The residential component of the Plan may be its most dynamic element. The 975 house lots are presently allocated to various development zones within the Plan Area. While the final number of lots at any single location is subject to site development and permit conditions, the general locations, and the assumed number of residential units at each, are shown on Table I-1.

Table I-1: Residential Lot Location

	Piscataquis County		**Somerset County**
Lily Bay	154	Long Pond	110
Beaver Cove	32	South Brassua	250
Wilson Pond	32	Blue Ridge	160
Moose Bay	112	6/15 Corridor	125
Total	***330***		***645***

The development of the residential lots will have a material impact on the Impact Area. Solid waste collection, traffic patterns and education facilities are all directly affected by the location and number of house lots. The proportion of seasonal-to- year-round residences will also affect the level of impact. To conform to the assumptions in Dr. Colgan's Economic Impact Analysis, it is assumed that 85 percent of the residential development in the Plan Area will be seasonal, (five months per year).

Resort Development

The Plum Creek Plan outlines a vision for tourism facilities in two (2) resort envelopes:

- Big Moose Mountain Resort/Recreation area (4,700 acres within the Greenville/Rockwood corridor) and
- The Resort at Lily Bay (800 acres within the Greenville/Lily Bay corridor).

Table I-2: Construction of Tourism Facilities at Big Moose Mountain and Lily Bay

	Big Moose Mtn.	Lily Bay
Projected Resort Construction Cost	$205,000,000	$85,000,000
Full Completion	2021	2017

Construction timeline:

- Big Moose resort is on-line with 30% of its units by 2011
- Big Moose resort has 70% of its units by 2015.
- Big Moose resort is built-out by 2021.
- Lily Bay resort has 50% of its units by 2012
- Lily Bay resort has 100% of its units by 2017

Both resort envelopes are located near existing infrastructure and close to the service center of Greenville, the two tourism facilities could improve the community economy by providing economic activity centers on both sides of the community.

The Big Moose Mountain facility is envisioned as an all-purpose resort attraction; attracting families, outdoor recreation enthusiasts, young adventurers, golfers, business conference attendees and "experiential" tourists. The facility would tie into the ITS snowmobile trail network and to two new hiking trail systems: the Peak-to-Peak Trail and the Moosehead to the Mahoosucs Trail. A new Nordic and biking trail also is planned and is integrated with this resort.

Table I-3: Location and Accommodation Total for Resort Development

Resort Location	
	Accommodations
Big Moose Mountain	800
Lily Bay	250
Total	**1050**

The Lily Bay tourism facility is envisioned as a five-star destination resort. This facility is proposed to be built from local materials, and its programs would emphasize guided and self-guided nature experiences. This facility would have market appeal to international visitors, retirees and travelers interested in the area's nature, culture and history.

Because the plan will attract both seasonal and long-term residents and short-term visitors, a visitor-impact model is essential. By multiplying the number of accommodations by a proposed population per unit of three (3), we can assess that the total daily occupancy capacity is 3,150. In order to annualize the occupancy, it is necessary to establish an occupancy rate. Utilizing information from Smith Travel Research, at 65-percent occupancy rate was deemed appropriate. This rate is a bit higher than the majority of the resorts in Maine, and therefore allows this report to estimate the maximum impact of the resorts. Because this is an annualized calculation, the occupancy capacity is multiplied by the occupancy percentage, and that figure is then multiplied by 365 to determine the visitor impact per resort development.

Table I-4: Visitor Impact Calculations

Resort Location	Number of Accommodations	Pop. per unit	Occupancy Capacity	Annual Occupancy percentage	Days/Yr	Visitor impact
Big Moose Mountain Resort	800	3	2400	0.65	365.00	569,400
Lily Bay Resort	250	3	750	0.65	365.00	177,938
						747,338

*Occupancy rate of 65 percent was derived from information provided by Smith Travel Research. Rates in Maine for established properties average 62% annual occupancy.

Based on the calculations, 747,338 annual overnight visitors could be anticipated once both facilities are at full operation.

The number of day trips to the region is more difficult to predict. While many of the users of the new trail system and other outdoor amenities will come from the resorts or the new residential development, it is assumed that there would be additional impact from day trippers that is not counted within the overnight visitor calculations. It can also be assumed that the majority of the day visitors to the area will not consume services at the same rate as those making extended visits to the region.

While it can be difficult to ascertain the amount of day use in the region, it is possible to provide historical data related to other conservation/recreation based areas of Maine. Baxter State Park, the 207,433-acre park located in just outside Millinocket, provides a good base for comparison. While smaller in size, by half, of that the Plan Area associated with the Concept Plan, Baxter State Park is a good comparison, due to the rural nature of the setting and reliance on small primary service centers in Millinocket, East Millinocket and Medway.

Table I-5: Baxter State Park Annual Visitors

BAXTER STATE PARK COMPARATIVE STATISTICS 2000 - 2006 GATEHOUSE STATISTICS:							
PERSONS	**2000**	**2001**	**2002**	**2003**	**2004**	**2005***	**2006***
Resident	39,903	40,940	38,428	36,027	35,483	31,972	33,402
Non-resident	34,818	31,975	33,226	28,688	28,057	24,095	25,014
TOTAL	**74,721**	**72,915**	**71,654**	**64,715**	**63,540**	**56,067**	**58,416**
Campers	23,000	21,858	22,217	20,282	20,195	17,552	18,455
Day Use	47,723	49,256	48,613	44,273	43,113	38,338	39,720
Transient	3,748	1,600	731	*	*	*	*
Walk/Bike	250	201	93	160	232	177	241
TOTAL	**74,721**	**72,915**	**71,654**	**64,715**	**63,540**	**56,067**	**58,416**

The 58,416 admitted through the gate accounted for 108,859 visitor days when calculating overnight stays for camping. Of the total visitors to the park in 2006, 68 percent represented Maine residents.

Proposed Public Trail Development

Permanent Hiking (Peak-to-Peak and Western Mountain Trail) Easement (76 miles)
Permanent hiking trail easements extending over 58 miles are proposed to be conveyed upon LURC approval of the rezoning Plan. Two major trail systems would be created. The first, the Peak-to-Peak trail around two-thirds of Moosehead Lake, is about 64 miles long. It potentially connects with the Appalachian Trail and the proposed resorts. A second 12-mile trail, part of the Moosehead to the Mahoosucs Trail, ties into the Peak-to-Peak trail and follows the northwestern shore of Indian Pond. The easements will be held by the State Bureau of Parks and Lands and/or an approved 501(c)(3) organization.

Permanent Snowmobile (ITS) Trail Easement (74 miles)
Permanent trail easements, comprising 74 miles of ITS snowmobile trail, will make permanent the link between the Moose River region and the greater Baxter Park region, and would be conveyed upon LURC approval of the Plan. The easement will be conveyed to the State Bureau of Parks and Lands or an approved 501(c)(3) organization.

Nordic Ski and Bike Trail at Big Moose Resort (35-50 kilometers)
The vision for the resort at Big Moose Mountain is to have 35 to 50 kilometers of trails designed for cross-country and telemark skiing. These same trails will be able to be used by bicyclists in the summer and fall.

Conservation Plan Components

The total set of conservation measures proposed in the Plum Creek Plan include:

- 90,000 acres of donated permanent conservation including shoreland easements;
- 150 miles of permanent trail easements within the Plan Area.
- A 266,000-acre conservation easement that Plum Creek has offered to sell to the Nature Conservancy within five years of the Plan's approval;
- A 29,500-acre parcel of land that Plum Creek has offered to sell to The Nature Conservancy for conservation within the five years following Plan approval.
- A 45,000-acre proposed fee sale outside the Plan Area to The Nature Conservancy

When the Plan and Conservation Framework are fully implemented, 154 miles of permanent shorefront conservation will be in place, and all of Plum Creek's shorefront ownership on 60 lakes and ponds will be permanently protected. If realized, the conservation efforts will create a continuous stretch of land where development is permanently prohibited, connecting the eastern shores of Moosehead to the Roach Ponds, the Nahmakanta Public Reserve Unit, the Appalachian Trail and the 100-Mile Wilderness, the Katahdin Forest Easement and Baxter State Park. The Plan's proposed permanent trail easements allow for extended, permanent connectivity of the region's trail system. The region's hiking opportunities will increase with the creation of new trails. This will enhance the existing system by adding capacity to the trail network.

The expanded conservation components, and the consolidation of the development corridors, are in response to comments from state agencies and the public on Plum Creek's Plan applications filed in April of 2005 and 2006. The public indicated its preference that house lot development be located in defined corridors, and that the proposed resorts be sited closer to Moosehead Lake and Greenville (with specific mention of Big Moose Mountain), while providing substantial "green" infrastructure in the region through conservation measures. Plum Creek's decision to relocate one resort to Big Moose Mountain and move the Lily Bay resort closer to Greenville and Moosehead Lake allow both resorts to benefit from the services based in Greenville.

2.0 Housing

Overview

The housing market in the Housing Impact Area[1] includes the service center communities of Jackman and Greenville, smaller village settlements along the shores of Moosehead Lake such as Beaver Cove and Rockwood, and relatively remote and primarily seasonal housing located among the 29 minor civil divisions within the Plan Area. Jackman and Greenville are located outside the Plan Area, but function as regional job and service centers, and thus serve as a center of housing for the Plan Area. The areas included for this housing analysis are described in Table 2-1. Comparisons are provided for Piscataquis and Somerset Counties and the State of Maine.

There are several major drivers in any regional housing market. Housing demand and supply is largely a function of people and their motivation for establishing a residence (seasonal or year-round). Increased employment, seasonal amenities, the search for small-town rural living in a natural environment and proximity to family and friends are some of the major 'drivers' for the housing market in the Rezoning Plan Area. The Rezoning Plan has the potential to spur market demand, but this is subject to a number of other regional and national trends in the recreation market that are beyond the scope of this report.

The focus of this Chapter is the effect the implemented Plum Creek Plan may have on the affordable housing market. Affordable housing means decent, safe and sanitary living accommodations that are affordable to persons in the very low, low, and moderate-income groups. The State defines an affordable owner-occupied housing unit as one for which monthly housing costs do not exceed approximately 30 percent of monthly income, and an affordable rental unit as one that has a rent not exceeding 30 percent of monthly income (including utilities).

Table 2-1: Townships Included in Census Designated Unorganized Territories

Northeast (NE) Piscataquis Unorganized Territories (UT):	Northwest (NW) Piscataquis Unorganized Territories (UT):	Seboomook Lake Unorganized Territories (UT):	Northeast Somerset Unorganized Territories (UT):
T8 R11 WELS	Soper Mountain Twp	Soldiertown Twp T2 R3 NBKP	Misery Twp
T4 R9 NWP	T4 R12 WELS	T8 R17 WELS	Misery Gore Twp
T4 R9 WELS	Islands of Moosehead Lake	West Middlesex Canal Grant	Indian Stream Twp
T5 R11 WELS	T4 R13 WELS	T9 R16 WELS	Brassua Twp
Bowdoin College Grant	Northeast Carry Twp	T5 R18 WELS	Johnson Mountain

[1] The 'Housing Impact Area' for the purposes of this study includes an area that encompasses a number of communities and territories that are within or immediately adjacent to the area proposed for rezoning by Plum Creek. Due to how the Census Bureau aggregates data for some of the Unorganized Territories, the housing data includes some areas outside the Impact Area. Thus, this housing chapter uses the broader Housing Impact Area. Excluding these areas, however, would have resulted in an undercount of the overall housing supply impacted by the proposed rezoning.

W.Twp			Twp
Rainbow Twp	Harfords Point Twp	T8 R16 WELS	East Moxie Twp
T5 R9 NWP	T4 R15 WELS	T10 R16 WELS	Parlin Pond Twp
Elliotsville Twp	T6 R14 WELS	Little W Twp	Taunton & Raynham Academy Grant
T5 R9 WELS	T6 R13 WELS	T7 R16 WELS	Tomhegan Twp
T10 R10 WELS	Cove Point Twp	Big W Twp	Long Pond Twp
T6 R10 WELS	T6 R12 WELS	T7 R19 WELS	Squaretown Twp
T6 R11 WELS	T5 R12 WELS	T8 R18 WELS	Rockwood Strip T1 R1 NBKP
Mount Katahdin Twp	Days Academy Grant Twp	Bald Mountain Twp T4 R3	Bald Mountain Twp T2 R3
T7 R10 WELS	T5 R14 WELS	Blake Gore	Sapling Twp
T7 R11 WELS	T5 R15 WELS	T8 R19 WELS	Mayfield Twp
T3 R11 WELS	T4 R14 WELS	Big Six Twp	Sandwich Academy Grant Twp
T3 R10 WELS	T8 R15 WELS	T7 R17 WELS	Sandbar Tract Twp
T7 R9 NWP	T9 R15 WELS	Big Ten Twp	Moxie Gore
T7 R9 WELS	Big Moose Twp	Dole Brook Twp	Rockwood Strip T2 R1 NBKP
T10 R9 WELS	T9 R14 WELS	Prentiss Twp T4 R4 NBKP	Chase Stream Twp
TA R11 WELS	T9 R13 WELS	Pittston Academy Grant	
T8 R10 WELS	T9 R12 WELS	Thorndike Twp	
T9 R10 WELS	T2 R13 WELS	Elm Stream Twp	
T2 R9 WELS	TX R14 WELS	Russell Pond Twp	
T8 R9 WELS	Chesuncook Twp	Hammond Twp	
Barnard Twp	T3 R13 WELS	Sandy Bay Twp	
Frenchtown Twp	Moosehead Junction Twp	T5 R17 WELS	
TB R11 WELS	Kineo Twp	T4 R17 WELS	
TB R10 WELS	T10 R14 WELS	T4 R5 NBKP	
T10 R12 WELS	Spencer Bay Twp	Alder Brook Twp	
Bowdoin College Grant East Twp	T10 R15 WELS	Plymouth Twp	
T4 R10 WELS	T8 R14 WELS	T9 R18 WELS	
TA R10 WELS	Eagle Lake Twp	Saint John Twp	
T9 R9 WELS	East Middlesex Canal Grant Twp	Seboomook Twp	
T1 R10 WELS	T10 R13 WELS		
T1 R11 WELS	T3 R12 WELS		
T1 R12 WELS			
T1 R13 WELS			
T9 R11 WELS			
T2 R12 WELS			
T4 R11 WELS			
T2 R10 WELS			
T1 R13 WELS			
T9 R11 WELS			
T2 R12 WELS			
T4 R11 WELS			
T2 R10 WELS			

Current Situation

Housing Supply

There were 6,124 units of housing in the housing market for the Housing Impact Area in 2000, according to the Census. Jackman and Greenville accounted for 32 percent of those units, with the remainder more dispersed. Occupied housing was heavily concentrated in the service centers of Jackman and Greenville, where 62 percent of the occupied units are located. Seasonal housing accounted for 4,146 units, or 68 percent of the total housing units in the entire Housing Impact Area, but there is a sharp difference between the proportion of seasonal units in the Unorganized Territory and the organized towns (86% for the former and 41% for the latter). Jackman and Greenville account for only 17 percent of the total seasonal units.

Most concentrations of housing are found in Greenville and Jackman, in traditional village areas and in shoreland areas. Newer housing tends to be placed in outlying shoreland areas at lower densities.

Table 2-2: Impact Area Housing Summary in 2000

Geography	Total Units	Total Units-Town	Total Units-UT	Total Seasonal	Total Seasonal-Town	Total Seasonal-UT	Total House-holds	Total House-holds Town	Total House-holds UT	Total Population
Greenville	1,378	1,378		524	524		731	731		1,623
Jackman	585	585		193	193		310	310		718
Beaver Cove	224	224		173	173		46	46		91
N.W. Piscataquis UT	982		982	895		895	80		80	159
N.E. Piscataquis UT	1,214		1,214	1,037		1,037	157		157	347
N.E. Somerset UT	1,062		1,062	881		881	165		165	354
Seboomook Lake UT	368		368	315		315	22		22	45
Shirley	189	189		95	95		81	81		183
Moose River	122	122		33	33		81	81		219
Impact Area[1]	**6,124**	**2,498**	**3,626**	**4,146**	**1,018**	**3,128**	**1,673**	**1,249**	**424**	**3,739**
Piscataquis County	13,783			5,512			7,278			17,235
Somerset County	28,222			5,906			20,496			50,888
Maine	651,901			101,470			518,200			1,274,923

Source: Census
Note: Greenville Housing Market: Greenville, Beaver Cover, Northwest Piscataquis Unorganized Territories, Shirley, and Seboomook Lake Unorganized Territories

Population

Year-round population dramatically declined in the service centers of Greenville and Jackman between 1980 and 2000, with a population loss of 501 during that time (a 17.6-percent decline). Population growth in the unorganized territories within the Housing Impact Area has increased, growing from 753 people in 1990 to 905 people in 2000 (a 20.2 percent increase). In 2000, Jackman and Greenville still represent nearly 63 percent of the total population in the Housing Impact Area, despite a trend toward higher rates of housing formation in the Unorganized Territories.

Table 2-3: Population Change

Geography	1980	1990	2000	2004 estimated	Average Annual Change
Greenville	1,839	1,884	1,623	1,692	-.33%
Jackman	1,003	920	718	718	-1.1%
Beaver Cove	56	104	91	91	2.6%
N.W. Piscataquis UT*	No data	141	159	159	.91%
N.E. Piscataquis UT*	No data	216	347	347	4.3%
N.E. Somerset UT*	No data	377	354	356	-.40%
Seboomook Lake UT*	No data	19	45	45	9.7%
Shirley	242	271	183	198	-.75%
Moose River	252	233	219	219	.54%
Impact Area	**3,392 (Incomplete)**	**4,165**	**3,739**	**3,825**	**-.58%**
Piscataquis County	17,634	18,653	17,235	17,525	0.0%
Somerset County	45,028	49,767	50,888	51,584	0.6%
Maine	1,124,660	1,227,928	1,274,923	1,317,253	0.7%

* based on 1990-2004 data only
Source: Census

Population decline in Greenville, Jackman, and in Piscataquis County is due mainly to the out-migration of residents, rather than through natural change (births and deaths). In Somerset County, modest population growth has been due, on average, to natural increase, not in-migration.

Table 2-4: Migration and Population Change

Geography	1990-2000			
	Births	Deaths	Natural Change	Net Migration
Greenville	213	297	-84	-177
Jackman	157	113	+44	-246
Somerset County	6,615	5,389	1,226	-105
State of Maine	161,751	128,399	33,352	13,643

Source: Maine Department of Human Services, U.S. Census

Commuting Patterns

More people are working outside of their town of residence than have done so in the past. Thus, while the number of commuters decreased by 6.4 percent, the number of workers living and working in the Town of Greenville, for example, declined by over 12 percent between 1990 and 2000. The Town of Jackman shows similar patterns, with an even more dramatic decline in the percentage of workers residing and working in that Town between 1990 and 2000. The percentage of workers living in Jackman declined from 82.8 percent to 64.7 percent during that same period. Presumably, a slower local economy is forcing more workers to commute outside of town to work. This would indicate that some workers would choose to work locally if jobs were available, as opposed to their relatively long commutes to employment in adjacent job centers.

Table 2-5: Commuting Patterns

Category	Year	Greenville		Piscataquis County		Somerset County		Jackman	
Total Commuters	1990	761	100%	7,373	100%	21,105	100%	378	100%
Work and Reside in Same Town		644	84.6%					313	82.8%
Work in County of Residence		700	92.0%	6078	82.4%	14,990	71%	375	99.2%
Work in Other Maine County		55	7.2%	1220	16.5%	5,968	28.3%	3	.79%
Work in Other State		6	.8%	75	15%	147	0.7%	0	0%
Total Commuters	2000	712	100%	7115	100%	22,767	100%	338	100%
Work and Reside in Same Town		565	79.4%	na	na	na	na	219	64.7%
Work in County of Residence		650	91.3%	5367	75.4%	14,937	65.6%	324	95.8%
Work in Other Maine County		60	8.4%	1670	23.5%	7,592	33.3%	8	2.3%
Work in Other State		2	0.3%	78	1.1%	238	1%	6	1.7%

Source: U.S. Census

Household Size and Median Age

Household size has decreased at the municipal, county and state levels due to more retiree, single-person and single-parent households. The median age of residents increased at all levels in the Housing Impact Area due to the influx of retirees and reduced numbers of resident births in Piscataquis County. This trend toward smaller household size, along with the increase in seasonal housing, has helped sustain housing demand, despite the loss in year-round population.

Table 2-6: Households

Geography	Number of Households			Persons Per Household			Median Age		
	1990	2000	Change	1990	2000	Change	1990	2000	Change
Greenville	794	731	-7.9%	2.33	2.19	-6%	38.2	43.2	13.1%
Jackman	371	310	-16.4%	3.10	2.25	-27.4%	34.8	39.6	13.7%
Beaver Cove	44	46	4.5%	2.55	1.98	-22.3%	42.5	53.5	25.8%
N.E Piscataquis UT	94	157	67.0%	2.95	2.21	-25%	37.9	46.5	22.6%
N.W. Piscataquis UT	62	80	29.0%	2.54	1.99	-21%	41.1	46.8	13.8%
Seboomook Lake UT	9	22	144.4%	3.20	2.05	-35.9%	41.9	49.5	18.1%
N.E. Somerset UT	157	165	5.1%	2.40	2.15	-10.4%	40.6	44.2	8.9%
Shirley	102	81	-20.6%	3.20	2.26	-29.3%	35.1	42.5	21.1%
Moose River	86	81	-5.8%	3.13	2.46	-21.4%	32.2	42.5	32.1%
Impact Area*	**1,719**	**1,673**	**-2.7%**	**2.82**	**2.17**	**-23.0%**	**37.3**	**43.3**	**16.6%**
Piscataquis County	7,194	7,278	1.2%	2.56	2.34	-8.6%	36.5	42.1	15.3%
Somerset County	18,513	20,496	10.7%	2.65	2.44	-7.9%	33.8	38.9	15.1%
Maine (State)	46,5312	518,200	11.4%	2.56	2.39	-6.6%	33.9	38.6	13.9%

*Weighted Average
Source: Census

The median age of the population has increased at rates comparable to the State, although some communities have seen a more dramatic increase in the median age of their population. Furthermore, the median age of many of the communities in the Housing Impact Area is often greater than the State average. This indicates that the population is aging, due to the departure of younger residents and the immigration of retirees into the area. The aging population is causing increased concern among Greenville officials and business owners about the future of the area's workforce.[2]

Housing Growth

Housing unit growth from 1980 through 2000 increased at a slightly greater rate in Greenville than in Piscataquis County and the State as a whole, despite the lack of population growth in Greenville. The increase in housing units and declining population in many locations, as noted below, indicates that much of the newly constructed housing is used seasonally and not occupied by year-round residents. This is demonstrated in Tables 2-7 and 2-8.

Housing unit permits issued from 2000 to 2004 averaged 18.6 permits on an annual basis for Greenville, 67.4 for Piscataquis County and 97.8 for Somerset County. This pattern demonstrates the attraction of Greenville (and the greater area) to the overall housing market in the area. During this period, Greenville alone accounted for nearly 27 percent of total housing starts recorded in Piscataquis County.

[2] See "Greenville at the Crossroads: The Dire Need to Grow Our Population and To Enrich Our Community; An Unsolicited Analysis and Proposal Prepared by Town Manager John Simko;" Prepared March 17, 2002, Updated April 12, 2002.

Table 2-7: Household Units and Building Permits

Geography	Total Housing Units					Building Permits 2000-2004			
	1980	1990	2000	Total Growth	Annual Avg.	Single Family	Multi-family	Total	Annual Avg.
Greenville	1,044	1,317	1,378	32.0%	1.6%	91	2	93	18.6
Jackman	493	526	585	18.7%	0.9%	No Data	No Data	No Data	No Data
Beaver Cove	124	218	224	80.6%	4.0%	No Data	No Data	No Data	No Data
*N.W Piscataquis UT	No Data	903	982	8.7%	0.9%	No Data	No Data	No Data	No Data
*N.E. Piscataquis UT	No Data	1,260	1,214	-3.7%	-0.4%	No Data	No Data	No Data	No Data
*Seboomook Lake UT	No Data	195	368	88.7%	8.9%	No Data	No Data	No Data	No Data
*N.E. Somerset UT	No Data	972	1,062	-9.3%	.93%	No Data	No Data	No Data	No Data
Shirley	136	170	189	39.0%	1.9%	18	0	18	3.6
Moose River	119	134	122	2.5%	0.1%	No Data	No Data	No Data	No Data
***Impact Area**	**1,916 (incomplete)**	**5,695**	**6,124**	**7.5%**	**.75**	--	--	--	--
Piscataquis County	10,731	13,194	13,783	28.4%	1.4%	335	2	337	67.4
Somerset County	20,890	24,927	28,222	35.1%	1.8%	473	16	489	97.8
State of Maine	501,093	587,045	651,901	30.1%	1.5%	33,819	3123	36,942	7,388.4

* based on 1990-2000 data
Source: Census (100 Percent Data), U.S. Department of Housing, Percents Rounded

Housing Occupancy and Change

In the context of flat population growth, decreasing household size, and an increasing proportion of the available housing used seasonally, trends in future occupancy can be anticipated. As noted earlier, household occupancy rates have declined in Greenville between 1990 and 2000. Most of this decline was felt in the rental market, as the number of rental occupied units declined from 265 to 224, a decline of 15 percent. In Jackman, there was a similar loss of rental units, declining from 109 in 1990 to 88 in 2000 (a 19 percent decline). Across the Housing Impact Area, rentals declined from 456 to 429 (5.9 percent), while owner occupied units declined by 19 households. At the same time, the number of vacant rental units (for rent) increased from 53 to 109 units. Most of these vacancies were in Greenville and Jackman, as vacancies grew from 42 in 1990 to 93 in 2000.

During a period of escalating real estate prices, this decline (in the absence of major economic changes) would indicate that rental units are becoming less affordable. However, a flat economy, net nominal job creation caused by the loss of a major lumber mill in the early 1990's, and a generally flat tourism economy also reduced pressures on the rental market. As real estate prices escalate, the conversion of rental units to year round units is also an issue. This trend was noted in the Greenville Comprehensive Plan in 1999 and is likely to have accelerated since then.

Seasonal housing in Greenville grew rather dramatically between 1990 and 2000, increasing by 104 units from 420 to 524 units during this period. Since the total number of housing units grew by only 61 units during this period, much of the growth in seasonal housing is due to the conversion of occupied, owner or renter housing. Across the Housing Impact Area, seasonal housing grew from 3,752 to 4,146, an increase of 10.5 percent. Vacant units not otherwise used seasonally or in transition between occupants increased between 1990 and 2000 by 125 percent, representing 70 units. This would indicate a declining housing market, as this category includes abandoned housing. Given the increase in real estate values over the past 6 years, however, many of these formerly vacant properties can be assumed to be more fully utilized, although we have also heard anecdotally that some of these units were and continue to be vacant as their

owners seek employment outside the area and leave their residence empty. Finally, it should also be noted that among the 305 units of vacant housing not classified as seasonal in the Impact Area, Jackman and Greenville account for 205, or 67 percent of this figure.

Vacancy rates, as determined through the US Census and indicated in Table 2-8, are somewhat suspect in the Impact Area. Census takers are likely to record a seasonal unit with a 'for sale/for rent' sign as such, and not account for the fact that it may be seasonal. This has the effect of driving the vacancy rates higher than it would show otherwise.[3] This measure only reflects occupied/year round units.[4] However, to the extent that we can make inferences from vacancy rates the following points emerge:

- Rental vacancy rates in Greenville and Jackman, the prime locations for rental housing, are high, 18.8 percent and 31.8 percent, respectively, compared to 7 percent for the State in 2000. As noted earlier, it is likely that some of these units listed as 'for rent' are actually seasonal units that are for rent only a portion of the year and should not be counted. The seasonal nature of the housing market and the poor economy are also contributing factors.
- Both Greenville and Jackman had a homeowner vacancy rate nearly two to four times the state average, 3.2 percent and 6.3 percent, respectively, compared to 1.7 percent for the State, indicating a somewhat weak housing market.
- Within the Unorganized Territories there was also a somewhat lower homeowner vacancy rate of 3.6 percent, and the renter vacancy rate was 12 percent.

Table 2-8: Housing Occupancy and Vacancy in 2000

Geography	Total Housing Units	Occupied			Homeowner* Vacancy Rate	Renter* Vacancy Rate
		Owner	Renter	Total Occupied		
Greenville	1,378	507	224	731	3.2	18.8
Beaver Cove	224	40	6	46	4.8	25.0
Shirley	189	74	7	81	3.9	12.5
N.W. Piscataquis UT	982	57	23	80	1.7	4.2
N.E. Piscataquis UT	1,214	137	20	157	2.1	4.8
Jackman	585	222	88	310	6.3	31.8
Moose River	122	70	11	81	2.8	0.0
Seboomook Lake UT	368	15	7	22	16.7	50.0
N.E. Somerset UT	1,062	122	43	165	3.9	8.5
Impact Area	**6,124**	**1,244**	**429**	**1,673**	**2.7**	**11.7**
Piscataquis County	13,783	5,789	1,489	7,278	4.0	13.6
Somerset County	28,222	15,952	4,544	20,496	2.9	11.4
State of Maine	651,901	370,905	147,295	518,200	1.7	7.0

[3] Also note that even seasonal rental vacancy rates will tend to be inflated due to the census counts being taken during the mud season.

[4] In addition, the vacancy rates would seem to contradict the current high demand for seasonal housing in the Plum Creek Plan Area. However, the current seasonal market prefers a higher quality housing than is currently available in this region, which may explain the higher rates.

*Homeowner vacancy = for sale only/(for sale only + owner occupied). Rental Vacancy = for rent/(for rent + renter occupied)

Source: Census

Table 2-9: Vacant Housing Units in 2000

Geography	For Rent	For sale only	Rented or sold not occupied	For Seasonal, Recreational or Occasional Use	For Migrant Workers	Other Vacant	Total Vacant Units
Greenville	52	17	6	524	1	47	647
Beaver Cove	2	2	0	173	0	1	178
Shirley	1	3	1	95	0	8	108
N.W. Piscataquis UT	1	1	0	895	1	4	902
N.E. Piscataquis UT	1	3	1	1,037	0	15	1,057
Jackman	41	15	4	193	3	19	275
Moose River	0	2	0	33	0	6	41
Seboomook Lake UT	7	3	0	315	0	21	346
N.E. Somerset UT	4	5	2	881	0	5	897
Impact Area	**109**	**51**	**14**	**4,146**	**5**	**126**	**4,451**
Piscataquis County	234	244	73	5,512	3	8	6,505
Somerset County	587	476	191	5,906	8	558	7,726
State of Maine	11,153	6,249	3,569	101,470	70	11,190	133,701

Source: Census

Table 2-10: Housing Occupancy and Vacancy in 1990

Geography	Total Housing Units	Occupied			Homeowner* Vacancy Rate	Renter* Vacancy Rate
		Owner	Renter	Total Occupied		
Greenville	1317	529	265	794	6.21	10.17
Beaver Cove	218	40	4	44	0.00	0.00
Shirley	170	92	10	102	4.17	23.08
N.W. Piscataquis UT	903	46	16	62	2.13	5.88
N.E. Piscataquis UT	1260	89	5	94	4.30	0.00
Jackman	526	262	109	371	1.13	9.92
Moose River	134	74	12	86	3.90	14.29
Seboomook Lake UT	195	2	7	9	0.00	0.00
N.E. Somerset UT	972	129	28	157	2.27	15.15
Impact Area	**5695**	**1263**	**456**	**1719**	**4.03**	**10.41**
Piscataquis County	13194	5654	1540	7194	2.80	10.31
Somerset County	24927	14513	4210	18513	1.40	7.49
State of Maine	587045	327888	137424	465312	1.77	8.41

*Homeowner vacancy=for sale only/(for sale only + owner occupied). Rental Vacancy=for rent/(for rent + renter occupied)

Source: Census

Table 2-11: Vacant Housing Units in 1990

Geography	For Rent	For sale only	Rented or sold not occupied	For seasonal, Recreation or occasional use	For Migrant Workers	Other Vacant	Total Vacant Units
Greenville	30	35	17	420	0	21	523
Beaver Cove	0	0	0	170	0	4	174
Shirley	3	4	2	51	0	8	68
N.W. Piscataquis UT	1	1	0	837	1	1	841
N.E. Piscataquis UT	0	4	0	1,146	7	9	1,166
Jackman	12	3	9	122	4	5	155
Moose River	2	3	1	40	0	2	48
Seboomook Lake UT	0	0	0	162	21	3	186
N.E. Somerset UT	5	3	0	804	0	3	815
Impact Area	**53**	**53**	**29**	**3,752**	**33**	**56**	**3,976**
Piscataquis County	177	163	86	5,293	13	268	6,000
Somerset County	341	206	183	4,663	29	992	6,414
State of Maine	12,622	5,911	3,564	88,039	167	11,430	121,733

Source: Census

Between 1990 and 2000, the number of vacant houses (excluding seasonal housing) increased from 224 to 305. This indicates a softening of the housing market during this period, as there was more housing for rent or sale in 2000. This situation has changed in the past five years as housing prices have escalated. However, the dynamics of the market are shifting. As more housing becomes seasonal, some second-home buyers may choose to rent their properties to help pay the mortgage. This can translate into added pressure on the rental market, and may be one reason that the number of units 'for rent' (i.e. currently vacant) increased from 53 in 1990 to 109 in 2000 despite an overall decrease in rental units. A lackluster economy also likely contributed to this increase in rentals during this period.

Age of Housing

The age of housing can often be an indicator of quality. In Greenville, nearly 38 percent of the housing is pre-1939, while in Jackman this figure is over 29 percent. Nearly 40 percent of the housing stock in Piscataquis County predates 1939. Table 2-12, below, shows the housing age for various periods and areas in the region.

Table 2-12: Age of Housing in 2000

Geography / Built	Before 1939	1940-1959	1960-1969	1970-1979	1980-1989	1990-2000	Median Year Built	
							All Housing (Occupied & Vacant)	Total Occupied Housing
Greenville	37.9%	14.1%	4.6%	19.5%	15.1%	8.7%	1966	1957
Greenville HM	34.3%	14.5%	6.2%	14.6%	16.3%	14.1%	-	-
Jackman	29.4%	11.6%	8.8%	18.0%	13.0%	19.2%	1970	1961

Geography / Built	Before 1939	1940-1959	1960-1969	1970-1979	1980-1989	1990-2000	Median Year Built	
							All Housing (Occupied & Vacant)	Total Occupied Housing
Piscataquis County	39.6%	9.9%	6.7%	16.0%	16.0%	11.8%	1966	1961
Somerset County	30.4%	12.8%	7.4%	16.7%	16.6%	16.2%	1969	1969
State of Maine	29.3%	14.5%	8.4%	16.8%	16.5%	14.5%	1966	1967

Source: U.S. Census, Percents Rounded

Type of Housing

The distribution of housing unit types is an important indicator of affordability, density and the character of the community. Housing units in structures are presented in the next table. The vast majority of units are in single unit configurations. Nearly 70 percent of housing occupancy within the Town of Greenville occurs within single unit buildings. A similar percentage could be expected for Jackman, while the unorganized territories are probably more similar to the county percentages, which are dominated by single-family and mobile homes.

Table 2-13: Occupied Housing Unit Types in 2000

Subject	Greenville		Piscataquis County		Somerset County		Maine	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
1-unit, detached	508	69.3%	5,550	76.3%	13,594	66.3%	335,598	64.8%
1-unit, attached	13	1.8%	58	0.8%	164	0.8%	11,704	2.3%
2 units	24	3.3%	174	2.4%	1,033	5.0%	32,456	6.3%
3 or 4 units	58	7.9%	356	4.9%	831	4.1%	33,693	6.5%
5 to 9 units	44	6.0%	127	1.7%	547	2.7%	23,937	4.6%
10 to 19 units	3	0.4%	14	0.2%	63	0.3%	9,252	1.8%
20 or more units	29	4.0	176	2.4%	198	1.0%	15,668	3.0%
Mobile home	54	7.4%	823	11.3%	4,054	19.8%	55,684	10.7%
Boat, RV, van, etc.	0	0.0%	0	0.0%	12	0.1%	208	0.0%
Total Occupied Housing Units	**733**	**100%**	**7,278**	**100%**	**20,496**	**100%**	**518,200**	**100%**

Source: Census, Percents Rounded

The Economy

The economy in the Housing Impact Area is flat, and in many respects declining. During the last ten to twenty years there has been a significant decline in manufacturing and related jobs in the woods industry. Unemployment rates over this period have risen dramatically in response to major layoffs, and spiked regularly with the seasonal economy. Between 1990 and 2000 the Town of Greenville civilian labor force lost 167 workers, according to the U.S. Census Bureau.

The Town of Jackman is considered part of the Skowhegan Labor Market Area (thereby obscuring the numbers for Jackman). Prior to 2003, the Town of Greenville was the service center for the Greenville Labor Market Area. The geography for labor market areas is determined by the amount of commuting that is contained within a given area, providing evidence that historically the Greenville area was able to sustain much of its resident's work within the immediate area. A change was recognized in 2003, however, in response to an increasing percentage of workers commuting beyond the greater Greenville area for work, such that today the Town of Greenville and surrounding areas are considered part of the Dover-Foxcroft Labor Market Area.

The table below indicates the change in employment among key industry sectors between 1998 and 2002 for the Greenville Labor Market Labor Market Area. These numbers, although three years old, provide a better indication of employment opportunities existing within the Housing Impact Area for the reasons noted above. Unfortunately, many of the industry numbers for 2002 are "protected" and therefore not available. This occurs where there is only one employer accounting for the industry number.

Table 2-14: Change in Employment, 1998-2002, Greenville Labor Market Area (LMA)

GREENVILLE LMA		
	1998	**2002**
Lumber and Wood	70	na
Construction	20	40
Wholesale Trade	40	na
Retail Trade	280	280
Accommodation and Food	190	180
Finance, Insurance, Real Est.	30	30
Health Services	120	na
Total Non-farm wage and salary	830	910

Source: Maine Statistical Handbook

The employment figures in the Table above illustrate the dominance of the tourism industries (accommodation and food) and health services. Collectively, these two industries account for nearly 37 percent of employment in 1998 and probably greater in 2002. Retail, another industry dependent upon tourism, provided another 280 jobs in 2002.

Unemployment rates have generally exceeded the State average for the Greenville LMA and the Town of Jackman. Following is a Table showing the annual average civilian labor force and unemployment rate for the most recent five-year period for which data is available.

Table 2-15: Civilian Employment, 1999-2004

Geography	Civilian Labor Force	Unemployed	
		Number	Percent
2004			
Greenville LMA	NA	NA	NA
Dover-Foxcroft LMA	9,130	640	7.0%
Skowhegan LMA	14,840	1,130	7.6%
Piscataquis County	7,270	510	6.9%
Somerset County	24,270	1,830	7.6%
State of Maine	699,000	32,000	4.6%
2003			
Greenville LMA	1,000	80	8.3%
Dover-Foxcroft LMA	9,530	760	7.9%
Skowhegan LMA	14,780	1,220	8.3%
Piscataquis County	7,580	600	7.9%
Somerset County	24,960	1,960	7.8%
State of Maine	694,300	34,700	5.0%
2002			
Greenville LMA	1,070	70	6.5%
Dover-Foxcroft LMA	9,600	760	7.9%
Skowhegan LMA	14,710	1,070	7.3%
Piscataquis County	7,580	530	7.0%
Somerset County	24,800	1,770	7.1%
State of Maine	684,700	30,200	4.4%
2001			
Greenville LMA	1,010	70	6.7%
Dover-Foxcroft LMA	9,960	580	5.8%
Skowhegan LMA	14,660	910	6.2%
Piscataquis County	7,910	460	5.8%
Somerset County	24,710	1,510	6.1%
State of Maine	676,300	26,300	3.9%
2000			
Greenville LMA	980	60	6.5%
Dover-Foxcroft LMA	9,960	520	5.2%
Skowhegan LMA	14,990	750	5.0%
Piscataquis County	7,940	430	5.4%
Somerset County	25,170	1,230	4.9%
State of Maine	674,400	23,200	3.4%
1999			
Greenville LMA	890	70	8.0%
Dover-Foxcroft LMA	7,310	510	6.9%
Skowhegan LMA	16,910	1240	7.3%
Piscataquis County	8,320	590	7.1%
Somerset County	25,960	1,920	7.4%
State of Maine	672,000	27,500	4.1%

Source: Maine Department of Labor

The Dover-Foxcroft (Labor Market Area) LMA includes Abbott, Atkinson, Beaver Cove, Blanchard unorganized, Bowerbank, Brownville, Cambridge, Dexter, Dover-Foxcroft, Greenville, Guilford, Lake View Plantation, Medford, Milo, Monson, Northwest Piscataquis unorganized, Parkman, Ripley, Sangerville, Sebec, Shirley, Southeast Piscataquis unorganized, and Willimantic. As noted above, prior to 2004 the Greenville LMA was a separate labor market area. In 2004, it was combined with the Dover-Foxcroft LMA, when this LMA was enlarged presumably because of changing employment/commuting patterns. (This change would support the assumption that workers from the Dover-Foxcroft area will commute to the Greenville area, and vice versa).

The former Greenville LMA was among the smallest in the State. Unemployment generally has been in the 60-80 person range, although underemployment was probably much greater.

Affordability

Measures of housing affordability are readily available for the Greenville Housing Market, and are described below. Other areas within the Housing Impact Area and nearby Jackman are combined with larger geographic areas (larger than the Impact or Rezoning Plan Areas), and thus are not readily applicable to this study. An estimated 416 households (42.4 percent of all Greenville Housing Market households) earn less than 80 percent of the median family income, according to the Maine State Housing Authority. See Table 2-16, below.

Table 2-16: Area Median Family Income
Adjusted for Household Size – Renter and Homeowner in 2004

Income Group	% of Median Family Income (up to)	Greenville Housing Market Households		
		Number	Percent of Households	Income (up to)
Extremely Low	30%	136	13.8%	$10,414
Very Low	50%	115	11.8%	$17,356
Low	80%	165	16.8%	$27,769
Median	100%	-	-	$34,712
Moderate	150%	293	29.8%	$52,068

Source: Claritas

Table 2-17 provides figures for renter households in Piscataquis and Somerset Counties. In 2004, roughly half of all renter households could not afford the average rent, even though rent and utility costs were significantly lower than in Maine as a whole.

Table 2-17: Renter Households That Can't Afford Average 2-Bedroom Rent in 2004

Geography	Can't Afford	Households Can't Afford	Households Total	Rent (with utilities)	Income Needed
Piscataquis County	54.2%	819	1,510	$576	$23,022
Somerset County	49.4%	2,290	4,633	$574	$22,951
State of Maine	61.0%	93,078	152,551	$841	$33,639
Source: 2004 Claritas and MSHA Quarterly Rental Survey					

The Greenville Housing Market has an undersupply of 43 units for families needing rental housing, and an oversupply of 26 units for seniors. Housing need is defined as the difference between total subsidized or affordable housing units and Section 8 vouchers available, subtracted from the count of renters at 50 percent of the Household Area Median Income (AMI). For a complete breakdown of subsidized or affordable units and Section 8 vouchers used in this summary see Table 2-19.

Table 2-18: Rental Housing Needs for Households at 50% AMI

Greenville Housing Market 2004 Rental Housing Needs Summary	Families	Seniors (65 +)
Number of Renter Households @ 50% AMI	65	43
Number of Subsidized Units Available	22	69
Project Based	20	68
Non-Project Based (Section 8 Vouchers)	2	1
Number of Affordable Rental Units Needed	43	-26
Indicated Unmet Need %	66.0%	0.0%
Source: 2004 Claritas and HUD, MSHA, Rural Development and local housing authorities		

The United States Department of Housing and Urban Development (HUD) is the primary federal agency concerned with affordable housing. Rural Development (RD), formerly Farmers Home Administration (FmHA), part of the United States Department of Agriculture (USDA), also deals with affordable housing. The Maine State Housing Authority (MSHA) and Maine DECD are State resources for affordable housing. They administer the following: Rental Loan Program, Section 8, SHARP, supportive housing, vouchers, and single/multi-family rehabilitation, home purchase, and home down payment.

Subsidized units are built with state or federal monies for the express purpose of providing housing to lower income individuals and families. A housing project or development may consist entirely of subsidized units, or the project may have mixed uses. Subsidized units are typically available to individuals below certain income guidelines, and residents are expected to pay a

fixed percentage of their income as rent. Table 2-19 provides an overview of subsidized housing for the Greenville Housing Market in 2004.

Table 2-19: Greenville Housing Market Subsidized Housing 2004

Type	Sponsor	Total	Total Rent Assisted	Family	Family Rent Assisted	Elderly	Elderly Rent Assisted	Disabled	Disabled Rent Assisted	Special Needs	Special Needs Rent Assisted	Market
Project Based	HUD/MSHA	40	40	20	20	20	20	0	0	0	0	0
	RD	64	48	0	0	64	48	0	0	0	0	16
	Total	104	88	20	20	84	68	0	0	0	0	16
Sec 8 Vouchers	MSHA	3	3	1	1	1	1	1	1	0	0	0
All	Total	107	91	21	21	85	69	1	1	0	0	16

Source: MSHA, 2004

Jackman, Moose River, Northeast Somerset UT, and Rockwood are part of the Skowhegan Housing Market. This housing market stretches all the way to Skowhegan, Madison, and Norridgewock, making the aggregated information not particularly useful to this study. Jackman, however, has a subsidized 16-unit property funded by Rural Development to serve the elderly market.

Homeownership Costs and Affordability

Table 2-20 shows the percentage of the median-priced home that can be afforded by the median income households for various geographies within the Housing Impact Area. For example, a household in Greenville earning the median salary of $34,512 could afford a house that costs 111 percent of the median priced home. In Piscataquis and Somerset Counties, the median income earner can afford the median home sale price, and this is true in the Skowhegan Housing Market area as well, where the affordability index was 1.27 in 2003.

According to this approach, a household earning the median income can more than afford the median priced home. Within the State of Maine, the poorer 'Rim' communities generally show the most affordability, because housing prices are low enough to make them reasonably affordable to those with an income. However, many workers are forced to leave these areas due to a lack of income. Further, despite the relative affordability of homes in this region, many households earn employment income in industry sectors where the wages are generally below the median income. Thus, determining 'affordability' is ultimately a challenge of matching household incomes with available housing in the price range that allows a household to keep the cost of a mortgage (principle and interest) and taxes below 30 percent of their income.

Table 2-20: 2004 Housing Affordability

Geography	Index	Est. Median Income*	Home Price Median Income Can Afford	Actual Median Home Price	Annual Income Needed to Afford
Greenville	1.11	$34,512	$96,624	$87,000	$31,075
Greenville HM	1.04	$34,712	$101,379	$97,500	$33,384
Piscataquis County	1.29	$30,750	$89,476	$69,450	$23,868
Somerset County	1.24	$33,702	$97,694	$78,500	$27,080
Maine	0.73	$41,929	$122,310	$168,000	$57,592

Note: An Index of less than 1 is Unaffordable; an Index of more than 1 is Affordable.
*Estimated Median Income of those who earn an income, not the Median Household Income.
Source: MSHA

To provide another perspective on affordability, we looked at the ability of various industry wages to afford the median priced single-family home. This analysis has the advantage of showing how well local wages support home buying in the Housing Impact Area. This approach allows us to see affordability in direct comparison to wages, providing a good benchmark for "workforce housing," i.e., housing that is affordable to working people at various industry wages.

Table 2-22 shows wage earning employment by industry for the Dover-Foxcroft LMA. It also provides a good indication of the relative contribution each industry makes to wages. As expected, manufacturing is among the higher-paying industries, while accommodation and food is among the lower-paying.

Table 2-21: Industry Employment and Wages

Greenville* Labor Market Area	Covered Employment (2004)		Average Annual Wage (2004)
Goods-Producing			
Natural Resources & Mining	140	15.6%	$26,416
Construction	40	4.4%	$22,412
Manufacturing	*	-	$28,028
Service-Providing			
Trade, Transportation & Utilities	200	22.2%	$19,916
Information	*	-	$37,804
Financial Activities	30	3.3%	$22,100
Professional & Business Services	20	2.2%	$18,460
Education & Health Services	*	-	$20,488
Leisure & Hospitality			
Accommodation and Food	170	18.9%	$10,452

Greenville* Labor Market Area	Covered Employment (2004)		Average Annual Wage (2004)
Other Services & Unclassified	50	5.6%	$16,484
Government			
State Government	10	1.1%	$40,560
Local Government	110	12.2%	$25,844
Total (includes sectors not listed or quantified above)	900	100.0%	$23,036

Source: Maine Statistical Handbook (2004)
Data Set: Table 3C - Average Annual Covered Employment by Labor Market Area, by Industry, 2004. *Covered employment is for the Greenville Labor Market area. Wages are for the entire Piscataquis County.

Table 2-22 indicates each industry's ability to contribute toward its workers reaching housing affordability. A general rule is that a worker can afford a house costing 2.7 times his or her annual wage. The last two columns in Table 2-22 show how much house they could afford if there were 1 worker and 1.5 workers earning the industry wage. For example, 1 worker in the natural resources and mining industry earning the average industry wage of $26,416 could afford a house costing $71,323. A household with 1.5 workers in the natural resources and mining industry could afford a house costing $106,985. In 2004, the median house in the Greenville Housing Market cost $101,379.

The data in Table 2-22 shows that the majority of industries do not provide enough wages, on average, even with 1.5 workers to support a purchase of the median price home. Practically speaking, most households will have close to 2 workers and they may not be in the same industry. Affordability will ultimately depend upon the number of workers in the household, the wages (and industry) they work in, and the ability of the household workers to earn a premium over the average wage due to experience, skill, or some other factor.

Table 2-22 Industry Employment and Wages

Dover-Foxcroft Labor Market Area	Covered Employment (2004)		Average Annual Wage (2004)	2.7 times annual wage with 1 worker/ household - maximum affordable house price	2.7 times annual wage with 1.5 worker/ household - maximum affordable house price
Goods-Producing					
Natural Resources & Mining	140	15.6%	$26,416	$71,323	$106,985
Construction	40	4.4%	$22,412	$60,512	$90,769
Manufacturing	*	-	$28,028	$75,676	$113,513
Service-Providing					

Trade, Transportation & Utilities	200	22.2%	$19,916	$53,773	$80,660
Information	*	-	$37,804	$102,071	$153,106
Financial Activities	30	3.3%	$22,100	$59,670	$89,505
Professional & Business Services	20	2.2%	$18,460	$49,842	$74,763
Education & Health Services	*	-	$20,488	$55,318	$82,976
Leisure & Hospitality					
Accommodation and Food	170	18.9%	$10,452	$28,220	$42,331
Other Services & Unclassified	50	5.6%	$16,484	$44,507	$66,760
Government					
State Government	10	1.1%	$40,560	$109,512	$164,268
Local Government	110	12.2%	$25,844	$69,779	$104,668
Total (includes sectors not listed or quantified above)	900	100.0%	$23,036	$62,197	$93,296

Source: Maine Statistical Handbook (2004)
Data Set: Table 3C - Average Annual Covered Employment by Labor Market Area, by Industry, 2004. Covered employment is for the Greenville Labor Market area. Wages are for the entire Piscataquis County. The Dover-Foxcroft LMA (Labor Market Area) includes Abbott, Atkinson, Beaver Cove, Blanchard Unorganized, Bowerbank, Brownville, Cambridge, Dexter, Dover-Foxcroft, Greenville, Guilford, Lake View Plantation, Medford, Milo, Monson, Northwest Piscataquis Unorganized, Parkman, Ripley, Sangerville, Sebec, Shirley, Southeast Piscataquis Unorganized, and Willimantic.

Summary of Housing Inventory

The above information reflects conditions existing as of 2000, based on the US Census Bureau figures. These numbers are only as good as the Census. Greenville officials believe the Census significantly undercounted occupied and seasonal units. Notwithstanding these discrepancies, the following trends or issues are identified:

- Population is declining in the major service centers and growing outside these areas. Population grew 20 percent in the Unorganized Territories between 1990 and 2000, although the increase was only 152.
- Out-migration, presumably associated with a lack of jobs, accounted for a loss of 177 people in Greenville and 246 in Jackman over the past decade.
- Households vacated through out-migration are being replaced by seasonal residents.
- A decline in the number of people living in households is leading to more households than would be indicated by population alone.
- Recent housing trends, fueled by a strong second home market, would be expected to increase the pressure on the supply and availability of affordable housing. A large share of the housing stock that is located with amenities (views or water) is no longer affordable for the average working household.
- Overall, the supply of rental housing has declined from 456 to 429 in the region. While the service centers of Greenville and Jackman have experienced a decline of 62 units of rental housing, the balance of the area has generally gained, and shows an increase of 35 units, or 43 percent.
- Affordability issues are most pronounced among industry sectors paying less than $24,074. In these sectors, even 1.5 workers earning the average wage would not provide enough income to purchase the median priced home. These sectors include:

construction, trade/transportation/utilities, financial activities, professional and business services, education and health, accommodation and food, and other services. Collectively, these industries account for more than three-quarters of all employees in the Greenville LMA and are the likely industries to have job growth in the Plan Area.

Affordable Housing Description and Issues

Local Job Creation

The focus of this Report is on the effect the proposed Plan could have upon housing in the Housing Impact Area. The housing impact is determined by the jobs the Plan will create in the Housing Impact Area. New jobs in the region will increase the need for housing (specifically, affordable housing) in the region. The following is an outline of key issues and factors related to job creation. After this is a discussion regarding how new jobs will affect housing needs.

1. Construction Jobs – Construction jobs will materialize in at least two ways. It is assumed that the residential market will absorb 75 units per year beginning in 2008. Actual building on these lots, however, is assumed to initially be 65 units per year, as some of the lots will be held for future development and/or speculation. It is assumed that, in 2013, residential construction will increase to 75 units per year, which will be sustained until 2021. The workers to build these houses will come from the existing construction industry in the region, commuters from nearby areas, and new entrants to the regional labor pool now able to find regular work in the area. For some workers, commutes will cease or be reduced. Some workers will find temporary housing in the area, competing for rentals and housing with local residents. Others will seek permanent housing.

   After construction, there will be homeowner demands to maintain and repair these residential units that will create and/or help to sustain the increased job opportunities that resulted from housing construction in the region. Insurers, specialty construction trades, landscaping, caretaking, snowplowing and numerous other jobs will be created as homeowners maintain, improve and repair their homes. These 'permanent' workers will need housing in the area. It is assumed that most of these workers will not be purchasing lots from Plum Creek, but rather will seek more affordable alternatives.

   According to a recent study by the National Association of Home Builders, for every 100 single-family homes there are 350 jobs created for a year, 280 of which are local. This 'local' figure may be high for the Plan Area, given the somewhat limited construction company services infrastructure. This number is consistent with Dr. Charles Colgan's estimate for construction job impacts for the year 2010, although the impact area used by Dr. Colgan in his Economic Impacts Analysis covers 4 counties – Penobscot, Piscataquis, Somerset, and Kennebec. For our purposes, we have reduced the impacts projected by the NAHB to reflect the more limited construction and service infrastructure existing in the Housing Impact Area.

In addition, construction of commercial and recreational facilities will add to the demand for construction workers. These construction workers also will compete for affordable housing, but will probably mostly seek rental housing. This is because the commercial buildings will likely be constructed by a large commercial construction company. As such companies do not exist in the Plan Impact Area, it is assumed that these workers will commute to the area and/or seek temporary housing. Some construction workers will permanently locate in the area as the overall volume of activity increases and is perceived to be reaching a higher plateau of sustained activity.

The ability of the local construction industry to gear up for this new level of activity is not fully known. The Maine Department of Labor reported 40 construction workers employed in 2003 in the Greenville Labor Market Area. This number accounts for those working for wages, and working in businesses with at least one employee, as opposed to self-employed workers. Given the preponderance of self-employment in this industry, however, Census figures may provide a more reliable figure for the size of this industry. In 2000, there were 68 construction workers in Greenville and 17 in Jackman. Within Piscataquis County there were 494 construction workers in 2000, according to the Census. Pro-rating these numbers over the entire Housing Impact Area population yields a total estimate of 100-150 construction workers living in the Housing Impact Area.

If current residential building and repair in the region is sustained at current (pre-Plan) levels, those construction employees who reside in the area could be fully employed. It is assumed, however, that the pace and scale of construction in the Housing Impact Area will decline absent the Plan consistent with national trends and projections, so that a percentage of the new construction jobs resulting from the rezoning Plan will be taken by existing residents who are under- or unemployed. Further, as noted earlier, the scale and schedule for the larger commercial buildings proposed in the Plan will likely require larger construction firms, which account for only a small portion of the construction employment in the Impact Area. It is assumed that some construction workers currently residing in the Impact Area will become employed by these larger firms.

2. Commercial - Permanent jobs will be created by the tourism and recreational facilities proposed in the Plan. Recreational enhancements to hiking and snowmobile trails will attract more visitors to the region, creating more retail and service jobs, while drawing people to the area to purchase seasonal housing. Lodging services in the area will employ more workers. These numbers were adjusted to arrive at an estimate of jobs that would be created within the Housing Impact Area. Straight-line growth was assumed for the intervening years over which we estimated impacts.

3. Indirect - Additional impacts will occur in the regional housing market as a result of the indirect effects of the above activities. Thus, there will be changes (positive or negative) in regional economic activity resulting from the purchases of goods and

services within the region by the 'direct' activity' (the activities of Plum Creek) called a 'multiplier effect' (see Colgan Report at page 13). Dr. Colgan, cautions that: a) multiplier effects are often small portions of employment that is involved in supporting and supplying the construction industry in the Plan Area. Thus, workers and suppliers 'commuting' into the Plan Area will support small portions of employment in the region they return to with their paychecks; b) construction jobs are normally highly seasonal in Maine, particularly in residential construction. In addition, large construction projects in areas such as the Moosehead Lake Region attract both local and commuter populations because of the seasonal nature of the work.

4. Valuation Increases and Future Affordability – The ultimate impact upon affordable housing will depend upon a number of factors, which we are no more able to predict than those debating whether the housing stagnation or slump that has recently replaced the boom of several years in many areas will lead to further stagnation, decline or to a new gradual or significant upsurge in home sale prices. On one hand, the supply of new housing might serve to reduce price pressures on existing homes and serve to moderate the market that now exists. Conversely, the supply of new housing may serve to accelerate housing prices in the region. This could lead to increased speculation on the value of the existing housing and in-town lots, as the market presumes that land prices will accelerate. And yet there are concerns on a national basis that portions of the second home market may be overbuilt (and that owners are seeking rents to help support the mortgages that aren't sustainable). Analysis about the likelihood of such events is beyond the scope of this study.

The impact upon affordable housing from these activities depends upon a number of factors. Key, however, is the extent to which new jobs created in the area are filled by new residents to the area whom in turn seek housing. Given unemployment rates, the lack of good paying year-round jobs, and other factors, it can be expected that local residents will take a number of these jobs. At the same time, resorts often bring in top managers; and the lodging operator(s) are likely to need more people than are currently available in the region. All these activities will bring new residents to the area and impact access to affordable housing.

Housing Formation

To assess the impact of Plum Creek's Plan on housing-related activities it is necessary to estimate the net new jobs locating to the area, and then develop an estimate of housing formation resulting from these jobs. While the projections provided by Dr. Colgan are illustrative in terms of understanding job creation resulting from the Plan, they do not provide for specific impacts in the Housing Impact Area. Accordingly, an alternative analysis is provided below.

The assumptions used below are drawn from Dr. Colgan's *Economic Impact Analysis*, as well as from the National Association of Home Builders, and from a basic knowledge about the size, nature, and excess capacity of the local economy, particularly the availability of the local population to take new jobs and commute.

Many of these assumptions could be modified to reflect a range of probable effects, such as a lesser or greater number of commuters to fill jobs (and more recently the impact of fuel on the costs of commuting), a higher or lower percentage of local people filling temporary (large commercial) construction jobs, or a higher or lower job impact from the construction of residential housing. Such modifications could also take into account the growing interest in manufactured housing, and the possibility that this type of housing may account for an increasingly larger portion of new residential construction, effectively reducing the number of construction jobs. Thus, for example, if we assumed that one-third of the new housing will be manufactured, employment impacts from residential construction would be reduced by slightly less than one-third, recognizing that the installation and assembly of manufactured housing will require some construction labor, albeit significantly less than stick-built housing.

It may be desirable to consider "low" and "high" impact scenarios using liberal to conservative assumptions, and then develop a "likely" scenario. This information would allow planners to anticipate a range of impacts. At this point, in the absence of developing various scenarios, we encourage the reader to take into account the fact that these assumptions are flexible and thus, so are the resulting estimated impacts.

Table 2-23, Estimating Job Impacts, provides a methodology to:

- First, estimate job creation impacts (both temporary and permanent) from the four primary Rezoning Plan economic activities;
- Second, reduce these job impacts by: a) accounting for people already living in the Impact Area (and therefore not needing, or adding to, the affordable housing challenge), and b) people commuting into the Impact Area for jobs; and
- Third, arrive at a yearly average for the number of new jobs created.

Table 2-23, Estimating Job Impacts, and Assumptions for Table 2-23, Estimating Job Impacts, are at the end of this chapter.

Based on Table 2-23, a total of 585 net new jobs are estimated to result from the Plan in the Plan Area. This figure represents an average for the 14 years over which the Plan impacts are estimated. Assuming an estimated 1.5 workers per household, the proposed development could lead to the development of an additional 390 households. These households are in addition to the 975 built as a result of Plum Creek's proposal. In short, these 390 households are due to the ability of new jobs in the Impact Area to attract new households to the area.

The income provided by a number of these jobs will not support a household's ability to buy housing. It is difficult to use average wages, the most common measure available to us, to determine housing affordability. Also, the ability of a household to afford housing varies by the type of industry the homeowner(s) are employed in, the wages they pay, and the number of workers per household. However, based on the history of wages in the major industries affected by this project, we estimate that up to 76 percent of the households will not be able to afford housing – based on paying 30 percent or less of their household wages for housing**.** Table 2-24, below, provides an estimate of the type of jobs to be created and their associated yearly and hourly earnings. Table 2-24 also estimates the maximum housing price affordable when 1.5

workers from the same industry are in a household. These are average wage figures. Each industry will employ workers at higher salaries than the average (and lower). A major unknown is the extent to which new jobs in the area will pay above the 'average'.

A total projected impact of 390 households yields an initial estimate, therefore, of 296 units (390 x 0.76) of affordable housing that may be needed over the term of the rezoning Plan.

Table 2-24: Industry Wages and Housing Affordability

	Average Annual Wage 2004 - Dover Foxcroft LMA (#)	Annual Hourly Wage Assuming 2000 hours/year (#)	Maximum monthly Housing Cost - 1 wage earner at 30% of Income (#)	Maximum monthly Housing Cost - 1.5 wage earner at 30% of Income (#)	Maximum Affordable Housing Price with 1 Worker (#)	Maximum Affordable Housing Price with 1.5 Worker (#)
Construction (93)	22,412	11.21	560.3	840	60,512.4	90,768.6
Manufacturing (46)	28,028	14.01	700.7	1,051	75,675.6	113,513.4
Leisure and Hospitality* (177)	15,548	7.77	388.7	583	41,979.6	62,969.4
Accommodation and Food (213)	10,452	5.23	261.3	392	28,220.4	42,330.6

*assumes Knox County average annual wage

These households will need assistance to find affordable or workforce housing. Some jobs, on the other hand, will support market-rate housing, and should not place any burden on the region's ability to generate affordable housing. However, these households will impact other aspects of the community, including solid waste, schools and other services inherent with new housing formation.

For purposes of this study, an adjusted projection of 160 units of additional affordable housing is estimated, including both homeownership and rentals. This estimate includes resort employee housing, which the Plum Creek Plan indicates may be an option on the resort sites. This seems reasonable, given that the assumptions used do not account for such moderating influences as:

- The likelihood that manufactured housing will reduce the overall demand for construction workers. This could result in a reduction of 20-30 jobs, assuming that 1/3 of the housing was manufactured off-site.
- The 2000 Census found 312 vacant units in the impact area. Based on discussions, we believe this inventory of vacant housing has been reduced over the past 6 years. Nevertheless, there is likely to be a pool of housing that, due to poor economic conditions, would in large part be available for affordable housing. Housing rehabilitation funds may be needed to support occupancy in situations where the quality is poor, but this is a relatively low cost affordable housing strategy.
- A portion of the housing units built on Plum Creek land as part of the 975 residential Rezoning Plan will bring residents to the area, including students and others, who may enjoy seasonal work and who would not seek permanent housing. These workers

would reduce the demand for affordable housing, and would be a ready source of labor for the tourism industry.

- Dr. Colgan's estimate of tourism jobs does not distinguish between part-time and full-time jobs. In many cases, one worker will fill several tourism jobs. Thus, we can reduce the impact of tourism jobs upon the affordable housing market to account for this.

Summary

Access to affordable housing is likely to diminish where there is pressure on the housing stock as a result of tourism or seasonal home buyers. Such buyers are not constrained by local wages, and thus are able to drive the price of housing up based on their perception of value and experiences (often) formed in more urban markets where prices are significantly greater than prices found in the Housing Impact Area. This trend has become exacerbated over the past several years as the value of waterfront homes grew dramatically, and the price of inland homes moved in a similar direction, but not as much.

A slow and declining economy has resulted in out-migration of the population, resulting in a 10 percent decrease in the Housing Impact Area between 1990 and 2000. The Plum Creek Plan would reverse this decline, bringing an estimated 585 jobs per year to the Housing Impact Area, on average, over the period from 2008 to 2021. These jobs are expected to be apportioned among residential construction and induced effects, the large resort, the small resort and recreation and tourism jobs. The balance of jobs is due to temporary construction jobs. Additional jobs may be disbursed to neighboring areas and larger service centers (i.e. Bangor, Skowhegan, etc) where there are more services and workers.

Since job creation will fuel new home demand, the estimates of the number of new, local workers were developed after subtracting jobs anticipated to be taken by existing residents and commuters. Overall, between 2008 and 2021 we project an average of 108 jobs to be filled by existing residents. According to the 2000 Census there were 1,795 workers age 16 and over in the labor force in the Housing Impact Area, so this figure assumes that approximately 6 percent of the existing labor force will become employed as a result of this Plan. This figure would theoretically exhaust the ranks of the unemployed, but practically speaking, much of this employment would be among the underemployed, although this is a difficult number to estimate. An additional 286 jobs are projected to be filled by commuters. It may also be assumed that some of these commuters already own housing in the area, realistically reducing the number of commuters needing to travel daily to the Plan Area. We are familiar, for example, with a number of contractors who have second homes in the Greenville area and thus, will not need housing.

The growth in households is positive for the region, providing jobs and income and helping to diversify the economy, while population growth among various age cohorts will serve to create a diverse community and mitigate the trend of an aging demographic. Growth in jobs will increase demand for housing, yet many jobs will not pay a wage sufficient to attain market rate housing.

Tourism/recreation areas tend to create a demand for housing that quickly outpaces the ability of the local wage and salary structure to provide incomes that allow a family to keep housing costs

(principal, mortgage, insurance and taxes) below 30% of household income. One potential mitigating factor could come from the Concept Plan's proposed on-site resort employee housing of 150 units in Big Moose Township and 40 units in Lily Bay Township.

Affordable housing in the Moosehead Lake region, like other parts of Maine where tourism is a primary industry and economic driver, is of significant importance. Plum Creek has proposed donating 100 acres to be used in the development of affordable housing units in Greenville, Jackman and in the Greenville/Rockwood Corridor.

Table 2-23 - Estimating Job Impacts																
Residential Construction Impact																
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total 08-21	Yearly Average
Units constructed (market rate)	65	65	65	65	65	75	75	75	75	75	75	75	75	50	975	
Units constructed (affordable)			15	30	15	20	20	30	15	15					160	
Total Units Constructed	65	65	80	95	80	95	95	105	90	90	75	75	75	50	1135	
Construction Jobs	91	91	112	133	112	133	133	147	126	126	105	105	105	70		
Induced Jobs - Ripple Effect	20.8	20.8	25.6	30.4	25.6	30.4	30.4	33.6	28.8	28.8	24	24	24	16		
Ongoing Annual Effect -Occupied Units	18.2	18.2	22.4	26.6	22.4	26.6	26.6	29.4	25.2	25.2	21	21	21	14		
Less Jobs:																
(Filled Locally)	25	25	25	25	25	25	25	25	25	25	25	25	25	25		
(Filled by Commuters)	33	33	43.5	54	43.5	54	54	61	50.5	50.5	40	40	40	22.5		
Net Jobs New to Region	**72**	**72**	**91.5**	**111**	**91.5**	**111**	**111**	**124**	**104.5**	**104.5**	**85**	**85**	**85**	**52.5**		**92.89286**
Resort Development																
Big Moose Mountain Jobs																
Temporary Construction Jobs			150													
Permanent Hotel, Service, and Mgmt Jobs				245	245	245	245	245	245	245	245	245	245	245		
Less Jobs:																
(Filled Locally)				25	25	25	25	25	25	25	25	25	25	25		
(Filled by Commuters)				125	125	100	100	100	100	100	100	100	100	100		
Net Jobs New to Region	**0**	**0**	**0**	**95**	**95**	**120**	**120**	**120**	**120**	**120**	**120**	**120**	**120**	**120**		**90.71429**
Lily Bay																
Temporary Construction Jobs								75								
Permanent Hotel, Service, and Mgmt Jobs								150	150	150	150	150	150	150		
Less Jobs:																
(Filled Locally)								20	20	20	20	20	20	20		
(Filled by Commuters)								50	50	40	40	40	40	40		
Net Jobs New to Region	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**80**	**80**	**90**	**90**	**90**	**90**	**90**		**43.57143**
Tourism and Recreation Development																
Tourism and Recreation Jobs	258	485	712	702	691	681	670	616	564	512	460	408	356	355		
Less Jobs:																
(Filled Locally)	25.8	48.5	71.2	70.2	69.1	68.1	67	61.6	56.4	51.2	46	40.8	35.6	35.5		
(Filled by Commuters)	64.5	121.25	178	175.5	172.75	170.25	167.5	154	141	128	115	102	89	88.75		
Net Jobs New to Region	**167.7**	**315.25**	**462.8**	**456.3**	**449.15**	**442.65**	**435.5**	**400.4**	**366.6**	**332.8**	**299**	**265.2**	**231.4**	**230.75**		**346.8214**
Total Jobs Created	388	615	1022	1137	1096	1116	1105	1296	1139	1087	1005	953	901	850		979.2857
Less: Total Jobs Filled Locally	50.8	73.5	96.2	120.2	119.1	118.1	117	131.6	126.4	121.2	116	110.8	105.6	105.5		108.0000
: Total Commuter Jobs	97.5	154.25	221.5	354.5	341.25	324.25	321.5	432.5	341.5	318.5	295	282	269	251.25		286.0357
Net new Jobs to Region	**239.7**	**387.25**	**704.3**	**662.3**	**635.65**	**673.65**	**666.5**	**739.4**	**671.1**	**647.3**	**594**	**560.2**	**526.4**	**493.25**		**585.7857**

Assumptions for Table I, Estimating Job Impacts

a. 125 housing lots sold per year, beginning in 2008. Actual lots that proceed into construction are initially 65. After 5 years, the level of construction increases to 75/year, as the inventory of lots sold increases.
b. Affordable housing is based on projected growth in workers who are not able to afford market rate housing, and need some form of 'subsidy' or support.
c. Construction jobs are based on report prepared by the National Association of Home Builders, 'The Local Impact of Home Building in a Typical Metropolitan Area'. The NAHB estimate of 184 jobs/100 homes built was reduced to 140 jobs for the initial Phase I Impacts (which includes direct and indirect impact of the construction). A small region such as the Plan Area would likely not capture all the impacts typically associated with housing development. Thus, for example, jobs in wholesale, retail, business and professional services, and other incidental areas would more likely accrue to the regional service centers in Dover Foxcroft, Skowhegan, and Bangor.
d. An additional 32 jobs are anticipated from the induced effect of the spending in Phase I Impacts. These jobs are due to the impact of local residents who earn money from the construction activity spending part of it within the local area. NAHB estimates this impact to be 100 jobs in a typical metro area, and again we have reduced due to the large number of induced jobs that would more likely be created outside the Plan Area.
e. The ongoing annual effect from new housing will create, according to the NAHB, an additional 63 jobs per year for every 100 residential homes constructed. This number was reduced to 28 per 100 homes for the Plan Area due to the large areas small economic size and the degree to which residents are likely to travel to neighboring areas for many services.
f. A portion of the jobs are likely to be filled locally by existing residents, and therefore not impact the area with new residents, housing, and other services. We assume this number to be fairly modest in the construction industry, since most workers are probably already fully employed due to the level of current activity. This level is assumed to continue, and not be impacted by the supply of new housing resulting from the Plum Creek proposal.
g. Commuters will fill a portion of the construction jobs. This is a typical pattern in Maine, with construction workers often commuting long distances for work. This figure is somewhat moderated by the stability offered by the Plum Creek proposal in terms of a set amount of lots made available for sale. The distance of the area from other labor market areas, however, means that many of the 'nearby' commuters (within 35-50 miles) can just as easily commute to bigger labor markets in Bangor, Skowhegan, etc.
h. Total Net New Jobs is the figure that is derived after the construction jobs, induced effects, and ongoing effects are added together, and from this is subtracted jobs filled by residents already in the area and by commuters.
i. Construction jobs to build Big Moose assumes over 1 year
j. Jobs filled locally at Big Moose Mountain: 25
k. Jobs filled by commuters working at Big Moose Mountain: 100 to 125. This number decreases as workers relocate and settle in the region.
l. Number of jobs filled locally that will work at Lily Bay Resort: 20.

m. Jobs filled by commuters working at Lily Bay Resort: 40 to 50
n. Tourism and recreation jobs estimated from Colgan study, Table 15. Colgan estimated 117 jobs in 2010, 645 jobs in 2015, and 259 jobs in 2020. We assumed straight line growth in the intervening years to complete a yearly estimate of tourism and recreation jobs for the period 2010 through 2021.
o. It is assumed that 90% of all temporary construction jobs are filled by commuters.

3.0 Government Services

Overview

This section evaluates the potential impact of the Plum Creek Plan on local, county and state government agencies.

The Moosehead Lake and Brassua Lake regions are rural communities with significant seasonal and recreational populations. Throughout the summer months, people venture to the area for hiking, biking, boating, fishing and rafting experiences. The winter brings snowmobilers, snowshoers, ice fishermen and explorers to the area. Government Services personnel are needed throughout the area to provide permitting, compliance, enforcement, registration and administrative services for residents and visitors.

The primary providers of Government Services to the Plan Impact Area are the Maine Land Use Regulation Commission and the Towns of Greenville and Jackman. The Towns of Greenville and Jackman provide services to the residents of each municipality and operate as agents of the State of Maine for the provision of municipal and some State services to the Unorganized Territories.

Historic and Current Inventory/Operations

<u>The Town of Greenville</u>

The Town of Greenville operates on a Town Manager/Selectmen/Town Meeting form of government. The Town Manager serves as the Economic Development Director, Treasurer, Tax Collector, Emergency Management Director, Road Commissioner and the General Assistance Administrator. Each year the Town of Greenville appoints and appropriates funds to provide staffing for two full-time governmental services positions, the town clerk and bookkeeper, and the following part-time positions: code enforcement officer, plumbing code officer, ballot and election clerks, public works employees, recycling coordinator, librarians, and Recreation Director.

The Town of Greenville acts as an agent of the State of Maine Department of Inland Fisheries and Wildlife and the Bureau of Motor Vehicles. Town officials are responsible for issuing in- and out-of-state sportsman licenses, as well as registering recreation equipment such as boats, ATVs and snowmobiles. As an agent for the Bureau of Motor Vehicles, the Town of Greenville is responsible for the proper administration and distribution of motor vehicle registrations and collection of excise taxes from Greenville residents. As an agent for the Inland Fisheries and Wildlife, the town participates in the IF&W Moses registration program. Residents of the Unorganized Territories can utilize this service to register motor vehicles and obtain licenses. The Town charges a nominal fee to all residents to recover their costs for providing this service.

The town clerk is also responsible for keeping track of public records in the community. Marriage licenses and birth and death certificates, as well as dog licenses, are collected and

records are maintained in the town office. The Town of Greenville also provides voting booths for residents of the UT.

As the primary service center for the Moosehead Lake region, the Town of Greenville provides significant levels of services in many areas, with few options for enhancing its revenue stream. Much of the Town's infrastructure is used by non-residents of Greenville.

The town library, Shaw Public Library, is a good example. Like many libraries, it serves a number of residents from outlying areas. While there are small collections of books in Shirley and Rockwood, this facility provides the most comprehensive library collection in the Moosehead Lake Region. According to library staff, there are approximately 3,000 library cards currently issued. While an exact number is not available, up to 50 percent of the card holders live outside of the Town of Greenville, with some as far away as Jackman and Monson. No fee is charged for the issuance of the card. The budget annual budget for Shaw Public Library is $59,000, with $36,000 of that total allocated for salaries and the remaining amount paying for operational expenses, programs and new publications. While the amount was unknown by library staff, a portion of the budget is contributed by Shirley and Beaver Cove.

The Town of Greenville also provides boat access to Moosehead Lake at Junction Wharf. This facility is in need of significant maintenance at present, and with the potential for increased use, the useful life of the structure could be cut dramatically.

The Town of Jackman

The Town of Jackman operates on a Town Manager/Selectmen/Town Meeting form of government. The Town Manager serves as the Treasurer and Welfare Director, as well as the Health Officer. Each year the Town of Jackman appoints and appropriates funds to provide staffing for the full-time governmental service positions of Town Clerk/Tax Collector/Registrar of Voters and the Deputy Tax Collector/Deputy Clerk/Deputy Treasurer, and part-time positions such as animal control officer, code enforcement officer, and the plumbing inspector.

The Town of Jackman acts as an agent of the State of Maine Department of Inland Fisheries and Wildlife and the Bureau of Motor Vehicles. This makes Town officials responsible for issuing in- and out-of-state sportsman licenses as well as registering recreational equipment such as boats, ATVs and snowmobiles. Short term licenses for hunting and fishing are also available at a variety sporting camps and other convenience outlets throughout the region. As an agent for the Bureau of Motor Vehicles, the Town of Jackman is responsible for the proper administration and distribution of motor vehicle registrations and the collection of excise taxes in the town. The town clerk and tax collector act as the responsible agents for the State to provide these licenses and registrations. Residents of the unorganized territories as well as Jackman can utilize the services. The town charges a nominal fee for these services to all residents to recover their costs for providing staffing for this service.

A Mobile Unit of the Bureau of Motor Vehicles operates a satellite office at the Jackman Municipal Offices. On the Last Tuesday of the month, from 11:30 am to 2:00 pm, representatives are available for residents to obtain and renew driver's licenses. The number of

customers who can be served on any one day is limited. Sign-up sheets are used at each Mobile Unit location to make sure customers are served on a first-come basis. The sign-up sheet also informs customers upon arrival whether they can expect to be served or whether all of the slots for the day are already filled. Persons interested in converting out-of-state licenses to Maine driver's licenses must visit a Motor Vehicle Branch Office, not a mobile unit. Branch offices are open Monday through Friday in Augusta, Bangor and other areas throughout the State.

The Town clerk is also responsible for keeping track of all public records in the community. Marriage licenses, dog licenses, as well as birth and death certificates are collected and records are maintained in perpetuity in the Town office.

Somerset County

The provision of municipal and government services is normally handled by the overseeing department or bureau of the State of Maine. Arrangements are made between the State and the local municipality for the provision of services to the surrounding municipalities and unorganized territories. Somerset County maintains records and information in the Registry of Deeds Office. Information regarding property deeds, marriage licenses, and birth certificates is available through the County Offices located in Skowhegan. Somerset County is not required to provide many governmental services. The primary focus of services provided to the Unorganized Territories is the provision of solid waste disposal and road maintenance.

Piscataquis County

The provision of municipal and government services is normally handled by the overseeing department or bureau of the State of Maine. Arrangements are made between the State and the local municipality for the provision of services to the surrounding municipalities and unorganized territories. Piscataquis County maintains records and information in the Registry of Deeds Office. Information regarding property deeds, marriage licenses, and birth certificates is available through the County Offices, located in Dover-Foxcroft. Piscataquis County is not required to provide many governmental services. The primary focus of services provided to the Unorganized Territories is the provision of solid waste disposal and road maintenance.

State of Maine

The State of Maine provides reasonable access to municipal and governmental services for all Maine residents through regional branch offices. Municipalities enter into agreements to become agents of the State for the provision of such services as vehicle registration, hunting and fishing licenses, driver's licenses, etc**.** As noted above, Bureau of Motor Vehicles provides service through a mobile unit in Jackman. Not all services are available in all municipalities and they are subject to change depending on demand.

Code Enforcement/Permitting/Compliance/Plumbing Inspections

The responsibility for permitting, compliance and enforcement in the Plan Area will be determined by location of the development. Permitting and compliance of residential and

commercial development in the Unorganized Territories falls under the jurisdiction of the Maine Land Use Regulation Commission (LURC).

With an office located in Greenville serving both Piscataquis and Somerset Counties, four (4) field personnel are responsible for the issuance of permits and compliance enforcement in the region. Their responsibility is to evaluate concept plans, applications for subdivisions, rezonings, and structures; to issue permits for approved applications, and to follow up with any compliance issues as may be necessary. The office is currently understaffed, given the demands for their services.

Plumbing inspections are the responsibility of four (4) licensed plumbing inspectors (LPI). They are responsible for all subsurface inspections for installation of septic systems from Jackman to Lily Bay. The LPIs are responsible for evaluating the plans, are on-site with the contractor when the first earth is moved for the subsurface system, and then will make final inspection when the system is hooked up. The LPIs handle all aspects of subsurface plumbing inspection unless a variance is required, which then must be approved by the Maine Department of Health and Human Service's Division of Environmental Health.

Since there is no building code that applies in the Unorganized Territories, the only time any building code enforcement is involved would be during commercial development. At this time the State's life safety code will be applied and the State Fire Marshall will be involved with the project.

Future Conditions, Impacts and Solutions

Potential Impacts

The towns of Greenville and Jackman will see relatively minimal impact from any development that may occur from the rezoning of the Plum Creek property. Primary impact will be felt at LURC, which already is stressed from existing activity.

Greenville

While there will be generally minimal impact in Greenville, it is important to note that there may be an impact on particular pieces of the Town's infrastructure. Greenville will have minimal capacity to create new tax revenue because the only new development slated for the community that will spin off taxes will be through the construction of 15 new affordable housing units.

Junction Wharf needs to be rehabilitated, and the impact of new users in the region will no doubt expedite the need for reconstruction. This is an issue that will need to be mitigated in the near future whether or not the Plum Creek development goes forward; it is a problem that exists today. Some estimates have pegged the cost at nearly $500,000.

Shaw Public Library, already out of space and having to conduct sessions outside the facility, could see additional visitors that make the need for expansion necessary. A primary reason for the lack of space is due to the fact that damage caused by flooding in the basement this past year

has rendered that space non-functional. A rehabilitation and expansion package, according to Town estimates, would cost between $100,000 and $200,000. Space constraints for any expansion exist as land previously available adjacent to the library has been purchased by another entity. As is the case with the rehabilitation of Junction Wharf, the expansion of Shaw Library is a need that exists presently, regardless of the implementation of the Plum Creek Concept Plan.

With the wide geographic distribution associated with library card holders and the know quality, it is possible to establish a projection of potential new card holders associated with the library.

Table 3-1: Projected New Library Card Holders in Impact Area

Current Card Holders	3,000
Total Homes in the Impact Area	6,124
Card Holders Per Household	0.49
New Card Holders Associated with 975 new homes	**477.75**

Source for Homes in Impact Area: 2000 Census
Source data for current card holders: Town of Greenville

While this figure reflects only new home development from the Plum Creek Concept Plan, it is anticipated that another 390 homes could be constructed due to induced development as indicated through chart 2-23. Should all homes through induced development be constructed, this would add an additional 191.1 library card holders to the system.

LURC, Compliance, Inspection and Enforcement

With the potential for multiple subdivisions being under construction simultaneously, it could be difficult for LURC field staff in the region to meet existing demand, let alone handle new client requests. New development in the region will create delays in the system because the new requests will have to be accommodated by a system that already is stressed.
Presently, the LURC staff at the Greenville office process an average of 400 permit applications annually. A breakdown of the particular permit types indicates the breadth of activity in the region:

Table 3-2: Average LURC Permits Issued Through the Greenville LURC Office

Building	Commercial Dev.	Other	Total Annual Average
300	30	70	400

*Data provided by Maine Land Use Regulation Commission.
Other includes: roads, wetlands alterations, subdivisions, shoreland alterations, zoning petitions, utility lines, water crossings, forestry operations, advisory rulings.

With the phasing proposed by Plum Creek, it is anticipated that 65 homes could be constructed in the Plan Area on an annual basis. This would account for a 14 percent increase in permit activity, if the annual totals provided by LURC remain consistent.

Post-development compliance also will be an issue, as field staff will be called upon to conduct more field compliance evaluations. While staff conducts inspections for projects in the region, due to the current case load they are often forced to conduct a "compliance-by-accident" system where they are conducting evaluations only while engaged in review of other projects. Compliance violations sometimes are only found by accident as staff is driving through the region. LURC's understaffing in the region exists as of today, regardless of any development that could occur from the Plum Creek Concept Plan

Impacts on LPIs will be minimal with the addition of 60-75 new homes constructed annually within the Plan Area. Discussions with the LPIs responsible for work in the Plan and Impact Areas indicate that the new work will be easily assimilated into their current workload.

As mentioned previously in this section, it is anticipated that there will be limited impact in Greenville and Jackman. Code enforcement within these municipalities is handled locally. Residential development in both towns will be limited to the construction of affordable housing under agreement between CEI and Plum Creek. Any increased cost associated with services provided by town officials will be offset by the fees charged for such services, as is the case presently. Under the terms of the agreement, 15 affordable housing units will be constructed in Greenville, and 10 units will be developed in Jackman. Thus, there should be negligible time and resource impact associated with this development.

Summary

Quantified Impacts to government services will primarily be felt at the state level with increase work load associated with the Greenville office of the Land Use Regulation Commission, and with public services provided by the Town of Greenville, in particular library services. These are areas where there are limited opportunities to develop tax revenues to offset added costs. Other areas of impact, such as services provided to additional regional residents at town offices, are able to offset any added cost by implementing fees for services rendered, as is often done currently.

The Greenville office of LURC issues approximately 400 permits annually in Somerset and Piscataquis Counties for residential, commercial and other activities. The addition of 65 residential units per year, based on phasing projections from Plum Creek, would increase the permitting workload by 14 percent annually. If additional staff is added to the Greenville office to accommodate development from the Concept Plan, based on quantified impact, would cost approximately $100,000 per year (figure supplied by LURC staff), per new staff member. The addition of staff was a recommendation of staff at LURC.

The impact of additional residents associated with the 975 homes proposed for construction could increase library card holders for Shaw Public Library by 477.75 cards. New residents from induced development could add another 191.1 card holders, for a total increase of 668.85, or 18 percent. This number takes into consideration impact at full build out of the Concept Plan. If the current budget of $59,000 (budget number provided by library officials) is increased by 18 percent (the percentage increase in card holders), this would add an additional $10,620 to the budget.

4.0 Waste Management

Overview and Inventory

This section discusses the impact of the wastes expected to be generated if the proposed Plum Creek Concept Plan (Concept Plan) is implemented. The categories of waste include: land clearing debris and construction debris generated during construction of proposed roads, structures and ancillary facilities; solid waste generated by the proposed residential and resort developments after construction; septic tank waste generated by the proposed residential developments; and sewage treatment sludge generated by the sewage treatment facilities serving the resorts.

This section addresses just the waste generated from the proposed "Concept Plan". It is anticipated that waste generated by the induced development (an additional 390 households as developed in the Housing Section) will be sufficiently dispersed throughout Piscataquis, Somerset and Penobscot Counties and that the waste generated by that development can be readily absorbed by the existing service providers.

Historic and Current Inventory/Operations

From an overall State perspective, there is ample capacity to dispose of the solid waste to be generated by this project. In the Maine State Planning Office's (SPO) most recent disposal capacity report to the Legislature, it is stated that "there are no impending short-term disposal capacity gaps and that there do not appear to be current or projected disposal fees would be considered supercompetitive. Supracompetitive, as applied to prices, means prices that are higher than they would be in a normally functioning, competitive market – usually as a result of overconcentration, collusion or some form of monopolistic practice."

The SPO further reports that "today's solid waste management system is functioning well and should continue to do so in the foreseeable future." Crossroads, a landfill located in Norridgwock, Maine, and owned by Waste Management (WM) is currently used to dispose of the solid waste generated by the communities in the area of the proposed development. This facility has approximately 4,000,000 cubic yards of available airspace. The total estimated quantity of solid waste that may be delivered to this facility over the next 20 years as the result of the proposed development represents less than three percent of the currently available capacity. In addition, the State of Maine recently purchased a landfill located in west Old Town to meet the future needs of Maine's citizens and businesses. This facility makes available an additional 9,000,000 cubic yards of additional capacity.

Solid Waste Disposal and Transfer Station facilities are regulated pursuant to Maine law and rule by the Maine Department of Environmental Protection (MDEP). Such facilities are required to obtain a license prior to commencement of operations, and must operate within set license parameters in order maintain the license. A review of MDEP records was conducted to confirm the licensing status of the subject facilities.

The MDEP records, and discussions with local/county officials, established the following:

Rockwood Transfer Station – This facility is an active licensed transfer station (DEP No. S-021371-WH-A-E), located in Taunton & Raynham Academy Grant. The licensee is the Somerset County Commissioners. The facility accepts municipal solid waste for consolidation and transfer to a secure commercial landfill facility located in Norridgewock, Maine. The County of Somerset has entered into an operating agreement with a private sector vendor who is responsible for providing operating personnel, equipment, and transportation services. Both bulky and non-bulky municipal solid wastes are placed in a 65 yard closed container equipped with a compacting unit. Staging (storage) areas for clean wood waste and metals are maintained. Staged metals are recycled and the clean wood waste is burned. The facility processes approximately 250 tons of municipal solid waste per year. The municipal solid waste transported to the Norridgewock commercial disposal facility is delivered under the County's waste disposal agreement. Transported loads average 18-19 tons per trip. The County of Somerset pays tipping fees of approximately $56.00 per ton. Provided that facility capital and maintenance investments are made, the useful life of transfer station facilities should be considered infinite. Further discussion of projected impacts on long term disposal capacity is provided below.

Piscataquis County Recycling & Transfer Station – This facility is an active licensed transfer station (DEP No. S-021136-WH-A-E), located in Lily Bay Township. The licensee is the Piscataquis County Commissioners. The facility accepts municipal solid waste for consolidation and transfer to a secure commercial landfill facility located in Norridgewock, Maine. The County of Piscataquis has entered into an operating agreement with a private sector vendor who is responsible for providing operating personnel, equipment, and transportation services. Both bulky and non-bulky municipal solid waste are placed in a 50 yard closed container equipped with a compacting unit. Staging (storage) areas for clean wood waste and metals are maintained. Staged metals are recycled and the clean wood waste is burned. The facility processes approximately 150 tons of municipal solid waste per year. The municipal solid waste delivered to the Norridgewock commercial disposal facility is delivered under the County's waste disposal agreement. Transported loads average 14-15 tons per trip. The County of Piscataquis pays tipping fees of approximately $56.00 per ton. Provided that facility capital and maintenance investments are made, the useful life of transfer station facilities should be considered infinite. Further discussion of projected impacts on long term disposal capacity is provided below.

Greenville Landfill – This facility is an active licensed municipal landfill (License No. S-010576-WB-A-N-S 010576-WB-B-R), located in Moosehead Junction Township. The licensee is the Town of Greenville. The facility accepts municipal solid waste for disposal for a population of less than 15,000 people. Roughly 2,000 people use the facility currently . The original license was issued in 1985, with a re-issuance in 1995. The 2003 reported fill rate was 1,389 tons, with a remaining capacity of 60,723 yards. Each cubic yard of landfill airspace will likely hold between .6 and .75 tons of municipal solid waste. The airspace factor varies, depending upon waste stream composition, operations practices, and other factors. Assuming a factor of .6 tons per yard, at the conservative end of the range, the remaining life of the licensed airspace exceeds 26 years. However, the town of Greenville is contemplating a system change whereby certain quantities of bulky waste and construction/demolition debris would be accepted

on-site and transferred to a solid waste disposal facility in Norridgewock for disposal. Such a system change could extend the remaining life of the landfill at least 33 percent.

Regulatory uncertainties have been raised concerning the ability of the facility utilize all of its remaining licensed solid waste disposal capacity. Local officials in Greenville recognize that the existing facility and its remaining airspace represent the best disposal option for their businesses and residents. The town of Greenville is actively engaged in efforts to preserve their right to utilize its remaining licensed airspace at the landfill facility.

Jackman Transfer Station – The town of Jackman is the licensee and site of the Jackman Transfer Station (DEP No. S-021357-WH-A-E). The facility accepts municipal solid waste for consolidation into 50 cubic yard containers for transfer to a secure commercial landfill facility located in Norridgewock, Maine. A total of 824 tons of bulky & non-bulky municipal solid waste was processed through the facility in 2004 (of which 267 tons were recycled), which is below the ten year average of 890 tons. Provided that capital and maintenance investments are made, the useful life of transfer station facilities should be considered infinite. Further discussion on projected impacts upon long term disposal capacity is provided below.

Caratunk/Forks Waste Facility – This facility is an active licensed municipal landfill (License No. S-005478-WB-A-N-S 005478-WB-C-R), located in West Forks. The licensees are Caratunk, the Forks, and West Forks. The facility is licensed to accept municipal solid waste for disposal for a population of less than 15,000 people. Fewer than 1,000 people use the facility currently. The original license was issued in 1989, with a re-issuance in 1997. The reported fill rate in 2003 was 492 tons, with remaining capacity of 8,706 yards. Each cubic yard of landfill airspace will likely hold between .6 and .75 tons of municipal solid waste. The airspace factor varies, depending upon waste stream composition, operations practices, and other factors. Using the same, conservative, factor of .6 tons per yard yields an estimated remaining life of the licensed airspace of more than 10 years. Note that some reports from state sources list the available remaining airspace as 38,000 cubic yards, which would yield a longer life for the facility. The lowest estimate has been applied in this case.

Regulatory uncertainties have been raised concerning the ability of the West Forks facility to utilize all of its remaining licensed solid waste disposal capacity. However, it would be prudent for officials responsible for the management of this facility to be actively exploring alternatives in case the remaining licensed airspace cannot be utilized. Given the relatively low existing and projected quantities of solid waste handled at this facility, alternative arrangements should be reasonably available.

Although LURC is responsible for approving the "Concept Plan" and Rezoning Petition, LURC has indicated that it will defer to the Maine Department of Environmental Protection on waste issues. This section therefore references DEP standards where relevant.

The disposal methods proposed herein are either currently available or very likely to be licensed by the appropriate permitting agency. Because this project will be developed over a period of up to 10 years, it is possible that additional disposal options may be available and that these options may also be utilized providing that they are approved by the State of Maine.

Land Clearing Debris

Significant quantities of land clearing debris will be generated from the construction of the roads and other facilities proposed in the "Concept Plan". Land clearing debris includes brush, stumps, soil material and rocks**.**

Insofar as practical, the inert material fraction (soil, loam and rocks) of the land clearing debris will be separated and used on site for fill and landscaping. Utilization of inert material on the site from which it is generated is generally encouraged by the DEP and typically does not require a DEP permit. The remaining land clearing debris will be either disposed or processed and utilized on the construction site.

Current construction practices typically utilize and prevailing DEP regulations allow the following on-site disposal methods for land clearing debris:

- The disposal of land clearing debris in a less than one acre on-site landfill providing that the landfill is not located in either wetlands, on a significant sand and/or gravel aquifer or other protected natural resource.

- The chipping of land clearing debris and either the use of the chips for approved BMP's (best management practices) for erosion control or on-site spreading providing that the depth of the chips does not inhibit plant growth.

- The burning of land clearing debris providing that the ash is spread on the same parcel of land where generated and spread in a manner that would not inhibit plant growth.

Land clearing debris generated by the proposed development will be either disposed of or utilized on-site in accordance with prevailing DEP rules, and therefore will not impact the local region.

Construction Debris

Significant quantities of construction debris (CD) will be generated from the construction of the resorts and homes proposed in the "Concept Plan". Because the proposed development is all new construction on undeveloped land, very little, if any, demolition debris (DD) will be generated. CD includes solid waste resulting from the construction of structures including, but is not limited to: building materials, asphalt, wall board, pipes and metal conduits. It does not include waste such as full or partially full containers of glues, solvents, paint, friable asbestos, caulking compounds and other special wastes. The quantity of CD will depend on the size of the proposed structures and the efficiency of the Contractors building the structures. Using an estimate of 5 tons per housing and accommodation unit (including the resorts with employee housing as well as the affordable housing units), an approximate total of 11,075 tons of CD is likely to be generated. Anticipating a construction period of 10 years, the average CD generation rate would be 1,107.50 tons per year.

Typically, contractors hired to construct the proposed housing units and resort facilities will place CD in a roll-off or other container and transport the CD to a licensed CD disposal facility, thus avoiding the impact on local transfer facilities.

Licensed CD disposal facilities closest to the proposed development include the CFWF landfill in West Forks and the Town of Greenville landfill. These facilities may or may not have the capacity to dispose of the CD waste depending on when the proposed structures are constructed and the status of the CFWF and Greenville's licenses at that time. Other licensed facilities that have the capacity to accept the CD are the Crossroads Landfill in Norridgewock and Juniper Ridge in West Old Town.

Exhibit F of Plum Creeks Petition for Rezoning application contains a letter from the respective owners of Crossroads Landfill and Juniper Ridge Landfill stating that they have the capacity to accept the expected CD.

Prevailing DEP regulations also allow the disposal of CD in an on-site landfill of less than one acre, providing that the landfill is not located in either wetlands, on a significant sand and/or gravel aquifer or other protected natural resource.

Existing landfill capacity and on-site disposal options are sufficient to handle the CD generated by the Plan. Contractors hired to build the proposed structures will be encouraged to contact the local disposal facilities and utilize the local facilities only if accepting the CD is a benefit to the local facility. Otherwise, contractors can be required to use Crossroads landfill or another facility that is licensed by DEP and has the capacity for the CD waste.

Post-Development Solid Waste Disposal

Overview

Post development solid waste is the typical solid waste generated by the residential housing and resorts proposed in the "Concept Plan" after they are fully developed.

- Municipal Solid Waste (MSW), which is solid waste emanating from household and normal commercial sources that would be acceptable to dispose at a MSW landfill or a waste-to-energy facility such as PERC.

- Construction and Demolition Debris (CDD) which is solid waste resulting from construction, remodeling, repair and demolition of structures. It includes but is not limited to; building materials, discarded furniture, asphalt, wall boards, pipes, and metal conduits. It excludes: partially filled containers of glues, tars, solvents, resins, paints, or caulking compounds; friable asbestos; and other special wastes.

- Bulky Waste (BW) which includes white goods, appliances, metal and clean wood.

- Universal Waste (UW) which means any waste listed in section 3.A(13)(b) of Chapter 850, the Maine Hazardous Waste Management Rules, including but not limited to

cathode ray tubes; mercury-containing lamps; mercury-containing thermostats and totally enclosed, non-leaking polychlorinated biphenyl (PCB) ballasts.

The method used to estimate the quantity of solid waste generated by the proposed development is to use a per-capita generation rate based on the solid waste-generation rate expected from a Maine community with a similar population.

This population was estimated using the following criteria:

- The 975 residential units will be occupied by an average of 2.5 people per unit;
- 15% of the 975 residential units will be occupied year round and the remaining 85% will be occupied five months per year;
- The combined 1,050 unit resorts will average 3 capita per unit and be occupied 65% of the time.

The population of the proposed development is thus estimated to be approximately 3,275.5 capita. For purposes of this report, we used a rural community with a year-round population of 3,500 capita.

After all the residential housing units and resorts are built and occupied, the anticipated annual solid waste generation is presented in the following table.

Table 4-1: Projected Annual Waste Generation

Waste Category	Estimated Tons/Units per Capita per year	Capita	Annual Generation
MSW	0.60 Tons	3,500	2,070 Tons
CDD	0.15 Tons	3,500	525 Tons
BW	0.15 Tons	3,500	525 Tons
UW	1 unit	3,500	3,500 Units

Both Somerset and Piscataquis County currently provide solid waste management services in two ways. First the counties operate their own waste transfer facilities (Rockwood Transfer Facility and Lily Bay Transfer Facility). Second, the counties contract with the Town of Greenville solid waste landfill and transfer facility and Town of Jackman solid waste transfer facility. All facilities accept MSW, CDD, BW and UW. At all facilities the BW and UW are collected and stored until sufficient quantities accumulate to fill a collection vehicle. The BW and UW are then transported to a DEP-licensed disposal facility.

At all facilities except Greenville, CDD is combined with MSW and then transported to Crossroad for disposal. At the Greenville facility CDD is collected and transferred to Crossroad for disposal. MSW at Greenville is disposed in their licensed landfill.

The Greenville landfill may not have the capacity to accept MSW from the Plan. This landfill was constructed in the 1980s in accordance with the DEP regulations in effect at that time. Under prevailing DEP regulations, the Greenville landfill would not be permitted. As a result, the ability the landfill to remain a licensed landfill in the future is questionable. In response to these regulatory issues, the Town of Greenville is considering the construction of a MSW transfer station in the near future to initially transfer MSW to their landfill and, if the landfill closes, to transfer MSW to either Crossroads or PERC in Orrington.

CDD, Bulky Waste and Universal Waste

Piscataquis and Somerset counties together with their service providers have the capacity to transfer and transport CDD, Bulky Waste and Universal Waste that is expected to be generated by the Plan when development is completed. Additional waste volumes can be handled by more frequent transportation of the waste and, if necessary, by adding additional days of operation.

The cost imposed by the generation of the additional waste can be negated by the disposal fee that most, if not all, of the service providers charge for the CDD, BW and UW before it is accepted. The collection of fees to offset the cost of the disposal of these wastes is common in the State of Maine.

Exhibit A contains a letter from the respective owners of Crossroads and Juniper Ridge landfills attesting to their ability to handle CDD, BW and UW.

<u>Municipal Solid Waste</u>

The increase in MSW will have an impact on both Piscataquis and Somerset Counties and their current service providers. Using location and jurisdictional factors, the projected impact that the proposed development will have on each of the current service providers is set forth in the following table.

Table 4-2: Impact of Additional MSW on Current Service Providers

	Pre-development MSW (tons/yr)	Additional MSW Quantity (tons/yr)	% Increase
Jackman TS	557	80	14
Rockwood TS	250	400	160
Lily Bay TS	150	450	300
Greenville LF/TS	1,389	1,140	82

Options that Somerset County has to mitigate this impact include:

- Expansion of the Rockwood Transfer Facility to accept the additional MSW. A DEP permit would be required.

- Contract with the Town of Jackman to expand the Town's Transfer Facility to accept the additional MSW. A DEP permit would be required.

- Contract with a licensed contractor to collect MSW either curbside or from containers at the site of the proposed residential homes and resort and transport the MSW to Waste Management in Norridgewock. Plum Creek would require that the developers of the residential housing and resorts be committed to pay curbside collection costs to Somerset County. This option would not require DEP permitting.

Options that Piscataquis County has to mitigate this impact include:

- Expansion of the Lily Bay Transfer station to accept the additional MSW. A DEP permit would be required.

- Contract with the Town of Greenville to construct a transfer facility to accept the additional MSW. A DEP permit would be required.

- Contract with a licensed contractor to collect MSW either curbside of from containers at the site of the proposed residential homes and resort and transport the MSW to Waste Management in Norridgewock or PERC in Orrington. Plum Creek would require that the developers of the residential housing and resorts be committed to pay curbside collection costs to Piscataquis County. This option would not require DEP permitting.

Plum Creek prefers to work with Somerset and Piscataquis County's existing service providers to expand/construct their current facilities. However, if the DEP permits are not forthcoming, then the latter option will be utilized.

Exhibit A contains a letter from the owners of Crossroads (Waste Management) and PERC stating that they have the capacity to accept the expected MSW.

Septic Tank Waste

Septic Tank Waste is generated from the cleaning of septic tanks serving the 975 residential units proposed in the "Concept Plan". The volume of septic tank waste is based on the use of one 1000 gallon septic tank for each residential unit at a cleaning frequency of once per every five years of year-round occupancy of the residential unit. For purposes of this report, it is assumed that the seasonal units will be occupied five months every year. Accordingly, the proposed development will generate approximately 112,000 gallons of septic tank waste per year.

Currently, two DEP permitted facilities dispose of most of the septic tank waste in the area of the proposed development.

- The Moosehead Sanitary District (MSD) located in Greenville is the closest facility to the proposed development. The transportation distance from the proposed residential units to MSD range from five to 35 miles. MSD's current facility is a land spreading site in Greenville. Based on recent correspondence from DEP, this site is at or near capacity. MSD currently has a pending application with the DEP to accept up to 408,000 gallons per year of septic tank waste at the MSD treatment facility.

- Soil Preparation, Inc. (SPI), a private company, located in Plymouth, Maine is licensed to accept at least 7 million gallons per year of septic tank waste. This facility historically accepts between 3 and 4 million gallons of waste leaving a future capacity of at least 3 million gallons per year. This facility is located from 60 to 100 miles away from the proposed development.

Typically, DEP requires that the proposed disposal facility be located within a reasonable distance from the generator. The MSD facility is within a reasonable distance under the DEP's interpretation. The SPI facility, however, is not.

The generation of septic tank waste by the proposed development will have a significant impact on the local disposal facilities.

Expanding the local capacity for septic tank waste disposal could be accomplished by one or a combination of the following options:

- Work with the MSD to obtain the DEP permit to accept Septic Tank waste at the treatment plant and expand/improve the existing land spreading site. If successful, obtain a commitment from MSD to treat all or part of the septic tank waste generated from the proposed development;

- Identify property within a reasonable transportation distance from the proposed development that can be permitted by the DEP for the disposal of septic tank waste generated by the proposed development. Negotiate with and identify either a public (such as MSD) or a private (such as SPI) entity to own and operate the facility;

- Identify property within a reasonable transportation distance from the proposed development that can be permitted by the DEP for the storage of septic tank waste for transportation to a remote septic tank waste disposal facility such as LTI. Negotiate with and identify either a public (such as MSD) or a private (such as SPI) entity to own and operate the facility;

In accordance with discussions with CES, Inc., a consulting firm experienced with the permitting of waste disposal and transfer sites, all of these options are feasible. Based on its experience and knowledge of regional practices, CES estimates that the feasibility of obtaining a license for

improving MSD's capabilities is good; the feasibility for developing new spreading or transfer facilities is very good.

Sewage Sludge

Sewage sludge will be generated from wastewater treatment facilities used by the resorts proposed in the Plan. An 800-unit resort is proposed in Big Moose Mountain and a 250-unit resort is proposed at Lily Bay Township. Occupancy is anticipated to average 65 percent. The quantity of sludge generated will vary significantly with the specific sewage-generating facilities (restaurant, laundry, etc.) included in the resort and the type of sewage treatment process proposed by the resort developer and approved by the Department of Environmental Protection (DEP).

Assuming that the resorts will be similar to a small municipality of 3,150 residents (1,050 accommodations with 3 per unit), we estimate the tons of sludge to be generated will range from 75 to 300 tons per year, assuming 100 percent occupancy.

All municipalities and private resorts that have waste water treatment facilities need to dispose of sewage sludge. Municipal waste water treatment facilities nearest the proposed developments are the Moosehead Sanitary District, Guilford Sanitary District, Dover-Foxcroft Sewer Department and the Jackman Utility District.

New England Organics (NEO) owns a private bio-solids composting facility (Hawk Ridge) in Unity, Maine. NEO accepts wastewater treatment plant sludge from numerous municipalities in the State of Maine. NEO currently composts between 35,000 and 40,000 tons of bio-solids per year. The sludge expected to be generated from the Concept Plan represents less than one percent of the tonnage currently composted.

The resort developers will be urged to use local public sludge disposal facilities if the additional sludge will benefit the local utilities however private facilities such as NEO are available for this service.

Exhibit A contains a letter from NEO confirming that they have the capacity to accept the anticipated sewage sludge.

5.0 Education

Overview

This section outlines and evaluates impacts to the educational system in the Plan Impact Area from the Plan's proposed development.

As development occurs throughout the region, the demand for educational services most likely will increase. The inventory of current infrastructure and personnel described below will provide the framework for analyzing the Plan's impacts in this area.

Educational services are provided through the State Department of Education and the local communities. Each organized community is responsible for either establishing a school department, or becoming a tuitioning member of a school Union, District or Department. For the students who reside within Unorganized Territories, the responsibility falls to the State Department of Education's division of Education in the Unorganized Territories. Students are taught according to defined learning standards established by the Department and are monitored with standardized testing. Each community, union, or district is responsible for the administration, education and maintenance of the staff, students and facilities.

The identified development areas within Plum Creek's Rezoning Plan are serviced by the Towns of Jackman, Greenville, Beaver Cove, Shirley, Moose River and the surrounding Plantations and Unorganized Territories. School Union #60, Maine School Administrative District #12, and the Rockwood Elementary School (Education in the Unorganized Territories) provide educational service within the region. The Towns of Jackman and Moose River are members of Maine School Administrative District #12, (MSAD #12) The Towns of Greenville, Beaver Cove, Shirley, Willimantic, and Kingsbury Plantation are members of Maine School Union #60 and operate two schools in Greenville and one in Shirley. See Figure ED-1 Educational System, for the location of local schools in and around the proposed Plum Creek Plan Area and in the Plan Impact Area.

Historic and Current Inventory/Operations

<u>Maine School Administrative District # 12 (Jackman, Moose River)</u>

School Administrative District #12 serves the communities of Jackman and Moose River. Currently, through tuition arrangements with the state of Maine, MSAD #12 accepts students from Dennistown Plantation, The Forks Plantation, West Forks, and the unorganized territories of Long Pond Township, Lake Parlin Township, Holeb Township, and Enchanted Township. Only one of these townships, Long Pond, is within the Plan Area.

District #12 Facilities

Forest Hills Community School

Built in 1961, the Forest Hills Consolidated School contains separated wings for each educational level. Originally built to house the elementary (K-5) and High School (9-12) students, additions were completed in 1985 and 1988. The first expansion added space to house the home economics and industrial arts departments, as well as create office space for the administration services of MSAD #12. In 1998, an addition was completed to house the middle school students as the community vacated the Sacred Heart Convent building they had been recently attending. At that time, a commons area, library, kitchen, locker rooms, and a separate special education department were created.

This expansion created its own separate wing for each educational level (elementary, middle, and high school), while sharing the gymnasium, home economics, industrial areas, a common dining area, and library.

District #12 Students

MSAD #12 and the Forest Hills Community Schools house local school-aged children in grades K-12. The majority of the schools' student body consists of residents from the towns of Jackman and Moose River.

Overall enrollment for MSAD #12 over the past ten years has steadily declined. Table 5-1 shows that, from 1995 to 2005, total student enrollment dropped from 241 to 186 students in grades K-12 (a 22.82 percent decline). While secondary education enrollment has remained stable over the ten-year trend, with a high of 72 and a low of 58 students, there has been a drop in enrollment at the elementary level, from 176 students in 1995 to 117 students in 2005 (a net loss of 59 students over the ten-year period).

Table 5-1

MSAD #12 October Enrollments											
Total Enrollment											
	1995	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**
Total Elem	**176**	**169**	**153**	**138**	**134**	**134**	**132**	**128**	**123**	**122**	**117**
Total Sec	**65**	**58**	**63**	**66**	**72**	**69**	**66**	**69**	**64**	**68**	**69**
Grand Total	**241**	**227**	**216**	**204**	**206**	**203**	**198**	**197**	**187**	**190**	**186**
% Change		**-5.81%**	**-10.37%**	**-15.35%**	**-14.52%**	**-15.77%**	**-17.84%**	**-18.26%**	**-22.41%**	**-21.16%**	**-22.82%**

Table 5-2 shows that resident student enrollment within the Towns of Jackman and Moose River remained consistent with the trends of the overall enrollment. Secondary enrollment has

remained stable and is currently above the ten-year average (of 62.8 students). The decline in elementary students has stabilized somewhat over the last seven years, after taking a marked decline over the first three years of the trend. Elementary enrollment fell by 42 students (25 percent) over the four year period from 1995-1998, and has continued to decline to a low of 105 students in October of 2005.

Table 5-2

MSAD #12 October Enrollments											
Total Resident Enrollment (Jackman and Moose River)											
	1995	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**
Total Elem	**170**	**163**	**147**	**128**	**122**	**119**	**117**	**117**	**112**	**109**	**105**
Total Sec	**61**	**53**	**61**	**63**	**69**	**64**	**64**	**66**	**62**	**65**	**63**
Grand Total	**231**	**216**	**208**	**191**	**191**	**183**	**181**	**183**	**174**	**174**	**168**
% Change		**-6.49%**	**-9.96%**	**-17.32%**	**-17.32%**	**-20.78%**	**-21.65%**	**-20.78%**	**-24.68%**	**-24.68%**	**-27.27%**

MSAD #12 accepts students from the surrounding area through inter-local agreements and an arrangement with the Maine Department of Education's program for the Unorganized Territories. As Table 5-3 shows, MSAD #12 has seen an increase in tuitioned students sent from the Unorganized Territories to Forest Hills Community School over the last 10 years. As the number of secondary students has remained fairly constant (a high of 6 and a low of 2), the increases in elementary population doubled from 6 to 12 in the same time period.

Table 5-3

MSAD #12											
October Enrollments											
Tuitioned Enrollment											
	1995	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**
Total Elem	**6**	**6**	**6**	**10**	**12**	**15**	**15**	**11**	**11**	**13**	**12**
Total Sec	**4**	**5**	**2**	**3**	**3**	**5**	**2**	**3**	**2**	**3**	**6**
Grand Total	**10**	**11**	**8**	**13**	**15**	**20**	**17**	**14**	**13**	**16**	**18**
% Change		**10.00%**	**-20.00%**	**30.00%**	**50.00%**	**100.00%**	**70.00%**	**40.00%**	**30.00%**	**60.00%**	**80.00**

Enrollment of students from within the Unorganized Territories, Plantations and Townships is based upon need. The Maine Department of Education and its program of Education in the Unorganized Territories monitors and pays for the education of students located within the unorganized territories. Placement of these students is based upon the proximity of residents with school-aged children to the school. Educational costs for students from the Unorganized

Territories are paid for through the taxation of the entire UT. Payments for elementary level students are representative of actual costs, where secondary student tuition is based upon state averages or the local per pupil costs, whichever is less.

From 1995 to 2005, MSAD #12 has accepted students from seven different unorganized townships and plantations (See table 5-4 for the individual tuitioning communities and their enrollments). Enrollment at MSAD #12 from the UTs has increased by 60-80 percent (representing 8 additional students) over the last ten years, but currently (2005) contributes only 10.7 percent of the total student population.

Table 5-4

MSAD #12											
October Enrollments- Tuitioned Students											
UT and Plantations		**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**
Dennistown Plt	All	4	4	3	5	5	5	6	4	3	4
The Forks Plt	All	0	0	0	0	0	6	4	4	3	3
West Forks Plt	All	0	0	0	0	0	0	0	0	0	2
Long Pond Twp	All	6	6	5	7	9	8	5	4	7	7
Holeb Twp	All	0	0	0	1	0	0	0	0	0	0
Parlin Twp	All	0	0	0	0	1	1	2	2	0	0
Spencer Bay Twp	All	0	1	0	0	0	0	0	0	0	0
TOTAL		**10**	**11**	**8**	**13**	**15**	**20**	**17**	**14**	**13**	**16**

District #12 Transportation

Transportation is provided for students residing within the District and is allocated and paid for within the MSAD's budget. Transportation for students tuitioned into the District from the unorganized territories and outlying communities is left up to the State or the individual community. There currently is an array of efforts for each township and group of children. The State contracts with local providers to transport children to school, or pays parents $.36 per mile for personal transportation of their children. An outlying community can also contract with the State for the use of its buses to pick up children along the way.

District #12 Extra services

***Adult Education**:* MSAD #12 provides an adult education program known as *Live 2 Learn* for area residents and offers college courses via satellite through the University of Maine's Education Network of Maine. The District also offers services to help individuals obtain a General Education Diploma (GED).

Members of the Leadership Team who support and assist the program include the Superintendent, the *Live 2 Learn* Coordinator and Assistant, one member of the School Board, representatives from district partners, and other community volunteers. The program's district partners are: Jackman Region Community Association, Jackman-Moose River Chamber of Commerce, Plum Creek Timber Company, and the Jackman Region Health Center.

The goal of the *Live 2 Learn* program is to improve education and to develop a community of lifelong learners. Activities linked to improving education, particularly improving student/parent reading and math skills, will receive priority. *Live 2 Learn* also provides cultural, recreational, and athletic opportunities, offering summer athletic instruction in baseball, basketball, tennis and soccer. After-school tutoring and library education programs are also being developed to increase students' interest in education.

District #12 Budget and Financial Capacity

School expenditures are measured in two distinct ways: the per-pupil expenditure and the local mil rate. The per-pupil costs reflect the ratio of costs to the administrative unit, or school department, to educate each student. It is the most informative number, as it reports the total cost regardless of the source of funding. The mil rate reflects the community tax burden from the costs of school operation and education.

***Per-pupil expenditures*:** The per-pupil operating costs for MSAD #12 are shown in Table 5-5 below. From 1993-2003, MSAD #12 has seen consistent and substantial increases in per-pupil operating costs. The District's rank in regards to per-pupil costs among schools in the State of Maine also decreased significantly. This decrease in rank and increase in expenditures per student is directly related to the decrease in student population. A direct correlation exists between the costs of education and the number of students enrolled.

Table 5-5 shows that, within MSAD #12, the Per-Pupil Operating Costs ranking fluctuates from year to year (high of 100 and a low of 35). MSAD #12 has remained in the top 25% of the most expensive schools for the last ten years.

Table 5-5

PER PUPIL OPERATING COSTS, MSAD NO. 12			
YEAR	SAD #12 P.P.O.C.	RANK	MEDIAN
1993-94	$4703	UNK	$4286 (132)
1994-95	$4857	76/264	$4417 (132)

1995-96	$4846	100/264	$4635 (132)
1996-97	$5336	65/264	$4938 (132)
1997-98	$5753	56/264	$5036 (132)
1998-99	$6441	35/261	$5317 (131)
1999-00	$6466	64/261	$5755 (131)
2000-01	$7049	55/261	$6188 (131)
2001-02	$7249	80/261	$6640 (131)
2002-03	$8,162	55/261	$7019 (131)

Local Property Tax Rate for Education (Mil Rate): Local property taxpayers pay for a portion of their schools' operating and administrative costs. The local taxpayers' share of school costs is indicated by the mil rate or the property tax dollars raised for each $1,000 of taxable property. The mil rate of MSAD #12's participating member communities and available surrounding townships for recent school years and the corresponding statewide average mil rate is shown in the following table.

Table 5-6

Local Mil Rate For MSAD #12 Communities and Feeder Communities					
Year / **Community**	**1999-2000**	**2000-2001**	**2001-2002**	**2002-2003**	**2003-2004**
JACKMAN	12.62	13.16	12.8	13.14	15.38
MOOSE RIVER	12.63	11.82	13.47	13.5	15.89
DENNISTOWN PLT	5.54	5.19	6.97	4.55	4.6
THE FORKS PLT	3.15	4.17	N/A	5.66	4.57
WEST FORKS	11.65	12.39	9.36	10.37	9.25
State Average	11.29	11.63	11.87	11.62	10.92

The table shows that the local mil rates have increased over the past five years, while enrollment has declined. The communities of Jackman and Moose River have seen significant increases in their mil rate, while the State average has declined.

Maine School Union #60 (Greenville, Shirley, Beaver Cove, Willimantic)

School Union #60 is an administrative collaboration of school departments. It includes the community school departments of Greenville, Beaver Cove, Shirley, Willimantic, and Kingsbury Plantation. The unorganized Townships and Plantations that surround Greenville tuition their students to School Union #60 through an arrangement with the Maine Department of Education.

Union #60 Administration

Maine School Union #60 is administered by a Board of Directors and a Superintendent. The five-member Board of Directors is comprised of representatives from each community's school board or committee. The Superintendent's office is located in Greenville and is housed on the Greenville School Department Campus. The Superintendent, a bookkeeper, an executive secretary and accounts payable personnel are located in this office and oversee the Greenville and Shirley School Department facilities.

Greenville School Department

The Greenville School Department is operated as a governmental entity of the Town of Greenville. As an active member of Maine School Union #60, the Greenville School Department educates a majority of students from Greenville, neighboring communities, and the surrounding unorganized townships and plantations.

Union #60 Facilities

The campus of the Greenville School Department is located in the center of Greenville. The campus consists of three separate buildings and athletic fields.

> ***Nickerson Elementary School****:* Built in 1962 of cinderblock and steel (a "Butler Building"), the Nickerson Elementary School is home to grades K-5. The ten-classroom facility houses special education, art and reading recovery services for elementary students and utilizes the Pritham gymnasium for athletic education.
>
> ***Greenville Middle/High School****:* Built in 1935, The Oakes Building houses the Greenville Middle School/High School. Students from grades 6-12 attend classes in a well-built structure with exceptional historic architecture.
>
> ***Pritham Gymnasium:*** Pritham Gymnasium is the third facility on the campus grounds and provides space for physical education classes and other athletic/social events.
>
> ***Athletic Facilities:*** The athletic fields are used for track and field practices (but are not suitable for sanctioned events), soccer, baseball and softball. Recent additions to the athletic facilities include a quarter-mile roller-oval, sand volleyball, outdoor basketball and tennis courts, and a combination ice-rink/skateboard park, most of which are maintained by the Town of Greenville.

Union #60 Student Body

Maine School Union #60 and the Greenville area schools include local school-aged children in grades K-12. The majority of the schools' student body comes from the Town of Greenville. The Union also accommodates students from neighboring communities and the regional unorganized townships and plantations.

Overall, enrollment for Union #60 over the past ten years has steadily declined. As seen in Table 5-7, from 1995 to 2005, total student enrollment has steadily declined from 416 to 271 students in grades K-12 (or a 40-percent decline).

Table 5-7

School Union #60											
October Enrollments											
Total Enrollment											
	1995	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**
Nickerson Elementary	**264**	**269**	**266**	**255**	**239**	**214**	**212**	**198**	**174**	**158**	**162**
Shirley Elementary	**21**	**22**	**17**	**8**	**11**	**11**	**10**	**13**	**9**	**10**	**14**
Total Elem	**285**	**291**	**283**	**263**	**250**	**225**	**222**	**211**	**183**	**168**	**176**
Total Sec	**131**	**105**	**102**	**112**	**119**	**123**	**123**	**116**	**106**	**108**	**95**
Grand Total	**416**	**396**	**385**	**375**	**369**	**348**	**345**	**327**	**289**	**276**	**271**
% Change		**-5%**	**-7%**	**-10%**	**-11%**	**-16%**	**-17%**	**-21%**	**-31%**	**-34%**	**-35%**

Table 5-8 shows that resident enrollment within Greenville has remained consistent with the trends of overall enrollment. Secondary enrollment has remained fairly stable and is now slightly below the ten-year average of 87 students. However, the decline in elementary students has dropped consistently over the last ten years. Elementary enrollment has decreased by 98 students over the ten-year period from 1995 to 2005.

Table 5-8

School Union #60											
October Enrollments											
Total Resident Enrollment (Greenville)											
	1995	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**
Total Elem	**234**	**231**	**220**	**220**	**210**	**186**	**181**	**171**	**147**	**130**	**136**
Total Sec	**81**	**77**	**79**	**83**	**93**	**97**	**94**	**98**	**90**	**89**	**77**
Grand Total	**315**	**308**	**299**	**303**	**303**	**283**	**275**	**269**	**237**	**219**	**213**
% Change		**-2%**	**-5%**	**-4%**	**-4%**	**-10%**	**-13%**	**-15%**	**-25%**	**-30%**	**-32%**

Union #60 Feeder Communities and Unorganized Territories

Maine School Union #60 accepts students from the surrounding area through an arrangement with the Maine Department of Education's program for education in the Unorganized Territories. As Table 5-9 shows, over the past ten years the Union has also seen a decrease in feeder community and tuitioned students sent to Greenville from the surrounding communities.

Table 5-9 shows that the decline in the number of secondary students has slowed since a major drop in 1995-1996 (from 50 students to 28 students). Elementary student enrollment has

remained fairly constant, peaking in 1997 with 46 students, then dropping back down to the average and remaining constant.

Table 5-9

School Union #60											
October Enrollments											
Tuitioned Enrollment											
	1995	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**
Total Elem	**30**	**38**	**46**	**35**	**29**	**28**	**31**	**27**	**27**	**28**	**26**
Total Sec	**50**	**28**	**23**	**29**	**26**	**26**	**29**	**18**	**16**	**19**	**18**
Grand Total	**80**	**66**	**69**	**64**	**55**	**54**	**60**	**45**	**43**	**47**	**44**
% Change		**-18%**	**-14%**	**-20%**	**-31%**	**-33%**	**-25%**	**-44%**	**-46%**	**-41%**	**-45%**

Table 5-10 below shows the communities that have contributed to student enrollment in School Union #60 and the Greenville schools from 1995-2004. There has been a significant decline in student enrollment from the Unorganized Territory and surrounding communities.

Table 5-10

Feeder Communities		**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**
Shirley	6-12	22	12	10	10	12	10	12	8	6	7	5
Beaver Cove	All	14	10	8	8	8	8	10	5	4	7	9
Rockwood Plt	5-12	22	25	25	27	26	27	22	21	17	19	17
Moosehead Jct Twp	All	12	8	14	12	4	6	11	6	9	9	7
Big Moose Twp	All	0	0	0	0	0	0	0	1	1	2	3
Lily Bay Twp	All	1	2	3	2	2	0	1	1	1	1	1
Harfords Point Twp	All	8	8	8	4	3	3	4	3	5	2	1
Elliotsville Plt	All	0	0	1	1	0	0	0	0	0	0	0
Kingsbury Plantation	All	0	0	0	0	0	0	0	0	0	0	0
Total Enrollment		**79**	**65**	**69**	**64**	**55**	**54**	**60**	**45**	**43**	**47**	**43**

Enrollment of students from the Unorganized Townships and Plantations is based upon need. The Maine Department of Education, through its program of Education in the Unorganized Territories, monitors and pays for the education of students located within the unorganized jurisdictions. Placement of these students is based upon the proximity of residents with school-aged children to the school. Payment for the education of these students is based upon State averages, and weighted formulas for costs of education at the local level.

From 1995 to 2004, School Union #60 has accepted students from seven different unorganized townships and plantations. Enrollment from the UTs and surrounding communities has decreased almost 50 percent over the last ten years, and currently (2004) contributes only 17 percent of the Greenville Schools' student population.

Union #60 Transportation

Transportation for students residing within School Union #60 (Greenville, Beaver Cove, Shirley, Willimantic, and Kingsbury Plantation) is provided by the School Union via an outside contract for students educated within the Union. If a student elects to attend a school outside of the Union, the student is responsible for his or her own transportation.

Union #60 Extra Services

Adult Education: Adult education programs are offered through School Union #60. The Greenville School Department offers adults and non-traditional students assistance in obtaining a General Education Diploma (GED). It also provides other courses for area adult residents to refresh or learn new skills.

Jobs for Maine Graduates: The Jobs for Maine's Graduates Drop-Out Recovery Program is a state-funded program that works with high school-aged students who have dropped out (or are at risk of dropping out) and want to return, succeed in school, graduate and obtain work.

Union #60 Budget and Financial Capacity

Finances for educating the students of the School Union are the responsibility of each community. Funds are appropriated annually at local town meetings for payment of educational services for students within the individual community. As community schools establish budgets for the year, a per-pupil expenditure level is calculated and used to determine the tuitioning rate for non-resident students. The division of Education in the Unorganized Territories reimburses the School District or Local School Department for the costs of educating each student located in the UTs.

Education in the Unorganized Territories

The Division of State Schools – EUT (Education in the Unorganized Territory) is responsible for the provision of educational services for resident pupils in Maine's unorganized territories (UT). The EUT is a division within the Maine Department of Education, and operated by the Commissioner of Education. The Director of State Schools EUT is responsible for the day-to-day operation and administration of the Division, and the delivery of a comprehensive range of elementary, secondary and special education services.

There are 419 townships and 75 offshore islands within the 9.3 million acres of unorganized territory (52 percent of the state's land area), with a population of under 8,000 year-round residents. Approximately 1,200 pupils are legal residents of the UT, with 200 pupils attending one of the six elementary schools operated by the Division. The remaining 1,000 pupils are tuitioned by the Division of Schools to the nearest public school system. Those pupils who reside in remote or geographically isolated areas of the UT receive educational services through a variety of alternative programs, such as home schooling or boarding schools.

The Director of the Education in the Unorganized Territories along with the child's parents decide which school the students may attend. The decision is based upon proximity to the nearest school, transportation, finances, and availability of placement of these students into classrooms. All UT schools and pupils are funded through taxation of the Unorganized Territory and appropriated funding sources. There is one school operated by the Education in the Unorganized Territories Program immediately adjacent to the Plan Area: the Rockwood Plantation Elementary School.*Rockwood Plantation Elementary School*

Built by the Unorganized Territories during the 1980s, the two-classroom Rockwood Elementary School originally was built to educate the children of employees at S.D. Warren and Scott Paper Company headquarters. The two-classroom school facility has an extensive library, a full elementary-size gymnasium, a small stage and a full kitchen.

Student Body

Students educated in the Rockwood Elementary School reside in the unorganized townships and plantations surrounding Rockwood, which is, itself, an unorganized township. Students from Pittston Academy Grant, Plymouth Township, Big W, Little W, West Middlesex Canal Grant, Soldiertown Township, Brassua Township, Tomhegan Township and Taunton & Raynham Academy Grant send their students to the Rockwood elementary school for grades K-4 and are tuitioned to Greenville Middle/High School for grades 5-12.

Table 5-11

Rockwood Plantation -Total Attending Enrollment											
October Enrollments											
	1995	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**
Elem Spec	0	0	0	0	0	0	0	0	0	0	0
4 Year Old	0	0	0	0	0	0	0	0	0	0	0
Early K	0	0	0	0	0	0	0	0	0	0	2
Grade K	5	4	2	2	2	4	3	1	0	3	3
Grade 1	2	4	4	2	3	2	3	4	0	0	1
Grade 2	3	2	4	3	2	3	2	5	4	0	1
Grade 3	4	3	3	5	2	2	2	2	6	4	4
Grade 4	1	2	2	5	3	3	2	3	1	7	5
Total Elem	**15**	**15**	**15**	**17**	**12**	**14**	**12**	**15**	**11**	**14**	**16**
% Change		**0.00%**	**0.00%**	**13.33%**	**-20.00%**	**-6.67%**	**-20.00%**	**0.00%**	**-26.67%**	**-6.67%**	**6.67%**

As it can be seen in Table 5-11, the enrollment rates at the Rockwood Elementary school have remained stable over the past ten years. According to Richard Moreau, the State Director of Education in the UT, enrollment has stabilized during the past 20 years. With the addition of another teacher, he advises that the school will have the capacity to accommodate up to 40 students. He also stated that the library could be converted quite easily into a third classroom to accommodate another 15-20 students, if needed.

Students from the UT south of Rockwood are sent to the Greenville School Department. If the Unorganized Townships of Moosehead Junction, Cove Point Township, Harfords Point Township, Big and Little Moose Townships and additional unorganized townships around Greenville have school-aged children, they are traditionally tuitioned to the Greenville schools.

Table 5-12

Rockwood											
October Enrollments											
Total Resident Enrollment											
	1995	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**
Rockwood Elementary	15	15	15	17	12	14	12	15	11	14	16
Greenville Middle	19	15	15	13	10	11	9	11	9	8	6
Total Elem	**34**	**30**	**30**	**30**	**22**	**25**	**21**	**26**	**20**	**22**	**22**
% Change		**-11.76%**	**-11.76%**	**-11.76%**	**-35.29%**	**-26.47%**	**-38.24%**	**-23.53%**	**-41.18%**	**-35.29%**	**-35.29%**
Total Sec	**13**	**10**	**10**	**14**	**16**	**16**	**13**	**10**	**8**	**10**	**11**
% Change		**-23.08%**	**-23.08%**	**7.69%**	**23.08%**	**23.08%**	**0.00%**	**-23.08%**	**-38.46%**	**-23.08%**	**-15.38%**
Grand Total	**47**	**40**	**40**	**44**	**38**	**41**	**34**	**36**	**28**	**32**	**33**
% Change		**-14.89%**	**-14.89%**	**-6.38%**	**-19.15%**	**-12.77%**	**-27.66%**	**-23.40%**	**-40.43%**	**-31.91%**	**-29.79%**

Staff

Due to recent declines in enrollment, the Rockwood Elementary School has reduced its staff to one full-time teacher and one aide. The administrative paperwork is handled by a part-time secretary who works 2 hours a week. A part-time cook is responsible for the school lunch program, and the custodial work is done by the part-time bus driver.

Transportation

Transportation services for EUT pupils are provided through a fleet of 27 school buses (18 regular and 9 spare). In those areas where a school bus is not available, there are 35 contract conveyors that provide daily transportation to and from school or to the nearest bus stop. Two school buses are assigned by the Department to serve the Rockwood Elementary School and area students, one in regular service and an alternate bus sitting in reserve if needed. The bus picks up students in Rockwood and continues south, picking up students on the way before dropping off the tuitioned students at the Greenville Middle/High School. The bus then returns and proceeds to collect students who attend the Rockwood Elementary School. Many of the students that ride the bus need to make alternative arrangements for transportation to the pick-up and drop-off locations.

Currently the Department of Education and the Program for Education in the Unorganized Territories does not pick up or drop off any students on roads that are not accepted as official roads. According to Mr. Moreau, arrangements are made with the families and the Department of Education for students to receive transportation to and from the school from a reasonable

location. It is recognized that there are situations that may not be feasible or reasonable for a school bus to safely get to a certain area. Therefore, if a road is not accepted by the municipality, county or state, school buses do not travel on it.

Budget and Financial Capacity

Funding for all services provided by the Division of State Schools EUT is obtained through a direct tax levy on real property located within the Unorganized Territory, including all properties within the proposed Plum Creek Plan Area. Thus, the Unorganized Territory Education and Services Fund is the source of all operating and capital monies. The EUT system receives no State subsidies of any kind, but does participate in a number of federal programs.

Future Conditions, Impacts, and Potential Solutions

Introduction

If the proposed development Plan occurs, an increase in employment and housing opportunities will occur in Greenville, Jackman and the surrounding Unorganized Territories. Increases in employment opportunities lead to increased population and the development of new households. Therefore, it is assumed that an increase in the school-age population will be in direct proportion to increases in the population.

During the past ten years, student enrollment within the Impact Area has fluctuated, with periodic declines, steeper drops, and then stabilization. Such fluctuations in enrollment are a major cause for concern for small rural schools. The ebb and flow of student enrollment directly affects the school funding formulas and raises concern about budgets and funding on a year-to-year basis.

Approach

To estimate the impact of Plum Creek's Plan development, it is necessary to estimate the potential number of school-aged persons generated within the broader Plan Impact Area. The assumptions applied in this Education impact study are the same assumptions applied in the Housing section of this Report. Census data for population are used to estimate the number of persons per household and the percentage of the population that are of school age (5-18 years of age). Many of the assumptions used could be modified to reflect a more conservative or liberal estimated impact. For example, one could assume a greater or lesser number of seasonal versus year-round residents proposed within the development; a higher or lower percentage of persons per year-round household, or a higher or lower number of induced housing units from the Plan development.

Assuming that 15 percent (or 146.25) of the Plan's proposed 975 housing units will be year-round, and that an additional 390 year-round households (determined from the Housing section of this Report) will be induced from the Plan development, the Plan could lead to the creation of a combined total of 536.25 housing units within the Plan Area and Plan Impact Area.

It is difficult to project where these year-round residents would be located. It is assumed that the distribution of year-round housing units would be similar to the location of the seasonal residences. The location of year-round housing is assumed to be in accordance (based on percentages) with the development patterns proposed in the Plum Creek Plan, as was any additional induced housing resulting from the increase in development in the Plan Impact Area.

Census 2000 data for average persons per household county-wide (2.44 for Somerset County and 2.34 for Piscataquis County) was used to calculate a total increase in year-round population for both Plan Area development and any induced development. Census 2000 data was also used to determine what percentage of the county population (19.5 percent for Somerset County and 18.7 percent for Piscataquis County) would be of school-age. This percentage was multiplied by the total year-round persons added to the population, to estimate the total student increase for the Plan Impact Area. This total student increase was then applied to the applicable school district in which the proposed development or induced development would occur. With an area covered by multiple school districts, as is the case with Rockwood, percentages are allocated. For example, it is assumed that 15 percent of the children in the Rockwood Elementary School system would be of the age appropriate for grades 5-12, and would need to be sent to the closest District that would educate the children within the Plan Area.

Potential Impacts

The impact of future increases in enrollment of potential students generated from developments within the Plan Area is shown in Table 5-13, Student Enrollment from Plan Development**.** The numbers in Table 5-13 are estimates of student enrollment from Plan development upon the Plan's full build-out. However, it is assumed that student enrollment would increase in tandem with the phasing of the development.

Table 5-13 Student Enrollment from Plan Development

General Location of Lots	Total Lots	Year Round Homes at 15%	Persons Per Year Round Home	Total Year Round Population	% Pop. Enrolled In School	Total Student Increase	Union #60	MSAD #12	Rockwood Elementary
Jackman/Long Pond Corridor	110	16.5	2.44	40.26	19.49%	7.85		7.85	
Greenville/Rockwood Corridor	535	80.25	2.44	195.81	19.49%	38.16	33.42		4.74
Greenville/Lily Bay Corridor	330	49.5	2.34	115.83	18.69%	21.65	21.65		
Total	**975**	**146.25**		**351.9**		**67.66**	**55.07**	**7.85**	**4.74**

Source: US Bureau of Census, Data Set FS-3-sample data
Plum Creek Rezoning Plan
EMDC Housing and Employment Projections
Assuming 15% of developed properties within Plum Creek Plan will be year-round housing
Assumptions were made according to detailed conversations with the Department of Education as to where, if students were living in the Plan Area, they would attend school.

Note: Location of proposed households in the Plan Area are distributed according to the locations specified in the Plan. The school districts that new students would attend will depend on the location of the new year-round households. Whether the Plan's proposed lots

	Induced Homes	Persons Per Year Round Home	Total Persons	% Pop. Enrolled In School	Total Student Increase	Union #60	MSAD #12	Rockwood Elementary
Total	**390**	**2.38**	**928.20**	**18.69%**	**173.48**	**143.99**	**15.61**	**12.14**

will be used for year round or seasonal use will be driven by market conditions.

The impact of future increases in enrollment of potential students generated from additional induced development in the Impact Area can be seen in Table 5-14**,** *Student Enrollment from Induced Development.* The numbers in Table 5-14 are estimates of induced population upon the Plan's full build-out. However, it is assumed that student enrollment would increase in proportion of the phasing in of the development.

Table 5-14 Student Enrollment From Induced Development

Source: US Bureau of Census, Data Set FS-3-sample data
Plum Creek Rezoning Plan
EMDC Housing and Employment Projections
Assumptions were made according to detailed conversations with the Department of Education as to where students would attend school in relation to their location.

Note: Location of proposed households in the Plan Area are distributed according to the locations specified in the Plan. The school districts that new students would attend will depend on the location of the new year-round households. Whether the Plan's proposed lots will be used for year round or seasonal use will be driven by market conditions.

The impact of future increases in enrollment generated from the Plum Creek Plan development and induced development in the Impact Area, is shown in Table 5-15, Enrollment Change in Impact Area**.** The numbers calculated in Table 5-15 are based on full build-out of the proposed development and the assumed additional induced development. However, it is assumed that student enrollment would not increase immediately but would increase in proportion to the phasing in of development.

Table 5-15 Enrollment Change in Impact Area

School District	Increases in Student Enrollment		
	From Plan Development	From Induced Development	Total
School Union #60 (Greenville)	56.83	143.99	200.82
MSAD #12 (Jackman)	7.85	15.61	23.46
Rockwood Elementary	4.74	12.14	16.88
Total	69.42	173.48	241.16

Total projected increase in expenditures can be calculated by multiplying the total number of new students by the annual cost per pupil.

Table 5-16: Projected Increased Cost Associated with New Students

	Cost Per Pupil	Projected New Students	Projected Increased Cost
Greenville School Union #60	$ 11,961.17	200.82	$ 2,347,821.76
Rockwood Elementary	$ 10,500.00	16.88	$ 177,240.00
Jackman MSAD #12	$ 9,521.92	23.46	$ 223,384.24

Source for data: 2005-06 Per pupil resident operating expenditures including special education and CTE (vocational). Excludes major capital outlay, debt service, transportation and federal expenditures. Rockwood Elementary is based on information provided by school officials.

An additional impact to the educational system is the provision of transportation to new students. Currently, School Union #60, MSAD #12, the Department of Education and the Program for Education in the Unorganized Territories provide transportation to the local schools. However, they do not pick up or drop off any students on roads that are not accepted as official state, county, or municipal roads. It is recognized that there are some locations that may be too inaccessible to accommodate school transportation. Therefore, if a road is not accepted by the municipality, county or State, school buses do not travel on such. With the Plum Creek Plan development's proposed use of road associations and homeowners groups, it is likely that the current system of transportation will not be affected.

Cost projections can be calculated to show potential increase for added transportation costs associated with the Plum Creek Concept Plan.

Table 5-17: Projected Increased Transportation Cost with New Students

	Cost Per Pupil	Projected New Students	Projected New Cost
Greenville School Union #60	$ 237.65	200.82	$ 47,724.87
Rockwood Elementary			
Jackman MSAD #12	$ 213.25	23.46	$ 5,002.85

Source of data: Maine Department of Education – Pupil Transportation Expenditure 2002-2003 Revised 3-04.
No information available for Rockwood Elementary as no UT information was provided for the State chart.

Proposed phasing for the project, over a 10-year period, would add approximately 24.12 students to the transportation system each year. Of that 20.08 would be destined for School Union #60, 2.35 would be bound for MSAD #12, and 1.69 would require transportation to Rockwood Elementary.

It is important that these transportation policies and expectations be communicated to incoming families. As a constant theme in rural Maine, people expect changes after they move in, either because of their unfamiliarity with the level of services before relocating, or because they are unwilling to accept the existing level of services. The Unorganized Territories need not unilaterally assume the added burden of rural locations if people choose to locate there despite well-known limitations on government services.

Summary

MSAD #12 and School Union #60, as well as the Rockwood Elementary School, currently show capacity to accommodate an increase in enrollment. Declines in enrollment over the past decade have left both school districts searching for options in meeting budgets while attempting to protect the quality of education the students receive. As the potential of consolidation looms over small community schools, MSAD #12 and School Union #60 and could accept increases in enrollment.

According to MSAD #12 officials, the school system has the capacity to increase enrollment by 80-100 pupils without having any immediate effect on the system (whether facilities or teachers). A projected increase of 23.46 students for MSAD #12, as seen from Table 5-15 Enrollment Increases to Impact Area, is well below the District's current capacity (additional 80-100 students) and can easily be handled by the current infrastructure and staff. Classrooms currently are under-utilized, with available space at all grade levels. School Union #60 also has experienced a decline in enrollment. Since 1995, School Union #60 has seen a decline of 178 students. This decline has forced the consolidation of classrooms and may have affected the quality of education. According to the administration, increases in school population due to development will not only be assimilated quite easily, they are actually being encouraged. As the threat of further consolidation looms over the small community schools, Union #60 can accept increases in enrollment of over 200 students. A projected increase of 200.82 students for School Union #60, as seen from Table 5-15 Enrollment Increases to Impact Area, is below the amount of increase that would be seen as tipping the capacity scale.

Over the past ten years, Rockwood Elementary School, as part of the Education Program in the Unorganized Territories, has not seen its enrollment drop off as significantly as School Union #60 or MSAD #12. Enrollment has remained fairly constant during the study period. However, the school operates far under its original capacity of almost 40 students. The two-classroom school is currently operating in one classroom and accommodates an average of 14 students a year. Previous highs of enrollment were more than double that number. A projected increase of 16.88 students for the Rockwood Elementary School, shown in Table 5-15 Enrollment Increases to Impact Area**,** is within the current capacity of 40 students.

Cost increases associated with total new students based on per pupil expenditures would show an increase at School Union #60 of $2,374,821.76, MSAD #12 of $223,384.24, and Rockwood Elementary of $177,240. Increases in transportation costs would be $44,724.87 at School Union #60, and $5,002.85 at MSAD #12.

It is important to note that projections are based on a figure that new homes in the Plan Area will be occupied by year-round residents at a rate of 15%, as indicated through discussion with LURC staff. Current infrastructure should be able to accommodate the projected increase.

6.0 Police and Law Enforcement

Overview

This section evaluates the potential impact of development as proposed in the Concept Plan for Plum Creek lands on local, county and state law enforcement agencies. The Moosehead Lake and Brassua Lake regions of the State are rural communities with significant seasonal and recreational populations. Law enforcement personnel are needed throughout the area to monitor and enforce the laws for the local residents and visitors.

Law enforcement services are provided at three levels: State Police, County Sheriffs' Departments within Piscataquis and Somerset Counties, and the Town of Greenville Police. The Maine Wardens Service provides assistance to the State Police and County sheriffs, and provides a visible presence of law enforcement within the unorganized territories. In the immediate vicinity of the proposed Plum Creek Plan area, only the Town of Greenville has an organized Police Department.

Historic and Current Inventory/Operations

Maine State Police, Troops E and C (Orono and Skowhegan, Maine)

The Maine State Police have general jurisdiction over the State of Maine. The State Police are organized into Troops. The Field Troops are the uniformed branch of the Maine State Police. The Troopers who work in the Field Troops patrol all the municipalities in the State of Maine that do not have their own police departments. They enforce criminal and traffic laws through investigation and patrol work. Field Troopers investigate traffic accidents and respond to a wide variety of criminal complaints including domestic violence, burglary and assault. Troops C and E are responsible for policing the greater Moosehead Lake region, but most of their work entails specialized investigative and other services. Services and coverage for the Greater Greenville area are provided from the barracks at Troop E in Orono, Maine, 75 miles from Greenville. Troop C, 72 miles away in Skowhegan, is responsible for the upper Kennebec River region and the Town of Jackman.

Staff

Troop E is responsible for Penobscot and Piscataquis Counties and for patrolling the 107 miles of Interstate 95 from Newport to Sherman. The Troop consists of a lieutenant, three sergeants, 24 troopers (which include 3 Troop investigators) and a secretary. The Orono Barracks is also home to the Regional Communications Center, where 11 emergency communication specialists, a mechanic and a radio technician also support the public safety division of the State Police. The building was renovated and expanded in 1994.

Many Troop E Troopers maintain specialties as part of their assignment with the Maine State Police. Among the 24 police in the Troop, one is a radar instructor, one is a vehicle-autopsy specialist, three are evidence-response team members, three are K-9 handlers (one patrol/drug,

one patrol, and one patrol/ tactical), three are instructors in emergency-vehicle operations, two are on the tactical team, three are members of the underwater recovery unit (one of those is the unit commander), two are firearms instructors, one is a member of the bomb squad, two are crash-reconstruction experts, one is a lead Criminal Justice Academy defensive-tactics instructor, and one is a forensic-mapping specialist.

Troop E maintains a long-standing cooperative resource coordination agreement with the Penobscot County Sheriff's Department, working daily with the Department's deputies. Penobscot County is divided into 6 rural patrol zones and two interstate zones, staffed by troopers and deputies. The southern interstate zone includes I-395. Troop E coordinates investigations and training with the Penobscot County Deputies, with one troop investigator maintaining a desk and computer access within the Penobscot Sheriff's Office. In August 2005, Troop E and Penobscot Deputies trained jointly in crowd control at the University of Maine at Orono.

Troop E is assigned five Troopers who serve the northern regions of Piscataquis and Penobscot Counties. The five Troopers include one supervisor, three Troop investigators and one patrolman. All Troopers reporting to the Troop barracks in Orono are stationed and reside in the Dover-Foxcroft area. On any given day, officers are available for service calls as they are patrolling the area and investigating criminal activities within the Troop's service region. Any officer in close proximity to criminal activity may respond to any area for assistance.

State Police Lt. Hussey stated that a majority of the work the State Police does in the region is criminal investigation and assistance. It was his opinion that the major coverage to the area is handled by the Sheriff's Department and they are there to assist when called upon.

Troop C is based out of Skowhegan, in southern Somerset County, and is responsible for patrolling Somerset, Franklin and northern Kennebec Counties. The Troop is also responsible for the patrol of a 45-mile stretch of I-95 from Augusta to Newport. The Troop is comprised of one lieutenant, three sergeants, 23 Troopers and a secretary. On any given day, officers are available for service calls as they are patrolling the area and investigating criminal activities within the Troop's service region. Any officer in close proximity to criminal activity may respond to any area for assistance.

Piscataquis County Sheriff's Department

The Piscataquis County Sheriff's Department provides police protection and public safety services to the people of Piscataquis County. Located in Dover-Foxcroft, the county seat, the Sheriff's Department serves 19 municipalities and approximately 92 unorganized territories spanning 3,500 square miles. The Sheriff's Department is responsible for responding to critical incidents, service calls and patrolling. Piscataquis County participates in a regional dispatch program by hosting the regional dispatcher within its offices. Calls are received at the central dispatch unit within the Sheriff's Department in Dover-Foxcroft.

Staff

Seven full-time and seven regular part-time Sheriff's officers comprise the Piscataquis County Sheriff's Department, which also employs two full-time administrative supervisors and five full-time investigators. The part-time officers regularly fill rotating shifts to complete the shift coverage. All officers are stationed and reside in the greater Dover-Foxcroft area. Officers are on active duty from 8 a.m. to 2 a.m., and rotate coverage for on-call services. The Piscataquis County Sheriff's Department also houses the Regional Dispatch Center, which operates 24 hours a day, 365 days a year.

Building and Equipment

The Piscataquis County Sheriff's Department operates out of a central office in Dover-Foxcroft. Each full-time Sheriff or Deputy is assigned his or her own vehicle. Two backup vehicles are used for part-time officers and rotations. All vehicles are replaced on a five-year capital replacement rotation.

Somerset County Sheriff's Department

The Somerset County Sheriff's Department provides police protection and public safety services to the people of Somerset County. Located in Skowhegan, the Sheriff's Department serves 32 municipalities and 82 unorganized territories, spanning over 3,984 square miles. Officers answer requests for services, respond to local community requests for special events (such as fairs and mud runs), conduct OUI activities, serve protective and harassment orders, and render public assistance to the citizens throughout Somerset County. Court Security Officers provide security and assistance to the Superior and District Courts, and the Civil Deputies serve summonses throughout Somerset County.

The Somerset County Commissioners created their own Regional Communications Center in 2000 which is housed within the County offices. The Communications Center provides E911 and emergency response services for all the towns and unorganized territories in Somerset County. The Center coordinates responses among all of the public safety agencies operating in the county, including State emergency responders, the Somerset County Sheriff's Department and Emergency Management Agency, four municipal police departments, 17 Rescue and Transporting Ambulance Departments, 25 Fire Departments (many of which are volunteer), and two hospitals.

Staff

In addition to the staffing of the regional communications center, the Somerset County Sheriff's Department has five full-time officers and a seven regular part-time Sheriff's officers. Two full-time administrative supervisors and three full-time investigators oversee the operations; they are assisted by a secretary, a receptionist and a network analyst. The Somerset County Sheriff's Department also has on its staff a Community Resource Officer, who engages in public activities and outreach. The part-time officers regularly fill rotating shifts to complete the shift coverage. All officers are stationed and reside in or near Skowhegan.

Building and Equipment

The Somerset County Sheriff's Department operates out of dedicated space in the County Correctional facility and Court House. Each full-time Sheriff or Deputy is assigned his or her own vehicle. Two backup vehicles are used for part-time officers and rotations.

Greenville Police Department

The Greenville Police Department is one of only four municipal police departments within Piscataquis County. Greenville police officers are on-duty from 7 a.m. to 1 a.m.; during the early-morning gap, the Piscataquis County Sheriff's Department handles any local calls.

Staff

The Greenville Police Department consists of two full-time Officers, one part-time Officer and seven to nine part-time Reserve Officers. The Greenville Police Chief and one Corporal make up the full-time staff, while reserve officers fill patrol shifts and cover special events as needed.

Building and Equipment

The Town of Greenville recently moved the town offices, including the Department, to a new municipal building. Construction of the 3,100-sq.-ft. building was completed in January of 2005. This facility adds a great deal of professionalism to the operation of the Town, and brings the Town into compliance with a number of state and federal requirements.

The new facility provides confidential meeting space for victims, witnesses and suspects. As part of the move, the Department updated its computer systems, enabling interaction with other agencies through databases and e-mail.

The Greenville Police Department currently owns a 2004 GMC four-door pick-up and a retrofitted Maine State Police Cruiser. In conjunction with the Maine Warden Service, the Greenville Police Department houses an "Intoxilizer" Breath Analysis machine.

The Department of Inland Fisheries and Wildlife: The Maine Warden Service

The Department of Inland Fisheries and Wildlife was established to preserve and protect the wildlife and aquatic resources of the State of Maine. The Department is responsible for: establishing and enforcing state regulations governing fishing, hunting, trapping; propagation and stocking of fish; acquiring wildlife management areas; registering snowmobiles, watercraft, and all-terrain vehicles; providing safety programs for hunting, snowmobiles and watercraft; and issuing related licenses and permits.

The Bureau of Warden Service was established within the Department to enforce state laws and Department rules governing the management of fisheries and wildlife, and to register snowmobiles, watercraft and all-terrain vehicles. The Warden Service also coordinates search-and-rescue operations, conducts hunting and recreational vehicle safety programs, and collects

data important to its missions. The Maine Warden Service also provides some policing in the unorganized territories, with the same law enforcement authority and powers as the State Police

The Maine Warden Service consists of 124 uniformed members and is the largest of three bureaus in the Department of Inland Fisheries & Wildlife. Its control headquarters are located in Augusta; regional headquarters are located in Gray, Sidney, Bangor, Greenville and Ashland. Each division is supervised by a Lieutenant and sectional Sergeants. The state is divided into warden districts, which tend to be geographically smaller in southern Maine and larger in the sparsely populated northern sections.

Staff

The Maine Warden Service's Greenville Regional Headquarters is responsible for the oversight of the greater Moosehead Region. Coverage is maintained by a Regional Lieutenant and Sectional Sergeants. The staff oversees the enforcement of Maine's fish and wildlife regulations, and assists local, county and state police in enforcing state and federal laws throughout the region. The Warden Service in Greenville takes the lead role in area search-and-rescue operations.

Equipment

Members of the Warden Service are certified law-enforcement officers who use a variety of equipment, including four-wheel drive trucks, boats, snowmobiles, ATVs, personal computers, a two-way radio repeater network, portable radios, fixed wing aircraft and night-vision equipment. The service maintains its own forensics laboratory, dive team, K-9 unit and aircraft. The aircraft enable Wardens to patrol remote sections of their assigned districts, respond to emergency situations, participate in fish stocking, conduct angler surveys, and oversee boating activity.

Response Times for Primary Law Enforcement in the Region

A primary concern when assessing the impact on new development on law enforcement is the effect on response times. Several factors contribute to the time it takes law-enforcement to respond to emergency calls: the distance to the call, average speed, weather and road conditions, and the point-of-reception of the call. Development of a response model is difficult because the point of reception of the call, or the location of officer in when the call is received, is constantly changing while the officer is on patrol.

With respect to Plum Creek's proposed Plan, none of the activity resulting from the proposed development would fall outside the area of activities resulting from existing residential or commercial uses in the region. One can therefore assume that while the number of calls may increase, the impact on response times should be limited.
The following observations can be made about current response times to the region by the various law enforcement divisions:

State Police

The response times for State Troopers vary as to their current location and proximity to the call. Penobscot and Piscataquis Counties cover over 5,000 square miles, and it may take a Trooper two to three hours to travel from one end of their coverage area to another. According to Lt. Hussey of Troop E in Orono, the majority of the calls to the Moosehead Lake region are handled by the County Sheriff's Departments, not the State Police. The State Police are normally called in only to assist with investigations and cover seasonal patrols.

Somerset County

Response time is critically important to the Sheriff's Department in Somerset County, due to a lack of available personnel and the location of the deputies in relation to the Plan Area. After a call comes in to the county's dispatch center in Skowhegan, it can take a deputy between 30 minutes to 90 minutes to respond to the incident. The closest deputy to the Plan Area is located in Bridgeton.

Piscataquis County

With the corps of deputies residing in the greater Dover-Foxcroft area, response to a call in the north portion of the county could exceed an hour. Response time greatly depends upon where a deputy is patrolling at the time of the call and the road and weather conditions that the deputy encounters during his or her response.

Town of Greenville

The Greenville Police usually respond to calls from within the town boundaries. Thus, response times tend the much quicker than those for the country and state agencies. One significant variable to response time is the time of day during which the call comes in. Because the station is closed from 1 a.m. to 7 a.m., it may take an on-call officer or county personnel longer to respond outside the regular hours of operation.

Potential Impacts from Development

In-depth discussions with law-enforcement personnel in the Moosehead Lake region indicate that there is pressure on the existing system, and increased visitors and residents will more than likely increase this burden. Because departments are already understaffed, and assuming no additional staff are hired, any additional impact that may result from development in the Plan Impact Area would be difficult to assimilate into the current workload.

Law-enforcement officials indicated that they see potential impacts coming from two primary areas: enforcement issues stemming from the influx of workers for the large-scale development projects, and crimes of opportunity arising from the number of properties and resort units that are anticipated from development of the Concept Plan. (For purposes of this report, it is assumed that 829 out of the 975 homes to be developed will be used seasonally).

Development Enforcement

To meet the need for the large-scale construction projects envisioned by the Plan, it will be necessary to import a significant number of workers. While some workers will seek out long-term opportunities associated with the phased-in residential development, many short-term employees will be needed to build the resorts at Big Moose Mountain and Lily Bay.

The transient workforce needed for the proposed resort projects is a point of concern for law-enforcement officials, especially in the Town of Greenville, where many of the after-hours services for the region are provided. Greenville officials expect an increased number of calls relating to off-duty workers. Additionally, the increased traffic passing through Greenville will more than likely stimulate moving violations at a proportionate rate.

The construction of hundreds of seasonal residences could increase law-enforcement activity in a number of ways. For example, not only is there increased potential for property crimes at vacant residences, but also for false alarms from residential security systems.

A current example that can be evaluated is the 89-lot subdivision at First Roach Pond. Discussions with law enforcement officials indicate that while there have been some additional break-ins associated with the housing development there has been little discernable additional crime.

A relatively new 89-lot subdivision at First Roach Pond provides a basis for projecting the impact of the Plan. Law-enforcement officials indicate that there have been some additional break-ins associated with the housing development. However, overall crime in the area has remained relatively constant. Since development of the subdivision was approved in 2001, approximately 30 residences have been constructed. There were approximately 100 seasonal and year-round residences in place prior to the new subdivision approval. Information on call volume provided by Piscataquis County Communications Center officials indicate that since 2000, there have been a total of 100 calls dispatched to First Roach Pond, with 13 of those calls responding to fire protection (3), and ambulance deployment (10). The chart below shows the trend of all emergency calls to First Roach Pond one (1) year prior to approval, and after the approval of the 89-lot subdivision.

Table 6-1: Emergency Calls to First Roach Pond 2000-2006

	2000*	2001#	2002	2003	2004	2005	2006@
First Roach Pond Emergency Calls	15	15	16	7	16	18	13

* Prior to new subdivision development: 100 Homes.

\# LURC approved 89-lot subdivision project.

@ Additional 30 homes in place for First Roach Pond create total home count of approx. 130

While the numbers for the First Roach Pond development point to a flat level of law enforcement calls since construction started on the new 89-lot subdivision, call totals from 2006 for the Greenville area, for data provided by Piscataquis County Communications Center, can allow for the prediction of potential new calls associated with Piscataquis County Sheriff operations.

Table 6-2: Total Projected New Calls for Piscataquis County Sheriff Based on New Residential Development

Total Sheriff Dispatched Calls 2006	288
Total Piscataquis County Households in Impact Area	2,609
Calls Per Household	.11
New Piscataquis County Housing Units per Plum Creek	330
Total New Calls Projected Annually from Residential Development	**36.30**

Source for Sheriff Dispatched calls: Piscataquis County Communications Center
Source for Piscataquis County Households in Impact Area: 2000 Census

If you apply the same projection method to the accommodations created by the resort development, to include the employee housing, the following scenario indicates:

Table 6-3: Total Projected Calls for Piscataquis County Sheriff Associated with Resort Accommodations

Total Sheriff Dispatched Calls 2006	288
Total Piscataquis County Households in Impact Area	2,609
Calls Per Household	0.11
New Resort Accommodations Including Employee Housing	1,240
Total New Calls Projected Annually	**136.4**

Source for Sheriff Dispatched calls: Piscataquis County Communications Center
Source for Piscataquis County Households in Impact Area: 2000 Census

Table 6-4: Total Projected New Calls for Somerset County Sheriff Based on New Residential Development

Total Sheriff Dispatched Calls 2006	325
Total Somerset County Households in Impact Area	2,137
Calls Per Household	0.15
New Piscataquis County Housing Units per Plum Creek	730
Total New Calls Projected Annually from Residential Development	**109.5**

Source for Sheriff Dispatched calls: Somerset County Communications Center
Source for Somerset County Households in Impact Area: 2000 Census
-Housing for Somerset Includes Affordable Housing: 85 units.

While this does provide some basis for evaluation, discussions with the Chief of Police at Carrabassett Valley/Sugarloaf, a small community with a large resort and visitor impact, indicated that in 2006 they issued 295 summons/arrests for a variety of offenses. The summons/arrest totals are based off of 8,114 total calls (emergency and non-emergency calls for both Sugarloaf and the Town of Carrabassett Valley) to the Police Department in 2006. A shared force between the town and the resort provides coverage for the primary operation, Sugarloaf, with secondary coverage for the property of the community. The total force is made

of eight officers, of which seven are security officers employed by Sugarloaf and granted law enforcement powers within the community. The Chief of Police is the only Town employee, but he also serves as part of the force at Sugarloaf. He indicated that while they are a community of 400 year-round residents, due to the resort, they prepare like they are a "community of 8,000." His discussions indicate that the majority of offenses were for the crimes of opportunity that exist around resort operations, such as stealing of ski equipment.

Table 6-5: Total Summons/Arrests for 2006 by Carrabassett P.D.

Offense	
Simple Assault	4
Intimidation	1
Burglary/Breaking and Entering	5
Theft from Motor Vehicle	3
All Other Larceny	144
Motor Vehicle Theft	3
Counterfeiting/Forgery	1
False Pretenses/Swindling	7
Destruction/Damage/Vandalism	37
Drug/Narcotic Violations	2
Bad Checks	7
Disorderly Conduct	34
Driving Under the Influence	1
Liquor Law Violations	1
Trespass of Real Property	15
All Other Offenses	7
Traffic, Town By-Law Offenses	23
Total	**295**

Source of data: Carrabassett Valley Police Department

While Carrabassett Valley/Sugarloaf prepare like they a community of "8,000," it is important to note that the capacity and occupancy projection for the resorts associated with the Plum Creek Concept Plan show a daily population impact of 3,150.

Summary

Law enforcement calls to the Plan Area for Sheriff Departments in both Somerset and Piscataquis Counties, based on full build out of the projects, could add an additional 282.2 calls annually. In the past Somerset County has put forth a proposal to the budget committee for an additional deputy, while Piscataquis County Commissioners have already approved the hiring of another deputy. If there is a determined need for additional deputies above and beyond what has already envisioned regardless of the Plum Creek Concept Plan, cost is estimated at $240,000 per

deputy for a three year period. Recommendations for additional deputies above and beyond what has already been proposed were made by the respective Sheriff Departments.

The Town of Greenville, as the primary service center in the Moosehead Lake region, is currently evaluating the feasibility of move toward a 24-hour law enforcement operation. While it is difficult to predict new call volume from worker or transient population use of Greenville services, Greenville officials indicate that an additional four (4) to six (6) officers could be needed to meet the demand of a 24-hour operation and could cost in excess of $150,000 annually.

7.0 Fire Protection and Rescue Services

Overview

The purpose of this section is to outline and evaluate the potential impact on fire and emergency protection services from the proposed Plum Creek Plan development. As development occurs throughout the region, the demand for fire and rescue services will increase. Inventory and analysis of current infrastructure and personnel will allow for better preparation for and management of impacts upon the area.

The Greenville Volunteer Fire Department, Jackman-Moose River Fire Department, and the Rockwood Fire Department provide primary structural fire-fighting capabilities in the Plan and Impact Areas, while the Maine Forest Service is responsible for wildland fire suppression activities. The Forest Service does not assist in structure fires. The municipal and plantation fire departments are manned by volunteer fire fighters. Through municipal appropriations, these departments provide fire-fighting services for the region. The unorganized territories purchase fire and emergency services from these groups. Please see Figure ES-2, Fire and Medical Services, for the location and coverage areas of Fire Protection and Rescue Services within the Impact and Plan Area.

Emergency calls for the three fire departments have remained fairly constant since 2001 as noted in Table 7-1. The calls noted are a compilation of all emergency calls call to include structure and non-structure fires, automobile accidents, outdoor recreation accidents, etc.

Table 7-1: Annual Fire Department Calls

	2001	2002	2003	2004	2005	2006
Greenville	74	69	77	73	79	64
*Rockwood	50-60*	50-60*	50-60*	50-60*	50-60*	50-60*
Jackman	41	47	33	33	42	53
Total	**170**	**171**	**165**	**161**	**176**	**172**

*Discussions with Rockwood Fire Chief indicated that while they are unable to provide specific numbers, they average 50-60 emergency call per year.

A breakdown of the call type in 2006 in Greenville and Jackman indicated that the department primarily responded to calls that were not fire-related.

Greenville Volunteer Fire Department

Structure Fire	3	Service Calls	31
Car Fire	1	Medical/Rescue	9
Chimney Fire	7		
Car Accident	17		
Snowmobile Accident	3		

Jackman–Moose River Fire Department

Structure Fire	5
Non-Structure Fire	10
Accident, Rescue, Other	38

Current Inventory and Fire-Fighting Operations

The Greenville Volunteer Fire Department

By community vote, the Greenville Volunteer Fire Department was established in 1913 as a division of municipal government for the Town of Greenville. The Greenville Volunteer Fire Department consists of 25 volunteers and provides fire and emergency response services to the towns of Greenville, Shirley, Beaver Cove, Big Moose Township, French Town and Lily Bay. The Greenville Fire Department is a member of the Piscataquis Community response and will respond to any call within the County if needed.

The Greenville Volunteer Fire Department recently expanded its facility after the town's municipal and law enforcement services moved across the street to a new building. While some storage space has been retained by the municipal offices, the majority of the old municipal building is now used by the Fire Department.

Coverage area

The Greenville Volunteer Fire Department provides fire protection and accident rescue services for a large region of Northern and Central Piscataquis County, including the Towns of Greenville and Beaver Cove. The Greenville Volunteer Fire Department also serves the unorganized territories of Greenville Junction, Harford's Point, Big Moose Township, Lily Bay Township, Kokadjo and Frenchtown Township. As part of a mutual-aid agreement with the other municipalities in Piscataquis County, the Fire Department offers assistance to Brownville, Brownville Junction, Milo, Dover-Foxcroft, Sangerville, Guilford, Monson and Shirley. The department acts as the primary and first responder to the region. Answering on average about 70 calls per year over the past five years, the Greenville Volunteer Fire Department handles calls ranging from small chimney fires to multiple vehicle accidents.

Staff

Comprised of 25 paid volunteers, the Greenville Fire Department is responsible for 24-hour coverage for fire protection and rescue services to the communities it serves.

Equipment

The Department's major equipment includes two pumper trucks (1991 Ford and 2002 KME), a rescue van, a brush truck, a ladder truck, and water tender.

Mutual Aid Agreements and Funding

The Greenville Volunteer Fire Department budget is $117,000 per year. Approximately $75,000 of the revenue to support this budget comes from Mutual Aid Agreements with neighboring communities. The formula for determining the cost for fire protection services for neighboring jurisdictions is based on population, valuation and distance from the station.

Expansion of the Greenville Department's services into additional areas will be challenged by the availability of volunteers. Finding volunteer firefighter is can be difficult. Many of the volunteers commute to jobs and have other responsibilities that impinge upon their availability to respond to fire calls. While the vast majority of firefighters live and work in Greenville, increasing commutes sometimes leave firefighters in a position where they must return to the fire station, and then ride past where they were prior to the fire call, perhaps traveling another half-hour or more.

Currently, the Greenville Volunteer Fire Department is the closest to the entire east side of Moosehead Lake, as there are no substations or other departments in the Plan Area for this part of the lake. Rockwood offers fire protection and has a mutual aid agreement with the Greenville Volunteer Fire Department, located nearly 20 miles away.

<u>The Jackman-Moose River Fire Department (JMRFD)</u>

Located in the western mountains of Maine, The Jackman-Moose River Fire Department (JMRFD) is owned and operated jointly by the Towns of Jackman and Moose River.

Coverage area

JMRFD provides fire protection and accident rescue services for a large region of Northern Somerset County, including the Towns of Jackman and Moose River, Dennistown Plantation and numerous unorganized townships. JMRFD acts as the primary and first responsder in this region. Answering an average of 35 calls per year over the past five years, the Jackman Moose-River Fire Department responds to emergencies ranging from small chimney fires to multiple-vehicle accidents.

Staff

Made up solely of paid volunteers, the Fire Department currently has 19 active members. According to the Chief, it is difficult to mobilize personnel during the work day. Member volunteers work at a variety of locations throughout the region and often commute long distances to work, or work in remote areas where travel during the day is difficult.

Equipment

JMRFD's fleet of Emergency Vehicles consists of a 1997 E-One Pumper, 1970 Kaiser Jeep Tanker/Brush Truck, 1990 KMC Pumper/Tanker, and a donated 1993 Ford E350 Rescue.

According to Chief William Jarvis, the Department needs to expand the Fire Department building. More room is needed for training, and the Department needs a trailer to haul ATV equipment used in remote rescues.

In October 2003, the Jackman-Moose River Volunteer Fire Department purchased an MSA 5000 thermal imaging camera complete with telemetry (Telemetry consists of a video transmitter built in to the camera that broadcasts images to a video receiver. This allows those outside of a burning building to watch all that the camera sees inside the burning building). Being located in a remote region, with no mutual aid available from other fire departments, the equipment helps the Department maximize its firefighting capabilities.

According to Chief Jarvis, LifeFlight Helicopter is an important part of public safety in the Jackman Region; it is often the primary provider of care to critically injured patients following an accident. While the Jackman Region Health Center has an emergency room with the necessary ER staff to provide immediate care for many injuries, critically injured patients need to be sent by ambulance or helicopter to a hospital with adequate facilities to house and treat these patients. Inclement weather often restricts use of LifeFlight, particularly in the winter.

Mutual Aid Agreements and Funding

JMRFD provides fire protection, accident and rescue services for a large region encompassing the Towns of Jackman, Moose River, Dennistown Plantation, and numerous unorganized townships within Somerset County. The JMRFD is in the process of signing a mutual-aid agreement with West Forks. The budget for the JMRFD is shared by the participating towns according to a formula based on valuation. The recent increases in waterfront valuation have served to shift a larger share of the Fire Department's revenues to neighboring towns where the valuation is increasing faster than in Jackman. According to Chief Jarvis, more mutual-aid agreements will help defer the costs of the Department, but may eventually stretch the capacity of the service.

<u>The Rockwood Fire /EMS</u>

Located on the western shores of Moosehead Lake, the Rockwood Fire Department and Emergency Medical Service is operated by the firefighters' association of Rockwood Township and funded through Somerset County appropriations.

As this fire department is located between the two (2) primary service centers, it could fill a critical need. The biggest problem for the Rockwood Department is a lack of equipment, which currently prevents the Department from providing mutual aid to Greenville and Jackman, thus creating a gap in the mutual aid coverage system. With only one pump truck available (see description of equipment below) to the firefighting force, the Department could not provide adequate coverage within the Rockwood area if it were to assist Jackman and/or Greenville.

Staff

Made up solely of paid-per-call volunteers, the five-member Fire Department currently provides fire protection and emergency response services to the Unorganized Territories in and around the Western Moosehead and Brassua Lake region of Northern Maine. Member volunteers work at a variety of locations throughout the region and often commute long distances to work, or work in remote areas where mobilization for a fire during the day is difficult.

Equipment

Somerset County purchased a 1999 pumper truck for the Department. The Department also has a 1994 refurbished ambulance as a rescue operations vehicle, a 1950s Forestry reserve tanker, and a new ATV rescue system.

Maine Forest Service, Forest Protection Division

The Division of Forest Protection, under the Maine State Department of Conservation, is primarily responsible for forest resource protection, pre-suppression, suppression and investigation of fires that threaten Maine's forest and other lands. The Maine Forest Service is comprised of professionals who provide education, assistance and enforcement. The Maine Forest Service only provides suppression services at the wildland urban interface (WUI), and does not participate in any structure suppression.

With more than 17.5 million acres of primary suppression responsibility in the State of Maine, and with 10 million of those acres located in the Unorganized Territories, the Maine Forest Service conducts fire coverage with 57 Forest Rangers stationed throughout the forested regions of the state. According to the National Interagency Coordination Center, in 2006 alone the agency responded to 614 fires statewide that burned 1,794 acres. Fire services can be rendered through deployment of a Ranger with appropriate equipment on a singular or small crew basis, or with the mobilization of aircraft and additional Rangers as necessary.

Statistics provided by the Maine Forest Service indicated that there have been 25 forest fires within the Plan Area from 2001 – 2006. As is noted in the chart below, the number of forest fires in the Plan Area has shown a downward trend on an annual basis.

Table 7-2: Forest Fires in the Plum Creek Concept Plan Area 2001 – 2005

2001	2002	2003	2004	2005
6	10	5	2	2

Source of Data: Maine Forest Service

By comparison, the State of Montana covers nearly 5.2 million acres of state, federal and privately owned property through its direct suppression program. They also assist with suppression on an additional 45 million acres, if the responding units cannot adequately contain the fire. Montana's Direct Protection Program is staffed with 150 permanent and seasonal firefighters with the assistance of 50 frontline engines, six water tenders, seven helicopters and

three fixed-wing aircraft. It is important to note that the conditions in the Montana are different and require a more significant fighting force to contain the massive number of wild fires on an annual basis.

The Maine Forest Service also coordinates with municipal personnel through combined attack efforts. Since 2001, the Maine Forest Service has coordinated with the Jackman and Greenville Fire Departments on more than a dozen instances, as documented in Table 7-3.

Table 7-3: Coordinated Fire Services Between the Maine Forest Service and Municipal Fire Departments

	2001	2002	2003	2004	2005	2006
Greenville Volunteer Fire Department	7	1	0	0	1	2
Jackman – Moose River Fire Department			0	0	1	2
Total	**7**	**1**	**0**	**0**	**2**	**4**

Source of data: Maine Forest Service

The increased population resulting from the shift in population from urban and town centers to more rural areas has caused an upswing in fire prevention and suppression efforts. According to the U.S. Fire Administration, the expanding growth of population into rural areas poses a significant danger to people, property and the environment due to the potential for additional forest fires. As outlined in their "Topical Fire Research Series, Volume 2, Issue 16:"

- "A dichotomy exists in dealing with WUI fires. On the one hand, environmentalists and foresters believe that a natural fire (or even a prescribed burn) is healthy for our forests. On the other hand, homeowners in these areas expect fire protection of their structures.

- WUI fires pose great challenges to the fire service. Firefighting tactics for wildland fires differ considerable from those in structures; access to homes and availability of water are often limited in WUI areas

- Fire prevention programs in WUI areas are extremely important. And homeowners must accept a measure of responsibility and be fully aware of the risks when deciding to locate in such an environment."

According to the recently published report that evaluated providing coverage of costs associated with providing services in the Unorganized Territories, 40 percent of the cost of fire protection services to the General Fund is reimbursed by the Commercial Forestry Excise Tax (CFET),

which is calculated and assessed on a per-acre basis for landowners that own more than 500 acres of commercial forest land.

The Report also indicates that recent action by the administration and the Legislature to cut spending eliminated 11 positions and the Service's capital budget, preventing them from maintaining or upgrading equipment.

Staff

The Moosehead District office is located in Greenville and employs three full-time forest rangers and a field supervisor. Satellite substations are located in Pittston Farms and at Chesuncook Lake. These stations are manned seasonally by one forest ranger each. During the winter months, the rangers at Pittston Farms and Chesuncook Lake are relocated to the Greenville office. An additional ranger is located year round in Brownville.

Equipment

The following is a detailed list of the capital equipment owned and used by the Maine Forest Service in the Moosehead Lake region.

The Forest Protection division in Greenville houses the following equipment:

1 Industrial Tractor (International)
1 Hose Truck (American General)
1 Equipment Truck (Chevy)
1 Engine Truck (GMC)
All-terrain vehicles (1996 and 1988)
1 12-foot Starcraft Boat with Trailer
1 16-foot Lund Boat and Trailer
2 Canoes (Old Town Discovery)
2 Snowmobiles (Both 1997 SkiDoo)
3 Generators (3000-5000 watts)
1 Snow blower

Division in Chesuncook houses:

1 Boat (16-foot Lund with Trailer)
3 Canoes
3 Generators
2 Trailers (Utility and Fuel)
1 Engine Truck (1995 Ford F700)

Division in Pittston Farm houses:

1 Engine Truck (Kaiser)
1 Boat (12-foot Starcraft with Trailer)
1 Tank Skidder
5 Assorted Trailers

Life Flight Emergency Services

LifeFlight is Maine's statewide critical-response medical helicopter service. LifeFlight's two helicopters (one based in Bangor, the other in Lewiston) cover the entire state and offshore islands. These patients are served by 13 landing zones in the Moosehead region that are provided for emergency landings. GPS technology and integration with the 911 system also help to support this rescue system. The service was developed by the nonprofit parent companies of Eastern Maine Medical Center and Central Maine Medical Center to complement the work of local physicians, nurses and EMS squads in caring for the critically ill or injured. LifeFlight's operating costs are also underwritten by Eastern Maine Healthcare and Central Maine Healthcare.

Maine physicians, physician assistants, nurses, nurse practitioners and EMS professionals count on LifeFlight to deliver lifesaving care. Day or night, 365 days a year, a LifeFlight helicopter can be on its way within minutes of a flight request so long as weather permits. Each incident is assigned a mission approval physician, who consults with on-site officials to confirm the care and transport needs of the critically ill or injured patient. Meanwhile, weather conditions will be checked, and a helicopter readied for liftoff. In flight, advanced medical communications keep local physicians and EMS personnel in constant contact with the crew. Physicians set treatment strategies and select destination hospitals in accordance with patients' needs and the Maine EMS/Trauma Advisory Committee protocol. Quality of care is overseen by a Clinical Practice Committee consisting of medical leaders from across the State.

LifeFlight pilots are supplied by Keystone Helicopter Corporation of Pennsylvania, a nationally recognized leader in air medical transport. To qualify for service, Keystone's FAA-licensed pilots must have logged at least 3,000 hours of pilot time in rotorcraft, pass initial and ongoing flight proficiency tests and participate in EMS flight training.

Response Times

In evaluating fire protection within the Plan Area, significant attention has been placed on response times to the various locations within the Plan Area. While it is important to note that there will be no development outside the current residential and commercial footprint, the effect of the development on response times remains important.

Through the Insurance Service Organization (ISO), a response time model has been developed to quantify the time it takes for a department to respond to a call for service. The model was developed after exhaustive study of fire department response times from across the nation. The study concluded that considering terrain, traffic, weather and the navigation of intersections, the average speed at which an apparatus responds is 35 miles-per-hour with emergency lights and siren activated. With average speed and the time it takes for a vehicle to accelerate from a dead stop to travel speed, ISO developed an equation to determine response time:

$$T = 0.65 + 1.7D$$

T = time in minutes to the nearest 1/10 of a mile
0.65 = a vehicle acceleration constant for the first 0.5 mile traveled
1.7 = a vehicle speed constant validated for response distances ranging from 0.5 miles to 8.0 miles***
D = distance

Understanding that the distance to travel to a call may be beyond eight (8) miles, the constant speed may be higher or lower based on environmental conditions and thus would adjust the response time.

Using this equation, sample response times from the fire departments located in Greenville, Rockwood and Jackman are as follows:

Greenville F.D. to Lily Bay (12.6 miles)	22.07 minutes
Greenville F.D. to Big Moose Mountain (14.5 miles)	25.30 minutes
Rockwood F.D. to South Brassua Lake (11 miles)	19.35 minutes
Jackman F.D. to the end of Long Pond (15 miles)	26.15 minutes

The response times calculated are based on travel time once the fire apparatus departs the station and does not take into consideration the time it takes to muster a crew from the volunteer fire fighting force. An attempt to retrieve muster times (time from emergency call to time when equipment is on route) was unsuccessful. Discussions with officials from communications centers in Piscataquis and Somerset Counties indicated that this information is not available, and they would have to "create a new computer program to calculate such data."

In the case of an extreme emergency requiring helicopter transport via LifeFlight, response times to the greater Moosehead region can be expected to be 60-90 minutes. This timing is critical for any patient; a prompt response can be the difference between life and death. The lack of suitable landing spots in the UT can cause service to be delayed.

Future Conditions and Impacts

It is important to note that many of difficulties facing the fire and rescue services in the area are unrelated to the potential development of the Plum Creek parcel. That said, this section discusses the impacts that could exacerbate the issues facing the region if development proceeds under the scenarios laid out in Plum Creek's Plan. As more people migrate into the Plan Area, whether as residents, workers, or visitors, and as the number of seasonal and year-round homes increases, the number of service calls is expected to increase. There are numerous types of disasters that can occur in the remote areas of the woods and waters. When the only medical and emergency services are many miles away over dirt roads, the issue of safety is the responsibility of the visitor. Nonetheless, when an accident occurs, the responsibility shifts to public services and private institutions.

While it can be difficult to predict actual additional call volume from increased levels of development, it is possible to anticipate an increase based on census data associated with housing

units and compare that with annual average call volume of the three fire departments to gain an understanding of potential impact.

Table 7-4: Projected New Fire Department Calls

Housing Units	6,124
Annual Average Fire Department Calls	169
Calls Per Existing Housing Unit	0.03
Additional Calls Anticipated with 975 new homes	**29.25**

*Source data for housing units: 2000 census
*Source data for fire department calls: Greenville, Jackman and Rockwood.

With the construction of 975 new homes into the Plan Area, it is anticipated that this could add an additional 29.25 new dispatched fire department calls for Greenville, Rockwood and Jackman. With the proposed phasing of residential construction at 65 new homes annually, this would demonstrate the addition of 1.95 new calls per year.

While it is difficult to predict if all 390 induced units will be constructed based on employment projections, should all homes come on line it would add an additional 11.70calls if all units come on line. In addition, by adding the calls that may come through from the development of 100 affordable housing units, this would add another 3 calls. These figures should be added to the 29.25 calls projected from the 975 new housing units.
Additionally, when using the same formula in conjunction with projected resort units, it is possible to predict the amount of calls associated with those developments.

Table 7-5: Project Fire Department Calls at Resort Developments

Resort Units	1,050
Employee Units	190
Calls Per Existing Housing Unit	0.03
Additional Calls Anticipated For Resort Development	**37.2**

*Source data for housing units: 2000 census
*Source data for fire department calls: Greenville, Jackman and Rockwood.

The impact is also available on a per department impact basis when understanding the percentage responsibility based on annual average. Calculations below are based on full build out of 975 residential units. It is impossible to indicate where the calls would go from induced development due to the fact that there is no way to predict where those residents will reside.

Table 7-6: New Calls Totals for Regional Fire Departments Based on 975 New Residential Units

	Percentage Responsibility of Regional Calls	New Volume Per F.D. From New 29.25 Annual Calls
Greenville	42%	12.29
Jackman	25%	7.31
Rockwood	33%	9.65
	100%	**29.25**

While is it difficult to predict with absolute certainty how many new fires will be caused by the development envisioned in the Plum Creek Concept Plan, we can look at recent historical data from new development in the region to extrapolate future fire-services deployment. The relatively recent development of 89 lots at First Roach Pond provides information about the number of calls for fire department services. Since 2001, there have been approximately 30 new dwellings built in the First Roach Pond development. Combined with the residential development already in place, there are presently 130 seasonal and year - round residences in the immediate area. Since 2000, there have been 100 total calls to First Roach Pond. Of those calls, three have been for fire services, ten have been for ambulance calls, and the remaining 87 were for police services.

When evaluating the fact that there have only been three dispatched fire calls over the past six years, as per information from Piscataquis County Communications Center, in an area with 130 homes, this would indicate a much lower response quantity than projected in the chart above.

The development of an increased cost model can be created based on the information and including annual budgets from the three fire departments. When calculating the average cost per call based on 2006 budget figures and multiplying by the projected new annual calls per fire department, it is possible to project, in 2006 dollars, what the new budget impact will be when 975 new homes are in place.

Table 7-7: Budget Impact Associated with New Residential Development

	Ave. Ann. Calls	Annual F.D. Budget	Cost Per Call	Projected Ann. New Calls	Projected Budget Impact Annually
Greenville	72.67	$ 133,000.00	$ 1,830.19	12.29	$ 22,493.04
Rockwood	55.0	$ 49,533.00	$ 900.60	9.65	$ 8,690.79
Jackman	41.5	$ 44,166.47	$ 1,064.25	$ 7.31	$ 7,779.67

Due to the fact that structural fire protection at the resorts will fall upon the Greenville Volunteer Fire Department, there will be an impact above and beyond what is projected from residential development on a budgetary basis. If all 37.2 fire department calls for the resorts fall on the Greenville Volunteer Fire Department, the overall budget impact based on the current budget would be $68,083.07 if the per call cost is $1,830.19.

The methods of providing fire protection in the rural areas of Maine have always been sensitive topics. The nature of a rural community is to maintain the feeling of a remote wilderness community, while providing a manageable level of services. As rural communities continue to operate volunteer fire departments while residents continue to build houses in the rural areas of a community or at the wildland urban interface of the unorganized territories, the availability of services may not reasonably meet the public's expectations.

The Greenville Volunteer Fire Department, the Jackman-Moose River Fire Department and the Rockwood Fire Department currently have the necessary equipment required to fight a fire or respond to an accident within their respective service territories. Mutual aid is available and can be provided by the departments in Jackman and Greenville, but the overall lack of available capacity in Rockwood does not allow them to engage in providing mutual aid. This should be addressed in the future.

One of the most significant challenges for these departments is the lack of available firefighters. A majority of the department's volunteers are foresters, mill workers or commuting professionals. Their jobs may not allow for some members of the department to leave work and respond to a fire in a timely manner. This lack of availability leaves the community vulnerable to manpower shortages. The more remote a housing development or accident scene, the more difficult it is for the appropriate number of firefighters to get to the scene on time.

The proposed development could have a positive effect on the manpower shortage. The new residents would provide a larger base to draw from for volunteer personnel. The addition of jobs in the region could also allow for volunteers to work closer to their respective fire stations, thus allowing for quicker mobilization and faster overall response times.

It is important to note that the availability of firefighting services in the unorganized territories is limited. Our interviews indicate that the best method for combating rural fires is often to prevent them from spreading to neighboring buildings or forests; long distances often mean that the building in which the fire originated is a total loss. Increasing the level or responsiveness of services in the unorganized territories will require discussion with the existing fire departments and the County. Under current law, the County is authorized to provide services to the unorganized territories.

Resort development could impact fire services; providing first-responder fire protection services, as well as dry hydrant and other systems would alleviate some of these concerns. At other resort developments, a common concern has been the ability to deploy ladder apparatus to a sufficient height to fight the fire and participate in rescue operations. The Greenville Volunteer Fire Department has a ladder unit that provides a maximum of 100-foot reach.

While there will certainly be additional calls associated with the development, interviews with personnel from the fire departments and the Maine Forest Service indicate that the phased in approach that is being proposed will allow for assimilation into the existing system. From information provided earlier in this section, there is an indication that the phased in approach will add approximately 1.95 calls per 65 new homes constructed. One of the primary concerns identified by representatives from the area departments are fires resulting from the renovation of

a seasonal camp into a year round residence. This will not be as much of an issue for new homes and structures constructed from more fire-resistant materials. In older structures, chimney fires are more prevalent, arising as owners utilize chimneys that were built for light use in a more significant manner.

Proposed Measures to Address Impacts as Submitted by Plum Creek

Plum Creek's submittal to the Land Use Regulation Commission includes language that provides for planning for fire services services. The Plan already includes the following mitigating provisions, regarding emergency services:

- Lot sale documents will require owners to utilize county Enhanced 911 Street and Address Numbering Systems, so that emergency workers can respond in a timely fashion;
- Resorts must ensure that payments are made to service providers (such as fire, police, ambulance) to cover costs associated with such services, as a condition of site plan approval;
- Plum Creek will support and will work with the Town of Greenville, at the Town's election, to help bring power to the emergency radio repeater station on Big Moose Mountain;
- Plum Creek will cooperate in providing sites for up to four helicopter landing zones for emergency situations at trailhead/parking areas.

Summary

With the increase in residential development and the construction of two resorts, calls for fire services will increase. For the three fire departments in the Moosehead Lake region that are responsible for structure fires, there is currently an average of 169 calls for services annually. It is projected that there will be an additional 40.95 calls for fire/emergency services to the departments due to residential development, including 390 induced households. In addition, since the two resorts will be constructed in the portion of the Plan Area that is primarily serviced by the Greenville Volunteer Fire Department, it is anticipated that the increased call count destined for that fire department could reach 37.2. This includes calls for the 1,050 resort accommodations and the 190 employee housing units that may be developed.

Annual financial impact to the new calls would be:

Greenville	$90,576.11 (includes calls from residential and resort development)
Rockwood	$8,690.79
Jackman	$7,779.67

These totals do not include calls from induced development or affordable housing, as final determination of where the units may be situated has not been outlined.

It is anticipated that with the increase in residential development and the potential for additional day trippers, there may be additional calls that would require the response of the Maine Forest Service. This state agency is only responsible for forest fires and protection at the wildland urban interface. They do not engage in suppression of any structure fires. Information provided by the Maine Forest Service indicated a downward trend in the incident level within the boundaries of the Concept Plan

8.0 Health Care Facilities

Overview

This section evaluates the potential impacts on medical and health care services within the Plum Creek Plan Impact Area. As development occurs in the Plan Area, the demand upon medical services will increase. The inventory and analysis below of current infrastructure and personnel will help anticipate impacts from the Plan development.

The Plan development will be serviced by the Town of Jackman, Greenville, and the surrounding unorganized territories. Emergency, immediate, and long term health care services are provided to the region in the Plan Area by the Jackman Region Health Center and the Charles A. Dean Memorial Hospital in Greenville.

Historic and Current Inventory/Operations

Charles A. Dean Memorial Hospital and Nursing Home

Located in Greenville, this Critical Access Hospital services the entire Moosehead Lake Region. The "critical access" designation requires that the average length of stay be less than 96 hours for patients. Affiliated with Eastern Maine Healthcare, hospital services are largely related to short-term acute care and "swing-bed" or rehabilitation services. For example, swing bed services provide care for recent heart surgery patients who can leave their acute care hospital but are not ready to return home.

The hospital is licensed for 25 beds, but the average daily inpatient census was only 2.3 for "swing-bed" or rehab services, and 1.7 for acute care patients. According to Geno Murray, CEO of the hospital, the most patients ever served was 10, leaving the hospital at only 40 percent of capacity.

Besides short-term inpatient care, the major use of the hospital is for outpatient services. This is the major growth sector, as the health care industry pushes towards shorter stays in the hospital, and more services are able (through technology and other advances) to be offered on an outpatient basis. Presently, the hospital plans for 3,000 Emergency Room visits each year. According to CEO Murray, the hospital could handle 10,000 or more visits, so there is ample capacity in the Emergency Room for growth. In 2006, hospital officials reported that there were 2,134 emergency room visits, and admitted 395 patients.

The hospital operates two fully equipped ambulances and one partially equipped ambulance unit that serves the greater Moosehead Lake area, stretching north and northeast to Jackman (50 miles away) and Northeast Carry (64 miles away), north to the summer community of Rockwood (25 miles), and south to Monson (15 miles away). The ambulances are supported by 20 EMS personnel. Given the area's remote location, remote ambulance services are often supported by a number of state and other agencies who are part of the search, find, and rescue operation. This includes the Maine Department of Inland Fisheries and Wildlife, the State Police, Maine Forest

Service, Maine National Guard and others who are often called in, especially in remote areas where larger search and rescue operations are required.

The ambulance service is supported by LifeFlight of Maine, a service of Eastern Maine Healthcare that provides emergency helicopter service for acute needs. EMS personnel at CA Dean are trained to recognize patients needing advanced care. These patients are served by 13 landing zones in the Moosehead region that are prepared for emergency landings. GPS technology and integration with the 911 system also help to support this system of rescue. Given the remote area, rescues in distant areas in the "backcountry" often require roads, planes, boats, and (in winter) snowmobiles to aid in reaching the patient. Significant planning and coordination has helped improve the service. A good example of this is the snowmobile industry. Over the years, the area has planned and developed five rescue stations for the snowmobile industry and added numerous other improvements based on prior needs and experiences.

CA Dean is in the process of a $3.3 Million fund raising campaign. New offices (12) will be created. Construction is planned for the summer of 2006. In addition, $2.3 million is being sought for upgrades for the emergency and operating rooms. These improvements are designed to address an aging facility, adapt to HIPPA (privacy requirements), and improve efficiency. According to Geno Murray, the improvements are very "appropriate" to the future growth of the region and part of the hospital's stated mission to service the needs of the area.

Jackman Region Health Center

In northern Somerset County, the Jackman Region Health Center is the sole community provider for medical services in the Jackman-Moose River Valley region. The Center includes an outpatient doctor's office, a 24-hour emergency room and an 18-bed continuing care nursing home. No admissions are made at the facility as patients are transported to Redington-Fairview or Maine Medical Center. Health Center officials reported that in 2006 there were 700 emergency room visits. The Jackman Region Health Center is a division of Maine General Health. The Health Center includes two doctors, three nurses and five full time nurse's aides, as well as a wide variety of part-time aides, maintenance workers and support staff.

The Jackman Region Health Center operates an ambulance for emergency response and transport. It is estimated that it receives approximately 120 calls annually.

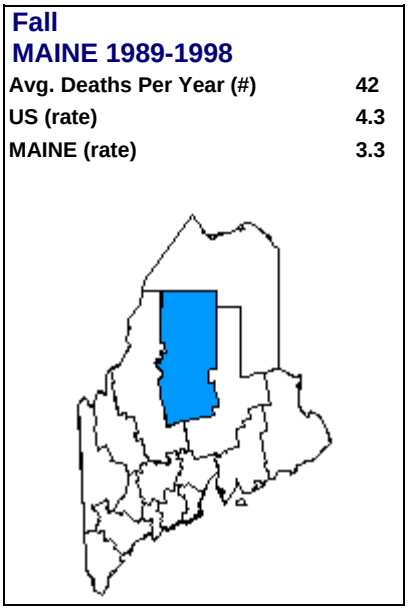
Future Conditions and Impacts

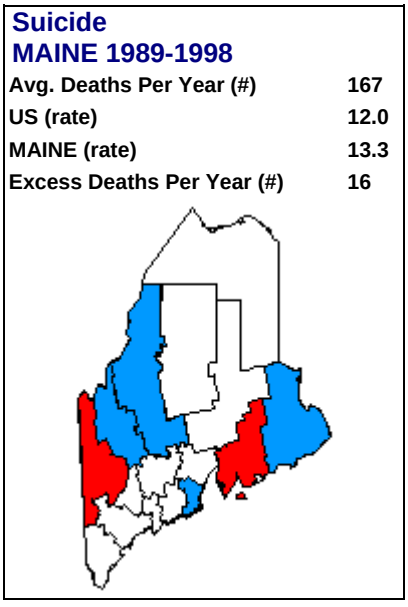
Both Greenville and Jackman as a "Federally Designated Primary Health Care Professional Shortage Area," as complied by the Maine Office of Rural Health and Primary Care, and thus the provision of health care service and the potential impact from increase utilization should be considered. These communities constitute two of the 62 regions of the state that fall under this federal designation. With increases in population and the potential increase in demand for health care services, the availability of health care and emergency medical service becomes an issue for any proposed development in the Plan. As current population trends continue to threaten the downsizing of local facilities, such as C.A. Dean and the Jackman Region Health Center, this

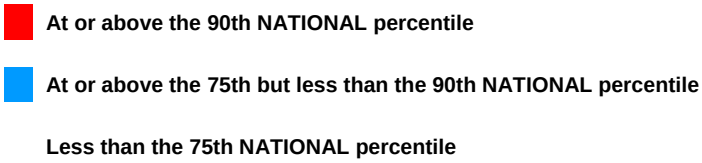
potential increase in patient traffic should be received with open arms. According to James W. Henderson and Beck A. Taylor's article in the Journal of Rural Studies 19(2003) pg. 363-372, *Rural Isolation and the Availability of Hospital Services*, access to quality health care is a continuing challenge for most rural communities and adds to the economic health of the community. The location and designation of a hospital leads to economic decisions, as the loss of or the downgrading of a facility can have a profound negative effect on employment and income in a rural community (as the hospital is most likely one of the major employers in the region).

The nature by which the region will be utilized by the potential influx of people, primarily for outdoor recreational activities, will certainly lead to additional use of the health care facilities. A study by the Canadian Institute for Health Information (CIHI) indicates "that 16% of severe sports and recreational injuries in 2000/2001 were snowmobile related. This figure far outnumbers other popular winter activities such as downhill skiing (6%) and snowboarding (5%)." Additionally, only cycling (at 18%) produces more serious injury cases from outdoor recreational activity.

The Moosehead Lake region and the array of outdoor activities that are available play a role in specific types of injuries as identified by the Center of Disease Control. In a comprehensive study from 1988-1998 looking at injury mortality from a variety of unnatural causes such as falls, drowning, suicide, and automobile accidents, Maine overall scored well. Although, healthcare providers should note that Somerset and Piscataquis Counties did not fare as well in two areas: death from falls and suicides. The maps below indicate the mortality and counties in question.







Maintaining adequate health care services in isolated areas is not easy. If the population of these rural areas continues to decline, the provision of health care services will continue to become more expensive and less likely to remain readily available. C.A. Dean Hospital is facing declining use and threats of further downsizing as the year-round population is migrating to find employment and seasonal residents move in. According to C.A. Dean CEO, Geno Murray, current expansion plans and available capacity will allow for a 60percent increase in acute or critical care patients and up to 70 percent in emergency care.

Table 8-1: Projected New Emergency Room Visits from New Housing Development

Emergency Room Visits	2,834
Total Household Units	6,124
Visits Per Household	0.46
Anticipated New Emergency Room Visits for 975 New Homes	**448.5**

Table 8-2: Projected New Emergency Room Visits from Resort Accommodation Development

Emergency Room Visits	2,834
Total Household Units	6,124
Visits Per Household	0.46
Anticipated New Emergency Room Visits for 1,240 Resort Units	**570.4**

Table 8-3: Projected New Emergency Room Visits from Induced Development

Emergency Room Visits	2,834
Total Household Units	6,124
Visits Per Household	0.46
Anticipated New Emergency Room Visits from 390 Induced New Homes	**179.4**

Although increasing the use of C.A. Dean Memorial Hospital and Jackman Region Health Center may stabilize the facilities' ability to provide adequate medical services to the region, the facilities will need to ensure that well maintained rescue vehicles are available, as the vehicles tend to have a shorter life span, due to damage caused by backcountry roads.

While healthcare facilities will certainly see an increased level of activities, so too will ambulance services. With ambulance coverage provided by both C.A. Dean and Jackman

Region Health Center, three fully equipped and one partially equipped unit respond within the Plan Area.

Projections for increased calls can be estimated based primarily on resort and housing unit development, but there is difficulty in creating an impact scenario based on calls from day trippers and transient travelers.

Based on residential and resort accommodations, the following chart attempts to predict additional calls for ambulance services in the Impact Area:

Table 8-4: Projected New Ambulance Calls Associated with Plum Creek Concept Plan

Dispatched Ambulance Calls	307
Total Impact Area Homes (does not include Greenville)	4,746
Calls Per Household	0.06
Total New Accommodations	2,690
Total Projected New Calls	**161.4**

Source of data for ambulance calls: Piscataquis County Communications Center, Jackman Region Health Center.
Source of data for Total Impact Area Homes: 2000 Census
Total New Accommodations: 975 new homes, 85 affordable housing units (Greenville affordable housing units are not included), 390 induced units, 1,050 resort accommodations, 190 employee housing accommodations.

Summary

There is capacity available for the primary impact, additional visits to emergency rooms at C.A. Dean Hospital and Jackman Region Health Center. Emergency room visits are anticipated to increase by 1,198.3 based on plan and induced development levels. Calculating ratios for 2006 emergency room visits, 75 percent of the visits were accommodated at C.A. Dean, with the remaining 25 percent destined for the Jackman Region Health Center emergency room. Using that calculation, 893.73 of the new ER visits will go to C.A. Dean, while the remaining 299.58 ER visits will go to Jackman.

By adding the new ER visits destined for C.A. Dean with what moved through the facility in 2006, this would create a total of 3,027.73 visits, or 27.73 ER visits above what the administration uses for planning and budgeting purpose. Although, this is still 69.7 percent below what the administration indicates it could accommodate on an annual basis.

Dispatched ambulance calls could increase as well by an anticipated 161.4 calls based on residential and resort development associated with the Concept Plan.

9.0 Transportation

Air Service

Overview

According to the Federal Aviation Administration, there are three (3) airports within the Plan Impact Area. There are two primary airfields and both are municipally owned airports; Greenville Municipal located in Greenville, and Newton Field located in Jackman. Both are rural airports as defined by the Internal Revenue Service (IRS).

The IRS defines the term "rural airport" as a rural airport for a calendar year if it satisfies both of the following requirements:

- Fewer than 100,000 commercial passengers departed from the airport during the second preceding calendar year and;
- Either of the following statements is true:

    a. The airport is not located within 75 miles of another airport from which 100,000 or more commercial passengers departed during the second preceding calendar year.

    b. The airport was receiving essential air service subsidies as of August 5, 1997.

In addition, there is a privately owned seaplane base in Jackman, which is available to the public.

The Maine Forest Service and Inland Fisheries and Wildlife Service share a seaplane facility in Greenville. This service was not reviewed for this study.

Historic and Current Inventory/Operations

Greenville Municipal

Greenville Municipal Airport is located approximately 2 miles east of the town center. While it is publicly owned and operated, it is not an attended airport and is open for service from dawn to dusk. There is no control tower and the nearest flight service station is located at Bangor International Airport, approximately 75 miles to the southeast.

The facility provides two runways, a 4,000'-by-75' primary and a 3,000'-by-75' crosswind. It also provides hangars, tie downs, airframe service and powerplant service. The facility can accommodate 25 aircraft on the field (21 single-engine and 4 multi-engine); fuel service is privately owned.

The Town of Greenville recently completed a substantial upgrade to the airport. A report issued by the Town in September 2006 outlines the deficiencies and the measures undertaken to improve the airport.

"A number of improvements were completed by the Town of Greenville to enhance the safety and functionality of the Greenville Municipal Airport. The 4,000 foot long Runway 14-32 was reconstructed to meet current FAA design standards and to remove obstructions to Federal Aviation Regulation (FAR) Part 77 protected airspace surfaces.

The project was designed by Stantec Consulting Services of Presque Isle, Maine and constructed by Sargent Corporation of Stillwater, Maine. The Town of Greenville applied for and received Federal and State Department of Transportation grants which together financed over 95 percent of the total project costs.

Prior Runway Deficiencies

By 2005, there were a number of serious deficiencies, both safety and operational in nature, associated with the main runway at the Greenville Municipal Airport. These included:

- Aircraft pilots on opposite ends of the runway could not see each other due to a runway profile that was much higher in the center of the runway.
- The asphalt pavement on the runway surface was severely cracked to the extent that loose aggregate and shards of pavement posed a serious FOD (foreign object debris) hazard to aircraft.
- The runway edge lighting system was unreliable and needed increasingly frequent maintenance and repairs to keep the airport operational for night use.
- Trees located within the protected airspace adjacent to the runway, including the approach surfaces, had grown to the extent that they posed obstruction hazards.
- Runway safety areas were inadequate in size and not in compliance with current FAA standards.
- Surface and subsurface drainage systems on the airfield were inadequate and in need upgrades.
- Airfield navigational aids (NAVAID) including the runway end identifier lights (REIL), precision approach path indicators (PAPI) and airport rotating beacon (ARB) and airfield guidance signs were in need of relocation or replacement.

Completed Improvements

To correct the safety-related deficiencies and improve the functionality of the airport, a number of specific improvements were incorporated into the reconstruction project.
These improvements were completed in July 2006 and are described as follows:

- The asphaltic surface of the runway was pulverized and blended with approximately 10 inches of existing and manufactured base materials in a reclaiming process. This blended material was then stockpiled for later use as the new runway base course.
- Approximately 60,000 cubic yards of embankment fill was placed, compacted and graded to raise both ends of the runway approximately six feet to create an improved line-of-sight runway profile for pilots. Embankment material was also utilized in the construction of new 240-foot runway safety areas in compliance with current FAA design standards. A new aircraft turnaround with stub taxiway was installed at the Runway 32 end.

- To reduce frost heaving beneath the runway, which accelerates pavement cracking and breakage, the existing unsuitable subsurface materials were removed and replaced with a 61-inch depth of new non-frost susceptible sub-base course.
- The reclaimed base course was then installed with an eight-inch compacted depth and then resurfaced with three inches of new 12.5 mm MDOT Superpave bituminous asphalt concrete pavement. New pavement markings were painted on the surface in compliance with current FAA runway marking standards.
- Drainage improvements consist of 10,000 feet of new perimeter underdrain system and 2,000 feet of storm drain piping and culverts. Catch basins were also installed and adjusted.
- A runway lighting system was installed with new medium intensity edge and threshold lights and lighted airport guidance signs.
- Approximately 10 acres of trees were cleared in order to remove obstruction hazards
- in areas where trees had penetrated FAR Part 77 protected airspace surrounding
- Runway 14-32. Ground obstructions were also removed on the east side of the runway.
- Cleared areas were grubbed, graded and restored to allow the Town to maintain critical areas free of tree growth in the future.
- Airport navigational aids (NAVAID) improvements completed under the project include a new airport rotating beacon, new runway end identifier lights (REIL), new precision approach path indicator (PAPI) system, and new primary and supplemental wind cones with segmented circle markers.
- With assistance from the National Weather Service, site work and foundations for an automated surface observation system (ASOS) have been installed. The ASOS will be located directly on the airfield to provide airport users and the public with accurate real time local weather conditions at the airport."

This airport does not provide commercial airline services. A review of statistics reveals there is an average of 111 enplanements (defined as a takeoff) per week, of which 64 percent are local general aviation and 36 percent are transient general aviation.

Newton Field (Jackman)

Newton Field is a municipally owned airfield in Jackman. It is an unattended facility that operates during daylight hours. It is designated as a customs landing-rights airport due to its location near the Canadian border. There is no control tower. The facility provides self-fuel 24-hours a day, as well as hangars and tie downs. The facility does not provide any airframe or powerplant service. The airfield offers one 2,900' asphalt runway, which is in poor condition.

The airport can accommodate 9 single engine airplanes. Airport operations report an average of 115 enplanements per week, of which 83% are local aviation and 17% are transient general aviation.

Moose River Seaplane Base (Jackman)

Moose River Seaplane is a privately owned facility open to public use. It is an unattended facility with no official listed hours of operation. There is no control tower.

The facility does not provide any fuel or repair services. It can accommodate 2 single engine airplanes and has a reported average of 25 enplanements per week. 75 percent of air traffic is local general aviation, 23 percent is transient general aviation, and two percent is air taxi.

Greenville Seaplane

There was a privately owned seaplane base in Greenville until 2004. It was owned and operated by Folsom Air Service and located on Moosehead Lake. This facility is no longer open to the public.

Highways and Bridges

Overview

The regional roadway system has developed in much the same manner as other roadways in rural Maine, providing access to the various settlements in the area. Highways have been improved over the years to accommodate additional automobile traffic associated with growing manufacturing and community centers. Logging and other heavy truck traffic increased significantly on Maine roads when river transportation of logs was prohibited in the 1970s.

There are two principal arterials leading into the Plan Area, including Rte. 6/15 (south of Greenville) and Rte. 201. Rte. 6/15 from Greenville to Jackman and the Lily Bay Road are both major collectors and provide direct access to the Plan Area.

Local roads primarily serve residential areas and are located off of these collectors and arterials. The majority of these roads are located in Greenville and Jackman, while the remainder of the road is located in unorganized territories and is owned by Somerset and Piscataquis Counties. An analysis of impacts on local roads is beyond the scope of this report.

There are over 1,400 miles of privately owned roads within the Impact Area. An analysis of impacts on private roads is beyond the scope of this report.

Historic and Current Inventory/Operations

Federal Functional Classification

The Federal Functional Classification (FFC) system designates all roads within one of five possible categories, based on their capacity and strategic significance within the highway network. These classifications, from highest to lowest, are: principal arterial-Interstate, principal arterial-other (hereafter referred to as "principal arterial"), minor arterial, urban collector, and local.

Figure TR-1 lists the road classification for each road within the immediate Impact Area.

National Highway System

The National Highway System (NHS) concept was a cornerstone of the Intermodal Surface Transportation Efficiency Act (ISTEA) federal legislation in the early 1990s. Development of the NHS remains a high priority under the new SAFETEA-LU legislation. The purpose of the NHS according to *ISTEA*, is to "provide an interconnected system of principal arterial routes which will serve major population centers, international border crossings, ports, airports, public transportation facilities, and other intermodal transportation facilities and other major travel destinations; meet national defense requirements; and serve interstate and interregional travel." More than one-third of all federal transportation funds are dedicated to the maintenance and improvement of NHS roads.

Rte. 201 is the only NHS-designated roadway in the Impact Area.

Traffic Volumes

MaineDOT has historically monitored traffic growth throughout the State using fixed and movable surveillance systems. Twenty-four hour traffic counts are taken on a rotating basis on selected routes to calculate the Average Annual Daily Traffic (AADT) serviced by a particular highway. Figure TR-2 shows AADT for points along major corridors in the Impact Area since 1984.

Traffic volumes were reviewed for count years 1984, 1999, and 2000. Counts have generally risen for the past 20 years, but have decreased in the last 5 years (except at a few locations).

Capacity

Currently, the only intersection in the area experiencing any capacity issues during seasonal peaks is the Route 6/15 and Lily Bay Road intersection. On road segments, MaineDOT traffic counts indicate that traffic volumes are well below the designed capacities. A separate traffic impact analysis is being conducted by Gorrill-Palmer Consulting Engineers, Inc.

Trucks

A study performed by the MaineDOT in 2001 (*A Heavy Haul Truck Network for the State of Maine*) estimates heavy truck volumes in Piscataquis, Penobscot and Somerset Counties will increase as shown in Table 8-1 below for the period 2000 to 2015.

Table 9-1: Heavy Truck Volume Increase

COUNTY	PRINCIPAL ARTERIAL	MINOR ARTERIAL	COLLECTORS
Penobscot	49%	84%	155%
Piscataquis	49%	84%	155%
Somerset	97%	85%	62%

Rte. 201 has the only 12-foot-wide truck lane located south of Jackman. The study identified many deficiencies throughout the State. Table 8-2 below identifies three that are in the Plan Impact Area.

Table 9-2: Deficient Heavy Truck Routes in the Area

Town	Location	Facility Type	Type of Deficiency	Length (km)	Estimated Cost
Greenville	Route 6	Minor Arterial	Shoulder	1.17	$219,104
Jackman	Rt. 201	Principal Arterial	Shoulder	2.67	$748,021
The Forks Plt.	Rt. 201	Principal Arterial	Shoulder	6.82	$1,910,608

Traffic Signals

There are no fully functioning traffic signals within the Impact Area. There is one flashing signal at the Route 6 and Lily Bay Road intersection in Greenville, which was installed as a safety measure.

Crashes

MaineDOT obtains and analyzes reported crash data from the Maine State Police to determine high-crash locations throughout the State. The standard comparison statistic is known as the Critical Rate Factor (CRF). The CRF is determined by comparing the historical crash rate on a section of roadway (link) or intersection (node) to what would be expected based on road type, traffic volume, and a statewide average of crash rates at similar locations. A CRF greater than 1.0 indicates that the number of crashes exceeds expectations (i.e., the location is more dangerous than average), while a CRF less than 1.0 indicates that the location is safer than average. A node or link must have a CRF of more than 1.0 and at least eight reportable crashes occurring over a three-year period to meet the criteria for listing as a high-crash location.

The MaineDOT publishes a listing that summarizes the previous three years' worth of crash data and identifies the high-crash locations statewide. There were no high crash locations listed in the 2005 publication.

Maintenance

MaineDOT is responsible for all summer and winter maintenance on the major roads within the Impact Area. The current average cost of maintenance on MaineDOT roadways is $5,263 per mile, which would total $584,193 per year for the Impact Area. Towns are responsible for the maintenance of their local roads.

The cost for maintaining local roads within Greenville has been budgeted at $179,850 for the 2005-2006 fiscal year.

Somerset and Piscataquis Counties provide maintenance on all local roads in the Unorganized Territories. Annual budget allocations for UT maintenance are approximately 60 percent of the

funds allocated to UT services. The UT budget for Piscataquis County is approximately $1 million, and they are planning to spend approximately $600,000 on winter and summer maintenance. The UT budget for Somerset County is approximately $1,117,000 for the coming year. Maintenance for the year will be approximately $700,000.

Maintenance of private roads in the area is the responsibility of the owner and, in some cases, a local homeowner's association.

Planned Projects

Maine's highway inventory contains numerous sections of road that do not meet the American Association of State Highway Officials' (AASHTO) national design standards. Many do not even meet reduced State standards for drivability and safety. These sections of road are commonly referred to as the unbuilt or "backlog," meaning these road projects will be improved to established standards once funding is available. Five sections of roadway in the Impact Area are not built to standard and are considered "backlog" by MaineDOT, including three sections of Lily Bay Road totaling 14.95 miles and two small sections on Rte. 6/15 in Greenville Junction area totaling 0.66 miles.

The Maine DOT's 2008-2009 BTIP which will list all new construction projects in the area is due to be released in the summer of 2007.

County Name	Town Name	Program	Type of Project	PIN	Route Name	Length	Description
Somerset	Jackman	Highway	Pavement Preventative Maint.	12917.00	Route 201	6.18	Arterial: beginning 2.58 miles northerly of the Parlin Pond TWP TL and extending northerly 6.18 miles to Moose River Bridge (#2583).
Somerset	Long Pond TWP, Sandwich Academy Grant	Highway	Level 2 Highway Resurfacing	12846.00	Route 6	4.48	Major collector: beginning 3.12 miles westerly of Long Pond TWP/Sandwich Academy Grant TL and extending easterly 4.48 miles to 1.36 miles easterly of the Long Pond TWP TL.

Bridges

There are 28 bridges located within the Impact Area. One is owned by the Montreal, Maine, and Atlantic Railway located on SR 6 in Greenville. There are two municipally owned and maintained bridges located in Frenchtown Township. The remaining bridges are owned and maintained by MaineDOT. There are three Kennebec River crossings, including The Forks, located in The Forks Plantation, The West Outlet, located in Taunton & Raynham Grant, and Richard Francis Lavigne, located in Sapling Township.

All 28 bridges located within the Impact Area were found to be structurally sound and in good condition.

Rail Facilities

Overview

The rail line through the Greenville and Jackman areas forms a link in a major rail route crossing Maine between the Canadian Provinces of New Brunswick and Quebec. This trans-Maine route

connects to a larger network of rail lines via Brownville Junction, allowing access to Maine and other New England rail traffic generators.

Historic and Current Inventory/Operations

Apart from a vacation excursion train that passed through Greenville in 2001, rail service on the line serving the Plan Impact Area has been exclusively for freight. The railroad carries forest products shipped out of the region and long distance shipments, such as automobiles, through the region.

The rail line is owned and operated by the Montreal Maine and Atlantic Railway (MMA). The route serves an estimated four trains per day on a single track with an operating speed of 30mph.

A transload facility with two switches and space for storage of loads is located in Jackman. The facility is owned by the Jackman Utility District and operated by Logistics Management System. The facility currently handles only out-bound lumber shipments totaling 3-4 cars per week. Lumber is trucked to the facility from the surrounding area, with the major shipper being Moose River Lumber.

Public Transportation

Overview

The low density of population and small market in the Plan Impact Area does not allow traditional fixed route public transportation to operate successfully unless large subsidies are applied. Many potential destinations are located on private land away from public highways, further limiting public transportation. A minimal demand-response service has been operating in part of the area to serve those needing an alternative to the private automobile.

Historic and Current Inventory/Operations

The Lynx (operated by Penquis CAP, a social service agency based in Bangor) is the area's demand response provider and offers weekday door-to-door van service in Piscataquis and Penobscot Counties. Each area in the region receives service one day a week, allowing riders to get to Bangor. The Greenville area is served on Mondays (the fare is $7 to travel to Bangor). Fare box revenue, Penquis CAP funds and federal funds support the service. There is little use of the service.

No public transportation is provided in the Jackman area of Somerset County.

Bicycle and Pedestrian Facilities

Overview

The Plan Impact Area's highways are rural in character and have developed over the years to accommodate automobile traffic and connect communities separated by great distances. Historically, bicyclists and pedestrians were not a major consideration as Maine DOT improved

its rural highways. MaineDOT however, adopted a shoulder paving policy in the 1990s that will be implemented on roadways of certain capacity as they are reconstructed. This policy will help accommodate the growing number of bicyclists in the State.

The majority of roadways located outside of town centers have higher speed limits, are very rural, and are not conducive to pedestrian use.

Historic and Current Inventory/Operations

A review of MaineDOT's and the Bicycle Coalition of Maine's websites indicate there are no designated bike trails/tours located within the Impact Area. Off-road bicycle trails are beyond the scope of this report.

Shoulder widths are too narrow on most roads for safe bicycle and pedestrian passage. Many shoulders are gravel only (Lily Bay Road), forcing bicyclists and pedestrians onto the roadway where they must compete with automobiles and heavy truck traffic for space.

Sidewalks and crosswalks within town centers are sufficient for pedestrians wishing to access shops and restaurants. However, because of the rural character of the area, many citizens and tourists must access some services via automobile.

Transportation Data Summary

Air Transportation

There are three (3) airports within the immediate Impact Area open to public use. Two municipally owned airports: Greenville Municipal located in Greenville, and Newton Field located in Jackman, and one privately owned seaplane base in Jackman.

There was a privately owned seaplane base in Greenville until 2004. This facility is no longer open to the public. The Maine Forest Service and Inland Fisheries and Wildlife Service share a seaplane facility in Greenville.

Table 9-3: Airport Capacity

	Greenville Municipal	Newton Field (Jackman)	Moose River Seaplane Base (Jackman)
Runways-Primary Crosswind	4000' paved 3000' paved	2900' paved	
Emplanements/week	111	115	25
Commercial air service	no	no	no
Control Tower/Attended	no	no	no
Hangers and/or Tiedowns	yes	yes	yes
Fuel	yes	yes	no
Airframe and Powerplant Service	yes	no	no

MaineDOT's programmed airport improvements at Greenville include design, overlay and expansion of the apron, a runway reconstruction, and construction of a snow removal equipment storage building.

MaineDOT's programmed airport improvements at Newton Field include obstruction removal and improvements to the safety area and drainage, purchase of a load and snow blower, as well as negotiations for easements.

Highways and Bridges

There are two principal arterials leading into the Plan Impact Area including Rte. 6/15 (south of Greenville) and Rte. 201. Rte. 6/15 from Greenville to Jackman and the Lily Bay Road are both major collectors and provide direct access to the Plan Area.

There are over 1,400 miles of privately owned logging roads within the immediate Impact Area.

Traffic Volumes

Traffic volumes were reviewed for count years 1984, 1999 and 2004 in the area. These counts have generally risen in the past 20 years but have decreased in the last 5 years (except at a few locations).

Capacity

Currently, the only intersection in the area experiencing any capacity issues during seasonal peaks is the Route 6/15 and Lily Bay Road intersection. On road segments, MaineDOT traffic counts indicate that traffic volumes are well below the designed capacities. A separate traffic impact analysis is being conducted by Gorrill-Palmer Consulting Engineers, Inc.

Crashes

There are no high crash locations in the Plan Impact Area.

Bridges

All 28 bridges located within the Impact Area were found to be structurally sound and in good condition.

Rail

The rail line through the Greenville and Jackman is owned and operated by the Montreal Maine and Atlantic Railway (MMA). The route serves an estimated four trains per day on a single track with an operating speed of 30 mph. The railroad carries forest products shipped out of the region and long distance shipments, such as automobiles.

A transload facility with two switches and space for storage of loads is located in Jackman. The facility currently handles only out-bound lumber shipments totaling 3-4 cars per week. Lumber is trucked to the facility from the surrounding area, with the major shipper being Moose River Lumber.

Bicycle/Pedestrian

There are no MaineDOT designated bike trails/tours located within the immediate Impact Area.

Shoulder width is too narrow on most roads for safe bicycle and pedestrian passage. Many shoulders are gravel only (Lily Bay Road), forcing bicyclists and pedestrians onto the roadway where they must compete with automobiles and heavy truck traffic for space.

Generally, the sidewalks and crosswalks within town centers are sufficient for pedestrians wishing to access shops and restaurants.

Public Transportation

The Lynx is the area's demand response provider and offers Monday service from Greenville to Bangor. Little use of the service is made.

No public transportation is provided in the Jackman area of Somerset County.

Future Conditions, Impacts, and Mitigation

Air Service

Potential Impacts

Airports are required to have updated master plans to review historic data, project future needs and analyze needed improvements. The last master plan was completed in 2000. The next time these master plans are updated they will review and analyze all historic and projected data. It is difficult to predict overall impact to the airports as impacts will be defined by the total number of new enplanements. Since Greenville's runway just went through a complete reconstruction, there should be minimal to no impacts on the surface other than normal wear and tear. Hangar space is at a premium, and the Town of Greenville has issued statements regarding the construction of additional space. "Currently, all developed hangar lots have been leased for private hangar development. The Town of Greenville is considering two additional locations for both private hangar lot development and also T-hangar development. Either of these areas will require tree clearing and site preparation, the cost of which will have to be borne by the lessee." To that end, the cost of constructing of any new hangar space will be the responsibility of the new tenants.

Highways and Bridges

Potential Impacts

Maintenance

Any changes in the road maintenance cost related to increased traffic are very difficult to determine. Road maintenance costs are influenced by several unrelated factors including the road's construction quality, current pavement and drainage conditions, various seasonal weather conditions, inflation, weight of vehicles and numerous other factors. Many of the major costs related to road maintenance aren't dependent on volume for example a local or state road needs to be plowed. It doesn't matter if there are 10 or 10,000 vehicles a day on that road. Additional mileage, however, would increase the local and state maintenance costs. There are no new local or state roads expected as part of this plan.

Due to a recent 35% increase in construction cost in less than two years, Maine DOT is now using an average annual inflation rate of five percent in its project planning. Future costs are based on this assumption. For example, this would bring the anticipated road maintenance budget amount in Greenville to $279,000 by the year 2015.

Using the same inflation figures at the State level would bring the cost-per-mile to $8,165 or $906,315 in year 2015 in the Impact Area.

Traffic Impacts

A separate traffic impact analysis is being conducted by Gorrill-Palmer Consulting Engineers, Inc.

Any project which generates 100 or more passenger car equivalents (PCE) trips during peak hour of traffic generation, must file a Traffic Movement Permit application with the Maine Department of Transportation. The application process is required to determine if there are any existing or expected traffic safety or capacity deficiencies in the vicinity of the proposed development.

The developer is usually required to mitigate any safety or capacity concerns determined by MaineDOT prior to receiving the permit.

Capacity

It is the assumption that the only capacity issue will be at the Lily Bay/Main Street intersection in Greenville, and possibly the Route 6/15 intersection to the resort.

It is assumed that the Lily Bay/Main Street intersection will need a full traffic signal with dedicated turn lanes. The dedicated turn lanes may require the elimination of several parking spaces on the adjacent approaches. Replacement spaces may need to be built nearby. According to Maine DOT staff the current cost for a full traffic signal is $110,000 to $120,000.

If a turning lane(s) are warranted on Route 6/15 at the entrance of the resort near Big Moose the current estimated costs are $ 30,000 to 40,000 for a right turn lane and $100,000 to $150,000 for a left turn lane.

Planned Projects

MaineDOT's 2008-2009 BTIP which will list all new construction projects in the area, is due to be released in the summer of 2007.

Five sections of roadway in the Impact Area are not built to standard and are considered "backlog" by MaineDOT, including three sections of Lily Bay Road totaling 14.95 miles and two small sections on Rte. 6/15 in Greenville Junction area totaling 0.66 miles.

Maine DOT estimates the cost of reconstructing the unbuilt or backlog miles on rural major collectors such as Lily Bay Road at $ 700,000 per mile in their report "Transportation in Maine: The State of the System, 2006." To bring all of these sections up to standard, it will total almost $11 million. Since bringing unbuilt road sections up to standard us the responsibility of the MaineDOT, it is anticipated that these few remaining sections of unbuilt or backlog road will be brought up to standard as MaineDOT funds become available.

Bridges

A review of the current condition and age of bridges indicates they will be able to handle additional volumes well into the future.

Rail Facilities

Potential Impacts

Montreal, Maine, & Atlantic (MMA) anticipates that the Plum Creek Plan will have no impact upon capacity of the existing main line. No yard capacity presently exists in the Impact Area. New sidings and switch crews may need to be added to accommodate any additional freight demands. Construction of new rail facilities would be a private matter between the freight generator and MMA. Currently the Town of Greenville and the Greenville Stream Company are exploring funding options for a rail siding in the Greenville Industrial Park utilizing fund from the Economic Development Administration.

Plum Creek's Plan will not have any negative impacts on passenger rail service.

Public Transportation

Future Conditions and Impacts

Plum Creek's proposal will have no significant impact on public transportation in the Impact Area due to the seasonality of the anticipated population and the dispersed placement of the

proposed development. The current level of available funding precludes any attempt to serve the new development.

However, site-specific needs may arise as new development occurs, such as a shuttle bus to bring visitors and workers to the resort facilities.

Bicycle and Pedestrian Facilities

Potential Impacts

The majority of people likely attracted by the type of activities mentioned in Plum Creek's Plan enjoy recreational activities including bicycling and walking/hiking. Most State roadways in the area were not constructed to accommodate bicyclists or pedestrians. Increased traffic volumes will exacerbate this problem. In the few locations where there are paved shoulders, often the width is too narrow for safe bicycle and pedestrian passage.

Suggested Solutions and Mitigation Strategies

Maine DOT has a "Shoulder Surface Type Policy" dated January 3, 2000 that determines which shoulders on State roads will be paved or gravel. When sections of Rte. 6/15 and Lily Bay Road need to be resurfaced under the pavement preservation project program, they will receive paved shoulders since they are both Group III–Recreational highways. The towns should currently be working with MaineDOT to ensure that paved shoulders be added or widened as part of any pavement preservation project in this area. Since some recent MaineDOT projects in the area did not include paved shoulders.

Any resort facility planned for this area should ensure that private access roads are designed to include sufficient width to safely accommodate bicyclists and pedestrians.

Exhibit A

JUNIPER RIDGE LANDFILL

Operated By
NEWSME, LLC a division of Casella Waste Systems, Inc.

April 13, 2007

Greg Lounder
Eastern Maine Development Corporation
40 Harlow Street
Bangor, Maine 04401

RE: Acceptance of Construction & Demolition Debris (CDD)
Plum Creek Project – Greenville, ME

Dear Mr. Lounder:

Juniper Ridge Landfill, located in Old Town, Maine is a Subtitle D Landfill licensed to accept CDD, as well as, a variety of other special wastes. The facility is prepared to accept any quantity of CDD generated from the proposed development of resorts and housing at the Plum Creek Project to be located in Greenville, Maine.

Juniper Ridge Landfill's current available capacity is approximately 9,000,000 cubic yards with an estimated 22,000,000 cubic yards available for future expansion. Therefore, the facility has more than adequate capacity for the projected 10,000 tons/year of CDD initially, then 600 tons/year thereafter.

If you should require any additional information regarding Juniper Ridge Landfill, please feel free to contact me at 394-4371.

Sincerely,

JUNIPER RIDGE LANDFILL

Thomas Gilbert
Manager of Environmental Compliance

2828 Bennoch Road • Alton, Maine 04468
Tel.: 207-394-4371 • Fax: 207-394-4370

New England Organics®
Environmental solutions since 1983

April 4, 2007

Mr. Greg Lounder
Eastern Maine Development Corp.
40 Harlow Street
Bangor, ME 04401

RE: Planned Development in Greenville, ME

Dear Mr. Lounder,

New England Organics operates the Hawk Ridge Compost Facility (HRCF) in Unity Maine. It is the largest biosolids composting operation in New England and has won numerous awards for its exceptional management of residuals. Annually, HRCF composts between 35,000 to 40,000 tons of biosolids.

HRCF follows a strict set of guidelines regarding the material we accept. For example, biosolids can not be classified as hazardous waste under United States Environmental Protection Agency (USEPA) and/or any other applicable laws & regulations, including but not limited to, state laws and regulations. In addition, the biosolids must meet the requirements of applicable law and regulation for composting, can not be frozen or have any free liquid, and must be free of any trash, hazardous waste or other debris.

HRCF can accept all of estimated 300 tons of biosolids generated at the Greenville, ME development if they meet the requirements listed above. We look forward to the opportunity to recycle these biosolids. You may contact me at the number below.

Sincerely,

Melanie D. Solmos

Regional Manager/Business Development

CC: Paul Jacques, P.E., CES, Inc.

135 Presumpscot Street, Unit 1 Portland, ME 04103-5225 tel 207.781.5011 fax 207.781.5794 www.newenglandorganics.com

Penobscot Energy Recovery Company
P.O. Box 160 • 29 Industrial Way
Orrington, Maine 04474
(207) 825 - 4566

ESOCO ORRINGTON, INC.
Plant Operator

April 6, 2007

Mr. Gregory Lounder
Eastern Maine Development Corporation
40 Harlow Street
Bangor, Maine 04401

Re: Development Project in the Greenville/Moosehead area

Dear Mr. Lounder:

Penobscot Energy Recovery Company is in receipt of your letter dated April 3, 2007 requesting our interest and ability in providing disposal services for municipal solid waste generated by the above captioned project. Your letter indicated that the project would potentially generate 2,500 tons annually of non-bulky municipal solid waste.

Please be advised that Penobscot Energy Recovery Company (PERC) has the capacity and is willing to accept the MSW generated by the proposed Greenville/Moosehead project.

Please feel free to give me a call with any questions.

Sincerely,
Penobscot Energy Recovery Company

Gary A. Stacey
Plant Controller

Copy: Shawn Small, CES

Soil Preparation

Responsible Solutions ...
in Residuals Management"

March 30, 2007

Mr. Greg Launder
Eastern Maine Development Corp.
40 Harlow Street
Bangor, ME 04401

Dear Mr. Launder:

I have been asked by Paul Jacques, P.E. of CES, Inc. to provide information regarding Soil Preparation, Inc.'s capacity to accept additional septage. This is to support an application for a development in Greenville that is projected to produce up to 112,000 gallons of septage per year.

Soil Preparation, Inc. has the ability to accept this volume of new septage. We are currently licensed to accept in excess of seven million gallons per year (7 MGY) and our typical yearly intake is between three and four million gallons per year (3-4 MGY).

If you have any questions or require additional information, please feel free to contact me.

Sincerely,

Jeffrey C. McBurnie
General Manager

cc: Paul Jacques, P.E., CES, Inc., Brewer

- Proud Member of the WeCare Family of Companies -
P.O. Box 158 ▪ 135 Valley Road ▪ Plymouth, Maine 04969 ▪ Phone: (207) 257-2525 ▪ Fax: (207) 257-2637

RECEIVED
APR 1 0 2007

WASTE MANAGEMENT

CROSSROADS LANDFILL
P.O. Box 629
357 Mercer Road
Norridgewock, ME 04957
(207) 634-2714
(207) 634-4519 Fax

April 9, 2007

Shawn Small P.E.
CES
465 South Main Street
PO Box 639
Brewer, ME 04412

RE: Crossroads Disposal Capacity
Plum Creek Residential and Resort Development Project

Dear Shawn:

Please be advised that Waste Management Disposal Services of Maine-Crossroads Landfill has a commercial solid waste disposal facility located in Norridgewock, Maine. At this time, we have approximately 4 million cubic yards of airspace remaining in Phase 8.

Based on the engineering estimate for waste generated from this project, the Crossroads Facility will have sufficient airspace to accommodate Plum Creek's Residential and Resort development proposed in Somerset and Piscataquis counties.

If I can be of further assistance please don't hesitate to contact me at 207-634-2714 x 219.

Sincerely,

Jeff McGown
Waste Management Disposal Services of Maine, Inc. – Crossroads

Development Baseline Evaluation Prepared by LURC Staff for Plum Creek's Proposed Concept Plan in Moosehead Lake Area, February 18, 2005

TOWNSHIP	LAKE/POND	AREA	MC	ADJ?	TOTAL PC SHORE FRONT	TOTAL LAKE SHORE FRONT	% PC	1400 FT	1/10 AC	PC CAMPS	EXISTING CAMPS	BO LAKE	LAKE SUBDIV
BRASSUA-LONG POND-BIG W AREA													
Big W Twp.	Moosehead Lake	74890	7	yes	33,000	1,295,661	3%	83	191		47	83	83
Brassua	Brassua Lake	8979	3		200,400	335,173	60%	501	537	2	1	499	499
Brassua	Fletcher Pond East	12	7	no	8,800	8,800	100%	22	1		0	1	0
Brassua	Fletcher Pond West	20	7	no	8,000	8,000	100%	20	2		0	2	0
Brassua	Leith Pond	18	7	no	7,000	7,000	100%	18	2		0	2	0
Long Pond	Fogg Pond	54	7	no	9,700	9,700	100%	24	5		0	5	0
Long Pond	Long Pond	3053	3		70,000	115,759	60%	175	185		49	175	175
Rockwood Strip West	Demo Pond	192	7	no	11,200	11,200	100%	28	19		1	19	0
Sandbar Tract	Moosehead Lake	74890	7	yes	500	1,295,661	0%	1	3		24	1	1
Sandwich Academy	Little Otter Pond	9	7	no	2,800	2,800	100%	7	1		0	1	0
Sandwich Academy	Otter Pond	12	7	no	3,800	3,800	100%	10	1		0	1	0
Sandwich Academy	Roderique Pond	44	7	no	7,400	7,400	100%	19	4		0	4	0
Soldiertown	Center Pond	51	7	no	8,300	8,300	100%	21	5		2	5	0
Taunton and Raynham	Moosehead Lake	74890	7	yes	4,200	1,295,661	0%	11	24			11	1
Thorndike	Fish Pond	211	7	no	15,500	15,500	100%	39	21	1	1	20	0
Thorndike	Lost Pond	10	7	no	2,700	2,700	100%	7	1		0	1	0
Thorndike	Luther Pond	154	7	no	13,700	13,700	100%	34	15	1	1	14	0
Thorndike	Mud Pond	50	7	no	8,750	8,750	100%	22	5		0	5	0
Thorndike	Muskrat Pond	100	7	no	10,000	10,000	100%	25	10		0	10	0
West Middlesex	Tomhegan Pond	356	7	no	14,500	14,500	100%	36	36		0	36	0
Sandwich Academy	Moose River			no	44,600								
TOTALS					484,850					4	126	895	769
KENNEBEC WEST AREA													
Big Moose	Burnham Pond	426	7	no	20,500	20,500	100%	51	43		0	43	0
Big Moose	Moosehead	74890	7	yes	8,000	1,295,661	1%	20	46		16	20	20
Chase Stream	10000 Acre Pond	37	7	no	5,810	5,810	100%	15	4		0	4	0
Chase Stream	Chase Stream Pond	75	7	no	3,900	3,900	100%	10	8	1	1	7	0
Chase Stream	Chub Pond	7	7	no	2,400	2,400	100%	6	1		0	1	0
Chase Stream	Ellis Pond	85	7	no	11,100	11,100	100%	28	9	1	1	8	0
Chase Stream	Flat Iron Pond	284	7	no	2,400	2,400	100%	6	28		0	6	0
Chase Stream	Horseshoe	27	7	no	5,700	5,700	100%	14	3	1	1	2	0
Chase Stream	Island Pond	24	7	no	5,700	5,700	100%	14	2		0	2	0
Chase Stream	Knights Pond	128	7	no	2,000	2,000	100%	5	13		0	5	0
Chase Stream	Long Pond	17	7	no	5,800	5,800	100%	15	2		0	2	0
Chase Stream	Mud Pond	17	7	no	3,700	3,700	100%	9	2		0	9	0
Chase Stream	Round Pond	30	7	no	4,850	4,850	100%	12	3		0	3	0

[1] These figures reflect the information Plum Creek originally provided to LURC staff, and do not necessarily reflect the latest information.

TOWNSHIP	LAKE/POND	AREA	MC	ADJ?	TOTAL PC SHORE FRONT	TOTAL LAKE SHORE FRONT	% PC	1/400 FT	1/10 AC	PC CAMPS	EXISTING CAMPS	BD LAKE	LAKE SUBDIV
Chase Stream	Squirtgun Flowage	30	7	no	7,100	7,100	100%	18	3		0	3	0
Chase Stream	Bates Pond	3	7	no	1,300	1,300	100%	3	0		0	1	0
Indian Stream	Indian Pond	3746	3		27,300	207,300	13%	68	49		0	49	49
Misery	Chase Str Pond	31	6		4,140	4,140	100%				0	0	0
Misery	Cold Stream Pond	205	7	no	26,300	26,300	100%	66	21		0	21	0
Misery	Little Chase Stream Pond	17	7	no	4,840	4,800	101%	12	2		0	2	0
Misery	Misery Pond	36	7	no	11,500	11,500	100%	29	4		0	4	0
Misery	Unnamed Pond	10	7	no	1,300	1,300	100%	3	1		0	1	0
Misery	Upper Misery Pond	18	7	no	3,830	3,830	100%	10	2		0	2	0
Sapling	Moosehead Lake	74890	7	yes	16,900	1,295,661	1%	42	98		21	42	42
Sapling	Unnamed Pond		7	no	6,300	6,300	100%	16	0		0	0	0
Squaretown	Little Indian Pond	25	7	no	5,200	5,200	100%	13	3		0	3	0
Squaretown	Knights Pond	128	7	no	5,200	7,600	68%	13	9		1	9	0
Squaretown	Unnamed Pond	5		no	1,770	1,770	100%	4	1			1	0
Squaretown	Scribner Bog	15	7	no	6,300	6,300	100%	16	2			2	0
TOTALS					211,140					37	41	252	111
MOOSEHEAD EAST AREA													
Beaver Cove	Prong Pond	427	7	yes	30,850	43,528	71%	77	30	3	3	27	27
Beaver Cove	Mud Pond	249	7	no	15,600	15,600	100%	39	25	1	1	24	0
Beaver Cove	Mountain Pond	56	6		6,600	6,600	100%				0	0	0
Elliotsville	Secret Pond	12	6		3,700	3,700	100%				0	0	0
Elliotsville	Long Pond	643	7	no	2,500	49,873	5%	6	3	0	5	3	0
Frenchtown	Bluff Pond	10	6		2,500	2,500	100%				0	0	0
Lily Bay	Moosehead	74890	7	yes	7,980	1,295,661	1%	20	46		128	1	20
Spencer Bay	Jewett Pond	13	7	no	3,100	3,100	100%	8	1		0	1	0
Spencer Bay	Lucky Pond	93	7	no	29,600	29,600	100%	74	9		0	9	0
Spencer Bay	Spencer Pond	980	7	no	21,120	21,120	100%	53	98		0	53	0
Spencer Bay	Unnamed Pond	20	7	no	4,380	4,380	100%	11	2		0	2	0
T1 R13	Lazy Tom Bog	13	7	no	3,400	3,400	100%	9	1		0	1	0
West Bowdoin	Brown Pond	18	7	no	4,000	4,000	100%	10	2		0	2	0
West Bowdoin	Cranberry Pond	7	6		2,600	2,600	100%				0	0	0
West Bowdoin	Fogg Pond	23	6		5,600	5,600	100%				0	0	0
West Bowdoin	Hedgehog Pond	40	7	no	7,400	7,400	100%	19	4		0	4	0
West Bowdoin	Horseshoe Pond	160	7	no	300	17,800	2%	1	0		3	0	0
West Bowdoin	Indian Pond	70	7	no	10,400	10,400	100%	26	7		0	7	0
West Bowdoin	Mountain Pond	56	6		2,400	2,400	100%				0	0	0
West Bowdoin	Notch Pond	10	6		2,000	2,000	100%				0	0	0
West Bowdoin	Rum Pond	245	7	no	7,300	7,300	100%	18	25		0	18	0
West Bowdoin	Upper Wilson Pond	940	4	yes	41,700	44,700	93%	104	88	4	15	83	83
TOTALS					215,030					8	50	282	130
THE ROACHES													
Shawtown	1st West Branch Pond	119	7	no	16,300	16,300	100%	41	12		1	11	0
Shawtown	2nd West Branch Pond	214	7	no	13,000	23,700	55%	33	12	1	0	12	0

TOWNSHIP	LAKE/POND	AREA	MC	ADJ	TOTAL PG SHORE FRONT	TOTAL LAKE SHORE FRONT	% PG	1/400 FT	1/10 AC	PG CAMPS	EXISTING CAMPS	BO LAKE	LAKE SUBDIV
Shawtown	3rd Roach Pond	570	7	no	46,400	47,000	99%	116	56		3	53	0
Shawtown	4th Roach Pond	266	1,6		22,300	22,300	100%				0	0	0
Shawtown	4th West Branch Pond	3	7	no	1,600	1,600	100%	4	0		0	4	0
Shawtown	Beaver Pond	27	6		5,200	5,200	100%				0	0	0
Shawtown	Long Bog	15	7	no	4,665	4,665	100%	12	2		0	2	0
Shawtown	2nd Roach Pond	970	7	no	61,600	61,600	100%	154	97		0	97	0
Shawtown	Trout Pond	145	7	no	14,900	14,900	100%	37	15		0	15	0
T1 R12	Penobscot Pond	279	7	no?	11,500	12,600	91%	29	25	7	7	18	0
TOTALS					197,465					16	11	212	01
PLAN TOTALS					1,108,485					23	328	1591*	1010**

* Buildout by lake (BO Lake): The total potential buildout of 1591 is based solely on application of ONLY the 1/10 acre and 1/400 foot maximum development guideline of the Commission's Comprehensive Plan. It does NOT consider the many other criteria that must of necessity be factored into determining the appropriate level of development such as adjacency, need, and undue adverse impact.

** Lake Subdivision: Buildout by lake factoring in certain of the adjacency considerations. This demonstrates the reduction in development potential by applying the adjacency criterion where there is a nearby pattern of development. Adjacency is presumed on Mgnt Class 3 lakes. This evaluation does NOT factor in the compatibility of the nearby development nor need and undue adverse impact, which, when applied,would reduce this potential to an unknown extent. See Commission's guidance on "Clarifying the Rezoning Criterion of Demonstrated Need", April 1, 2004.

- This evaluation is most useful on a lake-by-lake basis rather than on an area basis since most of the development guidelines of the Commission's Comprehensive Plan only apply on a lake-by-lake basis. The potential on the larger lakes tends to over-shadow the potential on the smaller lakes.
- This evaluation does not attempt to apply the 2-in-5 development potential. While if applied in an extreme fashion it would greatly increase the development potential of any area, we know of no instance where it has been applied in an extreme fashion and thus do not consider it a realistic potential to introduce into this evaluation.
- Color coding: brown = remote ponds; blue = Management Class 3 lakes

PRELIMINARY PHOSPHORUS EVALUATION for Select Watersheds of the Concept Plan for Plum Creek's Lands in the Moosehead Region

Prepared for:

Plum Creek Land Company
c/o Kent Associates
37 Brunswick Avenue
Gardiner, Maine 04343

Prepared by:

DeLuca-Hoffman Associates, Inc.
778 Main Street, Suite 8
South Portland, Maine 04106
(207) 775-1121
dhai@delucahoffman.com

April 17, 2007

TABLE OF CONTENTS

Tables

Attachments

I. INTRODUCTION

DeLuca-Hoffman Associates, Inc. has completed a preliminary phosphorus evaluation of multiple watersheds related to Plum Creek's amended Concept Plan for part of their ownership in the Moosehead Lake region. These evaluations have been prepared in support of the Concept Plan Submission currently under review by the Land Use Regulation Commission and other interested parties. The purpose of these evaluations were as follows:

- To determine the allowable phosphorus export (PPE) for proposed development activities within multiple watersheds for which development activity is proposed.
- To evaluate estimated phosphorus export increases, from a conceptual level for select developments and to determine whether the estimated phosphorous exports remain within the watershed's allocation tolerances or if additional phosphorous control methods will be warranted.

The estimated phosphorus export increases were computed based on conceptual level plans and limited data for activities within the following watersheds:

- Brassua Lake
- Long Pond
- Burnham Pond
- Mud Pond (watershed to Beaver Cove development)
- Upper Wilson Pond
- Indian Pond

Ultimately, similar, more detailed studies will be performed for all impacted lake watersheds. Analysis of the Moosehead Lake watershed has not been performed simply due to its complexity and lack of available input data from the DEP Lakes Division. For this reason, it is assumed that development activities within the Moosehead Lake watershed will need to meet the General Standards as outlined in Section 4 (B) of Chapter 500 of the MEDEP Stormwater Rules.

LURC subdivision and development permit guidelines state that an unacceptable increase in phosphorus concentration shall not occur due to the proposed development projects located in a Lake Watershed. Estimated phosphorus export increases in this report will need to be re-computed for final designs and, in cases where it has been determined that additional treatment measures may be warranted, the appropriate design measures will be prepared and incorporated into the plans.

Lot and roadway data used for computing estimated phosphorus export levels were based on the data presented in the " Concept Plan for Plum Creek's Lands in the Moosehead Lake Region".

II. METHODOLOGY

In accordance with LURC and MEDEP Guidelines, this evaluation has been based on a publication titled, "Phosphorus Control in Lake Watersheds: A Technical Guide to Evaluating New Development, MeDEP, September, 1992". This guide is divided into two parts. The first part involves the determination of the watershed phosphorus

allocation, which for most of the Concept Plan area involves watersheds that are owned in their entirety by Plum Creek. Data necessary to compute phosphorus allocation values have been obtained from Mr. Jeff Dennis of the MEDEP Lakes Watershed Planning Division. Where necessary the total allowable phosphorous export has been adjusted to reflect instances where Plum Creek does not own the entire watershed and/or does not own other areas of prospective development activity within that watershed; clearly an adjustment to the Plum Creek share of allowable phosphorous export is warranted in these situations.

The second part of the evaluation consists of an individual project review for determining the estimated phosphorus export increase from the proposed projects within each watershed area. These increases are compared to allowable phosphorus loading levels to determine if specific mitigation measures are warranted on a project-by-project basis.

III. WATERSHED DATA

The Plum Creek Concept Plan outlines development activities within multiple watershed subareas in the greater Moosehead region. For the purposes of the initial concept planning DeLuca-Hoffman Associates, Inc. has reviewed six watersheds. Additional study will be required for all impacted watersheds as individual development and subdivision proposals are prepared and presented to LURC for approval. Specific watershed data for each current study area is outlined as follows:

Table 1 – Watershed Data

Watershed	Water Quality category	Level of Protection	Phosphorus coefficient (F)*
Brassua Lake	M/S	High	860.00
Long Pond	M/S	High	201.42
Burnham Pond	M/S	High	26.61
Mud Pond	M/S	High	21.07
Indian Pond	Good	High	209.2
Upper Wilson Pond	M/S	High	86.23

*Phosphorous Coefficients provided by Jeff Dennis, MEDEP Lakes Division

IV. PHOSPHORUS ALLOCATION

In order to determine the allowable phosphorus allocation for a watershed, the lake's water quality category and desired level of protection are required. The MEDEP Lakes staff has provided this information for each of the study areas. Generally, each waterbody in the study areas has been assigned a water quality category of "Moderate/Sensitive" (M/S) or "Good" and a "High" level of protection by the MEDEP. A water quality category of "Moderate/Sensitive" means that waterbodies have an average water quality. The MeDEP suggests that the level of protection for each of these waterbodies should be high due to their cold-water fisheries (i.e., trout and salmon). Based on these criteria, an acceptable increase in lake phosphorus concentration (c) is 0.75 parts per billion (ppb). Indian Pond's level of protection is 1.0 ppb

The following table summarizes the computed allowable phosphorous export from each of the watersheds. The table also shows the value of the adjusted value of total phosphorous export that may be allocated to Plum Creek based on their percentage ownership of developable land in the watershed. In most cases Plum Creek owns the entire watershed area; therefore the allocation can generally be reserved for Plum Creek

activities, including development or land management. In several watersheds, a portion of the developable land is not owned by Plum Creek, thus the total allowable phosphorous export must be allocated between owners. In the cases of Brassua Lake, and Burnham Ponds we have made a simple adjustment to the allowable phosphorous export for Plum Creek's percentage and compared that result with the predicted export values from the development activities.

Table 2 – Allowable Phosphorous Export

Watershed	F Coefficient	C value	FC (lbs/year)	% of developable area in watershed owned by PC	Adjusted FC (lbs/yr)
Brassua Lake	860.00	0.75	645	50%	322.50
Long Pond	201.42	0.75	151.07	100%	151.07
Burnham Pond	26.61	0.75	19.96	80%	15.97
Mud Pond	21.07	0.75	15.80	100%	15.80
Indian Pond	209.2	1.0	209.2	100%	209.2
Upper Wilson Pond	86.23	0.75	64.67	100%	64.67

The remaining Plum Creek lands within each direct drainage watershed area that are not part of the proposed development areas, will either be placed in permanent conservation, if adjacent to the waterbodies, or be limited to forest management uses under a permanent working forest conservation easement. These areas were thus not considered to be a source of increased phosphorus over the long-term. We note that with the exception of the Brassua watershed, future construction of land management/harvesting roads is expected to be minimal in the smaller watersheds since there are well established harvesting roads already in existence. These considerations are consistent with the Technical Guide. We also note that ninety-five percent of the Plan Area will be subject to conservation measures. All conservation easements are granted in perpetuity

Computations for the allowable phosphorus export for each of the study areas are contained in Attachment A.

V. ESTIMATED PHOSPHORUS EXPORT INCREASE FROM DEVELOPMENT

Estimated phosphorus export increases were computed for the developments for building lots, roads and driveways. Lot data used for determination of phosphorus export rates are as follows:

Table 3 – Lot Data		
Predominant Hydrologic Soil Group[2]	**Assumed Clearing Area Per Lot (sf)[3]**	**Phosphorus Exports Per Lot [1] (lbs)**
Assumed C	10,000 to 15,000 SF	0.44

Notes: [1] Phosphorus export values are based on the assumption that 40% of the site's timber volume has not been harvested within the past five years.

[2] A hydrologic soil group (HSG) of 'C' was assumed based on soils data provided by S.W. Cole Engineering. An HSG C is considered conservative and therefore appropriate for this initial analysis.

[3]. Lot clearing areas are based on the Sample Homeowners Association Covenants contained in the Concept Plan submission.

Road and driveway lengths used in the phosphorus computations are summarized for each of the Development Areas as follows:

Table 4 Road and Driveway Lengths		
Development Area	**Approximate Road Length (ft)**	**Approximate Driveway Length Contributing Phosphorus (ft)**
Brassua Lake	26,400'	61,000'
Long Pond	26,400'	22,000'
Burnham Pond	19,560'	3,900'
Mud Pond	5,280'	4,800'
Indian Pond	15,840'	3,000'
Upper Wilson Pond	5,280'	4,800'

Driveway lengths were conservatively assumed to be 300' for shorefront lots and 350' for backlots. Driveways in excess of 150' long per lot are considered to contribute phosphorus export increases in addition to the lot contribution. Therefore the driveway lengths represented in Table 4 reflect only that amount beyond 150'. Existing roads that may need to be improved as part of the proposed subdivision were included in the determination of approximate road length.

Estimated phosphorus export increases computed for the proposed conceptual development are summarized as follows:

Table 5
Estimated Development Phosphorus Export Increases (lbs/year)

Location	Lots	Driveways	Roads/ Commercial Dev.	Total Export (TE)
Brassua Lake	99.55	97.60	69.27	266.42
Long Pond	35.33	21.12	59.14	115.59
Burnham Pond	4.00	3.74	22.16	29.90
Mud Pond	10.91	4.60	11.82	27.34
Indian Pond	4.84	2.88	102.03	109.75
Upper Wilson Pond	10.21	4.60	3.06	17.87

In accordance with the methodology, the Total Export (TE) is adjusted by a multiplication factor of 0.5 to yield the Total Phosphorus Available for algal production (TPA). Computations for phosphorus export are contained in Attachment A.

VI. CONCLUSIONS

The Permitted Phosphorus Export increase (PPE) and total phosphorus available for algal production (TPA) computed in this evaluation are as follows:

Table 6– Summary Comparison

Development Area	PPE	TPA	Comment
Brassua Lake	322.50	133.21	PPE>TPA therefore OK
Long Pond	151.07	57.79	PPE>TPA therefore OK
Burnham Pond	15.97	14.95	PPE>TPA therefore OK
Mud Pond	15.80	13.67	PPE>TPA therefore OK
Indian Pond	209.2	54.88	PPE>TPA therefore OK
Upper Wilson Pond	64.67	8.93	PPE>TPA therefore OK

Based on the methodology, it is reasonable to conclude that development activities, including resort facilities within each of the evaluated watersheds will result in phosphorus loadings that are within the permittable levels. The TPA for these watersheds was computed based on the following phosphorus control measures being implemented for the proposed development and subdivisions:

- Shorefront lots will maintain a 100' deep vegetated buffer
- We have assumed that the downhill sides of some of the access roads will have a 100' wide buffer to provide phosphorous treatment.
- Some downhill back lots will maintain a 100' deep vegetated, downhill buffer

Standard control measures routinely include permanent vegetated buffer strips, infiltration areas, filtration beds or wet basins that are designed to capture stormwater runoff from disturbed ground areas and treat the runoff for phosphorus removal. Critical to the overall assessment of project phosphorus loadings will be the development of roads and driveways for the projects. The ability to minimize new road development in

the watershed for either the development activities or long-term forest management will aid in keeping phosphorus loadings down. Similarly, the ability to reduce driveway lengths also reduces overall phosphorus loadings and will aid the design process for the locations of additional mitigation measures that may improve the overall design. Temporary and permanent erosion control measures such as mulch filter berms, silt fence, ditch linings, ditch turnouts, level spreaders, stabilized culvert inlets/outlets and other surface stabilization measures will also be incorporated into the proposed development and subdivision designs to help mitigate phosphorus impacts and minimize erosion and sediment transport. Each project proposal will include detailed design drawings that will outline all necessary methods and procedures to comply with LURC and State erosion control Best Management Practices. Within these drawings as well as within the lot development requirements, Plum Creek will include specific erosion control practices that will be followed during the construction of all roads, lots and other activities. Ultimately, the studies and design drawings to be prepared during individual project proposal submissions will rely on more detailed watershed data, land condition information, and design information in order to better determine estimated phosphorus loading, erosion control needs and any necessary mitigation measures.

ATTACHMENT A

PRELIMINARY PHOSPHOROUS COMPUTATIONS

APPENDIX A

Watershed Brassau Lake Standard Review Method

WORKSHEET A

PART ONE - DETERMINATION OF WATER QUALITY GOAL AND PHOSPHORUS ALLOCATION

PART ONE. Determine allowable phosphorus export (per acre) in the lake watershed.

1) Contact DEP's Lakes Section to obtain the value of (F) (phosphorus coefficient) for the lake in whose watershed the development is proposed.

(F) = 860 lbs/ppb/yr

2) Contact DEP's Lakes Section to obtain the water quality category of the lake. Choose a level of protection for the lake. Using the water quality category and level of protection, use Table 3-2 to determine (C) (acceptable increase in P concentration).

Water quality category: moderate/sensitive

Level of protection: High

(C) = 0.75 ppb

3) Using the values of (F) and (C) given above, complete the following equation:

(860 lbs/ppb/yr) x (0.75 ppb) = 645 lbs/yr
(F) (C) (FC)

Adjust by 50% for PC % of ownership = 322.5

4) Estimate (D) (future area to be developed over the next 50 years).

(D) = _____ acres

5) Using the values of (FC) and (D) given above, complete the following equation:

(_____ lbs/yr)/(_____ acres) = _____ lbs/acre/yr
(FC) (D) (P)

PER-ACRE PHOSPHORUS ALLOCATION = _____ lbs/ac/yr
(P)

Project Brassau Lake

Standard Review Method

WORKSHEET A-2

PHOSPHORUS EXPORT FROM ROADS
SINGLE-FAMILY RESIDENTIAL PROJECTS

Mark the road into sections based on the type of treatment each section will receive. Complete one of the lines below for each section of road applying appropriate treatment factor(s) for phosphorus control measures on that section of road. Treatment factors are listed on the last page of each design chapter. Buffer hydrologic class and width are determined from the site plan. Multiply by 0.5 when the two sides of a single stretch of road drain to different treatment systems.

****

LABEL NAME	LENGTH OF SECTION	PHOS. EXPORT (LBS)	TREATMENT FACTORS B	WP	I	N	PHOSPHORUS EXPORT	BUFFER HC/WI/SL
ew Access Roads	2.0 miles or 10,560 ft x	0.32* /100 ft x(	)x(	)x(	)x(	1)=	33.79 lbs P,	
,	ft x	/100 ft x(	)x(	)x(	)x(	1)=	lbs P,	
proved Road	3.0 miles 15,840 ft x	0.224** /100 ft x(	)x(	)x(	)x(	1)=	35.48 lbs P,	
,	ft x	/100 ft x(	)x(	)x(	)x(	1)=	lbs P,	
,	ft x	/100 ft x(	)x(	)x(	)x(	1)=	lbs P,	
,	ft x	/100 ft x(	)x(	)x(	)x(	1)=	lbs P,	
,	ft x	/100 ft x(	)x(	)x(	)x(	1)=	lbs P,	
,	ft x	/100 ft x(	)x(	)x(	)x(	1)=	lbs P,	
,	ft x	/100 ft x(	)x(	)x(	)x(	1)=	lbs P,	
,	ft x	/100 ft x(	)x(	)x(	)x(	1)=	lbs P,	
,	ft x	/100 ft x(	)x(	)x(	)x(	1)=	lbs P,	
,	ft x	/100 ft x(	)x(	)x(	)x(	1)=	lbs P,	
,	ft x	/100 ft x(	)x(	)x(	)x(	1)=	lbs P,	
,	ft x	/100 ft x(	)x(	)x(	)x(	1)=	lbs P,	
,	ft x	/100 ft x(	)x(	)x(	)x(	1)=	lbs P,	

TOTAL EXPORT FROM ROADS = 69.27 lbs P

N =No Treatment HC = Soil Hydrologic Class SL = Buffer Slope
B = bufferstrips WP = wet pond I = infiltration areas WI = Buffer Width

NOTE: Please provide a site map showing buffer location and a narrative of the buffers.

* (22' + 4' + 4') x (0.008) + 2 (0.04) = 0.32 (per 3.3.1.1 ref. 1)

** (22' + 4' + 4' - 12') x (0.008) + 2 (0.04) = 0.224

NO TREATMENT ASSUMED FOR INITIAL REVIEW

Project Brassau Lake Standard Review Method

WORKSHEET A-3
PHOSPHORUS EXPORT FROM LOTS
SINGLE-FAMILY RESIDENTIAL PROJECTS

Complete one of the lines below for each houselot. Phosphorus export figures for the various hydrologic groups are listed in Table 3-4. Treatment factors are listed on the last page of each design chapter. Buffer hydrologic group and width are determined from the site plan.

****

Lot	EXPORT TREATMENT *	TREATMENT FACTORS B	WP	I	N	PHOSPHORUS EXPORT (HE)	BUFFER HC/SL/WI	
Lot 100 :	0.44 lbs	x(.55)	x( )	x( )	x(1) =	24.20 lbs P,	C/8-15%/100'	Shorefront
Lot 75 :	0.44 lbs	x(0.55)	x( )	x( )	x(1) =	18.15 lbs P,	C/8-15%/100'	Downhill Backlots
Lot 130 :	0.44 lbs	x( )	x( )	x( )	x(1) =	57.20 lbs P,		uphill Backlots
Lot ____ :	____ lbs	x( )	x( )	x( )	x(1) =	____ lbs P,		
Lot ____ :	____ lbs	x( )	x( )	x( )	x(1) =	____ lbs P,		
Lot ____ :	____ lbs	x( )	x( )	x( )	x(1) =	____ lbs P,		
Lot ____ :	____ lbs	x( )	x( )	x( )	x(1) =	____ lbs P,		
Lot ____ :	____ lbs	x( )	x( )	x( )	x(1) =	____ lbs P,		
Lot ____ :	____ lbs	x( )	x( )	x( )	x(1) =	____ lbs P,		
Lot ____ :	____ lbs	x( )	x( )	x( )	x(1) =	____ lbs P,		
Lot ____ :	____ lbs	x( )	x( )	x( )	x(1) =	____ lbs P,		
Lot ____ :	____ lbs	x( )	x( )	x( )	x(1) =	____ lbs P,		
Lot ____ :	____ lbs	x( )	x( )	x( )	x(1) =	____ lbs P,		
Lot ____ :	____ lbs	x( )	x( )	x( )	x(1) =	____ lbs P,		
Lot ____ :	____ lbs	x( )	x( )	x( )	x(1) =	____ lbs P,		

TOTAL EXPORT FROM LOTS = 99.55 lbs P

N = No Treatment HE = P Export from houselots
B = bufferstrips WP = wet pond I = infiltration areas
HC = Soil Hydrologic Group WI = Buffer Width SL = Buffer Slope

NOTE: Please add a site map showing buffer location and a narrative of the buffers.

* from Table 3-4, HSG C, and 10,000 - 15,000 SF clearing area

Project BRASSAU LAKE

Standard Review Method

WORKSHEET A-4

PHOSPHORUS EXPORT FROM DRIVEWAYS LONGER THAN 150 FEET
SINGLE-FAMILY RESIDENTIAL PROJECTS

Mark the driveway section greater than 150 feet into sections based on the type of treatment each section will receive. Complete one of the lines below for each section of driveway applying appropriate treatment factor(s) for phosphorus control measures on that section of driveway. Treatment factors are listed on the last page of each design chapter. Buffer hydrologic class and width are determined from the site plan. Multiply by 0.5 when the two sides of a single stretch of driveway drain to different treatment systems.

NOTE: Only use this worksheet for the section of driveway(s) greater than 150 feet. Please note that the first 150 feet of driveway is automatically included export factors used in Worksheet A-3 so do not include the first 150 ft of drive here.

****

LABEL NAME	LENGTH OF SECTION		PHOS. EXPORT (LBS)		TREATMENT FACTORS B	WP	I	N		PHOSPHORUS EXPORT		BUFFER HC&SL&WI
305 ,	200LF LOT	ft x	0.16*	/100 ft x	( )x	( )x	( )x	(1)	=	97.6	lbs P,	
,		ft x		/100 ft x	( )x	( )x	( )x	(1)	=		lbs P,	
,		ft x		/100 ft x	( )x	( )x	( )x	(1)	=		lbs P,	
,		ft x		/100 ft x	( )x	( )x	( )x	(1)	=		lbs P,	
,		ft x		/100 ft x	( )x	( )x	( )x	(1)	=		lbs P,	
,		ft x		/100 ft x	( )x	( )x	( )x	(1)	=		lbs P,	
,		ft x		/100 ft x	( )x	( )x	( )x	(1)	=		lbs P,	
,		ft x		/100 ft x	( )x	( )x	( )x	(1)	=		lbs P,	
,		ft x		/100 ft x	( )x	( )x	( )x	(1)	=		lbs P,	
,		ft x		/100 ft x	( )x	( )x	( )x	(1)	=		lbs P,	
,		ft x		/100 ft x	( )x	( )x	( )x	(1)	=		lbs P,	
,		ft x		/100 ft x	( )x	( )x	( )x	(1)	=		lbs P,	

TOTAL EXPORT FROM DRIVEWAYS = 97.6 lbs P

HC = Soil Hydrologic Class WI = Buffer Width SL = Buffer Slope
B = Bufferstrips WP = Wet Pond I = Infiltration areas
N = No Treatment

NOTE: Please provide a site map showing buffer location and a narrative of the buffers.

* 20' WIDE x 0.008 = 0.16 per SECTION 3.3.1.1 Ref.1

ASSUMED WIDER D/W's for Brassau lots

Project BRASSAU LAKE Standard Review Method

WORKSHEET A-7

TOTAL PHOSPHORUS EXPORT FROM PROJECT

****

TOTAL PHOSPHORUS EXPORT FROM PROJECT

(from Worksheet A-2)	TOTAL EXPORT FROM ROADS: SINGLE-FAMILY RES.	69.27	
(from Worksheet A-3)	TOTAL EXPORT FROM LOTS: SINGLE-FAMILY RES.	99.55	+
(from Worksheet A-4)	TOTAL EXPORT FROM DRIVEWAYS>150 FT:	97.6	+
(from Worksheet A-5)	TOTAL EXPORT FROM MULTI-UNIT, COMM., INDUSTRIAL:	—	+
(from Worksheet A-6)	CREDITS:	—	-
	TOTAL EXPORT FROM PROJECT:	266.42	LBS/YR

STEP 3. Correct total export to reflect phosphorus availability.

Multiply total export (TE) by the correction factor to determine total phosphorus available for algal production.

$$\underset{\text{(TE)}}{266.42} \times 0.5 = \underset{\text{(TPA)}}{133.21}$$

STEP 4. Compare PERMITTED phosphorus export with PREDICTED phosphorus export.

(PPE) = 322.50 (from Step 1)
(TPA) = 133.21 (from Step 3)

If (PPE) > (TPA), then phosphorus control is adequate.
If (PPE) < (TPA), then additional phosphorus control is needed.

APPENDIX A

Watershed Long Pond Standard Review Method

WORKSHEET A

PART ONE - DETERMINATION OF WATER QUALITY GOAL AND PHOSPHORUS ALLOCATION

PART ONE. Determine allowable phosphorus export (per acre) in the lake watershed.

1) Contact DEP's Lakes Section to obtain the value of (F) (phosphorus coefficient) for the lake in whose watershed the development is proposed.

   (F) = 201.42 lbs/ppb/yr

2) Contact DEP's Lakes Section to obtain the water quality category of the lake. Choose a level of protection for the lake. Using the water quality category and level of protection, use Table 3-2 to determine (C) (acceptable increase in P concentration).

   Water quality category: moderate/sensitive

   Level of protection: High

   (C) = 0.75 ppb

3) Using the values of (F) and (C) given above, complete the following equation:

   (201.42 (F) lbs/ppb/yr) x (0.75 (C) ppb) = 151.07 (FC) lbs/yr

4) Estimate (D) (future area to be developed over the next 50 years).

   (D) = _____ acres

5) Using the values of (FC) and (D) given above, complete the following equation:

   (_____ (FC) lbs/yr)/(_____ (D) acres) = _____ (P) lbs/acre/yr

PER-ACRE PHOSPHORUS ALLOCATION = _____ (P) lbs/ac/yr

Project Long Pond Standard Review Method

WORKSHEET A-2

PHOSPHORUS EXPORT FROM ROADS
SINGLE-FAMILY RESIDENTIAL PROJECTS

Mark the road into sections based on the type of treatment each section will receive. Complete one of the lines below for each section of road applying appropriate treatment factor(s) for phosphorus control measures on that section of road. Treatment factors are listed on the last page of each design chapter. Buffer hydrologic class and width are determined from the site plan. Multiply by 0.5 when the two sides of a single stretch of road drain to different treatment systems.

****

LABEL NAME	LENGTH OF SECTION		PHOS. EXPORT (LBS)		TREATMENT FACTORS B	WP	I	N		PHOSPHORUS EXPORT		BUFFER HC/WI/SL
Access Roads,	5 miles 26400	ft x	0.224*	/100 ft x	( )x	( )x	( )x	(1)	=	59.14	lbs P,	
,		ft x		/100 ft x	( )x	( )x	( )x	(1)	=		lbs P,	
,		ft x		/100 ft x	( )x	( )x	( )x	(1)	=		lbs P,	
,		ft x		/100 ft x	( )x	( )x	( )x	(1)	=		lbs P,	
,		ft x		/100 ft x	( )x	( )x	( )x	(1)	=		lbs P,	
,		ft x		/100 ft x	( )x	( )x	( )x	(1)	=		lbs P,	
,		ft x		/100 ft x	( )x	( )x	( )x	(1)	=		lbs P,	
,		ft x		/100 ft x	( )x	( )x	( )x	(1)	=		lbs P,	
,		ft x		/100 ft x	( )x	( )x	( )x	(1)	=		lbs P,	
,		ft x		/100 ft x	( )x	( )x	( )x	(1)	=		lbs P,	
,		ft x		/100 ft x	( )x	( )x	( )x	(1)	=		lbs P,	
,		ft x		/100 ft x	( )x	( )x	( )x	(1)	=		lbs P,	
,		ft x		/100 ft x	( )x	( )x	( )x	(1)	=		lbs P,	
,		ft x		/100 ft x	( )x	( )x	( )x	(1)	=		lbs P,	
,		ft x		/100 ft x	( )x	( )x	( )x	(1)	=		lbs P,	

TOTAL EXPORT FROM ROADS = 59.14 lbs P

N =No Treatment HC = Soil Hydrologic Class SL = Buffer Slope
B = bufferstrips WP = wet pond I = infiltration areas WI = Buffer Width

NOTE: Please provide a site map showing buffer location and a narrative of the buffers.

* ((22'+4'+4'-12') x 0.008) + 2 (0.04) = 0.224

Assumed no treatment for initial review

Project Long Pond

Standard Review Method

WORKSHEET A-3
PHOSPHORUS EXPORT FROM LOTS
SINGLE-FAMILY RESIDENTIAL PROJECTS

Complete one of the lines below for each houselot. Phosphorus export figures for the various hydrologic groups are listed in Table 3-4. Treatment factors are listed on the last page of each design chapter. Buffer hydrologic group and width are determined from the site plan.

****

	Lot	EXPORT TREATMENT	TREATMENT FACTORS B**	WP	I	N	PHOSPHORUS EXPORT (HE)	BUFFER HC/SL/WI
hore	Lot 54 :	0.44* lbs	x(0.95)	x( )	x( )	x(1)	= 10.69 lbs P,	C/3-8%/100'
ack	Lot 56 :	0.44* lbs	x( )	x( )	x( )	x(1)	= 24.64 lbs P,	C/3-8%/–
	Lot ____ :	____ lbs	x( )	x( )	x( )	x(1)	= ____ lbs P,	________
	Lot ____ :	____ lbs	x( )	x( )	x( )	x(1)	= ____ lbs P,	________
	Lot ____ :	____ lbs	x( )	x( )	x( )	x(1)	= ____ lbs P,	________
	Lot ____ :	____ lbs	x( )	x( )	x( )	x(1)	= ____ lbs P,	________
	Lot ____ :	____ lbs	x( )	x( )	x( )	x(1)	= ____ lbs P,	________
	Lot ____ :	____ lbs	x( )	x( )	x( )	x(1)	= ____ lbs P,	________
	Lot ____ :	____ lbs	x( )	x( )	x( )	x(1)	= ____ lbs P,	________
	Lot ____ :	____ lbs	x( )	x( )	x( )	x(1)	= ____ lbs P,	________
	Lot ____ :	____ lbs	x( )	x( )	x( )	x(1)	= ____ lbs P,	________
	Lot ____ :	____ lbs	x( )	x( )	x( )	x(1)	= ____ lbs P,	________
	Lot ____ :	____ lbs	x( )	x( )	x( )	x(1)	= ____ lbs P,	________
	Lot ____ :	____ lbs	x( )	x( )	x( )	x(1)	= ____ lbs P,	________
	Lot ____ :	____ lbs	x( )	x( )	x( )	x(1)	= ____ lbs P,	________

TOTAL EXPORT FROM LOTS = 35.33 lbs P

N = No Treatment HE = P Export from houselots
B = bufferstrips WP = wet pond I = infiltration areas
HC = Soil Hydrologic Group WI = Buffer Width SL = Buffer Slope

NOTE: Please add a site map showing buffer location and a narrative of the buffers.

* from TABLE 3-4, HSG C, AND 10,000 – 15,000 SF CLEARING AREA
** BASED ON a Buffer width of 100' on 3-8% slopes (TABLE 5-1)

Project Long Pond

Standard Review Method

WORKSHEET A-4

PHOSPHORUS EXPORT FROM DRIVEWAYS LONGER THAN 150 FEET
SINGLE-FAMILY RESIDENTIAL PROJECTS

Mark the driveway section greater than 150 feet into sections based on the type of treatment each section will receive. Complete one of the lines below for each section of driveway applying appropriate treatment factor(s) for phosphorus control measures on that section of driveway. Treatment factors are listed on the last page of each design chapter. Buffer hydrologic class and width are determined from the site plan. Multiply by 0.5 when the two sides of a single stretch of driveway drain to different treatment systems.

NOTE: Only use this worksheet for the section of driveway(s) greater than 150 feet. Please note that the first 150 feet of driveway is automatically included export factors used in Worksheet A-3 so do not include the first 150 ft of drive here.

****

LABEL NAME	LENGTH OF SECTION		PHOS. EXPORT (LBS)		B	WP	I	N		PHOSPHORUS EXPORT		BUFFER HC&SL&WI
110 lots,	200 / Lot	ft x	0.096	/100 ft x(	)x(	)x(	)x(	1	)=	21.12	lbs P,	
,		ft x		/100 ft x(	)x(	)x(	)x(	1	)=		lbs P,	
,		ft x		/100 ft x(	)x(	)x(	)x(	1	)=		lbs P,	
,		ft x		/100 ft x(	)x(	)x(	)x(	1	)=		lbs P,	
,		ft x		/100 ft x(	)x(	)x(	)x(	1	)=		lbs P,	
,		ft x		/100 ft x(	)x(	)x(	)x(	1	)=		lbs P,	
,		ft x		/100 ft x(	)x(	)x(	)x(	1	)=		lbs P,	
,		ft x		/100 ft x(	)x(	)x(	)x(	1	)=		lbs P,	
,		ft x		/100 ft x(	)x(	)x(	)x(	1	)=		lbs P,	
,		ft x		/100 ft x(	)x(	)x(	)x(	1	)=		lbs P,	
,		ft x		/100 ft x(	)x(	)x(	)x(	1	)=		lbs P,	
,		ft x		/100 ft x(	)x(	)x(	)x(	1	)=		lbs P,	

TOTAL EXPORT FROM DRIVEWAYS = 21.12 lbs P

HC = Soil Hydrologic Class WI = Buffer Width SL = Buffer Slope
B = Bufferstrips WP = Wet Pond I = Infiltration areas
N = No Treatment
NOTE: Please provide a site map showing buffer location and a narrative of the buffers.

* 12' wide Driveway x 0.008 = 0.096 per 3.3.1.1

Project LONG POND Standard Review Method

WORKSHEET A-7

TOTAL PHOSPHORUS EXPORT FROM PROJECT

****

TOTAL PHOSPHORUS EXPORT FROM PROJECT

(from Worksheet A-2)	TOTAL EXPORT FROM ROADS: SINGLE-FAMILY RES.	59.14	
(from Worksheet A-3)	TOTAL EXPORT FROM LOTS: SINGLE-FAMILY RES.	35.33	+
(from Worksheet A-4)	TOTAL EXPORT FROM DRIVEWAYS>150 FT:	21.12	+
(from Worksheet A-5)	TOTAL EXPORT FROM MULTI-UNIT, COMM., INDUSTRIAL:	—	+
(from Worksheet A-6)	CREDITS:	—	-
	TOTAL EXPORT FROM PROJECT:	115.59	LBS/YR

STEP 3. Correct total export to reflect phosphorus availability.

Multiply total export (TE) by the correction factor to determine total phosphorus available for algal production.

$$\underset{\text{(TE)}}{115.59} \times 0.5 = \underset{\text{(TPA)}}{57.79}$$

STEP 4. Compare PERMITTED phosphorus export with PREDICTED phosphorus export.

(PPE) = 151.07 (from Step 1)
(TPA) = 57.79 (from Step 3)

If (PPE) > (TPA), then phosphorus control is adequate.
If (PPE) < (TPA), then additional phosphorus control is needed.

APPENDIX A

Watershed Burnham Pond Standard Review Method

WORKSHEET A

PART ONE - DETERMINATION OF WATER QUALITY GOAL AND PHOSPHORUS ALLOCATION

PART ONE. Determine allowable phosphorus export (per acre) in the lake watershed.

1) Contact DEP's Lakes Section to obtain the value of (F) (phosphorus coefficient) for the lake in whose watershed the development is proposed.

   (F) = 26.61 lbs/ppb/yr

2) Contact DEP's Lakes Section to obtain the water quality category of the lake. Choose a level of protection for the lake. Using the water quality category and level of protection, use Table 3-2 to determine (C) (acceptable increase in P concentration).

   Water quality category: moderate/sensitive

   Level of protection: High

   (C) = 0.75 ppb

3) Using the values of (F) and (C) given above, complete the following equation:

   (26.61 lbs/ppb/yr) x (0.75 ppb) = 19.96 lbs/yr
   (F) (C) (FC)

   Assume PC allocation @ 80% of FC since they own about 90% of watershed

4) Estimate (D) (future area to be developed over the next 50 years).

   FC = 19.96 x 0.8 = 15.97

   (D) = _____ acres

5) Using the values of (FC) and (D) given above, complete the following equation:

   (_____ lbs/yr)/(_____ acres) = _____ lbs/acre/yr
   (FC) (D) (P)

PER-ACRE PHOSPHORUS ALLOCATION = _____ lbs/ac/yr
(P)

Project *Burnham Pond* Standard Review Method

WORKSHEET A-2

PHOSPHORUS EXPORT FROM ROADS
SINGLE-FAMILY RESIDENTIAL PROJECTS

Mark the road into sections based on the type of treatment each section will receive. Complete one of the lines below for each section of road applying appropriate treatment factor(s) for phosphorus control measures on that section of road. Treatment factors are listed on the last page of each design chapter. Buffer hydrologic class and width are determined from the site plan. Multiply by 0.5 when the two sides of a single stretch of road drain to different treatment systems.

****

LABEL NAME	LENGTH OF SECTION		PHOS. EXPORT (LBS)		TREATMENT FACTORS B	WP	I	N		PHOSPHORUS EXPORT		BUFFER HC/WI/SL
Lot Access,	2.0 miles 10,560	ft x	0.04*	/100 ft x	(0.55) x	( ) x	( ) x	(1)	=	2.32	lbs P,	C/100'/0-3%
,	10,560	ft x	0.04*	/100 ft x	( ) x	( ) x	( ) x	(1)	=	4.22	lbs P,	
Resort Access,	9000	ft x	0.112**	/100 ft x	(0.55) x	( ) x	( ) x	(1)	=	5.54	lbs P,	C/100'/0-3%
,	9000	ft x	0.112**	/100 ft x	( ) x	( ) x	( ) x	(1)	=	10.08	lbs P,	
,		ft x		/100 ft x	( ) x	( ) x	( ) x	(1)	=		lbs P,	
,		ft x		/100 ft x	( ) x	( ) x	( ) x	(1)	=		lbs P,	
,		ft x		/100 ft x	( ) x	( ) x	( ) x	(1)	=		lbs P,	
,		ft x		/100 ft x	( ) x	( ) x	( ) x	(1)	=		lbs P,	
,		ft x		/100 ft x	( ) x	( ) x	( ) x	(1)	=		lbs P,	
,		ft x		/100 ft x	( ) x	( ) x	( ) x	(1)	=		lbs P,	
,		ft x		/100 ft x	( ) x	( ) x	( ) x	(1)	=		lbs P,	
,		ft x		/100 ft x	( ) x	( ) x	( ) x	(1)	=		lbs P,	
,		ft x		/100 ft x	( ) x	( ) x	( ) x	(1)	=		lbs P,	
,		ft x		/100 ft x	( ) x	( ) x	( ) x	(1)	=		lbs P,	
,		ft x		/100 ft x	( ) x	( ) x	( ) x	(1)	=		lbs P,	

TOTAL EXPORT FROM ROADS = 22.16 lbs P

N = No Treatment HC = Soil Hydrologic Class SL = Buffer Slope
B = bufferstrips WP = wet pond I = infiltration areas WI = Buffer Width

NOTE: Please provide a site map showing buffer location and a narrative of the buffers.

* 1/2 of road thru buffer (9+2−6) x 0.008 = 0.04

** 1/2 of road thru buffer (11+4−6) [99] x 0.008 + 0.04 = 0.112

Project Burnham Pond Standard Review Method

WORKSHEET A-3
PHOSPHORUS EXPORT FROM LOTS
SINGLE-FAMILY RESIDENTIAL PROJECTS

Complete one of the lines below for each houselot. Phosphorus export figures for the various hydrologic groups are listed in Table 3-4. Treatment factors are listed on the last page of each design chapter. Buffer hydrologic group and width are determined from the site plan.

****

Lot	EXPORT	TREATMENT FACTORS B	WP	I	N	PHOSPHORUS EXPORT(HE)	BUFFER HC/SL/WI
Lot 26:	0.44* lbs	x(0.35)	x( )	x( )	x(1) =	4.00 lbs P,	C/0-5%/100'
Lot ____:	____ lbs	x( )	x( )	x( )	x(1) =	____ lbs P,	____
Lot ____:	____ lbs	x( )	x( )	x( )	x(1) =	____ lbs P,	____
Lot ____:	____ lbs	x( )	x( )	x( )	x(1) =	____ lbs P,	____
Lot ____:	____ lbs	x( )	x( )	x( )	x(1) =	____ lbs P,	____
Lot ____:	____ lbs	x( )	x( )	x( )	x(1) =	____ lbs P,	____
Lot ____:	____ lbs	x( )	x( )	x( )	x(1) =	____ lbs P,	____
Lot ____:	____ lbs	x( )	x( )	x( )	x(1) =	____ lbs P,	____
Lot ____:	____ lbs	x( )	x( )	x( )	x(1) =	____ lbs P,	____
Lot ____:	____ lbs	x( )	x( )	x( )	x(1) =	____ lbs P,	____
Lot ____:	____ lbs	x( )	x( )	x( )	x(1) =	____ lbs P,	____
Lot ____:	____ lbs	x( )	x( )	x( )	x(1) =	____ lbs P,	____
Lot ____:	____ lbs	x( )	x( )	x( )	x(1) =	____ lbs P,	____
Lot ____:	____ lbs	x( )	x( )	x( )	x(1) =	____ lbs P,	____
Lot ____:	____ lbs	x( )	x( )	x( )	x(1) =	____ lbs P,	____

TOTAL EXPORT FROM LOTS = 4.00 lbs P

N = No Treatment HE = P Export from houselots
B = bufferstrips WP = wet pond I = infiltration areas
HC = Soil Hydrologic Group WI = Buffer Width SL = Buffer Slope

NOTE: Please add a site map showing buffer location and a narrative of the buffers.

* TABLE 3-4

Project Burnham Pond   Standard Review Method

WORKSHEET A-4

PHOSPHORUS EXPORT FROM DRIVEWAYS LONGER THAN 150 FEET
SINGLE-FAMILY RESIDENTIAL PROJECTS

Mark the driveway section greater than 150 feet into sections based on the type of treatment each section will receive. Complete one of the lines below for each section of driveway applying appropriate treatment factor(s) for phosphorus control measures on that section of driveway. Treatment factors are listed on the last page of each design chapter. Buffer hydrologic class and width are determined from the site plan. Multiply by 0.5 when the two sides of a single stretch of driveway drain to different treatment systems.

NOTE: Only use this worksheet for the section of driveway(s) greater than 150 feet. Please note that the first 150 feet of driveway is automatically included export factors used in Worksheet A-3 so do not include the first 150 ft of drive here.

****

LABEL NAME	LENGTH OF SECTION	PHOS. EXPORT (LBS)		TREATMENT FACTORS B	WP	I	N	PHOSPHORUS EXPORT		BUFFER HC&SL&WI
26 lots	150 ft / LOT ft	x 0.096	/100 ft	x( )	x( )	x( )	x(1)	= 3.74	lbs P,	
	ft	x	/100 ft	x( )	x( )	x( )	x(1)	=	lbs P,	
	ft	x	/100 ft	x( )	x( )	x( )	x(1)	=	lbs P,	
	ft	x	/100 ft	x( )	x( )	x( )	x(1)	=	lbs P,	
	ft	x	/100 ft	x( )	x( )	x( )	x(1)	=	lbs P,	
	ft	x	/100 ft	x( )	x( )	x( )	x(1)	=	lbs P,	
	ft	x	/100 ft	x( )	x( )	x( )	x(1)	=	lbs P,	
	ft	x	/100 ft	x( )	x( )	x( )	x(1)	=	lbs P,	
	ft	x	/100 ft	x( )	x( )	x( )	x(1)	=	lbs P,	
	ft	x	/100 ft	x( )	x( )	x( )	x(1)	=	lbs P,	
	ft	x	/100 ft	x( )	x( )	x( )	x(1)	=	lbs P,	
	ft	x	/100 ft	x( )	x( )	x( )	x(1)	=	lbs P,	

TOTAL EXPORT FROM DRIVEWAYS = 3.74 lbs P

HC = Soil Hydrologic Class   WI = Buffer Width   SL = Buffer Slope
B = Bufferstrips   WP = Wet Pond   I = Infiltration areas
N = No Treatment
NOTE: Please provide a site map showing buffer location and a narrative of the buffers.

12' x 0.008 = 0.096

Project Burnham Pond Standard Review Method

WORKSHEET A-7

TOTAL PHOSPHORUS EXPORT FROM PROJECT

****

TOTAL PHOSPHORUS EXPORT FROM PROJECT

(from Worksheet A-2)	TOTAL EXPORT FROM ROADS: SINGLE-FAMILY RES.	22.16	
(from Worksheet A-3)	TOTAL EXPORT FROM LOTS: SINGLE-FAMILY RES.	4.00	+
(from Worksheet A-4)	TOTAL EXPORT FROM DRIVEWAYS>150 FT:	3.74	+
(from Worksheet A-5)	TOTAL EXPORT FROM MULTI-UNIT, COMM., INDUSTRIAL:	-	+
(from Worksheet A-6)	CREDITS:	-	-
	TOTAL EXPORT FROM PROJECT:	29.90	LBS/YR

STEP 3. Correct total export to reflect phosphorus availability.

Multiply total export (TE) by the correction factor to determine total phosphorus available for algal production.

$$\underset{\text{(TE)}}{29.90} \times 0.5 = \underset{\text{(TPA)}}{14.95}$$

STEP 4. Compare PERMITTED phosphorus export with PREDICTED phosphorus export.

(PPE) = 15.97 (from Step 1)
(TPA) = 14.95 (from Step 3)

If (PPE) > (TPA), then phosphorus control is adequate.
If (PPE) < (TPA), then additional phosphorus control is needed.

APPENDIX A

Watershed Mud Pond Standard Review Method

WORKSHEET A

PART ONE - DETERMINATION OF WATER QUALITY GOAL AND PHOSPHORUS ALLOCATION

PART ONE. Determine allowable phosphorus export (per acre) in the lake watershed.

1) Contact DEP's Lakes Section to obtain the value of (F) (phosphorus coefficient) for the lake in whose watershed the development is proposed.

(F) = 21.07 lbs/ppb/yr

2) Contact DEP's Lakes Section to obtain the water quality category of the lake. Choose a level of protection for the lake. Using the water quality category and level of protection, use Table 3-2 to determine (C) (acceptable increase in P concentration).

Water quality category: moderate/sensitive

Level of protection: High

(C) = 0.75 ppb

3) Using the values of (F) and (C) given above, complete the following equation:

(21.07 lbs/ppb/yr) x (0.75 ppb) = 15.80 lbs/yr
(F) (C) (FC)

4) Estimate (D) (future area to be developed over the next 50 years).

(D) = _____ acres

5) Using the values of (FC) and (D) given above, complete the following equation:

(_____ lbs/yr)/(_____ acres) = _____ lbs/acre/yr
(FC) (D) (P)

PER-ACRE PHOSPHORUS ALLOCATION = _____ lbs/ac/yr
(P)

Project Mud Pond   Standard Review Method

WORKSHEET A-2

PHOSPHORUS EXPORT FROM ROADS
SINGLE-FAMILY RESIDENTIAL PROJECTS

Mark the road into sections based on the type of treatment each section will receive. Complete one of the lines below for each section of road applying appropriate treatment factor(s) for phosphorus control measures on that section of road. Treatment factors are listed on the last page of each design chapter. Buffer hydrologic class and width are determined from the site plan. Multiply by 0.5 when the two sides of a single stretch of road drain to different treatment systems.

****

LABEL NAME	LENGTH OF SECTION		PHOS. EXPORT (LBS)		TREATMENT FACTORS B	WP	I	N		PHOSPHORUS EXPORT		BUFFER HC/WI/SL
Access,	1 mile 5,280 LF	ft x	0.224	/100 ft x	( ) x	( ) x	( ) x	(1)	=	11.82	lbs P,	
,		ft x		/100 ft x	( ) x	( ) x	( ) x	(1)	=		lbs P,	
,		ft x		/100 ft x	( ) x	( ) x	( ) x	(1)	=		lbs P,	
,		ft x		/100 ft x	( ) x	( ) x	( ) x	(1)	=		lbs P,	
,		ft x		/100 ft x	( ) x	( ) x	( ) x	(1)	=		lbs P,	
,		ft x		/100 ft x	( ) x	( ) x	( ) x	(1)	=		lbs P,	
,		ft x		/100 ft x	( ) x	( ) x	( ) x	(1)	=		lbs P,	
,		ft x		/100 ft x	( ) x	( ) x	( ) x	(1)	=		lbs P,	
,		ft x		/100 ft x	( ) x	( ) x	( ) x	(1)	=		lbs P,	
,		ft x		/100 ft x	( ) x	( ) x	( ) x	(1)	=		lbs P,	
,		ft x		/100 ft x	( ) x	( ) x	( ) x	(1)	=		lbs P,	
,		ft x		/100 ft x	( ) x	( ) x	( ) x	(1)	=		lbs P,	
,		ft x		/100 ft x	( ) x	( ) x	( ) x	(1)	=		lbs P,	
,		ft x		/100 ft x	( ) x	( ) x	( ) x	(1)	=		lbs P,	
,		ft x		/100 ft x	( ) x	( ) x	( ) x	(1)	=		lbs P,	

TOTAL EXPORT FROM ROADS = 11.82 lbs P

N =No Treatment   HC = Soil Hydrologic Class   SL = Buffer Slope
B = bufferstrips   WP = wet pond   I = infiltration areas   WI = Buffer Width

NOTE: Please provide a site map showing buffer location and a narrative of the buffers.

* (22 + 44 - 12) x 0.008 + 2 (0.04) = 0.224

Assumed no treatment for initial review

Project Mud Pond Standard Review Method

WORKSHEET A-3
PHOSPHORUS EXPORT FROM LOTS
SINGLE-FAMILY RESIDENTIAL PROJECTS

Complete one of the lines below for each houselot. Phosphorus export figures for the various hydrologic groups are listed in Table 3-4. Treatment factors are listed on the last page of each design chapter. Buffer hydrologic group and width are determined from the site plan.

****

Lot	EXPORT TREATMENT	TREATMENT FACTORS B	WP	I	N	PHOSPHORUS EXPORT (HE)	BUFFER HC/SL/WI	
Lot 16 :	0.44 lbs	x(.55)	x( )	x( )	x(1) =	3.87 lbs P,	C/8-15%/100'	Downhill Lots
Lot 16 :	0.44 lbs	x( )	x( )	x( )	x(1) =	7.04 lbs P,		uphill lot
Lot ____ :	____ lbs	x( )	x( )	x( )	x(1) =	____ lbs P,		
Lot ____ :	____ lbs	x( )	x( )	x( )	x(1) =	____ lbs P,		
Lot ____ :	____ lbs	x( )	x( )	x( )	x(1) =	____ lbs P,		
Lot ____ :	____ lbs	x( )	x( )	x( )	x(1) =	____ lbs P,		
Lot ____ :	____ lbs	x( )	x( )	x( )	x(1) =	____ lbs P,		
Lot ____ :	____ lbs	x( )	x( )	x( )	x(1) =	____ lbs P,		
Lot ____ :	____ lbs	x( )	x( )	x( )	x(1) =	____ lbs P,		
Lot ____ :	____ lbs	x( )	x( )	x( )	x(1) =	____ lbs P,		
Lot ____ :	____ lbs	x( )	x( )	x( )	x(1) =	____ lbs P,		
Lot ____ :	____ lbs	x( )	x( )	x( )	x(1) =	____ lbs P,		
Lot ____ :	____ lbs	x( )	x( )	x( )	x(1) =	____ lbs P,		
Lot ____ :	____ lbs	x( )	x( )	x( )	x(1) =	____ lbs P,		
Lot ____ :	____ lbs	x( )	x( )	x( )	x(1) =	____ lbs P,		

TOTAL EXPORT FROM LOTS = 10.91 lbs P

N = No Treatment HE = P Export from houselots
B = bufferstrips WP = wet pond I = infiltration areas
HC = Soil Hydrologic Group WI = Buffer Width SL = Buffer Slope

NOTE: Please add a site map showing buffer location and a narrative of the buffers.

Project *MUD POND* Standard Review Method

WORKSHEET A-4

PHOSPHORUS EXPORT FROM DRIVEWAYS LONGER THAN 150 FEET
SINGLE-FAMILY RESIDENTIAL PROJECTS

Mark the driveway section greater than 150 feet into sections based on the type of treatment each section will receive. Complete one of the lines below for each section of driveway applying appropriate treatment factor(s) for phosphorus control measures on that section of driveway. Treatment factors are listed on the last page of each design chapter. Buffer hydrologic class and width are determined from the site plan. Multiply by 0.5 when the two sides of a single stretch of driveway drain to different treatment systems.

NOTE: Only use this worksheet for the section of driveway(s) greater than 150 feet. Please note that the first 150 feet of driveway is automatically included export factors used in Worksheet A-3 so do not include the first 150 ft of drive here.

****

LABEL NAME	LENGTH OF SECTION		PHOS. EXPORT (LBS)		TREATMENT FACTORS B	WP	I	N		PHOSPHORUS EXPORT		BUFFER HC&SL&WI
321 lots ,	*150 LF /Lot*	ft x	*0.096*	/100 ft x	( )x	( )x	( )x	(1)	=	*4.60*	lbs P,	
,		ft x		/100 ft x	( )x	( )x	( )x	(1)	=		lbs P,	
,		ft x		/100 ft x	( )x	( )x	( )x	(1)	=		lbs P,	
,		ft x		/100 ft x	( )x	( )x	( )x	(1)	=		lbs P,	
,		ft x		/100 ft x	( )x	( )x	( )x	(1)	=		lbs P,	
,		ft x		/100 ft x	( )x	( )x	( )x	(1)	=		lbs P,	
,		ft x		/100 ft x	( )x	( )x	( )x	(1)	=		lbs P,	
,		ft x		/100 ft x	( )x	( )x	( )x	(1)	=		lbs P,	
,		ft x		/100 ft x	( )x	( )x	( )x	(1)	=		lbs P,	
,		ft x		/100 ft x	( )x	( )x	( )x	(1)	=		lbs P,	
,		ft x		/100 ft x	( )x	( )x	( )x	(1)	=		lbs P,	
,		ft x		/100 ft x	( )x	( )x	( )x	(1)	=		lbs P,	

TOTAL EXPORT FROM DRIVEWAYS = *4.60* lbs P

HC = Soil Hydrologic Class WI = Buffer Width SL = Buffer Slope
B = Bufferstrips WP = Wet Pond I = Infiltration areas
N = No Treatment

NOTE: Please provide a site map showing buffer location and a narrative of the buffers.

Project Mud pond Standard Review Method

WORKSHEET A-7

TOTAL PHOSPHORUS EXPORT FROM PROJECT

****

TOTAL PHOSPHORUS EXPORT FROM PROJECT

(from Worksheet A-2)	TOTAL EXPORT FROM ROADS: SINGLE-FAMILY RES.	11.82	
(from Worksheet A-3)	TOTAL EXPORT FROM LOTS: SINGLE-FAMILY RES.	10.91	+
(from Worksheet A-4)	TOTAL EXPORT FROM DRIVEWAYS>150 FT:	4.60	+
(from Worksheet A-5)	TOTAL EXPORT FROM MULTI-UNIT, COMM., INDUSTRIAL:	—	+
(from Worksheet A-6)	CREDITS:	—	-
	TOTAL EXPORT FROM PROJECT:	27.34	LBS/YR

STEP 3. Correct total export to reflect phosphorus availability.

Multiply total export (TE) by the correction factor to determine total phosphorus available for algal production.

$$\underset{\text{(TE)}}{27.34} \times 0.5 = \underset{\text{(TPA)}}{13.67}$$

STEP 4. Compare PERMITTED phosphorus export with PREDICTED phosphorus export.

(PPE) = 15.80 (from Step 1)
(TPA) = 13.67 (from Step 3)

If (PPE) > (TPA), then phosphorus control is adequate.
If (PPE) < (TPA), then additional phosphorus control is needed.

APPENDIX A

Watershed INDIAN POND Standard Review Method

WORKSHEET A

PART ONE - DETERMINATION OF WATER QUALITY GOAL AND PHOSPHORUS ALLOCATION

PART ONE. Determine allowable phosphorus export (per acre) in the lake watershed.

1) Contact DEP's Lakes Section to obtain the value of (F) (phosphorus coefficient) for the lake in whose watershed the development is proposed.

(F) = 209.2 lbs/ppb/yr

2) Contact DEP's Lakes Section to obtain the water quality category of the lake. Choose a level of protection for the lake. Using the water quality category and level of protection, use Table 3-2 to determine (C) (acceptable increase in P concentration).

Water quality category: GOOD

Level of protection: HIGH

(C) = 1.0 ppb

3) Using the values of (F) and (C) given above, complete the following equation:

(209.2 (F) lbs/ppb/yr) x (1.0 (C) ppb) = 209.2 (FC) lbs/yr

4) Estimate (D) (future area to be developed over the next 50 years).

(D) = _____ acres

5) Using the values of (FC) and (D) given above, complete the following equation:

(_____ (FC) lbs/yr)/(_____ (D) acres) = _____ (P) lbs/acre/yr

PER-ACRE PHOSPHORUS ALLOCATION = _____ (P) lbs/ac/yr

Project INDIAN POND

Standard Review Method

WORKSHEET A-2

PHOSPHORUS EXPORT FROM ROADS
SINGLE-FAMILY RESIDENTIAL PROJECTS

Mark the road into sections based on the type of treatment each section will receive. Complete one of the lines below for each section of road applying appropriate treatment factor(s) for phosphorus control measures on that section of road. Treatment factors are listed on the last page of each design chapter. Buffer hydrologic class and width are determined from the site plan. Multiply by 0.5 when the two sides of a single stretch of road drain to different treatment systems.

****

LABEL NAME	LENGTH OF SECTION (ft)	PHOS. EXPORT (LBS) /100 ft	TREATMENT FACTORS B	WP	I	N	PHOSPHORUS EXPORT (lbs P)	BUFFER HC/WI/SL
EXIST. ACCESS	2 miles 10,560	0.112	0.55			1	6.50	C/100'/0-3%
NEW ROAD TREATED	1 mile 5,280	0.16	0.55			1	4.65	C/100'/0-3%
						1		
NEW ROAD UNTREATED	1 mile 5280	0.16				1	8.45	
EXIST ROAD untreated	2 miles 10,560	0.112				1	11.83	
						1		
						1		
						1		
						1		
						1		
						1		
						1		
						1		
						1		
						1		

TOTAL EXPORT FROM ROADS = 31.43 lbs P

N =No Treatment HC = Soil Hydrologic Class SL = Buffer Slope
B = bufferstrips WP = wet pond I = infiltration areas WI = Buffer Width

NOTE: Please provide a site map showing buffer location and a narrative of the buffers.

* (22+4+4-12) x 0.008 + 2 (0.04) = 0.224 Divide by 2 for treatment to downhill s

** (11+4) x 0.008 + 1 (0.04) = 0.16

Project INDIAN POND Standard Review Method

WORKSHEET A-3
PHOSPHORUS EXPORT FROM LOTS
SINGLE-FAMILY RESIDENTIAL PROJECTS

Complete one of the lines below for each houselot. Phosphorus export figures for the various hydrologic groups are listed in Table 3-4. Treatment factors are listed on the last page of each design chapter. Buffer hydrologic group and width are determined from the site plan.

****

	EXPORT TREATMENT	TREATMENT FACTORS B	WP	I	N	PHOSPHORUS EXPORT (HE)	BUFFER HC/SL/WI
Lot 20 :	0.44 lbs	x(0.55)	x( )	x( )	x(1) =	4.84 lbs P,	C/0-3%/100'
Lot ____ :	______ lbs	x( )	x( )	x( )	x(1) =	______ lbs P,	__________
Lot ____ :	______ lbs	x( )	x( )	x( )	x(1) =	______ lbs P,	__________
Lot ____ :	______ lbs	x( )	x( )	x( )	x(1) =	______ lbs P,	__________
Lot ____ :	______ lbs	x( )	x( )	x( )	x(1) =	______ lbs P,	__________
Lot ____ :	______ lbs	x( )	x( )	x( )	x(1) =	______ lbs P,	__________
Lot ____ :	______ lbs	x( )	x( )	x( )	x(1) =	______ lbs P,	__________
Lot ____ :	______ lbs	x( )	x( )	x( )	x(1) =	______ lbs P,	__________
Lot ____ :	______ lbs	x( )	x( )	x( )	x(1) =	______ lbs P,	__________
Lot ____ :	______ lbs	x( )	x( )	x( )	x(1) =	______ lbs P,	__________
Lot ____ :	______ lbs	x( )	x( )	x( )	x(1) =	______ lbs P,	__________
Lot ____ :	______ lbs	x( )	x( )	x( )	x(1) =	______ lbs P,	__________
Lot ____ :	______ lbs	x( )	x( )	x( )	x(1) =	______ lbs P,	__________
Lot ____ :	______ lbs	x( )	x( )	x( )	x(1) =	______ lbs P,	__________
Lot ____ :	______ lbs	x( )	x( )	x( )	x(1) =	______ lbs P,	__________

TOTAL EXPORT FROM LOTS = 4.84 lbs P

N = No Treatment HE = P Export from houselots
B = bufferstrips WP = wet pond I = infiltration areas
HC = Soil Hydrologic Group WI = Buffer Width SL = Buffer Slope

NOTE: Please add a site map showing buffer location and a narrative of the buffers.

Project INDIAN POND   Standard Review Method

WORKSHEET A-4

PHOSPHORUS EXPORT FROM DRIVEWAYS LONGER THAN 150 FEET
SINGLE-FAMILY RESIDENTIAL PROJECTS

Mark the driveway section greater than 150 feet into sections based on the type of treatment each section will receive. Complete one of the lines below for each section of driveway applying appropriate treatment factor(s) for phosphorus control measures on that section of driveway. Treatment factors are listed on the last page of each design chapter. Buffer hydrologic class and width are determined from the site plan. Multiply by 0.5 when the two sides of a single stretch of driveway drain to different treatment systems.

NOTE: Only use this worksheet for the section of driveway(s) greater than 150 feet. Please note that the first 150 feet of driveway is automatically included export factors used in Worksheet A-3 so do not include the first 150 ft of drive here.

****

LABEL NAME	LENGTH OF SECTION		PHOS. EXPORT (LBS)		TREATMENT FACTORS B	WP	I	N		PHOSPHORUS EXPORT		BUFFER HC&SL&WI
20lots	150LF/lot	ft x	0.096	/100 ft x(	)x(	)x(	)x(	1	)=	2.88	lbs P,	
		ft x		/100 ft x(	)x(	)x(	)x(	1	)=		lbs P,	
		ft x		/100 ft x(	)x(	)x(	)x(	1	)=		lbs P,	
		ft x		/100 ft x(	)x(	)x(	)x(	1	)=		lbs P,	
		ft x		/100 ft x(	)x(	)x(	)x(	1	)=		lbs P,	
		ft x		/100 ft x(	)x(	)x(	)x(	1	)=		lbs P,	
		ft x		/100 ft x(	)x(	)x(	)x(	1	)=		lbs P,	
		ft x		/100 ft x(	)x(	)x(	)x(	1	)=		lbs P,	
		ft x		/100 ft x(	)x(	)x(	)x(	1	)=		lbs P,	
		ft x		/100 ft x(	)x(	)x(	)x(	1	)=		lbs P,	
		ft x		/100 ft x(	)x(	)x(	)x(	1	)=		lbs P,	
		ft x		/100 ft x(	)x(	)x(	)x(	1	)=		lbs P,	

TOTAL EXPORT FROM DRIVEWAYS = 2.88 lbs P

HC = Soil Hydrologic Class WI = Buffer Width SL = Buffer Slope
B = Bufferstrips WP = Wet Pond I = Infiltration areas
N = No Treatment
NOTE: Please provide a site map showing buffer location and a narrative of the buffers.

* 12' x 0.008 = 0.096 per 3.3.1.1

Project Indian Pond

Standard Review Method

WORKSHEET A-5

PHOSPHORUS EXPORT FROM
MULTI-UNIT, COMMERCIAL, & INDUSTRIAL

Complete one of the lines below for each area with a single type of land surface (lawn [by hydrologic group], road ditch, road surface, or impervious surface). If the entire area does not receive the same level of treatment, it should be split into two or more sections for separate evaluation. Land surface and acreage should be determined from the site plan, phosphorus export from Table 3-5 based on type of land surface, treatment factors from tables at the end of each design chapter and buffer hydrologic group/width from the site plan.

****

LAND SURFACE (Type)	ACRES	EXPORT PRE-TREATMENT	B	WP	I	N	PHOSPHORUS EXPORT	BUFFER HC&SL&WI
Lawns C	20 acres	0.97	0.55			1	10.67 lbs P	C/0-3/100'
Road Surface	10 acres	3.5	0.55			1	19.25 lbs P	C/0-3/100'
Parking						1	lbs P,	
other impervious	6 acres	2.0		0.50		1	6.0 lbs P,	
						1	lbs P,	
Golf course	65 acres	0.97	0.55			1	34.68 lbs P	C/0-3/100'
						1	lbs P,	
						1	lbs P,	
						1	lbs P,	
						1	lbs P,	
						1	lbs P,	
						1	lbs P,	
						1	lbs P,	
						1	lbs P,	
						1	lbs P,	

TOTAL EXPORT FROM COMMERCIAL = 70.6

N = No treatment W = Wet ponds I = Infiltration systems
B = Buffer HC = Soil Hydrologic Group WI = Buffer Width
SL = Buffer Slope

APPENDIX A

Watershed Upper Wilson Pond Standard Review Method

WORKSHEET A

PART ONE - DETERMINATION OF WATER QUALITY GOAL AND PHOSPHORUS ALLOCATION

PART ONE. Determine allowable phosphorus export (per acre) in the lake watershed.

1) Contact DEP's Lakes Section to obtain the value of (F) (phosphorus coefficient) for the Lake in whose watershed the development is proposed.

   (F) = 86.23 lbs/ppb/yr

2) Contact DEP's Lakes Section to obtain the water quality category of the lake. Choose a level of protection for the lake. Using the water quality category and level of protection, use Table 3-2 to determine (C) (acceptable increase in P concentration).

   Water quality category: Moderate/Sensitive

   Level of protection: High

   (C) = 0.75 ppb

3) Using the values of (F) and (C) given above, complete the following equation:

   (86.23 (F) lbs/ppb/yr) x (0.75 (C) ppb) = 64.67 (FC) lbs/yr

4) Estimate (D) (future area to be developed over the next 50 years).

   (D) = _____ acres

5) Using the values of (FC) and (D) given above, complete the following equation:

   (_____ (FC) lbs/yr)/(_____ (D) acres) = _____ (P) lbs/acre/yr

PER-ACRE PHOSPHORUS ALLOCATION = _____ (P) lbs/ac/yr

Project Upper wilson pond Standard Review Method

WORKSHEET A-3
PHOSPHORUS EXPORT FROM LOTS
SINGLE-FAMILY RESIDENTIAL PROJECTS

Complete one of the lines below for each houselot. Phosphorus export figures for the various hydrologic groups are listed in Table 3-4. Treatment factors are listed on the last page of each design chapter. Buffer hydrologic group and width are determined from the site plan.

****

Lot	EXPORT TREATMENT	TREATMENT FACTORS B	WP	I	N	PHOSPHORUS EXPORT (HE)	BUFFER HC/SL/WI	
Lot 16 :	0.44 lbs	x(0.45)	x( )	x( )	x(1)	= 3.17 lbs P,	C/3-8%/100'	Shore lots
Lot 16 :	0.44 lbs	x( )	x( )	x( )	x(1)	= 7.04 lbs P,		Back lots
Lot ____ :	____ lbs	x( )	x( )	x( )	x(1)	= ____ lbs P,		
Lot ____ :	____ lbs	x( )	x( )	x( )	x(1)	= ____ lbs P,		
Lot ____ :	____ lbs	x( )	x( )	x( )	x(1)	= ____ lbs P,		
Lot ____ :	____ lbs	x( )	x( )	x( )	x(1)	= ____ lbs P,		
Lot ____ :	____ lbs	x( )	x( )	x( )	x(1)	= ____ lbs P,		
Lot ____ :	____ lbs	x( )	x( )	x( )	x(1)	= ____ lbs P,		
Lot ____ :	____ lbs	x( )	x( )	x( )	x(1)	= ____ lbs P,		
Lot ____ :	____ lbs	x( )	x( )	x( )	x(1)	= ____ lbs P,		
Lot ____ :	____ lbs	x( )	x( )	x( )	x(1)	= ____ lbs P,		
Lot ____ :	____ lbs	x( )	x( )	x( )	x(1)	= ____ lbs P,		
Lot ____ :	____ lbs	x( )	x( )	x( )	x(1)	= ____ lbs P,		
Lot ____ :	____ lbs	x( )	x( )	x( )	x(1)	= ____ lbs P,		
Lot ____ :	____ lbs	x( )	x( )	x( )	x(1)	= ____ lbs P,		

TOTAL EXPORT FROM LOTS = 10.21 lbs P

N = No Treatment HE = P Export from houselots
B = bufferstrips WP = wet pond I = infiltration areas
HC = Soil Hydrologic Group WI = Buffer Width SL = Buffer Slope

NOTE: Please add a site map showing buffer location and a narrative of the buffers.

Project Upper Wilson Pond   Standard Review Method

WORKSHEET A-4

PHOSPHORUS EXPORT FROM DRIVEWAYS LONGER THAN 150 FEET
SINGLE-FAMILY RESIDENTIAL PROJECTS

Mark the driveway section greater than 150 feet into sections based on the type of treatment each section will receive. Complete one of the lines below for each section of driveway applying appropriate treatment factor(s) for phosphorus control measures on that section of driveway. Treatment factors are listed on the last page of each design chapter. Buffer hydrologic class and width are determined from the site plan. Multiply by 0.5 when the two sides of a single stretch of driveway drain to different treatment systems.

NOTE: Only use this worksheet for the section of driveway(s) greater than 150 feet. Please note that the first 150 feet of driveway is automatically included export factors used in Worksheet A-3 so do not include the first 150 ft of drive here.

****

LABEL NAME	LENGTH OF SECTION		PHOS. EXPORT (LBS)		TREATMENT FACTORS B	WP	I	N		PHOSPHORUS EXPORT		BUFFER HC&SL&WI
32lots ,	150LF lot	ft x	0.096	/100 ft x(	)x(	)x(	)x(	1	)=	4.60	lbs P,	
,		ft x		/100 ft x(	)x(	)x(	)x(	1	)=		lbs P,	
,		ft x		/100 ft x(	)x(	)x(	)x(	1	)=		lbs P,	
,		ft x		/100 ft x(	)x(	)x(	)x(	1	)=		lbs P,	
,		ft x		/100 ft x(	)x(	)x(	)x(	1	)=		lbs P,	
,		ft x		/100 ft x(	)x(	)x(	)x(	1	)=		lbs P,	
,		ft x		/100 ft x(	)x(	)x(	)x(	1	)=		lbs P,	
,		ft x		/100 ft x(	)x(	)x(	)x(	1	)=		lbs P,	
,		ft x		/100 ft x(	)x(	)x(	)x(	1	)=		lbs P,	
,		ft x		/100 ft x(	)x(	)x(	)x(	1	)=		lbs P,	
,		ft x		/100 ft x(	)x(	)x(	)x(	1	)=		lbs P,	
,		ft x		/100 ft x(	)x(	)x(	)x(	1	)=		lbs P,	

TOTAL EXPORT FROM DRIVEWAYS = 4.60 lbs P

HC = Soil Hydrologic Class   WI = Buffer Width   SL = Buffer Slope
B = Bufferstrips   WP = Wet Pond   I = Infiltration areas
N = No Treatment
NOTE: Please provide a site map showing buffer location and a narrative of the buffers.

Plum Creek Concept Plan

Erosion and Sedimentation Control Plan for Roadway Construction

Prepared by:

DeLuca-Hoffman Associates, Inc.

South Portland, Maine

Table of Contents

1.0 Introduction

DeLuca-Hoffman Associates, Inc. has prepared the following preliminary plan, which presents the erosion and sedimentation control provisions required to construct the project roadways. Plum Creek has retained DeLuca-Hoffman Associates, Inc. to prepare preliminary discussions on erosion and sediment control as well as phosphorous related impacts resulting from the construction of the access roads and subdivision lots within the Plan Area. These reports will be further refined and detailed designs prepared as individual subdivision proposals are brought forth for LURC review and approval. The following outline of erosion control measures is provided in support of Plum Creek's ability to comply with all relevant standards and requirements pertinent to their proposed development activities.

This preliminary plan presents the erosion and sedimentation control provisions required to construct the roadways. There is the potential for conditions to be encountered during construction that have not been anticipated at this time, which will require modification to this plan. However, for the purposes of the Concept Plan submission, this plan identifies the tools which can be implemented during construction of the roadways, explains the basis for their use, and provides details for their installation. The erosion and sedimentation control plan and related drawings are not intended to provide the exact location for placement of the erosion control measures, but rather provide the basis for their use. The erosion and sedimentation control plan has been developed to satisfy the requirements of LURC Chapter 10 Rules and Standards and calls for provisions for the construction of roads to minimize unreasonable soil erosion and not result in reduction in the capacity of the land to absorb and hold water.

Filled or graded areas (other than roads), including all areas of disturbed soil, within 250 feet of water bodies and wetlands, shall be stabilized according to the Guidelines for Soil Stabilization contained in Appendix B of LURC Guidelines Chapter 10.

2.0 Existing Site Conditions

The development activities proposed by Plum Creek will generally involve access from existing land management roads within the greater Moosehead Lake region. New road construction and upgrades to existing land management roads are contemplated, thus requiring adequate measures be in place to prevent and minimize erosion and sediment transport from disturbed areas. Most of the existing land management roads have a defined drainage ditch system and are reasonably maintained. Typical road widths are 14' to 18'; however, this may vary, depending upon forest management practices and frequency of existing use. In many areas, no new improvements are proposed, although continued maintenance including grading, drainage course stabilization, and driveway construction is proposed as part of the proposed subdivisions. In other areas, new road construction is warranted along with driveway construction to lots.

Lot development activities are primarily planned for areas that have moderate topography (<25% average slope) and are located within land areas away from sensitive natural resources including streams or wetlands.

3.0 Overview of Soil Erosion and Sedimentation Concerns

The susceptibility of soils to erosion is indicated on a relative "K" scale of values over a range of 0.02 to 0.69. The "K" value is frequently used with the universal soil loss equation. The higher values are indicative of the more erodible soils. The soils identified by S.W. Cole Engineering and the USDA Medium Intensity Soil Survey with the attendant "K" values are listed in Table 1.

Table 1 – Surficial Soil Types and Relative Erodibility

Soil Type	Soil Description	K Value
Telos Silt Loam	HSG C – Very deep, moderately erodible, and somewhat poorly drained drained. Not hydric.	.24 - .32
Chesuncook Silt Loam	HSG C – very deep, moderately well drained, slightly to moderately erodible land, and. Not hydric.	.24 - .32

Based on a review of the K values, the onsite soils in the area where construction is focused are potentially slightly to moderately erodible after the cover material is stripped.

The control of erosion and sediment from the proposed construction of the access roads has several requirements which will be necessary, irrespective of tools selected for construction:

- A strict limit on the amount of denuded area exposed at any time;
- The rapid establishment of drainage patterns to control runoff and divert it away from construction areas;
- The proper selection and installation of the erosion control materials;
- The use of native materials to the extent possible; and
- The availability of the materials for construction without delay.

These five requirements must be strictly adhered to and are essential for the erosion/sediment control plan to be successful. **It is recommended that any contract include a specific statement requiring the contractor to certify the work will comply with the five requirements listed above.**

These five limitations are expounded upon further in the following paragraphs:

3.1 Limitation of Denuded Areas

There will undoubtedly be periods of adverse weather during the construction period for the roadways. Most construction areas are susceptible to erosion during adverse weather. By limiting the amount of denuded areas, the area exposed to erosion at any given time is reduced. Consequently, a major rain event will not cause significant erosion, because the open area which is susceptible to erosion will be small.

Achieving this objective will require that roadway segments be constructed and completed within one week, as opposed to sequential step progression where one element (such as clearing and grubbing) is completed followed by the next construction element.

To achieve this objective, construction work should adhere to the sequence established by this plan.

3.2 Rapid Establishment of Drainage Patterns to Control Runoff and Avoidance of Erosion

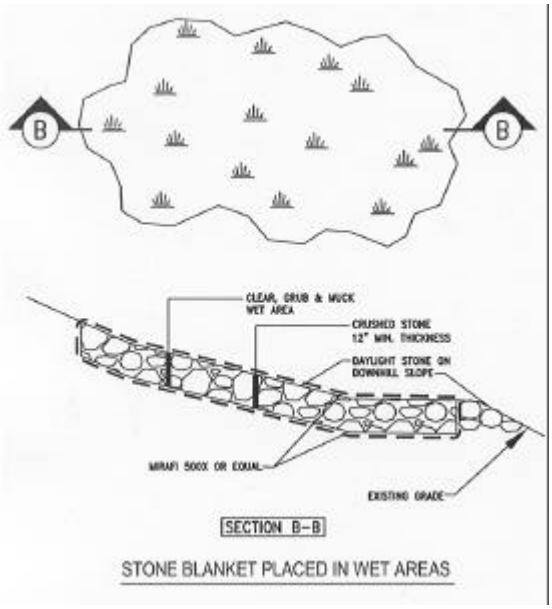
Establishment of drainage patterns includes the diversion of runoff from the construction site and the installation of the measures to collect and convey runoff across the roadway. These methods are described in the same sequence in which construction of these measures is recommended, and will typically follow clearing operations.

3.2.1 Wet or Seepage Areas

The first step will be to identify areas where wet conditions or seepage is observed. The following sequence of measures to address these conditions is required:

- Review the proposed road profile and determine if an adjustment of the profile can be made to elevate the section of roadway over the wet seepage area. If so, the design profile should be adjusted, being cautious to remain within the basis of design parameters established for the roadway.
- Grub the wet area – The grubbing should attempt to remove the organics directly under the roadbed area only.

Place fabric and drainage stone – The fabric should be overlapped at the edges by approximately 18 inches and be installed to minimize creases of the fabric. If the conditions are very wet, it may be necessary to use staples or ballast to secure the fabric until the stone is placed on top of the fabric. The figure below shows a detail of stone blanket for placement in wet areas.



STONE BLANKET PLACED IN WET AREAS

- Install cross culvert – In most areas, at least a 12-inch culvert will be installed within or below the stone bedding. This may be done concurrently with the stone placement or as a subsequent step. However, if done later, the fabric will need to be cut and repaired.
- Place and secure fabric over the stone (unless stipulated otherwise by the geotechnical representative).
- Cover fabric with common borrow to provide at least 24 inches of cover over the top of the culvert.
- Install the riprap culvert inlet and outlet aprons and channel, including the flow dispersion lip for the culvert outlet.

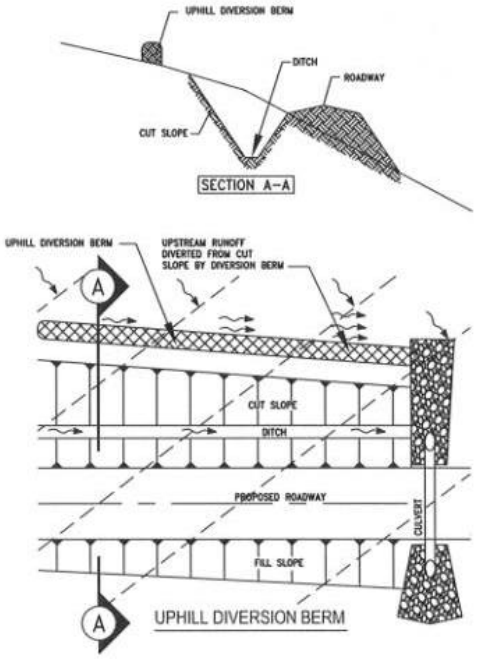
3.2.2 Install Cross Culverts Including Aprons And Outlet Flow Dispersion Lip

It is very important that culverts be carefully sited. Field observation will be required to finalize culvert locations. The final culvert locations should be at locations that appear to be stable and not eroded and at either natural low areas or areas where the flow dispersion lip can be eliminated. Culverts should be properly bedded and backfilled with cover material prior to crossing them with construction vehicles. Riprap aprons at the inlet and outlet should be installed at the same time that culverts are installed.

3.2.3 Divert Uphill Drainage

Runoff that must be handled during construction includes that emanating upslope of the work area. There is a series of implementation steps or tools to control runoff from the upgradient areas when necessary. These include:

- A barrier positioned across the upslope area to divert the water. This method will be very effective when the barrier directs the runoff to an area where a culvert has been set to convey the water across the proposed access road. The upstream barrier is illustrated in the sketch at right.



The material of the diversion berm will vary. A suggested schedule of materials for the barrier, as well as suggested maintenance and removal, is provided in the following table:

Table 2 – Riprap Material Size for Diversion Berm				
Flow Range (cfs)	**Gradient (% Slope)**			
	0-5	**5-10**	**10-15**	**>15**
0-2	d50 = 2”	d50 = 3”	d50 = 3”	d50 = 4”
2-4	d50 = 2”	d50 = 3”	d50 = 4”	d50 = 5”
4-6	d50 = 3”	d50 = 4”	d50 = 5”	d50 = 6”
6-10	d50 = 3”	d50 = 5”	d50 = 7”	d50 = 8”

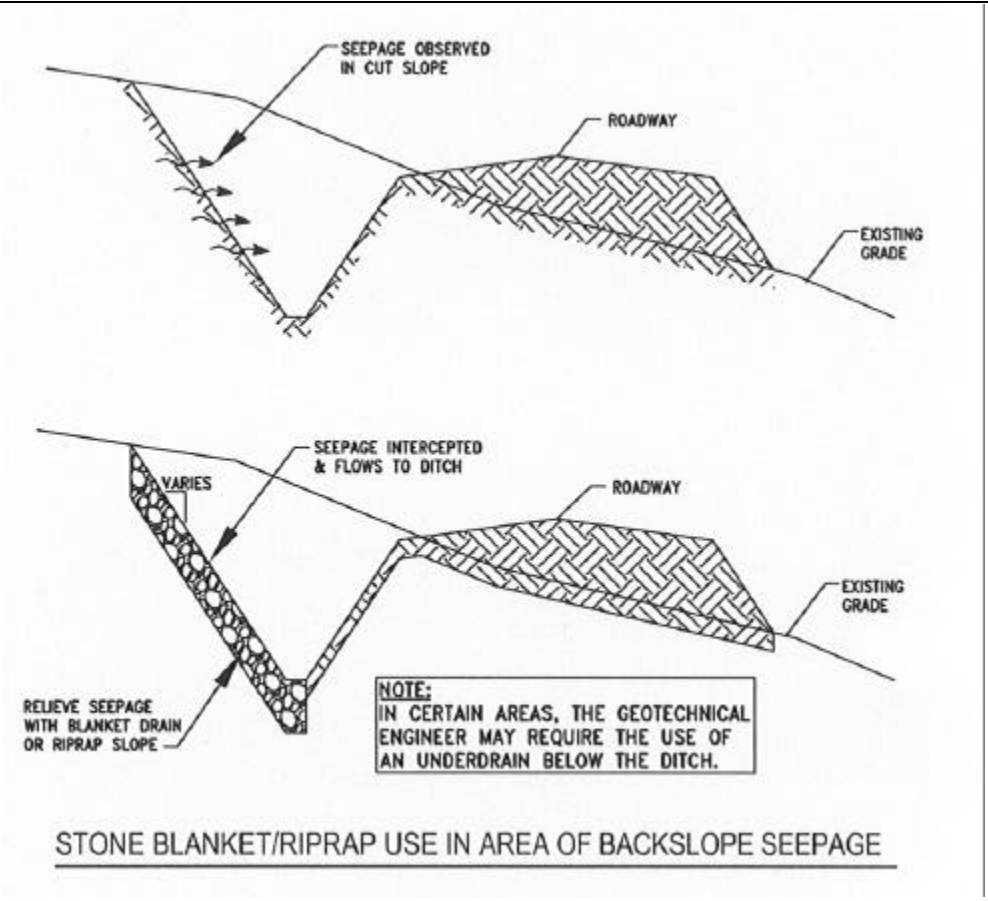
- An upgradient trench to divert the water: This alternative involves trenching in the upstream area to divert the runoff away from the slope. Instead of a berm, a ditch is constructed. The following table illustrates the treatment of the diversion ditch.

Table 3 – Diversion Ditch Size and Channel Treatment				
Flow Range (cfs)	**Gradient (% Slope)**			
	0-5	**5-10**	**10-15**	**>15**
0-2	d50 = 2”	d50 = 3”	d50 = 3”	d50 = 4”
2-4	d50 = 2”	d50 = 3”	d50 = 4”	d50 = 5”
4-6	d50 = 3”	d50 = 4”	d50 = 5”	d50 = 6”
6-10	d50 = 3”	d50 = 5”	d50 = 7”	d50 = 8”

Generally, diversion berms will only be used in lower sections of the roadway where upstream drainage runoff is substantial due to the size of the catchment.

3.2.4 Construct Backslope and Drainage Collector

The final step in the control of the drainage is to construct the ditch on the “cut” side of the roadway. This ditch is typically two feet deep with a 3:1 slope to the edge of shoulder and a backslope that matches the cut slope. The ditch should be protected with the final cover material as soon as possible. The ditch will lead to the riprap aprons of the cross culvert. In some cases, there may be a drainage collector up the backslope to intercept the runoff from the diversion berm. In areas where seepage is observed in the cut slope, a blanket drain or riprap slope will be installed as shown in the figure as follows.



3.3 The Proper Selection and Installation of Erosion Control Materials

The erosion control material selection is contingent upon the slope, the tributary watershed, and the season of construction. Provisions for erosion control in winter are different than those used at other times of the year.

The installation of erosion control materials should be in strict accordance with the details that will accompany each Subdivision Plan set, Maine DEP Best Management Practices, and information provided by suppliers.

3.4 The Availability of the Materials for Construction

The contractor will not be allowed to substitute material or delay installation of erosion control measures. The contractor shall be given the responsibility to maintain an adequate supply of all erosion/sedimentation control materials. In the event that a material supply is depleted, additional areas for the roadway construction cannot be denuded until the materials have been received and are available for use on the project.

4.0 Description and Location of Limits of All Proposed Earth Movements for the Roadway Construction

The construction of the roadways will disturb a variable width cross section. The goal of this section is to minimize disturbance. The width of the disturbed area will vary based upon the following:

- The existing transverse grade;
- The relative grade of the proposed section relative to the existing grade;
- The selected side slope treatment;
- Uphill diversion methods (if any);
- Whether the road is in tangent or a curve; and
- Whether the cut side is being widened to generate fill or the fill side is being widened to accommodate waste material.

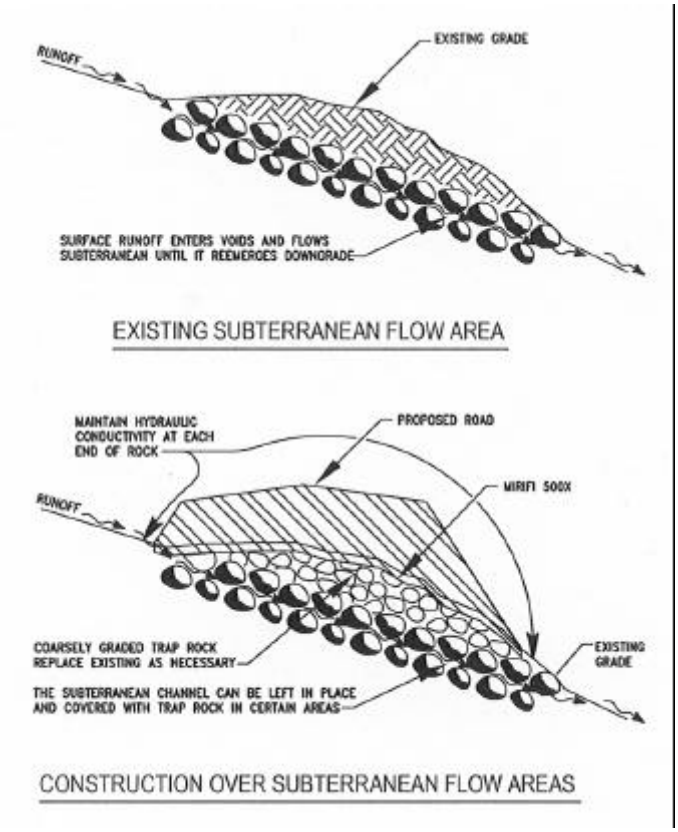
In addition, there will be disturbance for stump disposal areas and for the borrow areas where the roadway surface gravels will be obtained.

5.0 Existing and Proposed Drainage Features for Roadways

The new roadways will traverse timberland currently containing no formal drainage systems. The basis of design for the drainage system for the new roadways will ultimately be outlined in the individual subdivision applications. However, the basic measures may include:

- Retaining existing seeps and subsurface drainage channels to the extent possible. (In certain areas, surface seeps and runoff enter the subterranean features although there is no evidence of surface flow.) The tool to accommodate these is the fabric and

crushed stone sandwich, placed in locations where wet conditions are observed, or trap rock protected by fabric under the prepared subgrade. These are illustrated in the following figures:



- In some areas, the runoff may principally be a mix of sheet flow, shallow concentrated flow, and subterranean flow. In these situations, culverts are to be placed at frequent intervals to avoid flow concentration. When no downstream swale or runoff conveyance channel is observed, the flow will be re-dispersed at the outlet.

- Intercepting groundwater where seeps or erosion of the cut slope are likely to occur.

Culvert sizing will be completed as individual subdivision proposals are submitted. However, placement will rely on field judgment and reconnaissance.

Monitoring of the culvert outlets after construction will be necessary to confirm the culvert discharges are not causing erosion in downstream areas. If erosion is observed, the following corrective alternatives are available:

- Placement of non-erodible material or geotextiles to re-disperse the flow.

- Adding Culverts – For example, if a problem area is observed, and it appears to be fed by 200 feet of runoff intercepted in the uphill ditch, a second culvert placed midway back of the ditch line would reduce the flow by 50%. Therefore, follow-up monitoring of the outlets will occur to verify discharge stability.

The existing roadways have culverts and bridges, which will be retained. If longer culverts are required along existing roadways, the diameter of the new culvert will be the same as the old one. When culverts require replacement, small culverts will be replaced by ones one size larger (for example, a 15-inch culvert would be replaced with an 18-inch culvert). Larger culverts would be checked for size before replacement, using the standard procedures.

6.0 Critical Areas

The following four areas are considered "critical" areas:

6.1 Areas Within the Viewsheds

Stump disposal areas, borrow sources, and other features which result in additional clearing should not be located within the areas considered to be viewsheds.

6.2 Areas Near Particular Natural Resources

Wetlands, streams, and other natural resources are considered critical areas. These critical areas should include a minimum 100-foot buffer. Only the specific work shown on the plans shall be permitted in these areas. No optional areas such as stockpiles, stump disposal areas, or borrow sources should be located within these critical areas.

6.3 Areas With Slopes Over 25%

These areas are inherently unstable due to slope. Stump dumps and stockpiles should not be located within these areas.

7.0 Erosion/Sedimentation Control Measures

The developer will provide their contractors with the Final Erosion Control Plan, since it defines the basis of the erosion/sedimentation control plan for the project. **It should be the responsibility of the contractor to properly install these devices to control fugitive dust emissions, avoid turbid discharges, and avoid significant sedimentation throughout the construction process.** The proper installation of these devices, combined with the essential steps of implementation outlined in Sections 3.1 to 3.4, will be necessary for the contractor to meet these responsibilities. The devices described in this section are among the tools available to the contractor for construction of this project. These devices shall be installed as indicated on the plans or as described within this plan. For further reference, see the *Maine Erosion and Sediment Control Best Management Practices*, March 2003. Also see: State of Maine Department of Transportation (MDOT), *Standard Specifications, Highways and Bridges*, Revision of 1992; *Best Management Practices for Forestry: Protecting Maine's Water Quality, 2004*; and *Land Use Handbook* – Section 6 – *Erosion Control on Logging Jobs* and Revision (Supplement), effective January 5, 1981. In addition, the contractor may add measures to meet the requirements as defined by this plan.

7.1 Siltation Fence

Siltation fence shall be installed down slope of any disturbed areas to trap runoff-borne sediments until the site is revegetated. The silt fence shall be installed per the detail provided in the plan set. The fence will be inspected immediately after each rainfall and at least daily during prolonged rainfall. The contractor shall make repairs immediately if there are any signs of erosion or sedimentation below the fence line. Proper placement of stakes and keying the bottom of the fabric into the ground is critical to the fence's effectiveness. If there are signs of undercutting at the center or the edges, or impounding of large volumes of water behind the fence, the barrier shall be replaced with a stone check dam.

Siltation fence on the downgradient side of the roadway should be installed after the profile and slope treatment for the applicable segment of roadway has been determined.

Silt fence is classified by three types depending upon the timing of installation and intent, as follows:

Table 4 – Schedule of Silt Fence Requirements

Silt Fence	Type and Purpose	Time of Installation
Type 1	To trap sediment along the downgradient edge of the roadway with the silt fence; placed in segments to nearly parallel existing contours.	At initial site preparation and clearing, prior to other work. Also install around the perimeter of any stockpile that has erosion potential.
Type 2	To trap sediment from the work area; install in short sections parallel to existing contour; typically occurs where proposed and existing contours form a "V" shape.	During construction as the contour is shaped.
Type 3	To trap sediment along the base of proposed cut slopes; typically used in deeper cut areas.	During construction after new grade and backslope are shaped. Time between work in area and shaping new grade to allow silt fence to be installed shall be minimized. Typically not required if the cut slope height exceeds five feet. However, slopes that are found to be wet or have seepage may warrant the use of this silt fence for shallower heights.

7.2 Mulch

Straw, bark or hay mulch, including hydroseeding, is intended to provide cover for denuded or seeded areas until revegetation is established. Mulch placed on slopes of less than 10 percent shall be anchored by applying water; mulch placed on slopes steeper than 10 percent shall be covered with fabric netting and anchored with staples in accordance with the manufacturer's recommendations. Proposed drainage channels and the ditch at the toe of the "cut" slopes, (which are to be revegetated), shall receive

Curlex® blankets by American Excelsior or equal. Mulch application rates are provided in Attachment A of this section. Hay mulch shall be available on site at all times in order to provide immediate temporary stabilization when necessary. (Where necessary, a temporary stone channel pipe sluice may be used to convey runoff down the slope as might be required from upstream diversion berms.) For the cover material to be effective, it is necessary that it is applied uniformly at the rates indicated in this plan and that proper anchoring be used to secure the material in place. Bark mulch slope protection will be used as the primary soil stabilization measure to encourage natural woody vegetation to grow back.

7.3 Wood Waste

Wood waste generated by chipping trees and cleared material is intended to provide a cover material over bare slopes as an erosion control material. It may also be applied as a berm up to 12" high on the uphill side of Type 1 silt fences. It must be securely anchored with a geotextile since it is buoyant and therefore prone to dislodging by water. The wood waste will eventually break down and become thin. Therefore, it is recommended that a seed mix be applied to the soil below the wood waste material. Recommendations for this seeding will be provided. The wood waste material will be continually available at the site, so it should not be discounted, but effectively integrated into the erosion/sedimentation controls.

7.4 Riprap

Riprap slopes, ditch linings, stone check dams, hay bale barriers, and culvert outlet aprons are intended to reduce runoff velocities and protect denuded soil surfaces from concentrated flows. Installation details and stone sizes are to be provided in the construction details that will accompany future subdivision applications.

7.5 Diversion Berms

Flow dispersion berms at culvert outlets are intended to help re-disperse the flow. In areas where a defined area for concentrated flow is visible, the need for this will be less pronounced. In other areas, the redispersion of the water will be necessary. The identification of appropriate discharge locations and treatment of culvert discharges in

the field is usually the most effective way to achieve the successful implementation of the erosion control methods. During the course of construction, the flow pattern of the runoff discharge should be carefully observed. There will be instances where the outlet area is less stable than anticipated. In these areas, it is recommended that a geotextile or stone be placed downgradient to a location where stable flow conditions are apparent.

7.6 Construction Entrances

A construction entrance will be constructed between the terminus of the last completed segment of roadway and the next section scheduled for construction.

7.7 Sediment Traps

Stone sediment traps will be installed ahead of culvert inlets. Installation details are to be provided in future plan sets.

7.8 Reinforced Turf

Reinforced turf is to be used on steep slopes where a vegetated fill slope steeper than 3:1 but shallower than 2:1 is constructed.

7.9 Dirtbags™

Dirtbags™ will be required to be on site and available for construction dewatering. These will have particular benefit for dewatering areas where wet subgrade has been encountered and filtering of turbid water is required.

7.10 Loam and Seed

Loam and seed is intended to serve as a permanent revegetative measure for denuded areas not provided with other erosion control measures, such as riprap. However, to allow natural woody vegetation to grow back, bark mulch slope protection is preferred over loam and seed, and will be used as the primary soil stabilization measure. Application rates are provided in Attachment A of this section for temporary and permanent seeding in non-wetland areas.

7.11 Special Steep Slopes

Where a near vertical slope has to be created, special slope protection devices to allow back and fill slopes to be constructed are to be designed to retain the slope without erosion. These include gabions, nail walls, Miraweb™, and reinforced slopes. The need for such special slopes will be better identified during individual subdivision planning.

7.12 Separation Fabric

Separation fabrics are to be placed in wet crossing areas in conjunction with stone or trap rock; they reduce turbidity and avoid rutting of the subgrade on the construction site.

8.0 Temporary Erosion/Sedimentation Control Measures

The following are planned as temporary erosion/sedimentation control measures during construction:

- Type 1 and 2 siltation fence shall be installed along the downgradient side of the proposed improvement areas. The siltation fence will remain in place and properly maintained until the site is acceptably revegetated.

- A crushed-stone-stabilized construction entrance shall be placed at any construction access points onto public roadways at the terminus of established roadways.

- Dirtbags™ shall be available for use and, where necessary, installed in accordance with the details in the plan set. The Dirtbags'™ function on the project is to receive any water pumped from excavations during construction. When Dirtbags™ are observed to be at 50% capacity, they shall be cleaned or replaced. Stone under the Dirtbag™ shall be removed and replaced concurrently.

- Temporary stockpiles of erodible materials should be protected as follows:

  1. Temporary stockpiles shall not be located within critical areas, and shall be surrounded by silt fence. In general, these stockpiles are expected to consist of the material that has been stripped from the surface.

  2. Inactive stockpiles shall be stabilized within 5 days by either temporarily seeding the stockpile with a hydroseed method containing an emulsified mulch tackifier or by covering the stockpile with mulch. If necessary, mesh shall be installed to prevent wind from removing the mulch.

- All back and fill slopes that will be seeded should be rough graded, then fine graded with loam or an organic soil mixture. The mulch and mesh should be applied as soon as possible. As noted, the goal during the drier construction periods of the year should be to construct the roadway in sections that can be completed within a one-week period.

- The existing roadways shall be treated to control fugitive dust as necessary. In fall and spring, a water truck may be adequate, but it is likely that calcium chloride will be necessary during the months of higher evaporation. Controlling fugitive dust should improve visibility for equipment and vehicle operators, and so enhance safety.
  .

- Stone check dams, hay bale barriers, downstream stone, or fabric should be installed where any concentrated flow discharge points are evident during construction and earthwork operations. The treatment should extend downgradient to a location where stable flow conditions exist.

- Silt fencing with a maximum of 6 feet between stakes should be used, unless the fence is reinforced by wire mesh of at least 14 gauge and a maximum mesh spacing of 6 inches, in which case stakes may be spaced a maximum of 10 feet apart. The bottom of the fence should be properly anchored to a minimum depth of 6” and backfilled, per the plan detail. Any silt fence identified as not being properly

installed during construction shall be immediately repaired in accordance with the installation details.

- Culvert inlets shall be protected by stone sediment barriers or check dams. Stone sediment barrier installation details are to be provided in the plan set. The barriers shall be inspected after each rainfall and repairs made as necessary, including the removal of sediment. Sediment shall be removed and the barrier restored to its original dimensions when the sediment has accumulated to ½ the design depth of the barrier. Inlet protection shall be removed when the tributary drainage area has been stabilized.

- All slopes over 4:1 shall receive erosion control mesh.

- Slopes steeper than 2:1 shall receive reinforced turf.

- Type 3 silt fences shall be installed as construction progresses.

- Areas of visible erosion shall be stabilized with crushed stone. The size of the stone shall be based on flow, slopes, and observed field conditions.

All temporary sedimentation and erosion control measures shall be removed after construction activity has ceased and healthy vegetation has established itself, or other appropriate permanent control measures have been implemented.

9.0 Standards for Stabilizing Sites for the Winter

9.1 Standard for the Timely Stabilization of Ditches and Channels

The following additional measures apply to the colder seasons. The contractor shall construct and stabilize stone-lined ditches and channels along the roadway, using the standard methods, by November 15. The contractor shall construct and stabilize all grass-lined ditches and channels along the roadway, using the standard methods, by September 15. If the contractor fails to stabilize a ditch or channel to be grass-lined by the specified dates, then the contractor shall take one of the following actions to stabilize the ditch for late fall and winter.

- Install a Sod Lining in the Ditch – The contractor shall line the ditch with properly installed sod. Proper installation includes pinning the sod onto the soil with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, watering the sod to promote root growth into the disturbed soil, and anchoring the sod with jute or plastic mesh to prevent the sod strips from sloughing during flow conditions.

- Install a Stone Lining in the Ditch – The contractor shall line the ditch with stone riprap. The contractor shall hire a registered professional engineer to determine the stone size and lining thickness needed to withstand the anticipated flow velocities and flow depths within the ditch. If necessary, the contractor shall regrade the ditch prior to placing the stone lining, so as to prevent the stone lining from reducing the ditch's cross-sectional area.

9.2 Standard for the Timely Stabilization of Disturbed Slopes

The contractor shall construct and stabilize stone-covered slopes using standard methods by November 15. The contractor shall seed and mulch all slopes to be vegetated, using standard methods, by September 15. LURC will consider any area having a grade greater than 15% (7 horizontal foot : 1vertical foot) to be a slope. If the contractor fails to stabilize any slope to be vegetated by the specified date, the contractor shall take one of the following actions to stabilize the slope for late fall and winter.

- Stabilize the Soil with Temporary Vegetation and Erosion Control Mesh – By October 1, the contractor shall seed the disturbed slope with winter rye at a seeding rate of 3 pounds per 1,000 square feet and apply erosion control mats over the mulched slope. The contractor shall monitor growth of the rye over the next 45 days. If the rye fails to grow at least three inches or fails to cover at least 75% of the disturbed slope by November 15, then the contractor shall cover the slope with a layer of wood waste compost as described in this plan, or with stone riprap as described in this plan.

- Stabilize The Slope With Sod – The contractor shall stabilize the disturbed slope with properly installed sod by October 1. Proper installation includes the contractor pinning the sod onto the slope with wire pins, rolling the sod to guarantee contract between the sod and underlying soil, and watering the sod to promote root growth into the disturbed soil. The contractor shall not use late-season sod installation to stabilize slopes having a grade greater than 33% (3 horizontal foot: 1 vertical foot) or having groundwater seeps on the slope face.

- Stabilize the Slope with Wood Waste Compost – The contractor shall place a six-inch layer of wood waste compost on the slope by November 15. Prior to placing the wood waste compost, the contractor shall remove any snow accumulation on the disturbed slope. The contractor shall not use wood waste compost to stabilize slopes having grades greater than 50% (2H:1V) or having groundwater seeps on the slope face.

- Stabilize The Slope With Stone Rip Rap – The contractor shall place a layer of stone riprap on the slope by November 15. The contractor shall hire a registered professional engineer to determine the stone size needed for stability and to design a filter layer for underneath the riprap.

9.3 Standard for the Timely Stabilization of Disturbed Soil

By September 15, the contractor shall seed and mulch all disturbed soils on areas having a slope less than 15%. If the contractor fails to stabilize these soils by this date, then the contractor shall take one of the following actions to stabilize the soil for late fall and winter.

- Stabilize the Soil with Temporary Vegetation – By October 1, the contractor shall seed the disturbed soil with winter rye at a seeding rate of 3 pounds per 1,000 square feet, lightly mulch the seeded soil with hay or straw at 75 pounds per 1,000 square feet, and anchor the mulch with plastic netting. The contractor shall monitor the growth of the rye over the next 45 days. If the rye fails to grow at least

three inches or fails to cover at least 75% of the disturbed soil before November 15, then the contractor shall mulch the area for over-winter protection.

- Stabilize the Soil with Sod – The contractor shall stabilize the disturbed soil with properly installed sod by October 1. Proper installation includes the contractor pinning the sod onto the soil with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, and watering the sod to promote root growth into the disturbed soil.

- Stabilize the Soil with Mulch – By November 15, the contractor shall mulch the disturbed soil by spreading hay or straw at a rate of at least 150 pounds per 1,000 square feet on the area so that no soil is visible through the mulch. Prior to applying the mulch, the contractor shall remove any snow accumulation on the disturbed area. Immediately after applying the mulch, the contractor shall anchor the mulch with plastic netting to prevent wind from moving the mulch off the disturbed soil.

10.0 Sedimentation Sumps

The use of shallow sediment sumps on the downgradient side of erodible stockpiles and in areas where excess borrow is removed from the "cut side" of the roadway is encouraged.

11.0 Permanent Erosion Control Measures

The permanent erosion control measures for the roadways include:

- Culverts with proper inlet and outlet aprons and flow dispersion berms where necessary;

- Ditching on the cut side of the roadway with fully established vegetation or specified erosion resistant material (stone, etc.);

- Properly designed and constructed measures for cut or fill slopes which exceed 2:1 including riprap, soil nail walls, gabions, geowebs, and similar steep slope construction measures;
- Ditch turnouts;
- Restored borrow pit areas;
- Graded and revegetated stump disposal areas; and
- Properly designed bridges where specified.

LURC standards require permanent soil stabilization to be completed within one week of inactivity or completion of construction.

12.0 Timing and Sequence of Erosion/Sedimentation Control Measures

The following sequence is recommended for each roadway segment. A roadway segment is defined to be the length of road which can be constructed in one week. Where possible, roadway segments should end just beyond a cross culvert.

1. Mark the centerline.
2. Clear a corridor centered on the proposed roadway centerline using temporary skidder roads with appropriate crossings over wet areas.
3. Stakeout the roadway at 50-foot sections and walkover by the project team to select final:
   - Cross section and slope treatment to be used along the segment;
   - Locations of cross culverts;
   - Determination of the need for uphill diversion;
   - Identification of seeps or wet areas;
   - Erosion control measures to be employed; and
   - Confirmation or recommended adjustment of horizontal and vertical alignment.

4. Mark the final clearing limits along the roadway segment.

5. Conduct final clearing, including select clearing of trees over 6-inch diameter 30 feet behind the grading limits.

6. Install type 1 and 2 silt fence or organic mulch berm.

7. Stabilize wet or seepage areas using the procedure specified in Section 3.2.1 of this plan.

8. Install cross culverts including inlet and outlet aprons with dispersion berm, if necessary.

9. Install temporary erosion control measures ahead of culvert inlet.

10. Grub the roadway segment.

11. Prepare backslope (if blasting is required, it should be completed for the roadway segment concurrent with this step).

12. Install underdrain if necessary.

13. Install ditch and prepare roadway subgrade.

14. Install type 3 silt fences.

15. Install erosion control and final restoration measures in the ditch including meshes and staples.

16. Dress backslope including placement of final surface cover with mesh and staples.

17. Install roadway gravels.

18. Remove construction entrance.

19. Dress and restore fill slope (certain fill slopes with structural reinforcement will need to be integrated with subgrade preparation) and surface.

20. Conduct final grading of roadway surface.

21. Periodically remove sediment from barriers and dress up any areas of minor erosion rills.

22. Remove temporary erosion control measures after site stabilization has been achieved (for vegetation, a 75% catch of healthy vegetation is required).

Any deviation from this sequence is subject to approval of the regulatory officials.

13.0 Contracting Procedure

The roadways for the project will be constructed by subcontractors of the subdivision applicant. The contract documents will require a schedule for the completion of the work that will satisfy the following criteria:

13.1 The Work shall be Constructed in Accordance with this Erosion Control Plan

Work must also be scheduled or phased to prevent exposed areas as stipulated in this plan, to as great an extent possible. The contractor shall also agree and have the responsibility to control turbidity, to prevent significant erosion, to control fugitive dust, and to employ the tools outlined in this plan, and other measures as may be necessary to meet this responsibility. The work shall be conducted in sections which will:

- Limit the amount of exposed area to those areas in which work is expected to be undertaken during the following week.
- Revegetate disturbed areas as rapidly as possible.

- Incorporate specified inlets, groundwater control, and drainage system as early as possible into the construction phase. The ditches shall be immediately lined or revegetated as soon as their installation is complete.
- Comply with the provisions of this section.
- Stockpiling material at least 100' from any stream/water body or wetland.

13.2 The Area of Denuded Non-Stabilized Construction shall be Limited to the Minimum Area Practicable

An area shall be considered to be denuded until the surface gravel is installed on the roadway surface, the final surface treatment constructed, or the area has been loamed, seeded, and mulched.

Any deviations from the schedule or provisions contained in this plan shall require the approval of the permittee. The permittee may elect to consult with LURC to secure their approval prior to approving any schedule changes.

The contractor must install any added measures that may be necessary to control erosion/sedimentation from the site, dependent upon the actual site and weather conditions occurring at the time of construction.

14.0 Provisions for Winter or Seasonal Shutdown

Because the roadway construction is required to be completed in small segments, the ability to shut down the work for seasonal or other reasons should be relatively easy. This narrative describes this shutdown procedure. Any segments of the roadway where vegetation has not been re-established shall be treated as outlined in Section 9.0 of this narrative.

An inspection shall be made to identify any areas where additional erosion control work is needed. Such areas shall be repaired.

The new access roads shall be secured and barricaded to prevent illicit entry.

Subsequently, the new and reconstructed access roads shall be re-inspected after a significant rainfall. Any eroded areas shall be repaired. These subsequent inspections shall follow for four significant rainfall events.

15.0 Provisions for Maintenance of the Erosion/Sedimentation Control Features

The roadway construction will be contracted for by the subdivision applicant. The work may be subject to the requirements of a MeDEP Stormwater Discharge Permit depending on the size and timing of individual development activity proposals. The final provisions of this permit are anticipated to require the applicant and his contractors to prepare a list and designate by name, address and telephone number all individuals who will be responsible for implementation, inspection and maintenance of all erosion control measures identified within this section and as contained in the Erosion and Sedimentation Control Plan of the contract drawings. The applicant shall engage a contractor certified in erosion control practices by the Maine DEP to install all control measures and conduct follow-up inspections. Alternatively, the applicant may engage a Maine registered Professional Engineer to conduct follow-up inspections. The "Rapid Establishment of Drainage Patterns to Control Runoff and Avoidance of Erosion" and the "Erosion/Sedimentation Measures" sections of this application provide details on maintenance procedures. Specific responsibilities of the contract documents for the inspector(s) should include:

1. Execution of the Contractor/Subcontractor Certification by any and all parties responsible for erosion control measures on the site.

2. Assuring and certifying the contractor's construction sequence is in conformance with the specified schedule of this plan. A weekly certification stating compliance, any deviations, and corrective measures necessary to comply with the erosion control requirements of this section shall be prepared and signed by the inspector(s).

3. In addition to the weekly certifications, the inspector(s) shall maintain written reports recording construction activities on site which include:

   - Dates when major grading activities occur in a particular area.
   - Dates when major construction activities cease in a particular area, either temporarily or permanently.
   - Dates when an area is stabilized.

4. All project work sites shall be inspected on a weekly basis and after each significant rainfall event (0.5 inches or more within any consecutive 24-hour period) during construction until permanent erosion control measures have been properly installed and the site has been stabilized. Inspection of a project work site shall include:

   - Identification of proper erosion control measure installation in accordance with the erosion control detail sheet or as specified in this section.
   - Determine whether each erosion control measure is operating properly. If not, identify damage to the control device and determine remedial measures.
   - Identify areas that appear vulnerable to erosion and determine additional erosion control measures which should be used to improve conditions.
   - Inspect areas of recent seeding to determine percent catch of grass. A minimum catch of 75 percent is required prior to removal of erosion control measures.

   Accumulated silt/sediment should be removed when the depth of sediment reaches 50 percent of the barrier height. Accumulated silt/sediment should be removed from behind silt fencing when the depth of the sediment reaches 6 inches.

5. If inspection of the site indicates a change should be made to the erosion control plan, either to improve effectiveness or correct a site-specific deficiency, the inspector shall immediately implement the corrective measure and notify the applicant of the change.

Once construction has been completed, long-term maintenance of the permanent erosion control measures and storm water systems will be the responsibility of the subdivision applicant, and/or the Homeowner's Association.

All certifications, inspection forms, and written reports prepared by the inspector(s) should be filed with the subdivision applicant and the Maine Construction General Permit (MCGP) Permit File contained on the project site. All written certifications, inspection forms, and written reports should be filed within one (1) week of the inspection date.

16.0 Preconstruction Conference

Prior to any construction at the site, representatives of the MeDEP, LURC, the roadway contractor, and the site design engineer should meet with the owner to discuss the scheduling of the site construction and compliance with this plan. By or before that meeting, the contractor will prepare a detailed schedule and a marked-up site plan indicating areas and components of the work and key dates, including dates of disturbance and completion of the work. Three copies of the schedule and marked-up site plan shall be provided to the subdivision applicant.

17.0 Closure

This Erosion and Sedimentation Control Plan applies to the new roadways which will be constructed for access to the proposed development activities proposed by Plum Creek under their Concept Plan for Plum Creek's Lands in the Moosehead Region. LURC Chapter 10 Rules and Standards require permanent and temporary erosion and sedimentation control measures to meet the standards and specifications of the "*Maine* (MeDEP) *Erosion and Sediment Control BMP Manual of March 2003*" or other equally effective practices. This Erosion and Sedimentation Control Plan seeks to outline the measures that will be applied to minimize any unreasonable soil erosion or reduction in

the capacity of the land to absorb and hold water during the course of future development activities.