2016

CALAIS TOWN PLAN

Adopted: 2/1/2016
Amended: December 13, 2021
CVRPC Approval of Amended Town Plan:

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Maps

Vision

"Vision is the art of seeing the invisible" Jonathan Swift

We envision Calais as a viable, sustainable community for people of all ages which will proactively adapt to environmental, economic and social changes. We envision a community that will continue to develop, upgrade, expand, and add homes, community centers, government buildings, and business structures -- while preserving our rural characteristics -- agriculture, core forests, wildlife corridors, wildlife and other natural resources -- for the benefit of our current residents and future generations. Calais will continue to promote opportunities for:

1. A wide spectrum of housing needs through smart growth zoning, innovative architecture and landscaping design, village plans, and collaboration.
2. Local employment in a variety of occupations.
3. Sixty percent [60%] of residents generating energy by renewable systems either individually or through small groups.
4. Producing, processing, storing and distributing food necessary to promote food security and sustainability for our population.
5. Senior citizens who desire to be able to remain in town to have many of their needs and interests met.
6. Residents to have increased ability for walking, biking, skiing, snowshoeing, snowmobiling and a variety of low-energy transportation modes.
7. Programs that support remodeling existing buildings and constructing new buildings using the most energy efficient materials and techniques with an emphasis on renewable energy.
8. Residents to have access to high speed communications essential for economic development.
9. Small scale social financing and advice to property and business owners.
10. Our children from birth through high school to receive the care and education needed to be productive, healthy citizens.

Importance of a Vision

A vision is a general description of what our town looks like at some point in the future. It reflects our collective values – what is important to us as it pertains to our town. It reflects who and what we are, and what we want our town to be.

Importance of a Town Plan

1. An approved Town Plan enables the citizens of Calais to have significant influence over the future of their Town.
2. Any project subject to Act 250 must comply with the Town Plan and the Town Plan must comply with Act 250.
3. A Town Plan provides guidance to Town boards and commissions in their review of:
   - Future development
   - Natural resource conservation
   - Town governance
   - Historic sites
   - Economic development
   - Roads and traffic
   - Education
   - Energy conservation
   - Communication infrastructure
   - Flood resilience
   - The overall general welfare of the community
4. The Town Plan serves as the basis for evaluating and revising the Town's Land Use & Development Regulations. The most current edition of the Calais Land Use and Development Regulations and Zoning Maps shall be used as regulatory guidance.
5. The Plan works in conjunction with the Central Vermont Regional Plan.
6. Having a Town Plan is often essential for obtaining different types of municipal grants.

Plan of Action:

A Town Plan is a blueprint – typically – for the growth and well-being of a Town. At this juncture of the 21st century, we are faced with the challenges and opportunities of our time: the increasing effects of climate change; the growing recognition of the dynamic, interconnected influence development has on every aspect of our town; and the need for increased self-reliance and sustainability as a

community. There is a severe, adverse price the community pays for short-sighted, self-interested development and depletion of natural resources.

Each article throughout the Town Plan reflects the interdependence with other topics, addresses priorities, outlines goals that pertain to that article, and provides action plans for each goal. The Selectboard and Town Commissions will initiate and coordinate the following three action steps to achieve the goals in this 2014 Town Plan:

a. Develop and sustain community based, resident-friendly solutions in support of the town's vision and goals, and promote information sharing.

b. Initiate and coordinate community action groups to focus on specific town challenges – to help define problems, gather information, research criteria for possible solutions, and propose suggested solutions with implementation tactics.

c. Develop and maintain a list of willing resident leaders and local experts whose specific expertise would be helpful in attaining the vision and goals.

History and Demographics

SHORT HISTORY OF CALAIS: HOW WE STARTED

For thousands of years before European settlers came to the area, Native American inhabitants almost surely lived, hunted and traveled through what is now Calais. On October 1, 1780, the township of Calais was granted to seventy men by the General Assembly of the State of Vermont for 1479 Pounds 14 Shillings and 14 Pence. The majority of the "proprietors" were from Charlton, Rehoboth, and Brookfield, Massachusetts

In early 1787, Francis West settled just northeast of today's Adamant, however, he thought he was clearing land in (East) Montpelier. Abijah, Asa and Peter Wheelock arrived in June, 1787. They left their wagon in
Montpelier where the road ended, cleared their land and returned to Massachusetts for the winter. They built the first house in Calais, southeast of Kent's Corners.

In 1793, Colonel Davis built a sawmill in Gospel Hollow. He built a corn mill the same year and named the land around his mills "Calais Center." By 1828, there were nine sawmills, enterprises producing wooden clocks, axes, scythes, and bells, as well as blacksmith shops, corn and grist mills, a distillery, harness makers, shoe & boot makers, starch mills, and a wool carding factory.

By the middle of the 19th century much of the land had been cleared and turned to crops. Farmers were starting to use horses with mechanized equipment. Farms were larger and produced cash crops with hired hands. In 1850, the first Agricultural Census listed every farm in Calais, along with acreage, value, number of hands, number of milk cows, working oxen, other cattle, sheep, swine, value of the livestock, production of wheat, rye, Indian corn, oats, wool, peas & [1]beans, potatoes, buckwheat, orchard butter, cheese, hay and maple sugar.

The population of Calais declined with the expansion of western United States. Gradually, Calais farmers turned from sheep to dairy

cows and began producing cheese because it stored well. Later, butter was also made for sale. Buyers from the eastern cities came around to farms by wagon. Also, a market developed for maple sugar (syrup came later) and Calais exported such things as: potato starch, leather boots, granite, and even pianos. Walton's Directory of 1899 shows that Calais had 4 post offices, 2 creameries, 6 mills, 12 stores selling everything from feed to millinery, 1 hotel, 3 granite works, 3 active churches, and 2 doctors.

Around 1900, the refrigerated boxcar made it possible to ship milk to southern New England, but Calais roads were too poor to enable farmers to get their milk to the trains. In the 1930's, the state began improving roads so more milk could be shipped. After World War II, commuters required even better roads. In 1946, Route 14 was paved from East Calais to Hardwick. In 1959, Calais started paving the County Road in pieces from the East Montpelier line. East Montpelier also began paving the road from the Montpelier line. It took years to fill the gaps between Montpelier and Maple Corner.

Calais grew rapidly in the Sixties, Seventies and Eighties after nearly a century of population decline. Abandoned houses and camps were turned into year-round houses, and new houses were built. Over that period the Town's population more than doubled (122% increase) with an average of 28 people being added to the rolls each year. Since 1990, the Town's population growth has slowed dramatically. In fact, between 1990 and 2010, Calais added only 86 people to its population (4.3 per year). However, in that same period of time, the housing units in Calais increased from 679 houses to 786, a Housing unit growth of 24% (6.7 per year). Now, it is apparent that Calais is still changing. (Central Vermont Regional Planning Commission, *Calais,*
Vermont Development Potential and Buildout Analysis, Dec. 2007.)

WHO WE ARE

Who are we?

With a population of 1,607 as of the 2010 census, our median age is 45.9 with 88% of the population being 64 years old and under; 925 are in the labor force; our median household income is $60,313, and over 91.8% have completed high school or higher education. We work in a wide range of occupations, many requiring considerable skill. The largest number – 426 - work in management, professional

and related occupations. Although Calais residents of the past may once have earned their living from the land, less than 1% does so today.

Historically, Calais' population has lived and socialized within villages and hamlets -- North Calais, East Calais, Kent's Corner, Adamant, and Maple Corner -- which had small industries, schools, churches and stores. However, most of the rapid population growth and development since 1970 has occurred in the rural residential district along roads, outside of the villages and hamlets.

A Statistical Profile In 2016

Calais is rural; population has been stable. Calais is rural, both in appearance and according to statistical conventions. Throughout the 1980's, our rate of population growth exceeded the regional average by a factor of six and the State average by more than two and one half times. During the 1990's population growth slowed. Our population increased by only 86 people from 1990 to 2010. However we believe this pause in growth is temporary.

Table 1: Population 1960 - 2010 (Source: U.S. Census)

	Calais	Wash. County	Vermont
1960	684	42,860	389,881
1970	749	47,659	444,732
1980	1,207	52,895	511,456
1990	1,521	54,928	562,758
2000	1,529	58,039	608,827
2010	1,607	59,534	625,741

Our planning assumptions continue to be based on increases in population. Because of Calais' proximity to regional job centers, continued growth is likely. Population projections by the Central Vermont Regional Planning Commission ("CVRPC") suggest that the town will soon surpass the historical high. Since Calais' land area will not change, this means that our population density will continue to increase.

Table 2: Age Distribution 1970-2010 (Source: U.S. Census)

Year	under 5 years	5-19 years old	20-64 years old	65 and over
1970	81 (11%)	218 (29%)	375 (50%)	75 (10%)
1980	105 (09%)	281 (23%)	720 (60%)	101 (08%)
1990	119 (08%)	353 (23%)	927 (62%)	122 (08%)
2000	70 (05%)	346 (23%)	958 (63%)	155 (10%)
2010	70 (04%)	300 (19%)	1,040 (65%	197 (12%)

Despite low population growth in the past two decades, new and larger houses in Calais have continued to be built. The Town is among the fastest growing in the region in terms of new housing units and number of households. Of the 842 total housing units, 675 were occupied. The majority of vacant housing or 119 units were for seasonal, recreational, or occasional use.

Table 3 Housing Units (Source: U.S. Census)

Percent Change 1990 to 2010

	1970	1980	1990	2000	2010	
Calais	324	573	679	773	842	20%
County	16,258	22,113	25,328	27,644	29,941	15%
State	165,063	223,199	271,214	294,382	322,539	16%

Continued population and housing growth will present interesting challenges. Demands for municipal services and road management will increase as will impacts on natural resources. Careful planning will be needed for Calais to accommodate this growth while retaining its rural character and identity.

In earlier times, the Calais economy relied on the land and other natural resources. Until the second half of the 20th century, millpowered manufacturing, agriculture, mining, and forestry were the town's employment mainstays and most residents made their living in town. Several retail establishments catered to the population. Now, with only a few retail establishments, and no large employers, Calais has evolved into a bedroom community.

Table 4 Employment and Occupation 2012 (Source US Census, 2012 American Community Survey)

	Calais		Washington Co.	
Labor force	925	100.0%	33,684	100%
OCCUPATION				
Employed, 16 years and over	862		31,606	
Management, professional, and related occupations	426	49.4%	13,691	43.3%
Service occupations	106	12.3%	4,707	14.9%
Sales and office occupations	184	21.3%	7,676	24.3%
Natural resources, construction, & maintenance occupations	98	11.4%	2,994	9.5%
Production, transportation, & material moving occupations	48	5.6%	2,538	8%
INDUSTRY				
Agriculture, forestry, fishing and hunting, and mining	7	.8%	499	1.6%
Construction	70	8.1%	2,315	7.3%
Manufacturing	35	4.1%	2,715	8.6%
Wholesale trade	57	6.6%	1,007	3.2%
Retail trade	91	10.6%	3,374	10.7%
Transportation, warehousing, & utilities	15	1.7%	808	2.6%
Information	28	3.2%	876	2.8%
Finance & insurance, real estate, rental, & leasing	78	9%	2,164	6.8%
Professional, scientific, management, administrative, and waste management services	75	8.7%	2,606	8.2%
Educational, health and social assistance	265	30.7%	8,504	26.9%
Arts, entertainment, recreation, accommodation, and food services	51	5.9%	2,373	7.5%
Other services (except public administration)	50	5.8%	1,569	5%
Public administration	40	4.6%	2,796	8.8%

Table 8 Median Family Income (U. S. Census)

	2000	2012	Percent change
Calais	$46,083	$60,313	24%
Washington Co.	$40,972	$57,276	28%
State	$40,856	$54,168	25%

East Calais

Managing Our Land Use with Smart Growth Development

LAND USE

"Adopt at all levels sustainable development plans and regulations that make environmental conservation and rehabilitation integral to all development initiatives."Earth Charter 1

Introduction

Calais has maintained its rural character despite the fact that the number of houses in town has increased from 324 in 1970 to 842 in 2010 or 162% increase. Although land in agricultural production continues to decrease, and residential growth is up, much of the town remains a patchwork of woods, fields, small villages, ponds, streams and wetlands. Our goal is to guide development in an informed, intelligent manner that preserves this rural character and minimizes impacts on natural resources, agriculture and potential flooding. Instrumental to this vision is the protection of our town's working landscape and the natural resources (headwaters, streams, shorelines, floodways, rare and irreplaceable natural areas, necessary wildlife

1www.earthcharter.org

habitat and corridors, wetlands, endangered species, productive forest lands, and primary agricultural soils as defined in 10 V.S.A. Chapter 151) on which residents place high value. It includes increased focus on our villages as vibrant centers in which people of all ages and income levels can live, work, and do business.

It is in Calais' long-term interest to sensibly govern the use of land through the Calais Land Use & Development Regulations so that the land may continue to provide opportunities for current and future generations. We categorize this approach as "smart growth." Smart Growth, to paraphrase VSA 2791 Definitions (Title 24: Municipal and County Government), means that as a town we:

1. Support existing and new housing that meets the needs of a diversity of social and income groups.
2. Promote the historic development pattern of our villages separated by rural countryside.

3. Develop compact mixed-use centers at a scale appropriate for the community.
4. Support a diversity of viable businesses in our villages.
5. Protect the town's important environmental, natural, and historic features, including natural areas, water quality, scenic resources, and our historic district.
6. Promote strengthening agricultural and forest industries and minimize conflicts of development with these industries.
7. Balance growth with the availability of economic and efficient public utilities and services to include roads.
8. Enable choice in modes of transportation.
9. Reflect a settlement pattern that, at full build-out, is characterized by:
   a. development within compact "urban" areas and village centers to limit scattered building that is excessively land consumptive;
   b. development that incorporates alternate transportation options, especially for pedestrians and bikers;
   c. the safeguarding and protection of existing farm- and forest-land;
   d. development that does not require a municipal infrastructure or that requires the extension of municipal infrastructure across undeveloped lands in a manner that would extend service to lands located outside of our villages;
   e. Clustered development placed so as to limit impact on road infrastructure (limited curb cuts) and prevent undue adverse impact on natural resources.

Current Conditions

Calais is a relatively small rural town in northcentral Vermont. The Land Cover/Land Use Map, a copy of which is in the Supplement to this Plan, shows the current land use in town. Calais is hilly, but not mountainous. Elevations range from about 700 feet along North Montpelier Pond to almost 2,200 feet on Hobart Mountain in the northwest corner of Town. Its relatively gentle terrain has been conducive to the formation of agricultural soils, particularly along and east of Route 14 and the Kingsbury Branch. Although the amount of farming in Calais has declined, the landscape is still shaped by an agrarian history. The current land use pattern– a patchwork of fields and forests, interspersed with homes, and small villages, with several ponds, wetlands and streams – is very much in keeping with the bucolic image of Vermont.

The more fertile, lower elevations near Calais' streams and lakes have historically been the site of the most human activity. However, growth in Calais has been more widespread since the 1970's. Settlement patterns have been and continue to be primarily in the rural residential and upland districts, particularly along the upper County Road, Bayne Comolli Road, Jack Hill, Max Gray and Lightening Ridge Roads. Such growth may not be in the best interest of Calais' rural nature but is likely to continue if there are no incentives to alter the pattern.

Most of the land in Calais is forested or open. The Central Vermont Regional Planning Commission reports that actual land use breakdowns in Calais in 2007 were as follows:

Calais Land Use in 2007

Forest Land	17,737 acres	71.0%
Agriculture and Open Land	4,082 acres	17.0%
Scrub/brush	659 acres	3.0%
Residential	494 acres	2.0%
Other Developed Land	94 acres	.4%
Water and Wetland	1,641 acres	7.0%

This natural setting is partly responsible for the character of our community. The Calais landscape offers recreational activities, solitude, wildlife habitat, aesthetic enjoyment, as well as forestry, agriculture, and other economic opportunities. Accordingly, judicious use of natural areas, surface and groundwater, floodplains, primary agricultural lands, woodlands, core forests and other important wildlife habitats, and other vulnerable resources is necessary. (See the Natural Resources Section of this Plan).

The current land use policy in Calais is to preserve this rural character by applying the principles of smart growth, density averaging, transfer of property development rights, conservation easements, and shall encourage planned development throughout thetown.

Definitions:

Density Averaging: A method to give landowners increased flexibility in designing a subdivision (development) in response to the specific geological and natural resource characteristics of their property. It

provides flexibility to protect important resources and removes some of the disincentives in identifying and conserving those resources.

Transfer of property development rights: Seeks to preserve a landowner's property development value by moving the right to build a house in an area where development is discouraged to another parcel of land where development is encouraged.

Sustainable development: Property development and the use of resources in a manner that meets landowners' needs and wants while preserving natural resources and the environment for the landowner, broader community, and for future generations.

Conservation easements: A legal agreement between a landowner and a land trust or government agency that permanently limits the development of the land in order to protect its natural resources. It allows the landowner to continue to own and use their property and to sell or pass it to their heirs.

Buildout Analysis

The Central Vermont Regional Planning Commission (CVRPC) completed a buildout analysis for Calais in 2007. In that analysis, CVRPC found that the town had significant development potential of 1,252 total new housing units under zoning constraints at that time. Although it is hard to predict how much Calais will grow in the coming years, the number of housing units in Calais grew from 324 in 1970 to 842 in 2010 with the largest growth between 1970 and 1990. Housing projections made by CVRPC in 2007 indicated that the Town of Calais's "fair share" of regional housing needs would be approximately 306 new units by the year 2020. CVRPC has modified this number to 118 new units between now and 2020.

While Calais's landscape still generally reflects the historic settlement patterns, the Town acknowledges that it is experiencing scattered residential growth which threatens to undermine community character. Alarmingly, the buildout modeling predicted an exacerbation of this trend absent any regulatory changes or large scale conservation efforts. It predicted little growth for Calais' Villages, while 78 % of future development is allocated to the Rural Residential zone. Accordingly, it is important for the Town to address issues of residential sprawl, incremental large lot development,

resource protection, village vitality, and impact on roads, especially Class 3.

The study continues to be useful insofar as it depicts the direction in which various areas of the Town may be impacted by future growth, and examines alternate development strategies. Though it is impossible to know the future in any precise way, it is probable that Calais' growth will continue for many years to come. The challenge for the community is how to respond to change in a way that affords citizens the highest quality of life possible, responds to human needs and environmental and natural resource imperatives, respects property owner rights, and ensuresthe legacy for future generations.

The buildout analysis demonstrated that to avoid negative impacts on valuable natural resources and to better satisfy State statues, we need, as a town, to have the will to explore, test and effectively apply the principles of smart growth. The challenges include how to:

- Allow for development while ensuring the maximum protection of natural resources;
- Encourage expansion and more diverse development in our villages;
- Mitigate development in flood plains, around lakes, and along designated roads;
- Coordinate development with town services and road management;
- Change long-standing beliefs concerning property rights among our citizens; and
- Incrementally change zoning to reflect this shift and experience.

Most of the growth continues to occur in the Rural Residential District rather than in the Village Districts since the buildout analysis and our last Town Plan. Over the past five years, we have made incremental changes to zoning to encourage "smarter" development and to encourage development in our villages. We are faced with two primary and complexchallenges: (1) gaining support for smart growth from the majority of Calais residents; and (2) learning how to implement it in a way that allows for development while preserving natural resources and mitigating the impact of flooding.

We have included a map that shows the 118 "fair share" housing units estimated by the CVRPC between now and 2020. It shows that a good portion will be located in expanded village districts and the

remainder in the Rural Residential District. In the latter, we have attempted to show clustering and location within parcels with high natural resources.

Zoning

The Calais Land Use &Development Regulations establish general requirements for development and subdivision, as well as regulations for specific land use districts, as discussed below. The most current edition of the Calais Zoning Land Use and Development Regulations and Zoning District Maps shall apply. Current allowable densities in Calais range from approximately 4 lots per acre in the Village Districts, when conditions allow, to a 25-acre minimum lot size in the Upland Overlay District. Most of Calais (72% of land area) is in the Rural Residential District, which as of 2008 has a 3-acre minimum lot size.

Rural Residential District(17,854 acres) – Purpose: to guide the development of residences, home businesses and other allowed uses in ways that minimize their impact on the working and natural environment, and are compatible with natural resources characteristic of the district, including: 1) water resources such as lakes, ponds, streams, wetlands, floodplains, and fluvial erosion hazard areas; 2) earth resources such as primary agricultural soils and mineral resources; 3) contiguous stretches of forest and undeveloped land and other significant wildlife habitat, rare, threatened and endangered species, and important natural communities; and 4) connecting habitat corridors of smaller forests which tie together the larger contiguous areas and are critical for the survival of many species of animals and plants. The protection of rural land and natural resources through the use of density averaging or PUD provisions for new subdivisions, and definition of building sites for other uses, is encouraged. Expansion of existing residences and small home businesses is allowed within this District.

To this end, development should be clustered at the edges of open spaces and agricultural lands in a way that leaves the open land available for farming, natural resource conservation, and/or recreational uses; oriented where feasible to gain optimal passive solar energy; and creates a sense of community if appropriate. Development should be below rather than on ridge lines in order to protect the scenic quality of our rural landscape. Driveways should be shared when possible and located close to edges of open spaces to minimize visual impact, erosion and entrances onto the public road.

Large buildings and parking lots, which are not in keeping with the scale of development in Calais, are allowed only when screened to minimize visual impacts.

A significant portion of the Town lies within this zoning district. Most of the development and subdivision in the past decade has occurred in this district.

Village District(660 acres) – The purpose of the village district is to encourage the development of our villages as compact, livable, socially and economically vibrant community centers surrounded by open, working landscapes. Villages should accommodate relatively highdensity residential development as well as businesses and public buildings sized to provide services to the Calais community and environs, compatible with the needs of the town. Buildings should be designed and built at a scale and orientation that is compatible with the historic and existing development in the village.

The geology and the lack of sophisticated sewer and water systems do not enable the kind of village density that we might like to encourage. As septic technology advances, these areas should be developed more densely than current soil conditions allow.

Buildings in the village district should be built at a scale and orientation that is compatible with current development in the village. Multi-unit residential and non-residential development may be permitted as conditional uses if the development review board is assured that the general land use conditions will be satisfied. Such development, including any associated lights and signs, should be scaled and in keeping with the traditional social and physical character of the village. Lights will be LED for energy conservation. The district has no minimum lot size requirement, but does mandate frontage (64 feet) and setbacks, including a 40-foot front setback, that effectively make the lowerlimit just over ¼ acre (11,250 square feet).

Resource Recreation District: (1,936 acres) - The purpose of the resource recreation district is to protect the natural resource value of those lands in Calais which are essentially undeveloped, are important wildlife habitat, could have high potential for commercial forestry use or other extractive enterprises, are unsuitable for commercial, industrial or higher density residential development, or are necessary to protect ground water and aquifers, a fragile ecology,

or significant recreational or scenic resources. Low density residential, and limited outdoor recreation, conservation and forestry uses are allowed. Low density residential development of no more than one family unit per 10 acres will be permitted. Limited outdoor recreation, conservation and forestry uses will also be permitted. No additional class 2 or 3 highways will be built in this district.

***Shoreland District*:** (1,401 acres) – The purpose is to protect the environmental, ecological, and recreation value of our ponds, lakes and associated shore lands for existing and future generations by preventing and controlling sources of pollution and by minimizing developmental impact within the shoreland area. Sources of pollution and soil erosion include septic systems, run-off from roofs, roofs and other impervious surfaces, roads, ditching, and lawns. Developmental impact includes disturbance of the ecological buffer around the ponds and visual impact of any structure. This district generally consists of all land within 800 feet of the shoreline (mean water mark) of all lakes and ponds with a surface area of 20 acres or more (Bliss Pond, Curtis Pond, Nelson Pond, North Montpelier Pond, Mirror Lake or #10 Pond, and Woodbury Lake). District boundaries may vary, however, to reference physical landmarks such as roads or ridges or where there is no surface or subsurface drainage into a pond or lake due to geological formations (see the official Calais Zoning District Map). Where a lot contains both Shoreland District and Village District, the portion of that property that does not border on the shoreline and that does not have surface or subsurface drainageinto the body of water, shall be considered part of the village district and not part of the Shoreland District. (As they become law, new state statutes will impact this district)

***Upland District*:** (2,853 acres) - The purpose of this district, which includes all areas over 1,500 feet elevation above mean sea level within the Town of Calais, is to protect sensitive upland areas from the adverse effects of high-density and other inappropriate development. These areas are generally characterized by steep slopes, rock outcrops and shallow soils, and include important headwater and aquifer recharge areas, large tracts of unbroken habitat, valuable timber and recreation land, and scenic hills and ridgelines. They are also generally remote from public services and facilities and as a result are difficult and costly to access. Minimum lot size is 25 acres and development must be sited to avoid impacts to the extent feasible for all conditional uses, which includes single-family homes.

Only agriculture, forestry, public parks, and some uses of residential buildings such as home child care shall be permitted without review by the Development Review Board. Residential and seasonal dwellings, home industry and a few other low impact uses will be conditionally permitted if the Development Review Board is assured that the development will have minimal impact on this sensitive area.

Kent's Corner-Old West Church Overlay District: The purpose of the Design Control District is to ensure the protection of the historic and architectural integrity of the Kent's Corner - Old West Church Historic District. This area is regarded as an important asset both to the town and the state. The design control overlay district includes a portion of the May 17, 2006 National Register Old West Church and Kents' Corner Historic District and the Kent's Corner-Old West Church Historic District designated by the Vermont Division for Historic Preservation Historic Sites and Structures in 1979, and some of the adjoining properties. The design control and review requirements of the Land Use and Development Regulations, including the most recent version of the design control guidelines, are hereby incorporated into this town plan.

Flood Hazard Area Overlay District:The purpose of the flood hazard area overlay district is to prevent or minimize the loss of life and property, disruption of commerce, impairment of the tax base and extraordinary public expenditure from the results of flooding; to further ensure that design and construction of development would eliminate or minimize the potential for flood damage; and to ensure that the flood-prone lands are managed in accordance with state and federal regulations and thereby ensure that property owners are eligible for flood insurance through the National Flood Insurance Program (NFIP).

Subdivision: The Calais Land Use & Development Regulations also contain subdivision regulations intended to "to guide the subdivision and development process in a way that is consistent with the purpose of each zoning district. Density averaging is encouraged as a means to protect the development rights of landowners while also facilitating the conservation of valued natural resources for future generations and to satisfy the goals of the Calais Town Plan." Large-scale residential, commercial or industrial development is not consistent with the rural character of Calais and is discouraged.

The overarching goal is to move forward with implementing smart growth principles in zoning.

Goal 1: Preserve Rural Character, Open Land andNatural Resources.

Action Steps	Responsible Party	Time line
Shall continue to explore, test, and apply the principles of density averaging and transfer of development rights [TDR] in zoning	Planning Commission	2016-2021
Allow property owners greater flexibility in development while maximizingthe conservation ofnatural resources.	Planning Commission, Conservation Commission	2016-2021
Work to maintain the long-term viability of agriculture in Calais, consistent with the goals for agricultural land use and protection of agricultural soils set out in the Agriculture section.	Planning Commission, Agriculture Committee	2016-2021
Encourage Planned Unit Developments (PUD's), which allow more dense development while minimizing negative effects on agricultural soils, open land, and other natural resources.	Planning Commission, Zoning Administrator, DRB	2016-2021
Minimize scattered development patterns and protect open space, agricultural soils and other natural resources outside of village districts.	Planning Commission	2016-2021
New subdivisions and especially major subdivisions plans will be evaluated based on consideration of their effects on town services and roads	Planning Commission, Selectboard	2016-2021
Explore possibilities of establishing additional Water Districts	Planning Commission, Selectboard	2018
Consider creating a water quality commission if and when needed	Selectboard	

Modify zoning to address sub-surface water, especially as it pertains to Shoreland and Village Districts.	Planning Commission	2018

Goal 2: Make zoning permit application process easier tounderstand and implement.

Action Steps	Responsible Party	Time line
Develop a permit application that can be completed 'on-line'	Planning Commission	2016 - 2017
Tie property [parcel] information together with overlay maps of natural resources, flood plains, agriculture soils, uplands together with the permit application	Planning Commission, Conservation Commission	2016 - 2017
Provide more informal assistance to property owners and developers prior to submitting permit application either through "zoning made easy" FAQs orother information that can be accessed via theTown website	Planning Commission	2016 - 2017

Goal 3: Encourage More Dense Development in the Village Districts

Action Steps	Responsible Party	Time line
Revise zoning to allow and encourage greater density in the Village Districts	Planning Commission	Begin 2016
Research more affordable and effective sewage treatment systems or water supply systems, or both that would allow more dense development in the village districts; Seek grants for funding	Planning Commission, Selectboard, Water Quality Commission	2018
Consider expanding current village district boundaries, as explored in the CVRPC buildout analysis.	Planning Commission	2017

Explore possible incentives to focus housing development in the villages, through zoning and other means	Planning Commission, Selectboard	2017
Encourage mixed use development (buildings that have more than one use, for instance, residence and general store); redevelopment; Encouragerecreational opportunities in immediate proximity to villages; and land conservation to improve the quality of life in the villages.	Planning Commission	2017
Explore ways to provide incentives for more small-scale commercial development in village districts so villages are more vibrant and attractive places to live, shop and work	Selectboard Planning Commission	2018

Goal 4: Encourage Planned Unit Development

Action Steps	**Responsible Party**	**Time line**
Provide information to property owners and developers about density averaging and transfer of development rights to achieve conservation of the Town's rural character, agricultural soils, open space and natural resources	Planning Commission	2016
Explore other ways to encourage Planned Unit Developments.	Planning Commission	2017

Goal 5: Promote Community Education

Action Steps	**Responsible Party**	**Time line**
Share with the community the function of the Town Plan and Land Use and Development Regulations to promote our collective values now and for future generations, and the diverse influences (court decisions, legislation, and regulatory agencies) that we need to consider in their development.	Planning Commission	2016
Work collaboratively with landowners and experts to learn what best support our smart growth intent.	Planning Commission	2017

North Calais

HOUSING

Housing is a complex and dynamic challenge involving many different factors. We recognize that a diverse range of housing alternatives is essential for Calais to be a more viable, sustainable community able to meet economic and environmental challenges while simultaneously providing for our "fair share" of Central Vermont regional housing needs.

The aspirations of Calais residents expressed in a survey 25 years ago hold true today:

- To have the ability, in spite of forces beyond our control, to continue to live here.
- The hope that our children will want to and be able to live here also if they desire.
- Living in Calais will be affordable for senior citizens and for the young who are just starting out in life.
- To have enough housing available either for sale or rent for those wanting to move here.

CURRENT CONDITIONS

Housing

Calais currently has 4 village districts separated by large tracts of forested and agricultural lands and landscapes with many wildlife corridors. East Calais, Maple Corner, and Adamant are "Designated Village Centers" meaning there is a better chance for obtaining grants to develop economic growth or housing. East Calais and the Kents Corner areas are on the US National Register of Historic Places. The historical overlay district is in the center area of Calais anchored by the
Old West Church, Robinson Cemetery, Calais Town Hall and Maple Corner Village. The village district houses 14% of Calais residents along with most of Calais' businesses (excluding home businesses and agricultural operations). The resource recreation and shoreland districts house 24% of Calais residents. The remaining 62% of Calais residents live in the rural residential districts.

The 2010 U.S. Census the Town of Calais has 842[2] homes of which 99 are rented, and 167 are vacant. We assume that most of the vacant homes are camps and second homes. The combined total of homes in

Calais makes up2.8% of the housing in Washington County which has 29,905 housing units.

Further breakdown of the 842 units show:[3]
767 single unit dwellings
23 2 unit dwellings
10 3-4 unit dwellings
42 mobile homes

In the 2000 U. S Census, the Town of Calais had 773[4] homes of which 93 were rented, and 157 were vacant. In the decade between 2000 and 2010, Calais added 69 homes or almost 7 new houses per year. As far as we can tell from the data, none of the new buildings were multifamily units, all being single family dwellings.

[2] http://www.census.gov/popfinder/?s=50
[4] http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=DEC_00_SF1_QTH1
[3] http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_12_5YR_DP04

The median value of owner occupied homes in the 2010 census was $250,000.

Economics

According to the 2010 U.S. Census American Factfinder[4], 43.2% of Calais' households earn an income equal to or less than $49,999; 32.1% between $50,000 and $74,999; and 24.7% over $75,000. One hundred thirty-six [136] households have incomes under $25,000 annually.

Median monthly housing costs of owner occupied homes are $1,085 and 144[6] households pay greater than30% of their income for housing. Those that rent here in Calais pay a median rental of $950 per month; 28 households use more that 30% of their income for rent.

Issues

Location of new housing:

Any new homes, planned unit developments [PUDs], and clustered subdivisions must be placed so that we protect our valuable natural resources and wildlife corridors, preserving the beautiful rural landscape and making it so that agriculture land is productive and economically sustainable. To achieve this desired balance, "smart growth" development, as defined in the Land Use sectionwill be used. TheLand Use section and associated maps also address the location of the town's 118 "fair share" of new housing required by CVRPC.

6http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF

Placement of all development must consider not only the number of new housing units but the effect additional population will have on the maintenance of our roads. Thus it might be that placement of housing complexes will have to occur in expanded village districts along main thoroughfares. Evaluation is needed.

We see in the near future where building in defined flood plains will be prohibitive due to federal and state regulations and ability to obtain mortgages and flood insurance. As a town, the zoning regulations must reflect these realities.

[4]http://factfinder2.census.gov/faces/nav/jsf/pages/community_facts.xhtml#none

Housing Mix

There needs to be a better mix of housing types in more affordable price ranges so that families of diverse incomes can find housing in Calais. This mix would include:

- smaller size houses,
- rental units,
- duplexes
- multi-family units housing 3 or more units
- development ofclustered housing units that include multi-ages but cater to senior citizens

Such a diversity in house types and sizes may make it possible for senior citizens to sell their larger homes, purchase a smaller house in a clustered complex, or rent a place and still be able to afford to live here in Calais.

As more people look into shared housing the zoning regulations need to allow change of use for sharing easy to accomplish.

Clustered housing plans must allow for common water and septic systems along with alternative energy generation, making the cost of building and cost of utilities more affordable.

Another challenge is the increased cost of building a new home due to increased regulatory requirements. Increasingly and perhaps unwittingly, this is becoming a major issue for property owners and is pushing us more in the direction of being a "bedroom community".For economic development and increased sustainability, we need to seek a reasonable balance among competing interests to insure that the cost of housing does not outpace theincome of our citizens as is currently happening. Too often we hear from residents, "my children cannot afford to build and live in Calais." This is not a healthy sign.

Conversion of large houses to multi-family units

There are many older houses that could be converted to multi-family units. This could generate potential incomefor senior citizens. By developing a community of mixed ages and experiences we make Calais more self-reliant. This allows those who want to move to Calais, as well as those who wish to remain to be able to do so.Zoning regulations will be reviewed to allow for easier change of use from single to multi-family dwellings.

GOAL 1: DEVELOP A TOWN WIDE SITE PLAN FOR PLACEMENT OF PLANNED UNIT DEVELOPMENTS , CLUSTERED SUBDIVISIONS

Action Steps	Responsible Party	Time line
Seek funding for purpose of hiring a professional to conduct mapping of potential sites for PUDs and other multi unit developments that would developa master plan.	Selectboard	2916-2017
With funds from above action item, hire a professional site planner to map possible placement sites for multi unit development in keeping with Smart Growth techniques.	Selectboard	2017 - 2018
Zoning regulations and current district maps will be used by all developers so that any PUDs or special community housing will be placed in locations with adequate year-round access to emergency services, local businesses, etc.	Zoning Administrator, DRB, Planning Commission	2016 - 2021
All PUD's and clustered development with shared water and sewage systems will meet the most current state ANR requirements in effect at the time of building. If local restrictions are more stringent than the state's regarding buffer areas the local restrictions will prevail.	Zoning Administrator, DRB	2016-2021

GOAL 2: ENLARGE VILLAGE CENTERS TO ACCOMMODATE MULTI-UNIT AFFORDABLE HOUSING

Action Steps	Responsible Party	Time line
Expand Village Centers	Planning Commission	2017 - 2019

Through zoning, allow for solar arrays and micro wind turbines scaled to meet the approximate demand for energy consumption of the site 's users in Calais, as alternative energy resources in any district, with emphasis in the village district to accommodate multi-family units.	Planning Commission	2016-2019

GOAL 4: ASSURE THAT THOSE DESIRING TO BUILD NEW HOUSES USE DENSITY AVERAGING TO BALANCE CONSERVATION AND NEW DEVELOPMENT

Action Steps		
	Responsible Party	**Time line**
Revise zoning regulations so that no new building or development will be allowed in river corridors	Planning Commission	2016
Overlay maps for natural resources, agricultural lands and flood plains will be made available to all residents and future residents for guidance regarding the placement of new houses and development so that smart growth concepts are applied to all new building.	Select Board [to approve maps], Planning Commission, Zoning Administrator	2016 and ongoing for map updates.

ECONOMIC DEVELOPMENT

Current Conditions

A healthy and diversified economy is critical to maintaining quality of life in Calais. A healthy economy provides employment, stimulates social and cultural interaction, and provides resources for other community services.

According to American FactFinder,862 Calais residents are employed in a variety of professions. 719 residents commute to their places of employment which are mostly located in Central Vermont towns that have the necessary infrastructure to support such large scale commercial, industrial, non-profit, and governmental employment.

Calais does have a local economy that consists of numerous small businesses that include retail, various forest and agricultural enterprises, furniture makers, insurance, financial services, food producers, cultural services, repair services, construction, carpentry, landscaping, plumbing, health and personal care, electrical, town services, and manufacturing. The Vermont Department of Labor provides the following statistics of employment within Calais Town.

Covered Employment and Wages Calais Town7

Year	# of Establishments	# of Employees
2011	34	102
2012	37	112
2013	36	131
1st Quarter 2014	34	98

Based on census data provided by Central Vermont Regional Planning Commission [CVRPC], the people employed by the Calais businesses come from Calais, Hardwick, Woodbury, Cabot, East Montpelier, Fayston, and Montpelier.

The Vermont Department of Taxes reported that in 2011, 249 Calais residents filed their taxes as sole proprietors, although the tax

7Vermont Dept of Labor; Economic & Labor Marketing Information; http://www.vtlmi.info/indareanaics.cfm

department is careful to note these sole proprietors may not be actively in business. Some residents may have their own 'part-time' business while also working at other jobs.

It is important to develop as much business locally to attain a strong economic resilience for Calais. To begin this process, in 2013 three of our villages – Maple Corner, Adamant, and East Calais – received "Village Center Designation" by the Vermont Agency of Commerce and Community Development. The Town will seek to renew Village Center Designation for Maple Corner and East Calais with current boundaries. Calais will evaluate a possible change in the boundary of the Adamant Village Center Designation to include the Adamant Community Center and apply for either a renewal or a new designation to incorporate the boundary change. Calais also intends to apply for a new Village Center Designation for North Calais, and will consider applying for a Village Center Designation for Kents Corner in the future. Changes to the North Calais Village zoning district shall be considered when the Calais Land Use & Development Regulations are updated.

Designation of these Village Centers furthers the Town's efforts to encourage development within our villages as compact, livable, socially, and economically vibrant community centers by providing State incentives and benefits such as:

- Historic Tax Credits that allows the owners of qualified buildings to apply for tax credits to restore and renovate Historic buildings that contribute to a Designated Village Center's Historic District.
- Building Improvement Tax Credits that allows the owners of qualified buildings to obtain tax credits to make building improvements to meet current regulations such as ADA compliance, fire safety, and infrastructure improvements.
- Priority consideration for various State and Federal grants such as State Historic Preservation grants, Northern Borders Regional grants, Vermont Housing and Conservation Board grants, Transportation Fund and Better Connections grants to fund walking and bike paths, traffic calming, stormwater management, and other projects within the designated village centers.

An example of Village Center Designation benefits is the current owners of East Calais General Store Building, within the East Calais Designated Village, applied for and received State tax credits and several other grants to help pay for façade improvements and

renovation to make the building ADA compliant and meet current fire and safety codes. Retaining and receiving Village Center Designation would make such tax credits and other benefits available in North Calais, Maple Corner, Adamant, and East Calais.

Challenges and Opportunities

We must support those local economic initiatives that promote local employment in order to decrease transportation costs and the negative impact on the environment. We need to be more pro-active in our support of new and existing small businesses, including home-based professionals/businesses, telecommuting, and agricultural and forestry producers.

Access to high-speed telecommunications is essential for most all businesses and telecommuters to survive and thrive in Calais. Community and regional support through "buy local" initiatives, financing opportunities, supportive zoning, access to affordable housing, transportation systems, and childcare will also be needed.

GOAL 1: PROMOTE MEANINGFUL LOCAL EMPLOYMENT FOR MORE CALAIS RESIDENTS

Action Steps		
	Responsible Party	**Time line**
Establish a business support committee that would research ways to help promote local employment, and use the Village Center Designation to its full advantage. If a business support committee is not established it will be assumed that the Selectboard will complete the action steps that follow.	Selectboard	2017
Expand the official Calais Town website to include links to businesses and services available in the community for informational purposes only.	Web master	2016

Encourage the creation and expansion of Calais businesses that utilize natural resources and raw materials grown or processed in Calais, [except for ground water, mining and quarrying] with particular emphasis on valueadded processing of agricultural and wood products to develop a sustainable food and energy system.	Business Support Committee created in the 1st action step	2018
Identify and help organize former and existing successful Calais entrepreneurs willing to mentor new and beginning businesses by providing guidance and technical advice.	Business Support Committee	2018
Identify and facilitate networking and cooperative initiatives between Calais businesses, such as a tool rental cooperative, or group purchasing cooperative for bulk supplies.	Business Support Committee, Agriculture Committee	2019
Identify ways to strengthen Village Centers as units of economic activityand make the best use of the Village Center Designation for receiving grant monies.	Business Support Committee, Planning Commission,	2017
Focus on food production and other agricultural pursuits (see Agriculture Section).	Agriculture Committee, Business Support Committee,	2016
Renew Village Center Designations for Maple Corner, Adamant, and East Calais.	Planning Commission, Selectboard, Business Support Committee	2021 and 2022
Apply for Village Center Designation for North Calais Village	Selectboard, Planning Commission, residents of North Calais	2022

GOAL 2: ENSURE THAT ZONING REGULATIONS DO NOT IMPOSE ANY UNNECESSARY OR INAPPROPRIATE IMPEDIMENTS TOREASONABLE SMALL BUSINESS DEVELOPMENT, AGRICULTURALENTERPRISES, OR HOME BASED BUSINESSES.

Action Steps		
	Responsible Party	**Time line**

Review and recommend appropriate changes in the zoning to ensure that regulations and conditional uses promote rather than inhibit the start-up and sustainability of small, diverse businesses that support the town's vision and values stated in the Town Plan.	Planning Commission	2016
Consider zoning and other changes to encourage rental and multi-family housing [see Housing section].	Planning Commission	2017

GOAL 3: CONTINUE SUPPORT OF REGIONAL BUSINESSDEVELOPMENT ORGANIZATIONS AND INITIATIVES.

Action Steps	**Responsible Party**	**Time line**
Continue to provide financial support to regional economic development organizations through allocations decided upon at town meeting, e.g., responses to requests from such organizations as Central Vermont Economic Development Corporation and Capstone Community Action, http://www.capstonevt.org/	Selectboard and Voters of Calais	2016-2021
Encourage Calais residents to represent the town in regional economic and community development initiatives and organizations;	Selectboard, Committee Chairs	2016-2021
Support the Central Vermont Workforce Investment Board (WIB);	Selectboard, Committee Chairs, Voters	2016-2021
Work with adjacent towns to support the development of a regional systems approach to quality, affordable, and reliable early	Selectboard, Committee Chairs	2016-2021
childhood care and education centers and home care providers [see Child Care section]		
Encourage Calais residents to represent the town in initiatives that serve the region.	Selectboard, Committee Chairs	2016-2021

GOAL 4: SUPPORT DEVELOPMENT AND PROVISION OFINFRASTRUCTURE TO SUPPORT CALAIS BUSINESSES.

Action Steps		
	Responsible Party	**Time line**
Support and facilitate availability of high speed internet service to all areas of Calais [see Municipal Services Section]	Selectboard, Planning Commission	2016
Investigate decentralized wastewater systems or on-site system management to allow additional development, residential and business, within village districts	Business Support Committee, Planning Commission,	2019
Work cooperatively with neighboring communities when a multi-community solution is needed and feasible.	Selectboard, Committee Chairs	2016-2021

Agriculture

"The shorter the chain between raw food and fork, the fresher it is and the more transparent the system is." — Joel Salatin,*Everything I Want to Do is Illegal: War Stories from the LocalFood Front*
"True food security is the historical normalcy of packing it in during the abundant times, building that in-house larder, and resting easy knowing that our little ones are not dependent on next week's farmers' market or the electronic cashiers at the supermarket."
— Joel Salatin,*Folks, This Ain't Normal: A Farmer's Advice for Happier Hens, Healthier People,and a Better World*

History

Calais has a deep-seatedagricultural history dating back to the town's founding in 1781. For generations, the Calais landscape has included livestock and dairy, sheep, produce, and grain farms. But over the last century such farming has declined.

Current Conditions

The numbers of farms have dwindled with few people earning their income through farming and food production. As mentioned in "Who We Are" in the Vision section of this plan, only 1% of Calais residents now earn their living off of the land. As a bedroom community almost 90% of town residents commute to jobs outside of Calais. However, Calais residents realize the value for locally grown foods that is nutritious and affordable. A grassroots agriculture task force, Calais Organization of Local Agricultural Support System, has been formed with the hope that through shared information we will increase an interest in growing and processing our own food to move towards food independence.

Surveys[8]show that 80% of the respondents have gardens and enjoy the seasonal bounty of their food. Using Front Porch Forum we stay in touch with people who are growing garlic, shitake mushrooms, maple syrup, raspberries, and much more, and sell or barter the food or allow opportunities for pick-your-own. There is a vibrant interest in growing food and learning how to expand knowledge on processing and storing the food grown. And there are small businesses not only here in Calais but in our neighboring towns that sell their produce through stands, farmers market, or Community-Supported Agriculture (CSA). Finally, 90% of the residents who took the survey want to buy their food locally – meaning Calais and our surrounding adjacent towns - as long as it is at an affordable price.

Survey results also showed that 90% of the respondents felt that preserving the agricultural and forest landscape is important to them.

Vision

Calais, in 20 years and in many ways, will more closely resemble the Calais of generations past. While modern housing and transportation will be abundant in the village districts, the rural residential areas will be laden with lands rich with produce, grains, and livestock. Owners of agricultural acreage who do not aspire to live the farming lifestyle will have financial incentives to lease land to food producers and biomass producers. A method of financial sharing in several food related businesses such as meat processing and butchering, growing and producing hemp and biomass fuels, as an example, between the owner and the municipality will result in revenue to the municipality such that there could be a decrease in property taxes.

With such strong interests in agriculture it is believed that Calais can in fact become self-reliant in not only food but potentially with the growing and processing of bio-mass fuels, and locally grown and harvested wood using good forest management practices. Such capabilities will give us the resilience to face potential natural and economic disasters. Promoting the ability to grow, process, distribute, and store all of these agricultural related products provides an economic development opportunity, bringing jobs for local employment that bolster our own town economy. A by-product of this is a strengthening of the bonds of our community uniting the various villages and rural areas in a common goal of self-reliance and sustainable living to insure the future for the next generations.

Issues

The primary issues for agriculture relate to land use, economics and food independence and security, while simultaneously influencing public thinking and behavior as to where food comes from and is purchased. Each of these issues will be discussed under the goals set forth.

GOAL 1:CONSERVE AND RECLAIM AGRICULTURAL LANDS ANDSOILS FOR IMPROVED AND EXPANDED PRODUCTION.

Objectives

- To achieve such a vision of agricultural sustainability, we must use identified and potential agricultural land wisely, and we must preserve existing agricultural land. This means using the concepts of smart growth, allowing development in village and expanded village districts as well as corners and pockets where land is not as favorable for food production, and making available the land that is conducive for producing food available to food growers.
- To reclaim potential agricultural land that has become overgrown and fallow so that those wanting to start a food product business have available land. Owners of land need to be connected to those who want to work the land for leasing potential. This land rental can be an income used to offset property taxes.
- To mapagricultural lands and then using those maps to determine areas of development potential as well as identifying areas for protection. We desire to map the types of soil in the Calais area in order to ascertain which kind of food will best grow in which kinds of soil. Maps will be based on the most current up-to-date maps which canbe updated annually.
- To improveexisting soil. Some land may not be prime agricultural land, but with the use of good compost could become better, increasing food growth potential.

Action Steps	Responsible Party	Time line
Adhere to Land Use Regulations regarding expanding village districts using smart growth methods. Refine regulations as needed.	Planning Commission, Zoning Administrator, DRB	Each year
Develop a land exchange program that connects owners of usable land to those wanting to use land within the regions. Support and encourage residents to use UVM Landhttp://www.uvm.edu/newfarmer/?Page=land/index.html&SM=land/sub-menu.html	CVRPC, Planning Commission, UVM	2016 with annual updates

Maps from GIS and CVRPC that are updated annually will be used to identify Ag areas. Create an ag overlay to help identify appropriate places for housing development to preserve Agriculture land.	Selectboard to support maps; Planning Commission to use maps in zoning regulations	2016 and annual updates
Obtain a grant to do soil mapping to ascertain what types of products will grow best in what types of soil here in Calais	AG Committee	
Create a municipal composting center for use on surrounding ag lands that need soil enrichment, & develop land use regulations that apply to composting center	Selectboard, CVSWMD, Planning Commission	2017

GOAL(S) 2: AGRICULTURE ECONOMICS AND INDEPENDENCE.

1. Develop a Local Food System that encourages new businesses such as meat butchering, biodiesel fuel, grains, and the ability to process these products.
2. Develop the distribution system to deliver foods locally, helping current stores expand their businesses.
3. Develop an open market exchange that allows food, grain, meat, and milk producers to sell or barter or donate their products from their farms or places of business.

Objectives

- Tocreate a local distribution system of locally grown food.Currently we rely on food that is delivered via trucks every few days to the stores. As fuel prices rise, the cost of this food will increase. Having a local food system would decrease the cost of food by eliminating the high cost of transportation.
- To mitigate the effects of disaster. Having a local food system means we will not have to rely on typical food delivery that supplies food from outside sources, because we will have our food on hand. We can thus concentrate using our resources on the task of cleaning up the disaster.
- To study ways to incentivize entrepreneurs to start small food related businesses in Calais.

Action Steps	Responsible Party	Time line
Inventory agriculture lands in Calais to find where certain crops can be grown based on soil types. Inventory the types of products currently grown and find what is needed for self sufficiency.	Ag task force State Agric. Dept. CVRPC	2016 on
Evaluate feasibility or possibility of creating a non tax-related incentive to bring ag business here	Ag Committee, Selectboard	2016-2017
Once incentive is created advertise it in conjunction with available lands that can be leased for use based on various products [e.g. bio-diesel, grains, feed for animals]	Ag committee, Selectboard, Planning Commission [Zoning Admin. if needed]	2018-2021
Evaluate feasibility of tax incentives for food and non-food related agricultural businesses for those residents or businesses that do not enroll in Current Use program.	Ag Committee	2018
Research possibility of getting a grant to study if municipality could go into a shared business with ag producers and generate revenues to the Town from ag business	Ag Committee	2018
Create a distribution matrix that outlines what food is grown where, and when and where it will be marketed and sold, listing hours of operation if food is sold on the farm. Also list if bartering is accepted in exchange for goods	Ag committee Small business group for distribution?	2017
Create a 'seed' library compiled from the various gardeners, and growers, to share with each other --- library site TBD	AG committee	2016
Ensure suitable zoning and land use regulations which will encourage production, processing, storage, and distribution businesses	Planning Commission	2016-2021

GOAL 3: ASSURE LOCAL FOODS ARE AVAILABLE AT AFFORDABLE PRICES WITH NUMEROUS DISTRIBUTION POINTS SO THAT ALL CALAIS RESIDENTS HAVE FREEDOM FROM WANT,WHILE PROVIDING LIVING WAGES TO FARMERS AND FOODPRODUCERS.

The World Health Organization defines food security as "when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life".

Objectives

- No Calais resident should go hungry. We must build a food distribution infrastructure that assures everyone – regardless of income – will have access to food.
- Encourage farmers and food growers to sell their vegetables, eggs, meats, from their homes while they assure their patrons of safe food. Encourage the State of Vermont to continue to allow more "on-farm" purchases and slaughtering.
- People purchasing food from Calais growers will know what is in the food i.e.no GMO or harmful chemicals

Action Steps	Responsible Party	Time line
Establish a community-wide practice of gleaning [gathering leftovers after a harvest] with local CSAs, gardeners, and other food production businesses	Ag Committee, Vermontivate group?	2018
Work with the State of VT via our representative to allow greater flexibility in "on –farm" sales	Selectboard, Planning Commission, All residents	2016
Encourage farms and businesses to sign a guarantee they do not use GMOs in their seeds, feeds, etc. and post such a guarantee	Ag Committee	2016 - 2021

Establish a drop off station in each village for surplus produce grown by local growers for access at no cost to those in need.	Ag task force.	2016-2021

Responsibilities of farmers for natural resource conservation:

Due to the fact that many of the prime acres of agricultural lands within Calais coincide with the location of aquifers and ground water recharge sources which provide potable water to the entire town, zoning and land use regulations must provide for mitigation of water contamination. State regulations require all fuel storage vessels above 1000 gallons to have a secondary containment vessel. In Calais, any business or farm that has tanks storing more than 500 gallons AND that have these tanks within a buffer area of 100 feet of a ground water recharge source will be required to have a secondary containment vessel on all liquid fuel tanks. Currently Calais only has water source maps for the East Calais Fire District #1; as the Conservation Commission obtainsmore complete water source maps for the entire town, those maps will be used to define the buffer zones to be used for placement of secondary containment vessel of fuel tanks.

Additionally, farmers working agricultural lands which coincide with primary aquifers and ground water recharge sources must take responsibility for mitigating phosphate, nitrates, and other mineral contamination associated with organic (manure) or other crop fertilization.
For more of the agriculture strategic plan to develop a local food system, please refer to Supplemental Information,Section A.

FLOOD RESILIENCE

A Flood Resilience section is to be included in any Town Plan written or substantially rewritten after July 1st, 2014, as mandated by the state of Vermont (Act No. 16).[5]

For the purpose of this section, Flood Resilience is defined as the capacity of the Town of Calais to withstand flooding while reducing the risks of loss of life and/or property. This Flood Resilience section describes how and where the impact of flooding is expected to be most serious, and how and where these impacts can be addressed or, with some planning, avoided altogether.

A Short History of Flooding in Calais

Like the rest of the state, Calais suffered from the great flood of 1927. Many roads were washed out and bridges destroyed. Fortunately, no lives were lost and no houses were swept off their foundations. Eleven years later, a tropical storm devastated timber stands and sugar bush; fallen trees smashed buildings. As it was with the '27 flood, there were no personal injuries. On June 6, 1984, a sudden summer storm dropped 5 inches of rain on already saturated ground, sending swollen streams over their banks. In Gospel Hollow, a culvert choked with vegetative debris caused the fast moving waters of Pekin Brook to jump Kent Hill Road and take out a length of the North Calais Road. The flash flood scoured a six-foot deep by thirty foot wide channel through the gravel and exposed the logs of the ancient corduroy road upon which the new road had been built.[6] The Town Hall was an island, surrounded by water over thirty six inches higher than the lower floor level. In August 2011, rainfall between 5"-7" brought by Tropical Storm Irene ravaged many Vermont communities, but did
relatively little damage in Calais. Even a minor rain event can be

destructive: in the early evening of May 9, 2010, a beaver dam across the southern narrows of Adamant Pond let go. Millions of gallons of previously impounded water swept over a manmade stone dam, overwhelmed a large culvert, and jumped the road. Center Road and

[5] **Act 16** is included in its entirety as Appendix Article X

[6] **Forever Calais, A History of Calais, Vermont** , Weston A. Cate, Jr., 1999, Calais Historical Society

several nearby buildings were damaged. Seven homes were evacuated.

Adamant. Water over the dam, May 9, 2010

What are the Flood Risks?

Flooding is the most serious potential natural disaster that Calais has to plan for. Though the history of flooding in Calais does not include accounts of serious personal injury, flood events in the past severely damaged our roads. Similar damage to our roads in a future rain/flood event is a very real risk. Roads rendered impassable to ambulances, fire trucks, utility workers, our road crew and other emergency responders by flood damage directly affects public safety. Even if our luck holds out and future flood events do not result in serious personal injuries, the potential dollar value to the town could be devastating. Personal property loss in a worst case flood event is estimated in one report to be as high as $76,690,500 just for Calais.[7]

The Calais Selectboard, with input from the town's Emergency Management Coordinator (EMC), the Calais Road Commissioner, and with assistance from the Central Vermont Regional Planning Commission (CVRPC), drafted a Local Hazard Mitigation Plan (LHMP) in July 2013. This LHMP was submitted to FEMA on October 16, 2013 for

[7]**Local Hazard Mitigation Plan** (July2013 update of 2005 Plan), prepared for Calais by the Town of Calais and the CVRPC. This Plan is included in its entirety as Appendix Article X)

their acceptance *(pending as of June 18, 2014)* before it can be officially adopted by the town. The purpose of our LHMP is "to identify policies and actions that can be implemented over the long term to reduce risk and future losses. Mitigation Plans form the foundation for a community's long-term strategy to reduce disaster losses and break the cycle of disaster damage, reconstruction, and repeated damage."[8] The discussion in this section of the "risks and future losses" and "disaster damage, reconstruction, and repeated damage" from flooding should, for the most part, be understood in the context of financial loss. Calais is not in a position to shoulder the burden of a $76,690,500 bill for flood damage; it would rely on the state and the federal government for the greater part of the financial aid needed for damage recovery. And so it is that recommended mitigation strategy standards come down to the town from these two higher levels of government in the forms of an LHMP approved by both the state and FEMA, and this Flood Resilience section appears in the Calais Town Plan.

"1% Probability" Flood Event Risk

With respect to mitigation planning, areas prone to damage caused by a "1% Probability" Flood Event" (also referred to as a "100-year flood event") have been identified in Calais. These areas are also referred to as Special Flood Hazard Areas (SFHA) and are graphically represented on the Flood Insurance Rate Maps (FIRMs) recently updated by the Federal Emergency Management Agency (FEMA). These areas are defined by FEMA this way:

"*The land area covered by the floodwaters of the base flood is the Special Flood Hazard Area (SFHA) on NFIP[9]maps. The SFHA is the area where the National Flood Insurance Program's (NFIP's) floodplain management regulations must be enforced and the area where the mandatory purchase of flood insurance applies. The SFHA includes Zones A, AO, AH, A1-30, AE, A99, AR, AR/A1-30, AR/AE, AR/AO, AR/AH, AR/A, VO, V1-30, VE, and V."*[10]

For Calais' Local Hazard Mitigation Plan (LHMP), CVPRC overlaid building sites as they are represented on the state's E-911 database with the SFHA maps developed by FEMA and determined that 37

[8] Vermont Emergency Management agency

[9] **National Flood Insurance Program**

[10] ANR's ***Natural Resource Atlas*** places all properties not in the SFHA in Zone "X = (500-year flood area)

structures in Calais are situated in an SFHA. FEMA's NFIP Insurance Report (9/17/2013) to the state has on record that twelve NFIP flood insurance policies are in effect in Calais, and of those, six are for properties outside the SFHA. The Vermont Agency of Natural Resources' (ANR) *Natural Resource Atlas* (an online map currently available) provides ready access to graphic information describing the geographic extent of SFHAs and the E-911 building sites used in the CVRPC determination.
Table 1 outlines only the Flood Zones that are applicable to Calais which are graphically presented in the ANR *Natural Resource Atlas*. Only "A" Zones are Special Flood Hazard Areas (SFHAs).

Table 1: Calais Flood Zones[11]

"A" Zones: There are three "A" Zones types that apply to Calais:	
A	The 100-year or base floodplain. (No Base Flood Elevation data exists on Calais' FIRMs) (Also known as "approximate "A" Zones")
AE	The base floodplain where base flood elevations are provided.
AO	The base floodplain with sheet flow, ponding, or shallow flooding. Base flood depths (feet above ground) are provided
X	Area of moderate flood hazard, usually the area between the limits of the 100-year and 500-year floods.

[11] A complete table of all Flood Zone types with descriptions can be found at: http://www.fema.gov/floodplainmanagement/special-flood-hazard-area#0

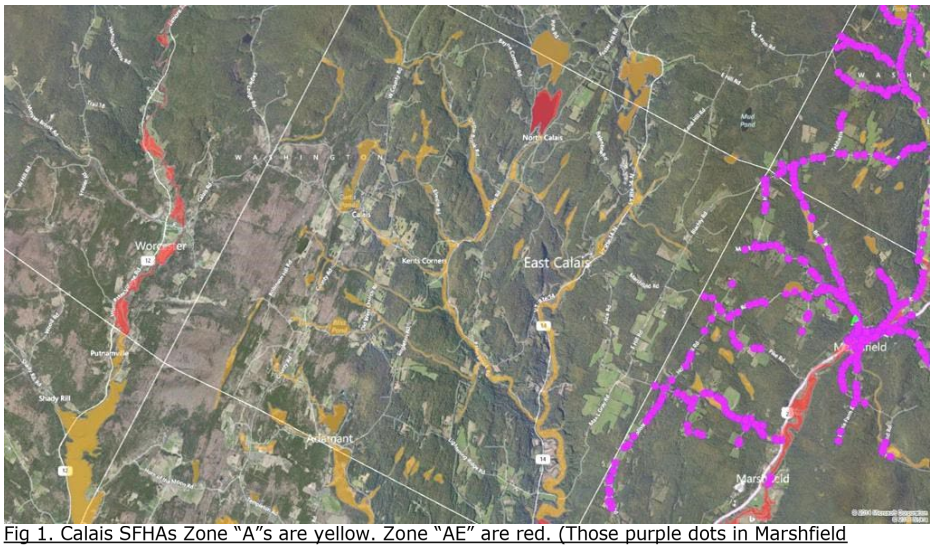

Fig 1. Calais SFHAs Zone "A"s are yellow. Zone "AE" are red. (Those purple dots in Marshfield are their culvert locations.)

Figure 1 above shows the extent of SFHAs in Calais. Areas in yellow are Zone "A"s. Area in red represent Zone "AE". Structures within the SFHA must comply with construction standards set forth by FEMA to be eligible for Flood Insurance. An example ofsuch one standard created by FEMA is entitled *Ensuring That Structures Built on Fill In or NearSpecial Flood Hazard Areas Are Reasonably Safe From Flooding*.

Fluvial Erosion Risk

A second flood related risk to property is Fluvial Erosion. As defined by the Watershed Management Division of ANR, "Fluvial erosion is erosion caused by rivers and streams, and can range from gradual bank erosion to catastrophic changes in river channel location and dimension during flood events." To safeguard property from the catastrophic impact of fluvial erosion, a "river corridor" has to be defined and understood to be an area within which there is a strong possibility for a change in a river channel location. The state of Vermont Department of Environmental Conservation has prepared Fluvial Erosion Hazard (FEH) area maps for use by the town. Currently, Calais has riparian buffer setbacks around its water bodies

and wetlands[12]. Named streams are also protected by a fifty foot wide riparian buffer measured from the edge of the bank. River Corridors add these fifty foot buffers to Fluvial Erosion Hazard areas. The exact width of a river corridor is determined by the configuration of the stream meander or river course.

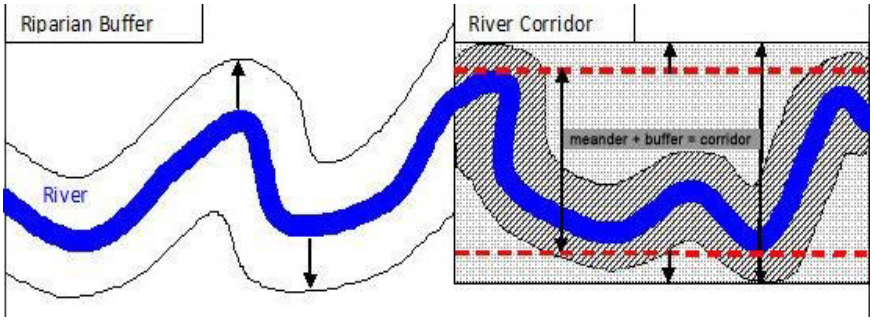

Fig. 2 Riparian Buffer and River Corridors

Figure 2 above shows the difference between Riparian Buffers and River Corridors. The River Corridor width is determined, in this example, by the general width of the meander along a length of the river's course plus the protective Riparian Buffer. River Corridor widths are variable, depending on the meander pattern. The Kingsbury Branch and the Pekin Brook are both meandering streams. And both have been identified as Fluvial Erosion Hazard (FEH) areas in our LHMP.

Figure 3 below shows the Fluvial Erosion Hazard areas on Kingsbury Branch and Pekin Brook identified in Calais, as prepared by the Vermont Department of Environmental Conservation.

[12]***Land Use & Development Regulations for the Town of Calais***, adopted by the Calais Selectboard January 3,2005, last amended March 4, 2014, Section 3.13

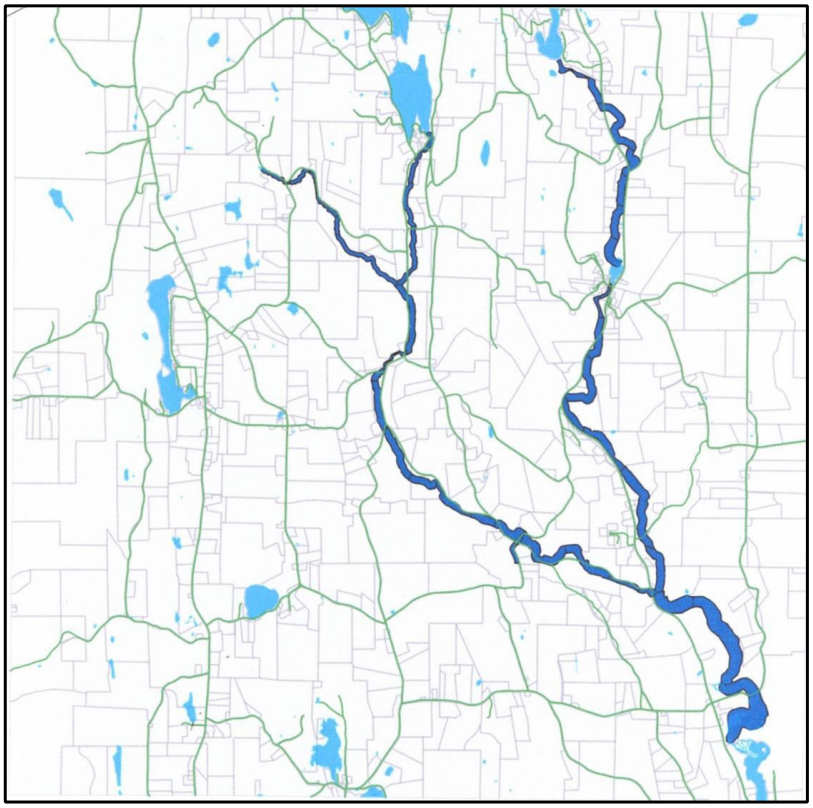

Fig. 3 Fluvial Erosion Hazard areas shown in dark blue

Dam Failure Risks

The failing beaver dam on Adamant Pond (approx 41.5 acres) caused damage to roads and buildings in Adamant in 2010. Though the beaver dam wasn't particularly tall, it impounded (by one estimate) some 2,000,000 gallons (267,361 cft) of water which was suddenly released. This is the quantity of water that would be impounded in a 40 acre area behind a 2 inch high dam[13]. In contrast, the 19th century dry-laid stone dam on Curtis Pond (27 acres) is 14 feet high. In the

[13] Google Earth satellite photos clearly depict the beaver dam

event of a storm-day dam failure, peak discharge rates are estimated to be above 2000 cft/second.[14]The Curtis Pond Engineering Analysis Report prepared for Calais and the state of Vermont by DuBois& King, Inc.(Jan, 2004), estimates that 34 minutes from a catastrophic stormday failure, the water level 2,400 feet downstream from the breach would rise over seven feet, flooding and knocking-out a power substation owned by Washington Electric Coop. "The Robinson Mill Dam at Kent's Corners and culverts along Pekin Brook upstream of Kents Corners may have significant amount of damage as a result of the storm-day failure of the Curtis Pond Dam."[19] Certain damage to the Worcester Road would impact direct access to parts of town west of the breach.

Landslide Risk

Though not flood related in the context of rising waters, the subsidence of hillsides has resulted from rain events in Calais. In 2005, a section of Moscow Woods Road (part of the primary east-west corridor through town) "slipped" downhill 18 inches, rendering it impassable for several days. This damaged section was patched up by the town road crew, but remained as a one lane road until 2006.[20]

Water Contamination Risk

A moderate threat (in terms of risk probability) to the community wellbeing is the contamination of drinking water sources as the result of a flooding and flash flooding. All waste treatment in Calais is by individual septic systems. Super-saturated soil over a disposal field can "short-circuit" a septic system and surface water run-off over the disposal field can combine with and carry off untreated effluent. A related concern is rainwater runoff that might carry chemical contaminants such as fuel stored in buried tanks. Calais has one water district which provides drinking water to 52 users. All other water supply sources are individual wells or springs.

[14]**Curtis Pond Engineering Analysis Report**, DuBois& King, Inc., January 2004
19**Curtis Pond Engineering Report**, op.cit. 20**LHMP**, op cit.

Planning for Flood Resilience

Emergency Preparedness

The Calais LHMP ranks the likelihood of the afore-mentioned flood hazard risks as Low, Medium or High. A Low likelihood hazard is associated with a 100-year event, a Medium likelihood hazard with a 10-year event, and a High likelihood hazard has "a near 100% probability in the next year".[15] Floods, Flash Floods, Fluvial Erosion and Dam Failures are ranked High; Landslides and Water Contamination hazards are ranked Low. There is no local flood related hazard ranked Medium.

Floods and flash flood hazards pose a threat to life and of personal injury. Floods and flash floods hazards have historically done severe damage to our roads, and they will do so again in the future, adversely affecting the response effectiveness of the emergency services on which we depend in a crisis. To the degree that it is possible to anticipate emergency responses to the contingencies that could arise in times of crisis, Calais has prepared a Local Emergency Operations Plan[16](LEOP, updated 4/14/2014. LEOPs are updated annually after Town Meeting). This LEOP:

1. Identifies the primary local emergency contact personnel.
2. Establishes a command structure
3. Identifies shelters to be used in times of emergency
4. Identifies high-risk sectors of our population
5. Identifies High Hazard sites in town (bridges, culverts, low-lying areas)
6. Identifies those town entities which lead or offer support in crisis response 7.Establishes an Emergency Contact and Mutual Aid Lists

In addition to the Local Emergency Operations Plan, Calais has an Emergency Action Plan for Curtis Pond Dam (DuBois& King, Feb 2004) which coordinates an emergency response in the event of a dam failure. While this Emergency Action Plan contains much interesting information regarding the hazard posed by the dam, based on its table of contents headings, it should also:

[15] **LHMP**, op.cit. There is confusing language regarding probabilities in the LHMP. A footnote states that Low-Likelihood hazards have a 10% chance of occurring in any given year. Probabilities, expressed as percentages, are also confusing with regard to Medium and High Likelihood Hazards.

[16] The Calais **Local Emergency Operations Plan** is, essentially, a form filled out by local governments prepared by the **Vermont Emergency Management** (VEM) division of the **Division of Emergency Management and Homeland Security** (DEMHS) division of **The Vermont Department of Public Safety** (DPS).

1. Define notification procedures & responsibilities with regard to a dam emergency
2. Define training & testing (of dam monitors)
3. Describe local evacuation procedures
4. Record changes and additions to the plan

In the plan on record, the first item has out-of-date information. The other three are missing altogether. There does not appear to be a specific coordinated dam emergency response plan that deals with the type of flash flood hazard which imminent dam failure presents. It is presumed that in the event of a dam failure, coordination of emergency response would fall back on the Local Emergency Operations Plan. It is also presumed that the same Local Emergency Operations Plan would give direction to emergency personnel responding to the failure of a beaver dam. This is the extent to which Calais has prepared to respond to Flood Emergencies.

Mitigation - Watersheds

Storm water management starts in our watersheds. Effective watershedmanagement reduces chances that the rapid runoff of surface water will carry with it eroded soils which can clog roadside ditches, and fill culverts, stream beds and ponds. Impervious surfaces such as roofs, driveways and parking areas which do not allow storm water to infiltrate the ground can increase the volume and velocity of surface water runoff, creating potentially destructive erosion conditions. Most of the surface water from a major rain event is eventually collected in roadside ditches and/or streams. Vegetative buffers along the banks of these steams can hold soils from the eroding effects of rapid water flow. Properly designed roadside ditches allow for storm water to continue its flow downstream without undue erosion. Water collected in steams and ditches flows through our culverts, under our bridges and eventually into our ponds and the larger brooks. The effect of Fluvial Erosion in our larger brooks has been discussed, as has the effects of the sudden release of impounded water by failing dams.

Calais has taken measures to protect the watershed. Calais has established an Upland Overlay District (all land 1500 feet above sea level) which controls the kind of development associated with poor watershed management. Most new construction requires a

Conditional Use review by the Development Review Board (DRB). "The DRB may impose or increase required setback distances and buffer areas as may be reasonably necessary to protect adjoining properties, surface waters, wetlands, shoreland areas, and other natural and cultural features from incompatible development,"[17] and "storm water, erosion control and/or buffer management plans may be required as appropriate to mitigate long-term impacts."[18]The maximum cleared area for any new building site in the Upland Overlay District is 1 acre. Forestry is a permitted use in this district, but only as defined in *Acceptable Management and Practices, Vermont Commissioner of Forest, Parks and Recreation*.

Additionally, with regard to watershed management, Calais has adopted language in our Zoning Regulations which addresses:

- *Steep Slopes*. Any development of slopes of 15% or greater requires a DRB review. "The DRB may require the submission of an acceptable erosion and sedimentation control plan, prepared by an engineer licensed by the state, which provides detailed information regarding temporary and permanent erosion and sedimentation control measures to be used prior to, during and following construction." [19]
- *Surface Water Protection.*"A naturally vegetated buffer strip of at least 50 feet shall be maintained from the mean water mark of all lakes and ponds, and the top of the banks of all named streams and rivers, and at least 20 feet from all other streams and rivers, as identified in the Calais Town Plan or from current U.S. Geological Survey maps."[20]

Mitigation – Roads, Bridges & Culverts

By one estimate, 95% of storm related damage (federally declared disasters) was to public infrastructure: (for the most part) roads, bridges and culverts. Statewide, most of the existing culverts are too small to carry even the water from a "20-year" rain event.[21]

A fundamental component of a Flood Resilience Section would be citations referencing the town's standards for roads, bridges and culverts, as they relate to flood hazard mitigation. ANR, in an online report on Flood Resilience planning, notes that acceptable standards

[17] **Land Use & Development Regulations for the Town of Calais, sec. 5.3, (D), 4)**
[18] **Land Use & Development Regulations for the Town of Calais, sec. 5.3, (D), 5)**
[19] **Land Use & Development Regulations for the Town of Calais, sec. 3.13(A)**
[20] **Land Use & Development Regulations for the Town of Calais, sec. 3.14(A),1**
[21] ANR, online guide on Flood Resilience Planning, step 3

can be found in the VTrans[22] Orange Book, 2014-2016: A Handbook for Local Officials. The Orange Book, in turn, makes reference to the Vermont Better Back Roads Program[23] (VtBBR). The VtBBR Manual is written with the consideration of erosion control as a pollution mitigation issue, not flood hazard mitigation.[24]

There are no references to using calculated probable flow rates from a major rain/water runoff event. Calais participated in the VtBBR program and reconstructed roadside ditches and culverts to VtBBR standards until February 10, 2014, at which time the Selectboard adopted alternate Calais Road and Bridge Standards (amended by the Selectboard April 14, 2014) developed by the Calais Roads Advisory Committee. This change was driven primarily by aesthetic issues resulting from construction to the VtBBR standards. Regardless of which road standard a town uses, disaster recovery aid administrators will determine the replacement value for a damaged road, bridge or culvert based on the standards in place at the time of the disaster.

While the accepted road standards that the town has in place at the time of a flood disaster are used to determine the cost of a repair, the proportions of that cost paid for by the town and by disaster recovery aid agencies depend on how well the accepted road and bridge standards mitigate flood damage. Disaster recovery aid money used for infrastructure repair is channeled through the Emergency Relief and Assistance Fund (ERAF):
"*The Emergency Relief and Assistance Fund (ERAF) provides Public Assistance grants through the Federal Emergency Management Agency (FEMA) to Vermont cities and towns to repair damaged infrastructure after a presidentially declared disaster. The state typically contributes half of the required 25 percent non-federal match for approved projects. Under the new ERAF rule, which went into effect on October 23, 2012, municipalities have 24 months to adopt additional flood hazard mitigation measures to maintain the state cost share for FEMA Public Assistance grants. Municipalities that adopt higher standards can achieve a higher percentage of state funding for post-disaster repair projects – from 12.5 percent to 17.5 percent. Municipalities that adopt the standard set of hazard mitigation measures will continue to receive state funds to cover half of the*

[22] Vermont Agency of Transportation
[23] **VtBBR Manual** was developed, in part, by VTrans and ANR,Dept.of Environmental Conservation
[24] **The Orange Book 2014-2016**, , VTrans, page 7-1

required non-federal match, or 12.5 percent. Municipalities that have not adopted the basic set of measures will see a decrease in the state match, from 12.5 percent to 7.5 percent. Thus, the state contribution toward the local match requirement will vary from 7.5 percent to 17.5 percent of the total project costs, depending upon the level of adoption of recommended mitigation measures."[25]

The "additional flood hazard mitigation measures" that must be in place by October 23, 2014, to receive half of the 25% non-federal recovery aid money from the state includes adoption of "*Town road and bridge standards consistent with or exceeding those listed under the most current version of* Town Road & Bridge Standards, Handbook
for Local Officials*, published by the Vermont Agency of Transportation*."[26]

The Calais Road and Bridge Standards, attached in the supplemental section of this Town Plan, has general language in its "*Guiding Principles"* addressing flood damage mitigation: "*All Road Work shall enhance flood hazard and inundation avoidance and shall protect the water quality of our lakes and ponds by the maximal use of innovative natural stormwater control mechanisms such as rainfall force attenuation (via tree canopies) and/or dispersion of stormwater to roadside verge shoulders, buffered areas and settlement structures."*

The amended Calais Road and Bridge Standards has been reviewed with respect to flood hazard mitigation by VTrans Technical Services Engineer Alec Portalupi. In a correspondence (March 31, 2014) to the Calais Selectboard he writes: *"I believe you have addressed all of our issues and you could sign the Certification form that these standards meet or exceed the January 23, 2013 State-approved minimums."*

Mitigation – Dam Failure

Construction of a replacement for the ailing Curtis Pond Dam is the chosen option for mitigation of the flood hazard it presents. According to the Calais Dams Task Force report to the Selectboard (Feb 2005), several replacements have been designed: one of concrete and the

[25] ERAF, as explained by Milley Archer, VLCT, *Flood Damage Mitigation Incentives for Municipalities under the New ERAF Rule*
[26] ERAF, rules for state matching funds under the federal public assistance program, Vermont Agency of Administration

other of stone. An early estimate for a concrete replacement was $228,044. A new stone dam was estimated to cost $175,588. Just who shoulders the financial burden for either is still being discussed. General concern from citizens has waned since the dam first became a critical issue.
There is also no record of procedures to check the progress of local beavers as they construct their own dams. Adamant Pond has had a "Beaver Baffle" installed, mitigating the flood hazard there from future a beaver dam failure. There is no monitoring system in place for reporting and following up on reports of other potentially hazardous beaver dams.[27]

Mitigation – Flood Plains and Floodways

Statistically, a homeowner in the 100-year floodplain has a 26% chance of being flooded during the life of a 30-year mortgage, and many owners are unaware that standard homeowner's insurance does NOT cover damages from a flood. That is why lenders generally require property in the floodplain to carry flood insurance. However, floods rarely follow the precise boundaries on a map, especially flash floods associated with sudden, heavy downpours. Flood damages can and often do occur outside the limits of the regulatory floodplain. Nationally, approximately one-third of all flood damages occur outside the mapped floodplain. In Vermont, two-thirds of flood damages occur outside of federally mapped flood areas.[28]

Calais Zoning Regulations limit development in "flood plains" via a Flood Hazard Overlay District (FHO), *"The purpose* (of which) *is to prevent or minimize the loss of life and property, disruption of commerce, impairment of the tax base and extraordinary public expenditure from the results of flooding; to further insure that design and construction of development would eliminate or minimize the potential for flood damage; and to ensure that the flood-prone lands are managed in accordance with state and federal regulations and thereby ensure that property owners are eligible for flood insurance through the National Flood Insurance Program (NFIP)"*[29].

[27] See ***Best Management Practices for Resolving Human-Beaver Conflicts in Vermont***, Vermont Fish & Wildlife, for additional information on beaver dams as well as some delicious beaver recipes.

[28] Two Rivers-Ottauquechee Regional Commission in cooperation with Vermont Law School's Land Use Institute, and the Vermont Department of Environmental Conservation

[29] **Land Use & Development Regulations for the Town of Calais, Table 2.7, (A)**

Permitted Uses within the FHO are limited to Agriculture and Forestry (as defined by the state). Home Occupations and Home Child Care are permitted uses in *existing* Single Family Residences. All other development or uses are subject to a Flood Hazard Area Review by the DRB. Flood Hazard Area Review standards include:

1. reference to Flood Insurance Rate Maps (FIRMs) and NFIP maps,
2. the involvement of state licensed engineers in determining Base Flood Elevations (BFE),
3. (the condition that) all (development) proposals are consistent with the need to minimize flood damage within the flood-prone area,
4. requirement that all public utilities and facilities, such as sewer, gas, electrical and water systems are located and constructed to minimize or eliminate flood damage, and that
5. adequate drainage is provided to reduce exposure to flood hazards

At the time of a Flood Hazard Area Review, the property owner or applicant must provide to the DRB the following documentation:

1. a completed Elevation Certificate prepared by a licensed surveyor, engineer or other state official who is authorized by the state to certify building elevation information,
2. ANR Project Review Sheet which shall identify all State and Federal agencies from which permit approval is required for the proposal
3. BFE and floodway limits provided by the National Flood Insurance Program and in the Flood Insurance Study and accompanying maps, and
4. In *Special Flood Hazard Areas* where base flood elevations and/or floodway limits have not been provided by the National Flood Insurance Program in the Flood Insurance Study and accompanying maps, *it is the applicant's responsibility to develop the necessary data*. Where available, the applicant shall use data provided by FEMA, or State, or Federal agencies.

Specific construction design standards in the FHO are reviewed with respect to wiring, plumbing, gas, water systems, basements, construction materials, and overall design for flood prone areas. The full text of all Flood Hazard Review Area criteria is found in Section 5.4, *Calais Land Use and Development Regulations*.

In developing the Calais Local Hazard Mitigation Plan, CVRPC found 37 building sites located within the SFHA. The E-911 Map Book showing these building sites begins with a disclaimer regarding the

accuracy of the graphic information it contains. Similarly, the Flood Insurance Rate Maps (FIRMs) have a disclaimer which directs anyone interested to
Flood Profiles and Floodway Data tables found in the Flood Insurance Study Report for "authoritative hydraulic data" which may differ from what is shown in the FIRMs. This being said, it is in Calais' best interest to review the 37 building sites as part of a process to accurately identify all structures located within the Special Flood Hazard Areas. With an understanding of just what types of structures these buildings represent, the Town can then recommend and/or raise awareness of actions that these property owners can take to protect their properties. Hardcopies of FIRMs are available at the Town Office for viewing and .PDF and .PNG versions of the same are available on request. The Town Office also has information available with regard to FEMA's Hazard Mitigation Grant Program. The Town Website can and should include web links directing anyone interested in Flood-proofing strategies to relevant governmental agency sites.

Some structures in Calais which are not in flood hazard areas have been represented as being on parcels which are. (Note that the current FHO District in Calais is based on FIRMs which have been superseded by newer maps.) With the exception of Mirror Lake and North
Montpelier Pond, the FIRMs for Calais contain no *Base Flood Elevation* (BFE) data. Through a process called *Letter of Map Amendment* (LOMA), a property owner can, with the help of qualified professionals, verify that a specific structure is not in a Special Flood Hazard Area. Copies of LOMA applications and the requirements for a map amendment are available in the Town Office.

Calais has participated in the *National Flood Insurance Program* (NFIP) since 1975. Our participation has been, and continues to be, dependent on the town's adoption of regulatory standards that meet or exceed standards set by the state and federal government (44 CFR 60). As a participating community, property owners in Calais can buy flood insurance through the NFIP. The cost of insurance premiums is variable, depending on the flood mitigation standards adopted by the town. FEMA supports communities that adopt higher standards through the *Community Rating System* (CRS) by offering incentives for safer development practices. Depending on the standards adopted, the town is rated from Class 9 to Class 1. Most communities enter the CRS program with a Class 9 or Class 8 rating. A Class 9

rating entitles residents to a 5% premium discount. Class 8 entitles residents to a 10% discount. Class 1 is 45%. In the CRS Program, a Class rating is achieved by accruing points:

"*A community accrues points to improve its CRS Class rating and receive increasingly higher discounts. Points are awarded for engaging in any of 19 creditable activities, organized under four categories:*

- *Public information*
- *Mapping and regulations*
- *Flood damage reduction*
- *Warning and response.*

Formulas and adjustment factors are used to calculate credit points for each activity".[30]

It is in the best interest of Calais to review the benefits and consider participation in the CRS Program.

GOAL 1: MITIGATE DAM FAILURE HAZARDS

Catastrophic dam failures pose threats to life, safety, and property. Implementation strategies to protect against such threats for Curtis Pond Dam and the Beaver Dams include:

Action Steps	Responsible Party	Time line
Reestablish an effective Emergency Action Plan for Curtis Pond Dam.	Selectboard	2016
Revisit Curtis Pond Dam replacement process Get up-to-date cost estimates Set a replacement schedule / timelineEstablish (re-establish?) dam replacement fund	Selectboard	2016
Establish beaver dam reporting and monitoring mechanism to track large impoundments of water which have recognized destructive potential	Roads Operations Manager (ROM)	2016

[30] National Flood Insurance Program (NFIP) Community Rating System (CRS) Fact Sheet, March 2014

GOAL 2: MITIGATE RISKS IN FLOOD HAZARD AREAS

Major flood events pose threats to life, safety and property. Implementation strategies to protect against such threats include:

Action Steps	Responsible Party	Time line
Redefine the Calais Flood Hazard Overly district such that it is consistent with the most recent FIRMs	Planning Commission	2015 with periodic review
Redefine the Calais Flood Hazard Overly district to include the mapped FEH areas with a 50' buffer	Planning Commission	2015
Inventory and document all known 37 existing structures that are within an updated FHO district	Planning Commission, Listers	2015
Review Zoning Regulation language with regard to septic and water systems in flood areas	Planning Commission	2015

GOAL 3: STORM WATER MANAGEMENT

Uncontrolled storm water runoff poses threats to life, safety and property. Implementation strategies to protect against this threat include:

Action Steps	Responsible Party	Time line
Schedule Calais roadside ditching and culvert and bridge replacement so that those places which affect the access by emergency vehicles in a flood event have first priority	Roads Operations Manager	2016
Schedule Calais roadside ditching, culvert, and bridge replacement schedule with regard to existing conditions which have been determined to be inadequate to handle expected runoff and erosion in a flood event as a second priority	Roads Operations Manager	2016

GOAL 4: PROVIDE READY ACCESS TO FLOOD HAZARD RELATED INFORMATION

Action Steps	Responsible Party	Time line
Set up an area in the Town Office solely to be a "clearing house" for up-to-date federal, state, and local emergency management information. Information available could be [but not limited to] : NFIP resources for property owners required to have Flood Insurance. LOMA resources. FHO general construction standards BFE information as it is developed	Town Clerk, Emergency Management Coordinator	2016
Develop an "Emergency Management "section on the Town Website that is easy to access and to understand. Information to include [but not limited to] is: Flood Resilience portal with relevant ANR, FEMA NFIP links. Calais Online Map updated to include graphic data with regard to SFHA and River Corridors. LOMA resources and FHO construction standards LEOP, Emergency Action Plan for Curtis Pond, and LHMP	Webmaster, Town Clerk, Emergency Management Coordinator	2016
Review options with regard to FEMA's Community Rating System	Selectboard	2016

NATURAL RESOURCES

I. Introduction and Current Conditions

Calais has an abundance of natural resources, and it is our natural resources that represent much of what makes life in Calais unique and enjoyable. Living in Calais, surrounded by nature, we are able to maintain a connection with the land and an appreciation for wildlife. The forests provide a variety of benefits to residents: income from forest products; habitat for wildlife species; recreational opportunities; and clean water by filtering surface water runoff. Plentiful and diverse wildlife provides opportunities for hunting, fishing, tracking, and connecting with the natural world. Calais has several areas that are known to contain rare, threatened, or endangered species of plants or animals or which support significant natural communities of plants or animals. Calais also has numerous ponds, streams, and wetlands that provide opportunities for water recreation, wildlife observation, aesthetic enjoyment, and peaceful contemplation. Our groundwater is abundant, accessible, and potable. Calais has the physical geography and human development patterns that make it a scenic and interesting place to live. One can find in Calais unique natural places that are often remote, quiet and beautiful and that are of immeasurable value both for their own sake and for the enjoyment of people.

As Calais residents, we need to share the responsibility for protecting and conserving these valuable resources for future generations. Based on a buildout analysis, completed by the Central Vermont Regional Planning Commission, Calais Residents can expect an additional 120 single-family dwellings by 2020. The question becomes how do we provide an adequate level of protection for our Natural Resources and still provide flexibility for development?

There are many actions that can be taken now to conserve Calais's important natural resources. However, more comprehensive information as to the types, locations, and significance of the town's various natural resources would enhance the town's ability to plan for future growth in ways that will allow our natural resources to be protected. To this end, a two-part Natural Resources Inventory was completed in 2017 under the auspices of the Calais Conservation Commission .

II. Natural Resource Areas

Natural resource areas are composed of a hierarchy of features. At the top of this hierarchy are the large features that dominate the natural landscape of Calais. These are the interior forest blocks; the connectivity blocks, the connecting corridors of smaller forests that tie together the larger contiguous areas and are critical for the survival of many species of animals and plants; the lakes, ponds, rivers, streams; and the wetlands. Because there are 'natural communities' within these places we have chosen to discuss these components in Section II of this document. Section III, Components of Natural Resource Areas, discusses some of the natural features within natural resource areas that are worthy of recognition and protection. They include deer wintering areas and rare, threatened, and endangered species. Other natural features that are important, but may take more research and inventory, including vernal pools, natural areas, mast stands, grassland bird habitat, and turtle habitat, are addressed in the Supplemental Information at the end of the Town Plan. The natural resources that we manage, such as agricultural lands, mineral resources, and public lands, are discussed in Section IV, Managed Natural Resources.

Detailed information is provided for each of the natural resource elements, as well as conservation goals and recommended action steps.

A. Interior Forest Blocks

Interior Forest Blocks are areas of contiguous forest and other natural communities and habitats (such as wetlands, ponds, and cliffs) that are unfragmented by roads, development, or agriculture. See 23 V.S.A. § 4303(34) (defining "forest block"). Forest blocks were identified, mapped, and ranked by Vermont Fish and Wildlife Department in 2014.

Ecological Function: Forest blocks provide many ecological and biological functions critical for protecting native species and the integrity of natural systems, including:

- Supporting natural ecological processes such as predator-prey interactions and natural disturbance regimes :
- Helping to maintain air and water quality and flood resilience;
- Supporting the biological requirements of many plant and animal species, especially those that require interior forest habitat or require large areas to survive;

- Supporting viable populations of wide-ranging animals by allowing access to important feeding habitat, reproduction, and genetic exchange; and
- Serving as habitat for source populations of dispersing animals for recolonization of nearby habitats that may have lost their original populations of those species.

Guidelines for prioritizing the interior forest blocks in Calais: The importance of Calais's interior forest blocks is enhanced by the fact that the Town serves as a connecting link between the more expansive forested areas of the Groton State Forest to the southeast and the Worcester Mountain Range to the northwest. Larger interior forest blocks are more important than small ones, which may provide little interior forest habitat. In general, interior forest blocks larger than 250 acres provide interior forest habitat values and are especially important when linked to others. Smaller blocks may provide other habitat or natural resource values, especially if they are part of identified connectivity blocks linking large habitat blocks together. Large interior forest blocks that include other natural resources (such as wetlands, rare species, or deer wintering areas) are more important than similarly sized blocks without these natural resources.

Guidelines for Maintaining the Ecological Function: The primary goal is to maintain the interior forest conditions that forest blocks provide by avoiding permanent interior forest fragmentation resulting from development. Limited development on the margins of existing large forest blocks may not have significant adverse effects as long as it does not reduce connectivity between blocks and does not encroach into the forest block interior. Forest management that maintains forest structure within the block and results in a distribution of all age classes is compatible with maintaining interior forest conditions over the long term.

Information or data available: A map of interior forest blocks as they exist today in Calais is appended to the Calais Town Plan. Any future updates to Interior Forest Blocks are available on the ANR Natural Resource Atlas.

GOAL: CONSERVE INTERIOR FOREST BLOCKS IN IN CALAIS WHILE ENSURING THE VIABILITY OF WORKING LANDS ASSOCIATED WITH A SUSTAINABLE FOREST PRODUCTS ECONOMY AND PROMOTING STEWARDSHIP FOR THESE AREAS

Action Steps	Responsible Party	Time line
Identify interior forest blocks that are at least 500 acres each, are relatively undisturbed, have the most diverse habitat types and have the best landscape context (near other interior forest blocks well buffered from fragmenting features) using public input and Natural Resource Map as resources	Conservation Commission	2016 - 2021
Establish a land and/or development rights acquisition plan drawing upon the Calais Conservation Fund, partnerships with private non-profit conservation organizations, and community fund raising efforts to conserve these large areas of interior forest blocks where landowners are willing.	Conservation Commission	Beyond 2021
Support and promote a sustainable local and regional forest products economy by encouraging landowners who are eligible to enroll in the Vermont Current Use Program through community outreach and educational opportunities.	Conservation Commission	Beyond 2021
Use overlay maps for natural resources, agricultural lands and flood plains as guidance for considering zoning regulations that direct limited development in areas that minimize impact on natural resources and infrastructures. Please refer to Housing Section of Calais Town Plan for specifics.	Planning Commission,	2016-2023

B. Connectivity Blocks

Connectivity Blocks are the network of forest blocks that together provide terrestrial connectivity at the regional scale (across Vermont and to adjacent states and Québec) and connectivity between all Vermont biophysical regions. See 24 V.S.A. § 4303(36) (defining "habitat connector"). Landscape connectivity refers to the degree to

which blocks of suitable habitat are connected to each other. There is a high level of connectivity within individual forest blocks. The proximity of one forest block to another, the presence of riparian areas, and the characteristics of the intervening roads, agricultural lands, or development determine the effectiveness of the network of Connectivity Blocks in a particular area.

Ecological Function: A network of Connectivity Blocks allows:

- wide-ranging animals to move across their range, to find suitable habitat for their daily and annual life needs,
- young animals to disperse,
- plant and animal species to colonize new and appropriate habitat as climate and land uses change, and contributes to ecological processes, especially genetic exchange between populations.

  Maintaining the landscape connectivity function requires both Connectivity Blocks and Riparian Areas for Connectivity, especially in highly fragmented areas of Vermont. There is general agreement among conservation biologists that landscape connectivity and wildlife corridors can mitigate some of the adverse effects of habitat fragmentation on wildlife populations and biological diversity. Specifically, climate change adaptation is enhanced if the long-distance movements of plants and animals is supported by a combination of short movements within large, topographically diverse forest blocks and short corridor movements between forest blocks.

Guidelines for prioritizing the connectivity blocks within Calais: All riparian habitat in Calais is important but Calais's major streams and rivers – including Dugar Brook, Pekin Brook, Kingsbury Branch, and their major tributaries – are particularly significant. Similarly, while small areas of forest and wetland provide important habitat, those areas that *connect larger* interior forest blocks are likely more significant. Wildlife road crossing areas are locations where there is suitable cover habitat and no physical barriers on both sides of the road, and where vehicular traffic patterns allows for animals to cross with minimal mortality. Wildlife road crossings are likely the most threatened aspect of connectivity blocks as housing construction or other development at crossing locations may effectively eliminate wildlife use of some crossings.

Information or data available about connectivity blocks: A map of connectivity blocks as they exist today in Calais is appended to the Town Plan. Any future updates to Connectivity Blocks are available on the ANR Natural Resource Atlas.

Guidelines for Maintaining the Ecological Function of a Connectivity Block: Similar to Interior Forest Blocks, it is important to maintain the interior forest conditions in Connectivity Blocks by avoiding permanent interior forest fragmentation resulting from development. Connectivity within forest blocks will remain high if they remain unfragmented. For Connectivity Blocks it is also critically important to maintain or enhance the structural and functional connectivity that occurs on the margins of these blocks where they border other blocks. This can be accomplished by maintaining forest cover along the margins and by limiting development in these areas of block-to-block connectivity.

Riparian Areas for Connectivity (Riparian Corridors)

Riparian Areas are the connected network of areas along streams, rivers, and other surface waters, in which natural vegetation occurs, providing natural cover for wildlife movement and plant migration.

Ecological Function: In addition to supporting the integrity of the lakes, ponds, rivers, and streams that they border, naturally vegetated riparian areas are especially important for providing cover for wildlife movement and other important wildlife habitat, such as nesting habitat for birds. Many wildlife species use riparian corridors for travel to find suitable habitat to meet their life requisites, but certain species are almost entirely restricted to riparian areas, including mink, otter, beaver, and wood turtle. The linear nature of riparian areas contributes to their function as movement corridors for wildlife. Roads, development, and agricultural lands fragment the Vermont landscape. The combination of Riparian Areas for Connectivity and Connectivity Blocks provide the best available paths for connectivity across the landscape, especially in highly fragmented areas of Vermont.

Guidelines for Maintaining the Ecological Function of Riparian Areas that support Connectivity: Restoration is needed to provide a fully functioning network of riparian areas that support connectivity. Restoration of natural vegetation is needed for river and stream

shorelines where it does not exist now, and especially in riparian areas that provide the best available terrestrial connectivity between relatively isolated Connectivity Blocks. The width of naturally vegetated riparian areas needed to provide riparian connectivity varies from 100 feet or less on some small streams (50 feet each side) to 600 feet or more (300 feet on each side) for larger rivers or riparian areas that span long distances of otherwise unsuitable habitat.

Information or data available: A map of riparian areas for connectivity and wildlife road crossings in Calais is appended to the Town Plan.

GOAL 1:CONSERVE IMPORTANT AND FUNCTIONING CONNECTIVITY BLOCKS

Action Steps	Responsible Party	Time line
Conduct a connectivity block inventory and use the information to identify and prioritize these areas for conservation.	Conservation Commission	2016-2021
Consider establishing zoning regulations that require a heightened level of conditional use approval by the DRB for these areas to protect the function of important wildlife corridors from encroaching development and incompatible activities and encourage density averaging	Planning Commission	2016-2023
Consider using conservation easements, landowner incentives, and overlay districts to establish a network of connectivity blocks within the town that connects all conserved lands, lands under long-term stewardship, or other habitats identified as important.	Planning Commission, Conservation Commission	2016 - 2023
Lands being considered for public acquisition or other long-term conservation efforts will take into account important connectivity blocks.	Conservation Commission	2016-2023

Adopt town road management standards designed to conserve wildlife corridor functions by avoiding the installation of guardrails (where possible), avoiding the removal of roadside vegetation, avoiding roadside ditching in existing corridor areas and providing for wildlife crossing where necessary.	Selectboard	2016-2023

GOAL 2: PROMOTE LANDOWNER AWARENESS OF IMPORTANT CONNECTIVITY BLOCKS IDENTIFIED ON THEIR PROPERTY SO THAT THEY CAN MAKE APPROPRIATE LAND MANAGEMENT DECISIONS FOR PROTECTION AND CONSERVATION

Action Steps	**Responsible Party**	**Time line**
Inform landowners of important connectivity blocks identified as existing on their land and offer a site visit to discuss its significance as a town resource. Provide educational	Conservation Commission	2016 - 2023
opportunities (such as community programs, site visits, and related media materials) to landowners and/or those who work their land, on the important characteristics of connectivity blocks and how to protect those characteristics.		
Invite landowners to consider making a long term conservation easement or stewardship commitment for the connectivity blocks crossing their land. This land will be given high priority in considering land for acquisition or other long term conservation efforts.	Conservation Commission	2016 - 2023
Establish an incentive program that provides recognition to landowners who are managing their property as wildlife habitat. This will be given high priority in considering land for acquisition or other long-term conservation	Conservation Commission	2016 - 2023

C. Physical Landscape Diversity Blocks

Physical Landscape Diversity Blocks (often referred to as enduring features) are the parts of the landscape that resist change. They are the hills and valleys, the underlying bedrock, and the deposits left behind by glaciers. They remain largely unchanged when changes in land cover and wildlife occur, as plants and animals move, and even as the climate changes. Physical landscape features are either rare in Vermont or are under-represented in the other kinds of blocks identified in Section A and B of Part II Natural Resources [above]. Physical Landscape Diversity Blocks complement the other block types and riparian area in order to more fully represent the complete spectrum of physical landscape diversity that is important for an ecologically functional landscape. However, these physical landscapes cannot continue to drive ecological processes or support plants, animals, or natural communities if they are developed or otherwise significantly altered by human activities.

Commented [JO1]: Seems this sentence is part of the definition.

In Calais, the Highest Priority Physical Landscape Diversity Blocks represent two distinct features. Most of these blocks represent the calcium-rich bedrock of the Waits River Formation. Calcium-rich bedrock supports many rare species and rare communities, such as the Rich and Intermediate Fens of Chickering "Bog". Calcium-rich bedrock also produces soils that support Rich Northern Hardwood Forests, excellent tree growth, and productive agricultural lands. Calais has an abundance of calcium-rich bedrock. A smaller proportion of the Physical Landscape Diversity Blocks in Calais represent deep sandy and silty soils and some gravel that are found along the valleys of Pekin Brook and Kingsbury Branch. These represent a mixture of origins, including recent alluvial soil deposits, soils deposited into a glacial lake that once existed in the valley bottoms and, further upstream, glacial outwash deposits of sands and gravels that gave rise to Calais' sand and gravel pits.

Guidelines for Maintaining the Ecological Function of Physical Landscape Diversity Blocks: Similar to Interior Forest Blocks, it is important to maintain the interior forest conditions in Physical Landscape Diversity Blocks by avoiding permanent interior forest fragmentation resulting from development. Forest management that maintains forest structure within and results in a distribution of all forest age classes helps to maintain the physical landscape diversity functions.

Information or data available about physical landscape diversity blocks: A map of physical landscape diversity blocks as they exist today in Calais is appended to the Town Plan.Any future updates to Physical Landscape Diversity Blocks are available on the ANR Natural Resource Atlas.

D. Aquatic Resources

***Lakes and Ponds**:* Fifteen ponds of five or more acres are contained within, or partly within, the Town. The largest are Nelson Pond (131 acres), Curtis Pond (103 acres), Number 10 Pond (Mirror Lake) (77 acres), North Montpelier Pond (53 acres), and Bliss Pond (46 acres). Others include Sodom Pond, Upper Adamant Pond, East Calais Pond, Hawkins Pond, Watson Pond, Tabor Pond, Wheelock Pond, Little Pond, and Little Mud Pond. Many of the ponds are accessible to the public and provide recreational opportunities such as swimming, fishing, canoeing, boating, and wildlife observation. Lakes and ponds also provide valuable habitat for plants and animals. Recognizing their importance, Calais has adopted shoreland zoning to protect the environmental, ecological and recreational qualities of its lakes and ponds.

Rivers and Streams: Calais's named rivers and streams are the Beaver Meadow Brook, Carr Brook, Dugar Brook, Kingsbury Branch, Long Meadow Brook, Pekin Brook, Still Brook, and Worcester Brook. All of these are in the Winooski River watershed. To maintain water quality, protect wildlife habitat, and prevent soil erosion and surface runoff, the Calais Land Use and Development Regulations require a minimum riparian buffer of fifty feet on named rivers and streams, and of twenty feet on all other streams.River Corridor Plans have been completed for the Kingsbury Branch and Pekin Brook watersheds. A River Corridor Plan is a planning document designed to manage, protect and restore rivers toward equilibrium conditions by resolving conflicts between human infrastructure and river dynamics. The River Corridor Plans for the Kingsbury Branch and Pekin Brook watersheds may be found on the Vermont Agency of Natural Resource website:
https://anrnode.anr.state.vt.us/SGA/finalReports.aspx

Aquatic and Riparian Habitat: Aquatic habitat includes all of the surface waters of Calais, specifically streams, rivers, lakes, and ponds. Riparian habitat is the area directly adjacent to aquatic habitat

and includes adjacent wetlands, floodplain forests and shrub swamps, and upland forests. Aquatic and riparian habitat forms a network across the landscape and defines the path of surface water movement.

Aquatic habitat supports fish, numerous mammals, aquatic plants, and all other aquatic organisms. Riparian habitats typically have high biological diversity and include reptiles and amphibians, plants, waterfowl, songbirds, bats, mink, and otter. Riparian habitats protect the adjacent aquatic habitat by shading the open water and maintaining cooler water temperature and by stabilizing stream banks. Undisturbed riparian areas are key in maintaining proper floodplain function and the natural form and function of rivers to avoid damage from fluvial erosion during major flood events. Riparian areas provide some of the most important wildlife habitat, including wildlife travel corridors and diverse cover adjacent to open water which allows wildlife to safely access and use the open water that is critical to their survival.

All ponds and perennial steams in Calais are well mapped on topographic maps. Fifteen ponds of five or more acres are contained either fully or partly within Calais. Watershed surveys have been conducted for Bliss, Curtis, North Montpelier and No. 10 ponds.

***Groundwater**:* The protection of our groundwater resources is crucial. The community is dependent on aquifers, the underground sources for domestic water supply. Pollution or significant depletion of groundwater aquifers would be a hardship for many years to come and would adversely affect streams and aquatic biota, as well as our drinking water supply.

Major groundwater deposits in the region are most often found in areas underlain by stratified drift deposits (permeable sand gravel of glacial origin) along watercourses in valley areas. In Calais, the areas of greatest potential yield occur along the length of the Kingsbury Branch and Pekin Brook.

Land directly above an aquifer, as well as upland areas from which runoff drains toward the aquifer, is the recharge area. Because land uses which have the potential for spills of toxic substances may pollute the groundwater aquifer, the regulation of land uses in recharge areas is necessary for aquifer protection.

Information or data available about groundwater:
The Land Use map associated with this plan shows the wellhead protection areas (WHPA) in town that have been designated by the State. Vermont's groundwater protection law (10 V.S.A. Chapter 48) sets forth general policies for WHPAs. State geologists are currently working on mapping Calais's groundwater resources.

Floodplains and Fluvial Erosion Hazard Areas
(See Flood Resilience section)

GOAL 1: PROTECT THE TOWN'S SURFACE WATERS - LAKES, PONDS, STREAMS AND RIVERS - AND THEIR RIPARIAN HABITAT BY PREVENTING LOSS AND FRGMENTATION OF THESE HABITATS

Action Steps	Responsible Party	Time line
Educate landowners about the importance of riparian buffers and the various programs available for conservation easements of riparian buffers. Work with landowners andprovide incentives for them to maintain and re-establish naturally vegetated riparian habitat.	Conservation Commission	Beyond 2021
Consider revising zoning regulations to require minimum setbacks of 150 feet and vegetated buffers of 50 feet for all surface waters.	Planning Commission	2020-2021
Work with riparian landowners to end the practice of mowing or clearing to the edge of named ponds and streams and assist to restore the vegetative buffers. Consider revising the zoning regulations to phase out the mowing or clearing of land to the edge of ponds and streams.	Conservation Commission	2016-2021
Notify the owners of a property that has either changed use or changed ownership of all land regulations regarding the practice of mowing or clearing to the edge of named streams and ponds on the property to maintain vegetative buffers. Educate the landowner about the importance of setbacks and buffer areas.	Conservation Commission	2016 – 2021

Consider clarifying zoning regulations pertaining to surface water protection so that the buffer requirements apply to all vegetated buffers and not just new development.	Planning Commission	2016-2021
Consider requiring conditional use approval for all new stream crossings. Stream crossings must be limited as much as possible and, where they cannot reasonably be avoided, must be properly sized and installed so as to maintain stream channel function and aquatic organism passage.	Planning Commission, DRB	2020-2021
Consider adopting a comprehensive Riparian Buffer plan or ordinance or zoning bylaw to promote the establishment and protection of heavily vegetated areas of native vegetation and trees along the Town's lakes, ponds, rivers, and streams to reduce the impact of stormwater runoff, prevent erosion, protect wildlife and fish habitat, and maintain water quality.	Planning Commission, Selectboard	2019-2021
Consider adopting a comprehensive Low Impact Development Stormwater Management Bylaw to promote stormwater management practices that maintain pre-development hydrology through site design, site development, building design and landscape design techniques, and road construction and management. http://www.vtwaterquality.org/stormwater/htm/sw_green_infrastructure.htm	Planning Commission	2019-2021

GOAL 2: IMPROVE THE RIPARIAN HABITAT IN CALAIS BY ALLOWING NATIVE WOODY VEGETATION TO BECOME REESTABLISHED OR BY PLANTING NATIVE WOODY SPECIES WHERE NECESSARY

Action Steps	Responsible Party	Time line

Develop a Road Inventory and Capital Budget Plan to identify and prioritize repair of road problems that result in erosion of gravel and other habitat impairing substances into streams. This includes identification of existing inadequately sized or installed road culverts that degrade riparian habitat by exacerbating erosion, and that impair passage of fish and other aquatic organisms.	Conservation Commission, Selectboard	2016 - 2021
Work with local watershed associations, Friends of the Winooski, and Natural Resource Conservation Districts to assist landowners in restoring riparian habitats on their lands. Assistance includes informing landowners about federal riparian restoration cost-sharing programs, organizing volunteers to install woody plants, raising outside funds to help with cost-sharing matches, and educating about the importance of riparian habitat.	Conservation Commission	2016 - 2021

D. Wetlands

***Definition*:** Areas that are inundated or saturated with water for long enough during the growing season to develop wetland or hydric soils (such as grey, mottled mineral soils or deep organic soils) and that are dominated by plant species adapted to life in saturated soils. Swamps are forest or shrub-dominated wetlands, marshes are dominated by herbaceous vegetation, and peat lands (including bogs and fens) are wetlands with deep, poorly-decomposed organic soils that usually lack trees. Each of these wetland types supports a unique group of plants and animals, many of which require these wetland habitats to survive.

Value of wetlands: Wetlands serve a wide range of ecological functions and are beneficial to a variety of native plant and animal species. Wetlands provide important habitat for waterfowl and other birds, mammals, and fish. Wetlands also provide flood and erosion protection, nutrient and pollution filtration, groundwater recharge, aesthetic interest and diversity, and sites for education and research opportunities and recreational activities.

Information or data available about wetlands: Most wetlands in Vermont have been fairly accurately mapped by the NWI project of the U.S. Fish and Wildlife Department. The U.S. Army Corps of

Engineers has regulatory authority over wetlands. Wetlands on the NWI maps are also protected under the Vermont Wetland Rules that are implemented by the Vermont Department of Conservation. The statewide maps are currently being updated to include more wetlands.

GOAL: PROVIDE FOR LONG-TERM STEWARDSHIP AND PROTECTION OF TOWN WETLANDS AND PREVENT FUTURE LOSS OF WETLANDS

Action Steps	Responsible Party	Time line
Establish ways to protect wetlands and wetland-dependent wildlife by restricting development and activities in wetlands and by maintaining or establishing vegetated buffers around their edges.	Planning Commission	2016-2021
Conduct an inventory of wetlands in town to verify NWI wetlands, and document other wetlands not on the NWI maps. The Selectboard may petition to reclassify significant wetlands not on the NWI maps to Class I or Class II for better protection under the Vermont Wetland Rules.	Conservation Commission Selectboard	2016 - 2021
Develop a landowner stewardship program to encourage restoration and maintenance of wetlands and their buffers. Inform landowners about federal cost-sharing habitat restoration programs.	Conservation Commission	Beyond 2021
Adopt road management standards designed to protect identified wetlands. Roads must be managed to maintain natural vegetated buffers around wetlands and to limit road runoff from directly entering wetlands.	Selectboard, Roads Operating Manager, Road Commissioner	2016-2021
Develop a landowner stewardship program to encourage restoration and maintenance of wetlands and their buffers. Inform landowners about federal cost-sharing habitat restoration programs.	Conservation Commission	Beyond 2021

E. Vernal Pools: (See supplemental information)

F. Natural Communities

Definition: A natural community is an interacting assemblage of plants and animals, their physical environment, and natural processes that affect them. As these assemblages of plants and animals repeat across the landscape wherever similar environmental conditions exist, it is possible to describe these repeating assemblages as natural community types. Examples include common forest types like Northern Hardwood Forest and Hemlock Forest and rare to uncommon wetland types like Rich Fen and Alluvial Shrub Swamp.

Value of Natural Communities: To conserve them for future generations, the particular environmental setting they require must be under minimal human disturbance. The full range of natural communities in Calais captures most of the biological diversity found in town. High quality examples of natural communities are of statewide significance.

Guidelines for prioritizing the significance of Natural Communities in Calais: State-significant examples of natural communities are identified and mapped by Vermont Fish and Wildlife Department using an evaluation process based on the rarity of the natural community type and the condition of the natural community example. Calais recognizes this prioritization system already in use by Vermont Fish and Wildlife Department. Examples of rare and uncommon natural community types are a higher priority for conservation than common natural community types.

Information or data available about Natural Communities: Vermont natural community types are described in the book *Wetland, Woodland, Wildland: A Guide to the Natural Communities of Vermont* (Thompson and Sorenson, 2005). The Natural Heritage Program of Vermont Fish and Wildlife Department maintains a database and map of state-significant natural communities statewide and the methodology used to evaluate them. In Calais, Chickering Fen, owned and managed by The Nature Conservancy, is an example of a Rich Fen, and is likely the best example of this rare natural community type in Vermont. Currently, four state significant natural communities have been identified in Calais; Poor Fen at West Hill Road, Calais Poor Fen,
Red Maple- Black Ash Seepage Swamp at West County Road Swamp, Northern White Cedar Swamp at Bliss Pond Cedar Swamp, and Intermediate Fen at Chickering Bog. The Calais Conservation

Commission has worked with landowners on a town wide natural areas inventory, which will in part identify additional state-significant natural communities.

GOAL 1: ENSURE CONSERVATION AND APPROPRIATE STEWARDSHIP OF SIGNIFICANT NATURAL COMMUNITIES IN CALAIS

Action Steps	Responsible Party	Time line
Continue to identify, field inventory, and map significant natural communities in Calais, which contain areas of both local and statewide significance and obtain as complete a portrait and understanding as possible of both.	Conservation Commission	2016 - 2021
Hold community/public educational forums about the significant natural communities comprising parts of both Calais and its greater bioregion. Discuss the rarity of the local natural communities and potential threats to their integrity.	Conservation Commission	Beyond 2021
Make information available to landowners about significant natural communities identified on their property. Provide resource information (and land managers) and assistance in developing long term stewardship, conservation and/or restoration plans, as appropriate to willing landowners.	Conservation Commission	Beyond 2021
Invite landowners to consider making a long term conservation easement or stewardship commitment for the natural community on their land. This resource will be given high priority in considering lands for acquisition or other long term conservation efforts.	Conservation Commission	Beyond 2021
Include natural communities in open space planning and land easement acquisition programs	Planning Commission	Beyond 2021

Consider establishing zoning regulations that protect or conserve identified (by the State or the Calais Natural Resources Inventory) significant natural communities from encroaching development and incompatible activities, such as road development or expansion, by restricting development within them and their buffer.	Conservation Commission, Planning Commission	Beyond 2021

GOAL 2: RESTORE DEGRADED BUT POTENTIALLY SIGNIFICANT NATURAL COMMUNITIES TO A VIABLE CONDITION IN PLACES WHERE THE LAND IS SUITABLE .

Action Steps	Responsible Party	Time line
Inform land owners when a degraded natural community is discovered to exist on their land through site visits, inventories, or historical records. Help willing landowners to restore the area by contacting Vermont Fish and Wildlife Department or other qualified experts for assistance, and inform landowners about federal cost-sharing habitat restoration programs.	Conservation Commission	Beyond 2021
Develop a landowner stewardship program to encourage restoration of significant natural communities.	Conservation Commission	Beyond 2021

G. Natural Areas

(See Supplemental Informationfor more information)

III. Components of Natural Resource Areas

A. Deer Wintering Areas

Definition: Deer wintering areas (or deeryards) consist of areas of mature or maturing softwood forest cover, which may be made up of hemlock, white pine, northern white cedar, red spruce, or balsam fir.

Value of deer wintering areas: Deer wintering areas provide protection from deep snow, cold temperatures, and wind, allowing white-tailed deer to survive the cold Vermont winters. White-tailed deer are at the northern edge of their range in Vermont and conserving deer wintering areas is essential for maintaining and managing the species in Vermont. Deer wintering areas also provide important habitat for a variety of other wildlife species, including porcupine, snowshoe hare, fox, fisher, coyotes, bobcat, crows, ravens, and white-winged crossbills.

Guidelines for prioritizing the significance of deer wintering areas in Calais: Site specific investigation is needed to evaluate the relative importance of each winter habitat based upon physical evidence of deer use.

Information or data available about deer wintering areas: Calais has large areas of mapped deer wintering habitat. The largest one runs parallel to Route 14 for nearly its entire length in Town.

GOAL: MAINTAIN AND PROTECT THE FUNCTIONAL INTEGRITY OF ALL DEER WINTERING AREAS IN CALAIS BY PREVENTING THEIR LOSS AND FRAGMENTATION BY DEVELOPMENT

Action Steps	Responsible Party	Time line
Continue to locate existing deer wintering habitat in Calais that has not been already mapped by the Vermont Fish and Wildlife Department.	Conservation Commission,	2016 - 2021
Development shall consider the conservation principles established in the Vermont Fish and Wildlife Department's 1999 Guidelines for the Review & Mitigation of Impacts to White-tailed Deer Winter Habitat in Vermont.	Conservation Commission, Planning Commission, DRB	2016-2021

B. Mast Stands
(See Supplemental Information for more information)

C. Grassland Bird Habitat
(See Supplemental Information for more information)

D. Rare, Threatened, and Endangered Species

Definition: A rare plant or animal species is one that has few populations in the state and faces threats to its continued existence. Whereas "rare" is a general term applied to many species, "threatened" and "endangered" are more specific terms for species that have legal protection under Vermont's Endangered Species Law

(10 V.S.A. Chapter 123). Threatened species are those that are significantly declining in number due to loss of habitat or human disturbance, and unless protected will become an endangered species. Endangered species are those whose continued existence as a viable component of the state's wild fauna or flora is in jeopardy.

Value of Rare, Endangered or Threatened Species: Rare, threatened, and endangered species are important parts of Vermont's natural heritage and contribute to the overall biological diversity of Calais and Vermont. The existence of a rare species in Calais may indicate that the Town lies at the edge of the species' area of natural distribution, that the Town may contain a rare natural community required by the species, or that the habitat required by the species has elsewhere been destroyed. In any event, the presence of these species in Calais is an indication of a healthy biologically diverse environment.

Guidelines for prioritizing the significance of Rare, Threatened and Endangered Species in Calais: All rare, threatened and endangered species of plants and animals are significant.

Information or data available about Rare, Endangered & Threatened Species: The Natural Heritage Program of Vermont Fish and Wildlife Department maintains a database and map of rare, threatened and endangered species in Vermont and the methodology used to assess the rarity of a species and the viability of specific populations. The Natural Heritage Program also maintains a list of all rare species in Vermont that can be used by landowners to help in identifying additional rare species populations in Calais. Currently there are two rare animal species in Calais (1 area of occurrence for a rare dragonfly and three breeding pairs of Common Loons) and 14 rare plant species in 19 locations.

GOAL: MAINTAIN, RESTORE OR INCREASE POPULATIONS OF RARE, THREATENED, AND ENDANGERED SPECIES AND PROVIDE FOR LONG-TERM STEWARDSHIP AND CONSERVATION OF HABITATS AND NATURAL COMMUNITIES THAT SUPPORT THEM IN CALAIS

Action Steps	Responsible Party	Time line
Inform landowners and land resource managers of rare, threatened or endangered species that have been identified on their property. Provide interested landowners or managers with resource information (such as location maps, species information) and assist in developing management plans.	Conservation Commission	2016 - 2021
Assist interested landowners to acquire services of the Vermont Fish and Wildlife Department or a qualified resource specialist or biologist who can conduct a more detailed inventory of the population status of the plant or animal, and to assist in management or conservation efforts to protect the species.	Conservation Commission	2016 - 2021
Support efforts, pursuant to the state of Vermont's Endangered Species Act or through other regulatory and non-regulatory mechanisms, to conserve or otherwise protect rare, threatened or endangered species, their habitats and travel corridors. Refer to Maps 1,2,3,& 4.	Conservation Commission, Selectboard, Planning Commission, DRB	2016-2021
Consider incorporating information about the location of rare, threatened and endangered species and related habitats as confirmed from inventory maps into overlay districts, open space and land acquisition/conservation plans. Areas of overlap should be identified and protected as high priority.	Conservation Commission, Planning Commission	2016-2021

E. Turtle Habitat
(See Supplemental Information for more information)

IV. Managed Natural Resources

A. Agricultural Lands

Primary agricultural soils and other farmlands are particularly vulnerable to encroachment and conversion because they are generally level, cleared and on good building soils. Primary agricultural soils are those best suited for producing food, feed, fiber, forage and oilseed crops. The U.S. Department of Agriculture's Natural Resource Conservation Service (NRCS) has rated and mapped soils in Vermont according to type and value for agricultural use. NRCS, Farmland Classification System for Vermont Soils (2006). Mapped soil units rated as "local," "statewide" and "prime" are considered primary agricultural soils in Vermont. A map of primary agricultural soils in Calais can be viewed on the Agency of Natural Resources' Environmental Atlas: http://maps.anr.state.vt.us/ANRA/.

Agricultural lands provide many benefits: economic, aesthetic, recreational and environmental. For example, these lands can provide habitat for game and non-game wildlife, area for floodwater storage, watershed protection, scenic vistas, open spaces for a variety of outdoor pursuits, and increased self –sufficiency as local sources of food and energy. Because agricultural soils and farming are an important part of Calais's history and culture, they are discussed further in the Agriculture section.

GOAL: SUPPORT FARMS AND MAINTAIN OPEN LANDS IN CALAIS

This goal and action steps are in addition to the actions listed in the Agriculture Section of the Town Plan.

Action Steps	Responsible Party	Time line
Discourage development on primary agricultural soils.	Planning Commission	2016-2021
Contact owners of open land to discuss various means of conserving the land.	Conservation Commission	Beyond 2021

B.Extraction and Quarrying

Historically several quarries operated in Adamant. These yielded granite, quartz, epodite, apatite, calcite, graphite, and zircon.

Although there were no active stone quarries in town for many years, a small wall stone quarry off the County Road obtained permits to begin operation in the spring of 2003. There are also a few sand and gravel extraction operations existing along Route 14 in the northern part of town.

A municipally owned source of sand and gravel would be in the long term interest of the town, but only if it can be located in an area where it will not have negative impacts on the rural character of the town, its residential areas, wetlands, surface water or groundwater.

It is important that care be taken in the siting and operation of residential development so that future extraction of resources is not foreclosed. But because of the numerous potential adverse impacts of sand and gravel extraction in rural residential areas, such operations should only be allowed where they will not impact the rural character of the area and the people who already live there.

GOAL: EXPLORE THE FEASIBILITY OF LOCAL GRAVEL EXTRACTION WHILE PROTECTING THE RURAL CHARACTER OF CALAIS

Action Steps	Responsible Party	Time line
An inventory of potential sand and gravel sites and identification of those sites that are sufficiently isolated from residences so that they could be used for commercial extraction shall be conducted.	Conservation Commission, Selectboard	2016 - 2021
Once potential sand and gravel extraction sites are identified, amend the zoning regulations to create an overlay district in appropriate locations where sand and gravel operations may be allowed as a conditional use to advise potential new owners of this proximal use.	Conservation Commission, Planning Commission	2016-2021

Explore additional methods to eliminate conflict between existing residents and potential new or expanded sand and gravel operations. Consider revising the Conditions of Approval in the Extraction and Quarrying section of the Zoning Regulations to better acknowledge the effects that often result from quarrying and sand and gravel operations in residential neighborhoods.	Conservation Commission, Selectboard	Beyond 2021

C. Public Lands

The Town of Calais owns three forest lots comprised of approximately 154 acres. The Conservation Commission completed forest management plans and inventory reports in 1985 on the Bliss Pond and Chapin lots, adopting in part recommendations set forth in the 1983 Town Plan. The Conservation Commission updated the forest management plans in 2003.

The Bliss Pond lot is the largest of these public lands, covering approximately 120 acres roughly located between County Road, Bliss Pond Road, West Church Road and Kent Hill Road. In 2001 a 1.5-acre parcel was acquired by the Town of Calais to provide public access to and protection of the natural values of approximately seven hundred feet of Bliss Pond shoreline. This lot is primarily northern hardwood and hemlock-hardwood forest. Parts of the lot are mapped as deer yards. This parcel contains a significant northern white cedar swamp with rare plants and an important vernal pool.

The Chapin lot covers roughly 29 acres and is situated in the approximate center of a tract of land bounded by George Road, Lightening Ridge Road, Route 14, and the Pekin Brook Road. It has a wetland area of between two and three acres that the management plan recommends be maintained as a wildlife habitat. The lot includes calcareous cliffs and a rich northern hardwood forest.

The Gospel Hollow lot covers approximately 19 acres and is situated along the east side of Pekin Brook Road from the intersection of Kent Hill Road to near Singleton Road. The old town garage was removed from this lot in 2002 before the Town Clerk's Office was built in 2004.

The land is steeply sloping forest that serves as a buffer for a small contiguous forest area above it.

GOAL: ALL TOWN LANDS WILL HAVE MANAGEMENT PLANS THAT WILL BE PERIODICALLY REVIEWED TO ENSURE THEIR IMPLEMENTATION

Action Steps	Responsible Party	Time line
Develop a management plan for the town land at Gospel Hollow.	Conservation Commission	2016 - 2021
Review the management plans annually.	Conservation Commission	2016 - 2021

COMMON PLANS OF ACTION

The following Action Steps apply to all the components of the natural resources in Calais:

- Consider implementing overlay districts for inventoried** and mapped natural resources.
- Consider techniques such as clustering to protect natural resources, farm land, and open spaces.
- Review current regulations to minimize adverse impact on: scenic areas, historic resources, ridgeline, wetlands, aquatic resources, open spaces, farm land, and other natural resources.
- Hold public meetings to educate landowners about the natural resources on their properties and how to protect them.
- Require land designated as "common land" in PUDs to have a conservation easement held by a third party entity or other mechanism that ensures management and uses of the land that are compatible with protection of the identified natural resources or other uses.

** an "inventoried" natural resource is one that has been identified, mapped, and accepted by the Calais Selectboard

V. Regulatory Implementation

Calais is committed to following a path that allows for smart growth development and that controls its impact on natural resources, agricultural potential, the scenic value and recreational uses of the land, and the infrastructure of the Town. Within this context, we recognize that the size of a development project often correlates with its impact. Calais has historically separated development into two categories, permitted uses and conditional uses, as this separation makes sense when considering small development projects. But when considering larger projects, higher standards of protection from the impacts of development must be implemented.

Action Steps: The Planning Commission shall pursue zoning regulations that restrict the allowable impact of larger development, including but not limited to:

- development of 8 or more parcels or development which impacts the minimum acreage for 8 parcels in any zoning district;
- development which generates more than 50 one-way trips per day on a town road;
- development which includes single or connected structures exceeding 15,000 square feet;
- development which includes structures of any type, including telecommunication towers and wind turbines, which are to be located on hills and ridgelines identified on the most recently approved Calais Ridgeling Map;

In addition to those larger development projects being subject to the following standards through zoning, any project that comes before Act 250 or the Public Service Board shall comply with the following standards:

a Techniques such as clustered housing to protect natural resources, farmland, and open land must be used if reasonably feasible.

b There shall be no harmful impact to inventoried* and officially mapped wetlands, primary agricultural soils, wildlife corridors and connecting habitat, vernal pools, deer wintering areas, significant wildlife habitat, mast stands, historic resources, and rare, threatened or endangered species.
* An "inventoried" natural resource is one that has been identified, mapped, and accepted by the Calais Selectboard.

c In order to protect the scenic quality of the rural landscape and the ecological values of the town's ridgelines and hills, development, including any type of tower structure, wind turbines, large scale solar arrays (total of 50 kilowatt), and associated building envelopes, or infrastructure, shall be sited below rather than on prominent ridgelines and hilltops as shown on the most recently approved Calais Ridgeline Map

d Vegetated buffers of mapped wetlands must be a minimum of 50 feet.

e New roads and driveways shall not be allowed to cross mapped wetlands when other access options are available. If roads must cross mapped wetlands, the developer shall submit a hydrological study and road design prepared by a licensed professionsl engineer that will maintain wetland hydrology and minimize effects on wildlife and their habitats.

f Lakes, ponds, and perennial streams (mapped, and accepted by the Calais Selectboard) shall be protected from encroachments, including but not limited to roads, driveways, and dwellings, by maintaining or establishing a minimum of 50-foot, undisturbed, naturally vegetated riparian buffers on their banks.

g New roads and driveways must be located such that a 50-foot vegetated riparian buffer is maintained between roads and surface waters.

h Stream crossings must be limited as much as possible and, where they cannot be avoided, must be properly sized and installed so as not to disrupt or prevent aquatic species' movements and to maintain the natural form and function of the stream channel.

i Channelization, dredging, filling, gravel mining, berming, or other activities which would alter the natural form and function of stream channels and lakeshores are prohibited. Waters intentionally impounded by structures in lawful existence at the time of adoption of this Town Plan are exempt.

j The buffers required by this Plan for mapped lakes and ponds, as well as mapped perennial streams as identified on the applicable U.S.G.S. 7.5 minute topographic quadrangle (as accepted by the Calais Selectboard) shall be described and designated as protected riparian habitat and shall be incorporated into any common land covenants, easements, or other legal documents.

HISTORIC RESOURCES

An important part of the character of Calais is its physical heritage as expressed by its cultural landscape and historic architecture. This heritage influences and contributes to the physical, social and personal landscapes in which we live. While the present must not be focused solely on preserving the past, efforts should be made to retain evidence of this heritage for ourselves and for future generations.

History of Preserving Our Historic Resources

On March 2, 1976, Calais adopted Zoning Regulations establishing the ***Kents Corner/Old West Church Historic District.*** This relatively small zoning district, overlaying the larger Rural Residential zoning district, was at the time, singular among historic districts nationally in its purpose to protect not just historic buildings, but also the open landscape in which these buildings were built from inappropriate development. The historic district boundaries were set and anchored by the Old West Church to the south, the Robinson Cemetery to the north, the Calais Town Hall to the east and the boundary of the Maple Corner Village District to the west. The Kent Tavern building (then owned by the Vermont Historical Society) occupies a place at the center of the district. (see attached map)

Old West Church

In 1979, a **Vermont Historic Sites and Structures Survey** for Calais officially listed 87 sites and structures in town as historically significant. Fifty-three of these sites and structures were found in the ***Kents Corner/ Old West Church Historic District***. Those sites and structures within a tight circle centered on the Kent Tavern building were chosen to be listed on the **U.S. National Register of Historic Places**.

In 2006, the **National Register of Historic Places** list was expanded to include all the sites and structures within the ***Kents Corner-Old West Church Historic District Design Control District***. The process of inventorying the district's historic buildings and applying to the U.S. Secretary of the Interior for consideration for National Register status was initiated and directed by the Calais Historic Preservation Commission (established in 2005).

In 2009, the Calais Historic Preservation Commission submitted an application for National Register status for the small village of North Calais. In 2010, the village of North Calais was accepted to the **U.S. National Register of Historic Places**.

Preserving Our Historic Resources

The present ***Land Use and Development Regulations for theTown of Calais*** (Zoning Regulation) requires all development within the Kents Corner/Old West Church Design Control District to receive special scrutiny. Development proposals within the District are reviewed by the Calais Design Advisory Board (DAB) which presents a formal opinion regarding the acceptability of a proposal to the Calais Development Review Board (DRB), which makes the final legal determination on the acceptability of a proposal. The standards used in determining the acceptability of a proposal are the U.S. Secretary of the Interior's Standards for the Treatment of Historic Properties. The Zoning Regulations refer specifically to these Standards. Also, the Historic Preservation Commission has assembled an illustrated Design Review Guide (2008) which discusses in clear language the requirements for development of property in the District.

The Zoning Regulations also contain language directed at the Reuse of Historic Barns. Within the Zoning Regulations, the applicability of certain "Special Requirements" is defined so as to direct any redevelopment proposal to a qualifying barn to the DRB. Special Requirements include reference to "historic facades".

The Future of Preserving Our Historic Resources

In addition to the Kents Corner-Old West Church Historic District, a **Vermont Historic Sites and Structures Survey**for Calais recommended historic districts at Maple Corner, North Calais, and East Calais. As cited above, the Calais Historic Preservation Commission successfully listed a selection of structures in the village of North Calais onto the Register of Historic Places. Their efforts to encourage the preservation, local awareness of, and pride in the historic character of Calais continue.

The Historic Preservation Commission (HPC) is also working on a historically sensitive rehabilitation of our venerable **Calais Town Hall**. RFPs for historic architectural services were sent out, and the proposals received back are currently being evaluated. How fast this project moves along will be a function of funding. The HPC did apply for and was awarded a grant to offset the cost of a standing seam metal roof which was installed to replace the Town Hall's ancient corrugated metal roof.

Perhaps the most pressing issue today is the deteriorating lower level floor framing. Rotting sills and joists, which bear on a concrete block frost wall foundation over an 18" dirt crawl space, are structurally failing. In 2014, two floor sections collapsed; one damaged section rendering the existing historic interior stairway unusable and the other damaged section (temporarily repaired) impacting accessibility to the mobility-impaired.

The degree to which the **Calais Town Hall** can be expected to provide the kind of community service it has in the past depends on the willingness of the Town to invest in it. Structural repairs, up-to-date accessibility modifications and energy efficiency upgrades stand in the way of its continued use.

Calais Town Hall

The **Robinson Sawmill** sits on the edge of a mill pond in Kents Corner. It was constructed along the stone dam on the south side of the mill pond in 1803, and operated commercially into the mid twentieth century. Restored and made operational again by tireless volunteers, it may be the only functional water-powered sawmill in the state. Many of the contributing structures in the Historic District were built from the lumber produced by this mill. Its future as a "living" historic artifact is cloudy. Sediment has filled the millpond to a degree that limits its capacity to operate. When conditions are such that the sawmill can operate, sediment discharges have been reputed to impact water quality downstream. The mill owners (**Aldrich Memorial Association**, Calais) are seeking permission from the state to dredge the mill pond, but the pond has been classified by the state as a wetland and, to date, their efforts are mired in bureaucratic processing.

Robinson Sawmill

The **Kent Tavern/Museum** is owned by the state of Vermont. The state's initial interest in ownership was to create a public museum of mid-19th century Vermont's agrarian historical culture. Though some steps have been taken in this direction, progress is very slow, as the "Kent" is not high on the state's list of funding priorities. A group of local volunteers, "The Friends of the Kent", have made it their mission to keep the Kent Tavern/Museum project alive by "keeping it on the radar" of appropriate state government officials. They have also sought and been granted special permission from the state to use the building "as-is" for the occasional display of central Vermont art. The rough unfinished interior has made a beautiful foil for art exhibits and installations in the past three or four years. The "Friends of the Kent"

are applauded for both their work to keep the museum project alive as well as finding an engaging interim use for this building.

Kent Tavern

While the historical architectural elements cited above are within the Kents Corner - Old West Church Historic District, many historical elements which define the cultural landscape of Calais lie elsewhere. The East Calais Church, the East Calais General Store and the repurposed East Calais School are historically significant, as are the Adamant Cooperative Store, the Adamant Church, the Adamant Community Center, Memorial Hall in North Calais, and all the ancient barns, too numerous to name. Not all historic elements are buildings; our cemeteries, our stone dams and stone culverts, our millponds, even our gravel roads are artifacts from an earlier time. These buildings and artifacts connect us to our history. The Calais Roads and Bridge Standards look toward protecting the unique aesthetic experiences offered by a tree-lined Vermont back road. The Cemetery Commission is overseeing the repair and cleaning of our cemetery stones and monuments. Involved citizens work to maintain the churches and community centers.

In what other ways can Calais encourage the preservation, local awareness of, and pride in its historic character? Should the town designate additional Design Control Districts or enlarge or modify the present one? How can we best inventory our remaining physical historic roots before they are lost permanently to earthmovers, demolition, or simply the ravages of time? How can we increase public awareness of our historic heritage and best encourage its voluntary preservation?

GOAL 1: Prevent undue impairment of important historic sites andtheir surroundings

Action Steps	Responsible Party	Time line
Conduct research on whether to expand/modify the Town's current historic district or designate additional districts as historic. Publish findings within 5 years for next Town Plan	Historic Preservation Commission, Selectboard	2016-2021
The design control requirements of the Town of Calais Land Use and Zoning Ordinancesfor the Historic District will be adhered to, and no development shall occur in the Design control District that is inconsistent with those requirements	Planning Commission, DRB, Zoning Administrator	2016

GOAL 2: Inventory and evaluate the remaining historic sites, determine which are important to preserve, and find ways to encourage their preservation

Action Steps		
	Responsible Party	Time line
Inventory and evaluate remaining historic sites in the Town, develop a plan to encourage voluntary preservation of those sites, and present to community for feedback. Publish findings within 4 years of this Town Plan's publish date so that it can be incorporated into the next Town Plan.	Historic Preservation Commission	2016-2021

GOAL 3: Establish a working relationship with local schools aspart of an ongoing program to foster the interest of youngpeople in the history of the cultural landscape

Action Steps	Responsible Party	Time line
Begin a working relationship with the local schools to assist in collecting historic data for those areas being surveyed for NRHP nominations. This becomes a teaching tool for students to learn the value of local history	Historic Preservation Commission	2016

GOAL 4: Ensure that the Kent Museum remains a historical andcultural resource for the residents of Calais

Action Steps	Responsible Party	Time line
Notify the State that Calais desires to have the right of first refusal should the State wish to divest itself of Kent Museum.	Historic Preservation Commission, Selectboard	2016-2021
Should the right of first refusal be granted, the Town must decide whether or not to purchase the ownership of Kent Museum and seek funding.	Selectboard	Dependent on State.

GOAL 5: Preserve existing historical barns and developmethods for barn reuse

Action Steps	Responsible Party	Time line
Investigate funding mechanisms or grants to restore and stabilize barns at least to keep them from complete decay. Prepare report for town and Selectboard	Historical Preservation Committee	2017

Inventory historic barns in the Town by district	Historical Preservation Committee	2017
Review standards for historic Barn reuse in zoning regulations within each district; review whether this should go to DRB	Planning Commission	2016

Managing Town Services

Municipal Facilities

Municipal facilities relate to those buildings owned by the Town such as the Town Office, Town Hall, and Town Garage.

FACILITIES

Calais Town Office

Current Conditions
The Town Office is physically located at the corner of Pekin Brook Road and Kent Hill Road in Gospel Hollow, with the mailing address of 3120 Pekin Brook Road, East Calais, VT 05650. The office is open Monday – Thursday, 8:00 – 4:00. This new building houses the Town Clerk's office and has office space used by the Town Listers, delinquent tax collector, and Zoning Administrator. All town records are stored in this office. In addition, there is a small area where Town committee meetings can be held. It is accessible for disabled citizens. See the Town Website for the most current information: http://www.calaisvermont.gov/or call 456-8720.

Goal 1: Look into expansion of the Town Office to allow for larger meeting room.

Action Steps	Responsible Party	Time line
Set up a committee to evaluate meeting requirements and space	Selectboard	2016
Committee to hire architect, get a cost estimate for expansion, and present to Selectboard and Town for vote.	Still to be formed committee, Selectboard	2017

Calais Town Hall

Current Conditions

The Town Hall is one of the most recognizable images in Calais. However, the building is showing the effects of years of deferred maintenance. The Town through the Historic Preservation Commission (HPC) and the Selectboard has taken steps to improve the condition of the building, but much more remains to be done.

The Town has generously supported the Selectboard's requests for a new roof(2012) and for a fund for repairs and maintenance of the Town Hall and Town Office(2013, 2014) and for matching funds for grants.

The Historic Preservation Commission has established eligibility under the Federal *Certified Local Government Program*to apply for grants to help restore the Town Hall. One of those grants was for the 2013 engineering study of the building. That study resulted in the report that is available on the website. Other grants have funded restoration of upstairs windows (2014) and hiring a consultant (2015) to help the HPC in the next stages of restoration.

GOAL 2: RENOVATE THE TOWN HALL IN A WAY TO MEETHISTORIC PRESERVATION AND SAFETY REQUIREMENTS.
OBTAIN FUNDING AS NEEDED.

Action Steps	Responsible Par	Time line
Create a report for town meeting 2016: • Result of public input on future use for the building. • Formulate action plans • Obtain cost estimates • Establish a timeline for completion	Selectboard, Historic Preservation Committee	March 2016
Write RFP, bidding process, select contractor, begin building renovation.	Selectboard, HPC, contractor, Calais residents	Summer 2017- 2018

Work on the Town Hall will adhere to the Secretary of Interior's Standards for the Treatment of Historic Properties, as well as all applicable Town of Calais and Vermont laws and regulations.	Selectboard, HPC, Contractors	2016-2018 Ongoing
Apply for grants. Establish fund-raising events and "soft" in-kind work to apply as matching grants if needed. Begin fund-raising within Calais and the surrounding area.	Selectboard, HPC, Calais residents	Spring 2016 2017

Town Garage

The Town Garage is located north of East Calais village, close to Route 14, near a once-productive gravel pit. While the existing town garage is adequate for the town's current needs, the location seems to be anissue because it is not centrally located within the town. In an interview in 2008 with the then Road Commissioner, Donald Singleton, Sr., it was suggested that the mileage on the town trucks and graders could be reduced if the Town Garage were located closer to the center of Town. No real study has been done, to our knowledge, to ascertain if this is so.

GOAL 3: EVALUATE PLACEMENT OF TOWN GARAGE

Action Steps	Responsible Party	Time line
The Road Commissioner and Road Operations Manager to conduct a study to determine if the Town Garage should be more centrally located	Road Operations Manager, Road Commissioner	2016

TOWN OPERATIONS

Elected Officials, Appointed Volunteers

Town Clerk

The Town has a full time Town Clerk who is elected. The Town Clerk, as needed, may hire an assistant (see 24 V.S.A. § 1170). The Town Clerk is considered the manager of the town, recording deeds, property transfers, and vital statistics. Calais Town Clerk is also the Treasurer of the Town, and together with the Listers, issues the tax bills.

Elected Officials
Other elected officials who provide further town services are: Selectboard, Listers, Auditors, Justices of the Peace, Trustees of Public Funds, and Cemetery Commissioners.

Appointed Volunteers
Most other groups serve Calais in a volunteer capacity and are appointed by the Selectboard: Development Review Board, Design Advisory Board, Planning Commission, Conservation Commission, Historic Preservation Committee, Roads Advisory Committee and Trails Committee.

Zoning Administrator
The Zoning Administrator is recommended by the Planning Commission and appointed by the Selectboard. The zoning administrator is a paid position and the function of this job is to help with permits and assure that the land use regulations are followed. Appointment is for a 3 year term.

Issues
The primary ongoing issue affecting town operations is getting people who are willing to serve in some capacity to continue to provide clear thinking and fresh ideas for the successful functioning of our Town. This is a common challenge in all communities. In an informal survey asking why people are not more involved the common replies were: trust people who run community, change happens slowly, no vested interest in most actions, and very busy lives.

GOAL 4: ENCOURAGE RESIDENTS TO SERVE ON VARIOUS COMMITTEES

GOAL 5: BEGIN INVESTIGATING POSSIBILITY FOR A SATELLITE BUILDING TO BE USED BY RESPECTIVE FIRE STATIONS TO STORE A PUMPER TRUCK.

Municipal Services and Resources

Municipal services are basic services such as fire protection, police protection, and road maintenance provided by the town in exchange for payment. The town must maintain good relationships with utility companies and in addition have policies in place to be sure that water

sources are protected and sewage and waste regulations are maintained so as to assure healthy conditions for all Town residents. Resources for maintaining the cemeteries and the swimming program on Curtis Pond, to name a few, are provided under the auspices of the Town.

UTILITIES

ELECTRICITY

Current conditions

The Town of Calais is serviced by three electric companies: Green Mountain Power, Washington Electric, and Hardwick Electric. All three companies allow net metering for solar customers. Several residents who have solar panels live off grid having back-up generation capabilities.

Issues

One important issue with regard to electricity is the placement of utility poles such that they meet setbacks and buffers areas as required for each district. One of the electric companies has historically placed poles in fields (potential agricultural land) or in areas that crossed woodlands. They currently seek to place poles along roads decreasing the natural vegetation buffers set aside by our road commission, and desire to cut down trees that would destroy the rural character of Calais. It shall be the intent that Calais will follow VSA 24 Section 2502 for protection of our shade trees so that we will assure the preservation of the rural character and charm of the roads of
Calais. We will work with all utility companies to achieve that goal.

Another issue that has come under discussion is the need for three phase energy by some types of business. In the event that such a business requires this type of energy, the Town will evaluate what it can do to support the business and meet its needs.

Issues of energy conservation, alternate energy resources, and placement of solar panels and micro wind turbines[31] are addressed in the Energy section of the Town Plan.

[31]Microwind turbineis an umbrella term for small scale wind turbines that are typically deployed on or near buildings and used to generate electricity that is transmitted direct to the property.http://www.ecowho.com/defn/m/micro+wind+turbine/24a86

Goal: To protect the scenic beauty and ridgelines of Calais

Action Steps	Responsible Party	Time line
Maintain ordinances and Rights of Way [ROW] such that utility poles are placed within the guidelines and outside the buffer zones as stated in the land use regulations.	Select Board, Planning Commission	Review every 18 months
Adopt a policy to preserve public shade trees using V.S.A. Title 24 section 2402 so that no trees will be cut by any company without consultation with the Tree Warden.	Select Board, Tree Warden	2016
Work with all electric companies to negotiate appropriate location of new utility poles so they fit within the guidelines, and evaluation for the co-use of poles with other communication companies will be required before placement of any new poles is allowed.	Select Board	As needed

Goal: To provide appropriate electrical service to meet future business requirement.

Action Steps.	Responsible Party	Time line
Should any new business in Calais require three-phase power, Act 250 requirements will be met, and the Town will facilitate communication with the Public Service Board and the electric companies to find a best location for such power.	Select Board, Planning Commission	As needed

WATER

Clean water is our most precious commodity. Without it we would not survive. So it is important that we manage our groundwater with great care --- keeping what we receive from the earth as pristine as possible -- using it wisely and not wastefully, and preventing pollution of that ground water wherever and whenever we can. Thus the topic of protecting our water supply is also addressed in the Natural Resources section and somewhat in Flood Resilience.

Current Conditions Calais is fortunate to be in a place where water is abundant. We have a myriad of lakes, ponds, and brooks all fed from springs. Because of this there are only 2 official "public water systems" in the Town. All other residents in the town have their own wells or are supplied from their own springs.

The Water Systems

Calais Elementary School has a water system that is classed as NonTransient, Non-Community Water System [NTNC]. The definition of a NTNC water system as defined by the Vermont Agency of Natural Resources [ANR] is a public water system that regularly serves at least 25 or more of the same persons daily for more than six months per year, http://www.anr.state.vt.us/dec/dwgwp/ntnc.htm The school must have a certified operator and must monitor water quality as scheduled by ANR with test results coming from certified labs.

The other public water system is the system operated by the East Calais Fire District #1[32] which is considered a Public Water System. The definition of a Public Community Water System is a public water system which serves at least fifteen (15) service connections used by year-round residents or regularly serves at least 25 year-round resident, http://www.anr.state.vt.us/dec/dwgwp/pcws.htm. The water system must have a certified operator and must monitor water quality as defined by the ANR and State Health Department. Today the ECFD #1 system has 52 connections. Users of the system must live in the village, be on the Grand List, and are required to use the water from the system.

Brief History

village. They recently refinanced that bond. Revenues are a flat fee charged quarterly. Meters are at each connection mostly to monitor water pressure and to check for leakage.

[32] Fire Districts are special purpose municipal districts sanctioned by the State. They carry all the powers of a municipality, including the ability to tax the residents and properties located within the district boundaries. Town governments do not regulate and are not legally responsible for the actions of Fire Districts.

Water Source

The unique feature of this water system is that the water is gravity fed and no electricity or pumping stations are required. The water source is from two springs: the most northeast spring [Bowen spring] has a pipe that feeds water into the #1 spring and reservoir. All water is stored in a two cell, poured in-place concrete tank reservoir. ECFD #1 has access and right of way to the reservoir. The Bowen spring produces about 25 gallons of water/minute; the #1 spring produces about 7-10 gallons of water/minute. Roughly the springs on average release 30,000 gallons of water per day into the reservoir. Water quality is monitored based on the requirements of the state. Samples of water are sent to certified laboratories for drinking water analysis. The top five tests are:

1. Coliform bacteria – monthly
2. Nitrate - yearly
3. Lead and copper - every three years
4. VOC - Volatile organic chemicals - every three years
5. IOC - Inorganic chemicals - every 9 years

A stand-by chlorinator can chlorinate the water as it enters the reservoir when needed. Routinely the system is flushed two times a year which is when the chlorinator is turned on.

Issues

There are three driving issues around the water supply and system for the Town of Calais. They are:

- Protecting the ground water from any contamination, especially chemical, and assuring clean, potable water for all residents of Calais.
- Handling future growth in East Calais, other village districts, and the rural residential district
- Conservation of water

Protecting the ground water is of the utmost importance so that all potable water, whether in individual wells, small systems, or public systems, is safe. This means protection from all chemical pollutants, hazardous waste, sewage, and agricultural runoff. To protect the sources of water, we first must KNOW where the sources, also known as recharge areas, are located. We do have a mapped source protection area for the East Calais Fire District #1 water system. We do not have any mapped source protection areas for other ground water sources that supply many of the wells for private households. That lack of knowledge is a detriment that needs resolution.

How can Calais and its villages meet the water demands for any future growth? The ECFD#1 water system cannot support any new connections without increasing the reservoir capacity. This means limiting new growth within existing village limits. The limitation is in the ability of the system to keep water pressure up to state required levels for a public water system. New water sources have to be found and another reservoir made if new housing is to be developed within East Calais Village District.

We must evaluate how to meet the water supply demand as a result of new development in other village districts or in the rural residential district.
Just because there is an abundant supply of water in the Calais area does not mean we should waste the water and use it needlessly. There are methods of collecting other sources of water to use for watering gardens, irrigating fields, washing cars, etc. Education of these methods is needed so that they become part of the residents' everyday life.

Goal: To protect ground water sources [recharge areas] so thatdrinking water is safe for all residents.

Action Steps	Responsible Party	Time line
Obtain grants to have ground water source maps developed for use by Town Officials.	Conservation Commission	2016
Use source protection area maps to develop an overlay for future zoning/land use regulations.	Conservation, Planning Commissions	2017
Shall develop, as needed, zoning guidelines for: the protection of water sources using buffer zones, removal of hazardous tanks, building containment buffers around hazardous tanks so that ground water is protected.	Select Board, Planning Commission, DRB, Conservation Commission	Annual review
Use GIS maps by parcel to identify all buffer zones and setback areas so they can be easily seen and adhered to in all permits for new buildings, subdivisions. Buffer zones and setbacks will be reviewed based on new State requirements.	Planning Commission, DRB, Zoning Administrator	2016, Periodic review

Goal: To assure quality water in areas where new development will occur.

Objective: To use source protection area maps to plan from where water will be supplied in new developments for cost effectiveness and efficacy.

Action Steps	Responsible Party	Time line
Adhere to all buffer zones as laid out in GMIS maps when reviewing multi-housing development.	DRB, Zoning Administrator	Ongoing
If major subdivision plans or PUD plans request a public water system or a shared water system, ensure that all state regulations are complied with to assure quality water.	Selectboard, Planning Commission, DRB	As needed
Work with Federal and State resources to fund any public water system to mitigate property owners' costs.	Selectboard, Developer	As needed
Expand the village limits of East Calais to allow for development, and evaluate the costs of enlarging the reservoir or creating a new reservoir: or simply allow new wells that meet State ANR and Environmental Conservation regulations.	Planning Commission, Selectboard, DRB, Developer, ZA	As needed

Goal: Encourage conservation of water methods such as alternate water storage.

Action Steps	Responsible Party	Time line
Provide information sessions and workshops for instruction on collection of rain water and its uses and encourage other methods of water conservation.	Selectboard and various State Offices, Conservation Commission	Begin in 2016
Allow rain collection units without requiring permits.	Planning Commission	2016

Evaluate the possibility of the Town to make bulk purchase of rain collectors for each village, so collected water may be available for area residents as needed.	Selectboard, Conservation	2017

Goal: The extraction of water, from the ground or a body of water for direct commercial resale as bottled water, flavored or nonflavored, is prohibited. Extraction of <20,000 gal/day is allowed for small current or future businesses that reside in Calais. This prohibition takes effect upon adoption of this Town Plan.

Action Steps	Responsible Party	Time line
Develop an ordinance that prohibits the extraction of water from the ground or a body of water, for direct commercial resale as bottled water or flavored bottled water, with the exception of the extraction of no more than 20,000 gal/day if it is required for any current or future businesses that reside in Calais (such as a micro brewery) . Businesses which extract water of no more than 20,000 gal/day must follow the permitting process of the Town of Calais except if for agricultural businesses.	Planning Commission Selectboard	2016

Goal: Groundwater resources must be conserved while allowing for local business needs.

Action Steps	Responsible Party	Time line
Establish zoning regulations to assure there are appropriate measures regarding road usage, truck weights, etc. for limited extraction of water for local commercial purposes.	Planning Commission, DRB	2016

SERVICES

SEWAGE AND STORM WATER OVERFLOW

Proper treatment of septic waste, agricultural waste, and storm water overflow is essential for a safe, healthy environment. Storm water overflow is also covered in greater detail in the sections on Flood

Resilience and Natural Resources. Currently any new system being built must comply with State regulations and a permit for the same must be approved by the Department of Environmental Conservation.

Current Conditions

Because of the rural nature of the Town of Calais, all septic systems are on-site. No community-wide septic system is desired at this time, with 69% of the residents being satisfied with each household having itsown septic system.

Issues

In coordination with state regulations and funding, we need to continue to reduce storm water overflow and runoffinto our ponds, lakes, and streams. This goal is addressed in the Flood Resilience and Natural Resource sections. In regard to all septic systems, we need to continue to ensure that our zoning regulations support state oversight and regulations.

Goal: To make sure that all new buildings and replacement septic systems put in by Calais residents will comply with state regulations.

Action Steps	Responsible Party	Time line
Maintain, develop, and change zoning regulations when needed to be sure all permits for new buildings and subdivisions are contingent on meeting state regulations and have had permits for them issued by the State.	Planning Commission, DRB, ZA	Annual review
Evaluate whether a permit application should be required for replacement of septic systems.	Planning Commission	2016
Review Septic regulations in conjunction with Zoning regulations.	Planning Commission	Every 2 years.
Work with Conservation Commission to obtain source water maps so that buffer zones for source water can be created and develop storm water runoff plans.	Conservation Commission,	2016 -2021

Goal: To provide education about a Green Infrastructure Plan for surface water and storm water management[33]**.** The Vermont Watershed Management Division of the Agency for Natural Resources defines green infrastructure [GI] as "a wide range of multi-functional, natural and semi-natural landscape elements located within, around, and between developed areas of all spatial scales."

Action Steps	Responsible Party	Time line
Create information and educational sessions for the residents of the Town in conjunction with State ANR.	Conservation Commission, Selectboard	2016
Provide incentives for residential and commercial property owners to install green infrastructure, spurring private owners to take action.	Select Board, Conservation Commission	2019
Working with outside organizations, provide demonstration projects and workshops with "how-to" materials and guides.	Conservation Commission, Selectboard	2018
Develop a full Green Infrastructure Plan.	Selectboard, Conservation, Road Commissioner	Begin 2017

For further reference see also this web site: http://www.watershedmanagement.vt.gov/stormwater/htm/sw_gi_planningandpolicy.htm

SOLID WASTE MANAGEMENT

As a state, Vermont has been unable to divert more than 36% of waste from the landfills. And the State only has two landfills, one of which may close soon. The question of how to handle waste is of concern. Does the state create more landfills, using up valuable land and potentially creating toxicity inthe surrounding land and water? Or do we, as a state, try to divert more trash from the landfills through greater efforts and recycling and composting? Act 148 passed in 2012 is the response to this issue. This act makes recycling mandatory by July 1, 2014, bans yard and leaf

[33] http://www.vtwaterquality.org/stormwater/htm/sw_green_infrastructure.htm

waste from landfills by July 1, 2015, and all food scraps [compost] will be banned from landfills by 2020.

Current conditions

Calais is a member of the Central Vermont Solid Waste Management District [CVSWMD]. CVSWMD mission is to provide services, education and leadership for residents and businesses to reduce and manage solid waste to protect public health and the environment.

CVSWMD was one of the first organizations to adopt Zero Waste Implementation Plan. Zero waste complements the Vermont tradition of thrift and conservation. We can manage the life cycle of goods by promoting reuse or encouraging recycling.

While it appears from our survey that almost 99% of the respondents recycle some amount of trash, what is still unknown is how much still goes to the land fill. In our survey of how trash was managed

- 71 % of respondents take trash to a management facility
- 29% of respondents have a trash management company pick up the trash.

Forty-six per cent [46%] took trash to the local recycle center on Moscow Woods Road available each Saturday. In addition a high percentage of Calais residents compost their own food scraps for use in their garden or for chickens.

Issues

The primary issue is to educate Calais Town residents in sorting properly those items for recycling, and for those who do not currently compost, learning how to compost and then what to do with compost if they do not use it themselves.

Second issue is to minimize the cost of managing solid waste. Not everyone can afford trash pick-up.

Goal: To provide information seminars regarding recycling and composting.

Action Steps	Responsible Party	Time line
Work with CVSWMD to provide a small 1 hour tutorial for proper sorting of recyclables – may be in conjunction with a potluck to get larger attendance; provide on-going information on FPF.	Selectboard, Planning Commission, CVSWMD	One session each year
Solicit citizens who compost to provide education seminars on the various methods of composting. Work with CVSWMD.	Selectboard, Planning Commission	One session each year.

Goal: To promote cost effective, efficient methods to manage recycled trash and compost.

Action Steps	Responsible Party	Time line
Conduct a study to evaluate if the town can have areas where recycling bins are available for central collection.	Selectboard, Planning	2016 – as needed
See if there is a grant to help with this.	Commission	
Change or adapt zoning to allow for areas of recycling.	Planning Commission	Ongoing
Study possibility of having centralized composting areas for people who do not compost for themselves. This would provide a central compost to supply soil for those needing it for gardens.	Planning Commission, Agriculture Task Force	2017
Apply for a grant for centralized composting. Check with CVSWMD for a grant to do this.	Selectboard, Planning Commission, Agriculture Task Force, CVSWMD	2018

ROAD MAINTENANCE SERVICE

The maintenance of the 83 miles of gravel roads is vitally important for the safety and livelihood of Calais citizens. Road maintenance accounts for a little over 59% of the Town's budgeted expenses. The town has a full-time Road Commissioner, appointed by and reporting to the Selectboard, and a full-time Road Crew hired by the Road Commissioner. We also have a Highway Operations Manager (who is currently a Selectboard member).

The document "Calais Town Road and Bridge Standards", which govern the design, construction, reconstruction, maintenance and repair of all town roads and bridges was adopted by the Selectboard in February 2014 and was amended on 14 April 2014. It appears in the Supplemental Information section at the end of the Town Plan. The standards can be modified as appropriate for a particular project, in communication with VTrans, if any federal or state funding is involved. Underlying the Standards are Guiding Principles which mandate that road and bridge work enhance the rural character of Calais, mitigate flood hazard and protect water quality. Safety of road users is paramount, and non-motorized uses of our roads are taken into account and encouraged. The scope of road and bridge work shall be limited to the particular problem at hand.

The importance of roadside trees both for their beauty and for their role in attenuating stormwater runoff is emphasized. Large, healthy trees shall not be removed without consultation with the Tree Warden and affected landowners must be notified of tree removal.

The use of roadside ditching shall be handled conservatively. Erosion control and prevention will be practiced. Paving and grading practices are prescribed for gravel roads, and standards for many other road and bridge-related matters are articulated.

Goal: To assure that Road Maintenance complies with "Calais Town Road and Bridge Standards"

Action Steps	Responsible Party	Time line
Annual review of Standards	Road Commissioner, Calais Roads Advisory Committee	Quarterly and every year.

Update Calais Town Road and Bridge Standards in keeping with State Standards and remain in contact with AOT of VT	Calais Roads Advisory Committee, Road Commissioner, Selectboard	Review annually

CALAIS CEMETERIES SERVICES

The Calais Cemetery Commission is made up of elected members who serve for five [5] year terms.

The Calais Cemetery Commissioners aspire to:

1. Recognize Calais cemeteries as beautiful, sacred and historical burial grounds for past and present generations, while continuing a legacy for future generations
2. Strive to sustain the integrity of the cemetery settings as honorable and appropriate locations for bereavement and solace as well as for inspiration and reflection.

The practical services and logistics for the internment and memorial of the deceased are managed by the town sexton, who is also appointed.

Cemeteries:

There are seven principal cemeteries in Calais:

- Ainsworth (Jack Hill Road)
- Robinson (TH 25 near Kent's Corner)
- Janes (East Hill)
- Fairview (East Calais)
- Old West Church (south of Kent's Corner)
- Shortt (George Road)
- Hudson (George and Lightening Ridge Roads)

There are at least four other, more or less obscure cemeteries that have not been maintained by the Town, that are located on private property:

- Bliss
- Poplar Hill (Rte 14)
- Bruce (near Calais/Worcester line)
- Martin (near LaValley farm off Dugar Brook)

Current conditions

Conditions of the Town's cemeteries differ widely.

- Robinson is in better condition than most other town cemeteries. The stones were professionally cleaned in September 2014.
- Fairview is in good condition but needs extensive pruning of its cedar hedges.
- Bliss Cemetery is within Fairview Cemetery. Bliss Cemetery is private and funds to maintain it are held in trust.
- Old West Church has a considerable fence, which was repaired and painted by volunteer labor in August and September of 2014.
- Janes is in good condition due in part to the efforts of local families.
- Ainsworth and Shortt are in very poor condition with rotting fences, broken headstones and trees and pervasive bushes overgrowing grave sites.

There is adequate burial space among the existing cemeteries to provide burial plots for several years.

Issues

The central issue affecting Cemetery Commission is funding for major work at the cemeteries to:

- Repair and/or replace fences
- Repair and reset broken and fallen gravestones
- Clean gravestones
- Clean the landscape from invasive plantings, over grown hedges and brush

Financing

Historically, the Cemetery Commission has received its operational monies as appropriated by the Town in the annual budget. This pays for routine upkeep and minor repairs. Monies are received from payment for burial plots and donations. All monies are kept in the Cemetery Endowment Fund, also known as the Cemetery Trust Fund. Income from the Cemetery Trust Fund is to be used strictly for the upkeep of the monuments and cemetery lands. The major work listed above under 'issues' will require the establishment of a Capital Budget to plan for large expenditures.

The Calais Cemetery Commission has three major goals: maintenance and preservation of existing sites, encouraging community involvement, and establishing a capital budget to plan for and execute major repairs needed at all cemeteries.

Goal: Maintenance and Preservation.

Action Steps	Responsible Party	Time line
Continue the respectful upkeep, preservation, rehabilitation and improvement of the Calais Cemeteries with regular maintenance, landscaping, and stone care.	Cemetery Commission	Ongoing
Develop strategic planning to inventory, anticipate, and execute routine upkeep, repairs, and future improvements to maintain Calais Cemeteries in perpetuity.	Cemetery Commission	2016 - 2021

Goal: Community Involvement

Action Steps	Responsible Party	Time line
Encourage community involvement through volunteer work for the historic, cultural and scenic importance of Calais cemeteries by promoting educational events.	Cemetery Commission	2016-2021

Goal: Establish a Cemeteries capital budget to plan for futuremajor repair expenses and for acquiring additional cemeterycapacity if donated land does not materialize.

Action Steps	Responsible Party	Time line
Seek donations of land in Calais for additional cemetery capacity	Cemetery Commission	Ongoing
The Town must establish a capital budget to plan for future major expenses of our cemeteries.	Selectboard, Calais voters at Town Meeting	Early spring 2016, Annually

SAFETY AND PROTECTION SERVICES

POLICE

Calais has a three-tiered approach to police protection:

1. Two town constables
2. The Washington County Sheriff Department with whom the Town contracts to provide a part- time deputy for traffic enforcement and patrol of designated areas. The Sheriff Department has an agreement with the State Police in Middlesex that the Sheriff Department will be the first responder to serious complaints received by the State Police, if the Sheriff's Department is patrolling in the area or is nearbyand the State Police request ~~to~~ them [Sheriff Department] to respond. The Department also provides a snowmobile patrol.
3. State Police are available for full-time law enforcement.

FIRE AND EMERGENCY SERVICES

The Town of Calais contracts with the East Montpelier Fire Department and the Woodbury Fire Department for fire-related emergencies. In addition, the East Montpelier Fire Department is contracted for Emergency Medical Services [EMS] and related ambulance services as needed.

As mentioned in the Municipal Facilities section of this plan, the town will investigate the possibility of locating a satellite building for the purpose of housing a pumper truck.

OTHER SERVICES

The Town has an Animal Control officer to assist residents incapturing and impounding dangerous or stray animals, and to investigate cases of reported animal cruelty and to enforce dog license laws.

The Town's Game Warden's responsibility is to enforce the Vermont hunting, fishing, and trapping laws as well as help solve problems with nuisance wildlife.

RESOURCES

COMMUNICATION

Information Services

The Town Website, http://www.calaisvermont.gov, is managed by a volunteer designee of the Selectboard. Currently this site lists the

members of the committees serving the Town along with meeting schedules, agendas, and minutes. Important documents such as the Town Plan, Land Use Regulations [Zoning], and DRB decisions can be found on the site. Instructions for filing permits and contacting the Zoning Administrator are also there.

Issues

With the recent changes to the State's "open meeting law" the maintenance of a town's web site becomes critical. Agendas must be posted publicly 24 hours in advance of the meetings; unofficial minutes of all official committees must be posted on the Town Web site within 5 days after the meeting. Once the minutes have been approved, all official minutes must be posted on the Town site. Calais has chosen to keep its site operational and comply with these requirements, though it may take more time to maintain the site.

Currently there is no way to have "on line" permits. The Planning Commission is moving from paper to comprehensive on-line permits through the town site. The intent is to make it easier for property owners to understand the permit process, seek guidance early on as needed, and to obtain required permits. And there is no way to obtain a petition or application on line if one wants to run for office or serve in any capacity.

Additionally there are great opportunities to post local businesses, ride and share schedules, and other communication that could be publicized. So some research is needed to see if the current site has limitations and if another site would be warranted for Calais's public businesses.

Goal: Improve and Enhance Calais website to make it of greater service.

Action Steps	Responsible Party	Time line
Establish a task force of 3 people to research the .gov site and find its capabilities and capacity – can this site be enlarged?	Current Website master, Selectboard	2016

Create ability on Town's Website to advertise local businesses without endorsing them, or develop a second Website expressing for the purpose of advertising Calais business, agriculture businesses, etc.	Website master, all citizens	2016
Evaluate if town should hire a professional website master to keep site active to meet Open Meeting Laws and provide expanded service. Check for costs of such a professional.	Website master, SB	2016
Develop online zoning permits with linkage to residential district maps with appropriate overlays	Planning Commission, Website master	2016

INTERNET

Current Conditions

Calais is served primarily by Comcast, FairPoint, Sovernet and a few other companies. Results from our survey informed us that the types of connectivity used by Calais residents are:
DSL 62%
Cable 17%
Wireless 12%
Satellite Dish 5%
Modem 3%
A little over one percent (1.6%) of the survey respondents did not have internet connection. For the most part, residents are satisfied, [with some exceptions], with their broadband connectivity and do not look to the Town to assist in getting faster services.

Cloud Alliance provides internet capability using a fixed-wireless broadband. It is a local Vermont service http://www.cloudalliance.com/. This adds competition to the existing companies, and residents can research this service for themselves.

The Town leaders can support and promote legislative initiative to provide speedier services for the town as long as those initiatives follow the objectives of this plan and the current Calais Zoning Regulations.

Intra-Town Communication

Internet connectivity makes Front Porch Forum possible. Front Porch Forum is a free forum designed for communication among the residents of a community. Calais joined in October of 2010 and currently has 1,047 Calais residents as "members" of FPF. This represents 680 households in Calais. So far we have generated over 10,090 postings and growing! This covers all the villages in our Town: Adamant, Maple Corner, East Calais, and North Calais. In addition, there are links to postings from our surrounding towns of Worcester, Woodbury, East Montpelier, and Plainfield. This has become an excellent method of communication, sharing goods for sale, events, educational classes, meeting agendas, and minutes of meetings.

CELLULAR COVERAGE

Current Conditions

The ability to have cell phone coverage is critical in times of emergencies. Calais has limited cell coverage; when electricity goes down, or if telephone systems go down there is basically no means of communication. In a recent informal survey that had responses from 8%of the Calais population, 80% of those having cell phones were dissatisfied with the quality of cell coverage. Greater than 50% of the respondents with cell phones would like improved coverage. Around 60% of the respondents would support placement of cell towers near their property, provided it did not impinge on any natural beauty or ridgelines.

In April of 2014, we learned that the Vermont Telecommunications Authority [VTA] has selected Coverage Co. to expand the cellular network. They utilize small-cell technology on existing utility poles to improve coverage on previously underserved roadways as well as adjoining areas. Areas in Calais that will be improved through this endeavor are along the Route 14 corridor and the Route 2 corridor in Marshfield. This work is expected to be completed sometime in 2015.

Coverage Co. is not a retail cellular carrier, but leases wireless spectrum owned by Sprint and gets standard roaming agreements with other cellular companies to provide broader coverage. Current roaming agreements are held with T-Mobile and Verizon Wireless.

It is our understanding that the Public Service Board does not consider the local zoning ordinances for placement of cell towers, but they will

give substantial deference to the land conservation measures stated in a town plan. Given that Calais has:

- A strong Natural Resource section in this Town Plan outlining the importance of conserving our natural beauty from undue adverse impact,
- a historic district that must meet guidelines of Federal and State historic Preservation,
- a comprehensive road and bridge standards to maintain the rural scenic quality of our country roads

The Town of Calais shall limit placement of cell towers to Town owned property, in designated village districts, or in rural residential districts, such that the height of the towers are not greater than 140 feet and shall not be exposed on a ridge line or hill top nor shall the top of the tower extend more than 20 feet above the average height of tree canopies within 100 feet of the top of the proposed tower.

Goal: Improve cell coverage

Action Steps	**Responsible Party**	**Time line**
Find cell hot spot areas along our roads, mark the spots and allow a small pull off for citizens to park and use their cell phones; share information with the public	Planning Commission, All residents, Road Commissioner	2016 on
Maintain contact with legislative representatives so that Calais remains in the forefront to get coverage when the state issues new contracts	Select Board, All residents	2016 - 2021
Any new cell towers must follow existing zoning regulations, and towers shall first be collocated with other existing towers if possible	DRB	2016 - 2021
Shall investigate the feasibility for small cell technology using existing utility poles and wireless spectrum, and if found to be feasible shall stipulate small cell technology or similar technology be used throughout all districts .	Planning Commission	2016

ENERGY

Energy Efficiency, Renewable Sources, Transportation

"To adopt patterns of production, consumption, and reproduction that safeguard Earth's regenerative capacities, human rights, and community well-being, . . . we will act with restraint and efficiency when using energy, and rely increasingly on renewable energy sources such as solar and wind." Earth Charter

Overview

As we write this section of the Town Plan evidence abounds that we as a nation are experiencing the consequences of climate change, as reflected in heating costs and fuel cost fluctuation affecting household budgets. Vermonters care about this change and desire to do what we can to restore a harmony and balance with nature. The Vermont state government in 2007 committed to reduce greenhouse emissions by 50% of the 1990 levels by the year 2028; and by 2050 the reduction is to be at a 75% level. To attain this goal it was determined that between 30 – 50% of the emission reduction would have to come from efficiency measures. It was concluded that to increase energy efficiency we would need to improve the energy fitness of our homes. The Vermont Legislature established statewide goals that 20% of the state's housing stock would be energy efficient by 2017; by 2020, 25% of the state's houses would meet energy efficiency standards.[43]

Vermont also has a goal that 90% of our energy needs will come from renewable energy sources by the year 2050. Montpelier is working to become the first state capital to attain "net-zero" by 2030, meaning that all energy consumed will be from renewable sources.[44]

The Town of Calais and its residents are affected by climate change in diverse ways. Rain deluges, snow storms, and winds affect our roads and waterways. Intense cold snaps increase heating costs in the winter. Floods and damage from storm runoff affect our Town budget. The Flood Resilience section of this plan highlights some of the costly damages the Town would incur in the events of flooding. While the costs of mitigation and the costs of changing to alternative resource use may be high, the costs of repairing damages are higher.

43 Energy Planning & Implementation Guidebook for Vermont Communities, April 2011, VNRC and VLCT; page 4
44http://publicservice.vermont.gov/sites/psd/files/Pubs_Plans_Reports/State_Plans/Comp_Energy_Plan/2011/Vol%20I%20Public%20Review%20Draft%202011%20CEP%201pg%20view.pdf

VISION

The Town of Calais, population of 1,607, has a vision of living more sustainably. Sustainability is based on the simple principle that everything we need for our survival and well-being depends, either directly or indirectly, on our natural environment. One resource of our natural environment is fossil fuels used for heating and transportation. This Energy section will discuss how to reduce our dependence on fossil fuels. The Agriculture section discusses the food aspect of sustainability. We as a town will commit to reducing our dependence on fossil fuels in four basic ways:

1. Become more energy efficient in our homes and public buildings, saving long term energy costs
2. Increase our use of renewable sources of energy
3. Reduce as much as possible the amount of gasoline used by changing our modes of transportation
4. Make greater efforts individually and collectively to reduce the amount of electricity we use, with greater emphasis on conservation and efficiency techniques.

CURRENT CONDITIONS

Energy Efficiency

There is a limited amount of data relating to how many residents in Calais have had energy efficiency audits.
Our recent informal survey indicates that over 60% of the respondents [which was about 8%of the population of Calais] who took the survey want to learn more about energy efficiency. The education gap needs to be closed in order to improve household energy efficiency.

We used the 2010 census data from the US Census Bureau to get an idea of the ages of the houses in Calais and what type of heat is used in the houses. The following data can be found on this website through American Factfinder:
http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_12_5YR_DP04.

In brief: there are 842 housing units in Calais, 676 which are occupied year round. Of those, 305 houses are over 75 years old. This supports the need for energy audits.[34]

HOUSING OCCUPANCY	
Total housing units	842
Occupied housing units	676
Vacant housing units	166
Homeowner vacancy rate	1.8
Rental vacancy rate	19.6
YEAR STRUCTURE BUILT	
Total housing units	842
Built 2010 or later	0
Built 2000 to 2009	79
Built 1990 to 1999	87
Built 1980 to 1989	100
Built 1970 to 1979	115
Built 1960 to 1969	75
Built 1950 to 1959	44
Built 1940 to 1949	37
Built 1939 or earlier	305

Alternative resource use

Heating and Cooling Houses

How homes are heated is displayed in the following table. Note how many use wood for heat, although it is unknown how many use combination heating such as propane and wood, etc. Apparently they did not allow for multiple combinations as a response. Even though these data are from the 2010 census, the solar line is inaccurate because the Renewable Energy Atlas of Vermont has at least 9 solar systems in Calais, [see the section on existing alternative systems in Calais]. We know there are more houses than 9 that use solar.

Fortunately there are more reliable sources of data being developed. Information is from US Census Bureau, American FactFinder, http://factfinder2.census.gov/faces/nav/jsf/pages/community_facts.xh tml.

HOUSE HEATING FUEL	
Occupied housing units	676
Utility gas	8
Bottled, tank, or LP gas	78
Electricity	0
Fuel oil, kerosene, etc.	205

[34]US Census Bureau: American Factfinder: http://factfinder2.census.gov/faces/nav/jsf/pages/community_facts.xhtml

Coal or coke	6
Wood	364
Solar energy	0
Other fuel	15
No fuel used	0

There is a great potential for change in how we heat our houses.

Electric Use

The next set of data shows the amount of electricity used in Calais for the years 2005-2010. Data are from the Renewable Energy Atlas of Vermont http://www.vtenergyatlas.com/.

Electrical usage for Calais from 2005-2010

Town: Calais **County:** Washington

» **Population:** 1538 • **% of Total Pop:** 0.25% • **Pop. Rank:** 108 • **Pop. Density:** 39.8 • **Pop. Density Rank:** 114

» **Area:** 38.6 Square Miles • 99.9 Square Kilometers • 24704 Acres • **% of Total Area:** 0.4% • **Area Rank:** 152

» **Number of Buildings:** 851 • **% of Total:** 0.29% • **Rank:** 113 • **Number of Households:** 782

» **Electricity Consumption : 2005-2010 (MWh)**

Type	2005	2006	2007	2008	2009	2010
Commercial & Industrial Consumption	376	386	356	375	373	542
Residential Consumption	3,910	3,776	3,814	3,709	3,611	4,445
TOTAL	4,287	4,162	4,170	4,085	3,985	4,987

The above information shows increased use of electricity between 2009 and 2010, after remaining fairly constant for several years.

Existing renewable systems in Calais

The Renewable Energy Atlas of Vermont reports there are 6 residences with solar roof systems, 2 thermal solar hot water systems, and 3 ground solar systems in Calais. In our recent survey, eighteen respondents out of 64 said they already use alternative energy sources for heating and cooling. So clearly the data on hand is incomplete. Those residents who have solar systems have done so as an investment into the future, saving money in the long term by seeing a reduction in their electric bills. Calais Elementary

School is heated primarily with woodchip fuel and pellet heating and water systems are more prevalent.

A better inventory of who in Calais uses renewable resources for heat and electricity is needed in order to measure any future improvement in reducing our reliance on fossil fuels.

Transportation

Calais is largely a bedroom community that commutes to work. The following tables show Calais workers have one person per car and have many cars available for transportation.

The table below lists commuting characteristics for Calais for 2008-2012 as taken from US Census Bureau and compiled by American FactFinder.

Subject	Calais town, Washington County, Vermont					
	Total		Male		Female	
	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error
Workers 16 years and over	806	+/-114	412	+/-68	394	+/-62
MEANS OF TRANSPORTATION TO WORK						
Car, truck, or van	84.7%	+/-5.0	84.0%	+/-6.4	85.5%	+/-5.7
Drove alone	79.2%	+/-5.5	76.7%	+/-7.5	81.7%	+/-6.4
Carpooled	5.6%	+/-3.0	7.3%	+/-5.1	3.8%	+/-2.9
In 2-person carpool	5.2%	+/-2.9	6.6%	+/-4.9	3.8%	+/-2.9
In 3-person carpool	0.4%	+/-0.7	0.7%	+/-1.3	0.0%	+/-4.9
In 4-or-more person carpool	0.0%	+/-2.4	0.0%	+/-4.7	0.0%	+/-4.9
Workers per car, truck, or van	1.03	+/-0.02	1.05	+/-0.04	1.02	+/-0.02
Public transportation (excluding taxicab)	1.5%	+/-1.8	2.9%	+/-3.5	0.0%	+/-4.9
Walked	1.2%	+/-1.2	0.7%	+/-1.0	1.8%	+/-1.7
Bicycle	0.0%	+/-2.4	0.0%	+/-4.7	0.0%	+/-4.9
Taxicab, motorcycle, or other means	1.7%	+/-2.2	0.7%	+/-1.0	2.8%	+/-4.4
Worked at home	10.8%	+/-3.5	11.7%	+/-5.5	9.9%	+/-4.9

Per the US Census Bureau, sixty-two percent [62%] of occupied Calais households have more than one vehicle per household.

VEHICLES AVAILABLE	
Occupied housing units	676
No vehicles available	4
1 vehicle available	256
2 vehicles available	309

3 or more vehicles available	107

The 676 Calais households have a total of 806 workers. Eighty-one percent [81%] or 653 workers have more than one vehicle available for transportation to work, and 99.5% [802 workers] have at least one car available.

VEHICLES AVAILABLE	
Workers 16 years and over in households	806
No vehicle available	0.5%
1 vehicle available	18.5%
2 vehicles available	54.5%
3 or more vehicles available	26.6%

While the above data reflect transportation for work, not addressed is the transportation for shopping. How many trips are made from Calais to stores in Montpelier, Hardwick, Plainfield, or Berlin/Barre? Is there a way to reduce that by shopping at our local stores in East Calais, Maple Corners, and Adamant? What would it take to shop at the local stores using bicycles or walking – eliminating driving a car - and thereby making those stores more economically viable? This is addressed in the Economic Development section.

If we desire to reduce use of fossil fuels in the transportation sector, we must change how we get to and from work, promote ride sharing for work and shopping and play, and make public transportation more available.

ISSUES

Many residents have expressed an interest in learning how to reduce their utility bills and have shown a desire to learn more about the incentives and services offered by Efficiency Vermont. The main issue is getting that information to the people so they can make informed decisions about how to proceed both technically and financially with making their homes more energy efficient.

Zoning regulations and the permitting process for new residential buildings will need to be adapted and changed so that new residential buildings comply with the latest Energy Standards.

We will need to evaluate where best to locate solar arrays for community groups and then make appropriate changes in zoning regulations.

Other alternative sources of energy such as hydro power, biodiesel, small wind generators, and biomass that could be developed within Calais need further research.

For commuters – the issue of ride sharing, car sharing, where to park their cars and bikes, and having public transportation is of primary importance. The need to develop better and safer bike paths along the public corridors of Route 14 and County Road is of utmost importance and remains an issue to resolve.

Helping our local stores to thrive, improving their business and promoting local food businesses [such as CSAs and small farm markets] as well as developing food processing entrepreneurial businesses as stated in the Agriculture section, will make Calais residents desire to do more shopping locally, decreasing our reliance on cars.

Another issue relating to fossil fuel use and transportation is the type of fuel used in our cars, trucks and tractors. Because of our agriculture capability we have an opportunity to research the ability to grow and process local bio-fuel creating a local economy. This is addressed in the Agriculture Section of the Town Plan.

BENEFIT OF TAKING ACTION

Why bother to do anything related to energy?

There are monetary savings to achieving greater energy efficiency in houses. This is an immediate short term reason. Most respondents to our survey expressed a desire to reduce their energy bills. That can come about by making homes more efficient thereby saving money on fossil fuel bills.

While there are expenses to converting to alternate renewable resources, with wise financial advice and various tax and energy credits, the expenses can be reduced so that there is a greater return on investment.

The ability to produce local wood, bio-diesel or bio-mass businesses not only reduces our dependence on foreign fuel sources, but we then provide for local economic growth, local jobs, making Calais more self-reliant.
The reason to do something today regarding the use of fossil fuels is for the long term and what we leave behind for future generations. Climate change is here and while what we do today may not reverse the effects of climate change, it will have an effect for the future.

DEFINITIONS

Energy conservation means to take the necessary steps to decrease the amount of energy we use. This might be as simple as always turning off power strips that computers and audio-visual components are plugged into or extinguishing lights. It can also mean keeping a thermostat turned low.

Energy Efficiency means restraining the growth of energy consumption and demand. This may be using improved or alternate technology that will decrease energy demand. Something can be viewed as more energy efficient if it delivers more services for the same amount of input, or provides the same services with less energy input. Converting to LED lights is an example of energy efficiency.

Calais Energy Group is a volunteer grassroots organization working to promote information, education, and help where possible to accomplish some of the actions steps of the Energy Plan.

ENERGY EFFICIENCY

GOAL 1: Reduce energy consumption in our private dwellings and public buildings

Objectives to attain this goal are:

- To provide education seminars about energy audits, potential savings, and financing of efficiency work.
- At least 90% of homeowners will complete an energy audit by 2020.
- All municipal buildings will complete an energy audit by 2017.
- All municipal buildings will convert to LED lighting.
- All municipal buildings will follow through on energy audit recommendations by 2020.

Action Steps	Responsible Party	Time line
Invite Efficiency Vermont to present to Calais residents what an audit entails [potluck recommended]	Select Board, Calais Energy Group Efficiency Vermont	Once a year starting in the spring of 2016
Create 'energy fairs' with surrounding communities	Select Board, Calais Energy Group, CVRPC	Summer 2016
Maintain an inventory of residences that have an energy audit	Calais Energy Group	2017

Work in groups for buying power to get cheaper prices: example: 6 households in Maple Corner agree to start some kind of work to seal areas of air leakage. They combine how much sealant is needed and share in the cost to get a reduced rate. Publicize the buying groups	All residents, FPF, Calais Energy Group, Select Board	2017
Zoning regulations will require new buildings to comply with Vt. residential building energy code: Handbook will be provided to all applicants for new buildings.	Planning Commission, ZA	2016

RENEWABLE ENERGY RESOURCE USE

GOAL 2a: Sixty percent [60%] of residents will increase use of alternative renewable energy sources for heating and cooling of homes, heating water, and for electric use, either individually or through small groups.
GOAL 2b: All municipal and community-used buildings will be heated with renewable energy sources by 2020

Action Steps	Responsible Party	Time line
Work with various organizations and solar companies to provide education for homeowners on how to finance and what the pay-back time is for switching to renewable energy.	Energy Committee, Select Board	Begin 2016 and as often as needed
Make solar capability easier by allowing permitted uses for ground based solar contingent that the placement of ground based solar meets all setbacks for the district in which they are located.	Planning Commission, Select Board	2017
Prepare zoning areas that allow for solar arrays in certain areas that will benefit neighborhoods and groups to share in the electrical output.	Planning Commission, All residents	2016
Consider zoning regulations that clearly state that siting of solar arrays [non rooftop] will not occur on ridgelines, nor on usable agriculture lands and that ground mounted arrays will not exceed 1 acre, and be scaled to meet the approximate demand for energy consumption of the site development in Calais.	Planning Commission	2016-2021

Develop education seminars taught by residents who use alternative heating and cooling systems such as heat pump systems or compost powered water heating systems to assist others in obtaining and using alternative energy	Calais Energy Group	2016
Look into ability of developing hydropower	Calais Energy group	2019
Research feasibility of producing local wood from local forests using forest management techniques, biomass or bio diesel products; is it effective, what is the cost, what zoning changes need to occur.	Planning, Select board, business development comm.	2019

TRANSPORTATION

GOAL 3a: To reduce the amount of travel in cars thereby reducing GHG footprint

GOAL 3b: To promote alternate sources of energy for vehicles

Action Steps	Responsible Party	Time line
Develop park and ride locations in each of the	Planning Commission, Select Board, Calais Energy Group	Park and Ride: 2016; charging stations 2017
Develop a ride and share log based on areas of employment to increase rider sharing: post to Town Web site; use FPF: create Facebook page	All residents, Calais Energy Group/ Transportation subgroup	2016
Work with GMTA to develop bus routes along County road and Rt 14	Select Board, Planning, Calais Energy Group	2016-2018
Promote Go VERMONT http://www.connectingcommuters.org/to promote ride share.	Energy Committee	2016-2021
Research the ability to purchase 2 cars for car sharing for a fee. Each user would have to have some insurance to cover for accidents.	Calais Energy Group, Select Board	2018

Develop a plan to work with the state and county to develop safer bike paths on the main corridors into and out of Calais [e.g. Route 14 and Route 2 and County Rd.]	Roads Commission, Calais Energy, All residents	2016 -2021
Provide information about location of area education seminars about electric vehicles; bring several car companies with EVs to a potluck for test drives	Calais Energy Group	2016
Research feasibility to grow the products locally and produce biodiesel fuel locally – Ag and Economic Development	Calais Energy Group, Ag Committee, Planning and Select Board	2018

Transportation

Introduction

Our roads facilitate our being a community and make it possible for townspeople to commute to jobs in the region. Because Calais is a bedroom community, the condition and quality of town roads affect most of us on a daily basis. However, our roads are more than just a transportation network for cars to get to and from work and go shopping; they are the shared public space that ties our community together. It is our shared appreciation for the scenic and rural character of our roads that sets the tone for much of what goes on in Calais.

Among factors which affect transportation are the means used, the affordability of fuel, and the condition of traveling surfaces. Citizens of Calais, who are interconnected by more than 83 miles of gravel roads (see Table 1 below), count on those roads to be well-maintained as efficiently and economically as possible.

Table 1: Roads in Calais

Classification	Miles
State Highway	6.9
Class II & III	72.4
Class IV	11.0

Current Conditions

Except for the seven miles of State Route 14, the Town has the responsibility to design and maintain all public highways in town for the best use of all our residents and the public in general. Good road design guides how roads are used. These Class II and Class III roads are maintained for year-round car, truck and motorcycle travel as well as for use by bicyclists, horse riders, and pedestrians.

Ninety-six percent (96%) of our workers commute to employment either within or outside of Calais (2010 Census).Despite this and the fact that many begin their commutes at about the same time each day, around 79% of all commuters drive alone, only 5% report that they participate in a carpool, and the remaining 4.5% use other means such as a bicycle, public transportation or walking. Ten percent [10%] work at home. These

statistics suggest that there are many opportunities for promoting ride-sharing, reducing carbon emissions, and decreasing road traffic.

Table 2: Raw 2010 Census Data, Calais, Vermont 2000-2010, Selected Economic Characteristics 2008-2012 (American Community Survey 5-Year Estimates)

Subject	Calais town, Washington County, Vermont	
	Estimate	Percent
COMMUTING TO WORK		
Workers 16 years and over	806	100%
Car, truck, or van -- drove alone	638	79.2%
Car, truck, or van -- carpooled	45	5.6%
Public transportation (excluding taxicab)	12	1.5%
Walked	10	1.2%
Other means	14	1.7%
Worked at home	87	10.8%
Mean travel time to work (minutes)	26.5	(X)

Carpooling

With increases in transportation costs outpacing income growth, the above data impel us to question how and under what circumstances we travel to work. If fuel costs continue to increase, people may adjust their work and transportation decisions. They may choose to move closer to work, decide to work from home, or figure out how to afford to continue working at the same locations. There is a clear need to obtain land for commuter parking lots in Calais to encourage carpooling; it would also be useful for citizens to be able to connect with the regional rural commuter buses operated on Route 2 by RCTA and GMTA.

Calais Roads

According to current Calais Road policy, the Town will continue to support private maintenance of Class IV roads, and will, without obligation or undue expense, assist in their private maintenance at the Selectboard's discretion.

Any permanent land use development must have access to the existing town highway network, and areas that are inaccessible because of excessive slope

or other topographic features are excluded from permanent development. A developer receiving permission from the town to extend the road system in order to make inaccessible land accessible shall, at the developer's expense, build a road that is at least up to Class III standards. However, this policy shall not obligate the town to accept a developer's road easement. For the last sixteen years, it has been the policy of Calais not to accept new roads or to upgrade Class IV roads unless there is significant benefit to the town from such action.

The State and the Calais Selectboard are responsible for reviewing curb cut permits for Calais roads in their respective jurisdictions. Curb cut permits are governed by state law (Title 19 Vermont Statutes Annotated, Section 1111), and Calais' curb cut ordinance. Members of the Selectboard take into consideration the location of a proposed new driveway in relation to the property and the road, as well as the safety of the passengers leaving the new drive and of potential travelers of the road when making their decision.

State roads and bridges within Calais need more maintenance than they are getting. It appears at this time that Route 14 in Calais is in somewhat better condition than in earlier years, perhaps due to federal Recovery/Stimulus funds available to communities since 2009.

Road Standards

The width, speeds, and types of maintenance appropriate to various categories of Calais's roads is set forth in the document, *"Town Road and Bridge Standards, Town of Calais, VT"*, prepared after three years of careful research by the Calais Roads Advisory Committee (CRAC), adopted by the Selectboard in February 2014, amended on April 14, 2014 and appended to the Calais Town Plan. You will find these Standards in Section C of the Supplemental Information in this Town Plan.

These Standards were approved as conforming to comparable VTrans and ANR standards. They set forth Guiding Principles for the conservative management of roadways, ditches, culverts, bridges, stormwater, erosion control and more. The goal of the Standards is to maintain the scenic and rural character of our roads and prevent the pollution of our surface waters from stormwater runoff, while maintaining safe travel ways for motorized vehicles as well as bicycles, horses, and pedestrians. This new document will provide a factual basis for the design, care and maintenance of Calais roadways for years to come. Because the document went through a process of public review prior to formal adoption, it should be seen as expressing the informed view of the people of Calais towards their roads.

An Acting Calais Highway Operations Manager who works closely with the Calais Road Commissioner was added in 2014. Roads that impose maintenance challenges and extended growth challenges have been identified. The Roads Advisory Committee will continue advising the Selectboard concerning the different treatments for various classifications of roads and the actions needed to bring certain roads into compliance with the Standards.

Issues

Cost of Travel

Today's high gasoline and diesel prices pose challenges for traveling. We believe that we either need to find ways to reduce our individual expense of travel or we, as a community, need to find ways to help individuals to reduce travel by being able to purchase what they need locally and to find ways for members of the community to work locally. When travel outside of the community is necessary, we ought to find ways to use shared resources and to take advantage of car pool opportunities or public transportation.

Increased fuel costs also affect local businesses, such as our local stores, as the cost of deliveries increases. This additional cost must be either absorbed in the price of products or by reducing the number of deliveries and either scenario affects the Calais residents who are trying to "buy locally".

The State also feels the financial impact of the increase in cost of petroleum products. Because of VT highway funding shortages, our state funded roads, such as Route 14, bridges and culverts have been deteriorating over many years. This poor condition puts an additional strain on motorists, whose vehicle repair and maintenance costs increase. Frequently encountered potholes decrease the safety of traveling these roads; they fill with water, snow and ice and are then more difficult to clear up.

Need for Local Source of Road Material

The town does not have a sufficient supply of local road material to use in maintaining the roads without trucking in loads of sand, gravel, and slate from other towns. Travel over our roads with these additional heavy loads of material increases the maintenance needs of the roads and ultimately impacts our property taxes. Calais needs to make progress developing local sources ofroad materials, especially a replacement for the McCullough gravel pit.

Implications for Calais

Will financial pressures – a tight state economy exacerbated by town expenses (roads, property taxes) - induce people to move closer to a nearby city, or impact the growth of Calais by discouraging people from moving here? And might they change the reasons why people choose to live in Calais or change the type of people who desire to move here? We do not pretend to know the answers to these and similar questions; however, we do believe that the impact of these challenges will be noticeable and that our goals (below) outline a reasonable attempt to do what we can to help minimize the impact of financial pressures on the Town , including roads-based decisions.

Our "Town Road and Bridge Standards" (Goal 1, 4thaction) document strongly endorses maintenance of our roads for the safe use of all means of travel, including not only motor vehicles, but also for cyclists, horse riders, and pedestrians. Greater traffic-calming on certain Class 3 roads would be achieved by maintaining existing tree canopies or planting new trees, thereby slowing traffic as well as providing better attenuation of stormwater runoff. The replacement of deep roadside ditches with shallower ditches or other means of reducing erosion is strongly encouraged for both safety and reduction of stormwater runoff to our lakes and streams.

The Planning Commission believes that issues raised in earlier studies of town roads - largely concerning Route 14 intersections with Class 3 roads [Clauson Study, 1993, 2004] - are still valid. In recent years, some of the recommendations from the two studies have been implemented. Signs have been added and moved, speed limits have been reduced and approaches to intersections have been changed slightly. However, during the time period of this plan, the town should do what it can to address the two most serious problem intersections. There is widespread agreement that the Route 14 intersections with Lightening Ridge Road, and with Marshfield Road remaintwo the most serious traffic problems in town.

EAST CALAIS VILLAGE STUDY AREA

- "The Marshfield Road intersection is characterized by the ambiguous layout around the church which impinges on safety and capacity, and sightlines and level stopping lines at Route 14 are poor." *(Calais Town Plan – Transportation Element, 1993)[May need updated CVRPC data if available].*
- "The lack of pedestrian walkways in the East Calais Village Center produces undesirable conflicts between vehicular traffic and pedestrian traffic. Sidewalks and traffic calming should be considered."

- "The Route 14 intersections with Marshfield Road and Moscow Woods Road should be reconstructed. Consideration should be given to establishing a park-ride lot on Route 14 in Calais."*(-Central Vermont Regional Transportation Plan, CVRPC, 2003)*

VT 14-LIGHTENING RIDGE ROAD-MAX GRAY ROAD INTERSECTION

- "At the Lightening Ridge Road intersection, there are poor sightlines and extra traffic due to the presence of the elementary school." *(Calais Town Plan -Transportation Element, 1993)*
- "It is recommended that the intersection of Route 14, Lightning Ridge, and Max Gray Road be regraded and/or relocated to improve sight distance and motorist safety." *(-Central Vermont Regional Transportation Plan, CVRPC, 2003)*

What other transportation-related activities should the town engage in or encourage? It would be appropriate to explore how we might encourage carpooling or ensure that those without reliable transportation might be assisted. Currently, non-motorized uses of our roads can be hazardous because of their design and implementation, yet walking, biking, horseback riding, etc. are healthy outdoor activities naturally enjoyed by many of our citizens. How does the Town create paths or utilize roadside margins which would make travel on foot or by bicycle safer on our roads?

Goals

Goal 1: Promote a safe, year-round system of town roads

Action Steps	Responsible Party	Time line
The Town shall consider the issues raised in the Clauson Study, the 2003 East Calais Village, and, VT Route 14 Transportation Study prior to granting development or curb-cut permits that are near the dangerous intersections.	Selectboard	2016-2021
The Town shall advocate for improvements in the approach and sight distances whenever road construction is undertaken near the determined dangerous intersections.	Selectboard, Highway Operations Manager	2016-2017
The Town shall consider adding crosswalks across VT 14 in front of the East Calais General Store and across	Selectboard, Highway Operations	2016-2017
Moscow Woods Road in East Calais village.	Manager	

The Town shall continue to encourage tree canopies as a traffic-calming device where appropriate. Tree canopies slow traffic because of the perception of a narrower road.	Calais Roads Advisory Committee, Selectboard	2016-2021

Goal 2: Develop support systems for alternate forms of commuting

Action Steps	Responsible Party	Time line
Calais should identify and promote appropriate alternate transportation options, including the development of park and ride lots, van-pooling and arranging connections to existing GMTA and RCTA Route 2 routes.	Selectboard in conjunction with CVRPC, Calais townspeople	By 2018
The Town shall support the efforts of local, regional, and state organizations in providing/facilitating alternative transportation and will welcome opportunities to obtain land to be set aside for park-and-ride areas when such becomes available	Selectboard, Planning Commission	By 2018
The Town shall develop recommendations for alternative forms of transportation to be included in the Regional Transportation Plan.	Selectboard, Calais representative to CVRPC	2017
The Town shall identify any state programs that support carpooling and notify the Calais community of these programs	Calais Legislative representative, Selectboard	2017

Goal 3: The Town should look for ways to obtain or produce road material locally when appropriate, and other ways to reduce the cost of transporting material long distances

Action Steps	Responsible Party	Time line
Calais officials shall seek new sources (preferably local) for obtaining road material	Selectboard, Road Commissioner	2016-2017

Goal 4: Finalize capital improvement planning for transportation

Action Steps	Responsible Party	Time line
Town Officials shall prepare the transportation element of the capital improvement & equipment plan as required at Town Meeting, utilizing designated budget funds to implement the plan.	Selectboard, Highway Operations Manager	2016-2017

Goal 5: Encourage preservation of scenic roads and their historic and aesthetic qualities

Action Steps	Responsible Party	Time line
The Town shall continue its process of inventorying of the town's scenic roads for inclusion in the Vermont Scenic Roads Program or protection through local ordinance.	Calais Scenic Roads Committee, CRAC, Selectboard	2106-2021
The Town shall continue to protect the public's interest in Town rights-of-way and trails, and will support appropriate private efforts to maintain this valuable public resource.	Calais Scenic Roads Committee, Calais Roads Advisory Committee, Selectboard	2016-2021

Goal 6: Transportation Design

Action Steps	Responsible Party	Time line
The Selectboard shall have a policy for building and accepting new roads of proven necessity.	Selectboard, Calais Roads Advisory Committee	2016-2021
Road design shall support the character of the neighborhood or area when modifying the design of roads.	Selectboard, Highway Operating Manager, Road Commissioner	2016-2021

Development shall be curtailed along Class 3 roads or those sections of Class 3 roads with limited traffic capacity and limited access by emergency responders.	Calais Roads Advisory Committee, Selectboard, Road Commissioner	2016-2021

Education and Early Child Care

"When educating the minds of our children, we must not forget to educate their hearts."
14th Dalai Lama

CALAIS ELEMENTARY SCHOOL

Introduction

Our educational facilities are a significant part of life in Calais. They are governed by an elected Board of School Directors for the elementary school, and one elected representative to the U-32 Board of School Directors. Calais has a long tradition of welcoming the community into the school and including community members in the classroom. The great majority of Calais Elementary students appear to be thriving, and any students who encounter difficulties receive strong support. Prior years' investments in the physical plant have paid off, and it is in solid operating condition.

Vision

Students, staff and families will work together to make Calais Elementary School an outstanding school, ensuring all its students show personal and academic growth, develop a love and commitment to lifelong learning, and have a strong foundation for making future choices.

Current Conditions

The 2013 Town of Calais Annual Report contains the annual school report, which includes enrollment, assessment results, progress in meeting annual goals, and capital improvement plans, as well as other pertinent information. Some highlights from the report are:

- Calais again achieved its 2013 target under the federal "No Child Left Behind Act". Only 27% of Vermont schools were able to do so.
- Calais children continue to excel at U-32 out of proportion to their numbers, be it in academics, athletics, or the arts.
- The teaching staff is performing at a high level of competence, and they continue to develop their professional skills outside their classrooms.
- The school's physical plant is in good condition, and should remain so due to a new 75 year capital plan.
- The school is ably run both as a $2m public enterprise (attested by its spotless 2013 audit) and an educational institution.
- Enrollment has been reasonably stable over the last 8 years, averaging around 130 students. While the school functions well at this level, an increase of 20-30 students could easily be accommodated.
- Budget increases over this time have averaged less than 2% annually.

The School as a Community Center

The school is currently an important community center. Over 90% of parents volunteer at the school (often for Fitness Fridays in the winter months). Community members use the school computers and library. After school programs support students doing homework and provide care for preschoolers. Many groups and organizations within the community use the building for meetings. The Selectboard, School Board, some political parties, community sports groups, and parenting groups use the building regularly. Others are welcome to use the school's facilities.

The school is also a designated center in case of emergencies. The Town purchased a generator that the school maintains. This allows the school to provide for the townspeople in the event of weather or other disasters.

Facility Maintenance and Planning

The school began to build a capital budget in 2003. In 2005 voters approved the first of what have become annual appropriations to a Capital Improvement Fund. The Fund began as a way to plan for the school's upkeep and as a way to pay for energy efficiency improvements. Extensive audits of the building revealed significant unanticipated needs, many of them dating back to the addition built in 1990, when construction defects and a lack of proper insulation created problems that needed addressing. In addition, systems reaching the end of their normal life spans need continual replacing or upgrading.

The school is fortunate to be able to draw on the expertise of many local community members. The Calais Elementary School Board has shown consistent commitment to keeping the school in good repair. The school retired its bond in 2012, and currently carries no debt.

Issues

- Making the Elementary School building more energy efficient is important for two main reasons: reducing utility costs, and teaching our children the value of alternative energy resources and energy conservation.
- We want to maintain our high quality of education and staff but must take into consideration the tax burden Calais residents share. It is important, therefore, to work with our legislative representatives to influence how schools are funded.

- We shall maintain building safety so that the school can continue to be used as a community center and in emergencies.

GOALS

The Calais Elementary School strategic plan includes the following goals for 2014-2019:

Goal 1: Provide an environment that helps children develop towards achieving their full potential both academically and personally.

Action Steps	Responsible Party	Time line
School will continue to attract, retain, and support quality staff	School Board	2016 on
Teach and practice by example the essential character traits of the ideal student	Teachers, School Board, all residents	2016 - 2021
Build and foster relationships with families to support child development	Teachers, School Board	2016 - 2021

Goal 2: Provide an environment for the child that is healthy and secure.

Action Steps	Responsible Party	Time line
Ensure that the physical plant meets the needs of the students	School Board, Maintenance, Selectboard [budgeting]	2016 on
Plan for energy efficiency of the buildings	School Board	2016-2021

Goal 3: Provide visibility to and partner with both community and state to ensure education sustainability

Action Steps	Responsible Party	Time line
Develop school budgets that are fiscally responsive to the needs of the children and community	School Board	2016 on
Continue joint meetings of the School Board and Selectboard to share information and discuss issues of joint concern	School Board, Selectboard	2016 on
Provide informational meetings to citizens periodically	School Board, Teaching staff	2016 on
Work with State to change how education is funded	School Board, Selectboard	2016 on

Goal 4: Support continuous improvement and evolution of the academic and social curricula.

Action Steps	Responsible Party	Time line
Support the teachers as needed [both financially and morale] to attain new and creative methods of teaching	School Board	2016 on

UNION 32 HIGH SCHOOL

Union 32 is the public middle and high school serving the towns of Calais, Berlin, East Montpelier, Middlesex and Worcester. The current student enrollment is roughly 800. The physical plant has the capacity to handle a greater increase in enrollment than is currently projected. The educational philosophy of U-32 includes a strong commitment to academic and athletic excellence, creativity and artistic endeavor, as well as active student engagement in the community.

EARLY CHILD CARE EDUCATION

Introduction

Quality and affordable early childhood care and education are an economic development and sustainability necessity. It benefits families by better preparing children for success in school while enabling parents to work and provide income. It benefits businesses' financial bottom line by being able to attract, expanding and retaining a quality workforce and creating more reliable, productive employees. Furthermore, early childhood care and education facilities are professional businesses themselves, and their existence expands local and regional economies directly through the hiring of workers and purchase of goods and services. Despite the economic and social good created by quality childcare services, Calais currently has a shortage of such facilities.

Issues

The Calais Elementary School, which is 5 STARS quality rated, provides a pre-school program for 3 year-olds two mornings a week from 9 to 12 a.m. and for 4 year-olds three mornings a week during the same times. Parents may opt and pay for an after-school program from noon to 3:30 p.m. on the days their child attends morning preschool. The program is available during the school year. This leaves families without child care during school vacations and summer months.

There are 3 registered providers in Calais and 7 in surrounding towns. There are no licensed providers except for the elementary school.
There are only 7 "quality" providers (licensed with 4 or 5 STARs in the Vermont Step Ahead Recognition System and/or with national accreditation).

The demand for quality early childhood care and education has outpaced the supply for many years and is projected to continue. This is a critical unmet family and community need. The high cost of child care keeps some residents out of the workforce. Even moderate income families needing child care often pay a large portion of their total income for these services and consequently struggle to get ahead.

Too many people continue to have the inaccurate perception that child care is a form of "babysitting". Quality early child care requires a high level of safe and enriching environments for children. The state does not have sufficient inspectors to ensure safe environments at all sites. Teachers need the same education, professionalism, and pay as elementary and high school teachers. Until we as citizens and employers value early child care and

education and recognize the economic and social necessity for quality providers, we will continue come up short as a community for our youngest and most vulnerable citizens.

Goal 1: To ensure that registered and licensed home care providers and child care centers are encouraged in zoning.

Action Steps	Responsible Party	Time line
Review permitted activities in Village and Rural Residential districts.	Planning Commission	2016-2021

Goal 2: To encourage the location of child care facilities inexisting settlements, near residential clusters, schools, and along public transportation routes. Such locations can help reduce traffic, energy consumption, and the overall financial cost of child care for families.

Action Steps	Responsible Party	Time line
Review permitted activities in Village and Rural Residential districts.	Planning Commission	2016-2021

Goal 3: To encourage registered and licensed providers to participate in STARS program.

Action Steps	Responsible Party	Time line
Provide STARS information to new providers when they apply for change of use permit. Post STARS information on Town Web Site	Zoning Administrator, Town Clerk Office, Web Master	2016-2021

Recreational Resources

Introduction

As we experience global, environmental, and regional changes, we need to increasingly look to our own community and region to provide residents with safe, inexpensive, environmental, and user friendly recreational opportunities. These opportunities should be readily available to all residents regardless of age, income, and/or ability. We need to ensure that, where possible, these opportunities are in concert with other aspects of the Town Plan.

The Calais Recreation Association, Calais Elementary School, and Community Connections (regional) provide many excellent recreation opportunities for children. The Mountain Tamers (local chapter of the Vermont Association of Snowmobile Travelers) maintains a network of trails on private and public land throughout Calais that are used for snowmobiles, cross-country skiing, and snowshoeing. There are informal groups that sponsor other adult recreation opportunities such as biking, hiking, drama, crafts, and music.

Calais owns three town forests, trails, roads, and the Curtis Pond swimming access that are used for hiking, biking, jogging, horseback riding, and swimming. The Calais Recreation Association owns a building in East Calais, a portion of which is rented to the U.S. Post
Office, and the rest used for indoor recreational activities. The Calais Recreation Association owns the recreation field on Route 14 in East Calais, which has two baseball fields, a soccer field, and an outdoor, hard-top

basketball court. The Calais Elementary School has a school playground with swings and climbing structures, a soccer field, and an indoor gym. The State of Vermont provides public access to area lakes and ponds in the form of boat ramps on Curtis Pond, Number 10 Pond, Nelson Pond, and Woodbury Lake. Privately owned land is used for snowmobiling, cross-country skiing, and hiking.

The Calais Recreation Association and Calais Elementary School provide a wide variety of sports activities for children from pre-K through 6th grade. These include soccer, basketball, baseball, softball, downhill and cross country skiing, snow shoeing, and, swimming. The Community Connections program conducts a wide variety of activities, programs and camps for pre-K through high school youngsters before and after school, during school vacations except Thanksgiving, Christmas, and summer.

Issues

- Expanded recreation opportunities for more residents
- Access to ancient roads and private lands
- Coordination and information sharing
- Funding

Goal: Provide safe, inexpensive environment-friendly, anduser-friendly recreational opportunities for all Calais residents

Action Steps	Responsible Party	Time line
Convene meeting of groups involved with recreation activities to define the scope of recreation and how to best coordinate current and future activities, funding, and information sharing.	Selectboard	2016-2021
Continue evaluating existing town rights-of-way, particularly trails, ancient roads, and class 4 roads, and consider posting them as open for recreational use	Planning Commission, Selectboard	2016-2021
Obtain, as needed, more effective enforcement of regulations regarding the recreational use of the ponds in the Town.	Selectboard	2016-2021

Encourage private landowners to allow public access to trails that cross their property.	Recreation organizations	2016-2021
Encourage the users of publicly and privately owned recreational resources to use the resource only in a manner that is safe, cooperative, and respectful of the resource	Recreation organizations	2016-2021
Continue the evaluation of access to an extensive interconnected trail system throughout town and to all town forests for recreational use.	Recreation organizations	2016-2021
Develop and periodically review risk management policies, procedures, and insurance for each recreational activity	Recreation organizations, Selectboard	2016-2021
Implement public education and information sharing regarding the availability and use of recreational resources.	Recreation organizations	2016-2021

Calais Trails Committee

The Selectboard has authorized a group of volunteer citizens to work on the planning and development of walking trails in Calais.

There is a trail system on the west side of the Town that includes the Ellis-Bruce trail to Worcester in addition to the Robinson Ridge Trail that runs parallel to Robinson Hill Road. These trails are connected by a small section of Longmeadow Hill Rd. This set of trails covers a distance of over 3 miles and involves the cooperation of 9 land owners who have signed agreements allowing such trails. These agreements are renewed annually.

The Committee will begin work on expanding the public trail system into the southwest corner of and eastern part of Calais. The Selectboard has decided to keep the "Ancient Road" that is along the old mill site in E. Calais Village for better viewing of this historical site. The Committee will update the Selectboard and the citizens periodically of their work.

This committee is not subsidized by any town tax dollars and relies strictly on volunteer labor and tax deductible donations to build and maintain trail infrastructure. Landowners are encouraged to consider offering easements that can be used for good walking trails.

SUPPLEMENTAL INFORMATION

A. Agriculture

This addendum is a strategic plan to be used as a guide to developing a local agricultural system that supplies food and non-food products for Calais residents to achieve a self-reliant, resilient community. We have a grassroots Agricultural Committee [COOLASS] and as momentum builds and more people volunteer to work on this committee, we expect that this committee will work to achieve the ideas behind this plan.

Requirements to Create a Local Food System

A local food system uses the concept of Food Justice as the basis or foundation for its structure.
Food justice is a broad subject that subscribes to the following ideals:

- All people are to have the opportunity to purchase affordable and nutritious food
- All food producers [farmers and farm laborers] are able to earn an affordable wage
- Inequities in food access are to be eliminated
- Food production systems will be transparent
- Local municipal government food policy will benefit all Calais residents
- We aspire to have the Calais Food System follow these ideals.

Certain issues included in a Food Justice undertaking may include diets for healthier living, better utilization of agricultural resources, establishing movements to assure living wages to farmers and farm workers, as well as how genetically modified organisms affect the health of our citizenry and shared environment. These issues may be incorporated into the local food system as it develops.

A community-wide, local [including neighboring towns] food system program that provides food security[35] for all consists of:

- A policy for providing food security for financially distressed community members

[35] The World Health Organization defines food security as "when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life".

- Farms
- Community composting
- Seed propagation
- Processing facilities
- Storage facilities
- Distribution networks
- Wild food gathering
- Bee Keeping / Bat Conservation
- Education

1. Providing food security for community members experiencing financial distress

A realistic look at economic viability must recognize that no matter how affordable food is, there will always be members of the community who cannot afford to meet their basic nutritional needs. There are conditions and situations that occur, beyond the control of people, which will require community support to provide food security for all community members. Such conditions may include sickness or disability, death of a providing family member, elderly lacking in necessary savings or income, etc.

How we develop a program of food security needs research. Possible approaches are:

- The implementation of a town administrated 501c3 organization to allow local tax incentives for both producers and distributors who make direct food donations in support of meeting the needs of community members in financial distress.

- Starting a program so that our most needy citizens could have the opportunity of a food for labor exchange where appropriate. This would involve both private and municipal elements of our food security infrastructure (producers, processors, storage, and distribution facilities), who maintain appropriate liability insurance, finding tasks that fit the abilities of the people in need so they can work in exchange for food produced by a collaborative private and municipal food system.

- Establishing set times of the season for gleaning operations and publishing those times for any who may need food assistance.

- It is recognized that food entrepreneurs and farmers, while they may want to help those in need, may themselves be experiencing financial

distress. In order to have full participation in this aspect of a food justice system there may need to be some initiatives or incentives to encourage participation in this. Such incentives might include but not be limited to:

a. Tax incentives for utilization based on a percentage of one's agricultural resources that are used for the needy. Such an initiative would function similar to the state's current use program, creating a local exemption to the municipal portion of the tax bill.
b. Tax deductions for participation in any and all aspects of a food security program. Establishment of a 501c3 organization could allow for income tax deductions for donations of food or other resources necessary to provide food aid to the needy in the community. Other tax incentive programs could be defined.

2. Farms

The term "farm" is broad and includes any land where growth of plant or animal products for the purpose of consumption or production of raw materials necessary for living takes place.

A local food system will require adequate operational farms in order to meet the nutritional needs of the current and future population of Calais. Additionally, farming also produces non-food products which should be included as an agricultural asset within a food security program. Necessary production includes fruit and vegetable produce, wine, grains, meats, eggs, dairy (milk and cheese), fish, healthy feed for livestock, maple sugaring, edible fungi production, shearing (for clothing production), down (for clothing and bedding production), flax [clothing], hemp, and herbs for medicinal purposes.

An inventory of the current farm resources available within Calais will need to be completed and include the willingness of private farmers to participate in a local food system. The town of Calais should never impinge on the private rights of farmers to export their produce. Calais should offer incentives for farmer participation and only include willing farmers in the resource inventory.

Upon completion of an inventory of current farm resources, a matrix would be established to determine the current and needed resources based upon population census and future growth projections.

Zoning and land use regulations shall encourage the development of needed farm resources determined by the inventory matrix.

3. Community Composting

Community composting means the collection of food and biodegradable wastes solely in Calais for use by the businesses and residents of Calais only. The benefits of community composting are two-fold.

- It effectively aids waste management efforts. Good waste management using approved and proper methods protects water tables and waterways; improves air quality; reduces and controls infectious epidemic disease, blight, and fungus; protects natural landscapes; controls predatory wild animal conflict, nuisance insects and rodents because of central collection and a reduction of garbage strewn on open lands.
- Compost of biodegradable waste produces excellent fertilizer for growth of vegetation. Farms and gardens require composted material to constantly renew top-soil nutrients, an essential component of organic sustainable farming practices.

Calais may maintain, at each village center, a drop-off location for biodegradable waste. Biodegradable waste pickup may also be possible as a local service of standard trash pickup as long as suitable biodegradable waste containers are distributed. However such trash pickup will be started only after an analysis of how such trucks affect the condition of Calais roads.

Calais can utilize either municipal resources and/or collaborative partnership with private resources, to maintain one or more composting operations. Composting operations would utilize biodegradable waste collected at points within each village center. The operation center itself would ideally not be located within the village centers, but in rural residential districts. Composting is best suited to rural districts where natural odors produced (caused by methane production) would not be perceived as compromising air quality as within the more densely populated village districts. Zoning may have to be evaluated as to placement of a compost operation and its proximity to any housing development that might be in the same district. Methane produced by composting could also be a valuable source of energy if community composting were to be used in conjunction with energy or heating systems. In this scenario, composting operations would be best suited within the village districts where delivery of heat or power to residents could be accomplished. The trade-off for a municipal power or heat generating and delivery facility within the village centers would be the

potential for compromised air quality around the facility where any non-combusted methane released would carry an unpleasant odor.

There are several methods of composting which may be implemented. Among the most popular is the use of varieties of earthworms which convert the biodegradable waste into worm castings. Worm castings are among the best top-soil fertilizer available. Composting may also produce meal worms, a particular type of beetle larvae, which are a natural high protein food for chickens, ducks, and fish. Composting also involves ventilation systems to aerate the composting material which greatly speeds up the process but requires a small amount of electricity in order to operate fans.

Compost produced should be made available to home gardens. Citizens requiring composted materials for soil nutrient maintenance may register to receive composted material so that priority distribution may be assigned. All recipients of compost would be required to sign a liability waiver so that neither the town nor any private individuals involved could be held liable, should any contaminated material make it through the composting process.

4. Seed Propagation

Local agriculture depends on the ability to obtain seeds for the next generation of crops. In order to guarantee the ability to sustain a long term food security program, Calais needs a community seed-bank to store and distribute seeds. A seed-bank does not require a large amount of space, but does require temperature and humidity control. All food producers will eventually need and desire local dedicated seeding resources assuring non-GMO seeds. Calais should provide additional incentives to farmers willing to produce an excess of seed beyond their own needs and to donate the excess seed to the town seed-bank. Tax incentives for seed propagation and donation are meant to offset the loss of income from the produce used to harvest seed.

Many fruits and vegetables produce mature seeds with mature fruit and require only the separation, cleaning, drying, and packaging of seeds. Some vegetables produce fruit which are left to mature from which seed is harvested. Other vegetables and fruits form seed pods which then need to be separated, cleaned, dried, and packaged. And still other vegetables require fermentation of seeds before the seeds are viable for germination.

All farms and home gardeners wanting to receive seeds from the seed bank would participate in a first come first serve matrix so that seeds will be picked up each spring prior to the start of each growing season. It is desired

that those receiving seeds would then share the skills of seed saving with others. Those beginners would then be educated in seed preservation and all in the program would donate some of their seeds to the seed bank for the coming years.

5. Food processing

Food processing is a broad topic that encompasses many procedures vital to bringing raw produced food to the table for consumption. Many processes can have a detrimental effect on the nutrition and digestibility of foods. Calais would encourage better processes designed to promote health, nutrition, and digestibility.

Processing facilities include slaughter and butchering houses for fowl, beef, pork, fish, and any other livestock, milking, washing and packaging of produce, milling of grains, fermentation in preparation for canning, sugaring, etc.

Calais will continue to support regulatory changes implemented by the State Government to allow for on-farm slaughtering and purchase of meats. Farms equipped with slaughter facilities may provide for-fee services for other farms. Traveling slaughter vans may also go from farm to farm providing slaughter services. Calais may encourage the opening of a butcher shop. An aggressive local food system, once advertised, and accompanied by business incentives, has the potential to attract an experienced and talented butcher to our community. Zoning regulations should encourage a commercial butcher to open shop and service Calais farms and our consumer community.

Facilities for the cleaning and packaging of vegetables and the milling of grains should be in each of the Calais village districts.

Canning, bottling, fermenting, etc. may require specialized equipment potentially with high temperatures and pressures. Calais would encourage private facilities in each of the village districts to operate under proper liability insurance; these will be encouraged to provide for-fee service to the general public.

Calais will support increased effort by the State Government and instruct our representative to limit restrictions on locally produced and sold milk or milk products on the farm, at farmer’s markets, or even provided for home delivery. Raw and pasteurized milk and cream will be encouraged so long as there is a market demand to sustain them.

6. Food Storage
Root cellars provide the best long-term storage for food that has been properly processed. Root cellars need different temperature and humidity zones to accommodate a variety of vegetables; or multiple root cellars are needed to accommodate different crops. Root vegetables such as potatoes, carrots, beets, parsnips may be stored in sand or sawdust since they require a higher humidity. Crops like onions and garlic and winter squash need to be stored in cool dry places.
Canned and bottled goods may be crated or stored on shelving.

Calais needs to encourage private root cellars in and around all of the village districts. Those residents with private root cellars will be encouraged to provide free or inexpensive storage for those community members who do not have, but could use, such storage capability. Every household will have access to affordable long-term food storage. A local food system that guarantees food security for all depends on the ability to provide food for all members of the community through the winter months when food production is limited to specialized greenhouse operations.

Ideally, root cellars may be combined with vegetable processing and canning facilities so that fresh produce may be cleaned, packaged, and stored at one location at an affordable price.

7. Distribution Network
Calais has several stores that residents support and would like to see succeed. Not every store is currently equipped for or interested in selling farm produce. A Calais-centric food system will encourage these markets to more readily handle fresh locally produced produce, meats, and dairy product, and assist them as needed to be better equipped to manage such produce and goods.

Farms have the resources to transport their goods to local points of sale.

Each village district will determine one location where food may be dropped off and picked up daily for community sharing. Persons or families in financial distress will have access to food resources from these locations. These locations may be maintained as private or municipal facilities. Where home delivery is necessary [example for elders without cars] for food assistance, volunteer delivery service may be utilized.

8. Wild Food Gathering
Calais has many experts on wild edible and medicinal plant gathering. Educational and productive walks are done frequently and open to any member of the community. Calais residents possess many thousands of acres of forest land which is largely unused. How we use our wild food is instrumental for survival in the event of emergencies or disasters. A cooperative local food system will encourage private citizens to open their land to organized educational and productive walks for the purpose of identifying and collecting edible and medicinal plants and fungi.

9. Bee Keeping / Bat Conservation
Bees and bats provide invaluable service to the ecology and environment. Both are pollinators while bats also control harmful night time insects. The natural populations of both bees and bats have been rapidly declining in recent years. Lacking conclusive evidence for population declines, scientists speculate that climate change, invasive development of natural habitats, wide-spread use of pesticides (such as Round-up), and GMO crops (which are genetically altered to produce neurotoxins) are responsible.

In order to combat population decline, keepers are needed to breed bees and bats. Bat houses should be maintained in deeper forested areas and around ponds. Bee keepers can be anywhere outside of the village districts. Both honey bees and bumble bees need to be encouraged. Bumble bees are better pollinators and function better in greenhouse situations. Honey bees produce honey, which is a valuable commodity. Ideally, several farms could be encouraged to engage in bee keeping and continue to grow and split their hives so that bees could be widely introduced into all the rural areas of Calais.

10. Education
Education is a primary tool in establishing a local food system that supports food justice and security. Education for members of the community could include, but not be limited to; farming and gardening, food processing and preparation, nutrition and diet, seed propagation, long-term food storage techniques, soil science, entomology, livestock raising, aquaculture, dairy production, maple sugaring, bee keeping, and wild food gathering. Education programs could be offered within a collaborative environment utilizing private and municipal facilities and expertise. Education could be offered for free, at cost, or on a donation basis as appropriate.

B. Natural Resources

This addendum identifies Natural Resources which require the following: location identification in Calais; recording identified locations on map(s); acceptance of the map(s) by the Selectboard; and, a statement of the issues of how these resources may be affected by development. Included in this addendum are action steps of how these Natural Resources may be protected. The action steps were developed without the benefit of location identification, and may need review once the mapping is complete. All of these Natural Resources are important to conserve within Calais. However, the realities of limited time, money, and people to do this work require us to prioritize what is most important. Regulations for these parts of the Natural Resources are not achievable in the current time frame. As time permits, these components will be worked on in accordance with all other aspects of this Town Plan.

Vernal Pools

Definition: Vernal pools are small, natural basins that fill with water in the spring and fall and that provide critical breeding habitat for many species of salamanders, wood frogs, and spring peepers, as well as habitat for several invertebrate species. Vernal pools typically have little vegetation due to the presence of standing water for long periods in the growing season, but they are typically well shaded by trees growing in the adjacent upland forest. Vernal pools typically occur in very small watersheds and usually have no inlet or outlet streams.

Value of vernal pools: Vernal pools provide critical breeding habitat for many species of amphibians. Salamanders and frogs travel to vernal pools on rainy nights in early spring where they mate and lay eggs before returning to adjacent upland forests where they spend the remainder of the year on the forest floor. These amphibians rely heavily on vernal pools to maintain their populations. Other animals use vernal pools as well, including bears, fairy shrimp, fingernail clams, snails, eastern newts, green frogs, American toads, spring peepers, and a diversity of aquatic insects. Despite their small size and temporary nature, vernal pools are highly productive ecosystems.

Guidelines for prioritizing the significance of vernal pools in Calais:
All vernal pools that provide successful breeding habitat for amphibians are significant. Pools associated with other natural heritage elements and pools of particularly high quality should be given higher priority. Existing forested connections between pools should be considered high priority for protection

because connections between vernal pools are vital to sustaining healthy populations of pool-breeding amphibians by allowing for dispersal of individuals and genetic exchange.

Information or data available about the resource: There are currently no statewide maps of vernal pools. Vernal pools are best identified by landowners that know of their presence by the spring calls of wood frogs and peepers. The Calais CC has worked with landowners on a preliminary natural resources inventory, which when completed will identify additional vernal pools. It is estimated that there may be 20 to 30 vernal pools in Calais. Vernal pools that provide successful amphibian breeding habitat are best protected by maintaining undisturbed forest for 100 feet from the edge of the pool, and maintaining forest with at least 75 percent canopy cover for an additional 500 feet from the pool edge in which no barriers are created for amphibian movement (such as deep skidder ruts) and where timber harvesting does not occur during the spring when amphibians are moving.

Goal 1: Inform landowners of vernal pools on their property so that they can make appropriate land management decisions for protection and conservation.

Action Steps	Responsible Party	Time line
Continue to work with willing landowners in Calais to gather information, inventory, and map the location of all vernal pools in town. Continue conducting surveys over several years to provide an accurate assessment of amphibian use of the vernal pools. Once the information is available, a vernal pool map will be included in the town plan.	Conservation Commission	As time permits in the next 5 years.
Continue to inform landowners of the locations of vernal pools on their property, the habitat needs of the associated amphibians, and how they can protect these pools and the amphibians using them.	Conservation Commission	2016-2021

Goal 2: Provide for the long-term protection and stewardship of vernal pools and adjacent upland forest habitat in Calais.

Action Steps	Responsible Party	Time line
Develop stewardship programs for landowners and use certification programs for foresters to encourage management of forested lands in a manner compatible with pool breeding amphibian conservation.	Conservation Commission	2016-2021
Where vernal pools are in close proximity to each other, once the inventory of vernal pools is complete work with landowners to protect and restore forested habitats between pools to provide dispersal corridors for amphibians.	Conservation Commission	2016-2021
Seek to reclassify highly significant vernal pools as Class II wetlands so they are protected by the Vermont Wetland Rules.	Conservation Commission	2016-2021
Include in the management plans for town owned lands provisions to protect functions of vernal pools.	Conservation Commission	2016-2021
Consider providing incentives such as density bonuses for PUD designs that cluster development away from vernal pools and their surrounding terrestrial amphibian habitat.	Planning Commission	2019
Consider protecting vernal pools from encroaching development, including roads and driveways, by requiring that forested habitat around all vernal pools in Calais are retained or established.	Planning Commission	2019
Consider the location of new roads and driveways be such that adequate terrestrial habitat is maintained between roads and vernal pools. Look into incorporating into subdivision and zoning regulations minimum setbacks from vernal pools of 500 feet or greater for new roads and driveways within the subdivisions. Consider requiring all road and driveway designs to avoid increasing runoff to, or changing the hydrology of, vernal pools and other wetlands.	Planning Commission, public input	2019

Natural Areas

Definition: Natural area is a general term used to encompass a variety of physical and biological settings where natural ecological processes dominate over human disturbance and where there is a significant feature of biological, geological, or scenic interest. Natural areas include waterfalls, glacial features, and certain wetlands and ponds.

Value of the natural areas: Such places — often remote, quiet and beautiful — are of immeasurable value to local residents and visitors. Natural areas are an important component of Calais's natural history, culture and character and may provide meaningful opportunities for education in natural science and local history.

Guidelines for prioritizing the significance of natural areas inCalais: Biological or ecological natural areas are better identified and prioritized using specific criteria, such as those for natural communities, wetlands or rare species habitat. Geological natural areas are typically very stable and enduring and there are many land uses that are compatible with their long-term protection. Balancing the town's need for sand and gravel resources with conservation of important glacial features will require site-specific evaluations.

Information or data available about natural areas: There are currently six natural areas identified by the state agency of Natural Resources within Calais that are known to contain rare, remnant, or unique species of flora and /or fauna. These areas are: Chickering Bog, Curtis Pond, East Hill Wetlands, Little Mud Pond, Watson Pond, and Bliss Pond Cedar Swamp. Other natural areas such as geological features can be identified from soils maps produced by the Natural Resources Conservation Service or by state surficial geology maps.

Goal: Identify and develop an appropriate level of conservation for Calais's important geological and scenic natural areas.

Action Steps	Responsible Party	Time line
Continue to identify, field inventory, and map significant natural areas in Calais.	Conservation Commission	2016-2021
Make landowners aware of significant natural areas identified on their property. Provide resource information and assistance in developing long term stewardship	Conservation Commission	2016-2021

and/or conservation, as appropriate to willing landowners (and land managers).		
Hold community educational forums about the significant natural communities comprising parts of Calais. Discuss the historical, geological and cultural values of the local natural communities and considerations for deciding their use or conservation.	Conservation Commission	2019
Invite landowners to consider making a long-term conservation easement or stewardship commitment for a significant natural area on their land. This resource will be given high priority in considering lands for acquisition or other long-term conservation efforts.	Conservation Commission	2016-2021
Incorporate habitats that overlap with natural areas important for the conservation and protection of rare, threatened, and endangered species into conservation districts, open space plans and land acquisition/conservation plans. These areas should be targeted and protected as priority conservation zones within Calais.	Conservation Commission	2018-2021
Balance the town's need for sand and gravel resources with conservation of important glacial features through site-specific evaluations.	Conservation Commission, Selectboard, Planning Commission	2017-2020
Develop specific criteria for the evaluation of natural areas to determine whether they should be conserved and present to Planning Commission.	Conservation Commission	2017-2020

Mast Stands

Definition*:* Mast is a term commonly used to describe the seeds of shrubs and trees that are eaten by wildlife. Hard mast refers to nuts (especially those of beech and oak trees) and soft mast refers to the berries of a variety of trees and shrubs (such as black cherry and blackberries). Mast stands are areas where there is concentrated growth of tree and shrub species that produce mast for wildlife. Beech stands representing necessary black bear habitat are defined as those stands that exhibit bear scarring (bear claws scar the beech trunks when they climb the trees to reach the beech nuts) within the past 10 years and include at least 15 to 25 scarred trees.

Value of Mast Stands*:* Many species of wildlife rely on mast for food. Hard mast is very important for wildlife and in Calais, where red oak is uncommon; beech stands are especially important. Beech stands are necessary black bear habitat as beech mast provides critical, high-energy food for bears that dramatically affects bear productivity rates and cub survival.

Guidelines for prioritizing the significance of mast stands in Calais: Mast stands of beech are not common in Calais and it is important to conserve and manage all existing stands for their wildlife value.

Information or data available about mast stands: The Vermont Fish and Wildlife Department maintains a database and map of mast stands that have outstanding value to wildlife.

Goal: Maintain and protect mast stands in Calais against loss and fragmentation by development and increase the number of acres of mast stand habitat that is under long-term stewardship or conservation in Calais.

Action Steps	Responsible Party	Time line
Locate existing mast stands in Calais based on Vermont Fish and Wildlife Department resources and engage trained professionals to assist in locating additional mast stands not already identified. Develop an overlay district or wildlife map of these mast stands after they have been mapped.	Conservation Commission, Planning Commission	2019-2021
Identify the largest and highest quality mast stands for land acquisition or conservation easements.	Conservation Commission	2019-2021
Inform landowners of the locations of mast stands on their property, the habitat needs of associated wildlife and how they can conserve these stands to keep them functioning as important wildlife habitat. Develop a stewardship program to assist landowners.	Conservation Commission	2019-2021

Grassland Bird Habitat

Definition: Grassland bird habitat is open land dominated by grasses, sedges, and broadleaf herbs with little or no woody vegetation. In Calais, most grassland habitat is hay field.

Value of Grassland Bird Habitat: Vermont grasslands provide critical breeding habitat for eight bird species, including Bobolink and Eastern Meadowlark in Calais. These species nest only in open lands of adequate size dominated by grasses, sedges, and broadleaf herbs with little or no woody vegetation. Grassland birds were more common in Vermont during the peak of agricultural clearing in the 1800s but these species are now declining, endangered, or state threatened as agricultural fields are developed for residential and other uses, abandoned and revert to forest, or are more intensively hayed.

Guidelines for prioritizing the significance of Grassland Bird Habitat: There are few remaining hay fields of adequate size (larger than 5 acres) in Calais to support grassland birds. Therefore, all remaining grassland bird habitat is significant.

Information or data available about Grassland Bird Habitat: Little information is available on grassland bird habitat in Vermont. Gathering field data on the locations of hay fields that support grassland birds is important for protecting these species.

Goal: Identify and maintain or increase populations of rare or uncommon grassland birds in Calais.

Action Steps	Responsible Party	Time line
Encourage landowners and those who mow their fields to use field management methods that will support successful grassland bird nesting and reproduction.	Conservation Commission	2019-2021
Offer educational opportunities designed to inform landowners, and those working their grasslands, about the life and reproductive cycles of meadow nesting birds, bird friendly farming techniques that support these cycles, and incentives for the compatible management of grasslands (e.g. the Wildlife Habitat Incentives Program known as WHIP).	Conservation Commission	2019-2021

Establish a recognition program that will identify landowners who are managing their property as wildlife habitat and who would be willing to use their land as demonstration sites to educate townspeople.	Conservation Commission	2019-2021

Turtle Habitat

Definition: Calais has three species of turtles: wood turtles, painted turtles, and snapping turtles. Nesting, over-wintering, and foraging habitat are critical to the survival of turtle populations. Nesting habitat must provide appropriate conditions for laying eggs (typically fine textured soil) within a reasonable distance of an aquatic environment.
Over-wintering habitat is typically the muddy bottoms of ponds and marshes for painted and snapping turtles and the undercut banks of slow-moving streams for wood turtles. Foraging habitat for wood turtles includes wide areas of riparian habitat (often a few hundred feet), while painted and snapping turtles forage in mostly aquatic habitat.

Value of Important Turtle Habitat: Turtles are a long-lived group of reptiles that face many threats from human activity, such as disturbance of wintering areas by placing fill in the water, dredging, and draw downs. Turtles are often hit by cars as they travel to suitable nesting habitat from the wetlands, ponds, and riparian areas where they spend most of their life (wood turtles are more terrestrial than the other two species occurring in Calais).

Guidelines for prioritizing the significance of Important Turtle Habitat in Calais: Any functioning important turtle habitat (including ponds, deep-water wetlands, and streamside riparian areas) and turtle nesting habitat nearby are especially important for the survival for these species.

Information or data available about Important Turtle Habitat: Little information is available on turtle habitat. Gathering town wide field data on turtle nesting, overwintering, and foraging habitat is important for protecting Calais's turtles.

Goal: Ensure continued existence of important turtle habitat in Calais by preventing loss, fragmentation, or degradation ofhabitat, including connections between turtle wintering orforaging habitat and nesting sites and riparian areas known tobe used by wood turtles.

Action Steps	Responsible Party	Time line
Identify turtle habitat and the corridors between turtle nesting, overwintering, and foraging habitat in Calais by consulting with residents and experts, and conducting field work with landowners' permission.	Conservation Commission	2019-2021
Determine which streams harbor wood turtles.	Conservation Commission	2019-2021
Provide for long-term stewardship or protection of these sites through landowner education, conservation easements, overlay districts, or other methods of conservation.	Conservation Commission, Planning Commission	2019-2021

TOWN OF CALAIS,

VERMONT ROAD AND BRIDGE STANDARDS

CALAIS ROADS ADVISORY COMMITTEE Members
Stephanie Kaplan, Chair
Rick Kehne, Vice Chair
Peter Harvey, Clerk
Barbara Weedon
Greg Pelchuck
Gary Schultz
Doug Lilley

Selectboard Members
Denise Wheeler, Chair
John Brabant, Vice Chair
Scott Bassage
Rose Pelchuck
Toby Talbot

READOPTED BY THE
SELECTBOARD ON
March 23, 2015

First Adopted by the Calais Selectboard on February 10, 2014; readopted April 14, 2014

The Town of Calais hereby adopts the following Town Road and Bridge Standards which shall govern the design, construction, reconstruction, maintenance and repair of all town roads and bridges, including any new road proposed by or conveyed to the Town.

The Selectboard reserves the right to modify the standards for a particular project, whether for design, construction, reconstruction, repair or maintenance activities, where, because of physical circumstances or other conditions, there is no practical possibility that the activities can be completed in strict conformance with these provisions. Any modifications to the Standards must be done in a manner that is consistent with the Guiding Principles listed below. All such activities must comply both with these Standards and with all applicable local, state and federal approvals, permits and duly adopted standards. Fiscal reasons are not a basis for modification of the Standards.

If any federal or state funding is involved in a project, the VTrans district office will be notified prior to any field changes taking place that would alter the original scope of work.

GUIDING PRINCIPLES:

These Standards shall be interpreted to carry out the following Guiding Principles.

- Design, construction, reconstruction, repair and maintenance activities on our roads, culverts and bridges ("Road Work") shall be consistent with and, where possible, enhance the rural character of our town and shall take into account and respect the agricultural, natural, historic, scenic and cultural features of our Town.

- All Road Work shall enhance flood hazard and inundation avoidance and shall protect the water quality of our lakes and ponds by the maximal use of innovative natural stormwater control mechanisms such as rainfall force attenuation (via tree canopies) and/or dispersion of stormwater to roadside verge shoulders, buffered areas and settlement structures.

- All Road Work shall enhance the safety of all users of our roads through traffic calming measures, such as tree-lined narrow roads with widths and speed limits appropriate to the designation of the road.

- All Road Work shall take into account and encourage agricultural uses and non-motorized uses of our roads such as walking, running, bicycling, horseback riding and carriage driving.

- Roadway reconstruction activities shall be undertaken to address particular problems and not to reconstruct entire roads.

  In general, healthy trees within the Town rights-of-way that are 5 inches or larger in diameter at breast height shall not be removed without notice to affected parties and after an appropriate public process. See "Community Notice and Involvement" Section of these Standards.

ROADWAYS: Road Classifications, Width and Speed Limits

- **Classifications:** Only for purposes of fixing the maximum width of the travelled portion and fixing the maximum possible speed limit, within six months of the adoption of these Standards the Selectboard will designate each of the gravel roads, or segments of certain gravel roads, in Calais as one of the following:
  - a Collector; o a Secondary Road; or
  - a Very Low Traffic Road

Definitions:

A 'Collector' is a road that currently carries, or in the future should carry, a substantial portion of the traffic out of, or into, Calais via Route 14, the County Road, and, possibly, to Route 12 or Route 2. A 'Collector' is a road that does now, or the Selectboard determines should in the future, function as one of the few primary routes to and from those paved arteries.

A 'Very Low Traffic Road' is every Class 4 road and some Class 3 roads that currently have, or should be encouraged to have, very low traffic because of its location, characteristics or housing density and which is overall suited to being narrow and to having a low speed limit.

A 'Secondary Road' is any other Class 3 road. Because of its current or anticipated slightly higher traffic and its location another characteristics, such a road would be slightly wider and have a somewhat higher maximum speed limit than a 'Very Low Traffic Road'.

- **Road Widths:** The total travelled portion of gravel roadways, including all graveled surface but not including any of the vegetated verge, shall be constructed, repaired or maintained at no more than the following maximum widths:

    - 20 feet for Collectors. ○14 feet for Secondary Roads.
    - 12 feet for Very Low Traffic Roads.

- **Speed Limits:** The Selectboard may set lower speed limits on roads or road sections that have particular hazards or where there are other reasons for lower speed limits, but otherwise:

    - The speed limit on paved sections of Route 14 and County Road shall not exceed 50 mph.
    - The speed limit on 'Collectors' shall not exceed 35 mph.
    - ○The speed limit on 'Secondary Roads' shall not exceed 30 mph.
    - The speed limit on 'Very Low Traffic Roads' shall not exceed 25 mph.

ROADWAYS: Ditching, Storm Water Management and Erosion Control Design Standards

- Ditches shall not be created or maintained where the road grade is essentially level (less than 3% grade), unless there is no possibility for dispersion of stormwater or seepage to the verge shoulder or further away from the road or where silt-laden stormwater is likely to directly enter surface waters essentially untreated.

- Ditches shall not be created or maintained where roads can be crowned so that stormwater sheets laterally to the edge of the road and then into a permeable surface – vegetated or forest litter-covered – unless there are nearby surface waters into which silt-laden stormwater from the road is likely to reach essentially untreated.

- Even where the road is on a grade, ditching shall be minimized where there are no nearby surface waters into which silt-laden stormwater from the road is likely to reach essentially untreated.

- Where ditches are allowed under these Standards, low-sloped ditches with U-shaped bottoms with frequent turnouts shall be installed when constructing new or reconstructing existing ditches. In cases where topography limits turnouts and width of ditches, all efforts to limit the depth and width of ditches shall be taken. Construction or maintenance of ditches shall include biodegradable, non-welded matting to stabilize side- slopes where slopes are greater than 1:2 and less than 1:1½; apply seed and mulch to any raw or exposed side-slope if slopes are less than 1:2.

- Whenever soils are disturbed by ditch maintenance activities with grades equal to and greater than 5%, install stone check dams. The check dams must meet criteria outlined in the *"Standards and Specifications for Check Dams,"* from the *Vermont Standards and Specifications for Erosion Prevention and Sediment Control.* Specifically, dams must be placed so that the crest of the downstream check dam is at the same elevation as the base of the upstream dam.

- No ditches shall be constructed any larger than needed for stormwater runoff, that is, not for the purpose of accommodating snow storage.

- Ditches shall not be so deep so as to be a hazard to traffic and shall be such that a car could drive out of it.

- Where at all possible, ditches shall be turned out frequently by pulling the soil back toward the road at the end of the turnout so that stormwater can easily exit the turnout. Where there is the likelihood of runoff from the ditch or turnout reaching surface waters, there must be adequate outlet protection, either an infiltration pond/area or a vegetated or structural (rock) filtering area at the end of the turnout. Turnouts shall be seeded and mulched.

- Existing ditches that are functioning adequately and are well vegetated shall not be disturbed unless they are actively eroding.

- Soil exposed during ditch and slope construction, repair or maintenance, must be stabilized immediately. Temporary erosion prevention and sediment control practices must be installed and maintained during construction activities and until the ditch and slopes are permanently stabilized with vegetation.

- Careful attention must be given to areas vulnerable to erosion and immediately adjacent or discharging to surface water and/or roadway drainage facilities.

- The following are minimum erosion control measures:

- Seed and mulch all ditches with grades less than 5% when undertaking projects or repairs or maintenance activities that result in exposed soil. Vegetation must be established and monitored. If vegetation is not established within 10 days of placement, install biodegradable, non-welded matting with seed.

- When check dams are used, they must meet criteria outlined in the "*Standards and Specifications for Check Dams,"* from the *Vermont Standards and Specifications for Erosion Prevention and Sediment Control as of February 24, 2014. Specifically, dams must be placed so that the crest of the downstream check dam is at the same elevation as the base of the upstream dam.* Six to 12 inch large stone shall be used when smaller stones would be washed downstream.

- When constructing new or substantially reconstructing side slopes, vegetative stabilization techniques shall be used whenever possible. If it is necessary to use stone, appropriately sized stone armament on slopes that are 1:1½ or greater shall be used. If Perennial streams are affected by the toe of slope the project must conform to the statewide Stream Alteration standards.

ROADWAYS: Sub-base, Top Course and Finished Height Design Standards

All new or substantially reconstructed gravel roads shall have at least a 12-inch thick processed gravel sub-base, with an additional 3 inches (minimum) top course of crushed gravel or crushed slate (without larger stones) and of sufficient quality so as to compact after grading and produce a travel surface with minimal loose gravel and which is safe and smooth enough for motorized and non-motorized users.

- All new or substantially reconstructed paved roads shall have at least a 15 inch thick processed gravel sub-base.

- Except when necessary under these Standards to eliminate berms, the finished height of a roadway after reconstruction, repair or maintenance activities should not be significantly higher or lower that the height of the roadway before the work unless there is a good reason (such as separation from the water table) and the effect on adjacent properties has been taken into account.

ROADWAYS: Other Standards

- Where allowed by the topography and physical conditions, every Class 2 and Class 3 gravel road must have a vegetated verge on each side. The vegetated verge may include grass, weeds, shrubbery forest duff and even trees. The vegetated verge may be part of a low angle beginning of a ditch, where ditching is allowed under these Standards and is necessary.

- The vegetated verge must be 2' to 4' wide on each side, unless there are rock outcroppings or large or canopy-making trees or other obstacles within that distance, to provide room for extra large vehicles such as school buses and agricultural machinery to pull over.

- The use of perforated underdrains, or other alternatives to deep roadside ditches, shall be considered when dealing with problems caused by under-road seeps or springs or by wet areas adjacent to roads.

- All road construction, repair and maintenance activities – including normal grading – shall include seeding and mulching the verge as part of the activity.

- To the extent practical, as part of road or bridge construction, reconstruction, repair or maintenance activities, or independent of such activities, unless clearly inconsistent with the scenic character of the road or area or unless opposed by the landowner, trees shall be planted within the Town's right-of-way to provide shade, control dust, lessen erosion by rainfall attenuation and add scenic qualities on roads where they do not already exist or where tree disease or die-off requires additional plantings.

- Tree branches may be removed only to eliminate safety hazards or to provide adequate clearance for traffic. Only the branch that is causing the hazard or interfering with adequate clearance may be removed. Branches shall be cut in accordance with the Vermont Urban and Community Forestry Program pruning guidelines. Even in such cases, the tree canopy shall be preserved to the greatest extent possible.

- Roadside mowing shall take into account and protect the flowers and other scenic vegetation except when mowing them is necessary for safety.

ROADWAYS: Grading and Maintenance

- Grading shall be done so as to maintain no more than the maximum widths allowed for the travelled portion of that road. The initial pass grading in each direction shall not disturb verge shoulder or ditching (where allowed) and final spread grading shall not widen the travelled portion beyond the maximum width allowed.
- All gravel roadways shall be graded so to promote sheeting of water which will result in lateral surface water flow to the verge shoulder and in water not remaining on the road surface.

- Grading shall result in effective crowning of the road. For roadways that are not banked, this generally means a 1/2 to 3/4 inch per foot crown for gravel roads.

- Proper grading techniques for gravel roadways shall be used to avoid creating a ridge or berm between the crown and the ditch.

- Roads with side berms shall be graded so that the berms are non-existent and stormwater can freely sheet off the road and into a buffered surface area or an allowed ditch.

- Where grading alone is insufficient to eliminate berms which are preventing stormwater from sheeting off the road into the verge, the road shall be raised by adding material.

- Gravel that accumulates on the sides of the roads shall be periodically pulled back onto the travelled portion of the road and the verge area immediately mulched or reseeded.

- Attention shall be paid to minimizing loose gravel through the choice of top course material and the use of grading techniques which will maintain a safe travel surface for motorized and non- motorized users.

- Grading and snowplowing shall avoid injuring trees, tree roots and stone walls.

- Dust suppression material shall be applied immediately after grading and as frequently as needed to control dust.

ROADWAYS: Non-Motorized Uses

- Lane widths on paved roads shall be minimized where allowable to provide the adequate and safe paved shoulders possible for bicyclists and pedestrians.

- Signs shall be installed at the entrances to Calais and at strategic points to remind motor vehicle drivers to share the road with agricultural and nonmotorized users.

- To the greatest extent possible, roads shall be tree-lined to provide shade and minimize dust.

Whenever dusty conditions are likely to develop, dust suppression materials shall be applied immediately after grading and as frequently as needed thereafter.

- Loose gravel on road surfaces shall be minimized; the existing scenic qualities of the roads shall be maintained; and restoration activities such as tree planting and/or seeding and mulching shoulders shall be implemented.

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ROADWAYS: Restoration

- Existing roads that do not meet these Standards or do not comply with the Guiding Principles shall be restored to be consistent with them to the greatest extent possible pursuant to a multi- year plan to be adopted by the Selectboard within two years of the adoption of these Road and Bridge Standards. The plan shall provide recommendations for specific roads or road segments.

CULVERTS AND BRIDGES:

- Where an existing large culvert or bridge has been in place for many years, has not failed or been overwhelmed under natural circumstances with significant damage resulting, is not in immediate danger of failure or being so overwhelmed, is not clearly inadequate for existing or imminently expected traffic and is of some historic, scenic or cultural importance, the culvert or bridge shall not be replaced. Nevertheless, where there is well-founded concern that the culvert or bridge is clearly inadequate for likely future extreme water flows and where significant damage is likely to result, creative alternatives shall be considered such as hardened flow-over or flow-around pathways or parallel culverts that would allow the preservation of the existing culvert or bridge with minimal impact on the historic, scenic or cultural values.

- When a new large culvert (diameter > 5 feet) or bridge is to be built, the design of the culvert or bridge, abutments or wing walls and any necessary guardrails shall take into account the historic or scenic context of the road and area and shall accommodate to the extent possible non-vehicular traffic needs.

- Replacement of existing bridges and culverts and any new bridges and culverts must be designed in accordance with the VTrans Hydraulics Manual, and, in the case of perennial streams, conform to the statewide Stream Alteration standards.

- Regarding the diameter of culverts that carry only stormwater under a road from or to a roadside ditch, replacement of existing culverts, and any new culvert, must have a minimum diameter of 18 inches or equivalent square inch opening or such larger diameter that would be capable of passing the maximum stormwater flow reasonably expected in the roadside ditch If, because of the diameter of the culvert, the culvert must be placed at a depth significantly greater than that of the (either) roadside ditch, the culvert entrance and/or exit must be protected so as to not be a hazard to vehicles. Culverts that are working or that can be cleaned or made serviceable need not be replaced.

- Regarding the diameter of driveway culverts, all new driveway culverts must have a minimum diameter of 15 inches or equivalent square inch opening or such larger diameter that would be capable of passing the maximum stormwater flow reasonably expected in the roadside ditch at the driveway. Driveway culverts are not necessary unless the portion of the road to which the driveway connects needs a ditch.

- When installing or replacing culverts, appropriate techniques such as headwalls and wing walls shall be used where there is erosion or undermining of the culvert or where it is expected to occur.

- A splash pad or plunge pool at the outlet of new or repaired drainage culverts shall be installed where there is erosion or where erosion may occur. Splash pads and plunge pools are not appropriate for use in streams supporting aquatic life.

GUARDRAILS

- When roadway, culvert, bridge, or retaining wall construction or reconstruction projects result in hazards such as fore slopes, drop offs, or hazardous fixed obstacles, a roadside barrier such as guardrail shall be considered if it is not practical to alter the slope or to otherwise mitigate or eliminate the hazard. The most current version of the AASHTO Roadside Design Guide will be consulted during the analysis of the hazard and the subsequent treatment of that hazard.

- Guardrails shall only be used to protect against injury from roadside hazards such as trees, natural rock outcroppings, drop offs or structural abutments only where there is clear and significant risk of injury to occupants of vehicles moving at the speed limit or at an appropriate speed in dangerous conditions.

- Where used, guardrails shall be unobtrusive, no larger than necessary and fit with the character of the road. Guardrails shall be made using effective AASHTO approved standards for wooden or box beam rails and posts. (See AASHTO standard 5.4.1.11 Backed Timber Guardrail)

MISCELLANEOUS RELATED MATTERS:

Community Notice and Involvement

- Any Road Work, other than entirely routine or minor repairs, grading or snow plowing, and maintenance, shall be preceded by adequate notice to all townspeople in the area affected and, if there is significant concern or opposition expressed, presented to the Selectboard for its approval.

Access Management

- The town has a process in place to review all new driveway accesses and development roads where they intersect Town roads.

Training

- Town highway maintenance crews must collectively attend a minimum total of 6 hours of training per year on road manage*me*nt practices that reflect the Guiding Principles of these Standards. The town crew foreman must keep documentation of their attendance for a period of three years.