VISION STATEMENT

The purpose of this ~~Town Plan~~plan is to ~~ensure that~~ guide Bakersfield to a better future ~~growth in Bakersfield be at a pace the town can assimilate, that the unique and essential character of Bakersfield remains intact, and that our valuable natural resources, such as wildlife, forests, wetlands and agricultural lands will be protected and preserved.~~

~~Bakersfield has experienced significant residential growth in the past twenty years~~ while ~~the commercial and economic sector has declined. This Town Plan is intended as~~preserving what makes this community special. The following statement describes a ~~guide for reasonable and effective policies, procedures, and bylaws designed to guarantee that the rate and pattern of growth enhances the quality of life enjoyed~~future supported by Bakersfield residents~~.~~ and the Town that guides the goals and policies of this plan:

Bakersfield is a quiet, small town with a strong sense of community where people are friendly and neighbors know each other. The Town is Franklin County's gateway into the Green Mountains, where the natural landscape and beautiful setting provide scenic views, peace and quiet and opportunities for recreation. A working landscape of active forests and farms of all sizes continues to be an essential part of the Town's identity and economy. The village center is historic, walkable and supports small businesses that serve the needs of the community and provide places to meet with friends and neighbors.

Survey Question: What do you like most about living in Bakersfield?

"My beautiful property, my wonderful neighbors"

"The history and people in the community who strive to make our town a better place while protecting our historic spaces"

"The quaintness, sidewalks, school, the village greens, music in the park, events that bring the community together like July 4th"

1. INTRODUCTION

Purpose

The purpose of a municipal plan is to help guide decision-makers to chart the future of a community. A plan is a town's vision for the future. It states related goals and objectives based upon a brief reflection of the past and an analysis of existing conditions. A plan is developed from an established planning program which has involved the public in a variety of ways. Through this collective effort the vision and recommendations have been developed with the best interests of the town as a whole in mind. In other words, a Town Plan is a calculated vision which is put together by the residents of the town.

This Town Plan will help Bakersfield control its future by providing it with the means to direct change. A Town Plan does that by providing the community with a plan of action, or blueprint, which shows a community what it will be like in the future. A Town Plan can help determine what things are going to stay the same and what things are going to change. It defines how those changes are going to happen, and how quickly, or slowly, they are going to take place. A Town Plan gives Bakersfield the power to guide change, and the pace at which change will occur, so that change does not control the town's future. If the recommendations of the plan are implemented, the quality of life in Bakersfield can be positively affected.

Bakersfield Town Officials engage in an ongoing planning program for additional reasons including:

- providing additional information and data to guide decision-makers in developing new policies;
- identifying areas where additional study is needed; and

- providing a foundation for amending the zoning and subdivision bylaws.

Policies within the municipal plan are based on an analysis of current conditions, the input of many residents, housing and population projections, and development trends in the town and the surrounding region. Though many of the goals and policies of this plan are long-term, it is expected that Bakersfield will re-examine them periodically and amend the Plan as needed and as required by law.

Authority

The town of Bakersfield is authorized to prepare and adopt a Municipal Plan via Chapter 117, Title 24 of the VSA (Vermont Municipal and Regional Planning and Development Act). Section 4382 of the Act dictates what needs to be included in a plan. The intent of the law is to encourage a municipality to "engage in a continuing planning process that will further several stated goals." The Act further states that municipal plans shall be re-examined, updated, and re-adopted every ~~five~~eight years. This process should be ongoing, whereby the Plan is continually reassessed and revised to meet the changing needs of the community. Consequently, there will be future opportunities to review and amend the plan. Residents, community groups, or anyone with an interest in the town is encouraged to provide input into this ever-continuing process at any time.

~~Overview of the~~ Planning Program and Community Outreach

BAKERSFIELD

2026 Town Plan

Planning and zoning in Bakersfield began with ~~a first town plan in 1992. Zoning~~zoning regulations ~~were~~adopted in 1966. The first Town Plan was adopted in ~~1966~~1992, and the Plan has been updated every 5-8 years since. The most recent major zoning update was in ~~1971, 1978, 1989 (interim), 1991 (interim), 1994, 2006 and 2009.~~ 2012. These are intended to be "living" documents which have been, and will continue to be, updated many times to reflect the ever-changing conditions in Bakersfield. ~~-~~The ~~2014~~2026 Bakersfield Town Plan builds on the previous town plans and furthers the effort to maintain a strong, vibrant community.

The Town Plan Update Community Workshop was held on November 6, 2025. Many updates to the goals and policies of this plan were based on the discussions that took place at the workshop.

The ~~2014~~2026 Bakersfield Town Plan ~~is a result of a planning process initiated in the fall of 2006. The 2009~~ update was completed with assistance from the Northwest Regional Planning Commission and support from a Municipal Planning Grant awarded through the Vermont Department of Housing and Community ~~Affairs.~~ Development. This planning process began with a survey of Bakersfield residents. ~~-~~More than ~~70~~80 Bakersfield residents responded to the survey and provided the planning commission with valuable input on their goals and visions for the community. ~~-~~Residents were also invited to participate in ~~two public forums,~~ a Community Workshop, which was held in ~~April 2007~~November 2025 and ~~April 2008 to discuss updates to~~attended by over 50 members of the ~~Town Plan and Zoning Bylaws. Further input was also gathered by the Bylaw Review Committee.~~community. The ~~2014~~2026 Town Plan incorporates ~~revisions brought to the Planning Commission's attention over the five years since the 2009 Town Plan was adopted~~the feedback generated from these outreach efforts.

The town of Bakersfield continues to encourage public participation at all levels of the planning process. All Selectboard, Planning Commission and other town meetings are open to the public. Residents are encouraged to attend to offer input and voice their opinions. In addition, Bakersfield has adopted a Declaration of Inclusion which states a commitment to fair and equal treatment of everyone in our community.

The Structure of the Plan

The Bakersfield Town Plan is divided into chapters that address both the required elements of 24 V.S.A. Chapter 117 and other key areas of concern. Each chapter contains background information, including past trends, current status, and future needs intended to inform the town's planning efforts. At the end of each chapter is a set of goals and policies that have been developed by the Planning Commission which are based on the available information and intended to move Bakersfield toward the Vision as highlighted at the beginning of this plan. For the purpose of this plan, the terms "goals" and "policies" are defined below:

- **Goals** reflect the "desired future condition" – although some may not be attainable for many years;
- **Policies** are the strategies to ~~pursue in order to~~ attain the goals.

The Town Plan also ~~considers compatibility with the surrounding towns and the region as a whole, and~~ concludes with an Implementation Chapter that makes recommendations and identifies specific actions for the town to take in the next five years and beyond.

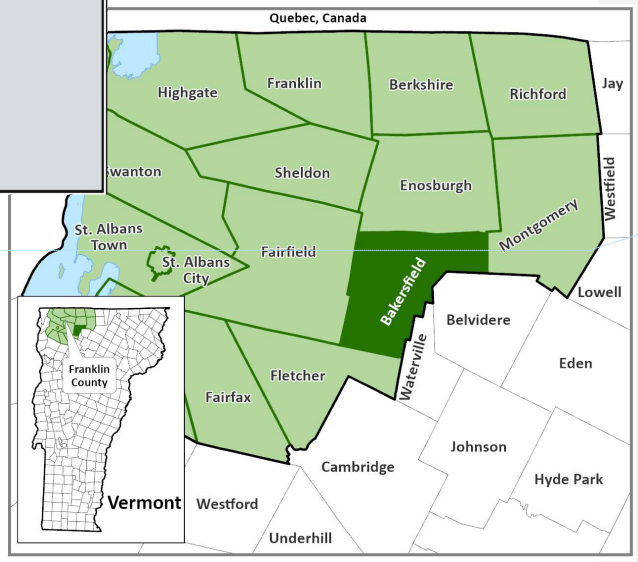
Bakersfield Declaration of Inclusion

"The Town of Bakersfield condemns racism and welcomes all persons, regardless of race, color, religion, national origin, sex, sexual orientation, gender identity and expression, age, disability, or socioeconomic status, and wants everyone to feel safe and welcome in our community.

As a town, we formally condemn all discrimination in all of its forms, commit to fair and equal treatment of everyone in our community, and will strive to ensure all of our actions, policies, and operating procedures reflect this commitment.

The Town of Bakersfield is and will continue to be a place where individuals can live freely and express their opinions."

~~Chapter 2.~~



Community Profile

The Town of Bakersfield is located in Franklin County in the northwestern part of Vermont. ~~-~~Bakersfield shares borders with the towns of Fletcher, Fairfield, Enosburgh, Montgomery~~,~~ in Franklin County, and Waterville and Belvidere ~~(~~in Lamoille County~~).~~ . Bakersfield is within 20 miles of the City of St. Albans, ~~the regional growth center~~Franklin County's largest city, and approximately 40 miles from the City of Burlington, Vermont's largest City.

Commented [A1]: Include this for Waterville as well? Or for neither

Population

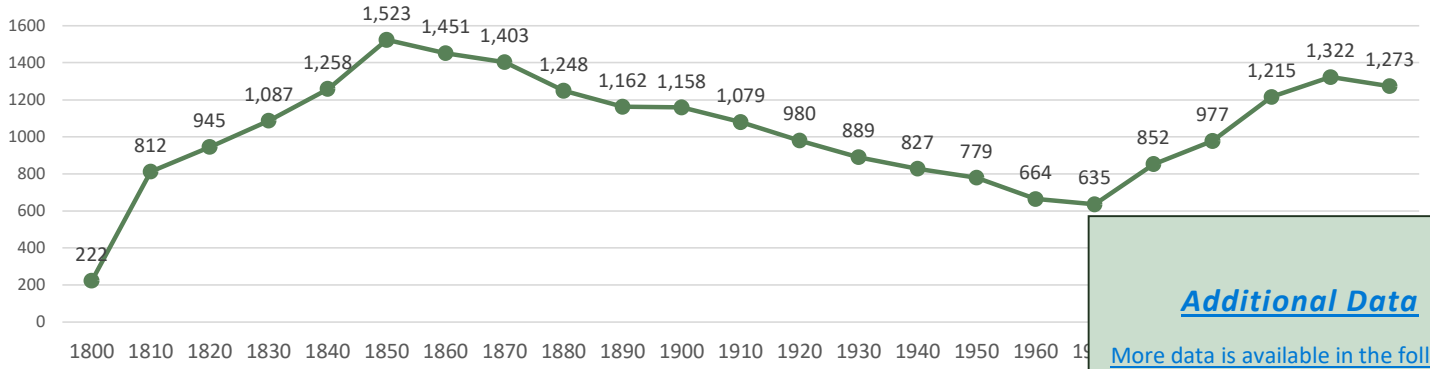
BAKERSFIELD

2026 Town Plan

The population of the Town of Bakersfield has fluctuated over the past two centuries (Figure ~~2.~~1~~).~~. X). In the mid-1800s, the town hit its peak population with more than 1500 residents. ~~-~~Following this peak, the population steadily declined until reaching a turning point in the 1970s.

Like many other towns in the ~~northwest region~~Northwest Region, the latter half of the 20th century brought significant growth to Bakersfield ~~(Table 2.1). .~~ From ~~1980~~1970 to ~~1990, its~~2010, the town's population ~~grew by 14.5 percent, and between 1990~~more than doubled. However, growth has since leveled off, and ~~2000 that increase jumped to 24 percent, nearly three times~~ the ~~rate of state growth (Table 2.2). The~~ most recent 2020

Figure 1.X: Bakersfield Population Trend, 1800-2020



Additional Data

More data is available in the following chapters:

Households and housing units: pg. XX (Housing Chapter)

Employment and income: pg. XX (Economic Development Chapter)

Educational status: pg. XX (Community Services Chapter)

Figure 1.X: Population Change Since 1970, Bakersfield and Surrounding Area

Data source: U.S. Census

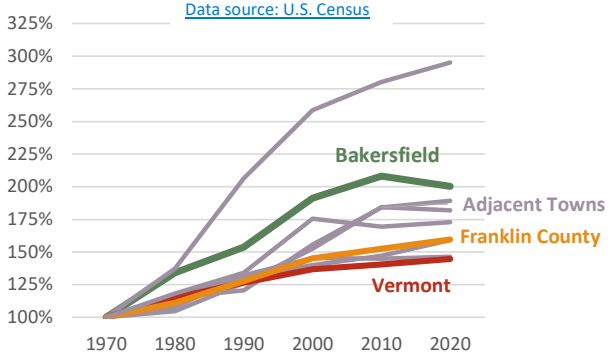


Figure 1.X: Median Age, 1980-2020

Data source: U.S. Census

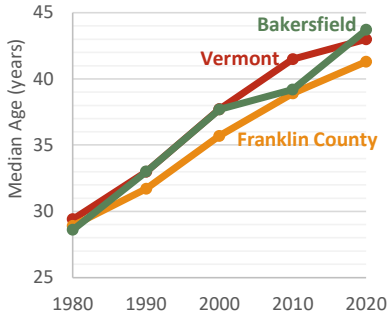
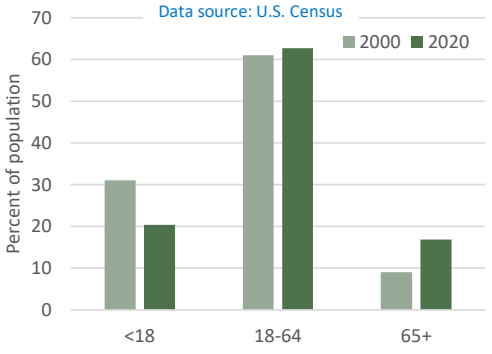


Figure 1.X: Bakersfield Population by Age Group, 2000-2020

Data source: U.S. Census



Census reported a slight decline in Bakersfield's population ~~continued to grow between 2000 and 2010 to a total of 1322.~~

Figure 2.1 Town of Bakersfield Population Trends, 1800-2010

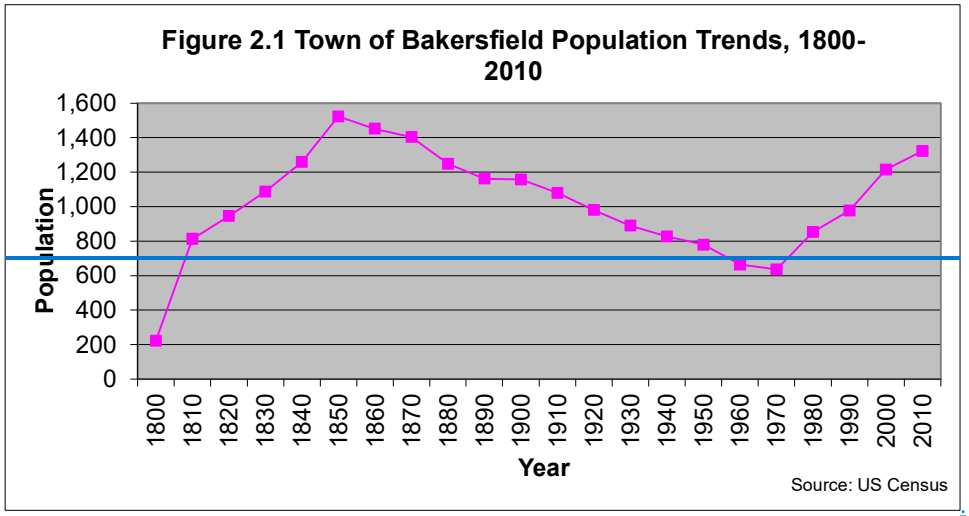


Table 2.1: Populations Trends for Bakersfield and its Surrounding Areas					
	Actual				
	1970	1980	1990	2000	2010
State of Vermont	444,731	511,466	562,767	608,827	625,741
Franklin County	31,281	34,788	39,980	45,417	47,746
Bakersfield	635	852	977	1,215	1,322
Fletcher	456	626	941	1,179	1,277
Fairfield	1,285	1,493	1,680	1,800	1,891
Enosburg	1,918	2,070	2,535	2,788	2,781
Montgomery	651	681	823	992	1,201
St. Albans City	8,082	7,308	7,339	7,650	6,918
St. Albans Town	3,170	3,555	4,606	5,324	5,999
Lamoille County	13,309	16,767	19,735	23,233	24,475
Belvidere	189	218	228	294	348
Waterville	397	470	532	697	673
Data Soure: U.S. Census					

Table 2.3: Percent Change in Number of Households, and Housing Units 1980-2000

	Households			Housing Units		
	1980-1990	1990-2000	2000-2010	1980-1990	1990-2000	2000-2010
Fletcher	37.3%		50.3%		25.3%	8.3%
Bakersfield	29.2%	27.3%	12.8%	19.3%	21.5%	16.3%
Fairfield	16.2%		12.5%		7.1%	5.1%
Franklin County	23.7%	17.0%	10.4%	19.3%	11.8%	12.5%
Enosburgh	7.9%		5.5%			0.3%
Montgomery	4.6%		28.9%		28.5%	21.1%
Vermont	18.1%	14.2%	6.6%	21.5%	8.5%	9.6%
St. Albans City	-9.6%		0.4%		4.2%	-9.6%

As the population of Bakersfield has increased, so too have the number of households and housing units (Table 2.3). The percent increase in the number of households and housing units for the Town is greater than the figures for the county and for the state. The rate of growth in the number of households and housing units has declined between 1980 and 2010. The average household size held relatively steady at in between1990 (2.83 persons/household) and 2000 (2.77 persons/household). The average household size decreased in 2010 to 2.25 person/household. This reflects trends both county and statewide.

Table 2.4: Age Structure Comparison in Bakersfield and its Surrounding Areas

	Year	% of Pop < 18 yrs	% of Pop 18-64 yrs	% of P	
Belvidere	1980	15.3%	4.6%	28.9%	18.4%
Bakersfield		25		55	
Waterville	1990	18.4%	13.2%	31.0%	3.4%
-		21		59	
-	2000	31		61	9
-	2010	28.5	61.7	9.9	39.2
Franklin County	1980	33	56	11	28.9
-	1990	29	60	11	31.7
-	2000	28.1	60.9	11	35.7

Data Source: U.S. Census

Definitions:

A Housing Unit is a house, an apartment, a mobile home, a group of rooms, or a single room that serves as a separate living quarters.

-	2010	27	61	12.2	38.9
State of Vermont	1980	28.4	60.2	11.4	29.4
-	1990	25.9	62.3	11.8	33
-	2000	24.2	63.1	12.7	37.7
-	2010	24	61.5	14.5	41.5
Source: US Census					

Age Distribution

The median age in 2010 for the residents of Bakersfield was 39.2 years. This age is up from 37.7 in 2000 and 29.4 in 1980 (Table 2.4), but is comparable to the median age of Franklin County and Vermont residents, 38.9 years and 41.5 years, respectively. Bakersfield, Franklin County, and the state of Vermont have all seen an increase in their median ages since 1980. As inAge

Like many towns in Vermont, the population of Bakersfield is aging. The percent of In 2020, the median age for Bakersfield residents was 43.7 years. This number has increased by over 15 years since 1980, a similar trend to Franklin County and Vermont as a whole. Bakersfield's 18-64 population has remained mostly steady since 2000, while the percentage of individuals under the age of eighteen has declined since 1980, while the percent of the population between the ages of eighteen and 64 has seen a slight increase. Bakersfield has actually seen the population of thoseand the percentage age 65 and older than 65 years remain steady since 1980has increased.

Special Populations

The US Census Bureau's American Community Survey (ACS) provides information about the number of people with various levels and types of disabilities. The percentage of Bakersfield's population with a disability is 14%, roughly the same percentage as in Franklin County and Vermont. More specific information on disability status in Bakersfield is difficult to obtain due to the small sample size of the ACS. Data for disabled persons

between the ages of 5 and 15 years old is no longer available for Bakersfield via the census, but was higher than previous county and state averages in the past (8.3 percent in 2000). Franklin County (5.1 percent) and the state of Vermont (5.8 percent) have lower percentages as of 2012 per the American Community Survey (Table 2.5). Bakersfield has a higher percentage of disabled persons over the age of 65 (42.2 percent) as compared with the County (41.1 percent) and the state (34.6 percent).

Table 2.5: Percentage of Population by Age with Disability Status

-	5-15 years old	16-64 years old	65 and over
Vermont	5.8%	11.0%	34.6%
Franklin County	5.1%	14.0%	41.1%
Bakersfield	Not Available	11.5%	42.2%

Source: 2008-2012 American Community Survey

Income and Economy

Historically, the Bakersfield economy has relied heavily on agriculture, forestry and education. According to the 2012 American Community Survey, 716 Bakersfield residents age 18 and older are working. Of these, only 6 percent made their living through farm, forestry or mining occupations. (Figure 2.2). More than 23 percent of Bakersfield residents reported health care, education or social services. This represents a significant shift in the economy of Bakersfield and is expected to continue in the coming years.

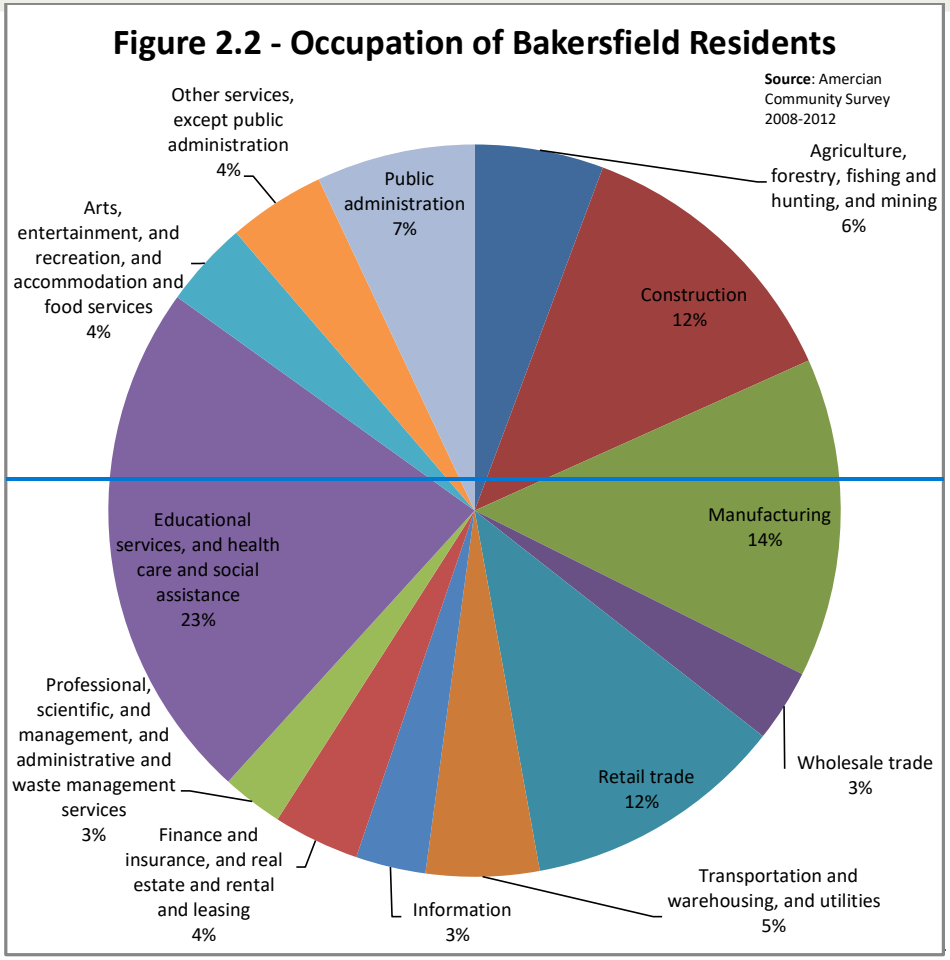


Figure 2.2 - Occupation of Bakersfield Residents
Source: Amercian Community Survey 2008-2012
Agriculture, forestry, fishing and hunting, and mining 6%
Construction 12%
Manufacturing 14%
Wholesale trade 3%
Retail trade 12%
Transportation and warehousing, and utilities 5%
Information 3%
Finance and insurance, and real estate and rental and leasing 4%
Professional, scientific, and management, and administrative and waste management services 3%
Educational services, and health care and social assistance 23%
Arts, entertainment, and recreation, and accommodation and food services 4%
Other services, except public administration 4%
Public administration 7%

~~The median household income for Bakersfield was slightly above the median household income for both Franklin County and for Vermont in 1989, but by 1999 had dropped to be slightly below and remains there as of 2012 (Table 2.6). The percent change in median household income in Bakersfield from 1999 to 2012 was significantly higher than that of Franklin County (62 percent as compared with 59 percent). Despite the fact that Bakersfield has a lower median income, the Town has a lower percentage of families with incomes below the poverty level (8.1 percent) as compared to the County (8.2 percent).~~

Commented [A2]: This discussion will be moved to the Economy chapter

~~**Table 2.6: Median Household Income and Percent Change & Percent of Families Below Poverty Level**~~

-	~~**Median Household Income & Percent Change**~~				~~**Poverty Level and Percent Change**~~		
-	~~**1989**~~	~~**1999**~~	~~**2012**~~	~~**% change 1999-2012**~~	~~**% families below poverty level 1999**~~	~~**% families below poverty level 2012**~~	~~**% Increase**~~
~~**Bakersfield**~~	~~$29,946~~	~~$40,417~~	~~$65,481~~	~~62%~~	~~6.12%~~	~~8.10%~~	~~1.98%~~
~~**Franklin County**~~	~~$28,401~~	~~$41,659~~	~~$66,186~~	~~59%~~	~~7.00%~~	~~8.20%~~	~~1.20%~~
~~**Vermont**~~	~~$29,792~~	~~$40,856~~	~~$69,033~~	~~69%~~	~~6.30%~~	~~7.30%~~	~~1.00%~~

~~Source: US Census of Population 1980-2000 and American Community Survey 2008-2012~~

~~Chapter 3~~

2. HISTORIC AND ARCHAEOLOGICAL RESOURCES[1]

Goals

- **To preserve important historic and archaeological resources in Bakersfield**
- **To recognize and respect Bakersfield's rich history in decisions regarding land use and development**

Policies

1. **Protect sites of archaeological and/or historical significance**
2. **Encourage the adaptive reuse of the Brigham Academy and other historic buildings to meet the needs of the Bakersfield community.**
3. **Encourage efforts to secure grants and raise funds for the preservation of historic and archaeological resources**
4. **Identify sites of potential archaeological and/or historical significance, and produce a document and map that locates and describes these sites**
5. **Encourage appropriate design and land use compatible with the historic character of the village**
6. **Encourage the planting of trees in the schoolyard and parks, and throughout the town**

Town History

~~The town of~~ Bakersfield ~~was originally chartered as Knowlton's Gore~~has a rich history, which is summarized in ~~1787. Approximately~~ this chapter

[1] ~~Special thanks to Nancy Hunt for all of her work in compiling this chapter.~~

GRAND ISLE

Town Plan

beginning on the next page. Special thanks to Nancy Hunt for all of her work in compiling this chapter.

GRAND ISLE

Town Plan

Abenaki, Mahican and Iroquois people have lived in the area for thousands of years. The European settlement of Bakersfield began in the late 1700s.

1791: Charter granted by the State of Vermont

- 10,000 acres of land were granted to Luke Knowlton, a land surveyor~~. Soon after the charter was signed by Governor Thomas Chittenden on January 25, 1791, Knowlton,~~ who then sold ~~the land~~it to Joseph Baker, a settler from a well-to-do family in Westboro, Massachusetts. ~~In 1792, part of adjoining Fairfield and Smithfield lying to the south and west of the present-day village common and St. George Cemetery, respectively, were annexed to Bakersfield.~~

Starting in 1800, Bakersfield's population began to grow rapidly. Over the next 50 years, the Town would grow from 200 residents to over 1,500. Many were families who emigrated from areas near Boston.

~~**Between 1800 and 1850 the population of Bakersfield increased from 222 to an all-time high of 1,523 inhabitants. By**~~

- **1839~~, some of the early families who had emigrated from areas around Boston realized that their children and grandchildren needed more than the 8th grade education provided by the town's 12 school districts if they were to succeed in the rapidly changing economy of the mid-19th century.~~ : Bakersfield's first Secondary School, South Academy, is founded**

Thirty-one townspeople contributed sums ranging from ten to seventy-five dollars to build South Academy (~~later St. George Church 1885-1977, and~~today's Bakersfield Historical Society ~~1997-present). The officers of the Bakersfield Academical Association hired Jacob Spaulding, a graduate of Dartmouth College, as the first headmaster/teacher (1840-1852). The catalogue of 1850 in the Historical Society's collection lists~~building). At its peak the school had 361 students from all over Vermont, New York, New England and Quebec~~, along with the houses where they~~ who took room and board for $1.25 per week~~. Some of these~~ in Greek Revival houses ~~with their continuous additions~~along Main Street (some of which are still standing ~~along Main Street~~ today~~.~~).

- **1844: North Academy founded**
  - In 1844, the Methodists built a second academy, North Academy on a hill across the road from the Methodist Church ~~**(its frame structure deteriorated and was torn down years ago). They hired the Rev. H.J. Moore, a noted classical scholar from New York State as its principal.**~~ . The two academies competed for excellence and established Bakersfield as an exceptional center for secondary education in

northern Vermont ~~in the mid-19th century. Meeting the demand for goods and services needed by the student population brought economic prosperity to an otherwise agricultural town. Two stages a day made round trips to St. Albans. The instructors and graduates who continued to live in Bakersfield enhanced the cultural environment of the community for years.~~ .

- In the mid-19th century, m**eeting the demand for goods and services needed by the student population brought economic prosperity to an otherwise agricultural town. Two stages a day made round trips to St. Albans. The instructors and graduates who continued to live in Bakersfield enhanced the cultural environment of the community for years.**
- During and after the Civil War **(1861-1865)**, Ba**kersfield experienced its first decline in population**, while the **percentage of Irish and French Canadian residents** increased.

~~Even though Bakersfield experienced its first decline in population during and after the Civil War (1861-1865) the percentage of Irish and French Canadian residents was increasing. The drop in student enrollment at South Academy driven by the war and the availability of other secondary school opportunities in northern Vermont provided a place for the Roman Catholics to worship. Beginning in 1867 the Congregation of St. George bought South Academy floor by~~

~~floor until they owned the whole building in 1885. In 1906 the parishioners had transformed the post and beam Greek Revival school house and belfry into the neo Gothic church that today is the home of the Bakersfield Historical Society. In 1865, the Congregation of St. George also purchased a burial ground, which continues today as the Catholic Cemetery in Bakersfield, located at the head of the Avenue (West Street). Figure 3.1 shows the development patterns, including the boundaries of Bakersfield's 13 school districts, in 1871.~~

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GRAND ISLE

Town Plan

~~When~~

- **1867: South Academy converted into St. George Catholic Church**
- **1877: Brigham Academy established**
    - Peter Bent Brigham died in 1877, leaving a bequest of $30,000 for the improvement of education, and the townspeople voted to build a high school **~~instead of dividing the funds among the 13 school districts. Their decision was encouraged by Sarah Brigham Jacobs, his widowed sister, who purchased a tract of land in the village for the academy.~~** . The building was completed and dedicated in August 1879**~~, with President Buckham of the University of Vermont and almost 1000 people in attendance. When Sarah Jacobs died in 1891, she left an endowment of $100,000 that strengthened the school's financial resources as well as providing seven scholarships for graduates to attend the University of Vermont.~~** . The north wing, built in 1900, doubled the size of the building**~~; it included a gymnasium for fitness training as well as four laboratories and classrooms to meet the needs of increased enrollment with an emphasis on scientific curriculum.~~** .

- **~~The completion of the~~1877: St. Johnsbury and Lamoille County Railroad ~~in 1877, with a~~completed**
    - A depot only a few miles away in East Fairfield**~~,~~** provided convenient transportation for Brigham Academy students and their families, as well as access to larger markets across northern Vermont and beyond for local merchants, tradesmen and farmers.

- **~~By~~ 1878: Telegraph line reaches Bakersfield ~~residents received messages and news over a telegraph line~~**
    - Line went from East Fairfield to the home of Mrs. Bradley Brigham (site of the present library) because she had learned Morse code. ~~-~~In 1899 that line was replaced with a telephone line to a public phone in the J.A. Perkins Variety Store (now an apartment block on Main Street opposite the Avenue).~~ Electrical power was available in the village in Bakersfield in 1924.~~

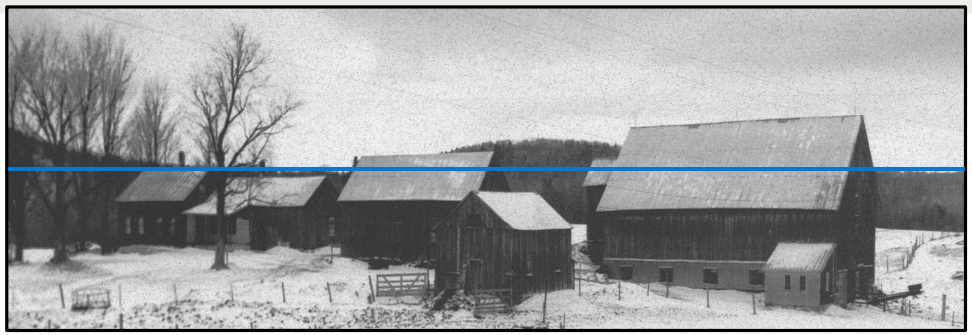
~~Bakersfield, in spite of a 43% decrease in resident population between 1870 and 1940, was a vibrant, self sufficient and prosperous community. The influx of students (as many as 160 in 1900) paid room and board in private homes, supported local stores and services, and entertained the townspeople with concerts, drama productions, athletic competitions, and literary publications. There were two venues for presentations and celebrations, one in the second floor auditorium of the Academy and the second, after 1909, on the second floor of the Town Hall for local~~

~~gatherings. The latter had a curtain painted by C. Andrus for its stage. The town gave it to the Vermont Historical Society several years ago. There was a trotting park behind the Catholic cemetery where residents could train and race their horses. An elegant hearse carriage, now on display at the Shelburne Museum, was available to carry the deceased to a free burial plot in the village cemetery. It was stored in the rear of the Queen Anne style hearse house that had been built for it in 1890.~~

- ~~**Agriculture flourished throughout Bakersfield until the middle of the 20th century. The earliest farms were self-**~~ **1888: Agricultural Census lists over 100 farms in Bakersfield**

Earlier farms were self-sufficient sources of food including grains and livestock for family use with small surpluses to barter or sell. ~~There was a saw and grist mill on Browns Pond in the north and a tannery. Until the War of 1812, there was a market in Canada (Great Britain) for ship building timbers and potash salts, both by-products of clearing the land. Cattle, especially oxen were prevalent, for hauling carts and clearing land. By the mid 19th century when Bakersfield's population reached its peak, there were almost four times as many sheep as people. Farmers from earliest times boiled maple sap for sugar at first on arches in the woods and later in sugar houses.~~

~~It wasn't until after~~After the Civil War ~~(1861-1865) that farmers~~, farms began specializing in dairy cattle. ~~Child's agricultural census (1888) lists over 100 farms in Bakersfield with an average of 18 cows, which were distributed evenly throughout the town. Jersey cows were the preferred breed because of the high butterfat content for butter and cheese production. Resident laborers, tradesmen, farriers, blacksmiths, harness makers, cattle brokers, and doctors were readily available.~~ Over time, many local businesses such as tanneries, creameries, ~~slaughter houses~~slaughterhouses, farm implement and feed stores provided the infrastructure needed for a strong agricultural economy.



~~***The Malone Farm in East Bakersfield includes an 1850 house on the left and a high bank dairy built in 1890 on the right. Horses pulled hay wagons piled high with loose hay up the ramp or wharf. Hay was packed into the sides of the loft and dropped down to the dairy***~~

~~A decline in agriculture accelerated during the 20th century due to technological change and state/federal regulations. The availability of electricity and gas-powered machinery in the 1930's, though extremely beneficial to the lifestyle of farmers, often brought financial challenges to the sustainability of Bakersfield's farms. Refrigerated storage elevators, rail cars and trucks required capitalization and centralized processing that in turn caused dependence on a commodity market for fluid milk.~~

Despite a 43% decrease in resident population between 1870 and 1940, Bakersfield was a vibrant, self-sufficient and prosperous community. The influx of students (as many as 160 in 1900) paid room and board in private homes, supported local stores and services, and entertained the townspeople with concerts, drama productions, athletic competitions, and literary publications.

~~Today, there are five dairy farms in Bakersfield, including one very large operation with a methane digester on the northern boundary with Enosburgh. There is a growing number of small farms engaged in livestock and local/organic food production. Many maple sugar producers process and market their own syrup. There are also three tree farms that raise and sell Christmas trees. Increasingly, landowners with timber and open land not enrolled in current use are selling lots for development.~~

During the 1950s and 60s, the automobile brought changes to Bakersfield. A growing number of residents found access to more goods and services in St. Albans, Essex, and elsewhere. The cultural dynamic changed from a self-sufficient and vibrant community to that of a bedroom town.

~~Except for loss by fire, many of the historic houses, public buildings, and barns in Bakersfield remain intact. The cultural dynamic, however, has changed dramatically in the last 50 years from a self-sufficient and vibrant community to that of a bedroom town. During the 1950's the dirt road to St. Albans was paved and became State Highway 36: Rte 108 was straightened and paved. By the end of the decade, a growing number of Bakersfield residents found better paying jobs at IBM in Essex and St. Albans as well as access to more goods and services. The completion of Interstate 89 to the Canadian border during the 1960's accelerated the daily exodus from the town.~~

~~**In**~~

-
- **1950s: The dirt road to St. Albans is paved and becomes Rt. 36. Rt. 108 is paved and widened.**

- **1967 ~~the~~: The town ~~voted~~votes not to make the state-mandated improvements to Brigham Academy, and it ~~was closed~~closes as a high school. ~~The academy building has been vacant since the~~**
    - A new K-8 school was built in 1987, and the Brigham Academy building has remained vacant since. The flow of students that had formerly brought prosperity and vitality to the village reversed course and left each ~~week day~~weekday for Enosburg, BFA in St. Albans or Essex.

Commented [A4]: Sentence structure is a bit confusing- reads like the K-8 building is vacant

- **Most of the population growth since the 1970s has occurred in the rural areas of town, especially to the north and east of the village.** The improved highways that enabled long time Bakersfield residents to leave the town for better jobs, goods and services also allowed people from Chittenden County to move to Bakersfield and commute to their jobs. Landowners with timber and open land sold lots for residential development to meet this demand. Even though the population has doubled, commercial activity in the village is limited. **Many of the historic houses, public buildings, and barns in Bakersfield remain intact.**

~~Elise Wells in her history of Bakersfield (1976, pp 120-121) noted how "the automobile has changed many things… The cars whisk people off to work every morning…People used to sit on their porches to see their neighbors. Now, they look out at the forests and mountains behind their houses and have outdoor cookouts and picnics… There are two general stores where once there were five, but you can buy many things you never could before and at fairer prices…The town had two doctors. Now townsfolk go to the two hospitals in St. Albans…"~~

~~Even though the population has doubled since the 1970's, commercial activity in the village is limited, mostly to support commuters and weekend recreation. There are two convenience stores with limited takeout, one of which has gas pumps, two car repair shops, and a sales and service business for recreational vehicles.~~

~~Most community activities are focused on fund raising and take place in the school cafeteria/gymnasium. The town meeting luncheon and bereavement receptions are held in the Historical Society building. For many years the fire department has sponsored Homeland Days in September with a parade down Main Street that is followed by a chicken barbecue, musical entertainment, cow plop, and games on the B Brigham lawn. In 2009, the town sponsored Bakersfield's own 4th of July celebration with activities on the village green, street dancing and fireworks by the town garage. This continues today, and Homeland Days was merged with the 4th of July in 2015.~~

~~Most of the population growth since the 1970's has occurred in the rural areas of town especially to the north and east of the village. The improved highways that enabled long time Bakersfield residents to leave the town for better jobs, goods and services also provided urban dwellers in Chittenden County and beyond greater access to former farms and large tracts of woodland at a relatively low cost. Increasingly, due to recent price increases, landowners with timber and open land not enrolled in current use are selling lots for development.~~

More information on the Town's history is available from the Bakersfield Historical Society at historicbakersfieldvt.org.

Historic Resources

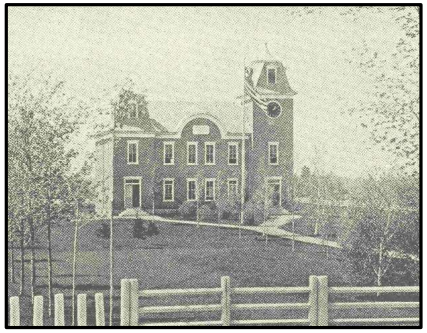
Historical cultural and archaeological resources are irreplaceable and provide a sense of continuity between the past and the present and help us identify who we are. It is important to preserve and promote these resources whenever possible.

GRAND ISLE

Town Plan

The Bakersfield Historical Society was established in 1997 as a 501(c)(3) non-profit cultural and educational organization dedicated to community awareness and the preservation of Bakersfield's heritage. A grant from the Vermont Museum and Gallery Alliance guided the organization in developing a collection management policy to properly conserve its extensive archive relating to the people, places, things and events in Bakersfield. The Historical Society has the only existing comprehensive collection of Brigham Academy catalogues, programs, photographs, and literary publications. They reveal the quality and extent of the academy's curriculum and student activities including athletics, plays and musicals. The building is open on a regular basis from May to October or by appointment. The Board of Directors meets monthly to plan programs and exhibits that have included participation in the Vermont History Expo. It publishes four newsletters a year and depends upon memberships, donations and fundraisers to maintain its building for community use.

State and National Historic Register



There are over 100 ~~public~~ buildings, houses and barns in the town of Bakersfield that are listed on the Vermont State Register of Historic Structures (as conducted in 1985). So far, two of these are listed on the National Register of Historic Places and one nomination is pending.

- ***Brigham Academy (listed 1995~~). ~~):*** The Brigham Academy Restoration Plan, completed in 1995, found that the building continues to be structurally sound and with proper renovation would be appropriate for educational and community services, or potentially elderly housing. So far, the clock/bell tower has been repaired and the roof replaced with grants from the Preservation Trust of Vermont/Vermont Division of Historic Preservation and the Vermont Housing and Conservation Board (VHCB), respectively. In 2003, voters approved the Brigham Academy agreement at a warned joint meeting of the Bakersfield Town and School district to renovate 75 percent of the building for school use and 25 percent for town use. The VHCB holds an easement to retain the front lawn of the Academy building as an open space including its alley of maple trees. A Municipal Planning Grant from the Vermont Agency of Commerce and Community Development was used in 2012 to assess the Academy Building for future renovation. The architectural firm conducting the assessment reported the foundation and other infrastructure were sound enough for complete or partial renovation of the building for future uses. In 2013, the Board of the Bakersfield Elementary and Middle School voted to sell its share of the Academy to the Town. Execution of this sale was completed in September 2014.

- ***South Academy/St. George's Church (listed 2001~~).~~):*** Saving the South Academy/St. George's Church from demolition was the first project of the Bakersfield Historical Society. ~~-~~Taxpayers provided $10,000 as seed money so that funds could be raised through grants (Preservation Trust of Vermont, Vermont Division of Historic Preservation, and the Vermont State Legislature via the Cultural Facilities Coalition) as well as a capital campaign to repair the hand-hewn post and beam structure and bell tower, replace the roof and chimney, upgrade the lighting and electrical systems, install a kitchen as well as a code compliant bathroom and handicapped ramp. ~~-~~The masonry on the main building still needs to be repaired and the newer bricks on the 1906 addition need to be replaced. The Bakersfield Historical Society is currently located in the building.

- ***Hearse House (nomination pending~~).~~):*** The Hearse House, owned by the Town and maintained by the Bakersfield Cemetery Commission, ~~has been~~was nominated by the UVM Historic Preservation Program for inclusion in the National Register of Historic Places. ~~Reportedly it~~It is a unique funerary structure; its elegant hearse carriage that was stored in the rear is on display at the Shelburne Museum. ~~-~~Currently its windows are broken and the beam between the front rooms and the rear garage needs to be replaced. ~~-~~The Cemetery Commission uses the space for storage of cemetery benches and urns; the mower is stored in the rear. ~~One year~~The outside was repainted by high school students ~~painted it~~ as part of a Community Service project.

Commented [A5]: Still pending? Doesn't look like it was ever accepted

Other ~~significant sites:~~ Significant Sites

Residents and visitors entering Bakersfield from the South on ~~Rte~~Rt. 108 are welcomed to Bakersfield at the Fletcher line by ~~an~~a historic ~~farm stead (see frontispiece).~~ farmstead. Two other barns reveal changes in agricultural technology that took place during the 19th and 20th centuries. ~~-~~Old Stage Road on the east side of Town is an ancient road that continues up Kings Hill past stone foundations to the District 9 School House.

A concentration of mostly historic village houses begins with the Daniel Dean place across from Larry's Tree Farm and continues north to the landmark federal brick houses at the four corners. ~~-~~To the east is a row of public buildings:~~-~~ Town Hall (1909) with its paneled and tin-clad interior, Congregational Church (1845) and South Academy (1840; remodeled 1906)/Bakersfield Historical Society. ~~-~~This road continues out to East Bakersfield and the historic Malone farm (1850, 1890~~).~~), Cook Cemetery and more.

Main Street continues north on ~~Rte~~Rt. 108 past the village cemetery/hearse house/village common, and the iconic Brigham Academy building (1879/1900) with its deep lawn and alley of maple trees.- Across Main St. to the east is the town library (1950) as well as a row of mostly historic and well maintained private houses on both sides of the street. -The Methodist Church (1854) and the Hazeltine house (1800) mark the northern end of the historic village, yet a keen eye will spot other houses on the Vermont State Register on the east side of the road until its end at the Albert Brigham house at the fork. -There are many historic ~~farm houses~~farmhouses, including two stone houses, the site of the former Johnson saw mill and more on the Joyal and Witchcat roads. -There are many historic farms and barns along Egypt and Lawyer roads as well.

There are many other historic buildings and landmarks in Bakersfield not included on the historic register. -Smaller landscape features that often go unnoticed are increasingly considered of historic value and importance. -These include old barns and outbuildings~~;~~, stone walls, corner stones, markers, ~~and~~ "witness trees~~;" and~~," old apple orchards ~~and~~, lilac bushes planted around former homesteads, and clumps of orange day lilies.- These features say as much about the region's rural and agricultural heritage as many of its more readily recognized historic landmarks, but are often disturbed, removed or demolished without any thought. -Recognizing the need for more public education, the Vermont Department of Forests, Parks and Recreation in 1994 published Stonewalls and Cellarholes: a Guide for Landowners on Historic Features and Landscapes in Vermont's Forests.

~~In 1990 a~~A study conducted by UVM's historic preservation program found that incremental changes over time, including cumulative alterations to historic structures, and the abandonment, deterioration and demolition of outbuildings and barns, ~~had~~have a profound impact on historic character and significance. ~~They noted~~It notes that the removal of agricultural buildings in particular ~~suggested the~~suggests a failure to connect the preservation of buildings with the preservation of rural and community character. -In Bakersfield, many historic homes and farms are under private ownership.- There is currently little incentive or financial assistance to encourage the preservation of these structures. -The Vermont Division of Historic Preservation does offer grants of up to $~~10~~20,000 for the restoration and repair of historic agricultural buildings.

In 2011, Bakersfield was granted ~~Village~~ Center designation by the Vermont Department of Housing and Community ~~Affairs~~Development. This gives the Town and residents access to tax credits for ~~various improvements~~historic preservation projects in the village center. In 2026, Bakersfield also received a Neighborhood designation that gives additional benefits to the area immediately surrounding the village. More information on the designation program is available in the Economic Development chapter.

Commented [A6]: Needs to be updated with the new FLU designations Center & Neighborhood

Archaeological Resources

Archaeological resources provide evidence of human habitation ~~dating~~starting from prehistoric times~~.~~. A number of important archaeological sites have been found in Northwest Vermont.~~-~~ These include evidence of several types of prehistoric habitation and use, including villages, hunting and fishing camps, trails and trade networks, and burial grounds. ~~-~~Other archaeological sites include remnants of historic settlement and use, such as old foundations and cellar holes; quarry, mill, kiln and foundry sites, and unmarked cemeteries and roads. ~~-~~Although these sites are often buried and no longer visible on the land, they are nevertheless important for the story they tell of the collective past of the area.

The Division for Historic Preservation maintains listings of known archaeological sites within the state, which is made available on a "need to know" basis in order to protect their integrity. ~~As of 1995,~~At least 312 recorded archaeological sites ~~were~~have been identified in Franklin County.~~-~~ This figure likely represents only a small fraction of all significant sites in the region, since intensive investigation of site locations has not been

Commented [A7]: And more recent times? E.g. much evidence of Abenaki settlements is from much more recent time period

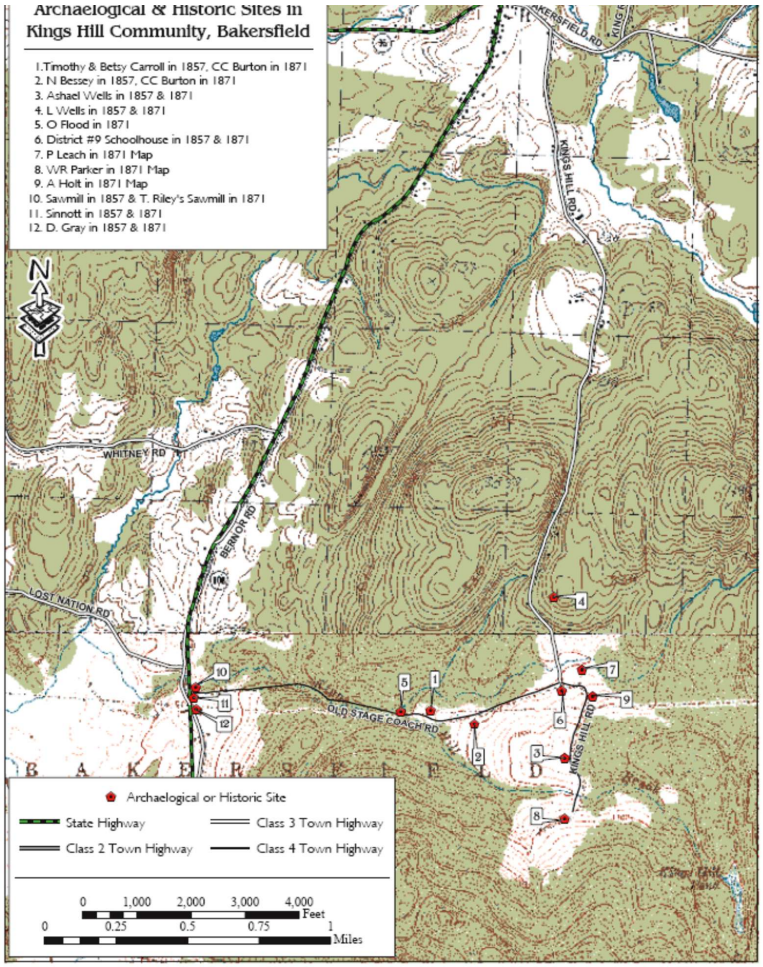
Commented [A8]: Assuming maps will be updated- looks like resolution needs to be improved

Commented [A9R8]: Although I believe that the state limits information on exact location of many sites

undertaken. -Archaeological sites are protected under state and federal law, including Act 250, the Vermont Historic Preservation Act (22 VSA, Chapter 14), and under Section 106 of the National Historic Preservation Act.

For planning purposes the Division has identified more broadly defined "sensitive areas," using modeling based on known site conditions, in which archaeological sites are known or expected to occur. -These include a 200 foot buffer along all major rivers and tributaries in the region, particularly in the vicinity of major confluences, and the Lake Champlain shoreland, which is considered highly sensitive. -Development in known or anticipated sensitive areas should be reviewed with particular attention given to the possibility of buried sites. ~~-Vermont's Archaeological Heritage, prepared for the Division of Historic Preservation in 1988,~~The Vermont Archeological Society estimates that most of Vermont's archaeological sites have not yet been found.- A Predictive Model, developed by the State Agency of Transportation, has greatly improved the ability to predict where historic and prehistoric sites are likely to be found.

Figure 2.X: Archaeological and Historic Sites in the King's Hill Area



GRAND ISLE

Town Plan

In Bakersfield, the Kings Hill area in the southeastern portion of town has a notable number of cellar holes and stone foundations along Stage Coach Road and at the junction with Kings Hill Road. -These sites provide intact archaeological evidence of a 19th century community that is described on 1857 Wallings Wall map and 1871 Beers Atlas. -This area includes the high fieldstone wall of the C. Bessey stage coach inn and the foundation of Betsey and Timothy Carroll's farmstead (Betsey Carroll's papers are in the Vermont Historical Society Collection). -In this same vicinity, the District No. 9 schoolhouse still stands intact, and serves as a camp to a local forester. -On Kings Hill Road ~~is~~are the ~~complete farmstead in~~ fieldstone foundations of Lucien ~~Wells~~Wells' complete farmstead, including a farmhouse, barn, silo, and ~~a~~ well.

There are also anecdotal accounts of cellar holes and other artifacts in the area of East Bakersfield and Sornborger Place, but they are not as significant as the Kings Hill area. -The Sornborger papers are available in the "Special Collections" at the University of Vermont.

Right: The former District No. 9 schoolhouse is evidence of the settlement that was once in the King's Hill area. Credit: Nancy Hunt

Below: Evidence of the Wells farmstead built ca. 1845 and burned in 1934 can still be found in the King's Hill area. Credit: Bakersfield Historical Society

6. ENVIRONMENT AND RESLIENCE

Goals:

- To protect and enhance the ~~natural integrity and~~ quality of wetlands and watercourses, wildlife habitats, ground water and aquifers, populations of rare and endangered species, forests, scenic viewsheds and all other irreplaceable natural resources.
- ~~To enhance environmental quality, preserve the character of Bakersfield, and protect its natural assets~~
- To~~E~~ encourage and foster an all hazards disaster resilient community.
- ~~Reduce the loss of life and injuries that result from disasters.~~
- ~~Reduce damages to public infrastructure resulting from all hazards events through hazard mitigation planning and project implementation.~~

Policies:

1. Restrict the density of development near high quality wetlands and watercourses, wildlife habitats, ground water and aquifers, populations of rare and endangered species, forests and all other irreplaceable natural resources to levels that will have minimal impact.
2. Support the purchase and protection of natural or fragile areas by local or state conservation agencies.
3. Prohibit all land development on slopes greater than 25 percent and maintain vegetative cover.
4. ~~Conduct~~ Regulate development on slopes greater than 15 percent ~~carefully in order~~ to avoid environmental degradation and conditions that create health hazards.

- Carefully control runoff and erosion should during all phases of construction.
- ~~Inventory the town for high quality wetlands and watercourses, wildlife habitats, ground water and aquifers, populations of rare and endangered species, forests and all other irreplaceable natural resources~~
- ~~Restrict the density of development in these critical areas to levels that will have minimal impact~~

5. ~~Discourage development within ecologically sensitive areas including wetlands, steep slopes, and areas with shallow soils~~
6. ~~Protect groundwater resources by p~~Prohibit~~ing~~ development in ~~those~~ areas where the water table is less than 1.5 feet below the surface.

- ~~Permit development only in a manner that is safe to existing water supplies, both public and private~~

7. Prohibit new construction within the Wellhead Protection Area, as designated by the Vermont DEC.

- ~~Minimize the impact of development on streams and floodplains to allow them to perform their natural functions~~

8. Encourage the use of Low Impact Development (LID) strategies to treat stormwater on-site.
9. Promote the natural balance of the hydrologic regime- by controlling excess runoff and maintaining natural water infiltration and storage capacities.

- ~~Encourage development within shoreline areas of streams, lakes or ponds that is compatible with the natural beauty of the area.~~
- ~~Require sufficient setbacks to prevent erosion along streambanks or shorelands and pollution from subsurface sewage disposal systems, and to retain visual and physical access to the water bodies~~
- ~~Prohibit land development resulting in the loss of wetland storage capacity~~
- ~~Prohibit additions to wetlands of any substances that are likely to increase the concentration of materials beyond their assimilative capacities~~

10. Promote development in proximity to wetlands, ~~and~~ streams and ponds that preserves their value for education, science, aesthetics and recreation.

- ~~Incorporate vegetated buffers from streams, rivers and ponds into Bakersfield's zoning bylaws in order to better protect water quality~~
- ~~Develop and utilize Fluvial Erosion Hazard Maps to minimize losses from flooding and erosion~~

11. Develop a plan to establish a Town Forest.
12. Evaluate the flood hazard regulations for opportunities to incorporate additional measures to increase public safety and reduce future damages.

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13. Consider adopting ~~and implementing~~ Rriver Ccorridor bylaws~~s and buffers~~ to discourage future development in areas of high risk ~~areas~~ for fluvial ~~flooding or~~ erosion ~~hazards~~.

Encourage the protection and restoration of floodplains and upland forested areas that attenuate and moderate flooding and fluvial erosion.

14.

15. Explore participation in the FEMA Community Rating System (CRS) ~~so as~~ to secure a discount on flood insurance

~~Incorporate mitigation measures when developing improvements or expansion to municipal infrastructure.~~

~~Encourage the protection and restoration of floodplains and upland forested areas that attenuate and moderate flooding and fluvial erosion.~~

~~Encourage and foster an all hazards disaster resilient community.~~

~~Reduce the loss of life and injuries that result from disasters.~~

~~1.~~16. Reduce damages to public infrastructure resulting from all hazards events through hazard mitigation planning and project implementation.

~~Encourage flood emergency preparedness and response planning.~~

~~Continue to implement high priority projects identified in the Local Hazard Mitigation Plan~~

~~Adopt annually the Local Emergency Operations Plan.~~

17. ~~P~~Continue to participate in the Franklin County Mutual Aid Agreement.

~~Resiliency measures will be compatible with natural features, including floodplains, river corridors, land adjacent to streams, wetlands, and upland forests, historic resources; character of neighborhoods; and the capacity of the community to implement them.~~

~~Emergency Management, and the road crew to plan improved emergency response capacity (operations, training, equipment) during natural disasters.~~

~~Adopt and implement the most recent (currently 2013) VTrans Town Road and Bridge Standards, or stricter standards.~~

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Bakersfield is rich in natural resources, including high quality forestland, abundant water resources, and valuable agricultural soils. ~~-~~These resources contribute significantly to the town's rural and scenic character, provide opportunities for recreation, and support the local economy. ~~According to a 2006 survey, 83 percent~~In the 2025 Town Plan Survey, over 70% of ~~surveyed~~ residents ~~felt that conserving~~supported protecting and preserving farms, forests, natural areas and scenic resources ~~was an important or very~~as the most important planning ~~goal.~~ goals. Through proper planning and management, Bakersfield can work to protect and conserve the valuable natural resources that make our community a unique and enjoyable place to live. Proper planning will also ensure that our community is resilient to flooding and all other environmental risks.

Land Resources

GRAND ISLE

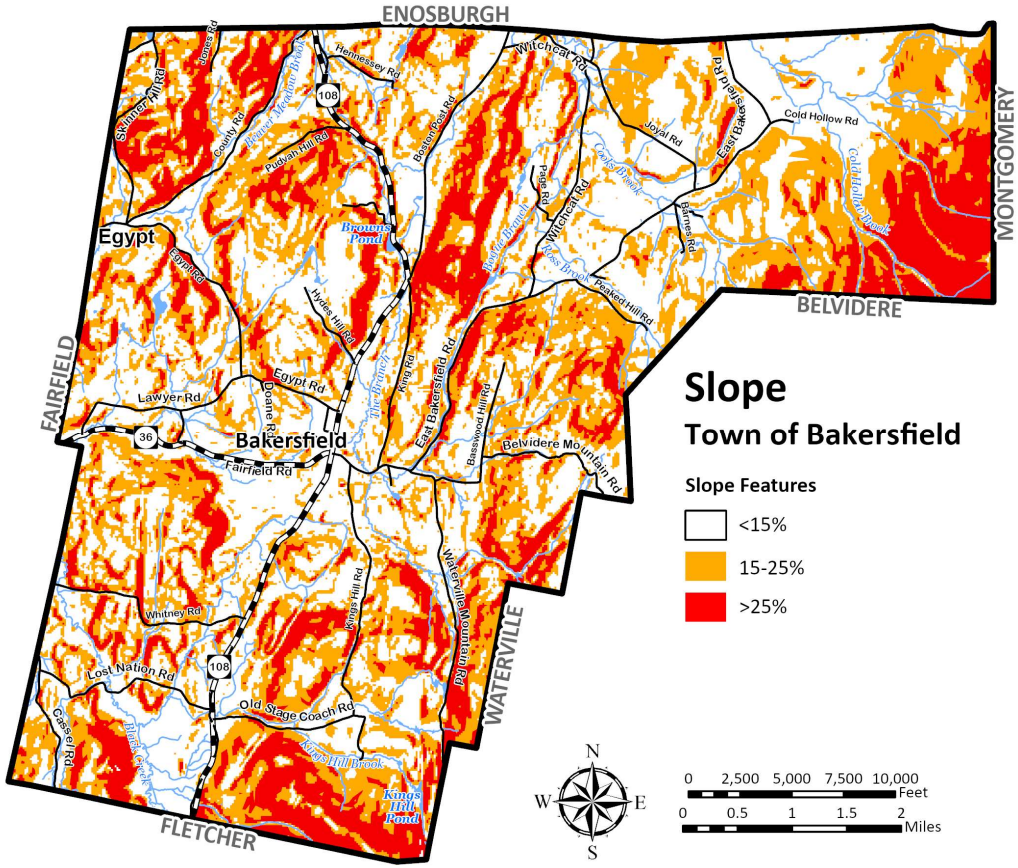
Town Plan

The Town of Bakersfield spans two biophysical regions: the Champlain Valley and the Northern Green Mountains region ~~(Thompson and Sorenson, 2000). .~~ The Town generally rises in elevation as you move from west to east, varying from under 600 feet to ~~approximately 1940~~over 2500 feet.

~~*High*~~ *Elevations and* ~~*Steep*~~ *Slopes*

Table X.X: Slope Classifications	
0-3%	generally suitable for most types of development but may require drainage
3-8%	most desirable for development because these areas generally have the least restrictions
8-15%	suitable for low-density development with particular attention given to erosion control, runoff, and septic design
15-25%	unsuitable for most types of development and septic systems, construction costly, erosion and runoff problems likely
>25%	all types of construction should be avoided, careful land management for other uses is needed

The high elevation areas of eastern Bakersfield include steep slopes, shallow soils, and exposed, fractured bedrock. -These areas are largely forested and are not well-suited to development. ~~The necessary cuts and slope stabilization for foundations, parking areas, road access and utilities are expensive and often, unless well-designed, unsafe.~~ Development on steep slopes ~~may also be at the expense~~can create a number of ~~the Town, as the costs of road maintenance, runoff maintenance and sedimentation~~environmental problems~~ increase with pitch. School bus and fire service may also be difficult, expensive, unsafe~~, including increased stormwater runoff, erosion and the possibility of landslides. Septic tank disposal fields on slopes greater than 15 percent can also result in partially treated effluent seeping downhill or ~~even impossible depending on weather conditions.~~



rising to the surface. The Natural Resources Conservation Service (NRCS) provides general guidelines for assessing slope limitations as shown in Table 8.1. ~~The slope of an area should be taken into account when deciding if the land is capable of supporting potential development.~~

~~Development on steep slopes can create a number of environmental problems as it may upset the natural slope repose angle and increase stormwater runoff, erosion and the possibility of mass movement or slumping. Septic tank disposal fields located on slopes greater than 15 percent may result in partially treated effluent surfacing and seeping onto the downslope~~

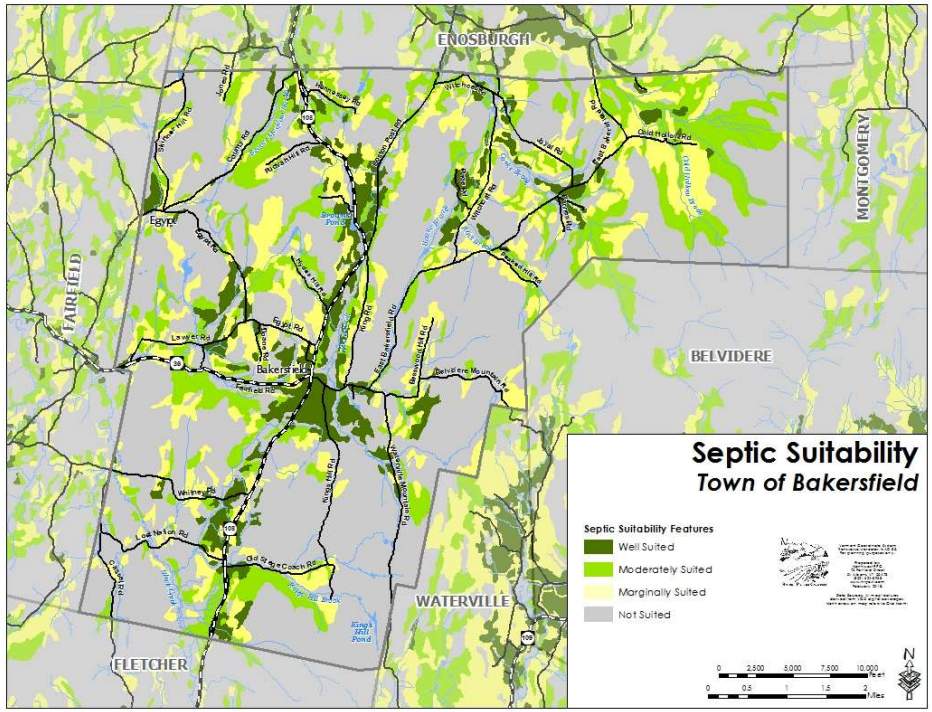
surface, causing health hazards and possible nutrient enrichment of surface water. Of the effluent that does remain under the shallow soil characteristic of steep slopes, much of it may flow laterally. This situation often results in groundwater contamination or the surfacing of effluent at outcrop or fragipan areas.

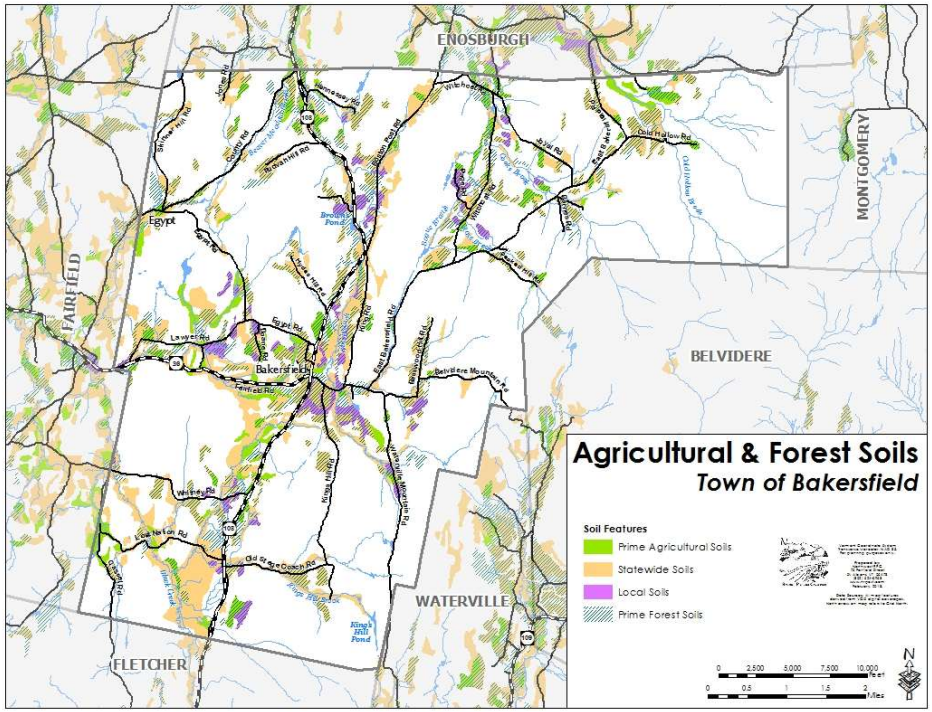
Soils

Soils are one of the most important environmental factors influencing the use of land in rural areas. Good, fertile soils represent a 10,000 year investment - a valuable and limited resource. Soils are classified on the basis of structure, form, composition, and suitability In planning for various types of growth and development. Within the context of land use planning, the characteristics that are of primary concern are bearing capacity, erodability, drainage, septic suitability and resource value. These characteristics tell us whether soils are capable of accommodating, it is important to target development, whether they are well-suited to agricultural or silvicultural uses, or whether they should be high priorities for conservation.

in areas with appropriate septic capacity. The septic suitability of Bakersfield soils are shown ~~in Figure 8.2.~~ to the right.

The ability of soils to support ~~agricultural~~farming and ~~silvicultural (~~forestry~~) activities~~ is also an important consideration in Bakersfield land use planning. ~~Vermont's agricultural soils have been identified by USDA/NRCS in the publication, "Farmland Classification Systems for Vermont Soils" (June 2006). Soils with values 1-7 are considered to have the characteristics needed to support agricultural uses and are shown on Figure 8.3. Soils with values 1-3 are considered "Prime soils" and are the most productive. Soils valued at 4-7 are considered to be of "statewide" importance. Soils in class 8 may be considered of local importance.~~





Local agriculture depends upon the availability of high quality soils~~,~~ in ~~sufficiently~~ large, contiguous parcels ~~(critical mass)~~ to allow for economical hay and field crop production. ~~Because of their physical qualities, however, these soils are often also considered the best suited for subdivision and development. The conversion of good farmland effectively takes it out of production over the long term, and reduces an already limited resource base. Given the importance of farming to the local, regional and state economies, farmland~~ Farmland conversion and fragmentation are of particular concern in Bakersfield. ~~Retaining sufficient acreage of primary agricultural soils in good condition for agricultural production is necessary for the continuation of farming our community. Keeping~~Keeping prime agricultural soils in agricultural use is one of the goals

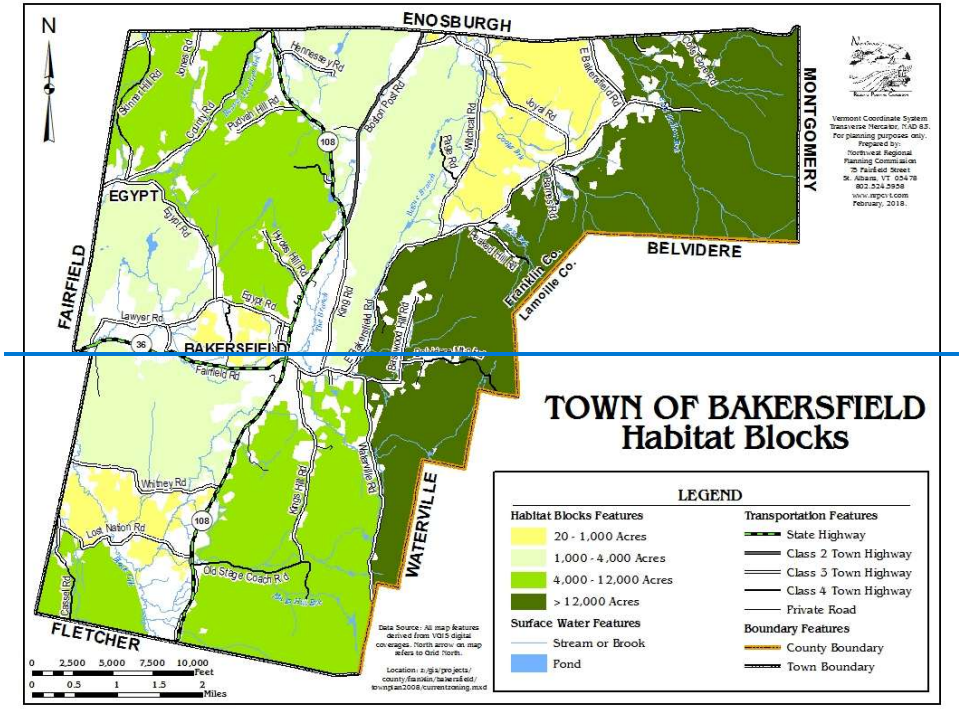
~~Figure 8.3 Agricultural and Forestry Soils in Bakersfield~~

~~The NRCS has also identified "primary~~ Prime forestry soils~~," important to sustain commercial forestry operations in the region, according to their relative productivity. Similar concerns exist regarding the development and fragmentation of these soils; however they tend to be more widely distributed, and less suited for intensive development. However, even low density development, including seasonal camps, may result in the fragmentation and degradation of productive~~ are also important to conserve. Areas of forest ~~land. Again, social and economic factors, as well as the sustainable management of the soils resource base (e.g., through accepted management practices (AMPs) for silviculture, as defined by the state) should be considered in determining~~soil can help determine which tracts of forest land should be maintained long-term for commercial use.

Sustainable management of soils through best management practices (BMPs) can ensure that farms and forest lands remain productive in the future.

~~***Forest Blocks and Habitat Connection***~~

~~Approximately 72 percent of Bakersfield is covered by forest (2002 Landstat data). Bakersfield's forests provide habitat for many different kinds of wildlife, stabilize soils, absorb runoff, add to the scenic value of the landscape, and provide a living for Bakersfield residents who rely on logging or profits from their woodlots. Large, unfragmented stretches of forest in the eastern part of Bakersfield are critical habitat for mammal and bird species that require forest interior. Bakersfield's forests are dominated by sugar maple, yellow birch, American beech, and hemlock. It is important to minimize forest fragmentation and promote the health, viability, and ecological function of forests in Bakersfield.~~



~~Figure 8.4 Habitat Blocks in Bakersfield~~

~~The habitat blocks located to the east of VT Route 108 are considered to be "highest priority" core habitat blocks by the Vermont Agency of Natural Resources. This essentially means that these are areas of contiguous forest that are unfragmented by roads, development, or agriculture that are critically important to protecting native species. The same habitat blocks have also been noted to be "highest priority connectivity blocks" in that they provide connection between the largest core habitat blocks located in the state and New England region along the "spine" of the Green Mountains. These blocks also provide connection to the forests and lowlands in western Franklin County.~~

~~*Earth*~~*Resource Extraction*

Earth resources, including sand and gravel deposits, are important natural resources particularly for their use in road maintenance and construction. ~~-~~However, it is important to recognize that these resources are finite and that the geologic processes that create them can take tens of thousands of years to occur. ~~-~~In Bakersfield, their use must be carefully balanced with the consequences of their extraction, and even then should be used only when high public benefit is in evidence. In 2014, the Town purchased land for a gravel pit and this should provide for the public needs for the foreseeable future. Other extractions in town, especially for commercial purposes, should be restricted.

Improper or excessive resource extraction is extremely damaging to the natural and scenic resources of Bakersfield, with far-reaching implications for water quality and the archaeological and aesthetic resources of the region. ~~-~~Sand and gravel deposits often serve as important areas for aquifer recharge and filtration. Disturbance of these areas results in a reduction of their natural ability to retain and filter groundwater, resulting in degraded water quality. On-site storage and disposal of materials at extraction sites can cause contamination of groundwater through the leaching of hazardous materials into the water table. ~~, so vital for high quality sources of drinking water. Disturbance of these areas results in a reduction of their natural ability to retain and filter groundwater, resulting in degraded water quality. On-site storage and disposal of materials at extraction sites can cause contamination of groundwater through the leaching of hazardous materials into the water table.~~ Removal of top soils ~~for sale~~ may also have far-reaching impacts and should be discouraged.

Cultural resources are also at risk of degradation through improper earth resource extraction, including the accidental destruction of buried archaeological sites, and diminished scenic qualities which may negatively affect land values and opportunities for future use. Noise, dust, and increased traffic on roads near extraction sites can increase road maintenance costs and negatively impact the quality of life in Bakersfield.

To minimize negative impacts on the natural and cultural environment, a focus on appropriate site development that minimizes visual impact and reduces the risk of resource degradation ~~should~~ shall be coupled with post-operative attempts at proper mitigation and site reclamation. ~~-~~Prior to permitting extraction, the Bakersfield Planning Commission may require a plan for the rehabilitation of the site during and at the conclusion of extraction or processing activities and appropriate guarantees to allow for enforcement and to ensure rehabilitation at the operator's expense.

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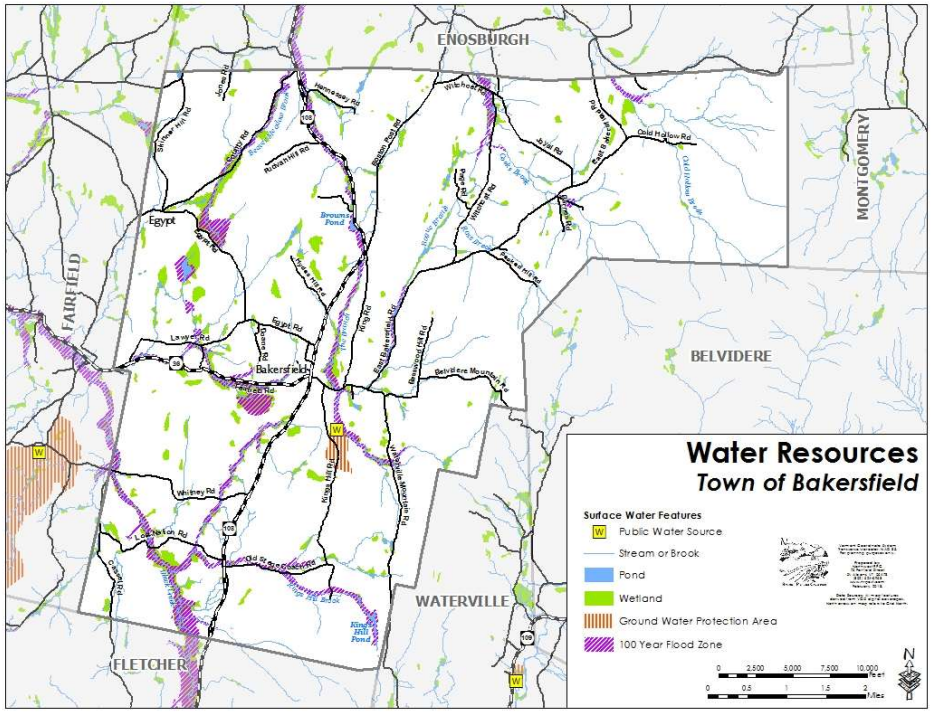


Water Resources

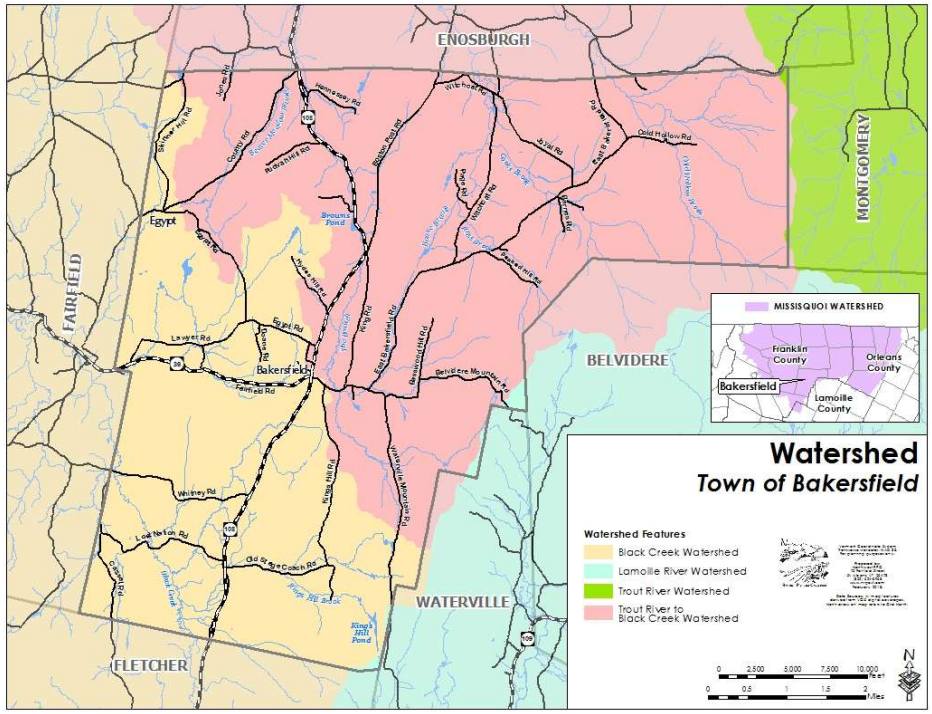
~~The town of~~ Bakersfield has rich water resources, including rivers and streams, wetlands, and groundwater resources (Figure 8.4). -The town's waters offer sustenance, scenic beauty, ecological values, and recreational opportunities and are important to the social, economic and cultural character of the community.

Surface ~~Waters~~ Water

Bakersfield is situated within the watershed of the Missisquoi River. -The Missisquoi Watershed encompasses much of northwestern Vermont and southern Quebec. -All of this area drains into the Missisquoi River Basin and ~~ultimately~~then into Lake Champlain. -This watershed has been identified as a high priority area for the Vermont Department of Environmental ~~Conservation's~~

~~Clean and Clear Center~~ Conservation due to its contribution to phosphorus runoff and ~~the resulting~~ water quality issues in northern Lake Champlain ~~(VT DEC, Clean and Clear Work Plan, 2007).~~ .

The two major subwatersheds in Bakersfield are the Black Creek and ~~Tyler Branch~~Trout River subwatersheds (Figure 8.5). ~~-~~Flooding and erosion are major issues within these subwatersheds. Stormwater runoff from roads, roofs, driveways and other surfaces also degrades local water quality and exacerbates flooding. During rain events and snow melt, stormwater carries dirt, oil, debris and other pollutants from these surfaces into our waterways.



~~and have increased the risk of flooding and erosion hazards, particularly downstream in Enosburgh and Fairfield. Flooding in the winter of 1996 and August of 1998 led to a FEMA-declared disaster. The Northwest Regional Planning Commission estimates that there are seventeen (17) structures within the 100 and 500 year floodplain in Bakersfield.~~

~~Geomorphic assessments have been completed within the Black Creek and Tyler Branch watershed to determine the causes of flooding, erosion, and other water quality issues and to identify potential solutions. According to these studies, most streams in the Bakersfield portion of the Tyler Branch watershed have adequate buffers. Out of the 35 reaches or stream segments that were assessed, 32 reaches had wooded buffers that were at least 25 feet wide on at least 75 percent of the reach length. The three reaches with little or no buffer were all along The Branch, a tributary to the Tyler Branch, from the town boundary with Enosburgh upstream 1.5 miles. The stream reaches within the Black Creek~~

~~subwatershed tended to have fewer riparian buffers. Three of the 13 reaches assessed had adequate buffers, three had little or no buffer on 75 percent of their length, and the rest had little or no buffer on 25-75 percent of the stream reach. It will be the goal of Bakersfield planning to ensure that these and similar buffers are maintained and enhanced.~~

~~More in-depth studies have been conducted along The Branch. Seven reaches within Bakersfield tended to be stable and in good condition. The assessed reaches still have access to the floodplain, which allows the stream to dissipate energy during high flows. Several upper reaches are good candidates for conservation or protection because there is no significant development within the stream corridor. In-depth studies of this type for the Black Creek and Tyler Branch have not yet been completed.~~

~~One of the main concerns along the Black Creek is that the Lamoille Valley Rail Trail cuts off access to the floodplain. The State of Vermont and local partners have identified several sites where the rail embankment can be lowered to allow the stream to access the floodplain during high flow events. The two locations in Bakersfield are along Lost Nation Road and Route 108S. Implementation is expected to begin in early 2008.~~

~~Stormwater runoff from roads, roofs, driveways and other surfaces also degrades local water quality and exacerbates flooding. During rain events and snow melt, stormwater carries dirt, oil, debris and other pollutants from these surfaces into our waterways.~~

Wetlands

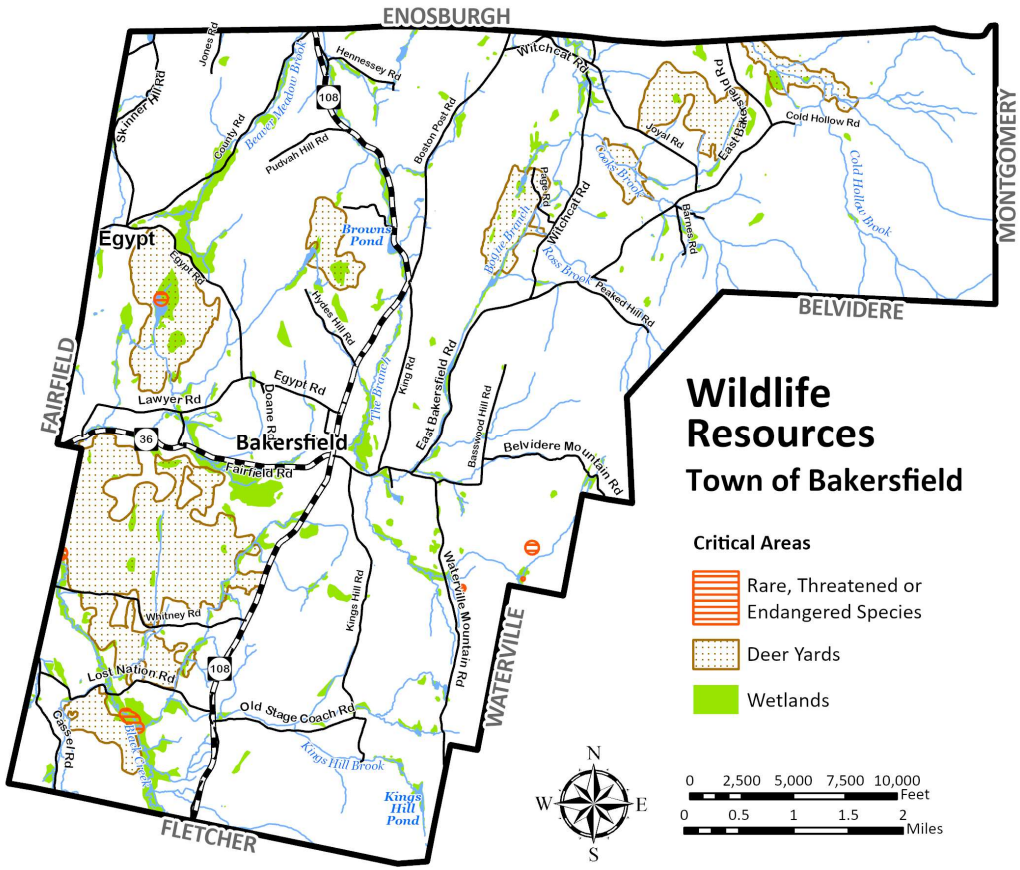
Wetlands are ~~also~~ important for ~~the maintenance of water quality.~~ a variety of reasons. The extensive biological activity of ~~a wetland area enables the absorption and assimilation of~~wetlands allows them to absorb nutrients and ~~thus purifies to some extent the water that is discharged. These areas store~~purify the water. Wetlands also regulate water levels of streams by storing large quantities of water during periods of high runoff and gradually ~~release~~releasing water during low flow periods. ~~Therefore, the wetland regulates stream discharge both during low flow and peak flow. Loss of this storage capacity not only adversely affects stream behavior but also increases floods and reduces stream flow during crucial low flow periods. Wetlands also~~ Wetlands also provide habitat for a wide variety of plants and animals, including a ~~disproportionately~~ high number of threatened ~~or~~and endangered species~~, compared to other ecosystem types~~.

~~Groundwater represents both a hazard~~Bakersfield has many Class II wetlands identified on the Vermont Significant Wetlands Inventory Maps. These mapped wetlands receive protection from the State of Vermont, the Army Corps of Engineers, and the Federal Environmental Protection Agency.

Groundwater

~~a~~ Clean groundwater is a valuable resource~~. In~~ in Bakersfield, since many residents depend upon springs and shallow wells for their water. Water from the surface slowly seeps into the ground to form groundwater aquifers. Activity in these groundwater recharge areas ~~where the~~ can affect the quality and quantity of the potential water supply, especially in areas with a seasonal high water table ~~is~~of 0-1.5 feet~~,~~ where there is unconfined groundwater at or near the surface for part of the year. ~~These waters can be easily polluted by nutrients from septic~~Failed septic systems, leaking gas tanks, ~~agricultural practices, hazardous waste sites, pesticides,~~ road salt ~~and other~~, industrial wastes and chemical application in agriculture are all common sources ~~(Vermont DEC, 2005).~~ of groundwater pollution. Once a groundwater system is contaminated~~, these waters may present health hazards locally and cause pollution of surface waters should the groundwater contribute to stream flow or wetlands.~~ it is expensive and difficult, if not impossible, to fix.

~~Many residents of Bakersfield depend upon springs and shallow wells for their water. Should septic systems, landfills or faulty sewer lines be located too close to a water supply, contamination may result.~~ In an effort to protect the municipal water supply, Bakersfield has adopted an aquifer overlay district, which is intended to discourage new development and maintain the high quality of drinking water for village residents.



~~In order to maintain supplies and access to clean and sufficient water for the Towns' residents, businesses and farms, new and novel uses of water, including the commercialization of water sources in the Town, will generally be discouraged. One issue of concern to some in Bakersfield is commercial~~Commercial extraction of water~~. Along with the restrictions permitted by the State of Vermont Department of Environmental Conservation and Act 199, Bakersfield may want to limit commercial groundwater extraction until a full assessment of the groundwater can be made for the Town by the State Geologist. Such an assessment would provide evidence about the quantity and quality of water required to support its residents and other purposes~~ is discouraged town-wide in Bakersfield to protect the quantity of water available in aquifers.

Wildlife Resources

The Town of Bakersfield is host to abundant flora and fauna typical of the region. Bear, deer, moose, and small mammals occupy ~~its~~our fields and forests. ~~Thorough surveys of rare and endangered plants and animals have not been conducted within the Town, but recent research has confirmed the presence of both a rare fern population and a nesting site for a rare bird that were previously known only from historic records (Vermont Nongame and Natural Heritage Program, personal communication). Osprey, which nest in the Fairfield Swamp just to the west, must surely venture into the skies over Bakersfield from time to time.~~

~~A heronry in the western part of Bakersfield~~Over 90 species of breeding birds have been documented in Bakersfield. A heronry (breeding colony of herons) in the western part of town has been monitored by state wildlife personnel for several years and is a protected area. ~~Over the last five years, breeding bird populations have been monitored within the town for research for the Vermont Breeding Bird Atlas being conducted by the Vermont Center for Ecostudies, and at least 90 species of breeding birds have been documented.~~ More than fifteen of Vermont's forty breeding reptiles and amphibians have also been recorded within the town's boundaries. Vernal pools, ponds, and other wetlands within the town provide critical breeding habitat for amphibians.

Invasive plant and animal species pose problems for our forests, wetlands, and waterways. So far, very little research has been done to inventory Bakersfield for the presence of invasive species.

~~(Vermont Reptile and Amphibian Atlas, Dr. J. Andrews, Middlebury College).~~

Commented [A11]: Define this somewhere in text

Deer wintering areas provide critical habitat for whitetail deer. ~~-~~These areas of hemlock, spruce, fir, cedar, and pine forest provide shelter from deep snows~~,~~ and ~~also~~ permit easier winter travel for ~~deer and other species. The combination of elevation, vegetation, and solar aspect significantly increase the survival rates of deer populations.~~ animals. The U.S. Fish and Wildlife Service has targeted ~~these areas~~deer yards for protection. ~~-~~These and other critical habitat areas are depicted in Figure 8.6.

Black bears prefer mountainous and forested landscapes just like those found on the slopes of the Green Mountains. Black bears have a significantly large home range and because of this, their survival rate decreases when larger areas are divided up into smaller units and into isolated forestlands.

~~-~~When land is developed in scattered locations, the black bear habitat areas are decreased.

Habitat Blocks

Approximately 72 percent of Bakersfield is covered by forest. Bakersfield's forests provide habitat for many kinds of wildlife, stabilize soils, absorb runoff, add to the scenic value of the landscape, and provide a living for Bakersfield residents who rely on logging or profits from

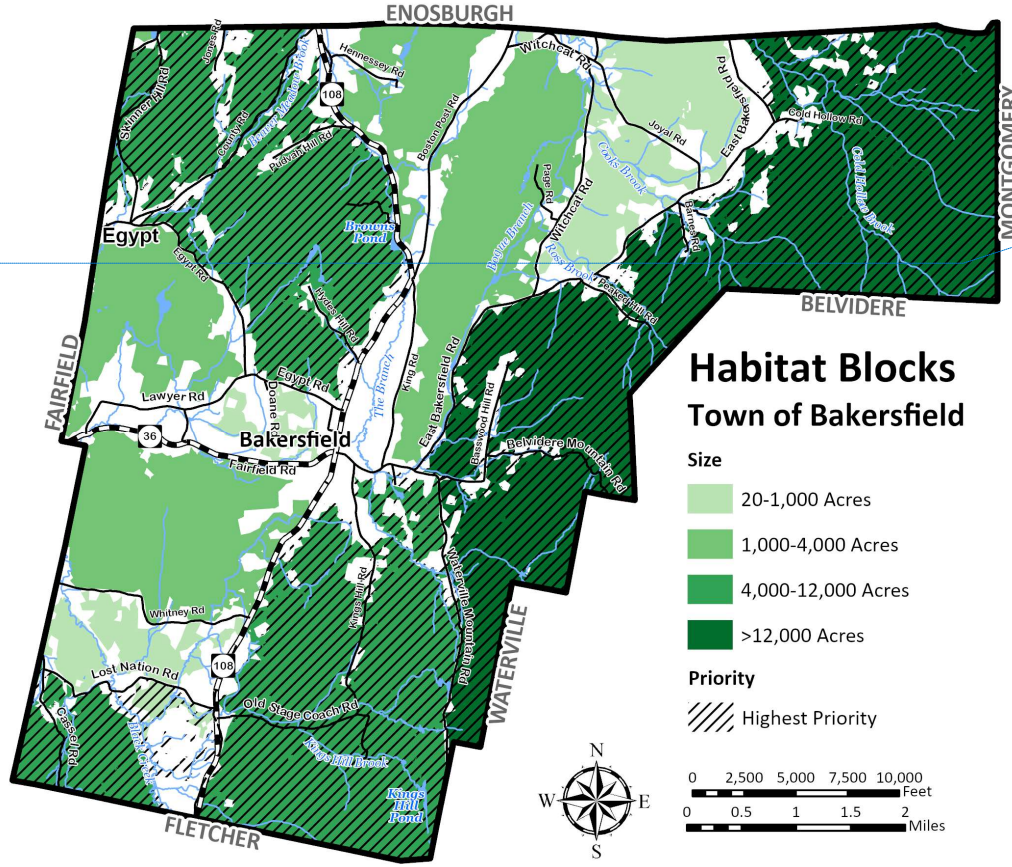


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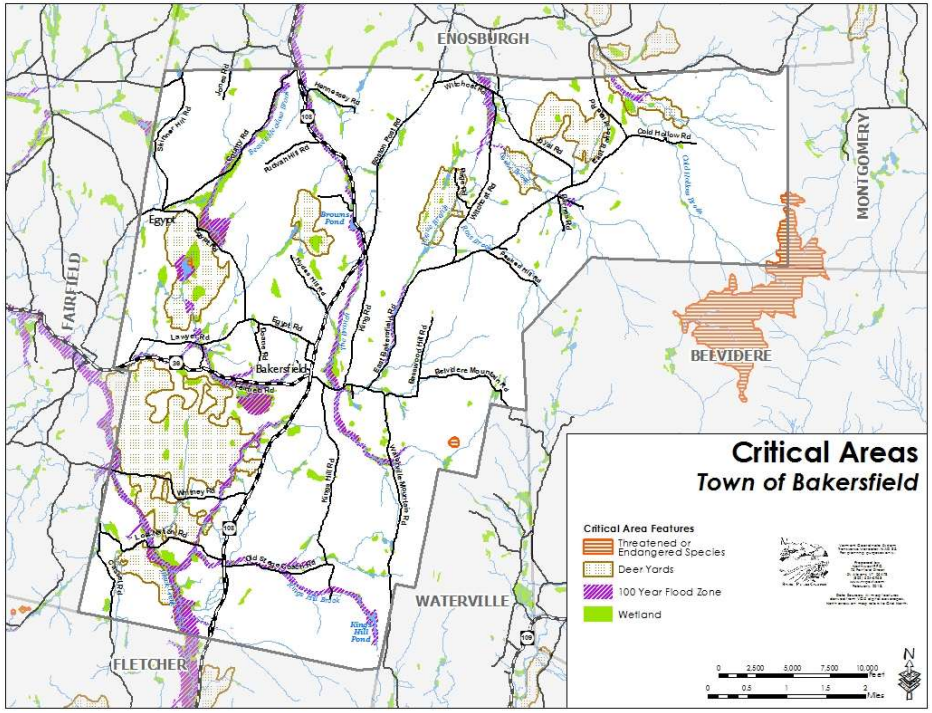
Figure 8.7 Critical Wildlife Areas in Bakersfield



their woodlots. Large, unfragmented stretches of forest in the eastern part of Bakersfield are critical habitat for mammal and bird species that require forest interior.

Many areas east of VT Route 108 have been identified as "highest priority" core habitat blocks by the Vermont Agency of Natural Resources. This means that they are areas of contiguous, unfragmented forest that are critically important to protecting native species. The same habitat blocks have also been "highest priority connectivity blocks" that provide connection along the "spine" of the Green Mountains between Vermont and Quebec.

It is important to minimize forest fragmentation in Bakersfield. Even low densities of development and rural roads can fragment habitat blocks. Roads and homes disrupt animal travel, resulting in invasive species taking root, and creating more conflict points between humans and animals.

Bakersfield has mostly avoided significant fragmentation of its forests and important habitats. Many habitat blocks are located in the Town's Conservation district, which will help prevent future development and fragmentation of these areas.

Scenic Resources

The scenic beauty of Bakersfield is among our community's greatest assets. Yet, despite the importance of scenic beauty to our community and sense of place, scenic and aesthetic concerns are often difficult to quantify, and can be challenging to incorporate into comprehensive planning endeavors. In order to protect these resources, the Town will need to identify these resources and encourage innovation in design and layout of

development so that the visual impact can be minimized. -The use of vegetative buffers and other screening methods will be encouraged to help reduce the visual impact of development in the Town. -This includes the regulation of cellular and wind energy systems to the extent possible.

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Recreation

The Town of Bakersfield is fortunate to have an abundance of open space and forestland available for recreational activities such as hunting, fishing, riding, and snow mobiling. Future development could reduce access and opportunity for these kinds of activities. Alternatively, planned unit developments present an opportunity to create common resource land that can be set aside for recreation or other uses in perpetuity. Through the bylaws, the Town Planning Commission will support the maintenance of larger tracts of natural spaces.

CHAPTER 12. ALL HAZARDS RESILIENCY

Environmental Resilience

Hazard Mitigation Planning

Due to the effects of a globally changing climate, severe weather events have become more common in Vermont in recent years. Hazard Mitigation is any sustained action that reduces or eliminates long-term risk to people and property from natural and human-caused hazards and their effects. Communities can engage in opportunities to identify mitigation strategies and measures during all phases of Emergency Management including Mitigation, Preparedness, Response and Recovery. Hazards may not be eliminated, but it is possible to determine what the hazards are, where the hazards are most severe and identify local actions that can be taken to reduce the severity of the hazard.

Hazard Mitigation Strategies and Measures **alter** the hazard by eliminating or reducing the frequency of occurrence, **avert** the hazard by redirecting the impact by means of a structure or land treatment, **adapt** to the hazard by modifying structures or standards or **avoid** the hazard by stopping or limiting development and could include projects such as:

- ~~Flood-proofing structures~~
- ~~Tying down propane/fuel tanks in flood-prone areas~~
- ~~Identifying & modifying high traffic incident locations and routes~~
- ~~Ensuring adequate water supply~~
- ~~Elevating structures or utilities above flood levels~~
- ~~Identifying & upgrading undersized culverts~~
- ~~Proactive land use planning for floodplains and other flood-prone areas~~
- ~~Proper road maintenance and construction~~
- ~~Ensuring critical facilities are safely located~~
- ~~Buyout & relocation of structures in harm's way~~
- ~~Establish & enforce appropriate building codes~~
- ~~Public information~~

The Town of Bakersfield is actively engaged in hazard mitigation planning~~.~~ and adopted a Local Hazard Mitigation Plan (LHMP) in 2020. The LHMP evaluates potential risks to the community ~~is~~and the strategies that address those risks. Bakersfield is also represented on the Local Emergency Planning Committee District 4 serving Franklin County and is a member of the Franklin County International Firefighters Mutual Aid Association. ~~Additionally, the Town of Bakersfield is currently working to adopt a Local Hazard Mitigation Plan (LHMP). The draft LHMP evaluates potential risks to the community and the strategies that address those risks. The draft LHMP evaluated just those natural and human-made hazards that are likely to affect the community~~This plan summarizes many of the risks addressed in the LHMP. For additional information on these risks and Bakersfield's hazard mitigation planning efforts, the full LHMP is available on the Town website and at the Town Office.

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Flooding

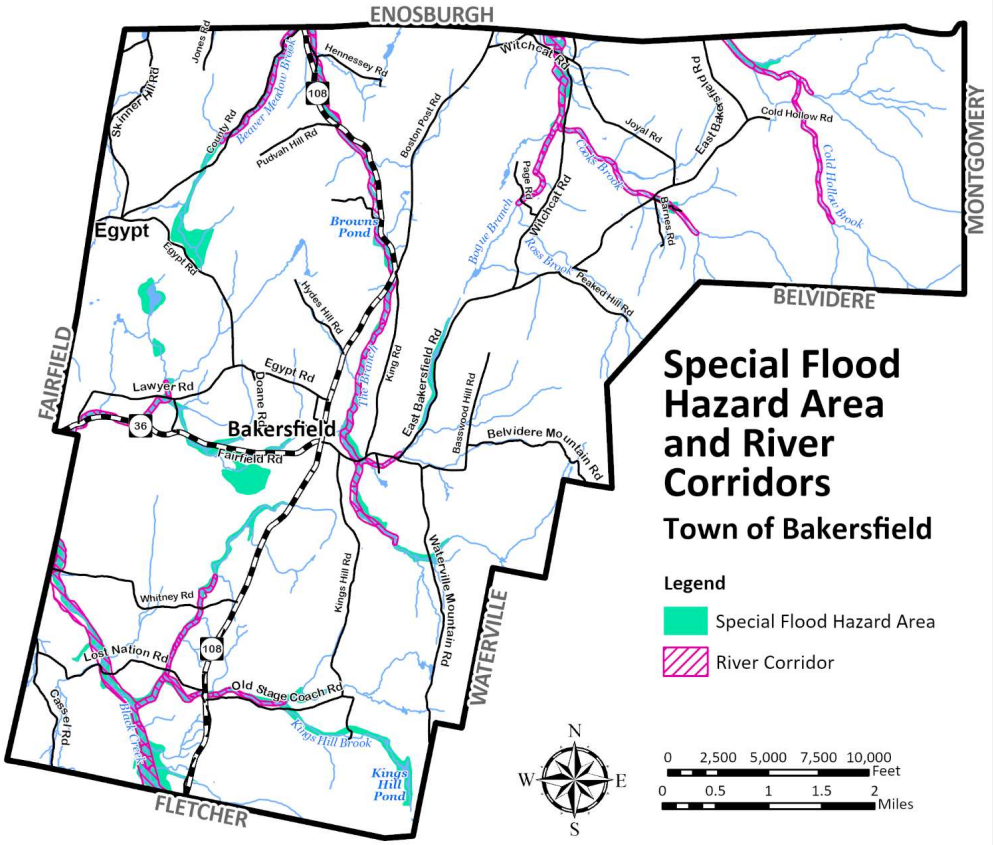
GRAND ISLE

Town Plan

Flooding is a natural and ~~mitigating the most~~ common ~~hazards in Bakersfield.~~ occurrence in Vermont, but floods have been increasing in recent years due to climate change. The ~~chapters is particularly focused upon~~ best protection against loss of life and property is to not build in areas prone to flooding. Flooding can occur in two ways: inundation and fluvial erosion ~~to ensure compliance with 24 V.S.A §4382(a)(12~~.

Inundation flooding occurs when the water level of a river, stream or pond rises beyond its banks and flows into nearby land. The Federal Emergency Management Agency (FEMA) maps areas that have a 1% chance of flooding each year. This area is known as the special flood hazard area (SFHA). The SFHAs in Bakersfield ~~Flooding~~

~~Flooding is a natural occurrence and happens when water rises and inundates the adjacent low-lying land. Residents of every town should be aware of the power inherent in a flood. Proper land use management should be used to ensure that critical floodplain areas~~ are ~~being used appropriately.~~ along the Tyler Branch, Black Creek and their tributaries. Development within these floodplains ~~poses significant risks and should generally be avoided. River channels~~ can have many potentially damaging consequences, as construction may obstruct the natural flow of water or displace soil and ~~floodplains function as a single hydrologic unit, periodically transferring floodwaters and sediment from one to the other.~~ create higher water levels during floods.



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Town Plan

Appropriate uses of floodplains are those that ~~can accommodate this cycle and~~ allow ~~for areas where~~ the ~~rivers can~~river to access the floodplain during high flows~~. Examples of uses that are appropriate to floodplains include~~ , including agriculture, open space, and recreation. ~~-~~Bakersfield's zoning bylaw restricts development within the SFHA. These regulations comply with the standards set by FEMA for participation in the National Flood Insurance Program, a federal program which allows residents and businesses to purchase government-backed flood insurance. Official Special Flood Hazard Area maps from FEMA can be found in the vault at the Town Office or online at the FEMA Map Service Center.

~~Bakersfield lies within the Tyler Branch and Black Creek subwatersheds of the Missisquoi River basin. The western side of Town drains into the Black Creek subwatershed which includes Black Creek, Elm Brook and Kings Hill Brook. The eastern side of Town drains north to the Tyler Branch and includes Beaver Meadow Brook, Bogue Branch, Cold Hollow Brook, Cooks Brook, Ross Brook, The Branch, and Tyler Branch. The headwaters of the Tyler Branch watershed are located in the Cold Hollow Mountains which form the eastern boundary of Bakersfield and are among the more rugged parts of the Missisquoi River basin.~~

~~Flood plains in Bakersfield follow along the brooks and creeks of undeveloped areas of forest lands and marshes and land that is in agricultural use. Summer or fall storms are more likely to be responsible for major flooding. Most flash flooding is caused by heavy rain from thunderstorms. Smaller creeks and streams are particularly vulnerable to flash flooding. Black Creek, the Branch, Beaver Meadow Brook and their tributaries typically flood in the spring of each year, and during periods of concentrated rain events.~~

~~The nearest USGS stream gages for the study area are on the Missisquoi River at its outlet in Swanton downstream from Bakersfield and in East Berkshire. Based on the USGS data, several flood events greater than 25 year discharge have occurred over the last 20 years including the years 1992, 1997 and 1998. Based on interviews with landowners, there was a relatively large flood that occurred in 2002 as well. The last serious flood occurred in November 1927 when dangerous flash flooding was recorded. There is no official record of loss of life. Numerous homes were inundated with rising waters, and many roads in Bakersfield and throughout the State were damaged.~~

~~A two day heavy rainfall event occurred on May 18th and 19th, 2006 compounding above normal rainfall conditions. Two day rain fall amounts of 3 to 5 inches were common in Franklin County with locally more than 6 inches along the western slopes of the Green Mountains and Cold Hollow Mountain. Widespread flooding occurred on the 19th and 20th resulting in numerous flooded roads as well as some road and culvert washouts.~~

On June 29, 2006 a series of thunderstorms and tropical like showers moved over the Bakersfield area during the evening and delivered heavy rainfall on already saturated soils. An unofficial weather spotter reported 3.30 inches of precipitation in 90 minutes. The end result was several flooded basements, a few flooded road culverts, some minor washouts on Route 108 through town and some minor washouts along Route 36 between Bakersfield and Fairfield. There was approximately $20,000 in damages reported in the county.

Floods are a reminder to residents the power inherent in nature and are an urgent reminder of the need for proper management and appropriate use of critical floodplain areas. Development within floodplains poses significant risks and should generally be avoided. River channels and floodplains function as a single hydrologic unit, periodically transferring floodwaters and sediment from one to the other. Appropriate uses of floodplains are those that can accommodate this cycle. Examples of uses that are appropriate to floodplains include agriculture, open space and recreation.

One of the main concerns along the Black Creek is that the Lamoille Valley Rail Trail cuts off access to the floodplain. The State of Vermont and local partners have identified several sites where the rail embankment can be lowered to allow the stream to access the floodplain during high flow events. The two locations in Bakersfield are along TH38 (Lost Nation Road) and Route 108S. Implementation was expected to begin in early 2008.

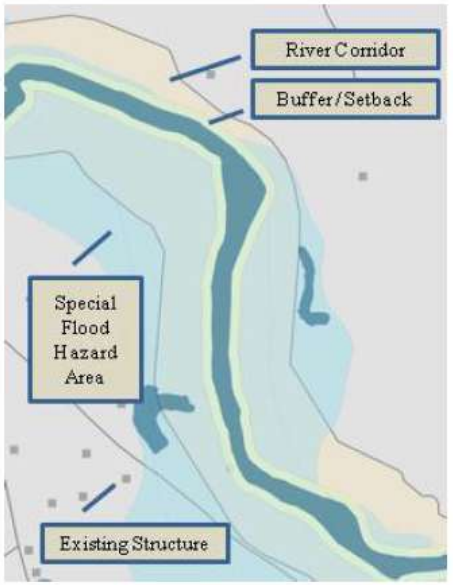
Structures in Floodplain

The Federal Emergency Management Agency (FEMA) provides flood insurance under the National Flood Insurance Program (NFIP). In order for property owners to participate in the NFIP, FEMA requires that communities adopt flood hazard regulations. Owners of buildings within the designated special flood hazard areas (SFHA) are required to carry flood insurance in order to get a federally backed mortgage. The Town of Bakersfield has adopted land use regulations for flood hazard areas in order to protect the health, safety, and welfare of its residents and to allow the community to participate in the National Flood Hazard Insurance Program. A GIS based overlay analysis was conducted by NRPC using Flood Insurance Rate map (FIRM) data with the Vermont E-911 address data of structure location. The results found that there are thirteen (13) structures within the 100 or 500 year flood plain in Bakersfield. Nine (9) are all-season single family units, one (1) mobile home, three (3) are seasonal single family units. There are no Tier II hazardous materials storage sites within the 100 or 500 year flood plain.

An important note: the existing Flood Insurance Rate Maps (FIRMs) are dated January 2, 1981 and the Flood Insurance Study was published in December 1979. While this information is the best available, the hydrology is dated and does not account for shifts in the river channel or the effects of development since 1979 in these areas. The FIRMs were digitized by the Northwest Regional Planning Commission in 1999 to assist in planning efforts and are used to determine approximate locations. The digital version is not used for regulatory rulings. The digital FIRM can be seen in Figure 8.4.

Fluvial Erosion in the River Corridor.

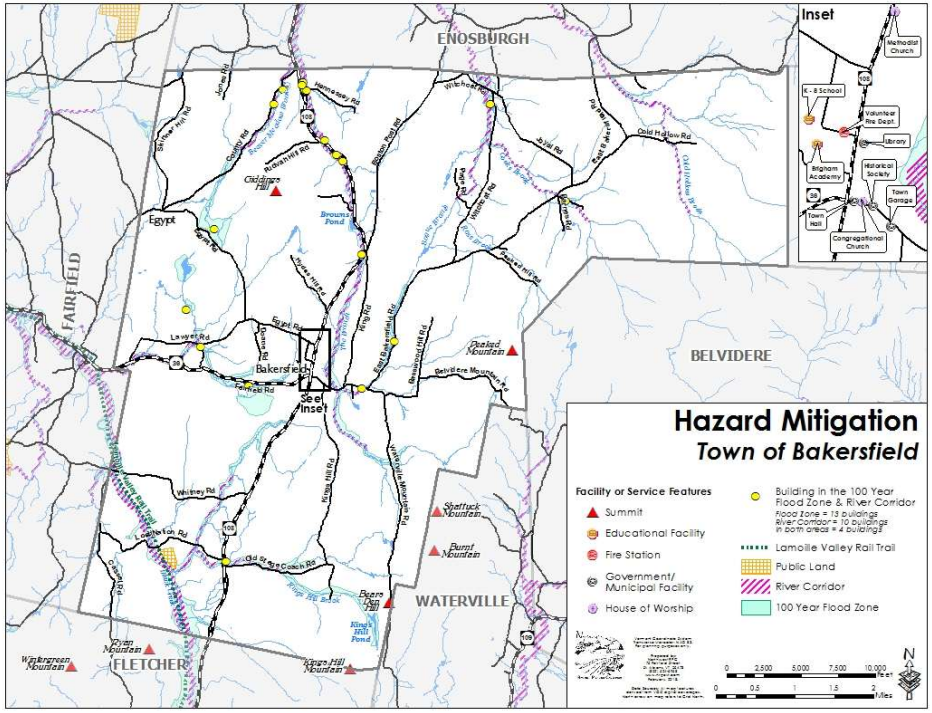
Fluvial erosion is erosion caused by the lateral and vertical movement of streams and rivers. Fluvial erosion and landslides are becoming more common within the Northwestern region of Vermont. The VT Department of Environmental Conservation recommends that the community identify *River Corridors*, or the area along the larger tributaries and rivers, that are susceptible to stream channel adjustment in order to reduce the risk of erosion damage. Historic land uses along the river and its streams including floodplain encroachments and vegetative debris removal have increased the risk of erosion and landslides. Such practices included armoring, dredging, gravel mining and channelization, for the purpose of containing high flows and to protect infrastructure built in the historic floodplains. This has resulted in an increase in the streams' power and has direct effects on the rocks and vegetation that make up the channel boundary. The effects can be varied and may lead to channel instability and increased damages from flooding. Additionally, beaver activity along the western areas of the Tyler Branch watershed has contributed to increased sediment loads in the stream channel.



The Vermont Agency of Natural Resources has partnered with the Missisquoi River Basin Association and the Northwest Regional Planning Commission to conduct Phase 1 and Phase 2 Geomorphic Assessments of several stream reaches within the Tyler Branch watershed. From 2005 to 2008, Phase 2 Geomorphic Assessments were conducted on 20 stream reaches of the Tyler Branch main stem, the Branch, a major tributary of the Tyler Branch, Beaver Meadow Brook and Bogue Branch. The assessments used protocols developed by the Vermont River Management Program. By assessing underlying causes of channel instability and encouraging the stream's return to equilibrium conditions, management efforts can be directed toward long-term solutions that reduce costs and reduce conflicts with ongoing stream processes.

~~Phase 2 involves rapid field assessments on select reaches. A bridge and culvert survey was conducted in conjunction with this assessment for structures within the 20 reaches as well.~~

~~The results of assessments led to the development of a corridor protection plan (March 2009) that includes 100 foot setbacks for development. The information was also used to develop a draft fluvial erosion hazards (FEH) map to support flood hazard prevention, mitigation and recovery activities. The map depicts delineated river corridors that should be protected from encroachments thereby preserving channel stability. Impacts to stream dynamics that are not associated with development (including those from agriculture and forestry) are not addressed by setbacks, however. The Phase 2 Geomorphic Assessments identifies several potential mitigation projects that can be viewed in the associated study and the Bakersfield Draft Hazard Mitigation Plan.~~



A second type of flooding is known as fluvial erosion. Fluvial erosion is the destruction of riverbanks caused by the fast movement of rivers and streams. Fluvial erosion occurs when heavy rains or alterations to the river channel cause the water to move faster. Fluvial erosion is a common cause of road and bridge washouts during flooding events. The Vermont Agency of Natural Resources has mapped River Corridors across the state that are at risk for fluvial erosion. To help prevent damage related to fluvial erosion, Bakersfield's development bylaw restricts development in River Corridors. Regulating River Corridors also means that Bakersfield can receive a higher amount of recovery funding from the state in the event of a disaster.

Commented [A15]: May want to clarify this is state match to federal FEMA funds.

High Winds

High winds are a hazardous threat to the Town and most commonly accompany other storm events. -Violent windstorms are possible in Bakersfield~~. The Town is far inland and is unlikely to receive a direct hit from a hurricane, however high winds and hail storms have occurred in Town as weakened tropical storms track near the region.~~, and high winds are common along the Cold Hollow Range on the eastern part of Town as well as along the Branch, Beaver Meadows Brook and Bogue Branch.

Power lines and trees are most vulnerable to high winds.- Power outages may occur resulting in significant loss of business as well as threatening public safety. -The Town has a limited ability in quickly restoring lost power caused by damaging high winds.- Cleaning up debris following high wind events can be costly depending on the severity of the event.

~~High winds are common along the Cold Hollow Range on the eastern part of Town as well as along the Branch, Beaver Meadows Brook and Bogue Branch.~~

~~The estimated damage from a high wind event occurring to 10% of all structures in Town with 20% damage is $6,968,414. The estimated cost does not include building contents, land values or damages to utilities. Impacts to future populations, residences, new buildings, critical facilities and infrastructure are anticipated to remain the same.~~

Structure Fires~~.~~

Structure fires can occur anywhere. -The Town Fire Department receives an average of 6 structure fire calls per year. ~~ (2013 there were 5 structure fires and 6 wildland fires according the 2013 Report of the Fire Marshall.~~ The Fire Department also ~~provided~~provides assistance to other Towns through Franklin County Mutual Aid. –The Fire Department actively upgrades its equipment through federal grant programs.

~~There are four fire ponds in Bakersfield. They are located on TH34 (Whitney Road), TH14 (County Road), TH42 (Ovitt Road) and TH38 (Lost Nation Road). There are also 10 fire hydrants.~~

In the village area of Bakersfield, structures that are relatively close together raise the risk for multiple structure fire. ~~The impact of this type of incident would primarily be on the commercial sector with a smaller impact on housing.~~ Older historic buildings that lack fire alarms and sprinkler systems are greater at risk for damages. -New building construction codes and standards which address fire safety are expected to lessen this risk.

~~Estimated loss due to fire damage on 6 structures annually using median home values is $1,265,000 (using estimated single family home value of $202,244 from draft Hazard Mitigation Plan). This loss estimate does not include building contents. Impacts to future populations, residences, new buildings, critical facilities and infrastructure are anticipated to lessen due to new building construction codes and standards which address fire safety.~~

Winter ~~Storm.~~Storms

Winter storms affect the entire Town and generally cause disruptions to public and private services. The primary impacts of a storm typically include the disruption to transportation networks, school closings and occasionally telecommunications and power outages. -Vulnerable populations such as the elderly, those dependent on medical equipment and specialized health or physical care are at risk to winter storms. -Also at risk are farms and associated structures and livestock. -Barns can collapse due to heavy snow loads. -Dairy cattle are susceptible to mastitis if they are unable to be milked.

~~Severe winter storms are accompanied by strong winds creating blizzard conditions with blinding wind-driven snow, severe drifting, and dangerous wind chill. Strong winds with these intense storms and cold fronts can knock down trees, utility poles, and power lines. Extreme cold often accompanies a severe winter storm or is left in its wake. Prolonged exposure to the cold can cause frostbite or hypothermia and become life-threatening. Infants and elderly people are most susceptible. Severe winter storms can bring heavy accumulations of ice which can down trees, electrical wires, telephone poles and lines, and communication towers. Communications and power can be disrupted for days while utility companies work to repair the extensive damage. Even small accumulations of ice may cause extreme hazards along roadways.~~

~~The Town's recent history has not recorded any loss of life due to the extreme winter weather. These random events are difficult to set a cost to repair or replace any of the structures or utilities affected. Impacts to future populations, residences, new buildings, critical facilities and infrastructure are anticipated to remain the same.~~

The Town is equipped to handle typical winter emergencies, including keeping roads open and repairing downed infrastructure. -The town has access to ~~private~~ machinery, including bulldozers, plows, ATVs and snowmobiles, should they be needed in the event of a storm.

~~The National Climatic Data Center lists 194 snow and ice events for Franklin County between January 1, 1950 and October 31, 2009. A listing of the most severe winter storms can be seen in the draft Hazard Mitigation Plan. Below is a selection of the recent severe winter storms:~~

~~On January 6th 1998 a winter storm affected the Town and produced some flooding along streams. Snow turned to freezing rain and produced power outages into the area. This storm is referred to as the Ice Strom of 1998 (FEMA-1201-DR-VT), but the weather was more akin to a traditional winter storm than an ice storm. It is not known what the financial losses were to the Town as a result of the storm. Public Assistance funding was $5,899,183~~

~~On February 14, 2007 a winter storm, referred to regionally as the "Valentine's Day Storm", blanketed most of New England. In Vermont, snow fell heavy at times from late morning through early evening before dissipating during the night. Snowfall rates of 2 to 4 inches per hour and brisk winds of 15 to 25 mph caused near whiteout conditions at times, along with considerable blowing and drifting snow, making roads nearly impassable. Temperatures in the single numbers combined with brisk winds created wind chill values of 10 degrees below zero or colder in Bakersfield.~~

~~During December 20-26, 2013 (DR-4163) a wide-spread low pressure system that brought snow and freezing rain through Ontario, Quebec, and Northern New England. These areas experienced an ice storm that brought wide-spread power outages. Many Towns throughout Franklin County, Vermont were affected by the ice storm. Vermont Electric Cooperative responded to over 60,000 customer outages during the week and estimated costs of restoring power at $7,400,000. In Bakersfield, the highway department was active keeping roads open and removing ice damaged trees and limbs from local roads. Many residents were without power for several days.~~

Air Quality

Air quality is generally high throughout Vermont, especially in rural communities such as Bakersfield. Motor vehicles are the largest source of air pollution in Vermont, which can create localized areas of poor air quality where traffic is congested. Air quality can also impacted by weather patterns which carry pollutants from other areas. In recent years, wildfire smoke from Canada has impacted Bakersfield in summer months. All efforts should be taken to maintain good air quality in Bakersfield.