



CAPE COD
COMMISSION

Spring Bars Road Assessment



PREPARED FOR THE TOWN OF FALMOUTH
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Table of Contents

Executive Summary	5
Introduction	11
Site History	13
Part I Infrastructure Analysis	
A. Natural Resources	15
Natural Resources on Site	15
Analysis	16
B. Wastewater and Water Supply	19
Comprehensive Wastewater Planning	19
Water Supply	22
Permitting	23
Summary	24
C. Transportation Analysis	25
Pedestrian, Bicycle, Transit Accommodations	25
Traffic Volumes and Capacity Analyses	27
Crash History	28
Summary of Project Impacts	29
Part 2 Housing Proposal	
Project Feasibility and Viability	31
Comparison with Recent Rental Projects	31
Infrastructure Needs and Cost Allocation	32
Financial Feasibility	34
Financial Feasibility and Long Term Viability	39
Options to Enhance Viability	42
Feasibility and RFP Considerations	44
Summary of Financial Feasibility	48
Part 3 Future Land Use	
A. Analysis of Spring Bars Road Site	51
Site Development Issues and Opportunities	51
Potential Development Scenarios	55
B. Analysis of Study Area	59
Existing Conditions	59
Issues and Opportunities in Study Area	63
Recommendations	71
Potential Transportation Improvements	74
Appendices	
Transportation Details	79
Housing Exhibits	91



Spring Bars Road site entrance.



Spring Bars Road approaching the site, looking east.



Development at Spring Bars Road and Worcester Court.



Development along Route 28, north of Spring Bars Road.



Executive Summary

The town of Falmouth requested technical assistance from the Cape Cod Commission in evaluating proposed development on the Spring Bars Road property and in the surrounding area. The parties agreed to a scope of work in late December 2012, to include three parts. The first studies the infrastructure needs and natural resource constraints associated with developing the Spring Bars Road property for affordable housing. The second part assesses the financial viability of the proposed 30-unit affordable housing development on the property. The third part of the report looks at the broader study area, identifying opportunities and constraints in the larger neighborhood and recommending changes to support the town's goals for the Spring Bars Road property.

A natural resource analysis of the site identified buffers to natural resources and a large portion of the property that is designated as flood zone A on both current and proposed Flood Insurance Rate Maps (FIRM). While natural resources are protected on the adjacent 9.5 acre parcel under a conservation restriction, the location of several resources close to the lot boundary carries resource buffers onto the parcel in question. A 200-foot Riverfront buffer along the shore of Little Pond and a 100-foot buffer to wetland areas are required by state law. The Cape Cod Commission also recommends a greater buffer to the vernal pool on the site, and suggests providing access to Little Pond via the conservation parcel to limit impacts in the buffer area. The flood plain designation is the most significant natural resource issue on this site. Modified FIRM maps were proposed after the initial property analysis was completed, and they indicate an even greater area of the parcel within flood zone A. Due to the flood zone's changing boundaries and the extent of the site that is affected, the flood plain designation will direct the siting and design of any buildings. State building code requires elevating buildings in a flood zone above base flood level. Cape Cod Commission recommends elevating to one foot above base flood levels to accommodate sea level rise.

The Spring Bars Road property does not currently have wastewater or wa-



ter supply infrastructure. Sewer infrastructure plans for the Little Pond watershed would bring sewer pipes past the property in roughly 2017, making on-site wastewater treatment infeasible for such a short period of time. The town's Comprehensive Wastewater Management Plan (CWMP) has generated 30% design plans for sewer infrastructure in the Little Pond watershed, including a gravity main on Spring Bars Road. A separate plan for extending sewer from Davis Straits to the site was developed prior to the CWMP plan and is not entirely consistent with the CWMP plan. The capital cost estimate for the sewer extension is \$440,000 if done prior to CWMP implementation. Any wastewater infrastructure plans for the site should be coordinated with the CWMP for efficiency and to address the town's preference for gravity feed rather than force mains. Timing of the project and implementation of the CWMP in the Little Pond watershed will impact the wastewater cost and it appears that the sewer extension would require Town Meeting action if it went forward before the CWMP. Water supply also needs to be brought to the project site, and could potentially come from either the east or west side depending on the town's preference and the pressure available at those two locations. The capital cost estimate for the water supply extension is \$124,000 to \$161,000.

A transportation assessment of the proposed project looked at roadway characteristics, intersections, and pedestrian/bike/transit accommodations. To assess safety issues, the study also evaluated traffic volumes, road capacity or 'Level of Service', and crash history in the area. Travel speeds, accidents, and pedestrian safety were among concerns voiced by residents and the town. Pedestrian and bicycle facilities vary in terms of availability and quality throughout the study area. Safety, congestion and connectivity issues exist today, particularly at the intersection of Spring Bars Road/Worcester Court, and at Spring Bars Road/Route 28. These issues are not linked to the proposed development, which would have relatively low traffic impacts. The project site is in close proximity to a wide variety of facilities, and is also within walking distance of a transit stop at the Falmouth Mall. Safe pedestrian access is necessary to facilitate these connections, and some improvements are needed. A crosswalk should be provided over Spring Bars Road near the Falmouth Mall rear entrance, and the sidewalk should be extended to locate the crosswalk where there is adequate site distance and visibility. More significant sidewalk improvements along the length of Spring Bars Road are estimated at \$150,000.

In assessing the financial viability of the proposed 30-unit affordable housing project, staff compared the project with eight similar projects



developed in the region in the last 3 years. Total development costs among these projects ranged from \$265,000 to \$366,000 per unit, with an average development cost of \$305,500 per unit. For the Spring Bars Road project, the estimated total development cost is \$353,000 per unit, including infrastructure costs unique to the site for sewer, water, fill to address flood zone issues, and higher end building construction costs due to stated design goals (ie. multiple buildings, energy efficiency, handicap accessibility). If sewer costs are not included (for the Department of Couasing and Community Development/DHCD, sewer installation is likely not an eligible project expense), the estimated cost lowers to \$340,000 per unit. While this is approximately 12% higher than the average tax credit project in the region, DHCD has funded projects in the state at this level.

The total development cost estimated for the project is \$10.6 million, with the greatest amount allocated to building construction (\$4.6 million) and site construction (\$2 million). The town's \$2 million acquisition cost is not included in the project pro forma, but is rather considered a subsidy, amounting to nearly \$67,000 per unit for the proposed 30 units. Considering the development budget and the operating budget, and using conservative assumptions, staff determined the project is financially feasible. The primary funding source would have to be the Low Income Housing Tax Credit (LIHTC), which typically covers 60-65% of total development costs – in this case \$6.6 million in tax credit equity. The project could carry a first mortgage of \$1.2 million, and the developer would need \$2.36 million from various DHCD sources (ie. Affordable Housing Trust Fund, HOME funds), which is a reasonable assumption for a project of this size. Sewer extension costs were assumed to be covered by local funding sources such as CPA, town capital funds, or sale of excess development rights on the site through TDR (Transfer of Development Rights). TDR is believed to be the best option to offset the cost to the town, though it does add complexity to the process.

There are financial benefits if the town proceeds with the project sooner rather than later, given low debt interest rates, high investor interest in tax credit projects, and a likely rise in construction costs. The town would also realize approximately \$15,000 to \$20,000 a year in real estate taxes once the project is completed. Before proceeding with the project, the town should meet with DHCD to receive guidance on flood zone requirements and funding options. Releasing an RFP to the development community will give a clear indication from the marketplace of the projects' financial and operational feasibility.



The project site benefits from its proximity to a wide range of community facilities within a 1/2 mile walking distance, including conservation land and the views and recreation opportunities it can provide. Zoning regulations are not a limitation, as current use regulations allow multifamily dwellings and the large size of the parcel would allow up to 66 units. Natural resources buffers should be provided on the development site to support efforts to protect resources on the adjacent conservation parcel. The key concern is the development within the flood zone. Buildings could be designed with garages or storage areas below, elevating livable space one foot above base flood elevation, but this type of design may conflict with the town's handicapped access goals. Alternatively, fill could be used to elevate portions of the site immediately surrounding buildings. Engineering would be required to insure that flood waters are not diverted to nearby developed areas, possibly by removing an equivalent volume of soil and creating a "bowl" elsewhere on the parcel.

Four possible site layouts were suggested that meet overall goals of limiting development in flood zone areas, limiting need for fill, building multiple structures of modest scale, and orienting the development to existing features in the neighborhood. Some of the scenarios maintain the wooded character of the Spring Bars Road frontage, while others cluster development along the road frontage in an effort to follow existing neighborhood patterns. The study also acknowledges the possibility of amending the town's existing TDR bylaw to allow transfer of the development rights from this parcel to other locations in town that are outside the flood zone and do not have other significant constraints. TDR could potentially be used to transfer a portion of all of the existing development rights from this parcel to other appropriate locations. The town could choose to either sell these rights for affordable housing development or sell them at market rate and use the proceeds to support affordable housing development elsewhere in town.

Looking at the broader study area beyond the proposed project site, a land use analysis identified several barriers to pedestrian accessibility and connectivity. While some areas have buildings close to the street and are oriented to pedestrians with display windows and landscaping, others are defined by large parking lots, back sides of buildings, and incompatible uses. Given the dense and established nature of the surrounding residential neighborhoods, the commercial area would benefit from a more gradual transition to the large scale commercial development along portions of Davis Straits/Route 28. Fostering mixed use development that is pedestrian-friendly along the commercial frontage of Worcester Court



and also along parts of Route 28 would provide an appropriate transition area.

Providing adequate crosswalks and pedestrian paths in areas where they are missing would increase safety and encourage greater pedestrian activity. In particular, a stronger connection to the harbor facilities should be created, linking the main pedestrian corridors along Worcester Court and Route 28. Other recommendations include creating design guidelines and zoning regulations to guide siting, design and use of buildings in the transition area; developing a master plan for large commercial plazas to address the potential for change and redevelopment in ways that support neighborhood goals; maintaining a residential scale development node on Route 28 to break up traffic congestion and better facilitate pedestrian connections across this busy roadway; and expanding the green corridor between Little Pond and Teaticket Park. Potential TDR sending and receiving areas are identified to help guide the movement of development rights from the project site. Receiving areas are suggested in the transition area to encourage apartments above existing commercial uses and new mixed use developments, but they may also be identified in other parts of town where housing is deemed appropriate. Finally, transportation improvements (both low-cost and longer term) are recommended to improve safety at the intersections of Spring Bars Road/Worcester Court, and at Route 28/Spring Bars Road/Dillingham Ave.



Introduction

The Town of Falmouth requested technical assistance from the Cape Cod Commission (Commission) to conduct a planning analysis of its Spring Bars Road property and the surrounding area. The scope of the work for the Commission's analysis, dated December 27, 2012, includes studying the infrastructure needed to support a 30-unit rental affordable housing project proposed for the property, establishing cost estimates for the necessary infrastructure, assessing the financial viability of the proposed affordable housing project based on the town's design and development parameters, and exploring the surrounding neighborhood to identify opportunities to enhance community character and encourage development that is consistent with the proposed residential development.

The proposal for a 30-unit rental affordable housing project on the Spring Bars Road site was developed by the Falmouth Community Preservation Committee (CPC) over the course of several years. The property was proposed for a 168-unit Chapter 40B development in 2006, but the land was subsequently acquired by the town and subdivided into two parts: an 11.39 acre parcel (Lot 1) for community housing and other approvable uses, and a 9.59 acre parcel (Lot 2) for protected open space. The Commission's analysis is focused on Lot 1, and acknowledges the design and development parameters agreed upon by town committees, including: housing limited to 30 units and 70 bedrooms, all to be affordable; housing to be rental units for varied population at or below 80% of the area median income (AMI); a minimum of 10% of units to be handicapped accessible.

Over the course of 3 months, January through March 2013, Commission staff performed numerous site visits, met with various town staff and committee members, made a presentation to the Falmouth CPC, and held a listening session with members of local neighborhood associations to gather information and opinions about the project. A draft report was submitted in April 2013 and presented at a joint meeting of the Board of Selectmen and Planning Board. Comments were received from the town between April and August and were incorporated into the report, along with new draft flood insurance maps released during that period.

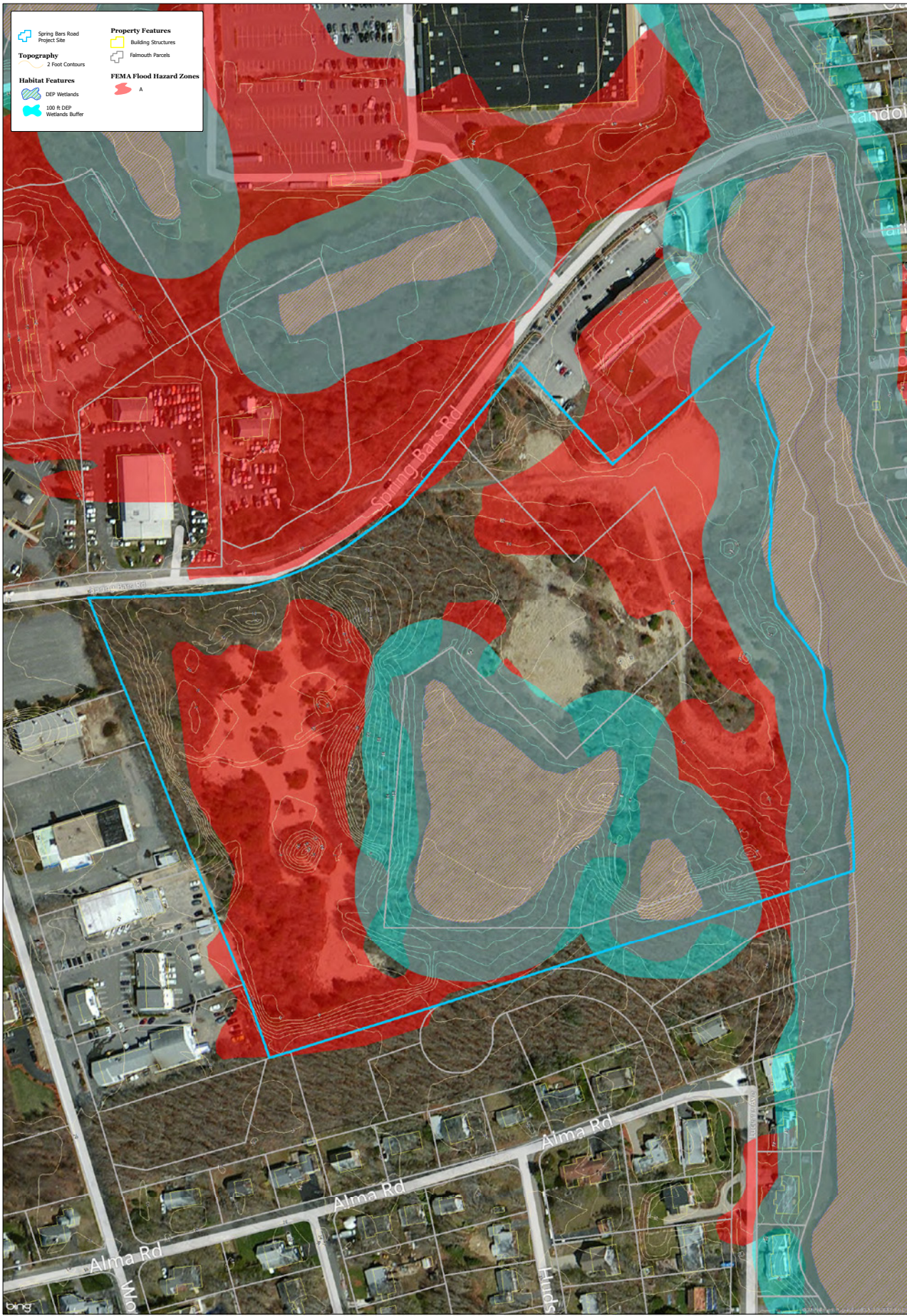


Site History

Based on historic maps of the area, the Spring Bars Road property and surrounding area have always been adjacent to a large wetland system that spread northward from Little Pond, through the current Falmouth Mall property and beyond. Given the proximity to water and wetland resources, parts of the property are known to be archaeologically sensitive, as cited in the Archaeological Reconnaissance Survey for the town of Falmouth.

While early development in this part of Falmouth was primarily limited to the area around what is now Route 28, by the 1880s significant residential neighborhoods were laid out and developed to the south in Falmouth Heights. Similar development soon followed to the east, with portions of Maravista developed by the early 1900s. Local sources note that much of the study area was used agriculturally until the 1950s, and that the Spring Bars Road property itself was a pig farm. Other nearby uses included cranberry bogs (which were filled for the Falmouth Mall development) and strawberry fields. From the 1950s through the 1970s, the Spring Bars Road property was used as a concrete production facility. In association with that use, the property was mined for sand and gravel, altering the topography in some areas by lowering the natural elevation.

Spring Bars Road itself is not shown on town maps prior to 1941, and it appears on the 1941 USGS Quad map as a dirt road stretching from Route 28 almost to the Little Pond Creek. Local sources indicate the paved road crossing the creek and connecting to Randolph Street was constructed circa 1960 to access the property.



Falmouth RESET Spring Bars Road Natural Resources Constraints Map

The map is produced by the GIS Department of the Cape Cod Commission, a division of Barnstable County. The information depicted on these maps is for planning purposes only. It is not adequate for legal boundary definition, regulatory interpretation, or parcel level analysis. It should not substitute for actual on-site survey, or supersede deed research.

The Basemap is the "Bing Maps Hybrid" datalayer; (c) 2010 Microsoft Corporation and its data suppliers. All other datalayers were acquired from the Town of Falmouth's GIS Department or MassGIS.

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PART I INFRASTRUCTURE ANALYSIS

A. Natural Resources

Natural Resources on Site

This section considers natural resources on the Spring Bars Road property and in the adjacent area. Many of the property's significant natural resources are located on Lot 2, which is protected by a Conservation Restriction. Lot 1, however, contains several natural resources that place constraints on the location of development: buffers to the vernal pool located on Lot 2, bordering vegetated wetland and wetland buffers, Little Pond and its 200ft Riverfront Area buffer, and Flood Zone areas, all shown on the Natural Resources Constraints map on the adjacent page.

Vernal Pool

The wetlands on the site were evaluated as part of a baseline assessment of the property conducted in 12/31/10. The baseline assessment determined that the Atlantic white cedar swamp contains species and characteristics that classify it as a vernal pool, though the town has not yet sought certification of the pool from the Natural Heritage and Endangered Species Program. The vernal pool is contained within Lot 2, but significant buffer areas extend onto Lot 1. The Town of Falmouth wetland regulations require a 100 ft no-disturb buffer to vernal pools, a portion of which extends into the upland on Lot 1, including the 'panhandle' that extends to Little Pond. This buffer area will limit development in the panhandle. The town should also be aware that under certain permitting scenarios (ie. if the development required DRI review or preparation of an EIR) the project could be subject to Regional Policy Plan (RPP) minimum performance standards, including the 350 ft undisturbed buffer to vernal pools. This would have a significant impact on development potential on this site.

Certification of the vernal pool would provide the pool and its 100 ft buffers with protection from development under the Wetlands Protection Act. This protection could not be waived through a Comprehensive Permit (40B) application. The protections afforded the vernal pool under the Falmouth Wetlands Bylaw are similar to those under the WPA; whether or to what extent relief from these local protections could be granted through a



40B application is unknown.

Little Pond

Lot 1 is little affected by Little Pond, with the exception of the extension of the 200 foot Riverfront Area into the panhandle. This will limit development potential in the easternmost portion of the panhandle.

Bordering Vegetated Wetland

There is bordering vegetated wetland (BVW) that extends into the Panhandle portion of Lot 1, limiting development in this area.

Flood Zone A

Much of Lot 1 is located within the Flood Zone A under current flood zone maps. The type of development within this zone will be defined by state building code regulations, and state and local flood plain regulations may limit the size or location of development. The town should be aware that under certain development scenarios where DRI review is required, RPP minimum performance standards would require elevation of structures 1 foot above base flood elevation to accommodate relative sea level rise.

Analysis

Flood Plain considerations

Current flood hazard zone delineations are based on FEMA's Flood Insurance Rate Maps, or FIRM, which were put in place in the 1990s. A different flood zone configuration is shown on a plan of Lot 1 and Lot 2 prepared by Warwick and Associates for the Falmouth Community Preservation Committee, dated March 24, 2011 and showing the delineations of the vernal pool, bordering vegetated wetland, and flood zone. At the time these plans were prepared, Warwick and Associates utilized an early draft of revised FIRMs, anticipating that the flood delineations on these maps would be adopted within the planning horizon for this project. Since that time, FEMA has issued new revised flood maps. FEMA expects these new maps to be adopted by July 2014. The new delineation shows that most of Lot 1 will be in the special flood hazard area subject to inundation by the 100 year flood, an area greater than the previous delineation. With these considerations in mind, this report includes the existing flood delineation and the new draft delineation from summer 2013 on a Flood Analysis graphic included in the Site Analysis section (page 52) to illustrate possible construction limitations.

The FIRM flood zones are the delineations used when regulating under the State Building Code and the MA Wetlands Protection Act. It is impor-



tant to note that regulations under both of these state laws are not eligible for waiver under Chapter 40B. The State Building Code requires that all new construction “within a flood-hazard zone shall be elevated so that the lowest floor is located at or above the base flood elevation.” There are various building design considerations that may allow for construction within the A-zone, (e.g. elevating the building with parking underneath), but these options will typically increase the cost of construction. Filling the site to elevate it to Base Flood Elevation (BFE, the equivalent of the 100 year storm flood elevation, or elevation 10 at this site) is also an option. Based on currently available topography, developable portions of the site would need to be filled between two to four vertical feet to achieve this elevation.

The introduction of fill within a floodplain is regulated under the Wetlands Protection Act. The proponent would have to demonstrate that the fill will not “cause an increase or will contribute incrementally to an increase in the horizontal extent and level of flood waters during peak flows,” or, in the alternative, create a compensatory storage area on the property (a “bowl” of equivalent volume to the area being filled). As the site is constrained by the vernal pool and its 100 ft buffer, the introduction or movement of fill on the site becomes more difficult.

Additional considerations for building within the flood plain

The conservation administrator indicated that the Falmouth Conservation Commission intends to embark soon on creating Town of Falmouth regulations pertaining to development within the floodplain, and that these regulations would likely be adopted within the next year or so. Consequently, any development on this site may be subject to additional local floodplain regulations. Also, while RPP standards likely will not apply to development on this site, the RPP minimum performance standards require elevation of new construction an additional 1 ft above BFE to accommodate sea-level rise. We strongly recommend that any RFP for housing on this property include a requirement to accommodate sea-level rise.

Habitat considerations

Many vernal pool species migrate up to a distance of 800 ft to and from vernal pools during the course of a year. In order to protect vernal pool species, the Town of Falmouth wetlands regulations prohibit development within the 100 ft buffer to the pool edge. As noted, RPP standards likely will not apply to this project, but minimum performance standards require a 350 ft undisturbed buffer to better protect the upland habitat of vernal pool species. In order to improve wetland and upland habitat for vernal pool species at this site, we recommend that the town consider requiring greater buffers to the pool in select portions of the site. Potential areas to increase the buffers are areas that provide linkages to exist-



ing upland habitat areas, and/or other wetlands in the area, such as the southern portion of Lot 1, and portions of the eastern “boot” that juts into Lot 2. The southern portion of Lot 1 abuts a long parcel to the south that is currently undeveloped. This likely serves as upland habitat for vernal pool species. Other upland, wooded portions of the site likely provide vernal pool species habitat, and should be considered for preservation.

The draft habitat management plan prepared by Horsley Witten Group identifies areas on Lot 2 where invasive species should be managed, and areas where other habitat restoration should occur. Given the configuration of Lots 1 and 2, the restoration effort, particularly invasive species management, may be most successful if the “boot” portion of Lot 1 is similarly managed for invasive species. By restoring this area of Lot 1, the overall restoration effort may create a more cohesive habitat area between the vernal pool/Atlantic White Cedar Swamp, and Little Pond.

Access to Little Pond

The configuration of Lot 1 seems to have contemplated a possible access route to Little Pond via the long panhandle on the southern boundary of the site extending to the estuary. Given the sensitivity of resources within this panhandle (vernal pool buffers, BVW buffers), and given that the management plan for Lot 2 includes access to the water, we recommend that primary access to Little Pond be through Lot 2, which is closer to developable areas of Lot 1. The panhandle area is an important habitat linkage between the wetlands and upland habitats nearby and should be left undeveloped, other than possibly a footpath, is possible.

Regional habitat restoration and linkages

The northern reaches of Little Pond become wetland with stream flow just south of Spring Bars Road. North of Spring Bars Road the wetland system continues in a linear fashion behind the mall buildings north through the new Teaticket Park to the school property north of that. As redevelopment projects occur along this corridor, the town should consider opportunities to restore this wetland system, especially where the wetland system intersects with the floodplain. Not only will wetland restoration improve habitat within this corridor, but it will aid in storing floodwaters during storm events, and help with nutrient management within Little Pond. Strategically placed stormwater best management practices (BMPs)/Low Impact Development/rain gardens, and/or other green infrastructure technologies such as Permeable Reactive Barriers or constructed wetlands also could help with nutrient management within the Little Pond watershed. Long term, the town may wish to consider ways to restore more of the wetlands and habitat in the low-lying areas north and south of Spring Bars Road.



B. Wastewater and Water Supply

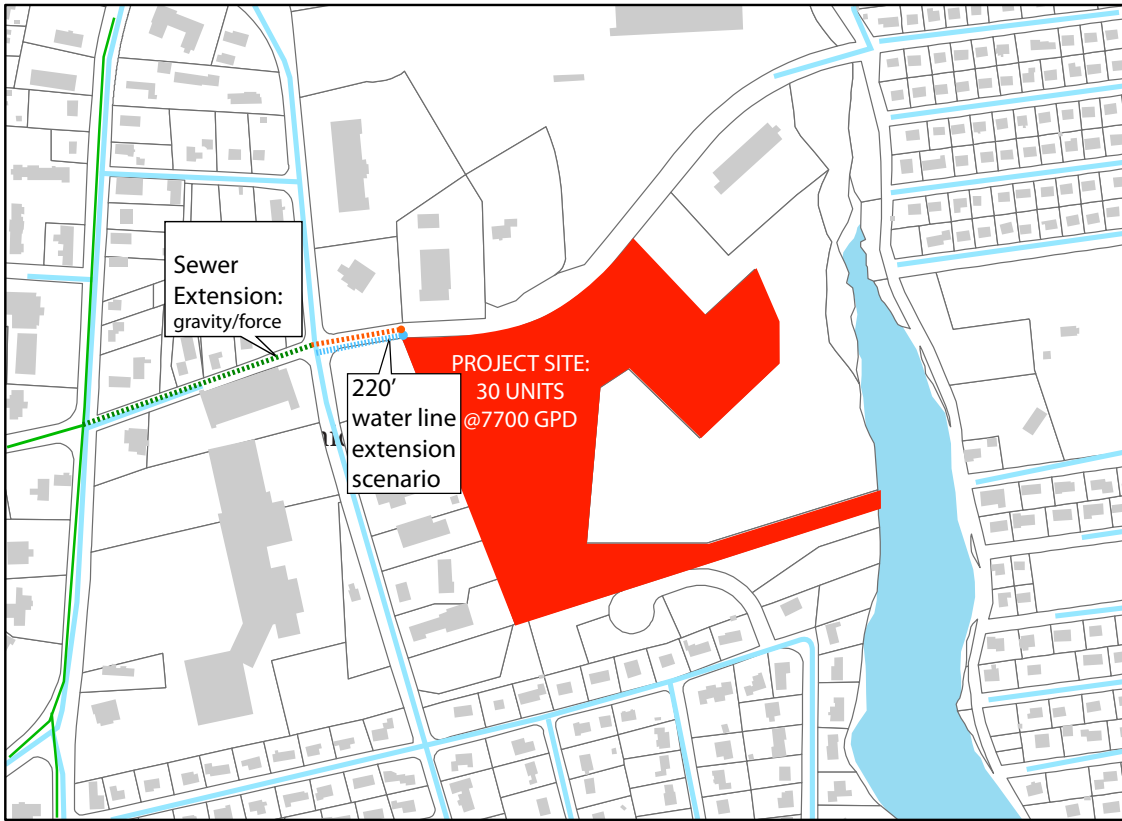
This section evaluates alternatives and costs for managing project wastewater and associated costs. The potential future extension of water-supply main to the property is also evaluated.

The Memorandum of Agreement between the Board of Selectmen and Community Preservation Committee (March 8, 2010) envisions development of the site with 30 residential units with no more than 70 bedrooms. This corresponds to Title 5 wastewater design flows of up to 7,700 gallons per day (gpd). The housing project site does not presently have wastewater or water-supply infrastructure available to it. Development of the site will require either construction of a wastewater treatment system on site, or project wastewater will need to be collected for conveyance and treatment offsite. The existing water main on Worcester Court or elsewhere will also need to be extended to the housing project site to supply potable water to the project and for fire suppression.

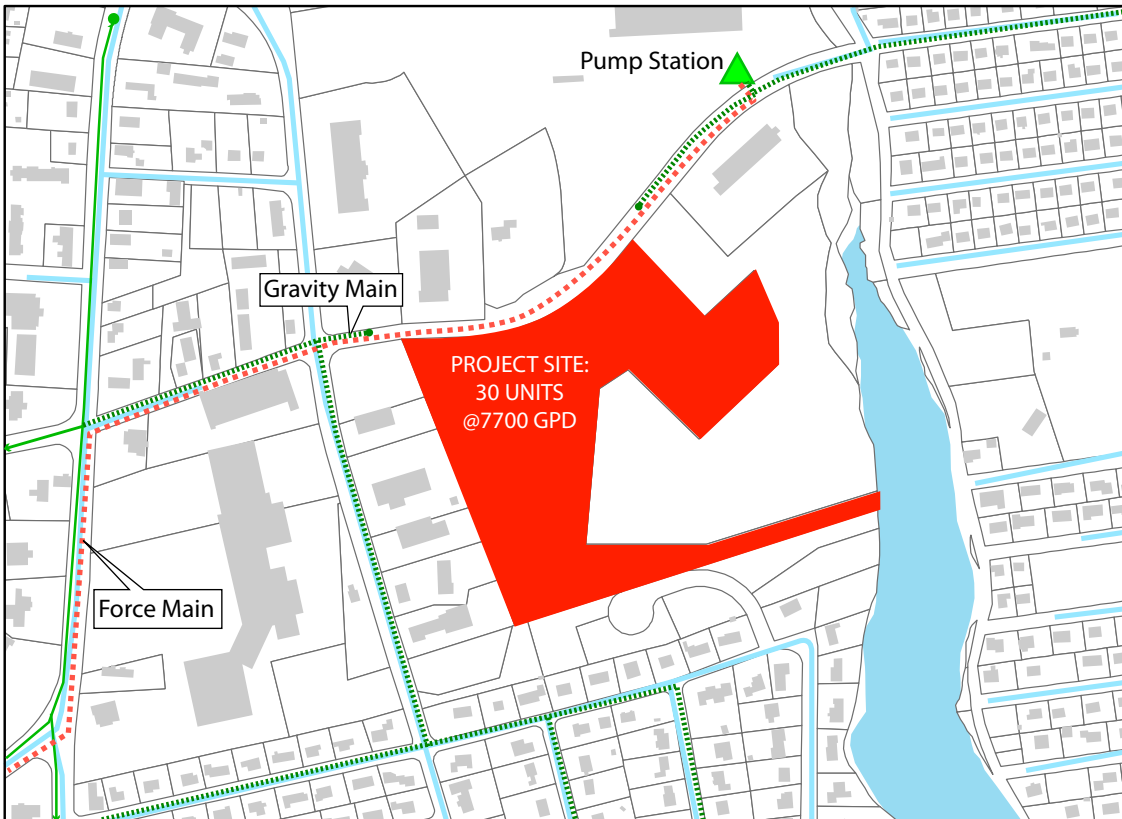
Comprehensive Wastewater Planning

The Town of Falmouth is presently engaged in comprehensive wastewater management planning (CWMP) that anticipates construction of sewers throughout the lower Little Pond watershed. The town contracted with GHD to design the wastewater collection system. The 30% design plans presented to the Town in December 2012 describe a system of gravity and force mains, and low-pressure sewers that will be implemented in phases starting on the west bank of Little Pond, progressing to the east bank and into the Great, Green and Bourne Pond watersheds. Plans anticipate use of gravity and force mains along Spring Bars Road in conjunction with a lift station nearby. The plans include gravity main that would drain from Worcester Court to the existing sewer main on Davis Straits (Route 28). Gravity main serving properties to the east of Worcester Court, including the housing project site, would drain to the future lift station. Under the draft CWMP 30% design plans, some force mains are included in the town's sewer design (as shown in CWMP Figure S-1-5 (Alternative 1A modified)). Low pressure pipe and grinder pumps are envisioned for residential properties in portions of Maravista and Falmouth Heights to

95% DESIGN PLANS Adapted from GHD Spring Bars Road Proposed Sewer Extension Plans (Drawing # 86-14509-G001, 3/12)



30% DESIGN PLANS Adapted from GHD ALTERNATIVE 1A/Profile 1 Plans (Drawings #86-15097, 12/12)



LEGEND		Proposed Water Main	<p>Scale: 1" = 500'-0"</p> <p>CAPE COD COMMISSION</p>
Existing Gravity Sewer	Proposed Gravity Main	Proposed Force Main	
Existing Water Main	Proposed Pump Station		



convey the wastewater back to the sewer. The plans also envision a force main nearly the entire length of Spring Bars Road to convey wastewater from the proposed pump station to the sewer on Davis Straits (Route 28).

Managing Project Wastewater

Future availability of a sewer connection to the housing project site would likely obviate onsite wastewater treatment as a long-term option for managing the project's wastewater. As an affordable housing development, the housing project would likely be required to connect to any future sewer constructed along Spring Bars Road. The town sewer and/or health boards would make this determination based on the Code of Falmouth, Chapter 180 Sewers and Septic Tanks.

Cost

Costs associated with on-site treatment could be in the vicinity of \$1/2 million¹. The actual cost of managing housing project wastewater onsite will depend on the final layout and design of the housing project (affecting wastewater collection costs); detailed site evaluations (affecting wastewater conveyance and disposal costs); and cost premiums associated with state-of-the-art treatment efficiencies, enhanced permitting, oversight, operation, and water-quality monitoring that would likely be required by the Board of Health to ensure that coastal water-quality objectives are achieved. Staff suggests that any decision to pursue onsite wastewater treatment for the housing project should be considered in consultation with the Town's health and sewer departments.

The Falmouth Comprehensive Wastewater Management Plan (CWMP) anticipates that sewer construction in the lower Little Pond watershed will be completed in 2017, contingent upon future town meeting approval. Prior to development of the referenced 30% CWMP plans for the lower Little Pond watershed, construction level (95%) sewer extension plans were prepared by GHD for extending the existing sewer at Davis Straits (Route 28) to the housing project site via Spring Bars Road². Elements of these plans are illustrated in the graphic on the adjacent page. The estimated capital cost of the 95% plan is \$440,000 (2012 bidding index)³. This cost includes police detail. Staff estimates an additional cost of approximately \$43,000 for road surface restoration after sewerage is completed⁴.

The \$440,000 cost estimate reflects the capital cost associated with extending sewer to the housing project site prior to implementation of the CWMP based on the construction (95%) sewer extension plans prepared by GHD. In its original April 25, 2011 proposal to the Community Preservation Committee, GHD indicated that extension of gravity main to the property would add \$20,000 to \$40,000 to the project due to the cost of deep excavation and dewatering. The proposal characterizes the use of



force main as “more appropriate.” However, the proposal suggests that a gravity main design could be engineered. Final elevations will need to be determined before this can be designed. Additional costs to connect the housing project to the sewer will depend on the final layout and design of the housing project and a site survey to determine on-site conveyance and pumping needs.

Potential cost sharing opportunities between Town and Developer
Both the 95% sewer extension plans and the 30% CWMP plans include gravity main that would serve properties abutting Spring Bars Road, from Davis Straits(Route 28) to Worcester Court. The 95% sewer extension plans also include a force main to convey wastewater approximately 220 feet from the housing project site to the gravity main at Worcester Court and additional piping for odor control. The independent force main will not be necessary if the housing project is developed after implementation of the CWMP as it is configured in the 30% CWMP plans. Thus, waiting could reduce the developer’s cost for sewer infrastructure. Staff estimates force main construction costs of up to \$59,000 as a portion of the total \$440,000 cost estimate cited above. This amount acknowledges work already done on the design.

The town may consider covering the added \$20,000-\$40,000 cost of constructing the gravity main to the project site if it determines that it can ultimately be used to implement the CWMP plans in this part of town, but this would require coordination of the design plans in future CWMP engineering. The project developer would presumably bear the cost of constructing any elements that would ultimately be replaced by the CWMP design, as well as any on site connection costs.

Water Supply

A water main needs to be extended to the housing project site to supply the property with potable water and fire suppression. The closest existing water main is located at the intersection of Spring Bars Road and Worcester Court, approximately 220 feet from the housing project site. Alternatively, after considering all factors and specifications required by the Falmouth Water Department (e.g. available water pressure at Worcester Court, topographic/ trenching constraints, Trade Center needs, etc.), it may be preferable to extend the water main on Randolph Street.

Staff spoke with Marybeth Wiser, the superintendent of the Falmouth Water Department, on February 6, 2013 regarding costs that could be expected to extend the existing water main approximately 350 feet from Worcester Court to the housing project parcel. Ms. Wiser outlined gen-



eral materials needs, including 12-inch ductile iron pipe, hydrant- and gate-valve specifications and unit costs. Ms. Wisner subsequently provided planning-level cost estimates totaling \$130,000 to \$168,000 for materials and trenching⁶. Adjusting the 350 feet down to reflect a distance of 220 feet between the project site and Worcester Court, consistent with the 95% sewer extension plans, yields \$83,000 to \$107,000. Adding non-construction related costs (assumed to be 50% of construction costs) results in a total estimated capital cost of \$124,000 to \$161,000. These estimates do not include the cost of services to connecting properties. Connection costs will depend on the final layout and design of the housing project, and would presumably be borne by the project developer.

Permitting

The Executive Office of Energy and Environmental Affairs issued a certificate indicating that no further MEPA filing is required on the Notice of Project Change that included the sewer extension to the Spring Bars Road project. EOEEA determined that the additional flow could be accommodated within the proposed CWMP plans to address the Little Pond Area.

For sewer extensions over 1,000 feet, a DEP sewer extension permit is required. For sewer extensions under 1,000 feet, no DEP permit is required. Sewer extension plans and a memo from GHD, the consultant in the sewer design, indicate that the sewer extension would be below the 1,000 feet threshold. According to the Ray Jack, the town's Director of Public Works, DEP also reserves the right of approval for any connection utilizing a pump system. The proposed system includes a pump. The town and DEP entered into a settlement agreement, and the Groundwater Discharge Permit stipulates that "[t]he Town may issue a sewer extension permit for the project known as Spring Bars Affordable Housing Project provided that the Town informs the Secretary of the Executive Office of Energy and Environmental Affairs of the Modified Permit and obtains a ruling that there is no need for further environmental review of this extension given the terms and conditions of the Modified Permit." These documents indicate that wastewater discharge from the project is expected to be approximately 4,000 GPD (gallons per day).

Article 29 of the Spring 1993 Town Meeting granted authority to the Board of Selectmen to approve sewer system extensions that meet the following criteria: 1) no cost to the town, 2) become the property of the town, 3) are for flows under 2,000 GPD, and 4) are no longer than 1000 feet. Ray Jack's email of 3-12-13 states this project has a flow of 4,000 GPD and a length just over 1000 feet, and he thus believes it exceeds the Board of Selectmen's approval authority and requires Town Meeting ap-



proval, following the protocol the Town has followed since Article 29 was enacted. Even if the length of the extension is less than 1000 feet, under this protocol the project would still require Town Meeting approval for the sewer extension.

Summary

If the project is constructed before the CWMP is implemented, the total estimated capital cost for providing water and sewer to the project site is \$564,000 to \$601,000 (combining the \$440,000 estimate for providing sewer infrastructure and the \$124,000 to \$161,000 estimate for providing water supply). Breaking this estimate into construction costs and non-construction costs yields the following estimates: construction costs to extend sewer and water supply to the housing project site total approximately \$485,000 to \$510,000; additional non-construction related costs of up to \$79,000 to \$91,000 should be budgeted to cover ancillary planning, engineering, legal and contingency costs. Extension of gravity main to the property would add another \$20,000 to \$40,000 to cover deep excavation and dewatering. Final total costs to connect the housing project to sewer will depend, in part, on final project designs and detailed site evaluations. If the housing project is constructed and sewer is extended prior to implementation of the CWMP, staff recommends that the 95% sewer extension plans be re-evaluated by project engineers so that the plans can be aligned with the 30% CWMP designs. Staff also recommends that the Falmouth Water Department identify specifications it will require to supply water to the housing project site so that construction plans can be developed that meet those requirements.

Footnotes:

¹ Based on information from the 2010 Barnstable County Cost Report.

² Spring Bars Road Sewer Extension, plans prepared by GHD, Inc., revised March 2012.

³ Technical Memorandum from Nathan C. Weeks, PE, dated May 17, 2012.

⁴ Estimated using unit costs from the Chatham CWMP (Table 9-1), adjusted for inflation.

⁵ Nathan Weeks, GHD Inc., personal communication February 26, 2013.

⁶ Marybeth Wisner, e-mail dated February 13, 2013.



C. Transportation Analysis

This section evaluates existing transportation conditions in the study area and considers what impact the proposed affordable housing development would have on those conditions. Commission staff conducted a field inventory of existing conditions in the study area. The field investigation consisted of an inventory of existing roadway geometry, traffic volumes and operating characteristics, crash history, and pedestrian and bicycle accommodations. Additional details on this field investigation are provided in Appendix A.

The study area was developed in consultation with Town of Falmouth staff and includes major roadways and intersections that provide access to the proposed project site. The study area includes portions of Spring Bars Road, Worcester Court, and Davis Straits (Route 28), as well as the following five intersections:

1. Worcester Court at Spring Bars Road;
2. Davis Straits (Route 28) at Spring Bars Road and Dillingham Avenue;
3. Davis Straits at Worcester Court and Jones Road;
4. Randolph Street at Maravista Avenue; and
5. Davis Straits/Main Street (Route 28) at Falmouth Heights Road.

Note that the intersection of Randolph Street at Maravista Avenue was added after the initial projects scope of work in response to concerns voiced by the Falmouth Police department.

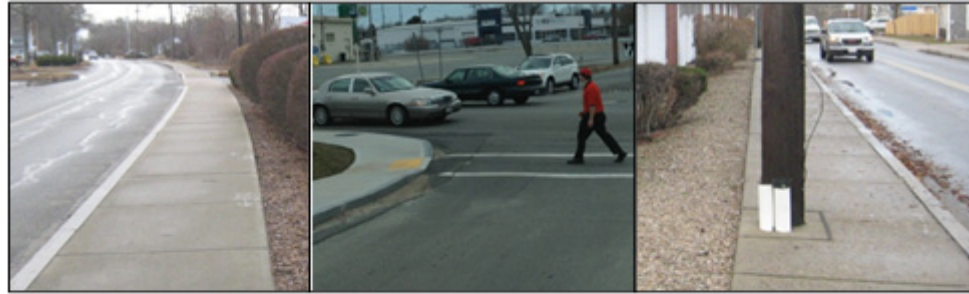
Pedestrian, Bicycle, and Transit User Accommodations

The availability and quality of bicycle and pedestrian accommodations vary throughout the study area. The availability of pedestrian accommodations, including sidewalks and crosswalks, is shown on the Connectivity Assessment Map on page 68 of the Future Land Use Analysis section of this report.

Within the study area the quality of the sidewalks vary greatly, but can



generally be categorized as concrete or asphalt. The concrete sidewalks all feature granite curbing and appear to be the newest and offer the best quality pedestrian experience. These sidewalks are consistently five feet wide and provide appropriate crossing treatments at most locations, though some crossings lack tactile warning strips. Obstructions within the sidewalk inhibit pedestrians in several locations.



EXISTING CONCRETE SIDEWALKS



EXISTING ASPHALT SIDEWALKS

FIGURE 1 EXISTING SIDEWALKS

The asphalt sidewalks are generally older and have a greater degree of variability in their quality as shown in Figure 1 above. Some sections of the asphalt sidewalk feature granite curbing, while others have asphalt curbing and some have no curbing at all. The sidewalk widths vary from three to five feet with portions even narrower due to damage and vegetation encroachment. Crossing treatments are generally substandard and in some cases nonexistent.

Crosswalks are provided at most desired pedestrian crossing locations. The crosswalks are generally consistent in design, with two wide painted lines marking the crosswalks, though some feature perpendicular white bars as well. More conspicuous crosswalk delineation would provide greater visual cues to motorists of the potential for pedestrians to be present. Most crosswalks are properly signed, however sign clutter and other visual distractions detract from the impact of the crossing signs.



Appropriate curbs exist at most crossings; however, many crossings lack contrasting tactile warning pads to alert visually impaired pedestrians of the crossing.

Bicycles are generally accommodated within the study area in a shared-use fashion with motor vehicle traffic. Davis Straits (Route 28), Spring Bars Road, Dillingham Avenue, and Falmouth Heights Road are designated as bike routes on the Town of Falmouth Bikeway Map with the disclaimer that “Falmouth Bicycle Routes are designated for use by bicyclists who are experienced and comfortable with riding on roads with automobiles.” Shoulders on most roadways within the study area are generally one foot wide or less, with some roadways lacking any marked shoulder. Shoulders on Davis Straits are more consistently marked. Given the drainage grates along the roadway edges, bicycles generally travel within the vehicle travel lanes.

Cape Cod Regional Transit Authority (CCRTA) operates the SeaLine bus service along Route 28 from the Hyannis Transportation Center to the Falmouth Bus Depot to the Woods Hole Ferry Terminal, with numerous local stops including the Falmouth Mall. Connections with other CCRTA bus routes and regional bus providers allow passengers a car-free alternative to reach Boston, Providence, and New York City. During the summer months, the SeaLine route terminates at the Falmouth Mall, with service between the Falmouth Mall and Woods Hole Ferry Terminal provided by the WHOOSH trolley.

In addition to the fixed-route bus service, the CCRTA provides a daily general public demand response service called Dial-A-Ride Transportation (DART - formerly b-bus) that is a door-to-door, ride by appointment transportation service. This service is available to all Cape Cod residents and visitors for any purpose. DART service is available Monday through Friday in all 15 Cape towns.

Traffic Volumes and Capacity Analyses

Traffic volumes were collected by Commission staff as part of this study. Traffic volumes on Davis Straits (Route 28) range from 14,000 - 16,000 daily trips on an average month to 18,500 - 20,500 daily trips during peak months. Spring Bars Road and Worcester Court experience lower volumes in the range of 4,000 - 7,500 daily trips on an average month to 6,000 - 9,500 daily trips during peak months. These volumes result in capacity issues at a number of intersections within the study area. The worst delays are experienced by vehicles on Dillingham Avenue and Spring Bars Road at the intersection with Davis Straits (Route 28). Ca-



capacity issues also exist, to a lesser degree, at the other study area intersections. Further detail on traffic volumes and capacity analyses are provided in Appendix A.

Crash History

Crash analysis was conducted at the five study area intersections using data compiled by the MassDOT Registry of Motor Vehicles for the recent three years on record, 2008-2010 (data available at <http://services.massdot.state.ma.us/crashportal/>). A figure summarizing intersection crashes is included in Appendix A. The analysis identified the following intersections as high crash locations:

1. Worcester Court at Spring Bars Road;
2. Davis Straits (Route 28) at Spring Bars Road and Dillingham Avenue; and
3. Davis Straits at Worcester Court and Jones Road.

The intersection of Davis Straits at Worcester Court and Jones Road was studied extensively as part of the design process for its upcoming reconstruction. These planned improvements, in part, are targeted at improving safety at this intersection. As such, no further analysis of this intersection was conducted.

To better understand the crash problem at the study area intersections, detailed crash reports were requested from the Falmouth Police Department. These reports contain additional information not included in the state crash database, allowing for a better understanding of the crash problem at the intersection. At the intersection of Worcester Court at Spring Bars Road, the majority of the crashes involve drivers trying to make a through or left-turn maneuver from the minor streets. At the intersection of Davis Straits (Route 28) at Spring Bars Road and Dillingham Avenue, it is clear from the crash patterns that drivers are having a difficult time entering the intersection from the minor roads. Given the speed on Davis Straits, this type of crash is particularly concerning.

Crash diagrams, prepared for the intersections of Worcester Court at Spring Bars Road and Davis Straits (Route 28) at Spring Bars Road and Dillingham Avenue, are presented following the intersection crash summary in Appendix A. Potential improvements to address the documented crash problem at these intersections are presented in the Future Land Use Analysis section of this report because they are not tied specifically to this proposed affordable housing development.



Summary of Project Impacts

There currently exist safety, congestion, and connectivity issues in the area surrounding the proposed project site. Depending on the number of new trips generated by future development, these issues could be made worse. The 30-unit rental affordable housing development proposed on this site would be a relatively low-impact development in terms of traffic impacts.

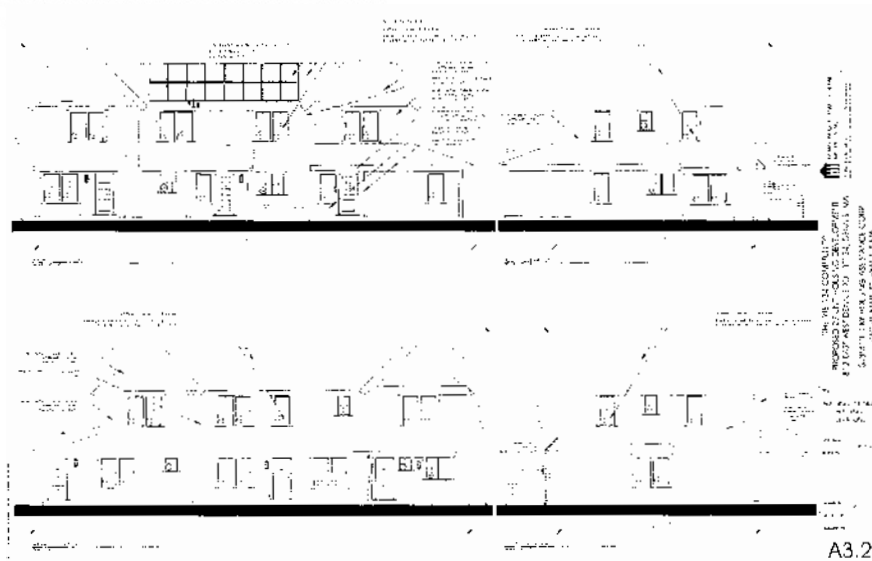
The location of the proposed project provides great opportunities for residents to access vast and varied points of interest throughout the Town of Falmouth. Additionally, the site is within walking distance of a transit stop that would provide residents access to points beyond. However, these benefits can only be realized if safe and convenient access by way of appropriate bicycle and pedestrian accommodations are provided.

In order to provide a safe connection to the transit stop at the Falmouth Mall a new crosswalk with appropriate markings and signage should be installed. Safely locating such a crosswalk is a challenge given the curvature of Spring Bars Road. The least cost option would be to locate the crosswalk east of the Falmouth Mall back entrance connecting with the existing sidewalks; however, the sight distance to the east would be limited. While the available sight distance does meet design standards based on the posted speed limit of 25 mph, vehicles travelling in excess of the posted speed limit, as observed during site visits, pose a potential safety hazard. A crosswalk located approximately 200 feet west of the Falmouth Mall back entrance would allow for better sightlines that would increase the conspicuity of pedestrians to motorists. This alignment would require construction of additional sidewalk along the north shoulder of Spring Bars Road, but would provide a more safe crossing option.

Along with the installation of the new crosswalk, upgrades to the existing sidewalk along Spring Bars Road should be considered. If the sidewalks were upgraded to meet current design standards (similar to the existing concrete sidewalks in the vicinity) and a new crosswalk was installed with the appropriate delineation and signage, the total cost would be approximately \$150,000. These safety improvements could be tied to construction of the proposed development, but they could also be shared with the town since they will likely get broader use. Other potential transportation improvements are suggested in the Future Land Use Analysis of this report.



CAPE COD
COMMISSION



Building elevations and plans from recent Affordable Housing developments in Provincetown and Dennis.



PART 2 HOUSING PROPOSAL

Project Feasibility and Viability

This section explores the financial feasibility and viability of the proposed Spring Bars Road 30 unit affordable rental housing development. In addition, this section explores options that might enhance the project’s financial viability and suggests next steps for the decision-making process.

In preparing this analysis, staff reviewed the project file, including the draft Request For Proposals prepared by the CPC and the MHP consultant’s draft project budget (included in Appendix B, sheet 1), the infrastructure cost analyses by Commission staff, and the development and operating costs of 8 recent HOME Consortium funded, new construction, 100% affordable rental projects over the last three years (summaries in Appendix B, sheets 2-4).

Comparison with Recent New Construction Rental Projects

The 8 recent (within last 3 years) new construction, HOME Consortium funded rental projects ranged in size from 10-60 units, had from 1-9 buildings on site, had acquisition costs that ranged from \$0- \$30,000 per unit, and included 5 tax credit projects. Staff did not include a current Barnstable Housing Authority development in the analysis as it had to go through the Chapter 30 procurement process that often results in a premium (10-12% by one estimate) on construction costs. Note however that all 8 projects were required to get competitive bids for construction: either through a competitive selection process for the general contractor or, if the general contractor was already identified, by requiring competitive bids for all the sub-contractors. Below is a summary of those 8 projects’ costs compared with the MHP draft project budget:

Total Development Costs (TDC)

Range	\$265,000- \$366,000 per unit
Average - All	\$305,500 per unit
Median - All	\$299,570 per unit
Tax Credit Project Average	\$303,000 per unit
MHP Draft Budget	\$281,000 per unit



Construction Costs
(building, site infrastructure, contractor overhead and profit)

Range	\$148 - \$232 per square foot
Average- All	\$191 per square foot
Median- All	\$195 per square foot
Tax Credit Project Average	\$175 per square foot
MHP Draft Budget	\$202 per square foot

Operating Costs

Range	\$5,852 - \$8,449 per unit per year
Average- All	\$7,046 per unit per year
Tax Credit Project Average	\$7,351 per unit per year
MHP Draft Budget	\$6,700 per unit per year

Infrastructure Needs and Cost Allocation

Wastewater

As noted previously, the estimated cost of installation of an on-site, denitrifying system could be approximately \$500,000. As the CWMP sewer extension to the site and to the area is scheduled for 2017 at the earliest and as the project would be required to connect to that sewer, it makes no sense to consider the installation of an independent on-site system for the project. However, the \$500,000 estimate is useful in assessing what the net added cost of the sewer extension would mean for the project.

The estimated capital cost of extending the sewer line to the site is \$440,000. These costs are just to run the line to the site; they do not include the site work costs to run the lines to the individual buildings on the site. Only one of the 8 projects (Province Landing- Provincetown) involved site connections to an existing sewer. That project involved 50 units in six buildings on a 2.6 acre site, and its wastewater infrastructure site costs were \$135,000. Assuming a compact development footprint with multiple buildings and therefore a comparable expense for the Spring Bars Road site, the total wastewater infrastructure cost would be approximately \$575,000. The net added expense that the project would incur because of the sewer extension over a comparable project (ie. beyond the \$500,000 estimate for on-site wastewater disposal) would thus be approximately \$75,000.



As this is a Town-sponsored project and the Town has already invested \$2,000,000 to acquire the property, and as the sewer extension is absolutely necessary for the project, it is possible that the Town could make the case to Department of Housing and Community Development (DHCD) that the full cost of the sewer extension of up to \$440,000 should be attributable to the project and should be considered an eligible project expense by public funders. However, as the length of the extension is about 1,000 +/- feet and as it will pass three other parcels prior to the site, it is staff's judgment based upon prior history, funding guidelines that limit eligible costs to site specific expenses, and resource constraints, that DHCD and other public funders would consider the sewer extension to provide a public benefit beyond that of just the project site and thus would consider the extension cost to be a public expense and not one that should be borne by or allocated to the project.

For the purpose of this analysis, staff will still include the cost of the sewer extension in the project budget; however, staff will also need to include local sources of funding in the budget to offset that expense.

Water Supply

The estimated cost to extend the water line approximately 220 feet to the site ranges from \$124,000- \$161,000. Again, only one of the 8 comparable projects (Thankful Chases - Harwich) faced this expense, and thus it should be considered as an additional capital cost that is atypical of comparable projects. As the water line runs along Worcester Court and provides access to the corner lot of Spring Bars Road, the extension of the water supply line to the project site on Spring Bars Road will solely be for the benefit of the project; therefore, the full cost of the extension from Worcester Court to the site could be attributable to the project and would be considered an eligible project expense by public funders.

Road and Sidewalk

The cost of the post sewer extension full road resurfacing of the approximately 1,100 +/-feet from Davis Straits to the project site was estimated at \$43,000. This type of expense is considered by public funders to be a Town/public responsibility and thus would not be an expense that public funders would allow to be attributed to the project.

The more extensive sidewalk improvements for Spring Bars Road were estimated at just under \$150,000. Again, this type of expense, even though part of it would include the project's frontage, is typically considered by public funders to be a Town/public responsibility with the benefit of the improvements accruing to the public in general and thus would not be an expense (or even a proportion of the expense) that public funders would allow to be attributed to the project.



Finally, public funders would likely look askance at any requirement that the project significantly upgrade (e.g. granite curbing) the sidewalk along its frontage while the remaining length of the sidewalk remains as is. The less costly asphalt resurfacing for the project's frontage would more likely be an expense that could be attributed to the project if the condition of the sidewalk along the frontage was determined to be a safety concern.

Fill

Staff assumed that adding fill to the site to raise the building footprints well above base flood elevation was a valid method to mitigate and minimize the risks associated with the entire site being designated as an "A" zone in the proposed new flood zone maps. The only one of the 8 comparable projects that required a significant amount of fill was the Province Landing project in Provincetown which required 15,000 cubic yards of fill at a cost of \$150,000 (\$10 per cubic yard).

Staff did an analysis of the amount of fill that would be required to bring each of the four development scenario footprints explored in the Future Land Use Analysis section of this report to one foot above base flood elevation. The estimates ranged from about 2,700 cubic yards for Scenario 4, to 9,550 cubic yards for Scenario 1. Assuming the \$10 per cubic yard expense and choosing the scenario that needs the most fill results in about \$95,500 of fill expenses. This would not be a significant overall project expense as staff estimated the overall site costs for this project at the upper end (\$45 per square foot) of per square foot costs on comparable projects, and the added fill requirements were part of the reason for that higher estimate.

Financial Feasibility

Development Budget - Uses

Acquisition:

Although the Town paid \$2,000,000 for the project parcel, staff did not include any of that expenditure in the project pro forma as its understanding was that the Town would either lease the land at a nominal annual fee or simply transfer the parcel at no cost to the designated developer through a land disposition agreement. Staff's analysis of the project's financial feasibility was primarily from the perspective of the public funders, reviewing a designated developer's funding request. Although there would be no acquisition cost associated with that funding request, clearly the \$2 million can be added to the project total to arrive at the actual cost of creating these units.



Staff notes that the Town subsidy is thus nearly \$67,000 per unit for the 30 units, while the highest per unit acquisition cost on the 8 comparable projects was \$30,000. If a private for-profit or non-profit party had to pay \$2 million to acquire the parcel, a 30 unit affordable rental project would not be financially feasible as it would likely require at least a 50 unit project size to justify a \$2 million acquisition cost.

Construction Costs:

Below is a summary of how the different construction cost elements broke down among the 8 comparable projects:

Construction Costs (includes contingency)	\$ Per Square Foot- Range	\$ Per Square Foot- Average	% of Total Cost- Range	% of Total Cost-Average
Direct Building	\$107-\$157	\$126	55%-74%	66%
Site Work	\$19-\$74	\$40	12%-33%	21%
Indirect- Builder Overhead/ Profit/General Conditions	\$17-\$35	\$24	10%-16%	13%
Total		\$190		100%

* Direct Building- Given the draft RFP’s requirement for multiple buildings rather than a single building, for high levels of energy efficiency, green building, accessibility, and visit-ability, staff assumed that the direct building costs would be at the higher end of the range and comparable to four of the multiple building projects reviewed. Staff budgeted \$140 per square foot, which accounts for about 61.6% of the total construction budget.

* Site Work- While there was a wide range of per square foot site work costs, there was a cluster of multi-building projects in the mid \$40 range and staff therefore budgeted \$45 per square foot, including the cost of the fill. As the sewer and water line extensions are atypical expenses, staff assumed an additional \$17 per square foot to account for these approximately \$565,000 - \$600,000 additional sewer and water line extension infrastructure costs. Therefore, site work was budgeted for \$62 per square foot. This will account for about 27.3% of the total construction budget.

* Indirect Building Costs- Staff used the average of the 8 projects and assumed that the contractor would charge 12.5% of the total building and site costs to overhead, profit, and general conditions; therefore these indirect building costs were budgeted at \$25 per square foot. This will account for about 11.1% of the total construction budget.



* Construction Costs- For Spring Bars Road, staff thus assumed construction costs, including a 5% contingency, of \$239 per square foot. This is about 3% above the top of the range of comparable projects. Staff assumed the same unit mix as that of the MHP consultant. The MHP consultant used an average unit size of 1,025 square feet, which was closer to those projects that averaged slightly more than 2 bedrooms per unit. However, given the project's location in a flood hazard zone, staff assumed the buildings would be built upon slabs and that the mechanical equipment would need to be incorporated into the buildings and/or units; therefore staff assumed 1,100 square feet per unit and 33,000 square feet of total building area. With all of these assumptions, construction costs would thus be around \$7,875,000. By way of comparison, the draft MHP budget estimated \$5.95 million in construction costs.

Soft Costs and Developer Overhead and Fee:

Tax credit projects typically have higher per unit soft costs, including the capitalized reserves, and staff used the average \$58,600 per unit soft costs of the five tax credit projects for this analysis and thus budgeted \$1,760,000 for these costs. By comparison, the MHP budget had \$1,400,000 for these expenses.

Staff used the average of a 10% developer overhead and fee of hard and soft costs from the five tax credit projects, and budgeted \$965,000 for this expense.

Total Development Costs (TDC):

The total TDC would thus be about \$10,600,000 or about \$353,000 per unit. For DHCD funding purposes in a One Stop application, the \$440,000 sewer extension expense would likely not be considered an eligible project expense and thus would not be in the budget; therefore, the TDC would be about \$340,000 per unit. While this per unit TDC with no acquisition cost is still a significant expense and is about 12% higher than the average tax credit project in the region, DHCD has funded projects in the region and elsewhere in the state with TDCs at this level.

Operating Budget

Rents:

Staff assumed the same unit and affordability mix as that of the draft MHP budget and found that the proposed rents in that budget were reasonable and were still 10% below the allowable 2013 tax credit maximum rents. Section 8 rents have decreased for 2014, and therefore, staff adjusted the project-based rent levels to provide for the reduced revenue from those 7 units. Staff also assumed a standard 5% vacancy rate for the project.



Operating Costs and First Mortgage:

Staff assumed that the operating costs would more likely be at the tax credit project average of \$7,350 per unit per year and thus had higher operating expenses than the draft MHP budget. Staff also investigated the impact that obtaining federal flood insurance would have on the project's operating expenses. There is still a great amount of uncertainty in the industry about how the market will price the rates that have been mandated to increase by Congress; however, the estimates that staff was able to obtain generally suggested that rates for properties in the "A" zone would be double those of properties not in flood hazard zones. Staff assumed that obtaining flood insurance would add about \$15,000 (or \$500 per unit) to the project's operating expenses. Therefore, staff budgeted \$7,850 per unit per year (\$7,350 project average plus \$500 for insurance) as the project's overall operating expenses.

First mortgage rates have increased from 1.5% - 2% since the time both of the draft MHP budget as well as the Commission's initial draft report six months ago. A tax credit project is about to close with a 6.5% first mortgage; therefore, staff was again conservative and assumed a 7% first mortgage for this project. All of these factors reduced the projected \$1,750,000 first mortgage in the MHP budget to \$1,200,000 in this analysis in order to satisfy the 1.15 debt service coverage ratio that private and quasi-public lenders require. An annual operating budget summary is below.

OPERATING BUDGET

Gross Potential Rents	\$366,468
Less 5% Vacancy Allowance	(\$18,323)
Total Revenue	\$348,145
Less Operating Expenses	(\$235,500)
Net Operating Income (NOI)	\$112,645
Debt Service- \$1,200,000 @ 7%	\$95,880
Debt Service Coverage (NOI/Debt Service)	1.17

Development Budget - Sources

Low Income Housing Tax Credit (LIHTC):

In order to achieve the Town and CPC's affordability goals, there is no question that the project needs to have the Low Income Housing Tax Credit (LIHTC) program as its primary funding source. After the near collapse of both investor availability and pricing in 2008-2009, the tax credit market has rebounded rapidly and there is a wide range of investor interest and availability and pricing is at near record highs at 90 cents on



the dollar. This program is designed solely to support affordable rental properties.

The LIHTC typically provides about 60-65% of the development funding needed for a project. To maximize the amount of tax credits available in a project, at least 80% and typically 100% of the units are reserved for households whose incomes are at or below 60% of the area median income. Assuming 100% of the units are tax credit eligible, there is likely at least \$8,000,000 in equity that could be available for the project. Using the 65% of TDC as a rule of thumb, staff assumed that there would be about \$6,600,000 in tax credit equity in this project.

Staff notes that 30 units is certainly a feasible size for a tax credit project; however, it is at the bottom of the size range for most tax credit projects. Most developers and potential responders to an RFP, along with the equity investors, would however prefer tax credit projects in the 40-60 unit range.

Other Funding Sources:

Staff assumed that local sources would cover the cost of the sewer line extension to the site via CPA funds, Town capital funds, and/or proceeds from the potential sale of excess development rights from the site or some combination of the above. Thus, in addition to the equity, Town sources, and first mortgage, the developer would need to secure about \$2,360,000 from various DHCD and County sources. There are a number of DHCD funding sources that could be used for this project: Affordable Housing Trust Fund (AHTF), Housing Stabilization Fund (HSF), Community Based Housing (CBH), and HOME- both state and County. This amount of funding from DHCD for a project of this size is not at all unusual and would be a reasonable assumption. A summary of development budget sources and uses that would be submitted to DHCD is below.

SOURCES

Low Income Housing Tax Credit Equity	\$6,600,000
Town/Falmouth CPA/Sale of Development Rights	440,000
DHCD- Affordable Housing Trust Fund	1,000,000
DHCD- HSF/CBH/HOME (including County HOME)	1,360,000
1st Mortgage	1,200,000
TOTAL SOURCES	\$10,600,000



USES

Acquisition	\$0*
Construction- Buildings	\$4,620,000
Construction- Site	2,046,000
Construction- Builder General Conditions, Overhead, Profit	834,000
Construction- Subtotal	7,500,000
Construction Contingency- 5.1%	375,000
Construction- Total	\$7,875,000
Soft Costs, including Capitalized Reserves	\$1,760,000
Developer Overhead and Fee- 12.5%	\$965,000
TOTAL USES	\$10,600,000

*acquisition cost not included in a developer's funding request to DHCD.

Financial Feasibility and Long Term Viability

Financial Feasibility

In order to provide a useful comparison, this analysis was based upon the same unit and affordability mix as was included in the draft MHP preliminary budget estimate. As the project is located within a flood zone and therefore will very likely be built on slabs, staff increased the total building size from the MHP study by about 7% in order to accommodate within the buildings and/or units the heating and other mechanical systems that would normally be located in basements. While staff notes that the development and operating budgets in this analysis are still very much estimates and that numbers will shift and change once the specific project is selected, they are a result of an analysis of comparable projects in the region and if anything, staff was conservative in budgeting at the upper end of the ranges of comparable projects. The need to provide water and sewer connections to the project site from a considerable distance is an atypical site/construction expense and will result in from \$565,000-\$600,000 of additional project costs. These infrastructure expenses and the increased total square footage account for over 50% of the approximately \$2.1 million difference in the TDC in this analysis from that of the draft MHP estimate.

Despite the projected increase in the TDC to \$10,600,000 or about



\$353,300 per unit, as noted earlier, it is staff's judgment that a 30 unit, 100% affordable family rental development as presented in this location is both financially feasible and fundable - both by DHCD on the development side and by private or quasi-public lenders such as MHP on the operating side. For DHCD funding purposes, the \$440,000 sewer line extension expense will very likely not be an eligible project expense and thus the TDC for DHCD purposes will be \$340,000 per unit. While this per unit TDC with no acquisition cost to the developer is still a significant expense and is about 10% higher than the average tax credit project in the region, DHCD has funded projects both in the region and elsewhere in the state with TDCs at this level. While DHCD has no official TDC maximum, it generally does not fund projects with TDCs over \$400,000 per unit, although there has been flexibility for projects in certain high cost areas. In addition, the TDC is still under Mass Housing Partnership's \$350,000 per unit lending cap guideline.

There has been strong leasing demand for recent affordable rental projects with full occupancy being achieved either at or within 2-3 months of construction completion. The only recent project that has encountered some leasing challenges (approximately 4 months to fully lease up) has been the Clay Pond Cove age restricted project in Bourne. According to the property management staff, as an age 55 and over development, up to 20% of the units can be rented to households under age 55, and this age mix was an impediment for some of the primary target population. To date though, there have not been any issues with the prompt initial leasing of family rental units as the demand has far exceeded the supply.

Long Term Viability

As a result of staff's meetings with various stakeholders in the project, the question was raised as to the long term financial and social viability of a 100% affordable development as compared to one of mixed income. There is a wide spectrum of opinion as to what constitutes a mixed-income development although in the context of rental housing in the region, the term mixed income typically means providing some units for households up to 80% or sometimes even 100% (the CPA maximum) of median income.

While an exhaustive analysis of this question is beyond the financial feasibility scope of this report, staff suggests the following selected summary findings from a November 2010 Urban Institute review of the literature titled "Effects From Living in Mixed-Income Communities for Low-Income Families" may be instructive:

* "There is no agreed upon definition of mixed-income developments..."
(p. 3)



- * “When families move from high-poverty to low-poverty neighborhoods they experience improvements in health and education outcomes.” (p. 13)
- * “Cross income interactions tend to be infrequent and superficial.” (p. 15)
- * “Low-income families have realized benefits from living in mixed-income developments and income-diverse neighborhoods. Benefits are associated with improvements in place rather than interactions with people. Documented benefits for low-income families from living in mixed-income developments and income-diverse areas include those related to place, such as improved housing quality, increased safety, and improved property management, and improved mental health from a reduction in stress.” (p. 25)
- * “Whether low-income families have benefited economically or educationally is contested.” (p. 25)
- * “Research has not lent support to the hypothesis that interactions among residents across income levels will be the primary mechanism by which benefits will be derived.” (p. 25)

From the workshops and trainings that staff has attended on rental property development and management, rental properties that have gotten into financial difficulty- no matter what the income mix- have primarily been those in which the original underwriting for the project was faulty: rents that were set too close to market rents; an inadequate amount of initial rehab or bare bones construction specifications that resulted in ongoing repair issues; no or an inadequate amount of required replacement reserves; an inexperienced or incompetent property management firm. Staff’s experience over the last 12 years is that the requirements for rental housing project funding requests and the underwriting review by the public funders of those requests have become significantly more extensive and thorough.

The experience of the development entity, and in particular of the designated property management firm, is one of the most important factors for a project’s long term viability. To help address these long term concerns, staff suggests including in the RFP a requirement that the respondents provide the last 2-3 years’ worth of operating financial statements from comparable properties that they own and/or manage. The information about vacancy rates, cash flow, and level of replacement reserves will provide at least a snapshot with respect to the financial health of the respondents’ portfolio.

Finally, staff would note that in this analysis there is currently room in the tax credit “basis” to have 10-15% of the units reserved for households whose incomes are above 60% median income and still not impact the amount of equity that has been budgeted. In the limited number of tax credit deals that have used this option, the standard model has been to



allow income eligibility of up to 80% median income while still charging the tax credit rents. As the “affordable” two bedroom rent for a household at 80% of median income is \$1,450 per month, staff suggests that households above 80% of area median income would have options and be able to afford a rental in the ‘regular’ market.

Options to Enhance Viability

Staff reviewed other potential funding sources for the water and sewer line extension costs that would relieve the Town and the selected developer from these atypical expenses; however, neither the State Revolving Fund (SRF) or MassWorks appears very feasible for the Spring Bars Road development, and the Chapter 40R zoning overlay district option has its own set of challenges.

State Revolving Fund (SRF)

Mass DEP offers loans at as little as 0% interest for wastewater treatment and drinking water infrastructure projects. Mass DEP must ensure that the purpose of the project is to mitigate existing pollution problems as opposed to providing extra capacity that will encourage sprawl. The Town could apply for SRF funding for the gravity main connection between the project site and Davis Straits; however, the Town would need to have flow-neutral regulations in place in order to qualify for the 0% financing. Should the Town pursue this option, it would likely then need to submit another SRF funding application for the CWMP approved improvements in the larger Little Pond area. The bigger issue for the project’s use of SRF however would be that it could not carry any more debt payments- even at 0%- beyond the first mortgage, and thus the Town would need to make the payments. Whether the Town would want to go through that application process prior to the approved CWMP and also prior to any potential application for SRF for the larger Little Pond area wastewater improvements is very much uncertain.

MassWorks

The MassWorks Program is administered by the Executive Office of Housing and Economic Development (EOHED) and provides infrastructure funding for municipalities and other eligible public entities to support economic development, job creation and retention, and housing development; however, there are two program requirements that make the use of this source for Spring Bars Road infeasible. The first requirement is that the density for housing projects, whether affordable and/or market, must be at least 4 units per acre, whereas, the Spring Bars Road site is just under 3 units per acre. In order to achieve the MassWorks required density, the Town would need to take about 4 +/- acres from Parcel A and add that acreage to the conservation restricted Parcel B. Unless there were strong



indications from DHCD that MassWorks was a likely funding source for this project, staff suggests that the practical and legal challenges accompanying such a land transfer would not be worth the resources expended.

The other requirement to receive an award is that all funding must be in place to complete the project within the grant year. For example, the projected schedule for the 2013 grant year was that applications were available in June and had to be submitted by early September with funding announcements made in November with the expectation that the project would be completed by June 2014. DHCD also has the “all other funding in place” requirement for its housing development rounds; therefore, the Town should have a meeting or conversation with DHCD in the context of the project’s infrastructure needs to determine whether MassWorks is at all an option to suggest to respondents in the RFP to include in their proposals.

Chapter 40R

Another funding option would be for the Town to adopt an as-of-right Chapter 40R “smart growth” zoning overlay district for the site. There are a number of requirements that need to be met, including a minimum multi-family density of 20 units per acre, along with the submission of an application to DHCD in order to have the 40R district approved. Once DHCD approves the district, Town Meeting approval also needs to be secured. After the Town has adopted the Chapter 40R district, the Town would be eligible for a \$75,000 housing incentive payment for the Spring Bars Road site. In addition, the town would be eligible to receive a \$3,000 per unit payment for each building permit issued for a new unit in excess of what is allowed as-of-right by the underlying zoning; therefore, an additional \$90,000 would potentially be available from a 30 unit Spring Bars Road project.

In addition to the time and work involved to create a Chapter 40R district, another consideration is that if the developer chooses to be permitted under the as-of-right Chapter 40R zoning, and if the project remains at 30 units, then it would be subject to Cape Cod Commission review as a Development of Regional Impact (DRI).

Zoning Overlay/Transfer of Development Rights (TDR)

Allowing the Town or selected developer to sell rights to develop up to 30 units in some designated receiving zone appears to be the best option for the Town to offset sewer line expenses. Given the amount of development allowed by zoning on this property, the town could choose to allow transfer of development rights for an additional 15 to 30 units that could be sold to developers in the greater neighborhood or transferred to another ‘receiving area’ to be designated by town. This is explored further in the



Future Land Use - Site Analysis section of this report. While use of TDR adds an additional layer of complexity to an already complex funding and legal process, the potential cost benefit to developers or the town from the sale of additional units could be significant given the median condo sales price in Falmouth has been \$300,000.

Feasibility and RFP Considerations

The following are the outstanding feasibility related issues staff has identified along with a discussion of RFP issues that either have been raised by the Town or staff suggests the Town consider whenever it redrafts an RFP for the project.

Timing and Allocation of Infrastructure Costs

The primary decision that the Town faces is whether this project is enough of a priority to proceed with in the very near term and to commit the funds needed for the sewer line extension or to wait until 2017 or later to proceed after the CWMP is approved, regulations are in place, and Town funding for the comprehensive wastewater infrastructure project for the Little Pond area is secured. In order to proceed prior to 2017, it will be necessary for the Town to have a clear plan in place of how the sewer extension expense will be funded, and staff recommends not issuing an RFP until that plan is in place. As part of developing the plan to fund the sewer line extension, staff would suggest having a discussion with DHCD's Associate Director about the sewer line extension in order to receive some guidance as to how much, if any, of those expenses DHCD would consider to be eligible to allocate to the project and also whether MassWorks was at all a funding option. If the Town chooses to delay the project for 4-5 years, then there will obviously need to be a new financial feasibility analysis performed at that time.

Timing Considerations for RFP and Funding Applications

DHCD typically conducts two rental project funding rounds per year; however, because of a variety of factors, DHCD only conducted one round in August in 2013. There were four rental projects in the region that received DHCD approval for to submit in the August round. In order to receive approval for submission in the funding round, DHCD looks for projects that are permitted and have all other sources of funding committed other than the DHCD funds. It is extremely rare for tax credit applicants to be funded on their first full submission; it typically requires two or three attempts in order to secure tax credit funding. DHCD hopes to again conduct two funding rounds in 2014: the first in April and the second possibly in October, although a decision has not been made on whether or when the second funding round would occur.



If the Town chose to proceed with the project in the near term and issued an RFP and had a developer selected early in 2014, staff assumes that the earliest that the sewer extension funding plan could be adopted would be spring 2014 Town Meeting. Once the Town selects the developer, the developer would also need to secure its 40B permit to satisfy one of DHCD's pre-application requirements in order to be eligible to be invited to submit a funding application. If DHCD returns to two funding rounds per year, the developer's initial funding request would not occur until the fall 2014 round at the earliest. The Spring Bars project would likely face competition from some regional projects that were not funded either in 2013 or in the first 2014 round as DHCD typically funds from 1-3 Cape projects per round. The absolute best case scenario would be that the project is funded in the first round in 2015. Since it typically takes about 6 months after the funding round award notification for a project to actually close on all its funding, the earliest the project would get into the ground would be late in 2015 with project completion 10-12 months later.

Permanent debt interest rates earlier in 2013 were at historic lows as staff witnessed with a 4.63% rate on a February 2013 HOME Consortium project closing; however, as noted, rates have risen by 1.5% - 2% just in the last six months. While staff was conservative and assumed a 7% rate, any increases in interest rates beyond that level would result in less mortgage debt that the project could carry and would necessitate additional funds from other sources and/or reductions in hard and/or soft cost line items.

Developers of tax credit projects have seen a dramatic turn around in both investor availability and pricing in the low income housing tax credit market program from the virtual equity market collapse of 3-4 years ago. More investors have entered the market, and prices are near historic highs of 90 cents on the dollar. It is impossible to predict whether these yields will remain at these levels over the next 2-4 years; however, should the economy continue with its slow but somewhat consistent recovery and overall corporate profitability continues, it would seem a reasonable assumption that yields would remain at or near current levels. As tax credits account for about 60-65% of the project's sources, the yield is the most important factor for the project's feasibility on the sources side.

On the uses side, construction costs are the largest and most important expense factor. While a March 18, 2013 Banker and Tradesman article reported that homebuilders are seeing an increase in materials costs as well as a smaller workforce of subcontractors and laborers from which to draw, it is simply impossible to predict what will happen with construction expenses over the next year or two. Once developers have pretty firm numbers from their general contractor, they then make the necessary budget adjustments whether via value engineering, adjustments in non-



construction line items, and/or adjustments in their sources, e.g. loan of a portion of developer fee, additional debt the project could carry, etc.

Finally, staff notes that a tax credit project does pay real estate taxes, and the Town is foregoing potential revenue every year the project is not built. School House Green paid over \$24,000 in taxes last year, and 704 Main Street's affordably units will pay over \$25,000 in taxes. Spring Bars Road's 30 units would likely generate about \$15,000- \$20,000 in annual real estate tax revenue for the Town.

Flood Zone

The proposed new flood zone maps show that virtually the entire project site is located in the "AE" flood zone. Any federal funding (DHCD and County HOME funds that could provide up to \$725,000) would require an environmental review, and HUD's policy for "A" or "V" zones is "to avoid direct or indirect support of floodplain development wherever there is a practical alternative." Given the Town's acquisition of the parcel for the public purpose of affordable housing and the paucity of comparable Town-owned parcels, it is still very possible to receive federal funding for a project located in the "A" zone; however, there is a very prescribed public process that the funding agency is required to go through in order to determine if mitigation measures can be incorporated into the project's design to reduce the floodplain risks. At a minimum, DHCD would require elevating or flood-proofing new construction and substantial improvements to one foot above the base flood elevation. This could be accomplished by adding fill to change land elevations or by elevating the buildings themselves. As noted earlier in the construction cost estimates, staff is assuming elevating one foot above base flood elevation and eliminating basements and increasing the building sizes to accommodate the location of mechanical systems well above the base flood elevation. This flood zone information should definitely be incorporated into any RFP for the project as irrespective of the sources of funding for the project, the housing absolutely needs to be designed to minimize the risks of building within the "A" flood zone.

Model Project and RFP

Given the history of this parcel, staff understands the desire of the Town and the CPC to make this a model project as reflected in the draft RFP's scoring criteria. There are always cost/benefit trade-offs that need to be made in any development, e.g. having parking underground or at ground level with the residential units above would reduce the development footprint and save on site costs and perhaps make it easier to address flood plain issues; however, this would make it more difficult and costly to achieve the visit-ability and accessibility goals of the RFP. In general,



staff's experience has been that the more social, economic, and environmental objectives that a project seeks to satisfy, the more expensive it is. Staff encourages the Town and the CPC to carefully weigh which objectives are most important in the course of the RFP development in order to maintain the project's financial feasibility.

Project Size and RFP

In order to provide responders with some flexibility in both design and financial feasibility, staff would suggest allowing the range of acceptable units to be from 25-35 while still maintaining the 70 bedroom maximum. It is likely that from a design, DHCD bedroom mix requirements, and financial feasibility perspective that respondents would propose from 28-32 units. Staff recognizes that the March 2010 MOU between the Board of Selectmen and the CPC had a 30 unit project maximum; however, if an amendment to that MOU is not an insurmountable obstacle, staff would recommend providing that project size flexibility in the RFP.

Property Management and RFP

To help address concerns about a project's long term viability, staff suggests including in the RFP a requirement that the respondents provide the last 2-3 years' worth of operating financial statements from comparable properties that they own and/or manage. The information about vacancy rates, cash flow, and level of replacement reserves will provide at least a snapshot with respect to the financial health of the respondents' portfolio. Staff would also recommend that the RFP ranking criteria provide a benefit to those respondents that include an on-site office as part of their proposal.

Land Disposition or Lease and RFP

There was a concern expressed as to whether the Town faced additional liability from the proposed long term leasing of the land as opposed to simply transferring ownership of the land to the designated developer. Staff's experience has been that on Town-sponsored rental projects that the preferred model has been to lease the land as opposed to transfer ownership to the developer. The ground lease model ensures that the Town would have a seat at the table should the project ever encounter significant financial or other difficulty. While the lease terms allow for the possibility of the Town having to reassert control and management of the property, staff's judgment is that in practice that if the project ever encountered severe difficulty that it would be the first mortgage holder and public funders that would take the lead and have a significant financial interest in stabilizing the project. Again, the advantage of a ground lease is that it guarantees that the Town will be a party to those discussions and have a voice and a vote in the outcome.



Public Procurement and RFP

Finally, staff wants to strongly support the guidance the Town received from MHP in the draft RFP process to avoid being prescriptive in the RFP requirements in order to avoid any appearance of Town control that would lead to the project being subject to the Chapter 30B procurement/public bid process.

The one recent Barnstable Housing Authority (BHA) project that staff did not include in this analysis went through a public bid process. BHA conducted what staff considered to be a very thorough review of construction specifications, value engineering, and analysis to arrive at a projected construction cost budget of just over \$2.4 million. BHA received six competitive bids, and the lowest bid was \$2.85 million, thus creating a gap of \$450,000 in the project budget. BHA was able to secure additional public resources to close the gap; however, the construction start for the project was delayed by over three months as BHA addressed that issue. However, if the BHA was not able to close the gap in the timely manner that it did, then the procurement law would have required them to re-bid the project all over again.

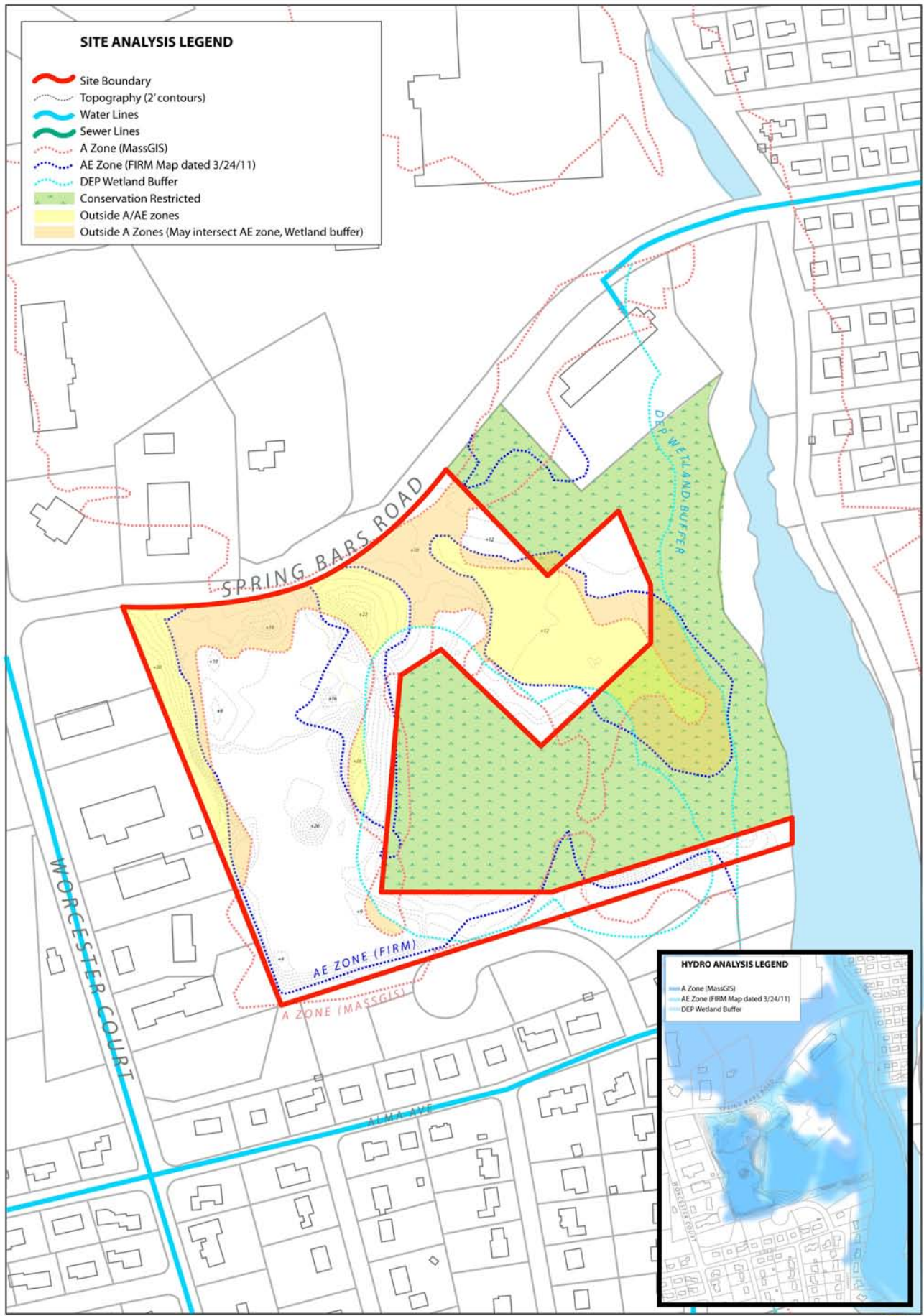
Summary of Financial Feasibility

Staff's analysis is that a 30 unit, 100% affordable, tax credit rental development at the Spring Bars Road site is financially feasible and fundable even with the design challenges and increased risk that come with the project's location in the "A" flood zone. As noted earlier, DHCD's review of tax credit funding requests is very thorough and projects typically need to apply at least two or three times in order to rework the proposal to address issues or concerns that DHCD identified in the initial funding request. In addition to the public review, tax credit projects undergo perhaps an even more thorough review by the potential for-profit investors who need to determine that the project in which they are investing is feasible both in the shorter and longer term and will produce the return on investment that they are seeking. The Town needs to determine whether the Spring Bars Road project is a high enough priority to move forward immediately and develop a plan for the commitment of local funding sources to pay for the sewer line extension and to proceed with the RFP process, or whether to delay the project for 4-5 years until the CWMP process is finalized and the infrastructure financing secured.

Should the Town choose to proceed with the project in the near term, staff suggests having a meeting or a conversation with DHCD's Associate Director in order to receive any guidance about the flood zone requirements, about whether DHCD would consider allowing some or all of the sewer



extension expenses to be attributable to the project, and about whether MassWorks is at all a feasible funding option for the project's off-site infrastructure needs. The Town would then be able to include that information or guidance in the RFP. As noted earlier, through the types and number of responses to an RFP from the affordable housing development community, the Town will get a very clear indication from the marketplace of the project's financial and operational feasibility.



SITE ANALYSIS LEGEND

- Site Boundary
- Topography (2' contours)
- Water Lines
- Sewer Lines
- A Zone (MassGIS)
- AE Zone (FIRM Map dated 3/24/11)
- DEP Wetland Buffer
- Conservation Restricted
- Outside A/AE zones
- Outside A Zones (May intersect AE zone, Wetland buffer)

HYDRO ANALYSIS LEGEND

- A Zone (MassGIS)
- AE Zone (FIRM Map dated 3/24/11)
- DEP Wetland Buffer



U.T.M. Zone 18Q
 486134N
 714810E

Falmouth RESET Spring Bars Road: Site Analysis

This map is prepared by the U.S. Department of the Interior, U.S. Geological Survey, a division of Massachusetts. The information obtained on this map is for planning purposes only. It is not intended for legal boundary definition, regulatory administration, or parcel identification. It should not substitute for accurate site surveys or appropriate field research. Customers have acquired this map from the State of Falmouth's GIS and MassGIS. Information available on this map is provided as a public service by the U.S. Geological Survey.





PART 3 FUTURE LAND USE

A. Analysis of Spring Bars Road Site

This section identifies potential design constraints for the Lot 1 site, looking at zoning and other regulations, as well as ways to link the development to existing amenities. It examines potential development scenarios and their pros and cons.

Site Development Issues and Opportunities

Zoning - Dimensional Regulations

Given the large size of the project site, its substantial width and frontage, none of the existing setback requirements would significantly impact the site's development potential. The Spring Bars Road property is currently zoned Limited Industrial A. Section 240-70 of the Falmouth Zoning Bylaw identifies dimensional requirements for development in this zone, including a minimum lot size of 40,000 square feet, minimum lot width of 150 feet, and minimum lot frontage of 100 feet. Multifamily dwellings in this zone must meet a front setback of 25 feet, unless they exceed 2 ½ stories or 35 feet in height, in which case they require a 50 foot front setback. Minimum side and rear setbacks are 10 feet unless the multifamily building exceeds 2 ½ stories or 35 feet in height, in which case the required side setback is the building height, and the rear setback is 100 feet. These setback requirements, in combination with resource protection buffers and flood zone information, can be used to help determine appropriate locations for development on the property.

The proposed 30 units of housing could easily be constructed within the lot coverage allowance in the town zoning bylaw. Maximum lot coverage, per Section 240-69 of the zoning bylaw, is 40% for structures and 70% for structures and pavement/parking. Given the 11.39 acre site, this would allow almost 200,000 square feet (198,400 sf of land area) to be covered by structures, and a total of 347,200 square feet for structures and paved areas. The Planning Board may allow higher lot coverage for multifamily housing by Special Permit if they determine that stormwater runoff and traffic impacts are adequately addressed. The large size of the lot and its correspondingly large lot coverage allowance means that a wide variety of unit configurations and multiple buildings could be designed and still meet existing zoning regulations.

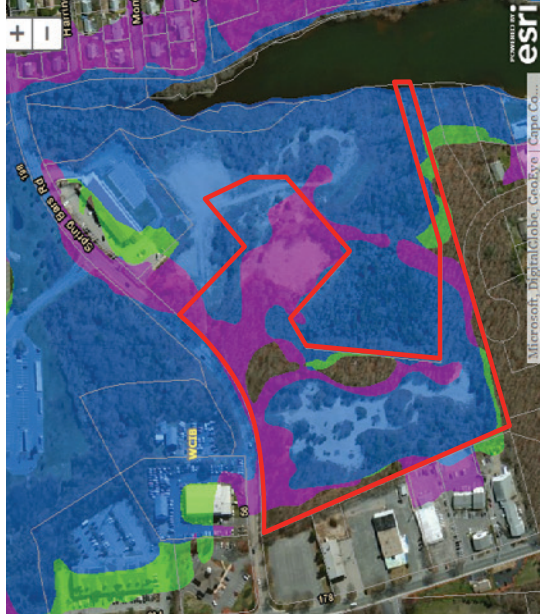
FEMA FIRM EXISTING



FEMA FIRM PROPOSED



FEMA FIRM EXISTING & PROPOSED



FEMA FIRM MAPS	
	Site Boundary
	FEMA Zone A
	FEMA FIRM Zone X
	Proposed FEMA FIRM Change (2013)
	Existing FIRM Zones
	Proposed FIRM Update
	Existing and Proposed

Falmouth RESET Spring Bars Road: Flood Analysis



CAPE COD
COMMISSION

This floodplain viewer has been created by the Cape Cod Commission as an information sharing tool. The data by FEMA and is merely displayed here as is, without warranty of any kind. Please contact rbennet@capccodcommission.org for questions about this tool.

Illustrative additions to this map were created using Adobe Illustrator CS4 by TH



Zoning – Density Permitted

The proposed affordable housing development of 30 units is well within the density allowed by Special Permit. Section 240-57 of the zoning bylaw allows the Board of Appeals to grant a Special Permit for multifamily use not to exceed 6 units per acre. Because Lot 1 is over 11 acres, up to 66 units could potentially be allowed by Special Permit if the Board finds (1) that the public good will be served, (2) that the industrial zoned area would not be adversely affected, and (3) that the uses permitted in the zone would not be noxious to a multifamily use. The Board of Appeals could determine that providing affordable housing serves the public good, that the development will not limit potential appropriate industrial uses in the district, and that the existing uses in the area are not likely to cause conflict due to their limited number, size and noise characteristics.

Zoning – TDR Potential

Given the site's allowed density, as well as natural resource and flood zone issues, use of TDR to transfer some development potential from this site to others was considered. While the town has a TDR bylaw (Section 240-174 of the Zoning Code) which allows the transfer of some development rights on one lot to a different location and zoning district, it only applies to a subdivision approval. The town would have to specifically vote to permit TDR in this situation. Section D of the TDR bylaw notes that town-owned land approved by 2/3 vote of Town Meeting can be available for this, which may serve as a basis for bringing such a question before Town Meeting. Because the site was purchased with CPA funds for open space and affordable housing purposes, Commission staff consulted with the Department of Revenue (DOR) regarding whether development rights transferred from this site would only be available for affordable housing. The DOR opinion, received July 3, 2013, states that development rights transferred from Lot 1 do not need to be used directly to develop affordable housing. It states: "We do not think the TDRs are required to be used solely to provide affordable housing at another location, but the town can make that a condition of the sale if it so chooses." This provides the town with some flexibility. Transferring some development rights at market rate from Lot 1 to other appropriate locations in town could provide financial benefits and support the proposed affordable housing development. Alternatively, if the flood zone delineation is found to be a deterrent to funders or the development community, TDR could provide another means of creating affordable housing in the community.

Flood Zone issues

The majority of Lot 1 is mapped as an A zone. The Site Analysis graphic shows the area outside the currently mapped A zones in yellow, and the area outside the previous draft FIRM A zones in orange. As noted in the Natural Resource section of this report, the newly released draft FIRM



maps are significantly different from the current maps, showing almost the entire site within the A zone. A comparison of the existing and proposed FIRM maps is shown in the Flood Analysis graphic on page 52. The extent of the A zone is a primary concern for development on this property, and the new draft maps make this issue even more significant. Considering sea level rise, this issue is likely to become more serious over time, and the overall appropriateness of developing new residential housing in a flood zone should be carefully considered.

Development in the A zone is not prohibited, and could be accommodated by either bringing in fill to raise the elevation of some land areas where buildings are proposed, or by constructing buildings with elevated living spaces and providing parking or storage below. Both of these avenues would involve additional cost, and both have limitations. Using fill to raise the elevation in some areas could impact the flood zone on surrounding properties, so needs to be carefully evaluated. Members of neighborhood groups expressed concern that fill for development will effect the water table and neighboring properties. It may be necessary to create equivalent volume storage areas in the form of “bowls” on the property. Elevating buildings would also be possible, but would make it more challenging to provide accessibility to units in the development.

Natural Resources

The certifiable vernal pool and other wetland resources are primarily located on Lot 2, but some wetland edges extend onto Lot 1, as do the 100-foot wetland buffers. The Cape Cod Commission requires 350 foot buffers for Developments of Regional Impact (DRIs). Regardless of whether the project requires Commission review, larger buffers are recommended to increase resource protection while still meeting other development goals.

Steep Slopes

Some areas of the site have steep slopes, notably along the edges of the vernal pool/vegetated wetland and along the northwest boundary of the property near the rear of lots fronting on Worcester Court. These slopes do not significantly impact the area available for development, but they do help to illustrate the low-lying nature of much of the property.

Proximity to Community Facilities and Open Space

The site is within walking distance (1/2 mile) of a variety of retail services and numerous community facilities, including Falmouth Harbor, Gus Cauty Recreation Center, Senior Center, Little Pond, the adjacent Lot 2 conservation parcel, and the Worcester Court greenbelt to Falmouth Heights. It is also within walking distance of a transit stop, facilitating travel to locations outside the neighborhood. Beaches are located slightly farther away. While the need for improved pedestrian facilities has been



identified to enhance safety, close proximity to community facilities is a desirable feature of the site. Views to natural resources on the conservation parcel will be another amenity for the development.

Surrounding Land Uses

To the north and west, the property is surrounded by retail and trade uses. Because the existing uses are low traffic generators and do not create a lot of noise, they are not likely to cause conflicts with residential development nearby. However, it should be noted that the current B2 (Business 2) zoning district does allow some uses by special permit that could be large traffic generators (ie. fast food restaurants and motor vehicle service stations) and would be less desirable adjacent to residential development. To the south and east are tightly developed residential neighborhoods with modest single family homes. Siting of the proposed development should take into account proximity and compatibility with surrounding uses.

Sewer and Water Access

The site is located between areas served by existing water lines, and does not currently have access to sewer, though it is located only a few blocks away. Sewer in this area is proposed in town's CWMP, but is not expected to be implemented until at least 2017.

Potential Development Scenarios

If natural resource buffers and flood zone constraints are taken into account, there is a limited amount of developable area on the project site. Commission staff considered four different scenarios to illustrate possible building configurations on the site. The scenarios were developed based on the existing flood zone delineation, but the following discussion acknowledges the impacts of the recently revised FIRM maps. Because of the town's and neighborhood groups' stated preference, all scenarios assume a grouping of five or six two-story buildings, each with a footprint of roughly 2,000 square feet. A larger number of buildings, each of smaller size, could also be proposed, though it would have some impact on the cost of connecting infrastructure to the project. Scenarios with fewer buildings assume two-and-one-half story buildings. Each scenario has slightly different cost implications due to the need for fill or site engineering to address flood zone issues, the length of water and sewer connections to individual buildings, and their ability to be sited in an energy efficient manner. Each scenario also has different resource and community character implications based on the design's support of neighborhood development patterns, the level of protection offered to natural resource interests, and relationship to the protected open space on Lot 2.



This graphic illustrates four different ways of configuring new buildings on the site.



Scenario 1: Buildings oriented along Spring Bars Road frontage. This configuration would create a street frontage with buildings oriented similar to those on nearby residential streets and on parts of Worcester Court. Much of the land suggested for development is at the same elevation as Spring Bars Road. Buildings could be oriented narrow end to the street so they appear to have smaller massings that are more consistent with surrounding residential structures. The amount of fill estimated to elevate building footprints and their immediate surroundings 1 foot above base flood elevation is 9,551 cubic yards. Connections to infrastructure on Spring Bars Road would be less costly due to their close proximity.



Scenario 2: Buildings clustered in Eastern lobe of site.

This scenario takes advantage of the boot-shaped area in the eastern portion of Lot 1. This area offers the largest area of upland at a higher elevation. Fill required for this scenario is estimated at 3,675 cubic yards. This area also has significant habitat protection value because of its location between two areas of protected open space on Lot 2. Infrastructure connections would be longer in length than for buildings sited closer to Spring Bars Road. The scenario would limit the project's presence on the road, but places the buildings where several could be oriented toward protected open space and possible views to Little Pond.

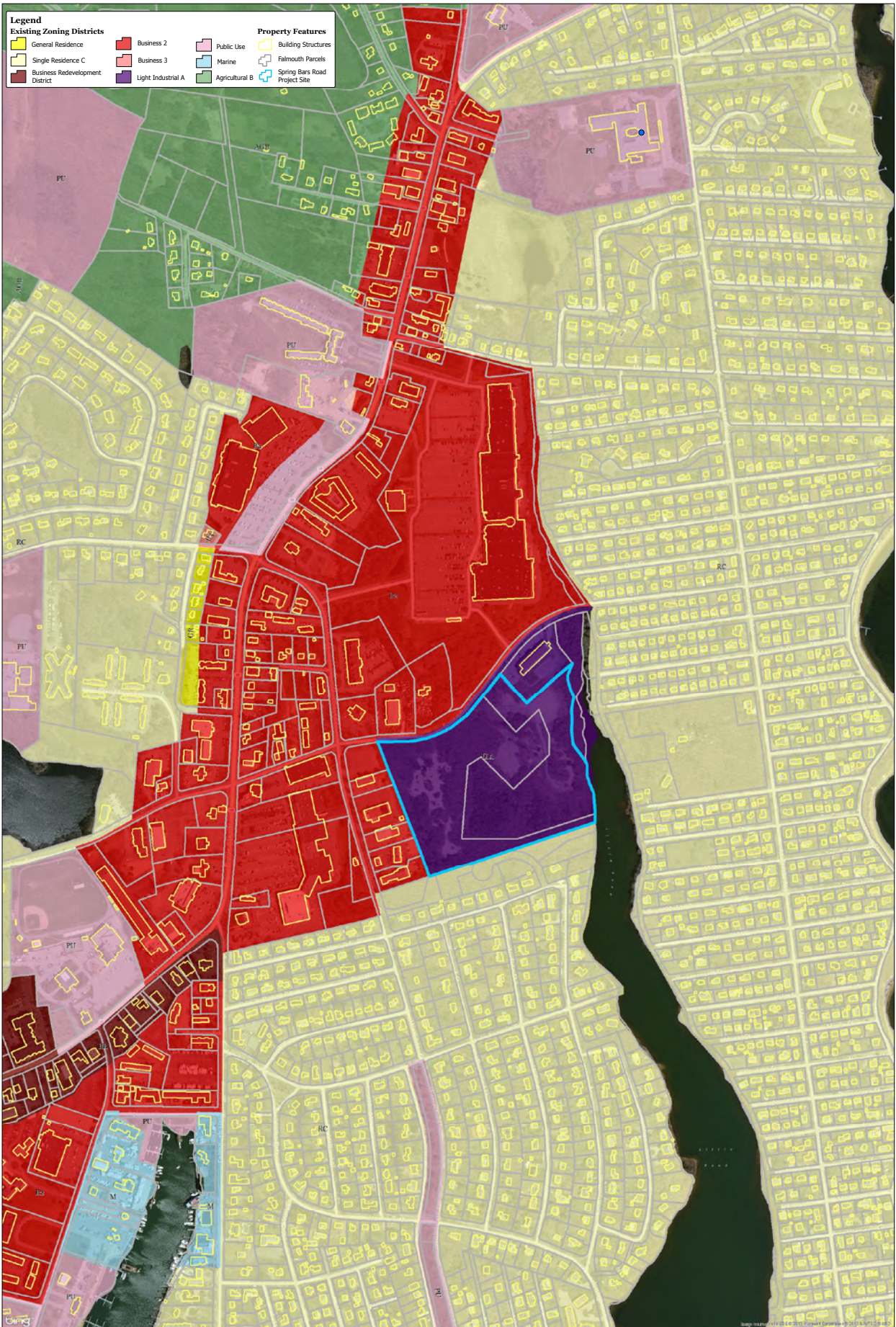
Scenario 3: Buildings focused in northwest corner of site.

This scenario links the proposed development to existing development at the intersection of Spring Bars Road/Worcester Court. It could serve as part of a plan to encourage mixed use and office/residential development near the intersection, leaving a large area in the eastern portion of the site available for habitat protection, supporting the goals of Lot 2. This design would also place the development closer to existing water and sewer infrastructure. Depending on the flood zone maps used, much of this area would be within the flood zone, requiring approximately 7,696 cubic yards of fill or raised construction.

Scenario 4: Buildings focused in northeast corner of site.

This design separates the proposed development from commercial uses along Spring Bars Road and Worcester Court, leaving a natural buffer area between them. It sites the buildings across from an existing wetlands area, thus providing a natural view to the north into the future. As with previous scenarios, some areas are within the flood zone and would thus require site engineering or fill, estimated at 2,698 cubic yards.

The uncertain boundary of the flood zone is likely the greatest concern. The placement and number of buildings proposed for the site will also influence the cost of the development and may determine how feasible it is to use green design features and energy efficient technology. If the property is developed as a 40B, the town has the ability to waive some regulations, including town wetland buffer requirements and future flood zone regulations. In the event the project is not developed as a 40B, the 30 units would trigger Development of Regional Impact (DRI) review, raising additional requirements and the question of whether 30 is the appropriate number of units. The town may wish to encourage a particular development scenario in the RFP, depending upon their goals for the larger study areas, which are considered in the following section. For the most flexibility, the town should consider both drafting an amendment to the existing TDR bylaw to facilitate DRI from this site in the future, and also releasing an RFP to gauge the response from the development community.



0 220 440 880 1,320 Feet

User: sgoulet Date: 3/21/2013

Falmouth RESET Spring Bars Road Existing Zoning Districts Map

This map is produced by the GIS Department of the Cape Cod Commission, a division of Barnstable County. The information depicted on these maps is for planning purposes only. It is not adequate for legal boundary definition, regulatory interpretation, or parcel level analysis. It should not substitute for actual on-site survey, or supersede deed research.

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B. Analysis of Study Area

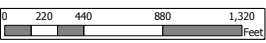
Existing Conditions

The study area generally includes a half-mile radius around the Spring Bars Road project site, stretching from the new town-owned Teaticket Park at the northern extent, to the tip of Falmouth Harbor on the south. It stretches from the shore of Great Pond on the east, to the Gus Canty Recreation Center on the west. Amenities located outside that boundary are also noted, including schools and beaches.

The study area includes both a large B2 zoning district which is a permissive commercial zoning district, and a large Residential C district with tightly developed residential streets of modest size homes on small lots. The study area includes significant Public Use districts, most notably along Route 28 between Jones Road and Beagle Lane. It also includes the eastern end of the Business Redevelopment District along Route 28 as it approaches downtown Falmouth. Smaller zoning districts are in the study area too, including Marine District adjacent to the harbor, and a small General Residential district west of Route 28 between the Business 2 district and the Residential C district. [See Existing Zoning Districts Map, page 58.]

Most of the buildings in the vicinity were constructed in the second half of the 20th century, though there are more from the early 1900s as you move south toward the harbor and Falmouth Heights. Along Route 28, commercial development is largely post-1950, though the block from Worcester Court to Spring Bars Road contains mostly early 1900s buildings and one property with buildings from the 1800s. [See Age of Buildings Map, page 60.]

This block of Route 28 between Worcester Court/Jones Road and Spring Bars Road/Dillingham Avenue is in marked contrast to the more prevalent strip commercial development found along this area of Route 28, which is characterized primarily by large retail buildings with large parking lots in front. Existing uses here are different too with more mixed use buildings combining office with residential apartments or small retail structures. The character of Worcester Court is also varied, though still



User: s90601 Date: 3/21/2013

Falmouth RESET Spring Bars Road Year Built/Age of Buildings Map

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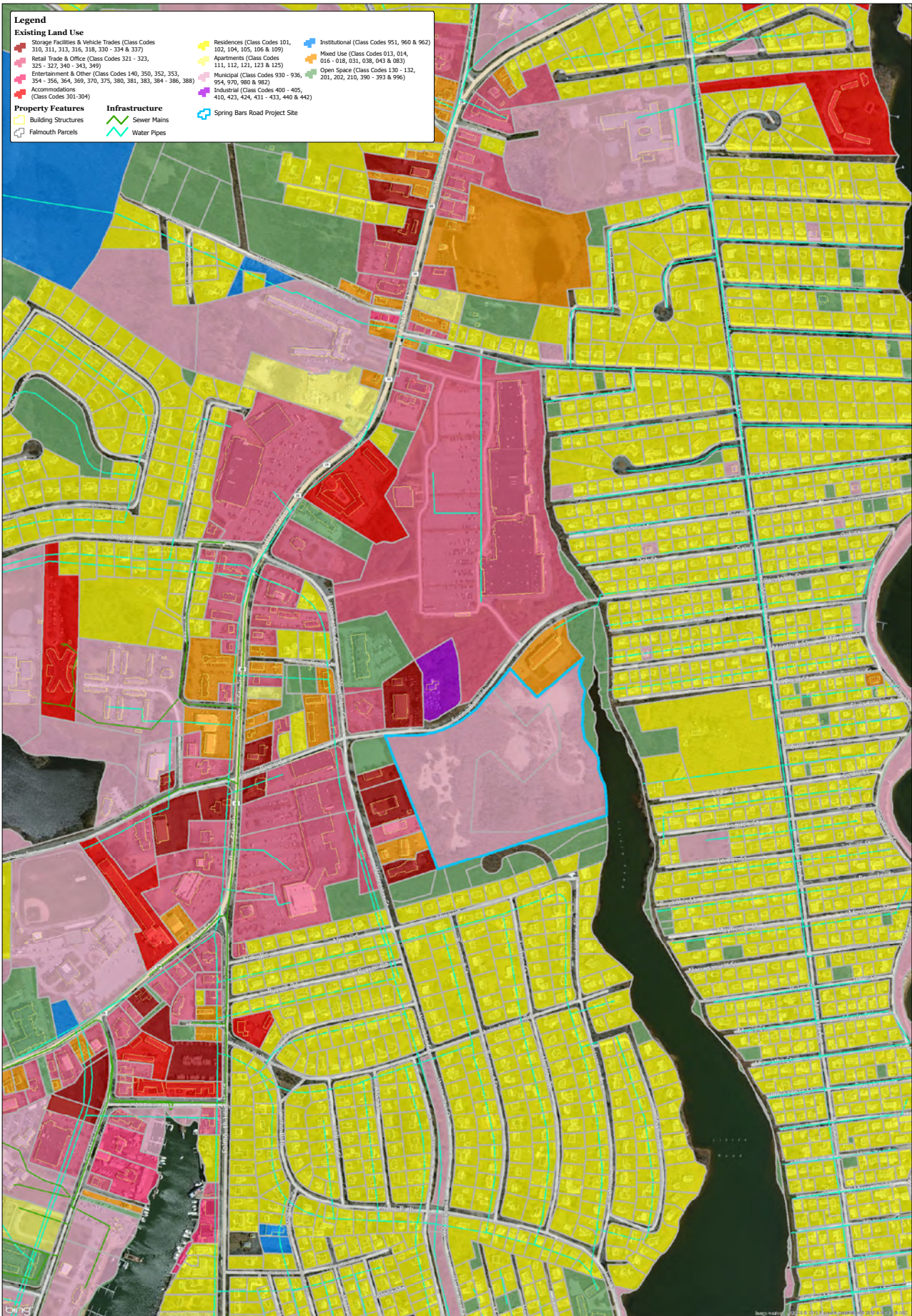
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within the B2 District. Here, the block north of Spring Bars Road has a mix of residential and small retail buildings in front of the Falmouth Mall, while the block to the south has mostly trade uses on the east side and the rear of a large retail complex on the west side. Beyond that, the area quickly changes to all residential development. [See Existing Land Use Map, page 62.]

In general, people living within the study area have access to a wide variety of community facilities in close proximity, from schools to the Recreation Center and Senior Center, to the variety of retail opportunities, including both food and drug stores. The area also provides access to natural amenities, including Falmouth Harbor and its park with a bandstand, beaches to the south in Falmouth Heights, Little Pond, Great Pond, and the new Teaticket Park to the north as well as the conservation parcel adjacent to the proposed development site, all with public access. All of these destinations and facilities fall within or just outside a 1/2 mile walk distance of the Spring Bars Road site. [See Circulation Map, page 64.]



Legend

Existing Land Use

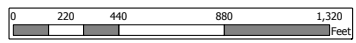
- Storage Facilities & Vehicle Trades (Class Codes 310, 311, 313, 315, 316, 330 - 334 & 337)
- Retail Trade & Office (Class Codes 321 - 323, 325 - 327, 340 - 343, 349)
- Entertainment & Other (Class Codes 140, 350, 352, 353, 354 - 356, 364, 369, 370, 375, 380, 381, 383, 384 - 386, 388)
- Accommodations (Class Codes 301-304)
- Residences (Class Codes 101, 102, 104, 105, 106 & 109)
- Apartments (Class Codes 111, 112, 121, 123 & 125)
- Municipal (Class Codes 930 - 936, 954, 970, 980 & 982)
- Industrial (Class Codes 400 - 405, 410, 423, 424, 431 - 433, 440 & 442)
- Institutional (Class Codes 951, 960 & 962)
- Mixed Use (Class Codes 013, 014, 016 - 018, 031, 038, 043 & 083)
- Open Space (Class Codes 130 - 132, 201, 202, 210, 390 - 393 & 996)

Property Features

- Building Structures
- Falmouth Parcels

Infrastructure

- Sewer Mains
- Water Pipes
- Spring Bars Road Project Site



User: sgeault Date: 3/22/2013

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Falmouth RESET Spring Bars Road Existing Land Use Map



Issues and Opportunities in Study Area

Proximity to Community Facilities - Opportunity

The study area as a whole seems an appropriate location for housing, both affordable and market rate, due to the range of nearby facilities. The ability to walk to both food and drug stores, schools and recreational facilities, and some of the town's natural amenities, makes this a desirable location in general for residential housing, especially if it can be kept somewhat separated from the heavier commercial development focused on Route 28. Flood zone issues, however, need to be acknowledged. The presence of strong residential neighborhoods nearby supports this.

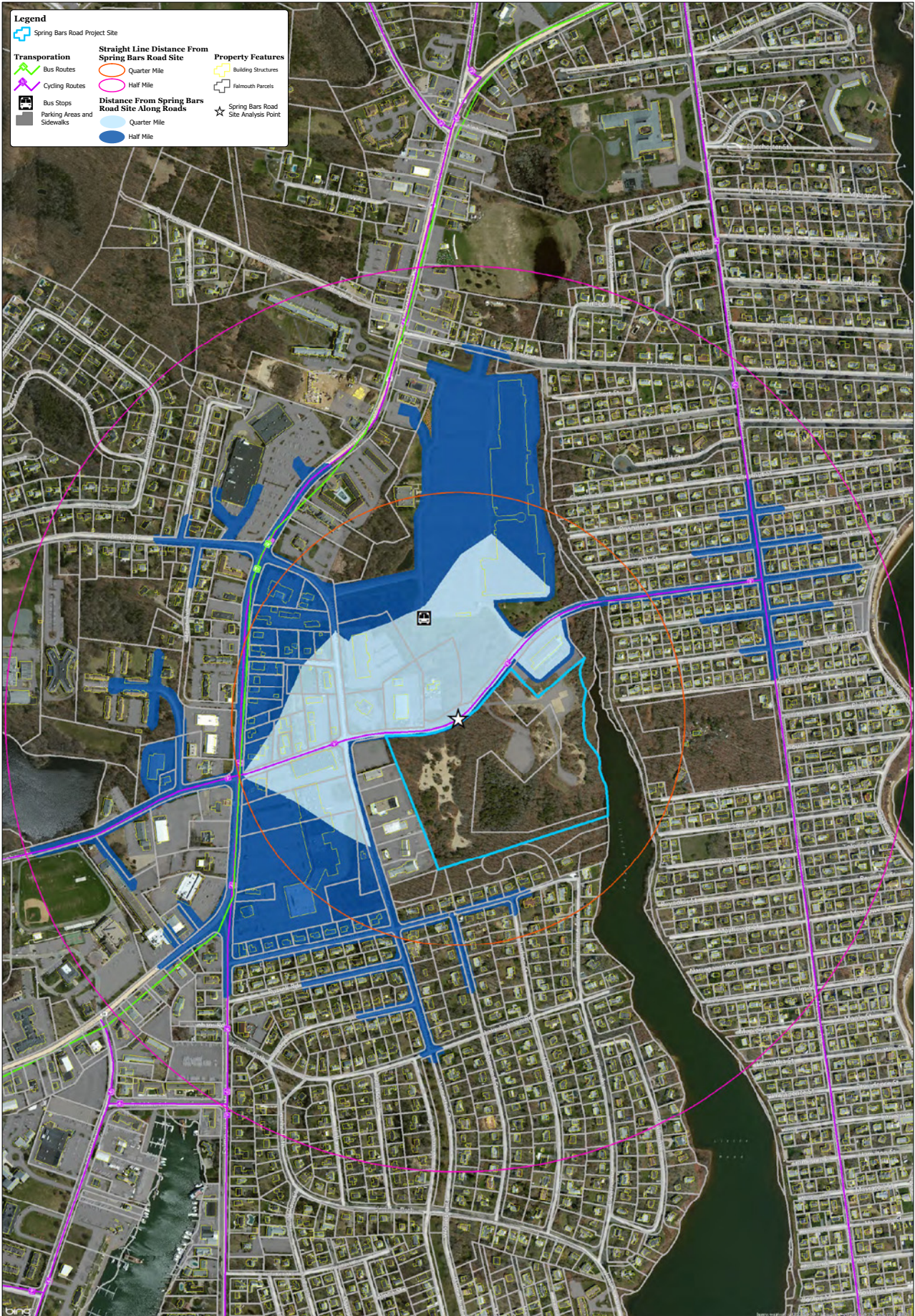
Transition from Route 28 Commercial Zone to Residential Area - Issue

Currently, the same commercial zoning district stretches from Route 28 across Worcester Court, to the edge of the adjacent single family residential neighborhoods in the study area. While Single Residence C zoning requires 40,000 sf lots, most nearby residential lots pre-date this regulation and are much smaller (ranging roughly 10,000 to 20,000 sf), following the pattern from early to mid-1900s development in this area. Several small scale commercial uses on the northern portion of Worcester Court are compatible with residential development (ie. bank, small offices, recent mixed use redevelopment at northwest corner of Spring Bars Road and Worcester Court), but other Commercial Uses are less desirable abutting residential uses (ie. large retail malls, some automotive uses and gas stations, fast food restaurants, and other high traffic generators) depending on their site design and noise and other considerations.

Given the different character of Route 28 and Worcester Court currently, this raises concern about the potential for redevelopment along Worcester Court. There is no buffer or transition area prescribed by current zoning between the B2 commercial district and the established residential neighborhoods to the south and east. Some small residential lots butt against the back of shopping plazas and there is limited room for buffering. While the creek stretching north of Little Pond serves as a natural barrier for the neighborhood to the east, there is no similar barrier for residences to the south. At present, a few undeveloped lots provide some buffer, but they will not provide permanent protection.

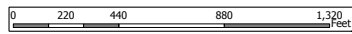
Trade and Service uses along Worcester Court - Issue

The presence of trade and service uses along Worcester Court on the block between Spring Bars Road and the residential district is unique for the B2 zoning district. While these uses are not high traffic generators in general, this type of use is not always compatible with residential development due to character and noise issues. While this does not appear to have been a



Legend

- Spring Bars Road Project Site
- Transportation**
 - Bus Routes
 - Cycling Routes
 - Bus Stops
 - Parking Areas and Sidewalks
- Straight Line Distance From Spring Bars Road Site**
 - Quarter Mile
 - Half Mile
- Distance From Spring Bars Road Site Along Roads**
 - Quarter Mile
 - Half Mile
- Property Features**
 - Building Structures
 - Farmouth Parcels
 - Spring Bars Road Site Analysis Point



User: sgonlet Date: 3/22/2013

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Falmouth RESET Spring Bars Road Circulation Map

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concern in this area in the past, it could become a concern as uses change or intensify in the future. Uses allowed by special permit under current zoning include: service stations, fast food restaurant, motor vehicle repair, and parking facilities. Zoning regulations should address this possibility.

Worcester Court Walking Corridor - Opportunity

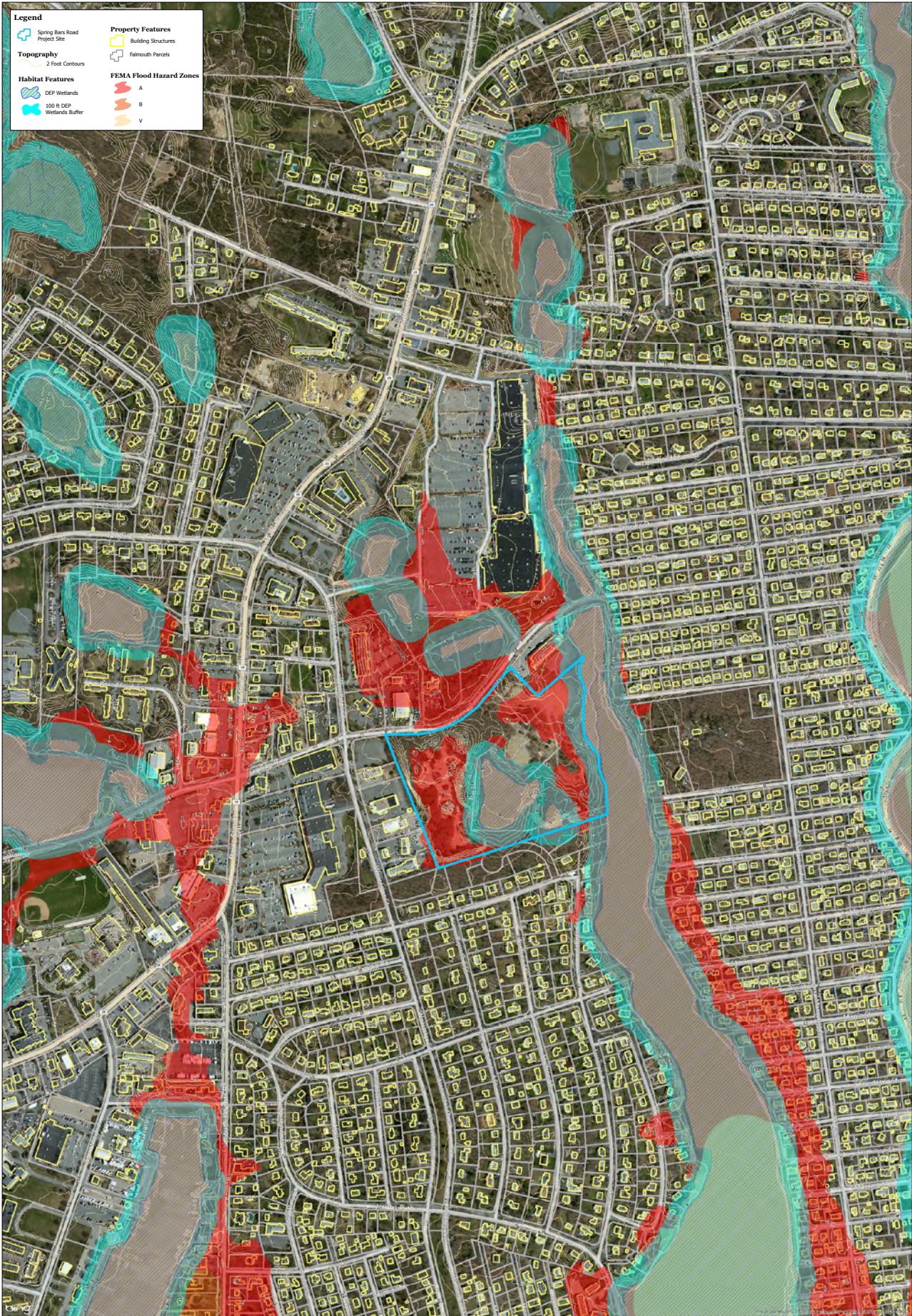
Worcester Court provides a popular pedestrian corridor, especially in the summer, for people walking from the residential area to beaches in the south and commercial needs in the north. The southern portion of the corridor follows a narrow park or common beginning at Lake Leaman Road and continuing all the way to the beach. A sidewalk exists from Lake Leaman Road north to Route 28, but the character changes significantly north of Alma Road as it becomes a commercial district with greater traffic levels. The presence of parking lots close to the street, large blank rear walls of commercial buildings, congested roadways, and other auto oriented features effects the level of pedestrian comfort in this area. Some street trees exist, notably at the intersection of Spring Bars Road and Worcester Court, but they are not consistent along the pedestrian path.

Spring Bars Road Walking Corridor - Opportunity

A walking corridor that connects the Senior Center to the west with the Conservation land to the east, and perhaps stretches as far as the Overlook even further east would be a benefit for the residential area, both in terms of providing improved access to walkable facilities, and also in terms of providing an alternative to automobile traffic. There are currently some physical barriers to this corridor in the form of poor sidewalks and also large pedestrian discomfort zones created by large scale development and large parking areas and busy roadways.

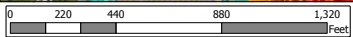
Route 28 between Jones Road and Dillingham Avenue - Opportunity

This block of Route 28/Davis Straits is unique in that it is primarily smaller buildings with residential site characteristics, reflecting the fact that many of the buildings were originally constructed as residences along a less busy Route 28. Buildings are oriented to the roadway and parking is located to the side or rear. This block provides a break from the larger commercial plazas along other stretches of Route 28 nearby, which makes it more comfortable for pedestrian movement, though travel along Route 28 is still less comfortable than travel along Worcester Court because of the higher traffic levels and travel speeds of Route 28.



Legend

Spring Bars Road Project Site	Building Structures
2 Foot Contours	Falmouth Parcels
DEP Wetlands	FEMA Flood Hazard Zones A
100 ft. DEP Wetlands Buffer	FEMA Flood Hazard Zones B
	FEMA Flood Hazard Zones V



User: sgomet Date: 3/21/2013

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Falmouth RESET Spring Bars Road Natural Features Map

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Retail plaza backing up to Worcester Court - Issue

The rear of the commercial plaza with Kappy's Liquors and Christmas Tree Shop creates blank walls and large setbacks that are not pedestrian friendly (ie. back of Kappy's Liquors at southwest corner of Spring Bars Road and Worcester Court). This plaza is used frequently as a cut-through to avoid congested intersections on Davis Straits/Route 28, and thus adds traffic onto Worcester Court and Spring Bars Road. Both the character of the rear of the plaza and the circulation pattern it creates should be addressed to increase pedestrian comfort and safety if any change in development occurs on this property.

Redevelopment Potential - Opportunity

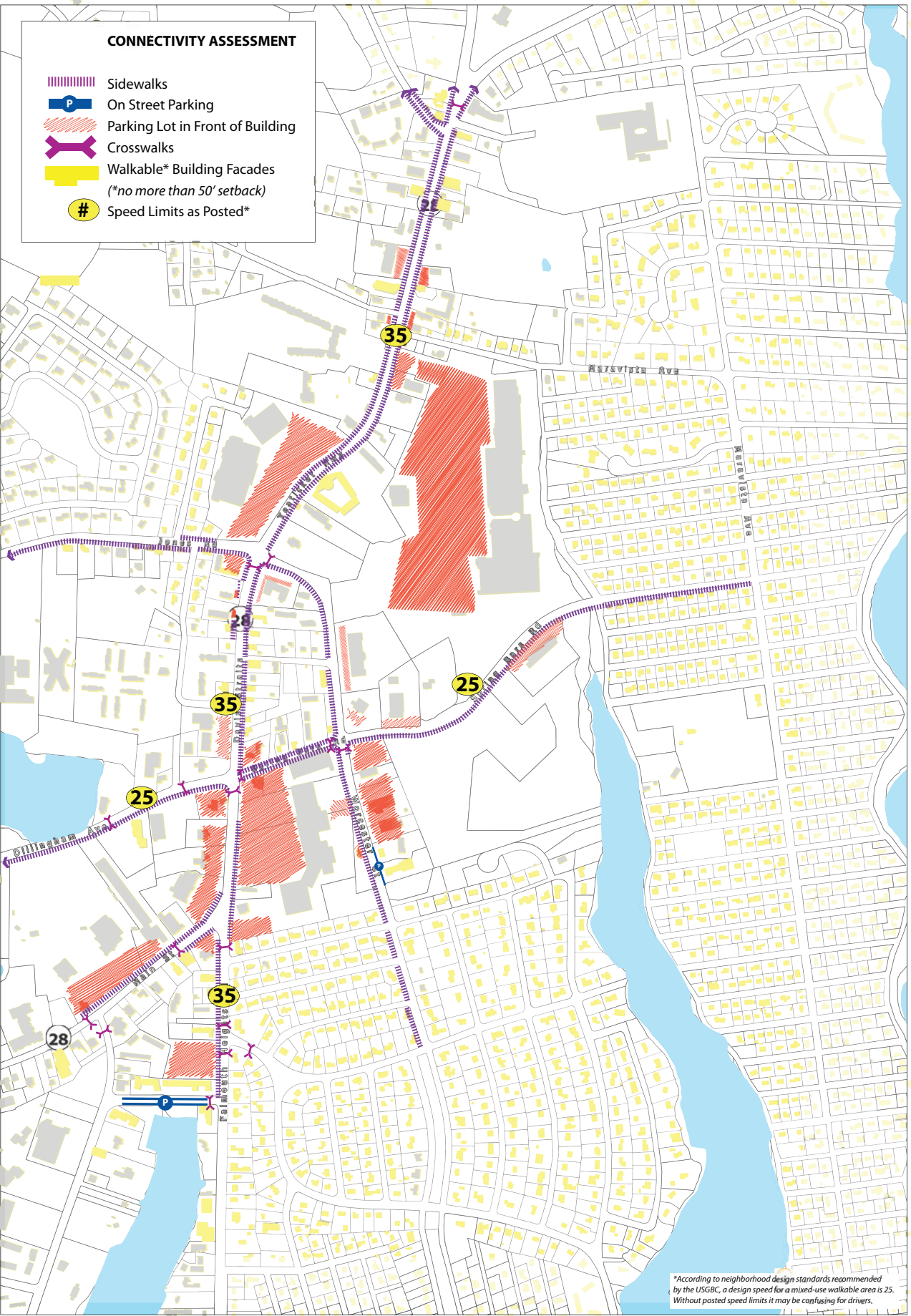
Parts of the study area are experiencing redevelopment or appear ripe for redevelopment. The undeveloped paved lot adjacent to project site at southeast corner of Spring Bars Road and Worcester Court is one example, the approved FW Webb redevelopment and the proposed CVS redevelopment proposal are others. This is an opportune time to guide redevelopment to address existing concerns in the area. Additional mixed use development that incorporates apartments or other residential units may be appropriate, allowing uses that would be focused on the road frontage and of modest scale. Neighborhood group representatives acknowledged the benefit of low traffic generating uses to limit congestion on Worcester Court between Spring Bars Road and Lake Leaman Road.

Natural Resources in the Area - Opportunity

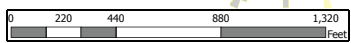
This area includes significant natural resources [Reference Natural Features map], despite the proximity to dense commercial and residential development. There is potential for a green corridor north of Little Pond, incorporating the new Teaticket park being developed by 300 Committee. Neighborhood group representatives noted a strong desire to protect Little Pond from further degradation and the two could potentially work together.

Cut Through Traffic and Travel Speeds on Worcester Court - Issue

Neighborhood group members cited high travel speeds and cut through traffic on Worcester Court between Spring Bars Road and flashing light to south. Transportation problems at the adjacent intersections of Dillingham Ave./Route 28 and Spring Bars Road/Worcester Court should be dealt with together so that improvements can be coordinated.



*According to neighborhood design standards recommended by the USGBC, a design speed for a mixed-use walkable area is 25. Without posted speed limits it may be confusing for drivers.



User: sgnat Date: 3/20/2013

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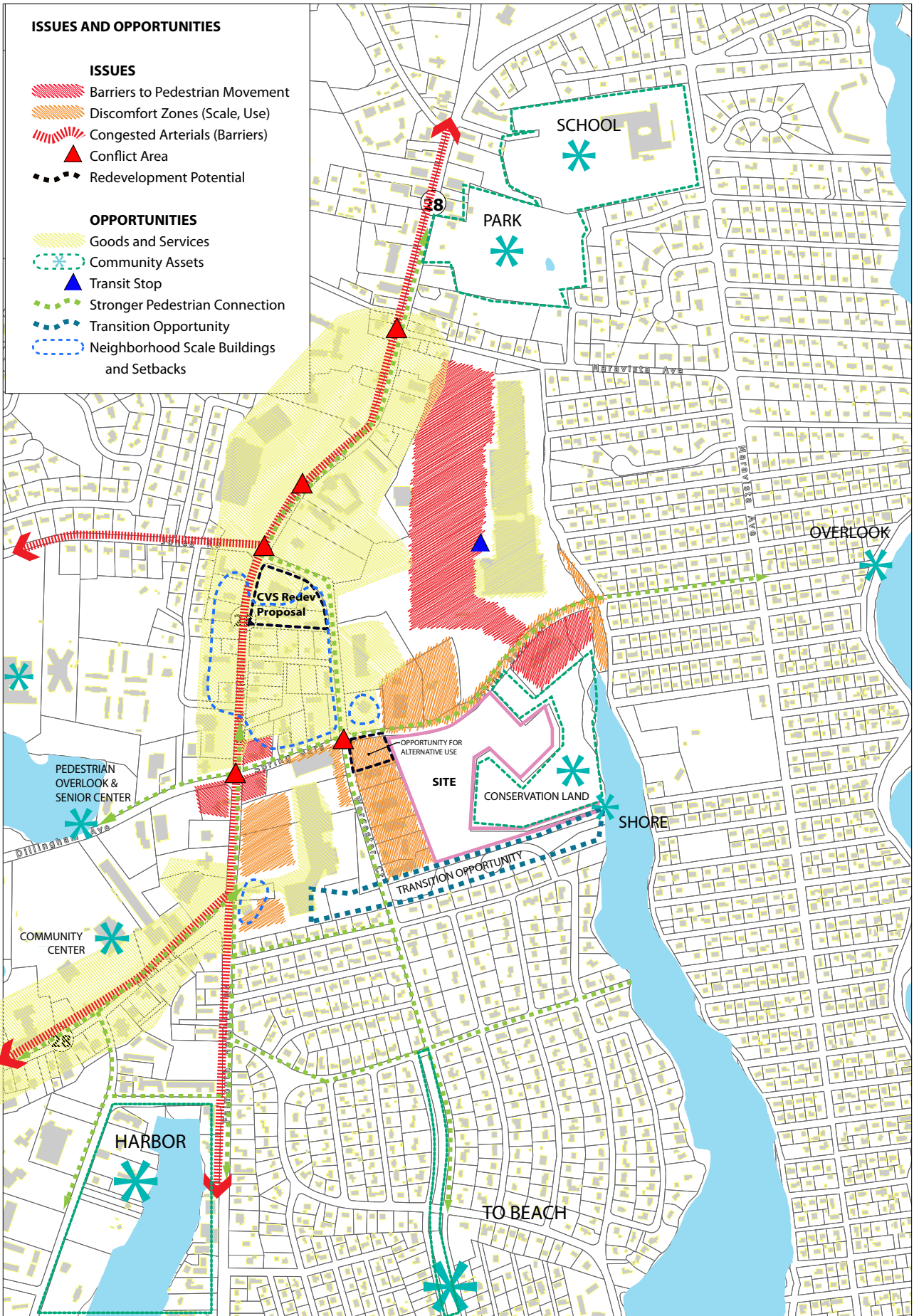


Falmouth RESET Spring Bars Road Connectivity Assessment Map



Lack of Consistent Sidewalks - Issue

Though some sidewalks in the study area are in good condition, they are not consistent. Poor condition sidewalks inhibit pedestrian travel to some of the resources in the area, even though they are less than 1/2 mile away. Pedestrian travel along high volume roadways is required to access Gus Carty Recreation Center and some other facilities. Travel along lower volume roadways is required to reach Falmouth Harbor. Crosswalks are also needed to improve safety. The Connectivity Assessment map on the adjacent page illustrates existing sidewalks and crosswalk locations, highlighting several gaps in the network, notably at the intersection of Spring Bars Road and Route 28, and along the west side of Route 28 between Jones road and Falmouth Heights Road.



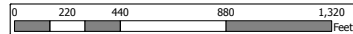
ISSUES AND OPPORTUNITIES

ISSUES

- Barriers to Pedestrian Movement
- Discomfort Zones (Scale, Use)
- Congested Arterials (Barriers)
- Conflict Area
- Redevelopment Potential

OPPORTUNITIES

- Goods and Services
- Community Assets
- Transit Stop
- Stronger Pedestrian Connection
- Transition Opportunity
- Neighborhood Scale Buildings and Setbacks



User: gmsdet Date: 3/20/2013

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Falmouth RESET Spring Bars Road Opportunities & Constraints Map



Recommendations

The following recommendations are keyed to the illustration on page 72.

A. Encourage Mixed Use development as a Transition Area

Zoning regulations should be adjusted to encourage mixed use redevelopment with apartments and condos along Worcester Court from the intersection of Spring Bars Road to Route 28. This type of development would provide a better transition between commercial development on Route 28/Davis Straits and the dense residential neighborhoods to the south and east. It would also help to differentiate between development on Route 28 and that on Worcester Court, and prevent the spill of higher traffic generating uses onto Worcester Court. The town's Business Redevelopment District may be a suitable model for this area because of its mixed use allowances. Building and lot coverage limits in the Business Redevelopment District are also more appropriate for this transition area as they are somewhat lower than existing B2 zoning and more consistent with residential characteristics, but the town may want to encourage only smaller scale buildings in this area.










B. Define Building Forms and Design Features along Worcester Court

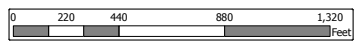
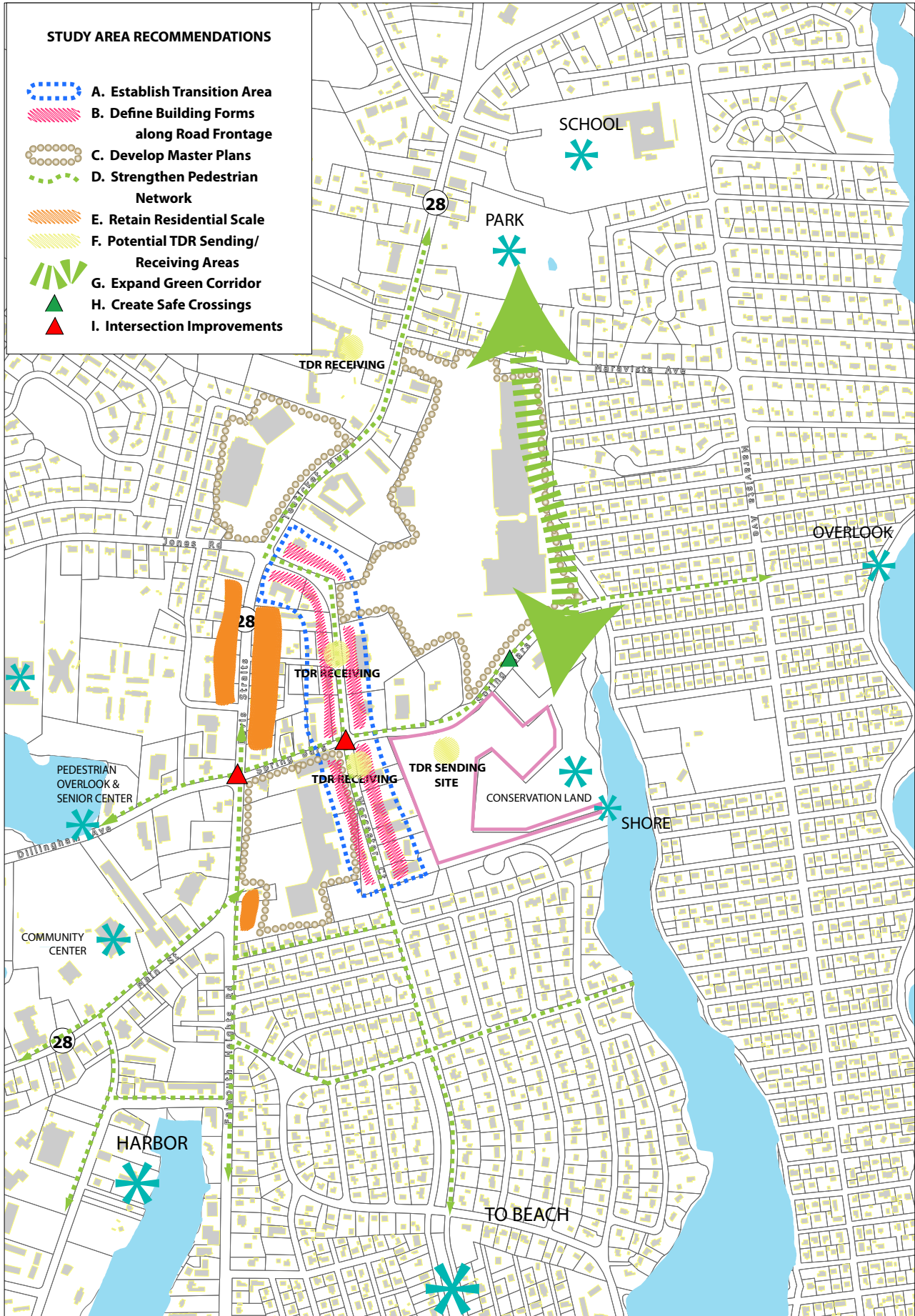
Establish regulations or design guidelines to guide the character of new buildings along Worcester Court, focusing on redevelopment that moves buildings up to the street edge and prevents parking in the front yard of a development. Establishing pedestrian-oriented buildings at intersection of Worcester Court and Spring Bars Road is particularly encouraged. The town should clarify its interpretation of "yard" in the zoning bylaw to prevent parking from being placed in this setback area – especially when in residentially-oriented areas. An established building setback line and building transparency requirements would support the goal of keeping the area pedestrian oriented.

C. Develop Master Plans for large commercial plazas in study area

Redevelopment is occurring in this area and is likely to continue. To encourage the greatest possible compatibility between future large-scale development/redevelopment efforts and residential neighborhoods nearby, pursue master plans for redevelopment of the three large commercial plazas in the study area. Consider requirements for consistent landscape buffers to residential areas, limited curb cuts, pedestrian pathways, and active street frontage buildings especially where the development abuts the corner of two streets. Remove barriers to pedestrian movement and discomfort zones, and consider possibilities for expanding pedestrian trails and greenways into this master planning effort.

STUDY AREA RECOMMENDATIONS

-  A. Establish Transition Area
-  B. Define Building Forms along Road Frontage
-  C. Develop Master Plans
-  D. Strengthen Pedestrian Network
-  E. Retain Residential Scale
-  F. Potential TDR Sending/Receiving Areas
-  G. Expand Green Corridor
-  H. Create Safe Crossings
-  I. Intersection Improvements



User: ggsdkt Date: 2/26/2013

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Falmouth RESET Spring Bars Road Opportunities & Constraints Map



D. Strengthen Pedestrian Network through Study Area to Key Facilities

Develop strong pedestrian corridors to improve walkability and bicycle circulation, linking key facilities such as Falmouth Harbor, beaches, and Gus Canty Recreation Center. Define one east-west corridor along Spring Bars Road as a connection to town-owned conservation lands and to the Maravista neighborhood. Also facilitate east-west corridors along Alma Road, which provides an efficient connection to the community center, and along Lake Leamon Road as the northern extent of the Worcester Court green park and as a proximate connection to Falmouth Harbor. Define a north-south corridor along Worcester Court, continuing the well-defined corridor stretching from the beach to Lake Leaman Road. Improve the pedestrian walkways along Route 28 to facilitate connections to community center and other uses along this corridor. Different pedestrian corridors might be defined by distinctive street tree patterns in areas that need additional plantings to increase pedestrian comfort. Consider ways to open up glimpses to water resources such as Falmouth Harbor and Little Pond along these corridors.

E. Retain Smaller Development Nodes on Route 28

On Route 28, encourage nodes of less dense development between areas of dense development to help reduce traffic congestion and also to prevent further strip style development from occurring. The block on the east side of Route 28 between Spring Bars Road and Worcester Court is an example of residential scale buildings that remain and provide a respite from other forms of commercial development on this stretch. Encourage this configuration and consistent setback pattern to remain and consider allowing more varied uses. In Commission staff's advisory comments to the Planning Board on the previously proposed CVS redevelopment project, we encouraged existing historic buildings to be retained, and noted that any new buildings should be oriented to the street frontage, not surrounded by parking. Additional small areas of residential scale development are located on the west side of Route 28 and near the intersection with Falmouth Heights Road. Adopting some features of the Business Redevelopment District may also be appropriate in these areas.

F. Consider Transfer of Development Rights Sending/Receiving Areas

To address the potential need to transfer or sell development rights from Lot 1 to make the proposed affordable housing development more viable, or to address concerns about development on the site due to flood zone issues, the town should identify appropriate receiving areas for housing units. Transferring development rights would both support affordable housing creation, reduce exposure to flood zone issues, and help to protect natural resources on the Spring Bars Road site. The town should amend its existing TDR zoning bylaw to allow transfer of residential units from Lot 1 to other sites in the town. Within the project study area, the



corridor along Worcester Court that is suggested for mixed use development, and existing housing authority parcels may be appropriate receiving areas. Outside the study area, other locations that provide easy access to a variety of goods and services and community facilities should be considered. Locations within the Main Street Redevelopment District may also be appropriate receiving areas.

G. Expand the Green Corridor between Teaticket Park and Little Pond
Implementation of a green corridor should be linked to future redevelopment efforts, incorporating incentives to move commercial buildings further away from the wetland areas and from flood zones. The corridor would provide a visual and recreational amenity to area residents, as well as a potential area for storage of flood waters. Short-term and a long-term means of expanding the corridor should be considered, such as pedestrian trails in the short term, and conservation restrictions on portions of land connecting the Teaticket Park to the Spring Bars Road conservation parcel in the long term. The Conservation Commission would be an important player in this process.

Potential Transportation Improvements

In order to better accommodate the proposed project in its current location, there are a number of transportation deficiencies that should be addressed. It should be noted that these deficiencies are not tied to project-related transportation impacts, but rather they exist currently. These improvements would benefit both the residents of the proposed project and other users of the transportation network. The degree to which any potential developer should be required to implement the following suggested improvements is beyond the purview of this technical analysis.

For the benefit of future consideration a number of improvement alternatives are presented with a varied level of investment and benefits. Improvements in the following areas are proposed: pedestrian, bicycle, and transit user accommodation, roadway maintenance, and intersection improvements. Note that all estimated costs are conceptual in nature and should be further developed should the improvement be selected for further consideration.

Bicycle, Pedestrian, and Transit User Accommodations

The location of the proposed project provides great opportunities for residents to access vast and varied points of interest throughout the Town of Falmouth. Additionally, the site is within walking distance of a transit



stop that would provide residents access to points beyond. However, these benefits can only be realized if safe and convenient access by way off appropriate bicycle and pedestrian accommodations are provided.

As previously discussed in this report, upgrades to the sidewalk on Spring Bars Road and installation of a crosswalk to provide a safe connection to the Falmouth Mall transit stop would benefit residents of the proposed development, visitors to the Little Pond Conservation Area, and the neighborhood as a whole. [Labeled “H” on the Recommendations graphic.] Removal of mobility obstacles (mainly utility poles) within the sidewalk and upgrades to crosswalk markings and signs would improve pedestrian accommodations throughout the study area.

Bicycle accommodations are lacking throughout the study area; however, without major reconstruction of the roadway, major improvements are impossible. There is however a number of low-cost alternatives that would help better accommodate bicyclists in the existing roadway network. Design elements should be incorporated into the roadway and abutting properties that encourage appropriate (slow) speeds in the study area and clear sight lines should be maintained at intersection through trimming. Additional Share-the-Road signage would remind motorists to be alert for bicyclists, but visual clutter would somewhat diminish the impact in some areas. Where lane widths allow, fog lines should be painted or re-painted to give bicyclists at least some shoulder to utilize.

Roadway Maintenance

The pavement on the section of Spring Bars Road west of Worcester Court is in poor condition with significant cracking and patches. While providing discomfort to motorists, the pavement conditions provide a safety hazard to bicyclists. Should this roadway be repaved as part of the proposed project, work should be coordinated with the installation of the sewer main. Since the sewer main installation will require significant excavation for trenches within the roadway surface, improvements to the road should follow this work.

As a town-owned road, Spring Bars Road maintained by the Town of Falmouth Department of Public Works (DPW). In discussions with the Falmouth DPW it was indicated that at this time no major improvements were currently planned; however, a survey was recently conducted on the roadway to assess the existing conditions. It was also mentioned that the Town DPW was aware of the proposed project and the potential for roadway improvements related to it.

Costs for all sidewalk and roadway improvements will vary depending



on if the project is constructed by Town forces or if the developer hires a private construction company. Funding for these improvements could potentially come from a number of different sources. Should this represent a priority project in the Town, the Town could fund the improvements using Chapter 90 funds (state formula-based roadway improvement funds) or other municipal funds. Given the potential connections to the Little Pond Conservation Area, one of the Town's retail centers, and nearby neighborhoods, the Town could also consider pursuing grants such as a MassWorks grant. As stated on the grant programs website: "the MassWorks Infrastructure Program provides a one-stop shop for municipalities and other eligible public entities seeking public infrastructure funding to support economic development and job creation and retention, housing development at density of at least 4 units to the acre." Given interdependence with the sewer upgrades, these improvements could also be budgeted as part of the sewer main upgrade.

Intersection Improvements

Given the safety problems that exist, upgrades to the intersections of Worcester Court at Spring Bars Road and Davis Straits (Route 28) at Spring Bars Road and Dillingham Avenue should be considered. Consideration of these upgrades are warranted based on existing and projected future traffic volumes irrespective of whether or not this proposed project is implemented. [Labeled "I" on the Recommendations graphic.]

Worcester Court at Spring Bars Road

Three factors that impact safety at a two-way stopped controlled intersection and where deficiencies exist at this location are conspicuity of the stop signs, sightlines, and speeds on the major street.

The stop signs on Spring Bars Road are in fair condition, although, they have been defaced by stickers and should be cleaned or replaced. Given the straight, level approach from the west, see Figure 5, the stop sign is quite conspicuous. The curvature and change in elevation approaching from the east, see Figure 5, is less conspicuous. A larger stop sign for the westbound approach may aide conspicuity. Advanced stop warning signs can also aide in altering motorist to the coming stop; this should also be considered for the eastbound approach.

The lowest-cost improvement would be to improve available sightlines by trimming the bushes on the corners of the intersections. At the time of the site visit, the bushes on the southwest corner of the intersection acted as a visual obstruction to drivers approaching the intersection from the west.

These short-term, low-cost improvements may provide some benefit;



however, given the duration and magnitude of the crash problem, other improvements should be investigated. One alternative would be converting the intersection to four-way stop control. This would allow vehicles on Spring Bars Road to more safely cross or turn on to Worcester Court. The Federal Highway Administration's Manual on Uniform Traffic Control Devices (MUTCD), 2009 Edition, provided guidance on "when multi-way stop control can be useful as a safety measure".

The decision to implement a multi-way stop can be based on safety, traffic volumes, or a combination of the two. At this intersection the criteria for safety ("five or more reported crashed in a 12-month period that are susceptible to correction by a multi-way stop installation") is met with 8 such crashes in 2007 and 7 such crashes in 2009. With the safety criteria met, the multi-way stop installation is warranted, but an analysis still must be conducted to determine if the intersection would function well under multi-way stop control.

For a multi-way stop controlled intersection to function well, the volumes must be approximately equal on the minor and major approaches. With the Spring Bars Road approaches experiencing 40-45% of the vehicles processed through the intersection, conversion to a four-way stop controlled intersection seems appropriate from this location. A more detailed discussion of capacity implications of conversion from 2-way to 4-way stop controlled intersection is presented in the Appendix.

Should the Town wish to pursue installation of a four-way stop at this location a more formal transportation analysis should be conducted. At the request of the Town, Commission staff would be willing to perform such a transportation study as a follow-up to this project.

Installation of a traffic signal or roundabout at this location could also improve safety, but would involve substantial financial investment and likely require right-of-way acquisition. Further analysis should be conducted on these alternatives if they are selected for further consideration.

Davis Straits (Route 28) at Spring Bars Road and Dillingham Avenue
While a number of factors contribute to the crash problem at this location including intersection geometry, poor access management, and signage issues, the simple fact is that vehicles on the minor streets (Spring Bars Road and Dillingham Avenue) cannot safely get on or across the major street (Davis Straits) safely. The traffic volumes and speeds on Davis Straits (Route 28) do not provide sufficient gaps for vehicles from the minor street to enter the traffic stream. As a result vehicles to either accept dangerously short gaps or wait until someone lets them out.



In site visits to this location it seems that this location brings out the best in drivers (yielding right-of-way to let vehicles out) and the worst in drivers (cutting vehicles off). Numerous dangerous maneuvers were observed including near collisions with drivers cutting of vehicles on Davis Straits and vehicles disregarding the stop sign if they see a gap in traffic they can squeeze into. If it were not for other drivers' courtesy let others go this intersection would likely fall into complete gridlock.

A few low-cost short-term improvements to this would include replacing the stop signs and adding more conspicuous roadway markings at in the sidewalk. In the medium-term consolidating and minimizing curb cuts in the vicinity of the intersection would eliminate some of the driver confusion that currently existing.

In order to determine the best long-term solution, a Road Safety Audit should be conducted at this location. The Road Safety Audit will bring together a diverse team of individuals that will bring their varied expertise to the table to assess and discuss the challenges of this intersection. The long-terms options that may be considered include converting the intersection to a four-way stop, installing a traffic signal, or installing a roundabout. The four-way stop conversion is not appropriate for the traffic volumes experienced on Davis Straits. The traffic signal and roundabout alternatives warrant further consideration. Both will involve significant capital invest and right-of-way acquisition, but could alleviate the congestion and safety issues at this intersection.

A number of potential funding sources exist that could be considered for reconstructing these intersections. One potential funding path would be as part of the Cape Cod Transportation Improvement Program (TIP). The TIP is a competitive program that funds a limited number of projects on Cape Cod each year. In order for a project to be considered for TIP funding it must first be recognized by the Massachusetts Department of Transportation (MassDOT) a Project Identification Form (PIF) must be submitted to and reviewed by MassDOT. The Town should consider filling out a PIF for each of these intersections if they wish to pursue TIP funding.



Appendix A

Transportation Details

2013 Existing Peak Month Traffic Volumes
2018 Future Peak Month Traffic Volume
Crash Diagram – Worcester Court at Spring Bars Road
Crash Diagram – Davis Straits (Route 28) at Spring Bars Road and
Dillingham Avenue
Level of Service Analysis Results

Roadway Geometry

Spring Bars Road

Spring Bars Road is a two-lane collector roadway under Town jurisdiction that provides the frontage for the proposed project site. Between Davis Straits and Worcester Court the roadway provides two 10-12 foot wide travel lanes separated by a double-yellow centerline, no marked shoulder, and is in fair condition. To the east of Worcester Court the roadway provides two 12 foot wide travel lanes separated by a double-yellow centerline, no marked shoulders, and is in poor condition. The posted speed limit is 25 mph. As Spring Bars Road crosses the creek north of Little Pond and enters the residential neighborhood to the east, the road name changes to Randolph Street.

Worcester Court

Worcester Court is a two-lane collector roadway under Town jurisdiction. Within the study area, Worcester Court provides two 11 to 14-foot wide travel lanes separated by a single-yellow centerline with no marked shoulders provided. A posted speed limit is not provided along Worcester Court; however, given the nature of the abutting land use (thickly settled business district), the “prima face” speed limit is 30 mph.

Davis Straits (Route 28)

Davis Straits (Route 28) is a two-lane arterial roadway under Massachusetts Department of Transportation (MassDOT) jurisdiction. Within the study area, Davis Straits provides two 14 to 19-foot wide travel lanes



separated by a double-yellow centerline with 2 to 4-foot wide marked shoulders provided. The posted speed limit along Davis Straits within the study area is 35 mph.

Intersection Geometry

Worcester Court at Spring Bars Road

Spring Bars Road intersects Worcester Court from the east and west to form this four-legged intersection under STOP-sign control. The Worcester Court north and southbound approaches consist of an 11 to 12-foot wide general-purpose travel lane with no marked shoulder provided. The directions of travel along Worcester Court are separated by a single-yellow centerline. The Spring Bars Road east and westbound approaches consist of a 10 to 12-foot wide general-purpose travel lane with no marked shoulder provided and vehicles approaching Worcester Court under STOP-sign control. The directions of travel along Spring Bars Road are separated by a double-yellow centerline to the west of the intersection and by a single-yellow centerline to the east.

Davis Straits (Route 28) at Spring Bars Road and Dillingham Ave.

Spring Bars Road and Dillingham Avenue intersect Davis Straits (Route 28) from the east and west, respectively, to form this four-legged intersection under STOP-sign control. The Route 28 north and southbound approaches consist of a 14 to 15-foot wide general-purpose travel lane with 3 to 4-foot wide marked shoulders provided. The directions of travel along Route 28 are separated by a double-yellow centerline. The Dillingham Avenue eastbound and Spring Bars Road westbound approaches consist of a 12 to 14-foot wide general purpose travel lane with variable width or no marked shoulder provided and vehicles approaching Route 28 under STOP-sign control. The directions of travel along both Dillingham Avenue and Spring Bars Road are separated by a double-yellow centerline, with a raised island provided at the intersection on the Dillingham Avenue approach.

Davis Straits/Main Street (Route 28) at Falmouth Heights Road

Falmouth Heights Road intersects Davis Straits/Main Street (Route 28) south, to form this three-legged, skewed intersection under STOP-sign control. The Route 28 northeast and southbound approaches consist of a 15 to 18-foot wide general purpose travel lane with 2-foot wide marked shoulders provided. The directions of travel along Route 28 are separated by a raised island at the intersection and by a double-yellow centerline thereafter. The Route 28 northeastbound approach (18-foot wide) was observed to operate as two (2) travel lanes (functional through and right-turn lanes) during the peak hours. The Falmouth Heights Road north-



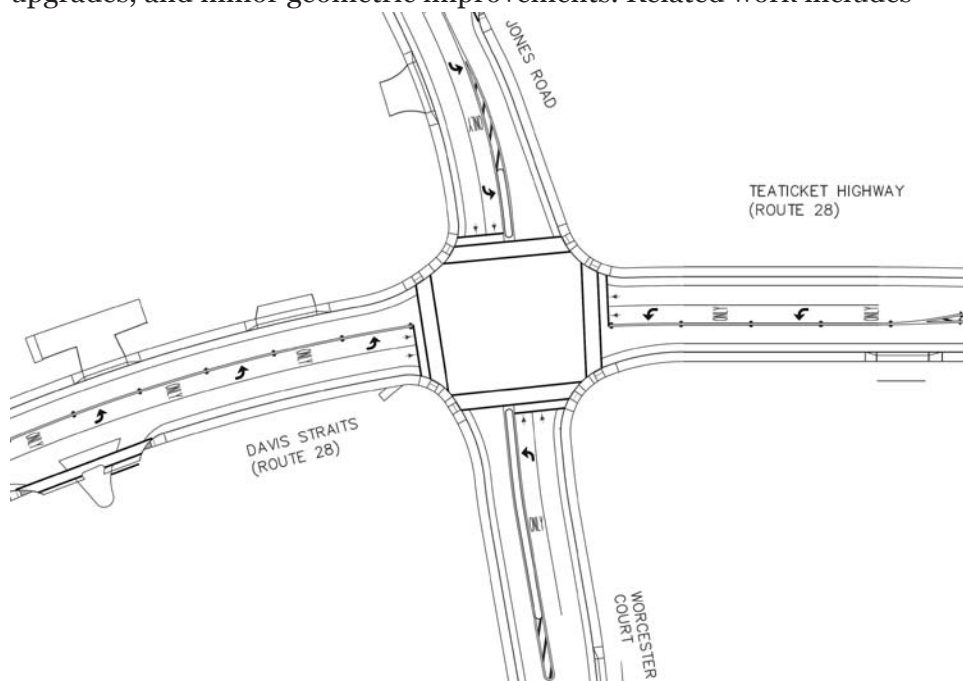
bound approach consists of a 15-foot wide general purpose travel lane with a 2-foot wide marked shoulder provided and vehicles approaching Route 28 under STOP-sign control. The directions of travel along Falmouth Heights Road are separated by a single-yellow centerline approaching the intersection and by a raised island at the intersection. Similar to the Route 28 northeastbound approach, the Falmouth Heights Road approach (15-foot wide with a 2-foot wide shoulder) was observed to operate as two (2) travel lanes (functional left and right-turn lanes) during the peak hours.

Randolph Street at Maravista Avenue

Randolph Street (continuation of Spring Bars Road) intersects the arterial roadway Maravista Avenue from the east and west to form this four-legged intersection under STOP-sign control. A flashing beacon is hung centrally over the intersection with a flashing red indication reminding drivers on Randolph Avenue to stop and a flashing yellow indication alerting motorists on Maravista Avenue to the intersection. All approaches consist of an 11 to 12-foot wide general-purpose travel lanes with no marked shoulder provided.

Davis Straits (Route 28) at Worcester Court and Jones Road

This signalized intersection is currently in the final design stages for intersection improvements intended to increase safety through traffic signal upgrades, and minor geometric improvements. Related work includes



INTERSECTION DESIGN PLANS - Route 28 at Worcester Court and Jones Road.



sidewalk installation, minor drainage improvements, pavement markings and new signage. The project is part of a two intersection improvement project, along with Davisville Road at Old Meetinghouse Road, with an estimated construction cost of \$3.3 million. Construction is expected to begin in the fall of 2013. Considering the detailed analysis conducted in the design stages of the improvement project and the planned upgrades, no additional analysis was conducted on this intersection as part of this study.

Existing Traffic Volumes

Traffic volumes were collected by Commission staff as part of this study and as part of the regular annual traffic monitoring program. Additional data was compiled by MassDOT as part of the Davis Straits (Route 28) at Worcester Court and Jones Road intersection upgrade project, and by Vanasse & Associates, Inc. as part of the Traffic Impact and Access Studies for F.W. Webb proposed at 171 Worcester Court and the proposed CVS Redevelopment on the corner of Davis Straits (Route 28) and Worcester Court.

One measure of traffic volumes is Average Daily Traffic (ADT), a count of the number of vehicles traveling along a roadway on a given day. Given the seasonal fluctuation in traffic volumes it is useful to look at both average month and peak month conditions. The estimated ADT values on the roadways within the study area are presented in the following table:

More detailed data on vehicle turning movements, based mostly on manual intersection counts, presents the number of vehicles using the roadways and intersections within a specific study hour. The study hour selected to evaluate this proposed project is the Peak Month Afternoon Peak Hour to represent a conservative (high) scenario. The estimated Peak Month Afternoon Peak Hour turning movements in the study area are provided in the appendix.

Future Traffic Volumes

Understanding that this project will likely take a number of years to implement, analysis of build versus no-build scenarios were conducted five years out from the existing conditions. The future 2018 no-build traffic volumes were estimated by projecting a conservative 1% annual growth rate (region-wide traffic has been decreasing slightly over the last decade). Additional trips were added to represent proposed developments that may increase traffic volumes over the next five years. These developments include the proposed CVS Pharmacy Expansion Project at 105 Davis Strait



(Route 28) and the proposed F.W. Webb Plumbing Supply Warehouse and Showroom to be located at 171 Worcester Court. Traffic volumes and distributions associated with these projected projects were obtained from their respective traffic studies.

Based on trip generation studies of Rental Townhouse and Residential Condominium/ Townhouse land uses presented in the Institute of Transportation Engineers' Trip Generation Manual (Ninth Edition, 2012), it is estimated that this proposed development would generate 226 new daily trips, 22 new morning peak hour, and 22 new afternoon peak hour trips. With this estimated trip generation, no intersections in the area would experience more than 13 new trips during the peak hours. This increase would have no significant effect on the safety or operations of the surrounding transportation network. Intersection turning movements in the projected 2018 no-build traffic volumes, along with the project-generated trips, are presented in the appendix.

Capacity Analysis

Using the traffic data volumes collected by the Cape Cod Commission, standard techniques published in the 2010 Highway Capacity Manual (HCM) were applied to calculate Levels of Service (LOS). LOS is an intersection's "report card" with possible grades ranging from LOS A to LOS F. LOS A corresponds to unimpeded travel with minimal delay while LOS F represents very high delays and possible gridlock. Inputs into HCM software include traffic volumes and associated intersection geometry such as number and type of approach lanes, signal timing schemes, and other factors affecting traffic operations. Each approach lane of an unsignalized intersection is given a separate score. The intersection of Route 28 at Jones Road and Worcester Court was not included in this analysis given the planned reconstruction of this intersection.

The LOS for the 2013 existing, 2018 no-build, and 2018 build scenarios are presented in the figure on the following page. There is no significant change in LOS between the 2013 existing and 2018 no-build scenarios or between the 2018 no-build and 2018 build scenarios. In general, drivers experience the worst LOS on the minor approaches to the study area intersections. More detailed LOS analysis results are presented in the appendix.

LOS Analysis for Spring Bars Road at Worcester Court

To better understand how the intersection would function under all-way stop control, a Level of Service (LOS) analysis was conducted. Using the



traffic volumes from the 2018 build scenario the peak month evening peak hour LOS was calculated and compared to the LOS for the current two-way stop configuration. As presented in Table 1, conversion to a four-way stop would improve the LOS for the Spring Bars Road approaches from F to C but degrade the LOS for the Worcester Court approaches from A to D.

TABLE 1. SPRING BARS ROAD AT WORCESTER COURT 4-WAY STOP LOS ANALYSIS

Approach	Demand ¹	2-Way Stop		4-Way Stop	
		Delay ²	LOS ³	Delay	LOS
Spring Bars Road EB	280	>50	F	24.9	C
Spring Bars Road WB	221	>50	F	19.7	C
Worcester Court NB	330	7.9	A	26.3	D
Worcester Court SB	353	8.4	A	30.97	D

¹Demand in Vehicle per hour

²Average control delay per vehicles [seconds]

³Level of Service

LEGEND

- X Total Crashes (2008-2010)
- X Injury Crashes (2008-2010)

**16 Total Crashes
5 Injury Crashes**

**4 Total Crashes
1 Injury Crashes**

SITE

**19 Total Crashes
5 Injury Crashes**

**20 Total Crashes
4 Injury Crashes**

**2 Total Crashes
1 Injury Crashes**

Note: Crash numbers represent reported crashes on file with MassDOT.

Crash History
Falmouth RESET Spring Bars Road

Traffic volumes estimated based on data collated from multiple projects conducted by various entities including Commission staff, MassDOT, and Vanasse & Associates, Inc. as described in the report. Traffic volumes intended for illustrative purposes, more detailed data collection would be required for design work.

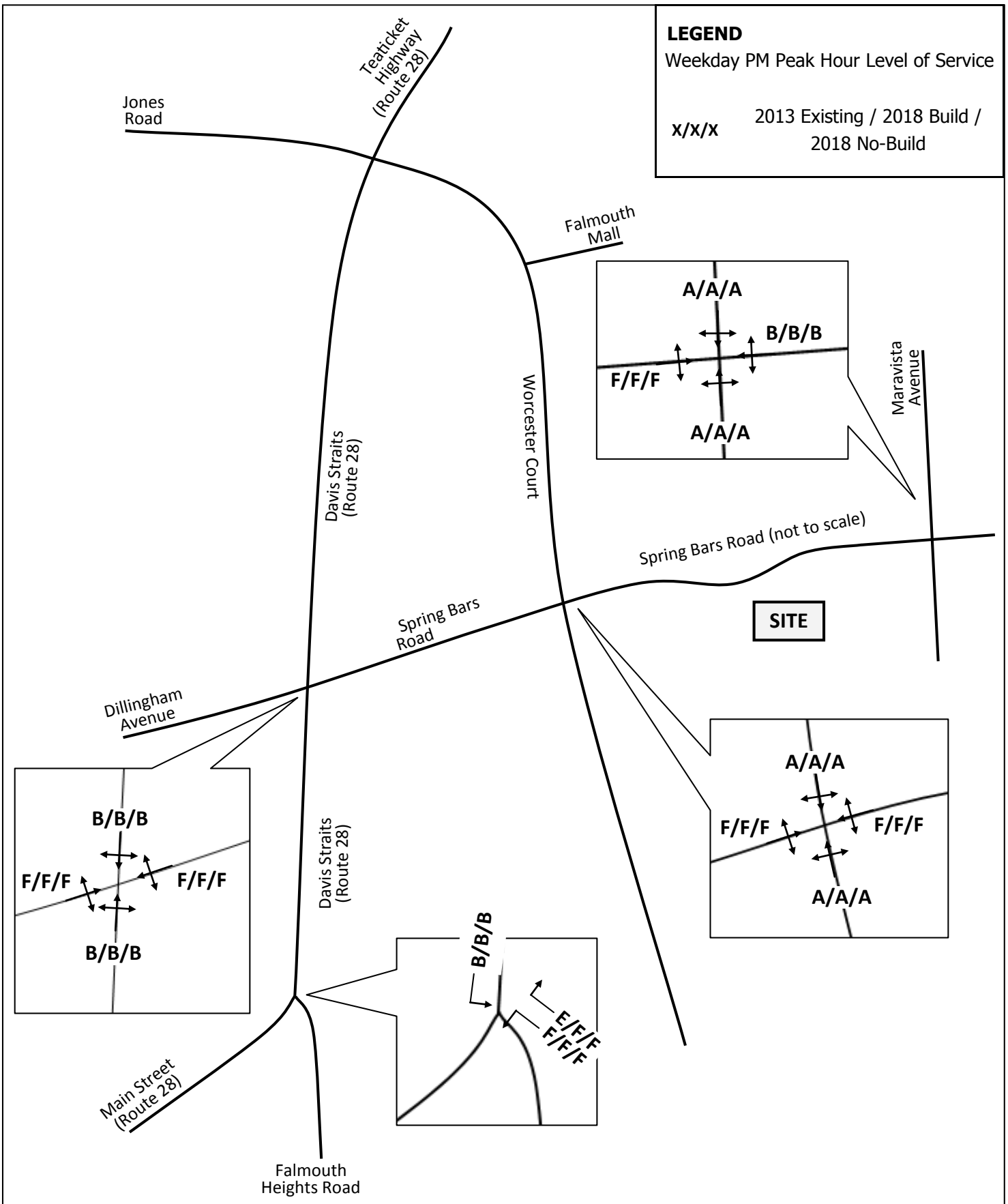


CAPE COD
COMMISSION

LEGEND

Weekday PM Peak Hour Level of Service

x/x/x 2013 Existing / 2018 Build /
 2018 No-Build



Peak Month Level of Service (LOS)
Falmouth RESET Spring Bars Road

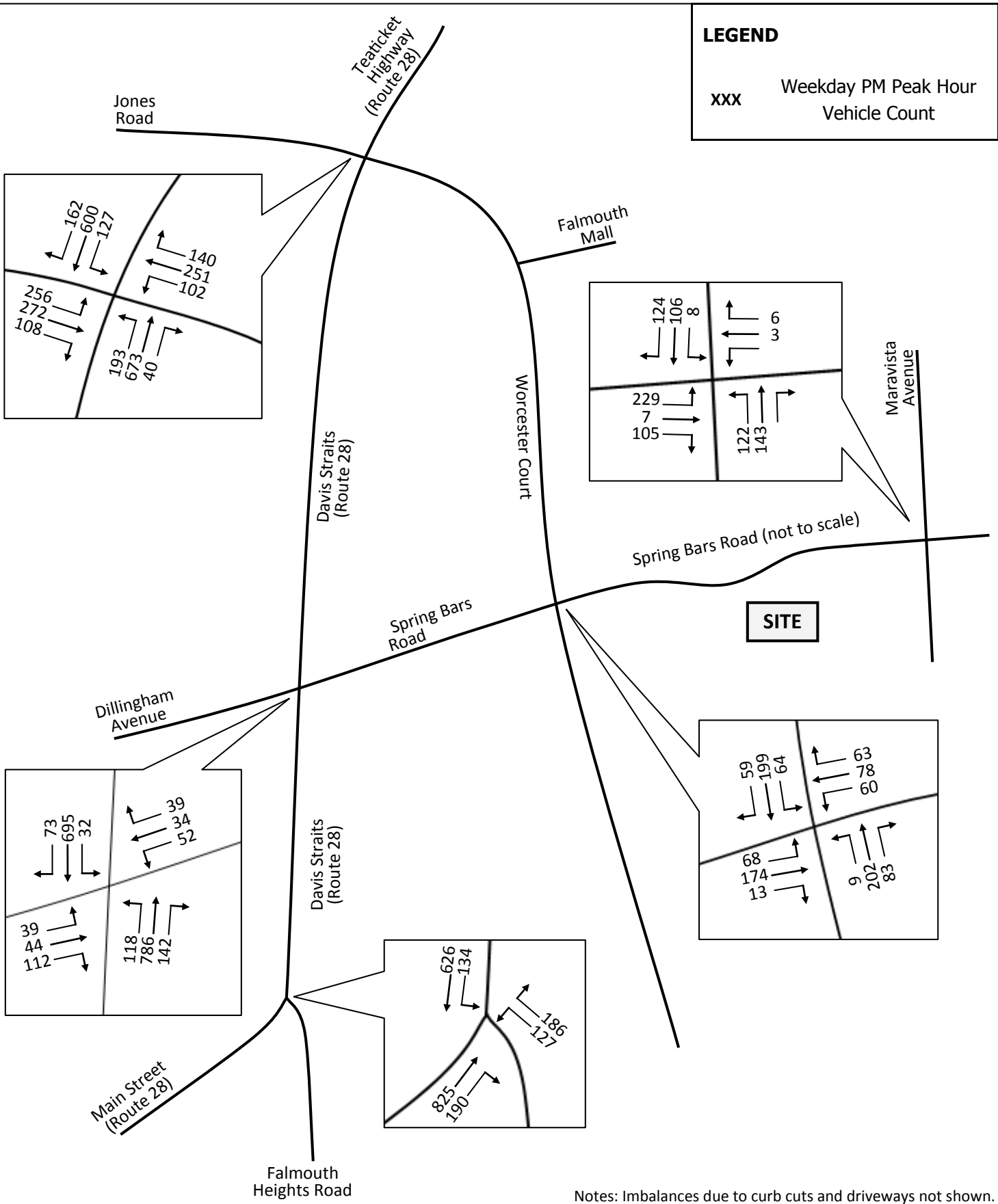
Traffic volumes estimated based on data collated from multiple projects conducted by various entities including Commission staff, MassDOT, and Vanasse & Associates, Inc. as described in the report. Traffic volumes intended for illustrative purposes, more detailed data collection would be required for design work.



CAPE COD
COMMISSION

LEGEND

XXX Weekday PM Peak Hour Vehicle Count



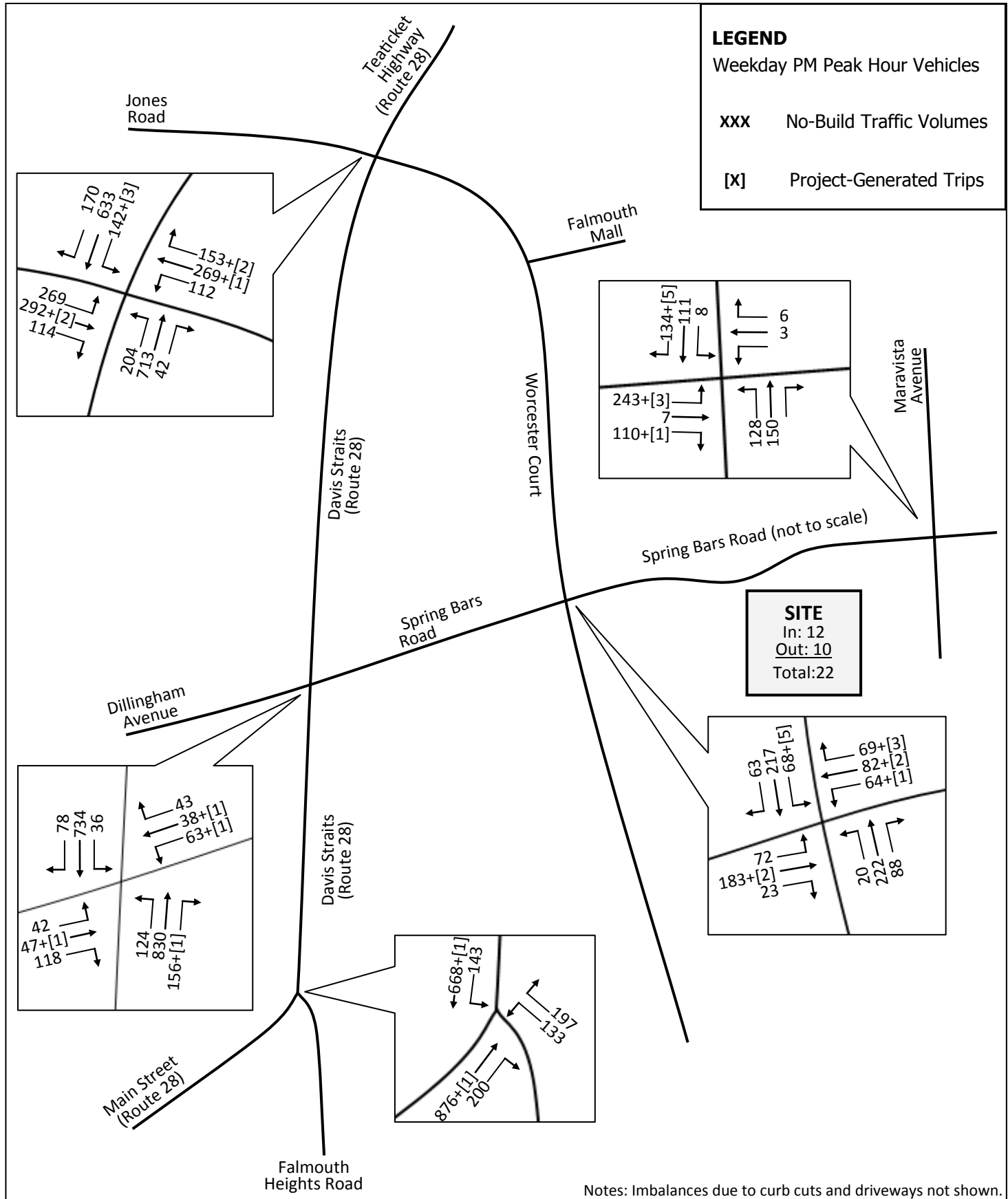
Notes: Imbalances due to curb cuts and driveways not shown.

2013 Existing Peak Month Turning Movement Volumes
Falmouth RESET Spring Bars Road

Traffic volumes estimated based on data collated from multiple projects conducted by various entities including Commission staff, MassDOT, and Vanasse & Associates, Inc. as described in the report. Traffic volumes intended for illustrative purposes, more detailed data collection would be required for design work.



CAPE COD
COMMISSION

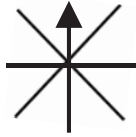


2018 Future Peak Month Turning Movement Volumes Falmouth RESET Spring Bars Road

Traffic volumes estimated based on data collated from multiple projects conducted by various entities including Commission staff, MassDOT, and Vanasse & Associates, Inc. as described in the report. Traffic volumes intended for illustrative purposes, more detailed data collection would be required for design work.



Collision Diagram

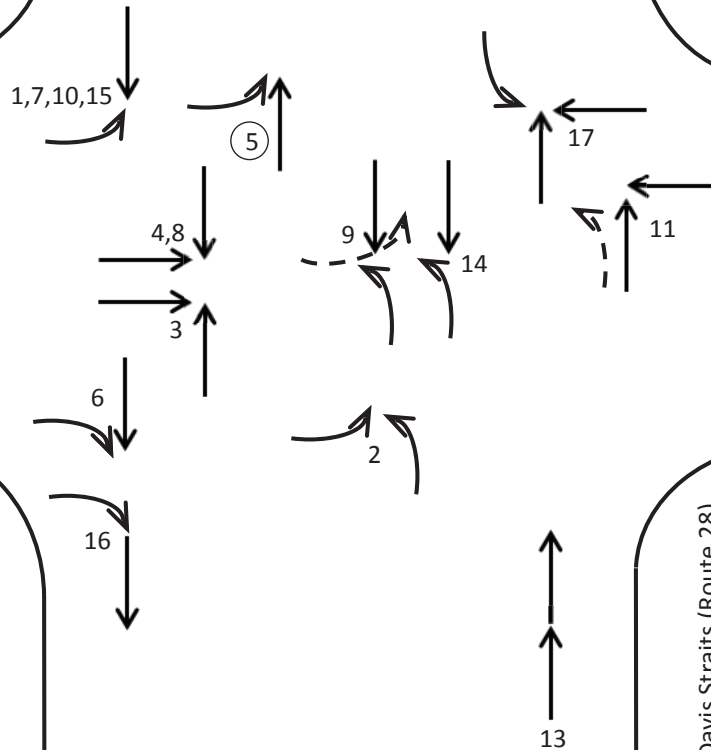


Indicate North by arrow



CAPE COD
COMMISSION

Name: Spring Bars Road



Name: Dillingham Avenue

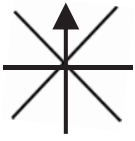
Name: Davis Straits (Route 28)

SYMBOLS	TYPES OF COLLISIONS	CRASH INFORMATION Each crash is numbered and additional information is included on the crash summary.
<ul style="list-style-type: none"> Moving Vehicle Backing Vehicle Non-involved Vehicle Pedestrian Bicyclist Parked Vehicle Parked Vehicle Fixed Object Fatal Crash Injury Crash 	<ul style="list-style-type: none"> Rear-End Head On Side Swipe Out of Control Turning Movement Right Angle 	<p>Notes:</p>

INTERSECTION Davis Straits (Route 28) AND Dillingham Avenue / Spring Bars Road

CRASHES FROM 2010 TO 2012

Collision Diagram

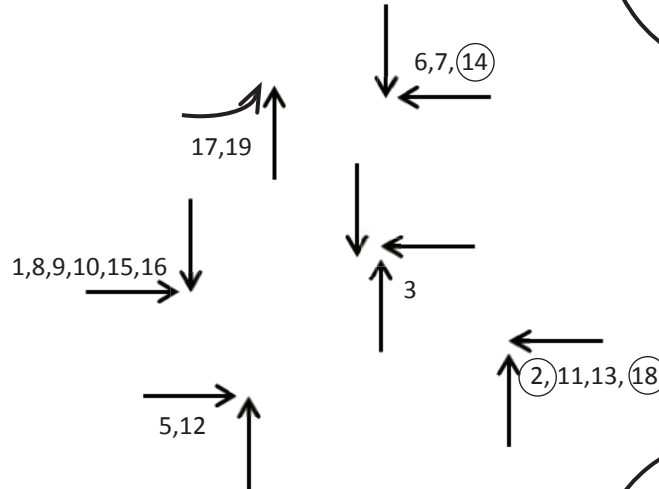


Indicate North by arrow



CAPE COD
COMMISSION

Name: Spring Bars Road



Name: Spring Bars Road

Name: Worcester Court

SYMBOLS	TYPES OF COLLISIONS	CRASH INFORMATION Each crash is numbered and additional information is included on the crash summary.
<ul style="list-style-type: none"> Moving Vehicle Backing Vehicle Non-involved Vehicle Pedestrian Bicyclist Parked Vehicle Fixed Object Fatal Crash Injury Crash 	<ul style="list-style-type: none"> Rear-End Head On Side Swipe Out of Control Turning Movement Right Angle 	<p>Notes: Crash #4 - unclear from description</p>

INTERSECTION Worcester Court AND Spring Bars Road

CRASHES FROM 2008 TO 2010



CAPE COD
COMMISSION

Appendix B

Housing Exhibits



Project Summary Information

NOTE: Do not fill out this section. It is automatically filled in by program.

Project Name	Spring Bars Rd - 100% tax credit		
Developer	N/A		
Community	Falmouth		
Number of Units	30		
SRO	0	Low-Income, Rental Assisted	7
0 bedroom	0	Low-Income, Below 50%	9
1 bedroom	3	Low-Income, Below 60%	14
2 bedrooms	21	Other Income (User-defined)	0
3 bedrooms	6	Market Rate	0
4 bedrooms	0		

This is an application for:	DHCD Tax Credit Allocation	No
	HOME Funding through DHCD	No
	MHFA Official Action Status	No
	MHFA Construction Financing	No
	MHFA Permanent Financing	No
	MHP Fund Financing	No
	MHIC Construction Loan	No
	MHIC Tax Credit Equity	No
	Boston: DND	No
	Other	N/A
Other	N/A	
Other	N/A	
Financing from Massdevelopment	No	

Sources of Funds:		Uses of Funds:	
Developer's Equity	\$0	Acquisition	\$0
Tax Credit Equity	\$5,000,000	Construction	\$5,954,630
Public Equity	\$500,000	General Development	\$1,321,256
Subordinate Debt	\$1,200,000	Developer Overhead	\$363,794
Permanent Debt	\$1,725,000	Developer Fee	\$727,589
Total All Sources	\$8,425,000	Capitalized Reserves	\$57,730
		Total All Uses	\$8,424,999

Uses Exceed Sources by	(\$1)
------------------------	-------

Rent Levels:		<i>BR (aver.)</i>	<i>SF (aver.)</i>
Low-Income, Rental Assisted	\$1,297	2.3	1021
Low-Income, Below 50%	\$814	1.9	940
Low-Income, Below 60%	\$1,018	2.1	991
Other Income (User-defined)	N/A	N/A	N/A
Market Rate	N/A	N/A	N/A
<i>Average, All Units</i>	<i>\$1,022</i>	<i>2.1</i>	<i>983</i>

Annual Operating Income (year 1):		Annual Operating Expense (year 1):	
Gross rental income (residential)	\$367,920	Management Fee	\$17,585
Vacancy (resid.) 4.41%	\$16,218	Administrative	\$45,000
Other Income (net of vacancies)	\$0	Maintenance	\$49,500
Subtotal	\$351,702	Res. Service, Security	\$0
Operating Subsidies	\$0	Utilities	\$58,200
Draw on Operating Reserves	\$0	Repl. Reserve	\$9,750
Total Annual Income	\$351,702	Oper. Reserve	\$0
		Taxes, Insurance	\$21,000
Net Operating Income	\$150,667	Total	\$201,035
Debt Service	\$130,838		
Debt Service Coverage	1.15	Total per Unit	\$6,701

Spring Bars Rd - 100% tax credit

N/A/UEI

Revised Date: 10/18/2011



CONSTRUCTION COST ANALYSIS

Recent AH Projects- New Construction	Cost	\$ per square foot cost	% of total cost	Total square footage & # units & project status
Route 134 Community Housing- Dennis*				28,905
Direct Building	\$4,540,408	\$157.08	67.6%	27 units
Site Work	\$1,328,040	\$45.94	19.8%	9 buildings
Indirect- Builder oh/profit/gen cond	\$849,751	\$29.40	12.6%	status: applied in DHCD
Total	\$6,718,199	\$232.42	100.0%	August 2013 funding round- 2nd request
Village Green- Barnstable*				66,609
Direct Building	\$7,125,748	\$106.98	72.1%	60 units
Site Work	\$1,540,935	\$23.13	15.6%	2 buildings
Indirect- Builder oh/profit/gen cond	\$1,213,336	\$18.22	12.3%	status: October 2013 loan
Total	\$9,880,019	\$148.33	100.0%	closing and start construction
Great Cove Community- Mashpee				11,122
Direct Building	\$1,384,560	\$124.49	55.4%	10 units
Site Work	\$820,328	\$73.76	32.9%	5 buildings
Indirect- Builder oh/profit/gen cond	\$292,187	\$26.27	11.7%	status: construction start-
Total	\$2,497,075	\$224.52	100.0%	March 1, 2013
Sally's Way- Truro				15,611
Direct Building	\$2,216,033	\$141.95	68.1%	16 units
Site Work	\$667,853	\$42.78	20.5%	6 buildings
Indirect- Builder oh/profit/gen cond	\$372,538	\$23.86	11.4%	status: construction complete
Total	\$3,256,424	\$208.60	100.0%	September 30, 2013
Thankful Chases Pathway- Harwich				12,421
Direct Building	\$1,681,334	\$135.36	62.6%	12 units
Site Work	\$573,038	\$46.13	21.3%	4 buildings
Indirect- Builder oh/profit/gen cond	\$433,262	\$34.88	16.1%	status: complete
Total	\$2,687,633	\$216.38	100.0%	as of Dec 2010



OPERATING COST ANALYSIS

Recent AH Projects- New Construction	Average Bdrm Size	Average Unit Size	Average Rents	Average Per Unit Operating Costs
Route 134 Community Housing- Dennis*	1.9	1028 sf	\$971	\$8,449
Village Green- Barnstable*	1.8	946 sf	\$980	\$7,613
Great Cove Community- Mashpee	2.2	1,112 sf	\$1,101	\$6,887
Sally's Way- Truro	1.9	889 sf	\$1,084	\$6,876
Thankful Chases Pathway- Harwich	2.1	1,021 sf	\$1,006	\$5,852
Schoolhouse Green- Falmouth*	1.2	689 sf	\$826	\$7,066
Province Landing- Provincetown*	1.6	832 sf	\$796	\$6,193
Clay Pond Cove- Bourne*	1.3	765 sf	\$798	\$7,433
Average Per Unit Operating- All				\$7,046
Average Per Unit Operating- Tax Credit				\$7,351
* Tax credit project				



TOTAL DEVELOPMENT COST ANALYSIS

Recent AH Projects- New Construction	Cost	Cost per unit	% of total cost	Total # of units & Buildings & Status
Rte 134 Community Housing- Dennis*				
Acquisition	\$0	\$0	0.0%	27
Construction	\$6,718,200	\$248,822	68.0%	9 buildings
Soft Costs	\$2,116,849	\$78,402	21.4%	status: applied in DHCD
Developer OH & Profit	\$1,048,000	\$38,815	10.6%	August 2013 funding
Total	\$9,883,049	\$366,039	100.0%	round- 2nd request
Village Green- Barnstable*				
Acquisition	\$1,570,000	\$26,167	9.8%	60
Construction	\$9,880,019	\$164,667	62.0%	2 buildings
Soft Costs	\$3,058,169	\$50,969	19.2%	status: October 2013
Developer OH & Profit	\$1,432,000	\$23,867	9.0%	closing and start of
Total	\$15,940,188	\$265,670	100.0%	construction
Great Cove Community- Mashpee				
Acquisition	\$0	\$0	0.0%	10
Construction	\$2,497,075	\$249,708	72.9%	5 buildings
Soft Costs	\$597,364	\$59,736	17.4%	status: under
Developer OH & Profit	\$331,070	\$33,107	9.7%	construction as of
Total	\$3,425,509	\$342,551	100.0%	March 1, 2013
Sally's Way- Truro				
Acquisition	\$0	\$0	0.0%	16
Construction	\$3,258,504	\$203,657	73.4%	6 buildings
Soft Costs	\$707,942	\$44,246	16.0%	
Developer OH & Profit	\$471,000	\$29,438	10.6%	status: complete as of
Total	\$4,437,446	\$277,340	100.0%	September 30, 2013
Thankful Chases Pathway- Harwich				
Acquisition	\$0	\$0	0.0%	12
Construction	\$2,687,633	\$223,969	72.7%	4 buildings
Soft Costs	\$620,083	\$51,674	16.8%	
Developer OH & Profit	\$391,062	\$32,589	10.6%	status: complete as of
Total	\$3,698,778	\$308,232	100.0%	December 31, 2010



Cape Cod Commission
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Barnstable, MA 02630

www.capecodcommission.org

A Department of Barnstable County Regional Government, Massachusetts