

# JERICO COMMERCIAL DISTRICT MASTER PLAN

An analysis of existing conditions, constraints and capacity in  
the Jericho Commercial District

Existing  
Conditions,  
Constraints,  
& Capacity  
Analysis

# Jericho Commercial District Master Plan

## Existing Conditions, Constraints and Capacity Analysis

### Executive Summary

DuBois & King, Inc. conducted an analysis of existing conditions, constraints to future development and interviewed stakeholders in order to identify a common vision for the Commercial District (CD). This process creates the foundation of information needed to develop potential approaches to encouraging new development within the Commercial District.

### Commercial District Today

The CD, from a land area standpoint, is well positioned to encourage future development. There is adequate available land for new development and the topography is reasonably flat. Natural resource constraints are limited to several small wetlands and river corridor areas. Soils are largely good for development and are good for on-site wastewater systems. Jericho's Land Use Regulations allow for a wide range of uses in the district, many of which require site planning and conditional use review. Allowable density is reasonably dense (1 acre minimum lot size) and aesthetic controls are not extremely restrictive.

### Barriers to New Development

Development is largely limited by the lack of public water and sewer. These utilities would be needed if the community were to allow for large-scale and/or high density development patterns, particularly those that are commercial in nature and require significant amounts of water. There is no consolidated wastewater in Jericho, which also limits building area. The extension of utilities will represent significant costs.

### Stakeholder Vision

Stakeholders indicate a preference for a mixed use pattern of development with residential and some forms of commercial development. New roads within the Commercial District are supported, particularly if they maintain the Route 15 corridor. Most interviewees felt that aesthetic considerations could be managed through good site planning and sensible site development. There is not a consensus on the role that the Commercial District should take in the community, in part due to its location between Jericho's villages, however, stakeholders largely agree that improved connectivity for walkers and bikers would bring value to the Commercial District.

# Jericho Commercial District Master Plan

## Existing Conditions Constraints and Stakeholder Opinion Analysis

### Overview

The purpose of the existing conditions, constraints and qualitative analysis is to adequately assess development potential and identify possible development strategies and approaches in the Jericho Commercial District (CD). This analysis had multiple components, which included:

#### Assessment of Current Conditions

Information was collected on existing land uses, identified natural resources, land available for development and existing infrastructure; including roads, water, power and other utilities.

#### Constraints Analysis

Potential impacts of constraints including natural resources, utility service limitations and regulatory barriers were identified.

#### Stakeholder Interviews

Interviews were conducted with multiple individual landowners, business owners and stakeholders to identify common themes among different parties that could be applied to future development.

## Existing Conditions Analysis

### Current Land Uses

The Jericho CD consists of approximately 131 acres of land located between the Village of Jericho Riverside and Jericho Village. Existing development is mixed use, with more residential than commercial (figure 1). Commercial development is largely service-based, offering a variety of options including auto repair, veterinary, and chiropractic service. There are three businesses that are primarily retail in nature.

There are no public amenities such as sidewalks or walking paths within or adjacent to the CD. State and municipal roads serve as the only connection that links the Commercial District to adjacent villages.

### LAND USES BY TYPE

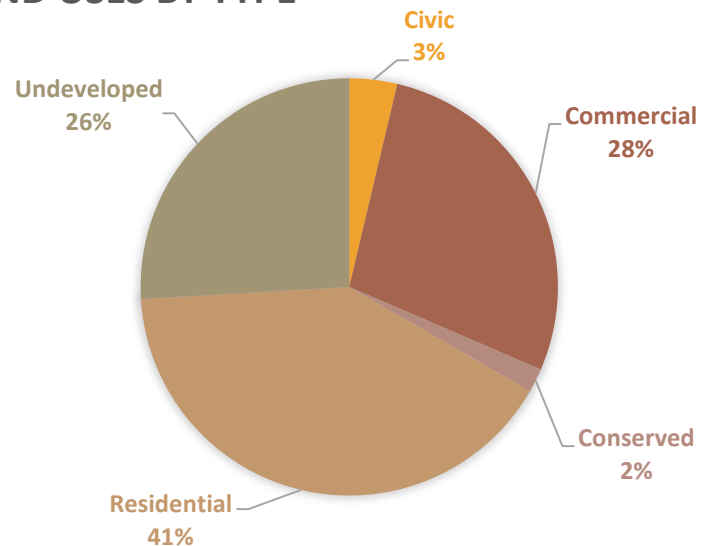


FIGURE 1: LAND USES BY TYPE

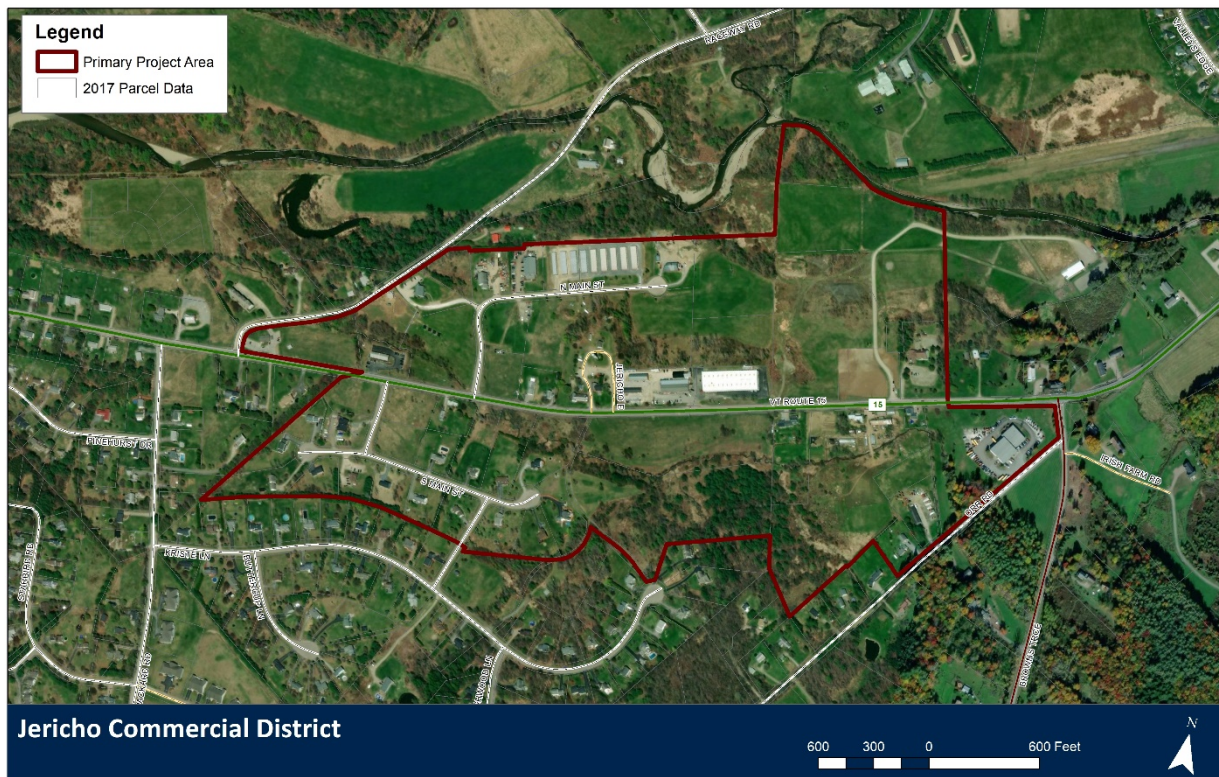


FIGURE 2: PROJECT AREA

## Natural Resources

Any land that is potentially available for new development may be limited in some capacity by natural resource constraints. In the Commercial district, this includes wetlands, flood hazard and river corridor areas, prime agricultural soils and hydric soils.

### Wetlands

There are two Class 2 mapped wetlands within the Commercial district which total roughly 5 acres in area. Class 2 wetlands are those areas that have been identified on the Vermont Significant Wetlands Inventory Map (VSWI). See **Appendix B, Map #2: Natural Resource Constraints – Water Related**.

### Flood Hazard & River Corridor Areas

Brown's river crosses north of the Commercial District. Much of the area surrounding the river is identified as FEMA (Federal Emergency Management Agency) 100 year floodplain and/or River Corridor Areas. The Commercial district is largely outside of the FEMA floodplain, although the northernmost parcels of the district do have some lands that are considered floodplain. Additionally, those properties are included as part of the Vermont River Corridor area. Development within the FEMA Floodplain and River Corridor Protection Areas are subject to regulation under Jericho's Jericho Land Use and Development Regulations. See Appendix B, Natural Resource Constraints – Water Related.

### Agricultural and Hydric Soils

Soils that have been identified by the Agency of Agriculture as Prime Farmland (see sidebar), are very common for river valley lands. A significant amount of the soil groups in the Commercial District identify as Prime or Statewide Prime Agricultural Soils. See **Appendix B, Map #2b: Natural Resource Constraints -Prime Agricultural Soils**.

## Existing Regulations

### Zoning

Jericho has a unified bylaw (combined zoning and subdivision regulation) that was adopted in August of 2018. This regulation outlines the specific dimensional and use standards for the Commercial District. See **Appendix B, Map #9: Jericho Zoning Districts**.

Uses allowed in the CD are broad, including a mix of commercial, industrial and residential uses. Most uses that have the potential for nuisances (such as heavy industrial) must seek a conditional use permit, which allows the Development Review Board to review site planning and other development impacts; and require conditions as part of approval.

## Prime Ag Soils

According to NRCS:

Prime Farmland has the soil quality, growing season, and moisture supply needed to economically produce sustained high yields of crops when treated and managed according to acceptable farming methods. These soils have an adequate and dependable water supply from precipitation, a favorable temperature and growing season, acceptable acidity or alkalinity, and few or no surface stones or boulders.

They are permeable to water and air, are not excessively erodible or saturated with water for a long period of time, and don't flood frequently or are protected from flooding.



The minimum lot size allowed in the CD is one acre, and maximum lot coverage (which includes building, parking, etc.) is limited to 60%. There are standards for "Planned Unit Developments," which can allow for higher density development if standards are met. 60,000 square feet is the maximum total allowed floor area for a building.

The Jericho Land Use and Development Regulation includes restrictions on development in and around certain natural resources. There is a requirement that development not take place within 50ft of a mapped wetland. The River Overlay District restricts the type of allowed development within the mapped floodplain or within 100 feet of the floodplain.

#### *Act 250*

Because Jericho has combined zoning and subdivision regulations, the Act 250 trigger for new commercial development is set at 10 acres.

#### *Local Road Standards & Access Management*

Jericho adopted Road and Bridge Standards in 2013. While these standards generally apply to public roads, if a developer intends to have the municipality take over a road in the future, they would need to design the roads to meet these standards. These standards also apply to ditches, culverts and bridges. Any new development that accesses town roads is required to seek an Access Management permit from the Selectboard.

#### **Existing Infrastructure**

A majority of the basic utilities which serve properties in the Commercial District, such as electric, gas, cable, telephone, etc, are privately owned. See Appendix B, Map #3: Existing Utilities.

**Water** – Water is provided to existing development in the commercial district by a mix of private wells and the Champlain Water District, via the Jericho East Homeowners Association's private water distribution system.

There are more than ten identified private wells in the commercial district, most of which serve single residences or apartments. At the end of North Main St. there is a well that used to serve the Jericho East housing development (see sidebar) and offers the potential of significant access to water if manganese contamination issues are mitigated. At the moment, the water from this well is considered non-potable, but could be used for industrial purposes.

#### **JEHA Water**

The Jericho East development was originally served drinking water through a private system fed by a well located at the end of North Main St.

Vermont State law requires regular testing of water systems that serve an average of 25 people per day. In 2015, the well tested for elevated levels of manganese.

Estimated costs to install a system that would clean manganese out of JEHA's drinking water came to roughly \$450,000. Rather than make a significant investment in the well, they chose to connect to the Champlain Water District in Jericho Village.

Champlain Water utilizes a single meter for the Jericho East development, billing the homeowners association directly. The total cost of water service is then split equally between users.

This arrangement would have to change if commercial or industrial users were added to the system.

**Electricity** - Electricity is distributed to Commercial District properties via Green Mountain Power. In addition to single-phase electrical service, there is 3-phase power along Route 15, South Main St. (which used to serve a pump house in the JEHA water system) and North Main St. Service continues north from the former JEHA well to Raceway road. Several of the undeveloped parcels in the CD do not have direct access to existing 3-phase power, future commercial or industrial development on these parcels will require extending the service.

The current grid that serves power in and around the CD has had some upgrades that facilitate expanding the availability of 3-phase power into additional properties. GMP recently upgraded the line between Browns River and Clark's Truck with 477 size wire, which is needed for additional 3-phase. Along Route 15, the existing 3-phase line needs to be upgraded (currently 336 size wire). GMP plans to re-conductor along RT15 between Browns River and the substation. According to GMP staff, this will most likely happen in the next year.

**Telephone/Cable/Broadband** - Cable, telephone and internet access are provided through Comcast (cable) and Consolidated Communications (formerly Fairpoint). Cable, telephone and broadband are governed by the State of Vermont's Department of Public Service and must renew their Certificate of Public Good (CPG) on a yearly basis. Under the CPG the terms of the company's operations, coverage area and service are defined.

Costs for extending services to unserved properties are generally borne by the developer and/or future customers of the service. Typically, costs can exceed \$15-25 per line mile, but vary greatly depending on topography, existing infrastructure and other constraints. The following formula is used to determine contributions-in-aid-of construction for cable extensions:

Any line extension policy that requires contributions-in-aid-of-construction shall not require a contribution in excess of the amount required by the following formula:

$$A = (CT / N) * (1 - (N / (H * L)))$$

where A is the dollar contribution from each new customer; CT is the actual cost of the line extension; N is the number of verified subscribers on the extension who will be making the contribution in aid of construction; L is the length of the extension in miles; and H is a number designated by the cable company's tariff representing the number of verified subscribers per mile, counting all the miles proposed on the extension, above which the company will not require a contribution-in-aid-of-construction.

**Gas** - VT gas offers natural gas service in the more densely populated parts of Jericho (Jericho Village, Jericho Riverside, etc.). The primary gas line between Jericho Village and Riverside follows Raceway Rd. Service in the Commercial District is limited to the JEHA and along Route 15 to Clark's Truck Center.

The cost of extending gas service to unserved properties is roughly \$30 per foot for residential (commercial development is priced on a case-by-case basis), with the

1 expectation that construction costs are paid off over ten years. The target number of  
2 hookups VT Gas is seeking for a line extension is one home per 100ft. For extensions to  
3 single users or new developments, the total cost is based on the number of confirmed  
4 users and actual installation costs.

5 **Wastewater** – There is no public or private centralized wastewater system in the  
6 Commercial District or surrounding areas. However, it is important to note that there is  
7 adequate area for shared onsite wastewater treatment.

8



## Constraints Analysis

The study of existing conditions allows for the identification of constraints or barriers to future development. Constraints can come in the form of natural resources which may require more significant site work or engineering, or additional permitting and regulatory conditions. They can come in the form of costly extensions of services or reduced property value due to the lack of available services.

### Land Use Constraints

Jericho has been actively pursuing development plans within its villages with a focus on creating walkable, mixed-use patterns of development that will attract new residents who want to live in walkable communities. In Jericho Riverside, the newly constructed Jericho Market will serve as a cornerstone for future development. If development in the Villages outpaces development in the Commercial District, it will ultimately limit the types of businesses that can be successful in the CD. For example, with the presence of the Jericho Market, the community unlikely to be able to support an additional grocery store in the Commercial District.

The Commercial District's location outside of the villages makes it an isolated area that can only be accessed easily by car. With limited bike or pedestrian infrastructure, and a Route 15 that favors cars over pedestrians, it is unlikely that a sense of connectivity between the villages and the CD will occur under existing conditions. This is particularly significant because younger families more likely to seek out locations that offer opportunities for active transportation. <sup>1</sup>

### Natural Resource Constraints

#### Wetlands

Development within or adjacent to wetlands is generally prohibited and are subject to regulation under Jericho's Land Use and Development Regulations as well as at the state level. Class 2 wetlands cover about 5 acres of land in the district. The presence of wetlands could have a significant impact on two to three undeveloped parcels, and two currently developed, but subdividable parcels.

Development within or adjacent to wetlands is generally prohibited and are subject to regulation under Jericho's Land Use and Development Regulations as well as at the state level. Note that the impacts of wetlands could be mitigated if a developer chose to hire a licensed wetland biologist to determine if the wetland is actually present and if so, what its exact boundaries are. With the appropriate information, the developer could negotiate with the Department of Environmental Conservation to reclassify the wetland.

#### Floodplains & River Corridors

The impacts of flood hazard areas on the northernmost parcels in the Commercial District is limited to approximately 2-3 acres.

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<sup>1</sup> Active Transportation & Real Estate, Urban Land Institute, 2016

### *Prime Ag Soils*

While local regulations generally do not have significant requirements for the protection of Prime Ag soils, Criterion 9(B) of Act 250 does consider impacts to these soils. Typically, a development that falls under Act 250 Jurisdiction will need to be designed in a manner that limits impacts to Prime Ag soils or, in situations where it is impossible to do so, off site mitigation may be allowed for a fee, which can be costly to the developer.

### *Hydric Soils*

Hydric soils are present in areas immediately adjacent to the Browns River. While there are no regulatory barriers to developing in hydric soils (unless they are further identified as wetlands or vernal pools), there can be physical challenges. Soils that are too wet or poorly drained can increase the cost of development due to the site design and engineering needed to mitigate wet soil conditions. Further, state regulations with regard to onsite septic require separation from the seasonal high water table. In soils that are immediately adjacent to the river, the water table may not be far from ground level, which would require a more complex disposal system to achieve the necessary separation.

### *Regulatory Constraints*

The Jericho Land Use and Development Regulations controls all development in Jericho.

### *Wetlands*

No development is allowed within 50ft of a mapped wetland.

### *River Overlay*

The River Overlay District restricts the type of allowed development within the mapped floodplain or within 100 feet of the floodplain (or less than 5 feet above base flood elevation) to the following:

- Agriculture
- Silviculture/Forestry
- Farmer's Markets
- Passive Recreation
- Wildlife Management

The Bylaw does provide a methodology for determining lands to be outside of the SFHA and/or above base flood elevation.

### *Building Height*

One of the ways to encourage more significant density is to allow for taller buildings with additional floor area. Building heights in the Commercial District are limited to 34 feet, which is roughly the height of a three story building.

### *Allowable Density*

Commercial developments that are not part of a Planned Unit Development are limited to a maximum density of one unit per acre. Density is also limited by the lack of public wastewater. If access to water and wastewater were available, density could – if allowed under the zoning regulations – be higher.

### *Floor Area*

The maximum amount of floor area for a primary building allowed in Jericho is 60,000 square feet (with exceptions for schools and agricultural structures). Floor area is the total square footage of all floors of a building. For example, a three-story building with a 60,000 square foot total floor area, would be limited to a building footprint of 20,000 square feet (20,000 square feet X 3 floor = 60,000 square feet).

### *Lot Coverage*

Lot coverage requirements dictate the maximum amount of buildable area on a lot, in the case of the Commercial District, that threshold is 60%. For example, on a one-acre parcel (43,560 square feet), the maximum allowed lot coverage for a commercial development is 26,136 square feet, which includes the building itself, parking, roads, walkways, etc.

### *State Regulations*

All development in Vermont is, to varying extents, governed by State Regulations. State regulations that might have an impact on development in the Commercial District would include rules associated with wetlands, floodplains and subdivision/potable water supplies. While Act 250 does not generally trigger in Jericho on commercial developments under 10 acres, there are many other regulations that proposed developments must adhere to.

### *Infrastructure Constraints*

#### *Wastewater*

The most significant constraint on development in the Commercial District is limited access to existing public water and a lack of centralized wastewater.

The size of a wastewater system is determined by the use and can be tied to square footage as well. A three bedroom single-family home is estimated to use 420 gallons per day, which would require approximately 1000 square feet of area dedicated to the wastewater system (and replacement field); if a mound system is required the approximate square footage is doubled. State regulations prohibit wells and wastewater systems from being too close to each other in order to avoid contamination. When accounting for separation distances from a well, roads, house, etc. it can be challenging to develop less than an acre without some sort of off-site wastewater system.

For commercial uses, the amount of area needed for onsite wastewater disposal depends largely on the type of use, number of employees and number of customers.

As an example, 60,000 square foot supermarket with a meat department (including a garbage grinder) must have a wastewater system that is designed to handle 6,600 gallons of effluent per day; a veterinary clinic (with 3 or less doctors) and no animal boarding, 750 gallons per day.

#### *Water*

For those parcels with no direct access to water, a drilled well will be needed. As with wastewater, there are limitations on drilled wells relative to separation distances from structures, wastewater systems, roads, etc. Additionally, certain types of uses require specific volumes of water. Because determining flows from a potential drilled well site is an inaccurate science, it is more desirable to connect to a public system or existing well with clearly defined water capacity.

#### *3-Phase Power*

Green Mountain Power identified one potential constraint which might limit the potential for significant commercial or industrial use in the Commercial District. The transformer that currently feeds the area may not be sufficient for industrial or some commercial uses. GMP Substation operations believes there is room in the substation for a larger transformer, which would require permitting, oil containment and larger regulators. The rough estimate of cost for this installation would be \$500,000 to \$1,000,000.

## Stakeholder Opinion Analysis

### Methodology

In order to inform the existing conditions and constraints analysis, and to gain essential anecdotal information to inform the project, interviews were conducted in person and via phone during two months – June and September. Interviews were generally kept informal, with the primary focus of questions geared toward determining what the interviewee would like to see happen in the Commercial District. Interviews typically took between 30 minutes and an hour to conduct. The following individuals were interviewed:

- Glenn & Ellie Martin
- David Villeneuve
- Randy Clark
- Susan Bresee
- J.D. Bugbee
- Katie Forlio
- Lee Ann Banks
- Bob Mulcahey
- David Raphael
- Bill Gardner
- Demetrios Michaelides
- Gordon Winters

Several others were contacted about interviews but were either unable to interview or did not respond.

- Matt Zambarano
- Hugh Griffith
- Steve Barnington
- Linda Irish

### Common Themes

The intent of the interviews was to collect comments from multiple sources and identify common themes among everyone. Interestingly, there was not a strong consensus among interviewees as to how development should unfold in the Commercial District. For example, one individual indicated that they felt that the Commercial District should function as a downtown. Some felt that landowners should not be “micro-managed” while others felt that design control and other site planning tools should be considered. This is likely a fair representation of how the community at large would consider the same question. Despite the lack of consensus, there were several common elements that can be identified.

### *Land Uses and Land Use Patterns*

The most consistent theme favored among interviewees was mixed use development. Virtually everyone identified some sort of balance between residential and commercial development. However, opinions on the approach to mixed-use varied significantly. Some indicated multi-story downtown style-buildings as a preference, while others preferred a style more consistent with a more rural location (i.e. less dense, more traditional buildings, etc.)

Types of uses commonly mentioned included elder housing, small single family homes, rental housing, services, restaurants and indoor recreation. Retail development was favored by several individuals, but others indicated skepticism that retail would be financially viable if it were in direct competition with retail within the Riverside district.

Most interviewees did not feel that restrictive parking requirements were needed, but instead much could be done with site planning tools like screening. Additionally, many felt that views from Route 15 could be protected through site planning and the topography can be utilized to allow taller buildings in some areas and still minimize visual impacts.

There was not a clear consensus on scale in the Commercial District. Some wanted no maximum building size thresholds, others favored some, and still more wanted smaller scale. Generally all people interviewed indicated an interest in higher density as long as it was mixed use in nature.

### *Utilities/Services*

The expansion of utilities into the Commercial District was universally favored by interviewees that owned property in the Commercial District, however several acknowledged that who should be responsible for funding infrastructure improvements was questionable. During one interview an owner indicated that he would love to improve his existing buildings, but could not "renovate or put up something new and tell potential renters that they don't have access to water and sewer." One key point that was made is that the lack of adequate water prevents expansion that would require fire suppression sprinkler systems.

### *Transportation*

A number of interviewees indicated that new development should be accessed via internal roads rather than directly onto Route 15. Walkability (sidewalks, paths, etc.) was supported, particularly if there were a way to connect the Commercial District to both villages.



# Jericho Commercial District Master Plan

## Capacity Analysis

### Land Capacity & Development Potential

Lands within the Commercial District were analyzed for development potential. Many parcels, particularly south of Route 15 in the Jericho East Homeowner's Association are fully developed, those parcels were eliminated for consideration in terms of development potential. Some parcels with existing development are large enough that subdivision is possible, particularly if there is an off-site option for water and wastewater. These were included in the analysis with all undeveloped parcels. Several properties identified as potentially developable were removed from consideration due to the presence of natural resource constraints, such as wetlands or river protection areas.

A total of 16 parcels have the potential for development. Four of the sixteen parcels have existing development, but the available land area to be subdivided. The remaining properties are undeveloped. Note that two properties along N. Main St. were included in the calculation of available land despite having mapped wetlands – visual inspection did not show clear indications of wetland species. A detailed wetland delineation would need to be made to determine the presence of wetland species on these parcels. (See Appendix B, Map #10 – Developable Parcels)

A GIS Analysis of the lands within the Commercial District was conducted using the following factors to grade the general develop-ability of parcels within the Commercial District:

- Proximity to Natural Resource Constraints (wetlands, floodplains, river corridor areas)
- Distance from roads
- Distance from existing utilities
- Existing development (parcels that are subdividable, but include development)

The analysis ranks parcels based on these factors. The resulting data indicates that, excluding areas that are entirely constrained by natural resources, virtually every potentially developable property in the Commercial district has good capacity for development – even the lowest scoring property scored well (See Appendix B, Map #11 – Development Analysis). The only significant constraint beyond natural resources, is the lack of water and wastewater service.

### Water System Extension

The Constraints Analysis identified a need to for potable water in the Commercial District, particularly if higher density is a priority. For the purpose of this project, five approaches to expanding water service into the Commercial District were considered:

- 1 • **Utilizing exclusively onsite individual drilled wells** – Well data indicates that there  
2 is a strong supply of groundwater in the Commercial District. However, due to  
3 setback limitations relative to wells, septic systems and the built environment, it  
4 becomes spatially challenging to develop individual wells in a dense pattern.  
5 Further, the greater the number of wells, the more significant the drain is on the  
6 underground water source.  
7
- 8 • **Utilizing the Jericho East Homeowners Association well** – One option for parcels  
9 near North Main St. is to utilize the former well owned by the JEHA. The well,  
10 which produces roughly 100 gallons per minute, or 144,000 gallons per day,  
11 could have a filtering system installed that would make the water potable. For  
12 the purposes of this analysis, a rough factor of 9.38ft<sup>2</sup> \* GPD was used to  
13 determine how many square feet of commercial development could be served  
14 by the well<sup>2</sup>. It should be noted that this factor is an estimate only, and further  
15 engineering study will be required on a site-by-site and use-by-use basis to  
16 pinpoint accuracy. For planning purposes, these numbers are reasonable. In  
17 theory, the well could provide water to between 600 thousand & 1.3 million  
18 square feet of mixed-use commercial development. JEHA was provided an  
19 estimate of just over \$450,000 to engineer and install a system that would clean  
20 the manganese out of the well water, but it is likely that costs for this option  
21 would be significantly higher. These cost estimates do not include the cost of  
22 extending lines to new areas within the Commercial District.  
23
- 24 • **Connecting to the Jericho Underhill Water District System** – The public system that  
25 distributes water in Jericho Riverside and Underhill Villages could, in theory, be  
26 connected to the Commercial District. However, costs would be greater for  
27 extending service due to distance, and because the system is well-driven there  
28 may be capacity limitations with regard to available water. As a result, this  
29 approach was dismissed due to potential costs.  
30
- 31 • **Connecting to the Champlain Water District System via the JEHA Connection** -  
32 There is the potential to access the Champlain Water District's system through  
33 the Jericho East Homeowners Association system which runs to the end of North  
34 Main St. However, the lines on North Main St. are 4", which would not provide an  
35 adequate water capacity for significant commercial water users. To  
36 accommodate new development in unserved areas, line size needs to be  
37 scaled to allow for many users. Further, if state code requires fire suppression  
38 sprinklers, additional water capacity would be needed. Typically, to ensure  
39 adequate water service and water pressure when expanding a system off of a  
40 main line, a minimum of 6-8" pipe would be warranted. Any connection to the  
41 JEHA system would require authorization from the system's owners as well as  
42 Champlain Water.  
43
- 44 • **Direct Connection to Champlain Water District** - It is also possible to connect to  
45 Champlain Water directly by linking to the system along Route 15 near Jericho

<sup>2</sup> Pathways to a Vital Economic Center: Bradford Buildout Analysis, Capacity Study and  
Economic Development Analysis, Dubois & King, 2017 | Existing Conditions, Constraints, & Capacity  
Analysis

Village. The installation of a new line that follows Route 15 would be expensive, roughly \$220 a foot to engineer, permit and install a 12" service line. To extend a 12" water main along Route 15 from Packard Rd to Browns Trace (roughly 4,900 feet) could cost \$1,000,000 or more. The Champlain Water District has the largest available capacity of any system within the scope of the project. Connecting to the District may be the most viable approach to extending water service to the Commercial District.

## Wastewater

There is adequate land within the Commercial District and surrounding area to consider the creation of a shared onsite wastewater system that serves the District. Shared onsite wastewater systems allow for increased density over individual systems. This is, in part, because each system has its own required setbacks from water supplies, buildings, roads, etc. Additionally, from parcel to parcel, soil types can vary – the poorer the soils, the larger the system required to process effluent. Additionally, for residential properties, the required design flow for systems decreases based on the number of units.

To identify ideal locations for such a system, potential parcels within and around the district were identified (See Appendix B, Map #8 – Onsite Wastewater Potential). Soils were analyzed using NRCS soils data in ArcGIS to determine which parcels provided the highest potential for use for wastewater. Out of the five locations initially identified, three were targeted as promising sites.

To calculate rough potential costs, projects of similar scope and scale were reviewed and a basic cost per square foot of leachfield factor of \$25/SF was developed. This factor represents the construction costs including the disposal fields, septic tanks, pump station, control panel, and miscellaneous associated construction. The potential approximate costs are as follows:

- **Area A:** 23,750 square feet of land involved in the leachfield area x \$25/SF = \$594,000
- **Area B:** 35,000 square feet of land involved in the leachfield area x \$25/SF = \$875,000
- **Area C:** 122,500 square feet of land involved in the leachfield area x \$25/SF = \$3,062,000