

4 Affected Environment, Environmental Consequences, and Mitigation

4.19 Utilities and Services

4.19.1 Introduction

This section assesses the No Build and Build Alternatives for potential effects on existing utilities, including water, sewer/septic systems, gas, electrical, and communications. **Section 4.10, Water Quality and Stormwater**, addresses the effects of the No Build and Build Alternatives on the stormwater drainage system.

4.19.1.1 Methodology and Study Areas

The existing utility locations were identified using a combination of methods. The Massachusetts Department of Transportation (MassDOT) performed aerial Light Detection and Ranging (LiDAR) survey information of the Study Area to identify aboveground utilities. This information was supplemented with topographic survey and measured pipe inverts within drainage/sewer structures. MassDOT also obtained system maps from the public and private utility owners to provide additional information on underground items. An additional Level B Subsurface Utility Engineering survey was performed on key utility infrastructure components to determine horizontal locations more accurately.¹

MassDOT identified utility impacts by overlaying the preliminary design details to identify areas of conflict with existing infrastructure either horizontally or vertically. These conflict areas were then evaluated to see if they could be minimized prior to determining the final limits of the relocation.

The Sagamore Bridge and Bourne Bridge Study Areas for this assessment are defined in **Chapter 3, Proposed Action and Alternatives**, and depicted on **Figure 4.19-1**.

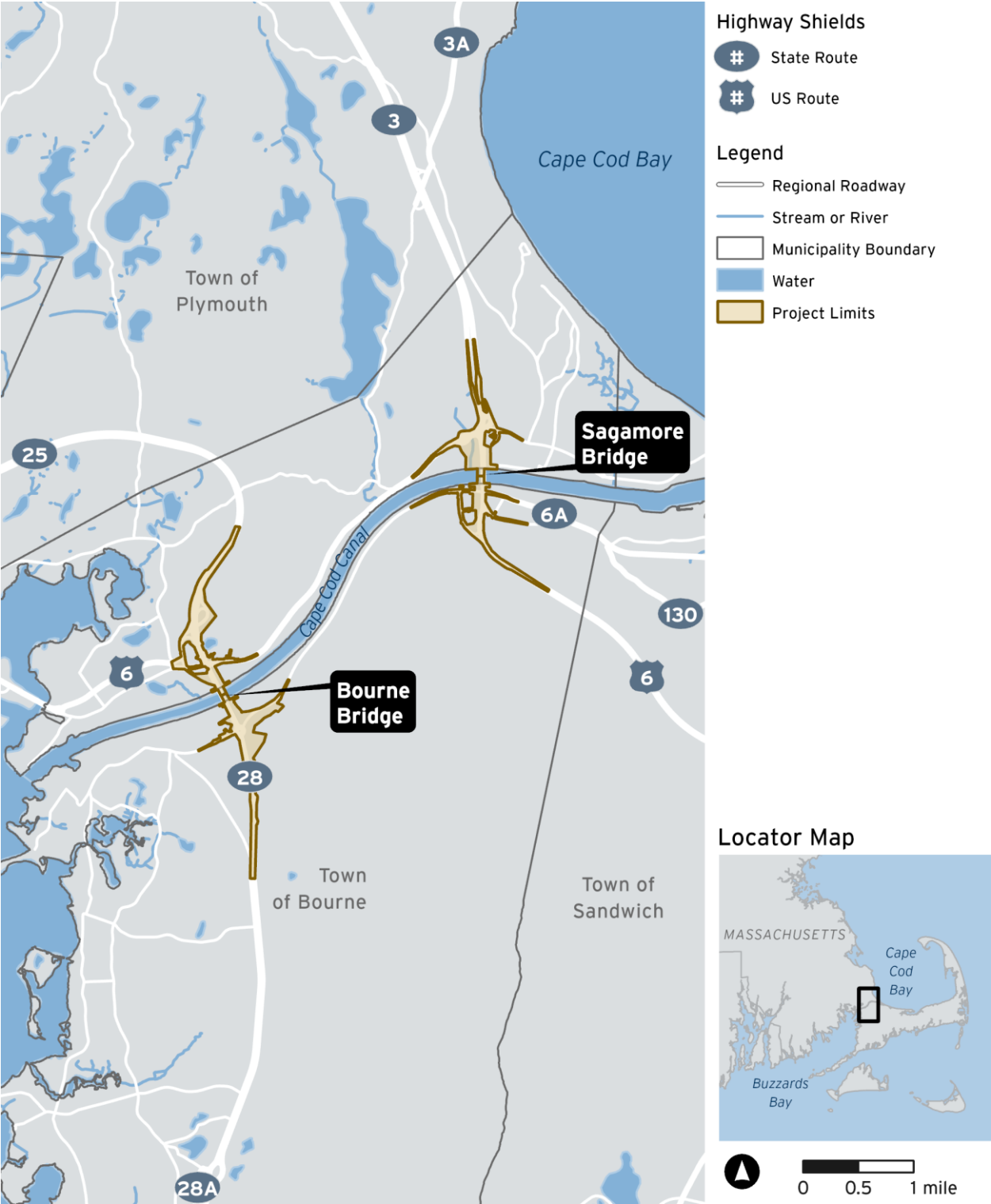
4.19.2 Affected Environment

The Sagamore and Bourne Bridges each carry utilities across Cape Cod Canal, including natural gas (via National Grid [NGrid]), fiber optics for telephone and cable (permitted to Verizon New England [Verizon] and leased to others), and electric lines and communications for the U.S. Army Corps of Engineers (USACE). **Figure 4.19-1** does not depict the utilities on the existing bridges and their routing due to safety and security concerns, and the sensitive nature of this infrastructure.

The USACE owns and is responsible for maintaining utilities and utility poles along the Canal Service Roads that parallel both sides of the canal and within the Cape Cod Canal Federal Navigation Project lands. Verizon maintains all utility poles in public streets north of the canal, and Eversource Energy (Eversource) maintains the utility poles in public streets south of the canal.

¹ A Level B Subsurface Utility Engineering survey is used to locate and identify underground utilities using surface geophysical methods.

Figure 4.19-1. Public Utilities Study Areas



Source: Massachusetts Department of Transportation, 2024

The remainder of this section further describes the utilities within the Study Areas. The discussion identifies the location of utilities by the following Study Area quadrants:

- Sagamore North
- Sagamore South
- Bourne North
- Bourne South

4.19.2.1 Water Distribution Infrastructure

Three separate water districts serve the Study Areas:

- North Sagamore Water District provides water service north of the canal in the Sagamore North quadrant.
- Buzzards Bay Water District provides water service north of the canal in the Bourne North quadrant.
- Bourne Water District provides water service to areas south of the canal, including the Bourne South and Sagamore South quadrants.

Within the Study Areas, waterlines ranging from 2 to 16 inches in diameter run beneath local roadways and connect the distribution system to individual properties. [Figure 4.19-2](#) and [Figure 4.19-3](#) illustrate the service areas of the water districts within the Study Areas at Sagamore Bridge and Bourne Bridge, respectively.

4.19.2.2 Sewer/Septic Infrastructure

The Town of Bourne Board of Sewer Commissioners manages the municipal sewer system in the village of Buzzards Bay that serves a small portion of the Study Area in the Bourne North quadrant. It provides sewer connections to approximately 1,000 units west of the Bourne North quadrant of the Study Area, including the Main Street area of Buzzards Bay. The current system terminates just west of Bourne Bridge beneath U.S. Route 6. The force main for this area runs along U.S. Route 6 to the west, eventually connecting to the Wareham Water Pollution Control Facility. Since August 2021, the Town has operated a new municipal Wastewater Treatment Facility (WWTF) at Queen Sewall Park in Buzzards Bay, diverting flow from portions of the existing sewer system to the WWTF. Additionally, there are ten permitting groundwater discharge wastewater treatment facilities in the town servicing a mix of public and private entities; entities within the Bourne South Study Area include the Upper Cape Cod Regional Technical School. The Bourne Recreation Authority is considering a proposed sewer system within Bourne Scenic Park, to be built in phases, which could entail a future connection to the Wareham or Queen Sewall Park facility. All other properties within the Study Areas rely on private septic systems for wastewater treatment under the supervision of the Town of Bourne Health Department. [Figure 4.19-4](#) illustrates the sewer service area managed by the Town's Board of Sewer Commissioners.

Figure 4.19-2. Water Service Districts (Sagamore Bridge Study Area)



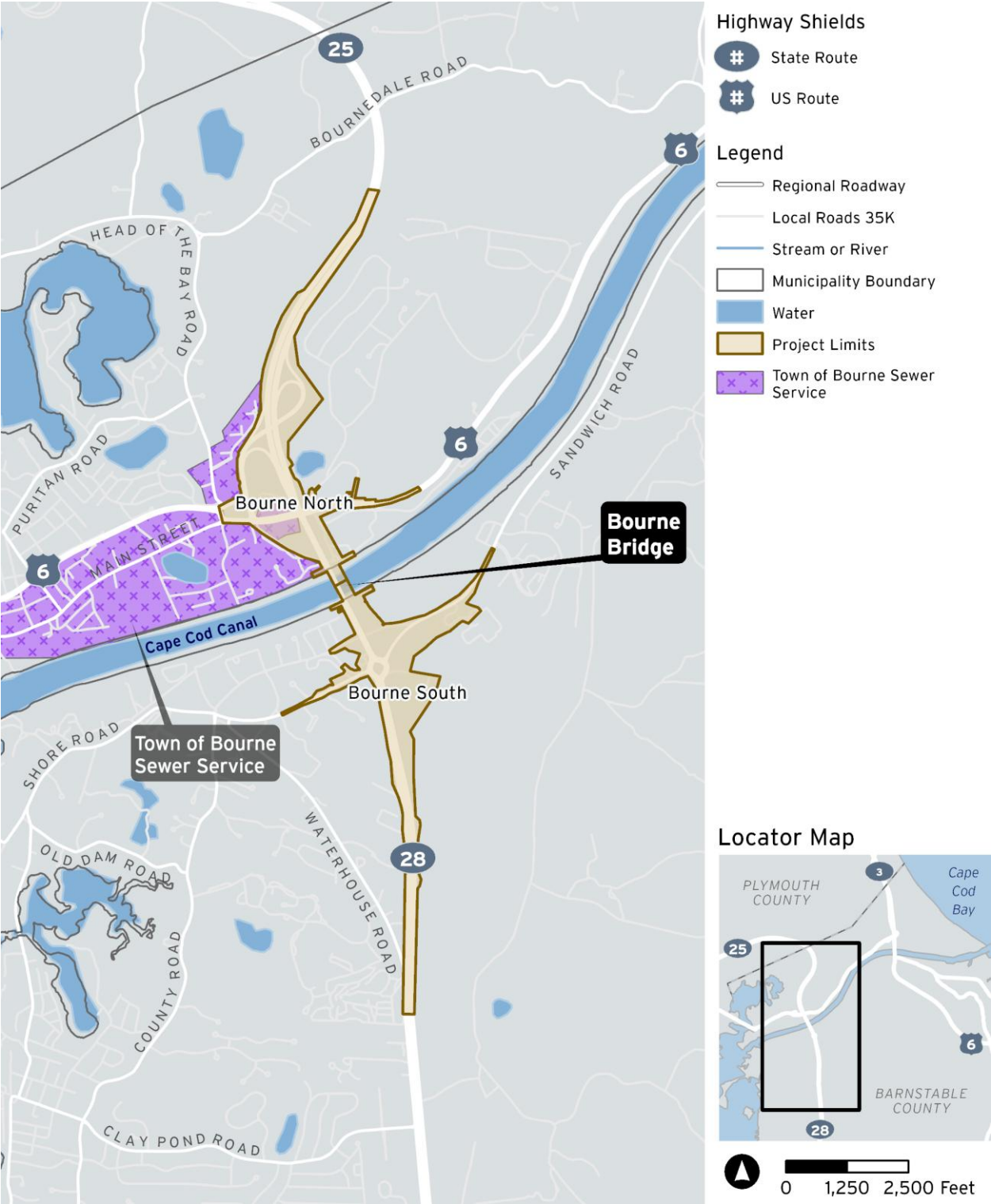
Source: Massachusetts Department of Transportation, 2024

Figure 4.19-3. Water Service Districts (Bourne Bridge Study Area)



Source: Massachusetts Department of Transportation, 2024

Figure 4.19-4. Town of Bourne Sewer Service Area (Bourne Bridge Study Area)



Source: Massachusetts Department of Transportation, 2024

4.19.2.3 Gas Infrastructure

Enbridge (doing business as Algonquin Gas Transmission) supplies natural gas to the Study Areas through high-pressure interstate transmission pipelines that terminate at two metering and regulating stations located north of Cape Cod Canal in the vicinity of Sagamore and Bourne Bridges. From these stations, NGrid distributes natural gas throughout the Study Areas. NGrid provides local distribution to customers north of the canal and operates high-pressure transmission mains that cross the canal on Sagamore and Bourne Bridges to serve customers south of the canal. Within the Study Areas, gas lines range from 2 to 12 inches in diameter.

The NGrid gas line on Bourne Bridge ends at a valve station south of the canal, adjacent to the bridge. NGrid's local distribution network provides gas service from this valve station south toward the town of Falmouth and east to serve approximately half of Cape Cod. Similarly, the NGrid gas line on Sagamore Bridge ends at a valve station in the vicinity west of the bridge. NGrid's local distribution network provides gas service from this valve station south and east toward the town of Sandwich and the remainder of Cape Cod. These two systems operate independently south of the canal and are not connected. The gas supply and distribution network are not depicted graphically due to safety concerns and the sensitive nature of this infrastructure.

4.19.2.4 Electrical Infrastructure

High-voltage transmission lines owned by Eversource supply electricity to the Study Areas.

Figure 4.19-5 depicts the location of these transmission lines over U.S. Route 6 in the Sagamore South quadrant and over State Route 25 in the Bourne North quadrant. Eversource provides electrical service to the Study Areas via overhead distribution lines along street utility poles with service drops to residences and businesses.

4.19.2.5 Telecommunications

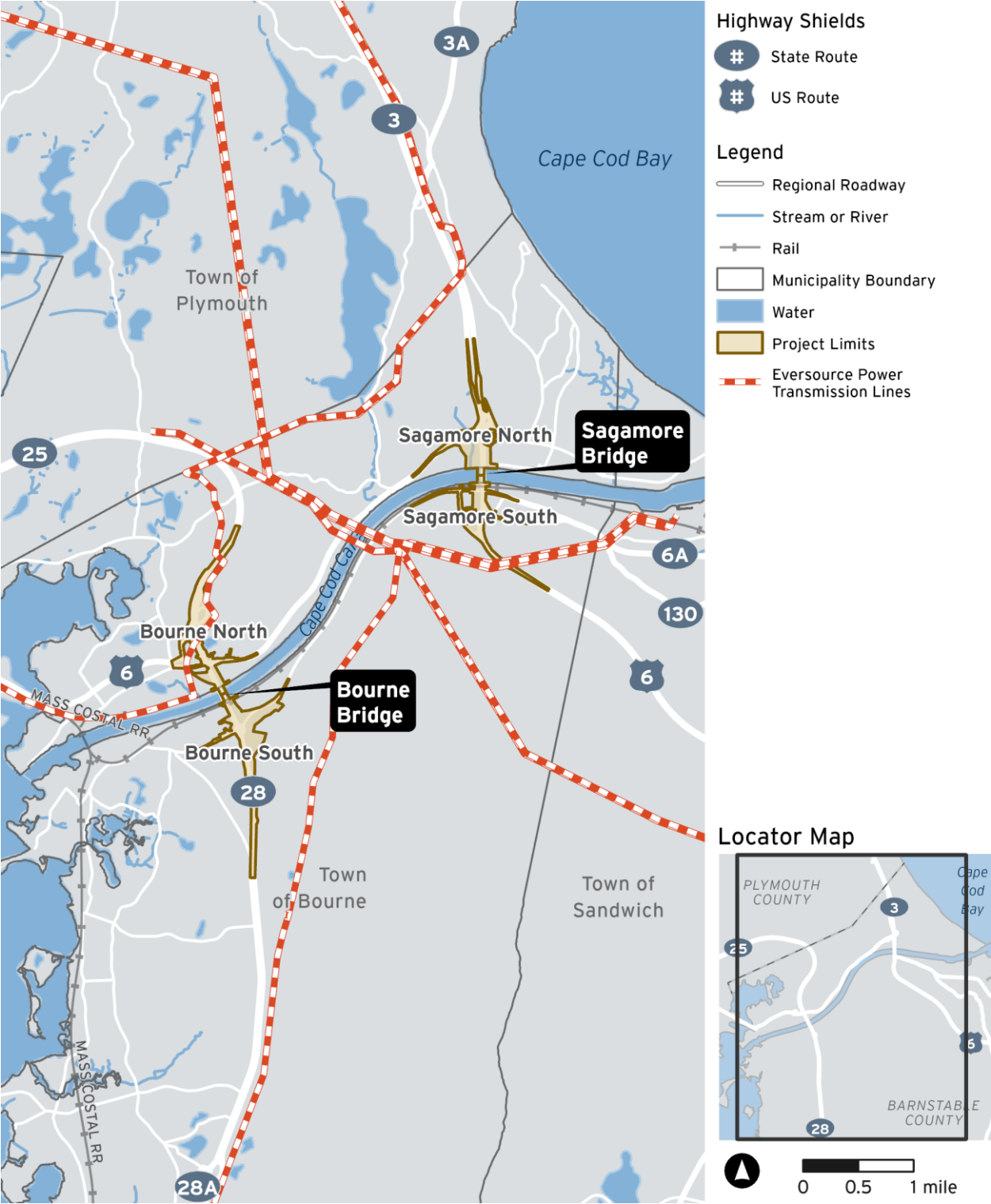
The fiberoptic lines that provide service to all of Cape Cod are carried across the canal on the two bridges. Verizon operates the existing communications conduit on the bridges under a permit from the USACE. Verizon leases this conduit to OpenCape and Comcast. Fiberoptics from the following companies provide cable and internet service within the Study Areas:

- Comcast Cable Communications Management, LLC (Comcast)
- Crown Castle
- Eversource
- OpenCape
- Verizon (provides telephone service within the Study Areas)

4.19.2.6 USACE Utilities

The bridges carry electric lines for the USACE for street lighting, canal lighting for watercraft navigation, navigation lighting on the bridges, and communications for the radar stations along Cape Cod Canal supporting the Cape Cod Canal Federal Navigation Project. The USACE owns and is responsible for maintaining the utilities and utility poles along the Canal Service Roads that parallel both sides of the canal and within other Federal Navigation Project lands.

Figure 4.19-5. Eversource Electric Transmission Lines (Sagamore and Bourne Bridge Study Areas)



Source: Massachusetts Department of Transportation, 2024

4.19.3 No Build Alternative

The No Build Alternative would have no long-term or temporary effects on public utilities or services within the Study Areas. For the No Build Alternative, the utilities would remain in their present locations, and their current owners/service providers would continue to maintain them, except for the gas lines.

Enbridge is proposing the Cape Cod Canal Pipeline Relocation Project, as a result of the USACE's determination that gas line relocation is necessary to address the ongoing maintenance needs of the Sagamore and Bourne Bridges, as concluded in its [Major Rehabilitation Evaluation Report and Environmental Assessment](#) (MRER/EA, March 2020).² In the MRER/EA, the USACE determined that that relocation of the gas lines off the existing bridges would be necessary in either a bridge replacement or a bridge rehabilitation scenario.

As described in [Section 4.19.4.3](#), Enbridge will be relocating two metering and regulating facilities near the existing Sagamore and Bourne Bridges. The relocation of Enbridge's facilities will undergo a separate environmental evaluation and permitting process. Enbridge will be responsible for installing its new infrastructure and removing the existing infrastructure in accordance with its new permits, obtained through the separate permitting process. Details of Enbridge's design are still being developed; however, a preliminary graphic depicting the general limits of the proposed pipeline relocation is available on the [Enbridge website](#).³

4.19.4 Build Alternative

The following sections describe the potential effects of the Build Alternative on public utilities and services. Potential effects are discussed according to Study Area quadrant.

4.19.4.1 Water Distribution Infrastructure

Portions of water mains would be relocated in three of the four quadrants: Sagamore North, Sagamore South, and Bourne South. In the Sagamore North quadrant, an existing 12-inch ductile-iron water main in the ramp leading from Scenic Highway to the existing bridge, down to Canal Service Road, and then under the existing bridge to Canal Street would be relocated. In the Sagamore South quadrant, construction would affect the 6-inch water line under U.S. Route 6 from Garfield Avenue to the Market Basket, and it would be relocated. In the Bourne South quadrant, a 12-inch asbestos-cement water main would be replaced to allow for the construction of the mainline bridge abutment.

New water connections would be established in the Bourne North quadrant to accommodate the relocation of several buildings within Bourne Scenic Park due to bridge construction.

² <https://www.nae.usace.army.mil/Portals/74/docs/Topics/Cape%20Cod%20Canal%20Bridges/Reports/MRER-Env-Assessment-March2022-FONSI-FINAL.pdf>

³ <https://www.enbridge.com/projects-and-infrastructure/public-awareness/cape-cod-canal-pipeline-relocation-project/project-map>

4.19.4.2 Sewer/Septic Infrastructure

In the Sagamore North quadrant, roadway construction on Canal Street is expected to disturb the septic system leach fields at three to five commercial and residential properties, potentially requiring partial or complete replacement of these leach fields. In the Sagamore South quadrant, roadway construction is expected to disturb the leach fields at the Market Basket grocery store site and 20 to 25 other properties along Sandwich Road and Cranberry Highway, potentially requiring the partial or complete replacement of the leach fields. In the Bourne North quadrant, several buildings within Bourne Scenic Park would be relocated during construction, including the restroom facilities on the east side of the bridge. The potential proposed sewer system within the Bourne Scenic Park could have a pumping station that would be coordinated with the Build Alternative's construction laydown area to avoid relocation. Additionally, septic system leach fields along the north side of Scenic Highway and Nightingale Pond Road are anticipated to be disturbed, potentially requiring partial or complete replacement. In the Bourne South quadrant, the restroom facilities (referred to as "comfort stations" by USACE) at Bourne Recreation Area would be closed during construction and relocated to a permanent site. Several trailers, which serve as temporary housing for seasonal USACE employees, would also be relocated during construction. Additionally, roadway construction near the existing Bourne Rotary on Trowbridge Road, Sandwich Road, and Old McArthur Boulevard is anticipated to disturb the septic system leach fields at 6 to 10 commercial and residential properties, potentially requiring their partial or complete replacement.

4.19.4.3 Gas Infrastructure

As discussed in [Section 4.19.3](#), in its MRER/EA of the deteriorating Sagamore and Bourne Bridges, the USACE determined that gas line relocation is necessary to address the ongoing maintenance needs of the bridges and would be required in both bridge replacement and bridge rehabilitation scenarios. Further, as directed by MassDOT, gas pipelines would not be permitted on the new bridges due to safety and security considerations.

Both existing Enbridge metering and regulating stations north of the canal, along with the gas pipeline network to these stations, are located on USACE property and would be decommissioned and reconstructed in new locations for the new bridges to be constructed. For the Build Alternative, relocating, commissioning, and decommissioning of the gas infrastructure would occur at each crossing prior to major bridge construction activities. Enbridge does not anticipate a service outage as part of its work. Because Enbridge's gas line relocation project would be required in both bridge replacement and bridge rehabilitation scenarios, it is considered a separate and independent action from the Build Alternative. Enbridge's relocation work is being reviewed independently of the Program's Build Alternative under the [Federal Energy Regulatory Commission's National Environmental Policy Act environmental review process](#).⁴ MassDOT will consider and incorporate any relevant information obtained from the Enbridge project's environmental review into the Program's environmental review.

⁴ <https://www.federalregister.gov/documents/2025/04/09/2025-06071/algonquin-gas-transmission-llc-notice-of-scoping-period-requesting-comments-on-environmental-issues>

Following Enbridge's relocation project, new connections by NGrid would be needed to provide service to the existing distribution network from the relocated Enbridge infrastructure within the Study Areas.

4.19.4.4 Electrical Infrastructure

In all four Study Area quadrants, numerous utility poles servicing electrical distribution lines would be relocated and reset. Electrical lines under the existing bridges and along the Canal Service Roads would be relocated outside of the crane laydown areas. In areas where relocation outside of laydown areas is not feasible, electrical lines would be buried and protected in underground duct banks during construction. Any short-term outages would be minimized through coordination among property owners, utility companies, contractor, and MassDOT. Eversource would maintain and reset utility poles south of the canal, and Verizon would maintain and reset utility poles north of the canal.

In the Sagamore South quadrant, an electrical duct bank carrying both primary and secondary power would be installed along Sandwich Road, and the overhead distribution lines would be relocated into an underground duct bank to protect the electrical lines. Relocating or raising the high-tension electric transmission lines crossing U.S. Route 6 near the limit of work should not be required. However, MassDOT would coordinate construction activities near these lines with Eversource.

In the Bourne North quadrant, an electrical duct bank carrying both primary and secondary power would be installed along Scenic Highway and the overhead distribution lines would be relocated into the underground duct bank to protect the electrical lines and eliminate conflicts during construction. The high-tension power transmission lines cross over State Route 25/28 in two locations. Relocating or raising the high-tension power transmission lines at the northernmost crossing would not be required. The high-tension power transmission line at the southern crossing near the bridge would be raised to provide adequate clearance over the raised roadway profile. This would require installation of approximately 10 new utility poles to accommodate the change in elevation on both sides of the roadway. MassDOT would coordinate work near both crossings with Eversource.

In the Bourne South quadrant, an electrical duct bank carrying both primary and secondary power would be installed along Sandwich Road, and the overhead distribution lines would be relocated into the duct bank to protect the electrical lines and eliminate conflicts during construction. This would also allow for the existing electrical lines in Trowbridge Road, east of the proposed bridge, to be eliminated, pending concurrence from Eversource.

4.19.4.5 Telecommunications

The fiberoptic lines that carry telephone, internet, and cable across Cape Cod Canal on the two existing bridges would be relocated to the new bridges and fully commissioned prior to the demolition of the existing bridges to preclude any service outages. Any short-term outages would be minimized through coordination among property owners, utility companies, contractor, and MassDOT. In all four Study Area quadrants, utility poles carrying telephone and cable transmission lines would be relocated and reset. Eversource would maintain and reset utility poles south of Cape Cod Canal, and Verizon would maintain and reset utility poles north of Cape Cod Canal.

In the Sagamore North quadrant, a communications duct bank carrying both telephone and cable lines would be installed along the proposed shared-use path west of the replacement bridge. This duct bank would replace an existing duct bank in the same area and serve a dual purpose of providing a permanent connection to the replacement bridge as well as a relocated temporary connection to the existing bridge over the canal. In the Sagamore South quadrant, a communications duct bank for both telephone and cable lines would be installed along Sandwich Road. The existing overhead distribution lines would be relocated into this underground duct bank to protect the communications lines and eliminate conflicts during construction. Similar communications duct banks would be installed along Scenic Highway in the Bourne North quadrant and along Sandwich Road in the Bourne South quadrant; existing overhead telephone and cable wires would be relocated into the underground duct bank to protect the communications lines and avoid conflicts during construction.

4.19.4.6 USACE Utilities

USACE infrastructure along Cape Cod Canal would be relocated within the construction area where large equipment operations would pose conflicts; relocations would include lighting, electrical power, and signals for surveillance and the canal navigation system.

4.19.5 Mitigation

Proposed mitigation for impacts to existing public and private utilities and services is described in the following sections.

4.19.5.1 Water Distribution Infrastructure

In all four Study Area quadrants, water systems affected by the Build Alternative would be restored in consultation with the local water authorities. Affected water mains in the Sagamore North, Sagamore South, and Bourne South quadrants would be relocated in consultation with the appropriate water districts. In all cases, service disruptions would be minimized through coordination with the property owners, the water districts, MassDOT, and the contractor.

4.19.5.2 Sewer/Septic Infrastructure

Where leach fields and/or septic systems are affected within all four quadrants, MassDOT would coordinate, through the right-of-way process, the development of land damage agreements with individual property owners who would then be responsible for restoring their septic systems. Best Management Practices will be implemented to effectively manage sewer and other wastewater systems during and after construction activities. The contractor will be responsible for developing emergency response plans that are based on their chosen construction means and methods.

In the Bourne North quadrant, MassDOT would coordinate with the Bourne Sewer Department, the Bourne Recreation Authority, and individual property owners to minimize disruptions in sewer service. It is anticipated that affected facilities within Bourne Scenic Park would be relocated or replaced before the existing facilities are taken out of service.

4.19.5.3 Gas Infrastructure

As noted in [Section 4.19.4.3](#), Enbridge must complete its gas infrastructure relocation activities prior to the start of any bridge construction work to prevent service outages. Once the Enbridge relocations are completed, NGrid would relocate its facilities within the Study Areas. Details of the NGrid work are currently under design.

MassDOT will continue to share relevant information with Enbridge to support its efforts in ensuring that all necessary work by the utility company is completed in advance of the Program.

4.19.5.4 Electrical Infrastructure

Utility pole installation and relocation would be assessed in all four quadrants during the design process, with new locations recommended as needed. Electrical lines under the existing bridges and along Canal Service Road would be relocated outside of the crane operation areas. In areas where relocation outside of construction areas is not feasible, electrical lines would be buried and protected in an underground duct bank during construction. All work would be coordinated with Eversource. Any short-term outages would be minimized through coordination among property owners, utility companies, contractor, and MassDOT.

4.19.5.5 Telecommunications

Existing telecommunication cables would be relocated to the new communications duct banks on the replacement bridges. The new bridges and telecommunications infrastructure would be in place prior to the demolition of the existing bridges to preclude any service outages. Utility pole relocation would be assessed in all four quadrants during the design process, with new locations recommended as needed. Communications lines under the existing bridges and along Canal Service Road would be relocated outside of the crane operation areas; or, in areas where construction areas cannot be avoided, communication lines would be protected in an underground duct bank during construction. No long- or short-term service outages are anticipated.

4.19.5.6 USACE Utilities

USACE power, navigation, and signal facilities along Cape Cod Canal would be relocated into underground ducts and protected during construction. Connections to the existing canal bridges would be maintained, and new connections made to the proposed canal bridges would be put in place prior to demolition of the existing bridges.

4.19.5.7 Other Utility Infrastructure

The USACE has granted rights to several parties to cross over and occupy land owned by the USACE for the purpose of providing utilities or other public services. These parties include the following:

- Bourne Recreation Authority
- NGrid
- Algonquin Gas Transmission (Enbridge)
- Verizon

- MassDOT – Highway Division
- North Sagamore Water District
- Comcast Cable Communications Management, LLC
- Canal Sportsmen’s Club
- OpenCape

In some cases, through the outgrant, the USACE has notified the grantee that a study for the rehabilitation or replacement of Sagamore Bridge and/or Bourne Bridge is underway. Utilities that are currently crossing the existing bridges under the outgrant with the USACE would obtain new agreements with MassDOT – Highway Division to occupy space on the replacement bridges. This would be accomplished by the utilities obtaining a Highway Access Permit from MassDOT.