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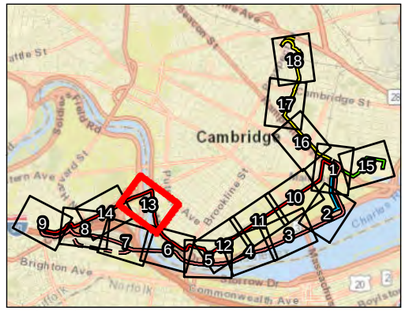
Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

Greater Cambridge Energy Program

EVERSOURCE

LOCUS



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1 inch = 150 feet

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LEGEND

- Brighton Preferred Route B2A East (2.91-mi)
- Brighton Preferred Route B29F West (3.00-mi)
- Kendall Preferred Route K5A (0.59-mi)
- Putnam Preferred Route P13 (0.49-mi)
- Somerville Preferred Route S1A (1.25-mi)
- Trenchless Crossing (Approximate)

Appendix 5-2

Project Map Set

Sheet 13 of 18

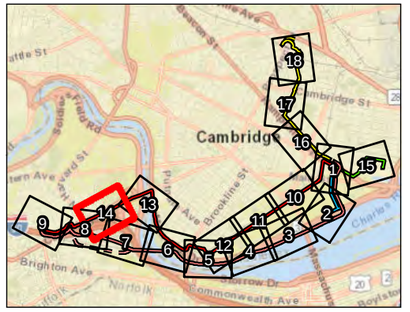
G:\Projects2\MA\MA\5711\EFSB\Appendices\MXD\Appendix_5-2_Map_Set_Project_20211130.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

Greater Cambridge Energy Program

EVERSOURCE

LOCUS



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1 inch = 150 feet

0 75 150 Feet

LEGEND

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- Trenchless Crossing (Approximate)

Appendix 5-2

Project Map Set

Sheet 14 of 18

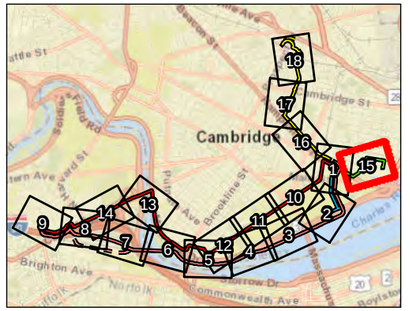
G:\Projects2\MA\MA5711\EFSB\Appendices\MXD\Appendix_5-2_Map_Set_Project_20211130.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

Greater Cambridge Energy Program

EVERSOURCE

LOCUS



SCALE

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1 inch = 150 feet

0 75 150 Feet

LEGEND

- Brighton Preferred Route B2A East (2.91-mi)
- Brighton Preferred Route B29F West (3.00-mi)
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Appendix 5-2

Project Map Set

Sheet 15 of 18

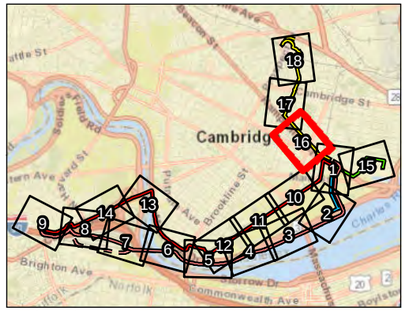
G:\Projects2\MA\MA\5711\EFSB\Appendices\MXD\Appendix_5-2_Map_Set_Project_20211130.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

Greater Cambridge Energy Program

EVERSOURCE

LOCUS



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LEGEND

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- Brighton Preferred Route B29F West (3.00-mi)
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- Somerville Preferred Route S1A (1.25-mi)
- Trenchless Crossing (Approximate)

Appendix 5-2

Project Map Set

Sheet 16 of 18

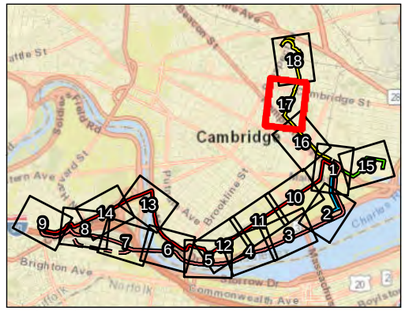
G:\Projects2\MA\MA\5711\EFSB\Appendices\MXD\Appendix_5-2_Map_Set_Project_20211130.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

Greater Cambridge Energy Program

EVERSOURCE

LOCUS



SCALE

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1 inch = 150 feet

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LEGEND

- Brighton Preferred Route B2A East (2.91-mi)
- Brighton Preferred Route B29F West (3.00-mi)
- Kendall Preferred Route K5A (0.59-mi)
- Putnam Preferred Route P13 (0.49-mi)
- Somerville Preferred Route S1A (1.25-mi)
- Trenchless Crossing (Approximate)

Appendix 5-2

Project Map Set

Sheet 17 of 18

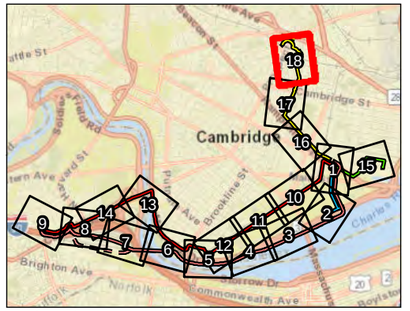
G:\Projects2\MA\MA\5711\EFSB\Appendices\MXD\Appendix_5-2_Map_Set_Project_20211130.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

Greater Cambridge Energy Program

EVERSOURCE

LOCUS



SCALE

1:1,800
1 inch = 150 feet

0 75 150 Feet

LEGEND

- Brighton Preferred Route B2A East (2.91-mi)
- Brighton Preferred Route B29F West (3.00-mi)
- Kendall Preferred Route K5A (0.59-mi)
- Putnam Preferred Route P13 (0.49-mi)
- Somerville Preferred Route S1A (1.25-mi)
- Trenchless Crossing (Approximate)

Appendix 5-2

Project Map Set

Sheet 18 of 18

Attachment D

Photographic Log

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Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

LEGEND

- Photo Location
- New Substation Site #8025
- Existing Substation
- Town/City Boundary
- Brighton Preferred Route B2A East (2.91-mi)
- Brighton Preferred Route B29F West (3.00-mi)
- Kendall Preferred Route K5A (0.59-mi)
- Putnam Preferred Route P13 (0.49-mi)
- Somerville Preferred Route S1A (1.25-mi)
- Brighton Noticed Alternative Route B31 East (3.26-mi)
- Brighton Noticed Alternative Route B30 West (3.43-mi)
- Kendall Noticed Alternative Route K11 (0.61-mi)
- Putnam Noticed Alternative Route P11 (0.87-mi)
- Somerville Noticed Alternative Route S11C (1.56-mi)

Scale 1:13,200
1 inch = 1,100 feet

0 550 1,100 Feet

Basemap: World Street Map, Esri

Route Variation S1

Somerville Substation #402

New Substation Site #8025

East Cambridge Substation #875

Putnam Substation #831

Brighton Substation #329

Route Variation B2AN

Greater Cambridge Energy Program

EVERSOURCE

Figure 1
Photo Key

Photo 1: View facing northwest facing the proposed substation at the Blue Garage. This portion is common to all routes.

Photo 2: View facing south along Ames Street. This portion is common to routes P13, P11, B2A East, and B31 East.

Photo 3: View facing south towards Memorial Drive along Ames Street. This portion is common to routes P13, B2A East, and B31 East.

Photo 4: View facing south from Ames Street at Memorial Drive, where P13 will tie into the existing line. This portion is common to routes P13, B2A East, and B31 East.

Photo 5: View of the sidewalk along Broadway facing west near the corner/intersection with Third Street.

Photo 6: View of the Volpe Property/sidewalk along the west side of Third Street, facing north.

Photo 7: View of Linskey Way facing east. This portion is common to both K5A and K11.

Photo 8: View of Second Street heading into the Eversource Substation, facing south. This portion is common to both K5A and K11.

Photo 9: View facing north along Hampshire Street.

Photo 10: View of Columbia Street facing north from Hampshire Street.

Photo 11: View of Columbia Street facing north, south of Windsor Place.

Photo 12: View of parking lot area where the route will cross the commuter rail line to the north.

Photo 13: View of the D2 parcel facing east from Prospect Street.

Photo 14: View facing south along Prospect Street looking into the Prospect Street Substation.

Photo 15: View of Memorial Drive facing west near the Walker Memorial. This portion is common to both B2A East and B31 East.

Photo 16: View of Memorial Drive near Fowler Street facing west. This portion is common to both B2A East and B31 East.

Photo 17: View along Memorial Drive where the Grand Junction Railroad goes beneath the roadway. This portion is common to both B2A East and B31 East.

Photo 18: View of Magazine Beach and Memorial Drive, facing east, showing the proposed transition area to an HDD pit.

Photo 19: View of Magazine Beach and the proposed HDD path towards the Charles River.

Photo 20: View of multimodal area from I-90 ramp facing west.

Photo 21: View from elevated I-90 facing north toward Lincoln Street.

Photo 22: View facing west along Lincoln Street. This portion is common to B2A East, B31 East, and B29F West.

Photo 23: View facing west from the Blue Garage parking garage.

Photo 24: View facing south along Vassar Street.

Photo 25: View of the proposed starting point of the Grand Junction Railroad crossing facing west.

Photo 26: View facing west from the Grand Junction Railroad along Waverly Street.

Photo 27: View facing north along Memorial Drive at the River Street Bridge intersection.

Photo 28: View facing northeast along the River Street bridge.

Photo 29: View facing east along Cambridge Street near the I-90 ramps. This area is common to B29F West and B31 East.

Photo 30: View facing south along Vassar Street. This portion is common to P11 and B29F West.

Photo 31: View facing south along Massachusetts Avenue near MIT Building 7.

Photo 32: View facing north from Memorial Drive showing the tie in location for Route P11.

Photo 33: View facing north from Broadway along the MIT Volpe Property.

Photo 34: View facing west of Potter Street.

Photo 35: View facing north along the Grand Junction Railroad from Binney Street.

Photo 36: View facing north along a parallel access road behind the shopping center.

Photo 37: View facing north along the Grand Junction Railroad at it's intersection with the commuter rail line and McGrath Highway.

Photo 38: View of Linwood Street facing northwest.

Photo 39: View of Washington Street facing east.

Photo 40: View of Prospect Street facing north.

Photo 41: View of River Street facing north into Central Square.

Photo 42: View facing west along Green Street.

Photo 43: View facing north along John F. Kennedy Street in Harvard Square.

Photo 44: View facing north into Harvard Square from the middle of Anderson Bridge.

Photo 45: View of North Harvard Street from its intersection with Western Avenue, facing north.

Attachment E

Preliminary HDD Inadvertent Returns Contingency Plan

EVERSOURCE

GREATER CAMBRIDGE ENERGY PROGRAM

PRELIMINARY INADVERTENT RETURNS CONTINGENCY PLAN FOR HORIZONTAL DIRECTIONAL DRILL CROSSING OF THE CHARLES RIVER

CAMBRIDGE AND BOSTON, MA

DECEMBER 2021

TABLE OF CONTENTS

PRELIMINARY INADVERTENT RETURNS CONTINGENCY PLAN FOR HORIZONTAL DIRECTIONAL DRILLING

1.0 Introduction

The Greater Cambridge Energy Project (the "Project") involves the construction of approximately 8.3 miles of new underground electric transmission lines located primarily in public roadways in Cambridge, Somerville, and Boston along with related ancillary substation work. One of the transmission lines servicing the Allston/Brighton area of Boston (identified herein as "Preferred Route B2A East") will cross the Charles River using a Horizontal Directional Drill ("HDD") technique.

HDD operations have a potential to release drilling mud to the surface environment through inadvertent returns ("IR"). An IR is the condition where drilling mud is released through fractured soil into the surrounding formation and travels toward the surface. Because drilling muds consist of a bentonite clay-water mixture, they are not classified as toxic or hazardous substances. A drilling mud discharge to surface water, however, can cause potential water quality impacts related to turbidity.[1]

While drilling mud seepage associated with an IR is most likely to occur near the bore entry and exit points where the drill head is shallow, IRs can occur in any location along a directional bore. Drilling mud may also be lost to the fractures within the soil or bedrock formation and never reach the surface. The key to containing and controlling an IR is early detection and quick response by the drilling crew.

The purpose of this PRELIMINARY Inadvertent Returns Contingency Plan ("IRCP") is to provide regulatory and permitting agencies with information on the typical procedures utilized by HDD contractors to prevent a fluid release during HDD construction and to outline steps to manage, control and minimize the impacts if an IR of drilling fluid occurs. The HDD Contractor for this Project has yet to be selected. The plan outlined in this document serves as a preliminary framework for the selected HDD Contractor's submittal presenting a site-and-contractor-specific IRCP that is consistent with the site conditions and constraints, and the HDD Contractor's proposed means, methods, and equipment. This IRCP was prepared as a draft to support and inform the environmental permit applications and will be updated with the HDD Contractor's specific information prior to the start of HDD construction. The HDD Contractor will be responsible for incorporating applicable environmental permit conditions, other regulatory requirements, site

[1] Bentonite is a naturally occurring, nontoxic, colloidal clay. Bentonite swells in water by absorbing the water, thus providing a viscous fluid that facilitates the HDD drilling operation by maintaining the drill path integrity by filling the bore hole void while also transporting the drill cuttings back to the surface through the bore hole. While bentonite is non-toxic, if released to the environment it has the potential to cause water quality impacts related to turbidity.

specific environmental features and geotechnical information into its IRCP submittal. The final plan will be submitted for review and approval by Eversource's Environmental representative prior to the start of HDD construction.

All personnel and sub-contractors responsible for the work will be required to adhere to the FINAL IRCP during the directional drilling process. The objective of this plan is to:

- Identify controls to be implemented during construction to minimize the potential of an IR.
- Provide for the timely detection of IR.
- Protect areas that are considered environmentally sensitive (river, wetlands, other biological resources, recreational areas, cultural resources, etc.).
- Establish site-specific environmental protection measures to utilize prior to, during, and following drilling and cable installation activities to minimize and control erosion and release of sediment or drilling fluid to adjoining wetlands or watercourses.
- Establish a general response program for construction that is understood and can be implemented immediately by field crews in the event of an IR of drilling fluid occurs.
- Establish a chain of command for reporting and notifying, in a timely manner, the construction management team, Eversource, and the proper authorities in the event of an IR of drilling fluid and of the response actions that are to be implemented.

2.0 General Description of HDD Process

Eversource is proposing to install an electric transmission line beneath the Charles River in Cambridge and Boston, Massachusetts (the municipal boundary is approximately in the center of the river). To avoid potential impacts to the Charles River, Eversource proposes to use the HDD method to install the electric transmission line below the bed and banks of the river and adjacent wetland resource areas. HDD is recognized as the least environmentally impactful construction technique available for installing utilities beneath sensitive environmental resources such as rivers and wetlands. For perspective, at its deepest point, the HDD installation for the Project could be up to 30-feet below the bed and shoreline of the river. The HDD process begins by mechanically excavating entry and exit pits at either end of the directional bore alignment. For this Project, the HDD entry/exit pits would be located east of the Charles River on the Massachusetts Department of Conservation and Recreation ("MassDCR") Magazine Beach property in Cambridge and on MassDOT's Allston Multimodal Project Site west of the Charles River in Boston on land owned by Harvard University. The layout of equipment and materials at the entry and exit locations will be carefully prepared to limit the required working area(s). In this way, the amount of site preparation and the resulting environmental disturbance can be minimized.

A small diameter pilot bore is then drilled from the entry pit using directional boring methods. During the pilot bore, a drilling fluid (typically bentonite and water based with selected polymers/additives to improve and modify fluid and drilling properties to address site-specific ground characteristics) is pumped through nozzles in the drill head to support the hole and to hydraulically transport drill cuttings from the drill bit back to the entry pit.

A guidance system is mounted immediately behind the drilling head to allow the driller to track and steer the path of the drill so that it follows the proposed alignment. The drilling fluid holds the cuttings in suspension and carries the drill cuttings back through the annular space between the drill string and the bore hole wall to the entry pit where drilling fluid is collected and processed for re-use by a recycling system. The cuttings are separated from the bentonite using screens, centrifuges, and de-sanding units which prepare the bentonite for re-use. Once the pilot bore reaches the exit pit, a larger diameter back-reaming head is attached to the drill string and pulled back through the pilot hole to enlarge the hole. Depending on the size of the pipe to be installed and the subsurface geologic conditions, several successively larger reaming passes may be needed. Again, a bentonite and water slurry are pumped into the bore hole during reaming to remove cuttings and to stabilize the bore hole. Once the bore hole is sufficiently enlarged, the drill string is pulled back through the bore hole with the new pull-back pipe attached to it typically in one continuous process until the lead end of the pipe reaches the entry pit.

Specific to this plan, it is important to have an awareness of the function and composition of the HDD drilling fluids. The drilling fluid composition and drilling fluid management are integral components of the HDD process with the following purposes:

- Support and stabilize the bore hole.
- Suspend and transport cuttings from the drill bit through the bore hole annulus.
- Control fluid loss through the bore's side walls by forming a filter cake on the bore hole walls.
- Managing and modifying the drilling fluid mix to improve its cutting carrying characteristics, its pumpability, and its hole stabilization and support characteristics.
- Power the downhole cutting tools (e.g., via mud motors if required).
- Serve as a coolant and lubricant to the drill bit during the drilling process, and lubricant during the pull-back pipe insertion process.

During the HDD process and subsequent pipe insertion, the drilling fluid pumped downhole will tend to flow along the path of least resistance. Generally, this will be through the annulus between the drill string and the bore hole side wall. However, the bore alignment may encounter ground conditions where the path of least resistance is an existing fracture, fissure, or hole of either natural or anthropogenic origin, areas with low overburden confinement, or coarse gravel zones in the soil. When this occurs, drill fluid circulation can be lost or reduced. This is a common

occurrence in the HDD process but does not necessarily prevent completion of the bore or result in a release to the environment. However, the environment may be impacted if the fluid inadvertently releases to the surface along a waterway's banks or within a waterway or wetland. Again, environmentally acceptable additives to amend the properties of the drilling fluid will be used as necessary to prevent and limit IRs through such paths of lower flow resistance.

3.0 Organization and Staff Responsibilities

The principal organizations involved in this project include the local, state and Federal Regulatory Agencies, Project Proponent (Eversource), Design Engineer, and HDD Contractor. The roles and responsibilities of the principal organizations are discussed in the following subsections.

3.1 Regulatory Agencies

Eversource is working to obtain necessary permit authorizations and approvals to implement the HDD crossing. Anticipated regulatory agencies reviewing and issuing permits include:

- Massachusetts Department of Environmental Protection ("MassDEP").
- U.S. Army Corps of Engineers ("USACE").
- Massachusetts Department of Conservation and Recreation ("MassDCR").
- Massachusetts Department of Transportation – Highway Division ("MassDOT").
- Massachusetts Water Resources Authority ("MWRA").
- Cambridge Conservation Commission.
- Boston Conservation Commission.

3.2 Project Proponent

The Project Proponent is Eversource. Eversource will provide Construction Manager(s) and Environmental Monitors ("EM") for the Project and will be responsible for correspondence and coordination among the parties including the HDD Contractor and the Design Engineer.

3.3 HDD Contractor

The HDD Contractor is responsible for the work and must adhere to this Plan during the HDD process. More specifically, the HDD Contractor will be responsible to complete the pipe installation by HDD in accordance with the design criteria, contract documents, environmental compliance permits, as well as local, state, and federal regulations. The HDD Contractor will be expected to use the appropriate construction procedures and techniques to complete the installation, including a project specific IRCP prepared by the HDD Contractor in accordance with

the provisions provided within this PRELIMINARY IRCP, contract documents and applicable permit conditions.

The HDD Drill Operator ("Drill Operator") will be responsible for operating the HDD drill rig and observing and managing changes in annular fluid pressure or loss of circulation. The Drill Operator will communicate with other members of the drill crew as needed when issues arise. The HDD Contractor will be responsible for developing the specific lines of communication within their organization and shall dedicate a responsible person for communicating IRs to the Proponent's Construction Management team and Environmental Monitor.

3.4 Lines of Communication and Authority

In the case of a detected or suspected IR of drilling fluids from the boring, the Drill Operator will notify the HDD Contractor's foreman or superintendent and Eversource's Construction Management team and Environmental Monitor immediately. Eversource will be responsible for notifying regulatory agencies, as necessary.

3.5 Training

The HDD Contractor will ensure that all construction personnel have appropriate environmental training and understand applicable permit conditions before beginning work. Eversource will also conduct a project orientation and field training meeting for staff assigned with specific roles during the HDD installation and will review the site-specific environmental concerns and permit conditions. Eversource and the Design Engineer will also attend the orientation meeting to review the procedures that will be used to document IRs in accordance with the HDD specifications.

4.0 Fluid Release Minimization Measures

4.1 Geotechnical Investigation

The first steps taken to minimize the potential risk of an IR will include conducting a geotechnical investigation along the HDD alignment to develop an understanding of the subsurface conditions. The data will be used by the Design Engineers to inform the detailed design of the HDD crossing and transmission line installation.

4.2 HDD Design

The HDD crossing will be designed to reduce the potential risk of an IR during construction. Design considerations will likely include (in part):

- Depth of cover during profile design (based on the results of the geotechnical borings) to limit the potential inadvertent break through to the river bottom or ground surface.
- Generally, for the formation of IRs, the more critical stage of the HDD process tends to be during the initial pilot hole drilling when the annular space between the bore sidewall and the drill string is the smallest.

- Adjusting the drill alignment to avoid existing infrastructure including existing utilities.

- Establishing a drill alignment line that allows for gradual angular changes to minimize pressure build-up.

- Requiring drilling fluid composition and drilling procedures that minimize drilling fluid pressures.

- Requiring drilling fluids that adequately address site-specific drilling concerns while posing the least threat to the environment.

4.3 Contingency Plans

As mentioned above, prior to construction the selected HDD Contractor will be required to submit a final Project-Specific IRCP for review and acceptance by Eversource. At a minimum, the Project specifications will require that the following major elements be addressed in detail in the HDD Contractor's Plan:

- Work plan and detailed description of the drilling program (details for executing pilot hole, reaming, pull-back operations, and schedule); this plan will include necessary procedures for addressing problems that are typically encountered during HDD installations through the anticipated subsurface for each drill location, including the potential use of conductor casings in the softer, weaker soils at the ends of the bore.

- Drilling fluid composition design and on-hand amendments to alter fluid properties to reduce pressures, potential for plugging, and seepage losses.

- Description of the proposed drilling equipment and drill site layout.

- Material Safety Data Sheet ("MSDS") information for all drilling fluid products proposed for use.

- Procedures for drilling fluid pressure control, and fluid and pressure loss monitoring and management to aid in the detection of an IR (i.e., metering of makeup water, recording of drilling fluid product quantities utilized, fluid return volumes, fluid and cuttings disposal quantities, turbidity of surface water, etc.).

- Contingency plans for addressing IRs into the river or adjacent wetlands, or other sensitive areas, which includes the specific procedures used to halt the release and then contain, clean-up, and remove materials from the release site.

- Notification procedures and chain-of-command in the event of a release.

- Criteria for evaluating the need for a drill hole abandonment and the associated plan for sealing the drill hole if abandoned.

- Drilling fluid management and disposal procedures.

The HDD Contractor will also be responsible for implementing the necessary safeguards to minimize the likelihood of a fluid release and management/control should a release occur. This includes having a readily available supply of spill response devices (e.g., containment booms, pumps, straw bales, silt fence, sediment logs, sandbags, vacuum trucks, silt curtains) and other materials or equipment necessary to contain and clean up IRs. To maximize protection to sensitive environmental areas these measures will be pre-positioned at the site, readily available and operational prior to the start of drilling. Such additional spill response will be employed immediately, as secondary measures, in the event of a fluid release.

4.4 Early Fluid Release Detection

The HDD method has the potential for seepage or fluid loss into pervious geologic formations through which the bore path crosses. This may occur because of fractures in the rock, low overburden confinement, or from seepage through porous soils such as coarse gravels. It is important to note that IRs of drilling fluid can occur even if the down-hole pressures are minimal. Subsurface conditions that could be conducive and lead to IRs or drill difficulties include:

- Highly permeable soil such as cobbles and gravel.
- Considerable differences in the elevations of HDD entry and exit points.
- Disturbed soil, such as unconsolidated fill.
- Soft soils with low overburden capacity.

An experienced drill crew is the most effective approach to detecting drilling fluid seepage prior to a surface release and promptly stopping drilling so they can modify the drilling fluid composition, properties, and pressures to address indications of loss of drill fluid. The HDD Contractor will be required to utilize experienced drill crews as the HDD alignment is adjacent to environmentally sensitive areas. The following factors can be used for identifying the potential for drill fluid release:

- The loss of pressure within the drill hole utilizing a downhole pressure monitoring system.
- A substantial reduction in the volume of return fluid (loss of circulation).
- Lack of drill cuttings returning in the drill fluid.

In addition to an experienced drill crew, the HDD Contractor will be required to perform periodic visual inspection and monitoring of the Charles River and adjacent areas in the vicinity of the drill bit or reaming bit for signs of an IR. If visual monitoring indicates a potential release additional measures such as turbidity measurements and bentonite accumulation measurements both upstream and downstream of the current active location of the drill bit may be required.

5.0 Inadvertent Return Monitoring and Notifications

The HDD Contractor is responsible for monitoring of the drilling operation to detect a potential IR by observing and documenting the flow characteristics of drilling fluid returns to the HDD entry/exit pits and by visual inspection along the drill path. If drilling fluid to the HDD entry/exit pits are lost, the HDD Contractor will implement the following steps:

- The Drill Operator will monitor and document pertinent drilling parameters/conditions and observe and monitor the drill path for evidence of an IR. If there is evidence (typically visual) of a release, the HDD Contractor will be required to stop the drilling immediately.
- The HDD Contractor will notify Eversource's Construction Manager and Environmental Monitor of significant loss of drilling fluid returns at the drill rig or if there is evidence (typically visual) of a release.
- The HDD Contractor will take steps to modify the drill fluid properties and pressures to reduce the potential of drill fluid loss or release.
- The Drill Operator will take steps to restore drilling fluid circulation in accordance with the requirements of the HDD technical specifications.

If a fluid release is identified, an immediate response is necessary and the proper corrective actions must be taken to minimize impacts to environmentally sensitive resources, including the Charles River, adjacent wetlands, and Magazine Beach.

5.1 Inadvertent Release Notification

The HDD Contractor will notify Eversource's Construction Manager and Environmental Monitor immediately if an IR is identified regardless of its location. Eversource will be responsible for notifying applicable regulatory agencies, as warranted. The HDD Contractor will not resume HDD activities until the release is controlled and confirmation has been received from the proper authorities. Eversource's Construction Manager will notify the HDD Contractor when HDD drilling operations may resume.

6.0 Inadvertent Returns Response (Uplands)

A common reason for upward movement and release of drill fluid is from pressure exerted by drill pumps. Lowering drill fluid pressure is a first step to limiting a release and can be accomplished by stopping drill rig pumps and allowing pressure to bleed off. With no pumping pressure in the hole, surface seepage will generally stop, then the HDD Contractor can withdraw the drill string back a selected distance and attempt to clear cuttings from the annulus to re-establish circulation.

The contractor will be required to contain/isolate and remove fluid that has emanated from the surface. On land this can be done through use of sediment controls (e.g., wattles, strawbales, filter

tubes, etc.) in conjunction with excavating a small sump pit if needed. Sufficient spill-absorbent material will also be available on-site.

If a release is identified in an upland area, the HDD Contractor will be required to immediately respond as described above to limit the extents of the release. After containment is established, cleanup and removal can be conducted by hand, with vacuum trucks, or other equipment. Eversource's Construction Manager and Environmental Monitor will be present during clean up and removal activities, as they may need to be conducted outside of the pre-authorized temporary workspace areas. The Environmental Monitor, Construction Manager, and the HDD Contractor will work closely to determine the best course of action for IRs occurring within upland areas.

Upon containment of the release, the HDD Contractor will be required to evaluate the cause of the seepage and develop mitigation strategies to limit the likelihood of recurrence. The location of the seepage and the area around the seep will be monitored upon the re-start of the HDD operations for changes in conditions. The segments of borehole nearest the entry and exit points and other areas of low overburden cover tend to be the most susceptible to surface seepage as they have the least amount of soil confinement. These locations may have areas of dry land where seepage detection is easily identified and contained. If areas of high risk for IRs are identified during the HDD design phase, they can be protected from an uncontrolled release through use of strategically placed confinement/filter beds, straw bales, silt fence, or earthen berms place prior to the start of drilling.

7.0 Preliminary IR Response Plan (Charles River and Adjacent Wetlands)

If an IR occurs within the Charles River, the HDD Contractor will be required to cease drilling operations, reduce pressures in the borehole immediately, and notify Eversource's Construction Manager and Environmental Monitor. The Environmental Monitor, with input from the Drill Operator and Design Engineer, will evaluate the potential impact of the release on a site-specific basis and will determine the appropriate course of action in accordance with the Contractor's separate Operations Plan and Emergency Response Plan. The HDD Contractor will be required to develop general response methods for within the resource area(s) and pre-place the necessary materials and equipment required for implementation of the response methods at the site prior to construction. Specific response actions will be determined in consultation with Eversource's Construction Manager, Environmental Monitor, Design Engineer, and Contractor and could potentially include the following one or more of the following measures:

- If the IR occurs close to the entry or exit point, a conductor casing can be installed to contain the IR. Alternatively, if a conductor casing is already installed, the HDD Contractor may advance it beyond the IR location, if practical.
- Shutting down or slowing the drill fluid pumps at the first sign of an IR.

- Modifying the drill fluid properties, adding agents to reduce drilling fluid pressures and/or to attempt to plug/seal release path.

- Withdrawing the drill string back and attempting to clear cuttings from the annulus to re-establish circulation.

- Stopping drilling activities as necessary to allow the bentonite in the subsurface pathways to gel and seal the pathways.

- Evaluate the current drill methods to identify site specific improvements to lower the risk of additional IRs.

- Prior to the start of HDD operation, the HDD Contractor will implement proper sedimentation control measures including, but not limited to gravity cells, silt curtains, turbidity curtains, or if suitable, sandbags and confinement/filter beds and/or other measures prescribed by environmental permits and approvals. Additionally, an emergency stockpile of sedimentation controls will be prepositioned and readily available at or near the site.

8.0 Drill Hole Abandonment Plan

In the unlikely event the HDD Contractor must abandon the drilled hole, a plan to fill the abandoned hole will be implemented as outlined in the Contractor's IRCP and an alternative plan/alignment for crossing the river will be evaluated. If it becomes necessary to abandon a partially completed hole, the abandoned hole will likely be filled with a mixture of high-yield bentonite, water, and drill spoil. A portion of the bore path will likely be compacted and filled with soil, or a cement-bentonite mix to prevent future settlement. The HDD Contractor's site-specific abandonment plan will be accepted by the Design Engineer and Eversource prior to being performed in the field.

After the abandoned hole has been filled, an alternate entry and exit hole and bore path alignment will be evaluated by the HDD Contractor, Eversource, and the Design Engineer. The new alignment will be offset from the abandoned hole by a pre-determined distance to help limit the risk of steering difficulties due to the presence of or hydraulic connection causing drill fluid loss to the abandoned hole.

9.0 Project Completion and Clean-up

The HDD Contractor will identify an approved landfill or off-site facility for disposal of all excess drilling fluids and cuttings. As previously described, during the pilot hole and reaming operations, bentonite drill fluids will carry the solids from the formation back to the entry pit. The fluids and cuttings will be pumped to the recycling system for separation, containment, and ultimate disposal. The solid materials will be contained in a lined roll-off dumpster and prepared for hauling to an approved disposal site. Similarly, the bentonite drilling fluids are continually being cleaned

and recycled back down hole. When the HDD installation is completed, the drilling fluids will be collected in a vacuum truck to be transported to the approved site for disposal.

Alterations at MassDCR's Magazine Beach property are generally limited to the temporary workspace necessary for the HDD drill rig and support equipment/materials staging area. The balance of the HDD installation will be sufficiently deep and will not otherwise affect the surface of the Magazine Beach property. The temporary workspace area will be located outside the existing athletic fields and exercise equipment area and setback from nearby mature trees. The temporary workspace area is presently flat and comprised of regularly maintained lawn/turfgrass cover. Upon completion of the work Eversource will restore the altered area to its preexisting conditions or better with loam and an appropriate turfgrass seed mix as approved by MassDCR. Where the transmission line duct bank transitions from conventional open-cut trenching on Memorial Drive to HDD construction on Magazine Beach, the adjacent Dr. Paul Dudley White Path (bituminous pavement), sidewalk, lighting, and grassed shoulder areas will also be restored to their preexisting condition or better in consultation with MassDCR. The final restoration details will be advanced in consultation with MassDCR as part of the Access Permit review process.

The MassDOT Allston Multimodal Project Site is already heavily disturbed with a gravel base cover and devoid of any vegetation. Eversource will restore the workspace to its preexisting condition or better, including restoration of existing grades and site stabilization measures as appropriate.

In addition to the above, general housekeeping measures will be implemented onsite and all materials and any rubbish or other construction debris will be removed from the construction zone at as necessary to maintain a clean and safe workspace area during construction. All erosion and sediment control measures (e.g., fiber rolls, straw bales, silt fence, etc.) will remain in place until all disturbed areas have achieved adequate vegetative cover or other stabilization measures (as applicable), after which these control measures will be removed from the site and disposed of as construction debris.

Attachment F

Chapter 91 Licenses

Greater Cambridge Energy Program

Chapter 91 License Research Summary

A review of documents at the State Library, the Middlesex and Suffolk County Registries of Deeds, and the Massachusetts Department of Environmental Protection - Waterways Regulation Program ("MassDEP") for information regarding legislative and waterways authorizations along the Preferred Routes associated with Eversource's Greater Cambridge Energy Program was conducted by Epsilon Associates, Inc. in September of 2021.

Table F-1 on the following page, entitled *Chapter 91 Historic Licenses and Legislative Authorizations*, page provides a list waterways legislative authorizations relative to the Preferred Routes. The approximate project locations authorized by these historic Chapter 91 Licenses are shown on Figure 1.

Table F-1 Tidelands, Licenses and Legislative Authorization

LICENSE NUMBER/ AUTHORIZATION	LICENSEE	WORK AUTHORIZED	LOCUS
No. 2049 (Harbor & Land Commission)	Cambridge Gas Light Co.	After-the-fact authorization of a portion of the eastern seawall along the Broad Canal and the filling of the Charles River behind said seawall; additional filling to the north of the Broad Canal	East of Broad Canal to approximately Athenaeum Street
No. 2060	City of Cambridge	Construction of seawall and filling flats north of said seawall.	Seawall constructed from approximately Ames Street east to Main Street, fill 200' landward of seawall (presently Memorial Drive).
No. 736	Charles River Embankment Co.	Construction of seawall and filling.	Seawall constructed from approximately Ames Street west to Audrey Street, fill landward of seawall to historic high water (presently Memorial Drive and MIT Campus)
No. 2408	City of Cambridge	Construction of seawall, solid fill, and drainage.	Seawall constructed from approximately Audrey Ames Street west to Brookline Street/BU Bridge, fill landward of seawall to historic high water (presently Memorial Drive)
No. 2262	City of Cambridge	Excavate, solid fill, and change the shoreline.	Between Brookline Street/BU Bridge and River Street, including Magazine Beach.
No 409	City of Boston	Rebuild the southerly draw pier of Cambridge Street Bridge over Charles River	River Street Bridge
No. 833	City of Boston	To rebuild and widen its part of Cambridge Street Bridge in and over the tide waters of Charles River	River Street Bridge
No. 1283	City of Cambridge	To rebuild and widen its portion of River Street Bridge over Charles River between Cambridge and Boston	River Street Bridge
No. 1284	City of Boston	To widen its portion of River Street Bridge over Charles River between Cambridge and Boston	River Street Bridge
Chapter 365 of the Acts of 1926	Metropolitan District Commission	To construct a parkway or boulevard on the southerly side of the Charles River Basin from Bay State Road to North Harvard Street in the City of Boston	Soldiers Field Road
Chapter 354 of the Acts of 1952	Massachusetts Turnpike Authority	An act providing for the construction, maintenance, repair, and operation of a self-liquidating express highway from a point in the vicinity of the City of Boston to a point at or near New York State line	Massachusetts Turnpike (I-90)

G:\Projects2\MA\MA\5711\Task_3.4.1\MXD\1_Ch91_Project_20211119.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

LEGEND

- New Substation Site #8025
- Existing Substation
- Town/City Boundary
- Brighton Preferred Route B2A East (2.91-mi)
- Brighton Preferred Route B29F West (3.00-mi)
- Kendall Preferred Route K5A (0.59-mi)
- Putnam Preferred Route P13 (0.49-mi)
- Somerville Preferred Route S1A (1.25-mi)
- Chapter 91 License or Authorization

DEP Tidelands Jurisdiction Data

- Chapter 91 Jurisdiction
- Historic High Water
- Inferred Historic High Water
- Landlocked Tidelands

Scale 1:14,400
1 inch = 1,200 feet

0 600 1,200 Feet

Basemap: 2021 Aerial, Nearmap

Somerville Avenue
Beacon Street
Washington Street
Somerville Substation #402
Route Variation S1
D2 SITE
BOSTON
SOMERVILLE
Rutherford Avenue
Kirkland Street
Concord Avenue
SOMERVILLE
CAMBRIDGE
Prospect Street
Webster Avenue
Medford Street
McGrath Highway
Monsignor O'Brien Highway
Quincy Street
Cambridge Street
WATERTOWN
CAMBRIDGE
Eliot Bridge
Mount Auburn Street
Trowbridge Street
Broadway
Massachusetts Avenue
Inman Street
Hampshire Street
Cardinal Medeiros Avenue
Third Street
Columbia Street
New Substation Site #8025
VOLPE CENTER SITE
Binney Street
Edwin H Land Boulevard
Cambridge Parkway
Greenough Boulevard
Soldiers Field Road
Western Avenue
License Nos. 409, 833, 1283, 1284
River Street
Portland Street
East Cambridge Substation #875
License No. 2049
RIVER STREET BRIDGE CROSSING
Putnam Substation #831
Main Street
Longfellow Bridge
First Street
Charlesbank Road
North Harvard Street
Memorial Drive
Putnam Avenue
Brookline Street
Erie Street
Sidney Street
Albany Street
License No. 2060
Brighton Substation #329
MASSDOT ALLSTON MULTIMODAL PROJECT SITE
Vassar Street
License No. 2262
MAGAZINE BEACH
Waverly Street
Henry Street
License No. 736
CAMBRIDGE
BOSTON
Route Variation B2AN
Harvard Avenue
Harvard Bridge
Berkeley Street
Clarendon Street
Brighton Avenue
Chapter 354 of the Acts of 1952
Chapter 365 of the Acts of 1926
HDD CROSSING
License No. 2408
Commonwealth Avenue
Newbury Street

Greater Cambridge Energy Program

EVERSOURCE

Figure 1

Chapter 91 Licenses and Authorizations - Project

Commonwealth of Massachusetts.

2049.

Whereas, the Cambridge Gas Light Company, in the County of Middlesex, and Commonwealth aforesaid, applied to the Board of Harbor and Land Commissioners for license to fill solid and maintain filling already done in Charles River adjoining Broad Canal in the city of Cambridge, has submitted plans of the same; and whereas due notice of said application, and of the time and place fixed for a hearing thereon, has been given, as required by law, to the Mayor and Aldermen of the city of Cambridge;

Now, said Board, having heard all parties desiring to be heard, and having fully considered said application, hereby, ~~subject to the approval of the Governor and Council,~~ authorizes and licenses the said Cambridge Gas Light Company subject to the provisions of the fifteenth chapter of the Public Statutes, and of all laws which are or may be in force applicable thereto, to fill solid and to maintain filling already done in Charles River adjoining Broad Channel in the city of Cambridge, in conformity with the accompanying plan No. 2049, and within the sea wall as now built on lines A-B-C-D-E shown on said plan, and within the boundary lines of said company premises, marked E-F, F-G on said plan.

work

id Board, numbered 2049, and a duplicate of said

referred to as a part hereof.

e-water displaced by the work hereby authorized, shall be ascertained

r shall be made by the said Cambridge Gas Light C

heirs, successors and assigns, by paying

t and one-half (2 1/2) cents for each cubic yard so

ed by said Board, the same to be reserved as a compensation fun

~~This License is also granted in consideration of the payment into the treasury of the Commonwealth~~ the said .....

~~the rights~~ and privileges hereby granted in land of ~~said Commonwealth~~, of the further sum of .....

.....

~~ng the amount determined by the Governor and Council to be just and equitable therefor.~~

Nothing in this License shall be so construed as to impair the legal rights of any person.

This License shall be void unless the same, and the accompanying plan, are recorded, within one year m the date hereof, in the Registry of Deeds for the ~~District of the~~ County Middlesex.

In Witness Whereof, ... said Board of Harbor and Land mmissioners have hereunto set their hands this Eighth day of September in the year eighteen hundred and ninety-seven.

Woodward Emery
Clinton White
Harbor and Land Commissioners.

True Copy
Attest: Frederick N. Wales
~~Asst. Secretary~~

~~COMMONWEALTH OF MASSACHUSETTS.~~

BOSTON, ... 189

~~pproved by the Governor and Council.~~

E. F. BOWKER
Civil Engineer
and Surveyor,
671 Massachusetts Ave.,
CAMBRIDGEPORT.
Aug. 28, 1897.
Scale 40 ft. to an inch.

Petition of Cambridge Gas Light Co.

No. 2049.
Approved by Harbor and Land Comm.
September 8, 1897.

William Emerson
Clinton White

Commonwealth of Massachusetts.

No. 2060.

Whereas, the city of Cambridge,

of _____, in the County of Middlesex and Commonwealth aforesaid, has been authorized by the General Court, by Chapter 508 of the Acts of the year 1896, to build a sea wall and to fill solid

in and over the tide-waters of Charles River

in the city of Cambridge in the County of Middlesex and Commonwealth aforesaid; and, before beginning said work, has given written notice to the Board of Harbor and Land Commissioners of the work intended to be done, and submitted, for the approval of said Board, Plans ~~and Specifications~~, showing in detail the location and dimensions of said work, and the mode in which the same is to be performed; and whereas due notice of said application, and of the time and place fixed for a hearing thereon, has been given, as required by law, to the Mayor and Aldermen of the city of Cambridge;

Now, said Board, having heard all parties desiring to be heard, and having fully considered said application, hereby approves the Plans ~~and Specifications~~ for said work hereto annexed, and the mode of performing the same as shown thereby, and, ~~subject to the approval of the Governor and Council,~~ hereby authorizes and licenses said work to be done in accordance therewith, subject to the provisions of the nineteenth chapter of the Public Statutes, Chapter 508, Acts of 1896, and of all laws which are or may be in force applicable thereto.

The work hereby licensed and approved is the construction of a sea wall on Charles River in the city of Cambridge, on the Pier-head and Bulkhead Line approved by the Secretary of War, February 13, 1890, and the filling of flats northerly of said sea wall, in conformity with the accompanying plan No. 2060. Said sea wall is to be built on the following described line: Beginning at a point marked A on said plan in said Pierhead and Bulkhead Line and in the southerly side-line of Main Street and West Boston Bridge, and running in a

general south-westerly direction, in said Pier-head and Bulkhead Line about 2022 feet, more or less, to a point marked B at the northerly end of the sea wall of the Charles River Embankment Company. The area bounded by said sea wall, the northerly boundary line of said Embankment Company's premises, a line drawn parallel with and 200 feet north-westerly from said Pier-head and Bulkhead Line and said southerly side line of Main Street and West Boston Bridge, may be filled solid. The material used for filling said flats shall be dredged in the area from a line 100 feet south of and parallel with West Boston Bridge to the easterly line of the dredging done by the Charles River Embankment Company, and from a line 50 feet south of and parallel with the sea wall, to the extreme low water line. All dredging to be done to a depth of not more than 12 feet below mean low water. All mud within said area to be excavated, to said depth, except where hard bottom or gravel is found less than 5 feet below mean low water.

If this does not furnish enough material to complete the fill, authority will be given to dredge to a greater depth as near the Charles River Embankment Company's line and the line of extreme low water as the Board may determine. This licence is granted subject to the laws of the United States.

reserved as a compensation fund for the harbor of Boston.

In assessing such compensation, however, deduction shall be made yard for yard for material used for filling which is taken from the Charles River Basin aforesaid.

Middlesex.

In Witness Whereof, the said Harbor and Land Commissioners have hereto set their hands this Twentieth day of September in the year eighteen hundred and ninety-seven.

Woodward Emery
Clinton White
Harbor and Land Commissioners.

COMMONWEALTH OF MASSACHUSETTS.

BOSTON,

by the Governor and Council.

True Copy.

Attest:-

Frederick N. Wales.

Clerk of Boards.

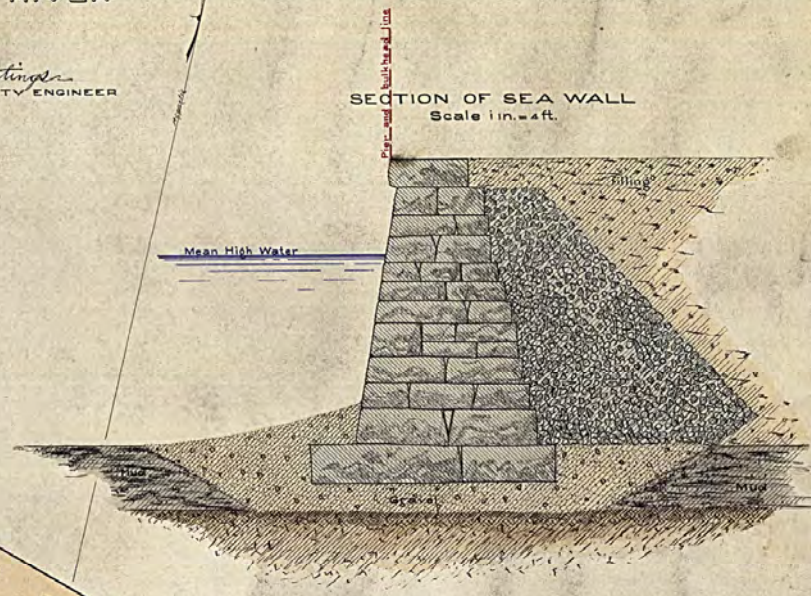
Park Dep't.

CITY OF CAMBRIDGE

SEA WALL ON CHARLES RIVER NEAR MAIN ST.

APR. 30. 1897.
SCALE 1 IN. = 100 FT.

L. M. Hastings
CITY ENGINEER



Harriett A. Porter
PIONEER ST.
BROADWAY
MAIN ST.
City of Cambridge
AVENUE
s. H. Souther
Passageway
rriett A. Porter
60' STREET
Chas. H. Souther
Passageway
Harriett A. Porter
Heirs of M. L. Smith.
Cambridgeport Savings Bank.
F. H. Elmes.
Heirs of B. Tilton & Wm Fisk.
Wm H. Wood.
Heirs of Wm & J. C. Fisk.
H. O. Bright.
Geo. B. Roberts.
Edward Kendall.
Heirs of Wm & J. C. Fisk.
Benjamin F. Brown.
Geo. H. Bent.
BROAD CANAL
FIRST ST
WEST BOSTON BRIDGE
Line of old bulkhead
2174.3 ft
200'
200'
CITY OF CAMBRIDGE — PROPOSED ESPLANADE
To be filled
2522.0 ft
Proposed Sea Wall
Pier and bulkhead line approved by Secretary of War 1890.
wall
B
A

No. 2060.
Approved by Harbor and Land Com'rs.
September 20, 1897.
Nathaniel Emery
Clinton White

CHARLES RIVER

Commonwealth of Massachusetts.

No. 736

Whereas, The Charles River Embankment Company of Boston, in the County of Suffolk and Commonwealth aforesaid, has been authorized by the General Court, by Chapter 211 of the Acts of the year 1881, to improve certain marsh land by filling, with material dredged from Charles River, and by building a sea wall in and over the tide-waters of Charles River in the City of Cambridge in the County of Middlesex and Commonwealth aforesaid; and, before beginning said work, has given written notice to the Board of Harbor and Land Commissioners of the work intended to be done, and submitted, for the approval of said Board, Plans and Specifications, showing in detail the location and dimensions of said work, and the mode in which the same is to be performed;

Now, said Board, having fully considered said application, do hereby approve the Plan and Specifications for said work hereto annexed, and the mode of performing the same as shown thereby, subject to the provisions of the nineteenth chapter of the Public Statutes, and of all laws which are or may be in force applicable thereto.

A duplicate of the aforesaid Plan and Specifications, numbered 736, remains on file in the office of said Board, and said work is to be executed under their supervision.

Nothing herein contained shall be so construed as to impair the legal rights of any person.

The amount of tide-water displaced by the work aforesaid shall be ascertained by said Board of Harbor and Land Commissioners, and compensation therefor shall be made by said .....

..... by paying into the treasury of the Commonwealth

..... cents for each cubic yard so displaced, being the amount hereby assessed by said Board, the same to be reserved as a compensation fund for the harbor of .....

s Whereof, a majority of said Board of

ereto set their hands this third

in the year eighteen hundred and eighty-three.

John E Clayton

J. A. Nye

G R A N D J U N C T I O N R. R.

M A I N S T.

C H A R L E S R I V E R
E M B A N K M E N T C O M P A N Y

PROPOSED BULKHEAD

PROPOSED BULKHEAD

PROPOSED LINE OF SEA WALL

A — HARBOR LINE. SOUTHERLY BOUNDARY OF CORPORATION RIGHTS AS DESCRIBED IN ACT OF 1891 — B HARBOR

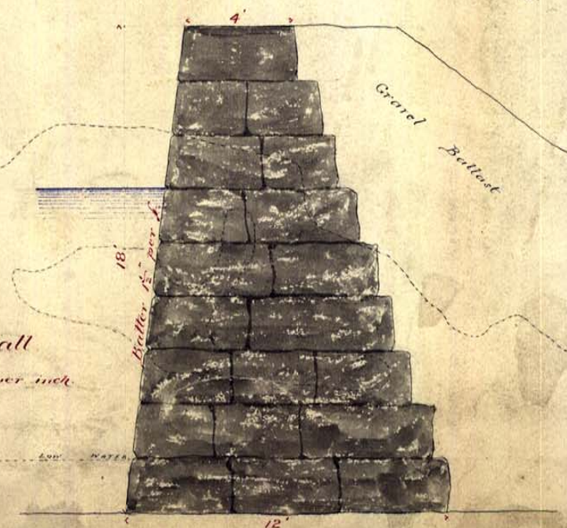
A. B. = 4436.39 ft.

AREA TO BE DREDGED

C H A R L E S R I V E R

EXTREME LOW WATER

Section of Wall
Scale 3ft. per inch.



No. 736

PROPOSED SEA WALL
OF THE
CHARLES RIVER EMBANKMENT CO.

Cambridgeport, Mass.

Scale 1/2000.

36

Commonwealth of Massachusetts.

No. 2408.

Whereas, the City of Cambridge, by its Board of Park Commissioners, of _____, in the County of Middlesex, and Commonwealth aforesaid, has applied to the Board of Harbor and Land Commissioners for license to fill solid in Charles River between Brookline street and a point about 700 feet east of Putnam Avenue in the city of Cambridge, _____ and has submitted plans of the same; and whereas due notice of said application, and of the time and place fixed for a hearing thereon, has been given, as required by law, to the Mayor and Aldermen _____ of the city of Cambridge;

Now, said Board, having heard all parties desiring to be heard, and having fully considered said application, hereby, subject to the approval of the Governor and Council, authorizes and licenses the said _____ city of Cambridge, _____ subject to the provisions of the nineteenth chapter of the Public Statutes, and of all laws which are or may be in force applicable thereto, to fill solid in Charles River in the city of Cambridge, in conformity with the accompanying plan No. 2408.

A sea-wall, as shown in section on said plan, may be built on the United States Pier and Bulkhead line from F to E, and on line E-G, on said plan, and the area shaded red between the present shore line, the Pier and Bulkhead line, and the Harbor line established by Chapter 177 of the Acts of 1878, extending to the easterly side line of Brookline street, may be filled solid, the slope of the filling to extend from the line marked "Mean High Water" on said plan

to said United States Pier and Bulkhead Line and the Harbor Line shown on said plan.

A box drain 18" x 18" is to be laid from the flats now or formerly belonging to Dalrymple and Lemon through the area to be filled in the location and as shown on said plan.

This license is granted subject to the laws of the United States, and is on condition that the material used for filling as aforesaid shall be taken from Charles River basin in front of the territory to be filled, to a depth of not less than 8 feet or more than 12 feet below mean low water.

The Plan of said work is on file in the office of said Board, numbered 2408, and a duplicate of said plan accompanies this License, and is to be referred to as a part hereof.

~~The amount of tide-water displaced by the work hereby authorized, shall be ascertained by said Board,~~ and compensation therefor shall be made by the said ..... heirs, successors and assigns, by paying into the treasury of the Commonwealth ..... cents for each cubic yard so displaced, being the amount hereby assessed by said Board, the same to be reserved as a compensation fund for the harbor of .....

This License is also granted in consideration of the payment into the treasury of the Commonwealth by the said .....

for the rights and privileges hereby granted in land of said Commonwealth, of the further sum of .....

.....

being the amount determined by the Governor and Council to be just and equitable therefor.

Nothing in this License shall be so construed as to impair the legal rights of any person.

This License shall be void unless the same, and the accompanying plan, are recorded, within one year from the date hereof, in the Registry of Deeds for the South District of the County of Middlesex.

In Witness Whereof, said Board of Harbor and Land Commissioners have hereunto set their hands this second day of August in the year ~~eighteen hundred and ninety~~ nineteen hundred.

Woodward Emery
Clinton White
Chas C. Dolan

Harbor and Land Commissioners.

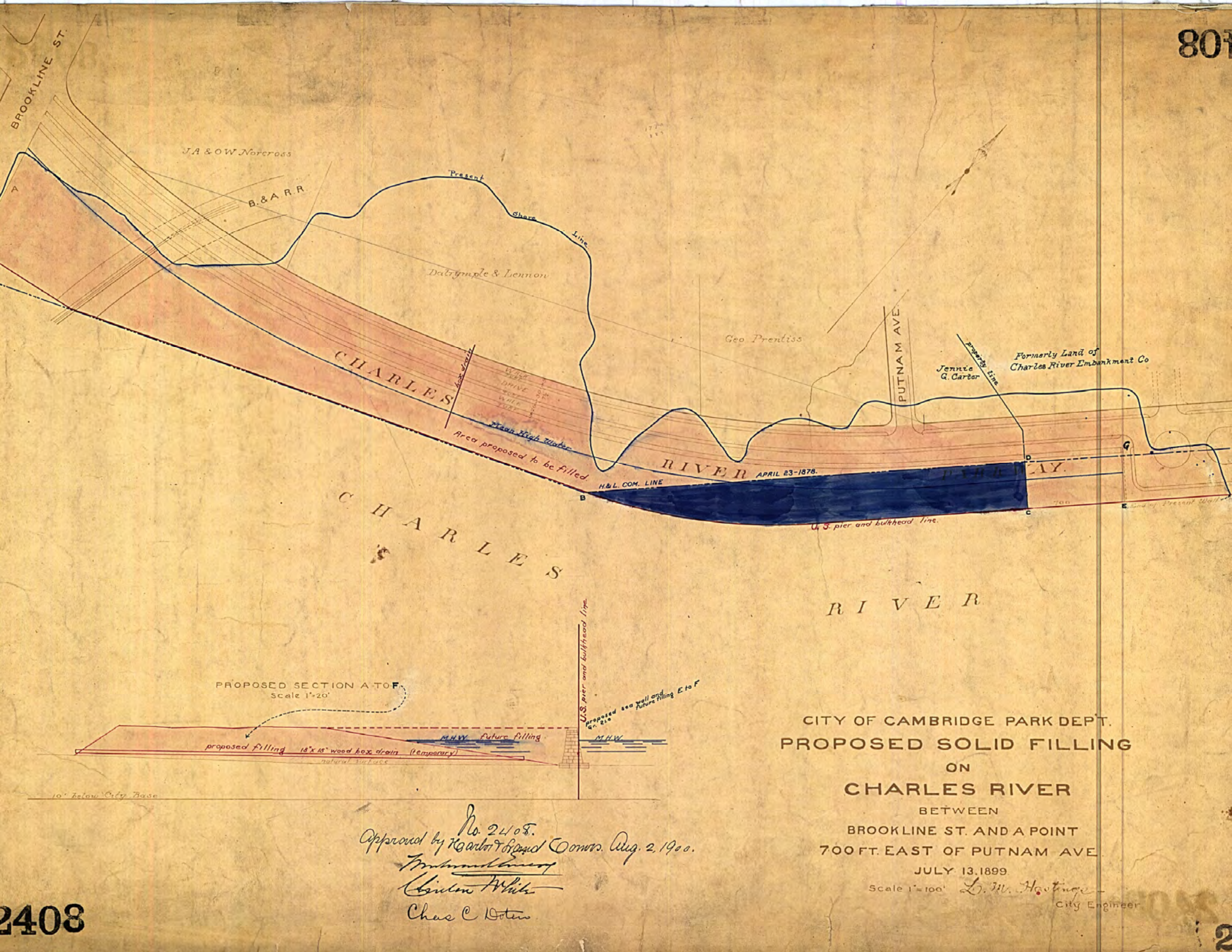
A true Copy.
Attest: Frederick N. Wales
Clerk of Board.

COMMONWEALTH OF MASSACHUSETTS.

BOSTON, Aug. 15, 1900.

Approved by the Governor and Council.

E. J. Hamlin
Executive Secretary


801
BROOKLINE ST.
J.A. & O.W. Norcross
B.&A. R.R.
A
Present Shore Line
Dalrymple & Lennon
Geo Prentiss
PUTNAM AVE
Jennie G. Carter
property line
Formerly Land of Charles River Embankment Co
CHARLES RIVER PARKWAY.
box drain
Mean High Water
Area proposed to be filled.
APRIL 23-1878.
H.&L. COM. LINE
B
C
D
E
G
700
U.S. pier and bulkhead line.
CHARLES RIVER
PROPOSED SECTION A TO F.
Scale 1"=20'
U.S. pier and bulkhead line
proposed sea wall and future filling E to F
M.H.W. Future filling
M.H.W.
proposed filling
18"x15" wood box drain (temporary)
natural surface
10' below City Base
No. 2408.
Approved by Harbor & Land Comrs. Aug. 2, 1900.
Chas C Doten
CITY OF CAMBRIDGE PARK DEPT.
PROPOSED SOLID FILLING
ON
CHARLES RIVER
BETWEEN
BROOKLINE ST. AND A POINT
700 FT. EAST OF PUTNAM AVE.
JULY 13, 1899.
Scale 1"=100'
City Engineer
2408

Commonwealth of Massachusetts.

No. 2262

Whereas, the City of Cambridge, by its Board of Park Commissioners, in the County of Middlesex, and Commonwealth aforesaid, has applied to the Board of Harbor and Land Commissioners for license to excavate and fill solid and change the shore line of Charles River between Brookline Street and River Street in the city of Cambridge, and has submitted plans of the same; and whereas due notice of said application, and of the time and place fixed for a hearing thereon, has been given, as required by law, to the Mayor and Aldermen of the city of Boston;

Now, said Board, having heard all parties desiring to be heard, and having fully considered said application, hereby, subject to the approval of the Governor and Council, authorizes and licenses the said City of Cambridge subject to the provisions of the nineteenth chapter of the Public Statutes, and of all laws which are or may be in force applicable thereto, to change the present shore line of Charles River between Brookline Street and River Street in the city of Cambridge by the construction of a sea-wall, and by excavation and filling, in conformity with the accompanying plan No. 2262, so that the high water line shall be the line marked C-B on said plan.

Said sea-wall may be built from A to B on said plan, and a wooden box culvert with a tide-gate therein, satisfactory to this Board, shall be built and laid in the location shown on said plan, to be maintained and kept open by the City of Cambridge until the area of tide-water easterly