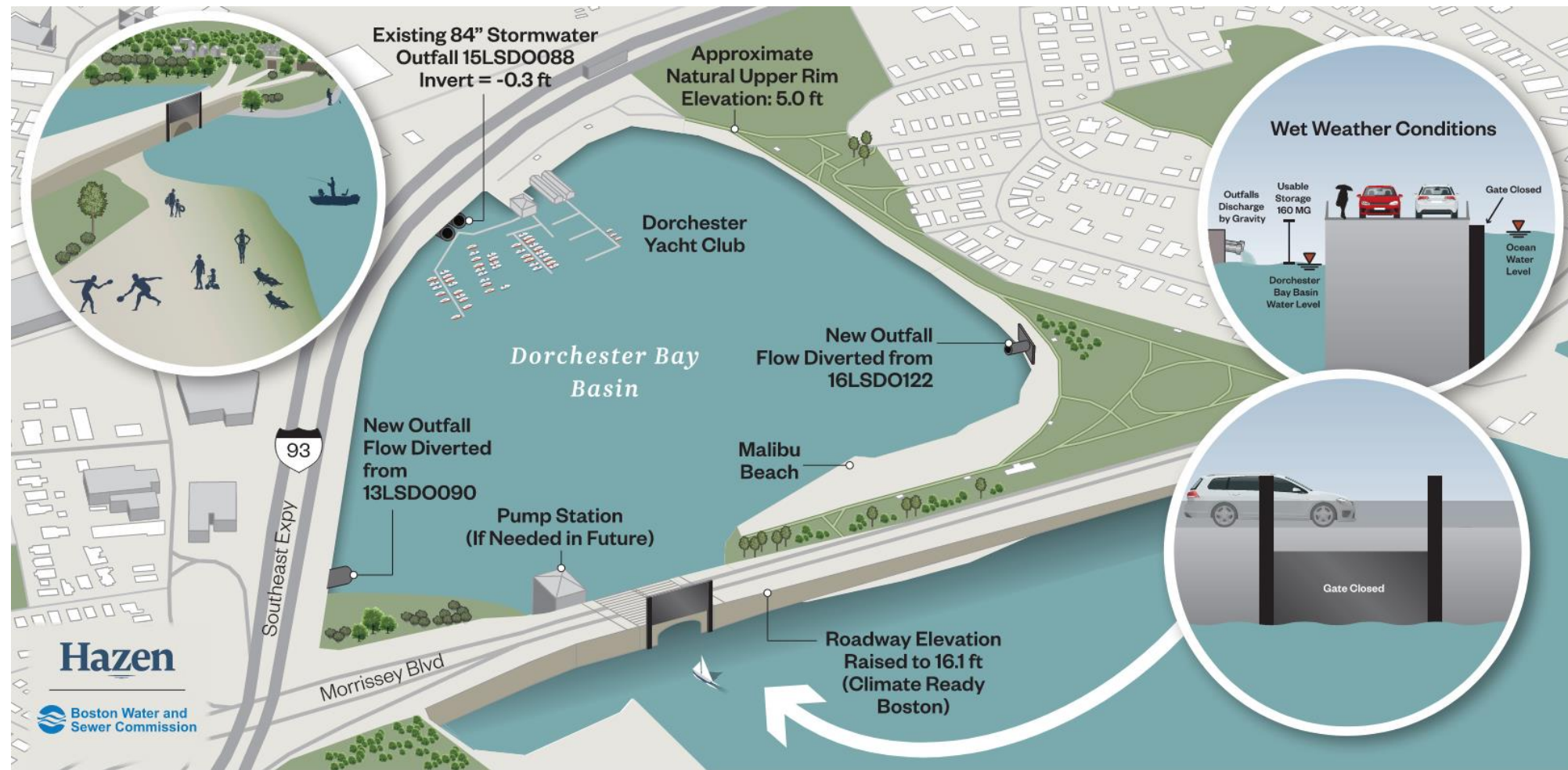


Dorchester Bay Basin Concept Overview



Conceptual Solution

The conceptual solution herein utilizes the existing shoreline geometry to store stormwater in the Dorchester Bay Basin (DBB). By utilizing a vertical lift gate, the DBB could be closed at low tide before a predicted coastal storm event. Under present day conditions, the basin could store approximately 160 million gallons (MG) before overflowing; by 2070 (assuming 4.3' of sea level rise) the basin's storage capacity would be reduced to 100 million gallons.

In addition to protecting outfalls 15LSDO088 and 15LSDO089, this concept protects outfalls 13LSDO090 and 16LSDO0122 with diversion structures that can redirect flow to the basin by gravity through new conduits. Higher elevation portions of the areas tributary to these outfalls are not vulnerable to flooding from rising sea levels; thus, this concept also includes new pipelines to separately drain these higher elevation areas directly to the receiving waters. By providing separate drainage conduits for these high elevation areas, flow into the DBB is reduced sufficiently to avoid the need for a pump station under the conditions analyzed. A pump station could be constructed in the future if necessary to help maintain sufficiently low water surface elevations in the basin, if conditions change in the future.

Type: Storage and Conveyance

Total Drainage Area: 1305 acres

Coastal Flood Vulnerable Drainage

Area Protected: 473 acres

Concept Elements:

- Nature based storage basin
- Gravity drainage via new conveyance for high elevation areas
- Diversion structures
- Navigable storm surge barrier and gate structure

Outfalls Included in Concept:

- 16LSDO122
- 15LSDO089
- 15LSDO088
- 13LSDO090

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin



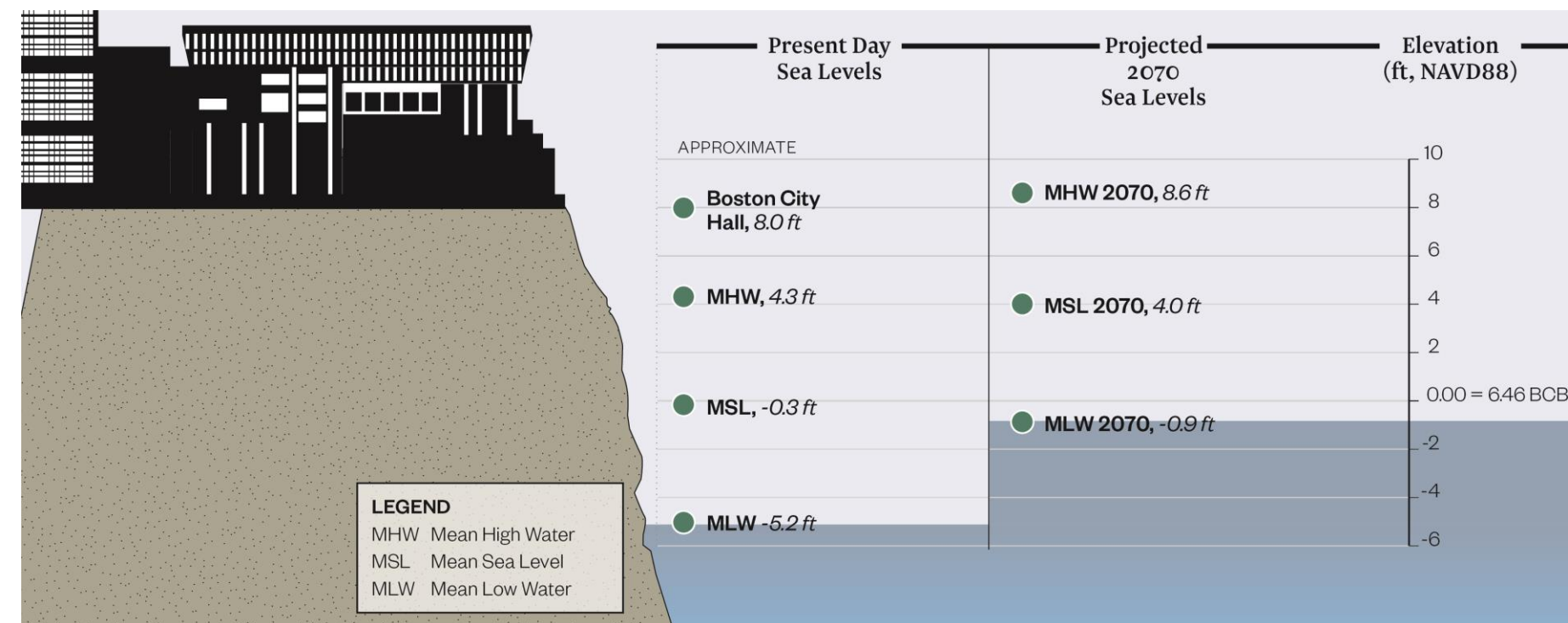
Assumptions

Sea Level Rise and Datum

The Dorchester Bay Basin concept was designed for consistency with Climate Ready Boston (CRB) proposed adaptations and analyzed based on sea level rise (SLR) projections in the Massachusetts Coastal Flood Risk Model (MC-FRM). The SLR values applied in MC-FRM are consistent with the standards for the State of Massachusetts developed by Coastal Zone Management. The MC-FRM utilizes a “High” SLR scenario. This scenario is based on the relative SLR projections under Relative Concentration Pathway (RCP) 8.5 (a “worst case scenario” of increasing atmospheric carbon concentrations) and represents elevations that have a 99.5% probability of not being exceeded within the respective timeframes. In 2030, that amounts to an increase of 1.3 feet in Boston from a baseline condition (2008 centered tidal epoch), and in 2070 that amounts to an increase of 4.3 feet.

The concept developed in this project was analyzed using coastal conditions that include 2070 projected SLR and storm surge resulting from a 100-year tropical storm. The peak water surface elevation (WSE) predicted by the MC-FRM during these conditions is approximately 13.8 feet NAVD88 (varies by location). In mid 2022, the Greater Boston Research Advisory Group (BRAG) issued an updated report with new SLR projections. The report acknowledges that long term SLR projections are associated with significant uncertainty, and that updated projections include less SLR by 2100 (compared to earlier projections in the 2015 BRAG Report). According to the report, the likely range of SLR by 2070 under an RCP 8.5 scenario is 1.4 – 2.8 feet. Based on this information, projections from the MC-FRM that were utilized in this project are conservative and appropriate for long term planning purposes.

Unless otherwise noted, all elevations are based on the NAVD88 vertical datum. Elevations given in NAVD88 can be converted to Boston City Base (BCB) elevation by adding 6.46 feet.



Climate Ready Boston and Shoreline Protection

The Dorchester Bay Basin concept was developed to maintain consistency with possible Climate Ready Boston (CRB) adaptations based on the latest available information at the time they were developed. As the CRB program continues to evolve, it is anticipated that proposed concepts will need to be adapted.

The concept was developed to be consistent with stated neighborhood design flood elevations. In the Columbia Point and Morrissey Boulevard Zone (location of the Dorchester Bay Basin), where the stated CRB design flood elevation is 16.1 feet, pumps would be designed to discharge to a minimum elevation of 16.1 feet.

At the time of this project, many CRB concepts were in early planning stages and not fully defined. **In consideration of this, it was assumed the shoreline protection around the City of Boston is 100% effective for all modeling evaluations.** This assumption eliminates overland coastal flooding from model predictions, allowing for isolation of flooding that results only from rainfall and stormwater that cannot be discharged due to high sea levels. It is important to recognize that additional flooding, beyond what is depicted herein, would be expected if 100% effective shoreline protection is not implemented.

Coastal Stormwater Discharge Analysis Dorchester Bay Basin	
Boston Water and Sewer Commission	Hazen
Sheet 2 of 18	November 2022

Basis of Design

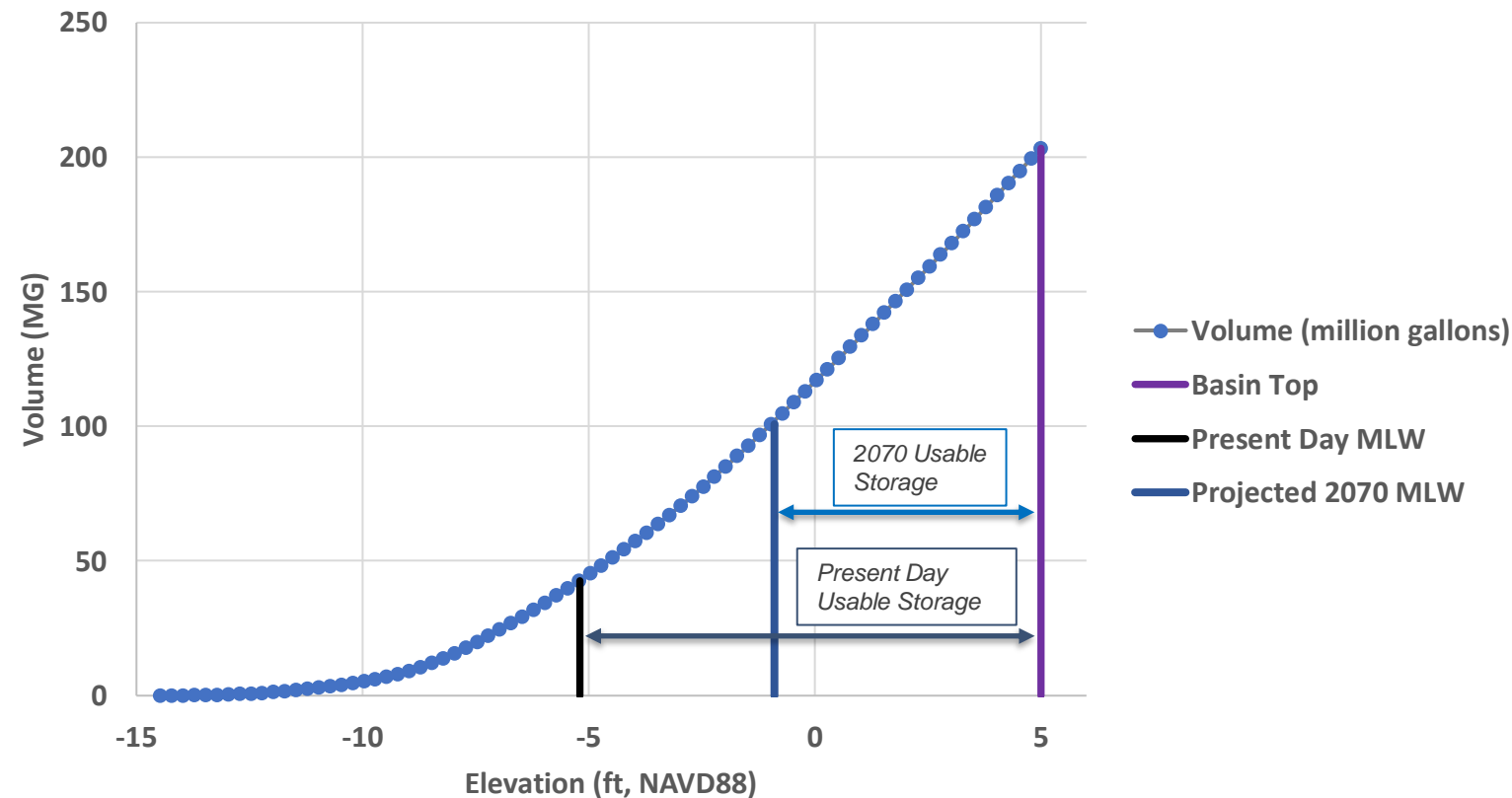
Basin Storage Capacity

The storage capacity of the DBB was analyzed under present day and 2070 conditions based on 4.3 feet of sea level rise projected in the MC-FRM. The usable storage volume was calculated by developing a stage storage curve from a topobathymetric DEM obtained for the DBB from the Continuously Updated Digital Elevation Model (CUDEM) project from NOAA and determining the volume between Mean Low Water (MLW) and the approximate upper rim elevation of the existing DBB (5.0 feet, NAVD88). Table 1 contains a summary of the present day and projected usable DBB storage volume. Figure 1 depicts the stage storage curve that was developed to determine the DBB storage capacity. For conceptual design purposes, a usable storage volume of 100 MG (2070 conditions) was assumed.

Table 1: Present Day and 2070 Projected Estimated DBB Storage Capacity

Scenario	Mean Low Water (ft, NAVD88)	Mean High Water (ft, NAVD88)	Usable DBB Storage Capacity (million gallons)
Present Day	-5.2	4.3	160
Projected 2070 SLR	-0.9	8.6	100

Figure 1: DBB Stage Storage Curve



Rainfall and Coastal Conditions

The Commission currently utilizes a 10-year, 24-hour design storm to establish its target level of service. For the purpose of sizing new piping and evaluating storage capacity, a projected 2070 10-year, 24-hour design storm was developed. For consistency with Climate Ready Boston, performance of the DBB storage concept was also evaluated with projected rainfall from a 100-year tropical event (developed during the Commission's Inundation Model Project). The DBB was evaluated using a 100-year return period coastal boundary condition. Data for this condition were obtained from the MC-FRM. For the purpose of evaluating the effectiveness of the concept, it was further assumed that complete shoreline protection was implemented, preventing flow of water between land and the Harbor/Neponset River. Table 3 contains a summary of the coastal conditions that were analyzed.

Table 2: Rainfall Conditions

Scenario	Purpose	Rainfall Depth (in)	Peak Intensity (in/hr)
Present Day, 10-year, 24-hr design storm	Baseline Conditions	5.15	3.32
Projected 2070, 10-year, 24-hr design storm	Design Conditions	6.18	4.08
100-year Tropical Storm	Damage Analysis	9.58	0.84

Table 3: Coastal Conditions

Scenario	Purpose	Peak Water Surface Elevation (ft, NAVD88)	Source
Present Day	Baseline Conditions	3.7	BWSC Existing Model (April 2016 Tide Cycle)
2070, 100-year Tropical Storm	Damage Analysis	13.8	MC-FRM

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin



Basis of Design Summary

Pumping Evaluation and Storage Capacity

A series of simulations were conducted using the Commission’s Inundation Model to determine the volume of water discharged into the DBB during the 10-year, 24-hour design storm and 100-year tropical storm under 2070 conditions. This analysis was conducted to evaluate the potential for the basin to overflow (exceed elevation 5.0’ NAVD88) and determine if pumping is required to prevent the basin from overflowing. The simulation included the high elevation gravity diversions shown on Sheet 5 and it was assumed that the basin was isolated from the Neponset River for the duration of the simulation (water was not discharged from the basin). Figure 2 depicts the WSE in the basin during the projected 10-year, 24-hour design storm event.

Based on the results of these simulations, it was determined that the DBB Storage Concept does not require a pump station under the conditions simulated. During the final design process, detailed survey should be conducted to verify the available storage volume in the basin with more accuracy. A pump station could be added to the concept in the future if larger storm events result in inflow volumes that exceed the storage capacity of the basin. It should be noted that these simulations utilized a MLW elevation based on projections for 4.3 feet of SLR by 2070; under present day conditions the basin has approximately 60% more storage capacity than this projected 2070 condition.

Figure 2: Model Predicted WSE in DBB
(2070 Projected 10-year, 24-hour Design Storm)

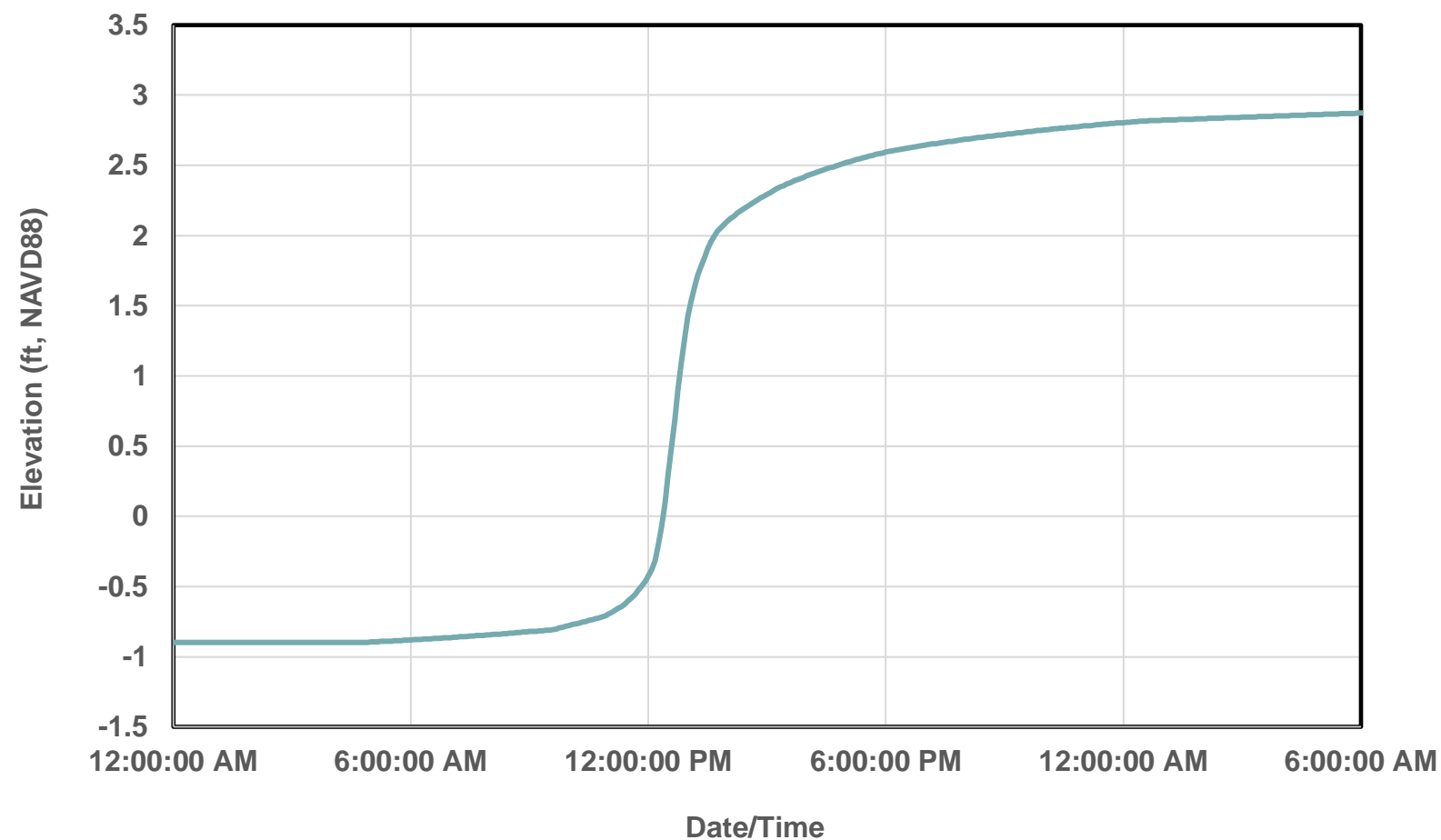


Table 4: DBB Storage Simulation

Scenario	Initial WSE (ft, NAVD88)	Final WSE (ft, NAVD88)	Volume Stored (MG)	Percent Full
10-year, 24-hr Design Storm (2070)	-0.9	2.9	64	64%
100-year Tropical Storm (2070)	-0.9	4.7	97	97%

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin



Hazen

Sheet 4 of 18

November 2022

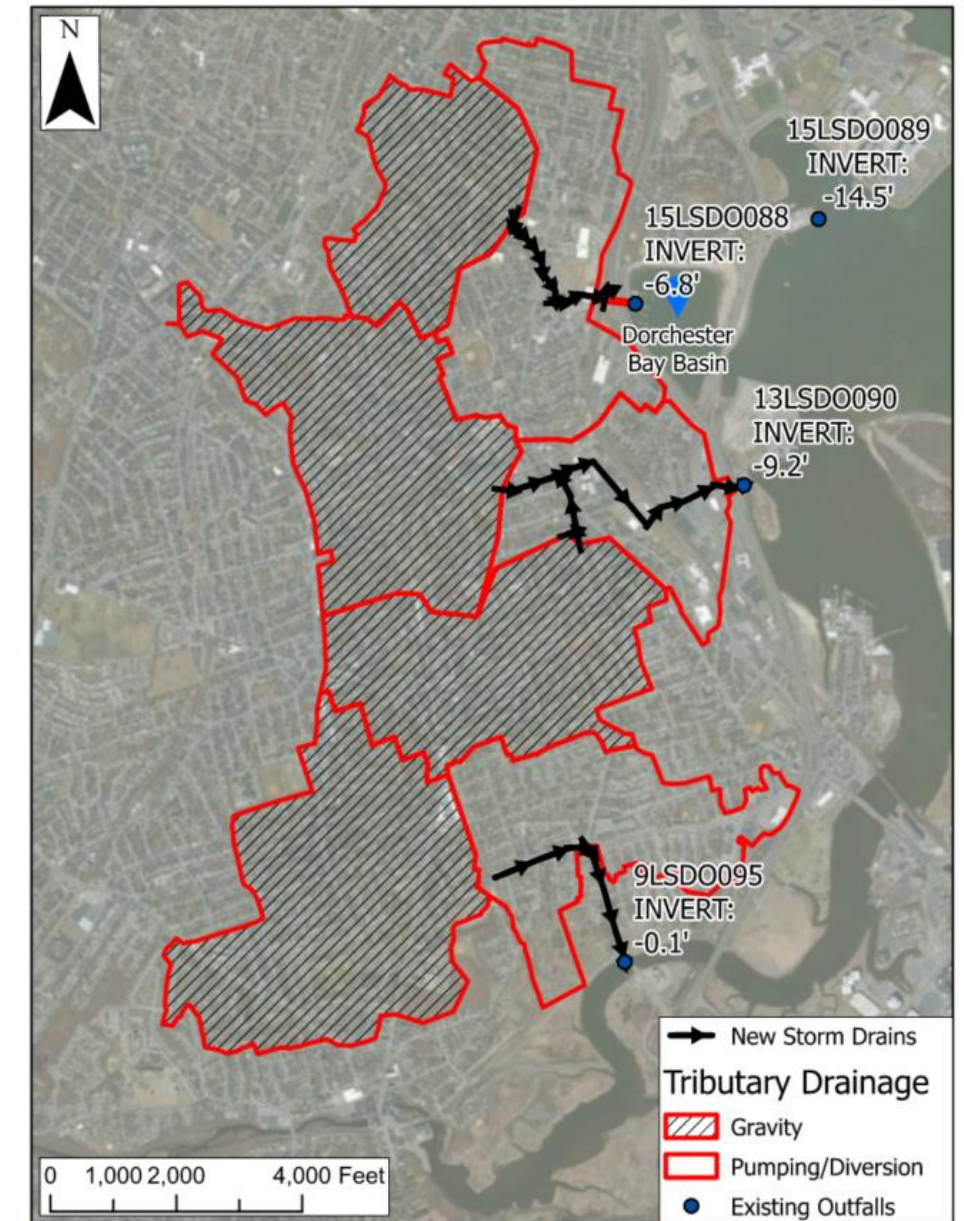
Proposed Pipelines



New pipeline to direct flow from 16LSDO0122 to the DBB



New pipeline to direct flow from 13LSDO090 to the DBB



New pipelines for drainage of high elevation areas

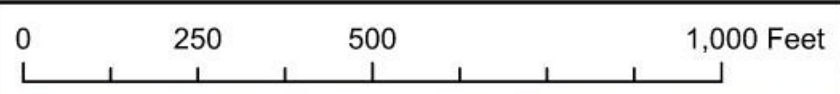
Coastal Stormwater Discharge Analysis
Dorchester Bay Basin



Hazen

Sheet 5 of 18

November 2022



Legend

- Proposed Manhole
- Proposed Outfall
- Existing Outfall
- Proposed Stormwater Pipe
- Existing Storm Sewer Line

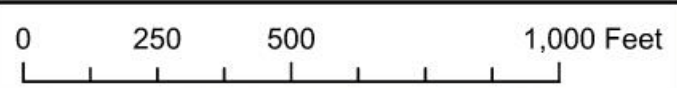


Dorchester Bay Basin

High Elevation Diversion – New Pipeline 1

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin





Legend

- Proposed Manhole
- Proposed Outfall
- Existing Outfall
- ▶ Proposed Stormwater Pipe
- ▶ Existing Storm Sewer Line

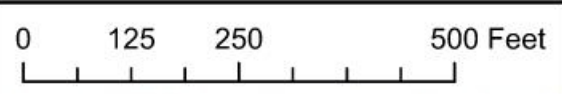


Dorchester Bay Basin

High Elevation Diversion – New Pipeline 2

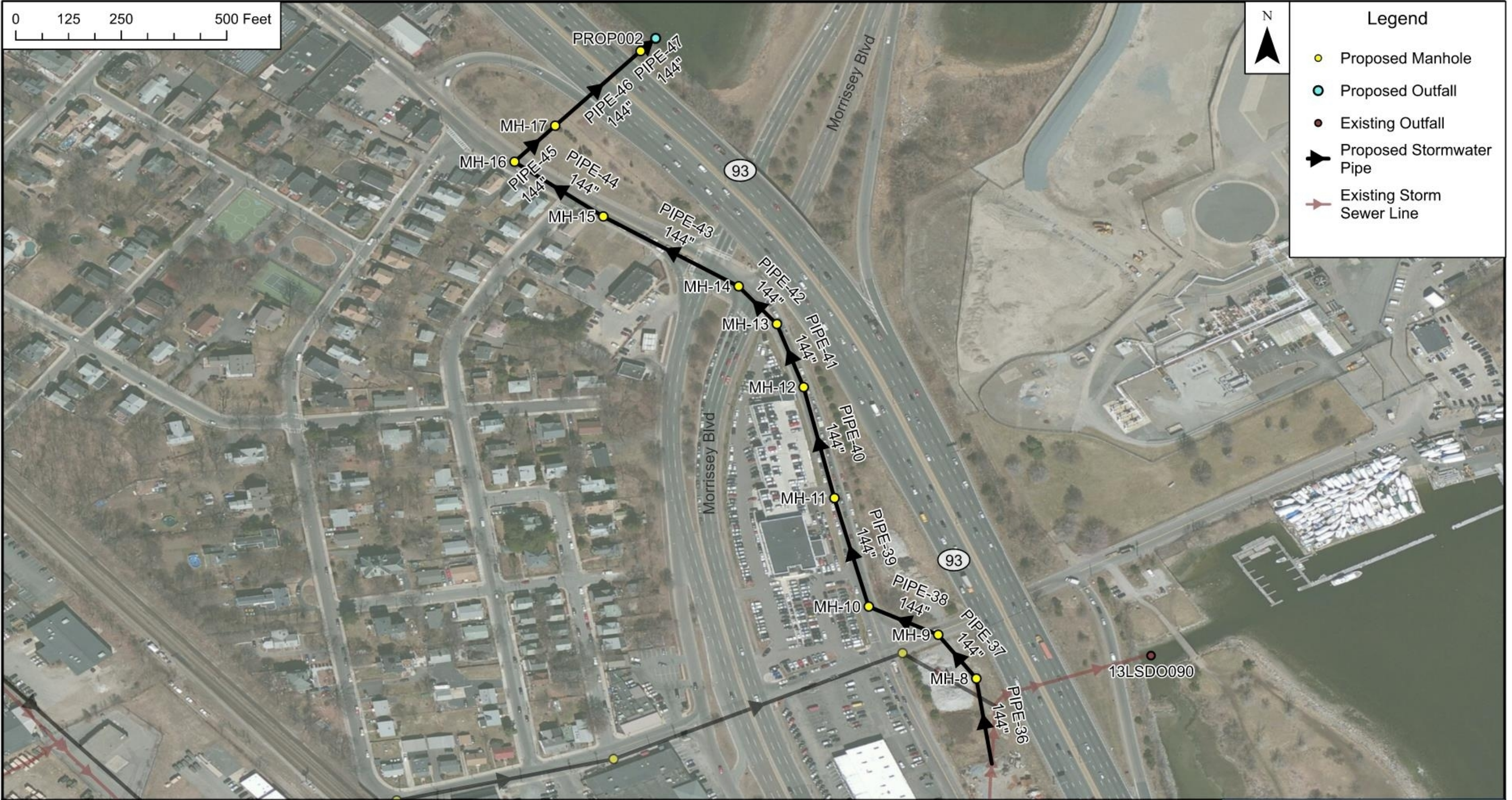
Coastal Stormwater Discharge Analysis
Dorchester Bay Basin





Legend

- Proposed Manhole
- Proposed Outfall
- Existing Outfall
- Proposed Stormwater Pipe
- Existing Storm Sewer Line

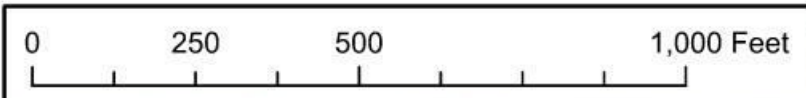


Dorchester Bay Basin

Outfall 13LSDO090 Diversion to Dorchester Bay Basin

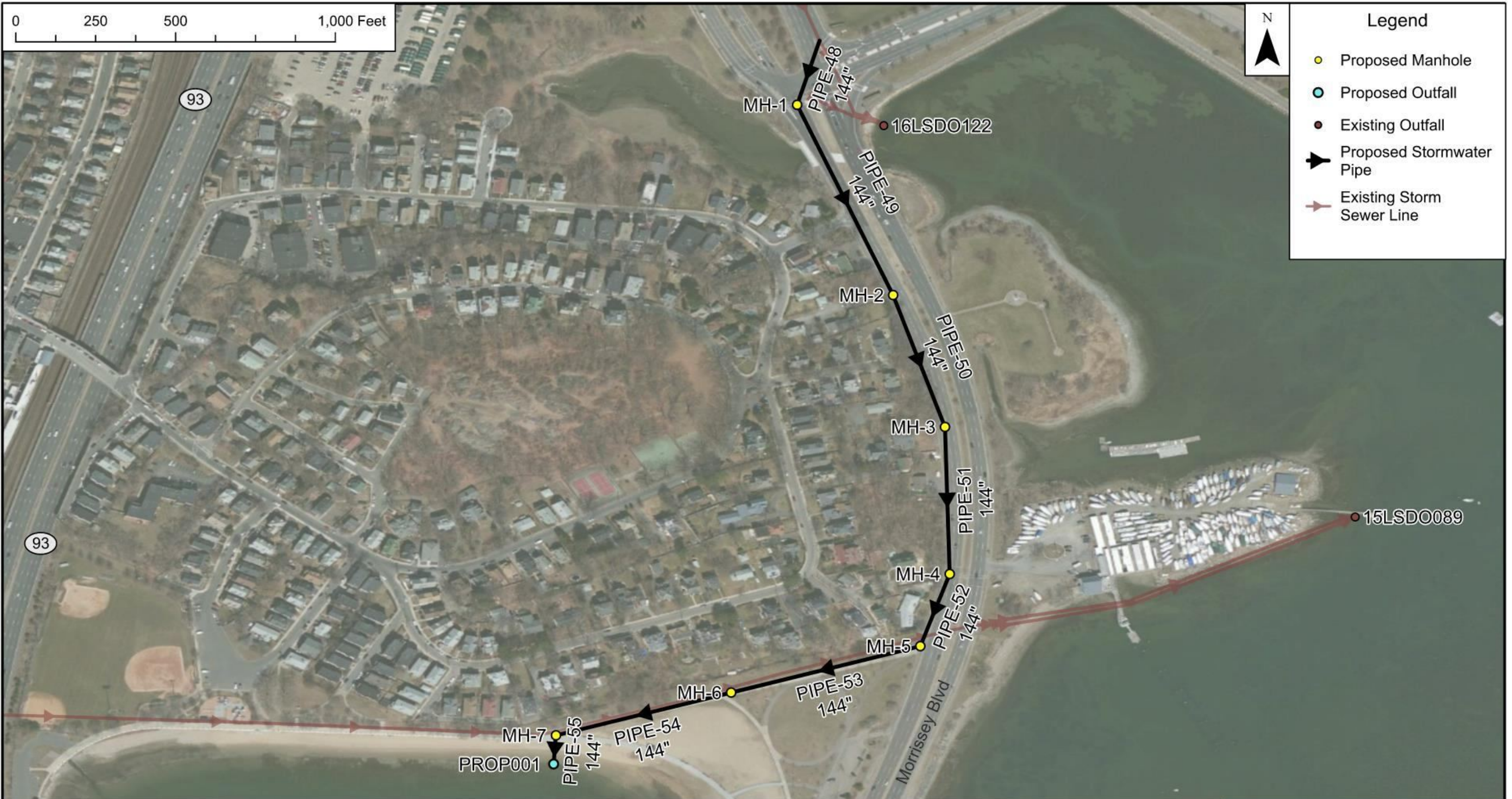
Coastal Stormwater Discharge Analysis
Dorchester Bay Basin





Legend

- Proposed Manhole
- Proposed Outfall
- Existing Outfall
- Proposed Stormwater Pipe
- Existing Storm Sewer Line



Dorchester Bay Basin

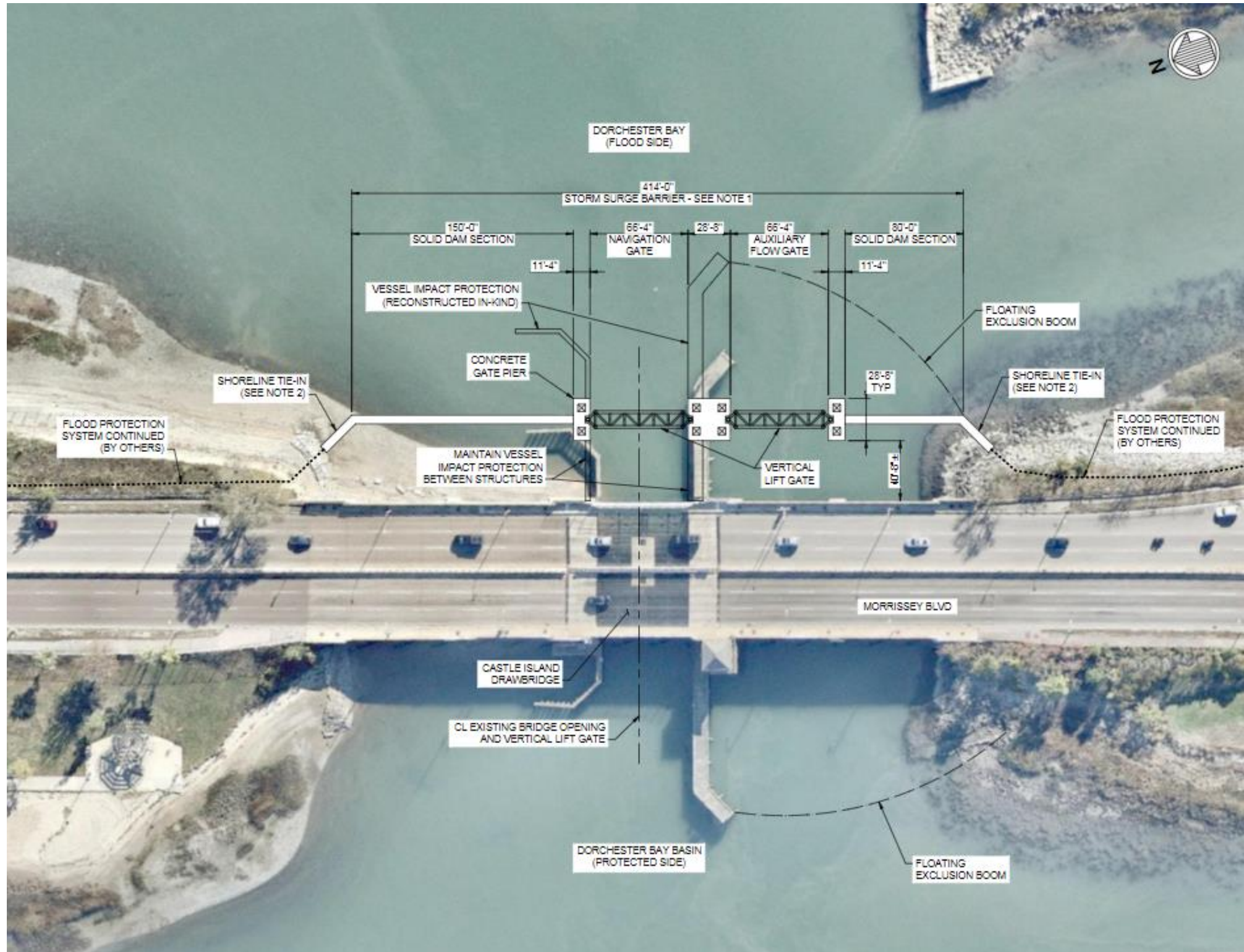
Outfall 16LSDO122 Diversion to Dorchester Bay Basin

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin



Hazen

Storm Surge Barrier and Navigable Gate



Storm Surge Barrier and Gates

The SSB concept at the DBB utilizes a single 66' navigation gate and an additional auxiliary flow gate. The gates, when open, are stored above the storm surge barrier superstructure. When open, the storm surge barrier does not impede existing navigation or flow between the DBB and Harbor. The gates can be lowered into the "closed" position ahead of an extreme storm event to isolate the DBB.

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin



Hazen

Sheet 10 of 18

November 2022

Flood Modeling and Damage Analysis

Figure 3: Estimated Replacement Cost

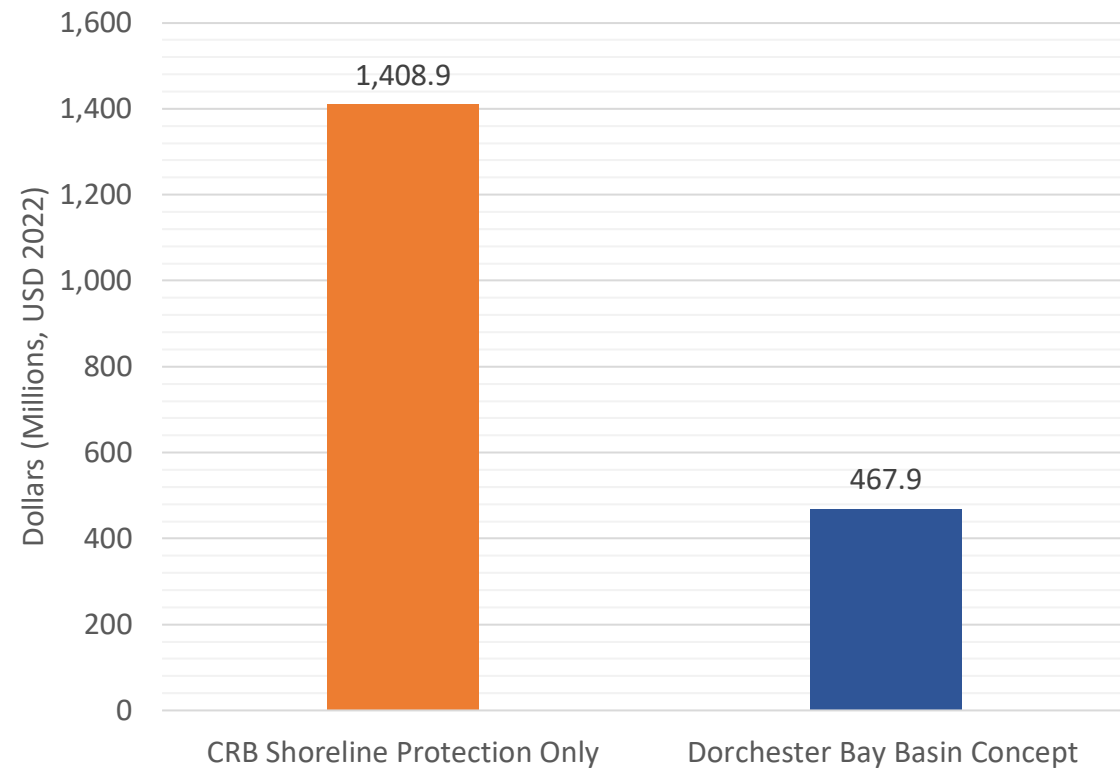


Figure 4: Loss of GDP

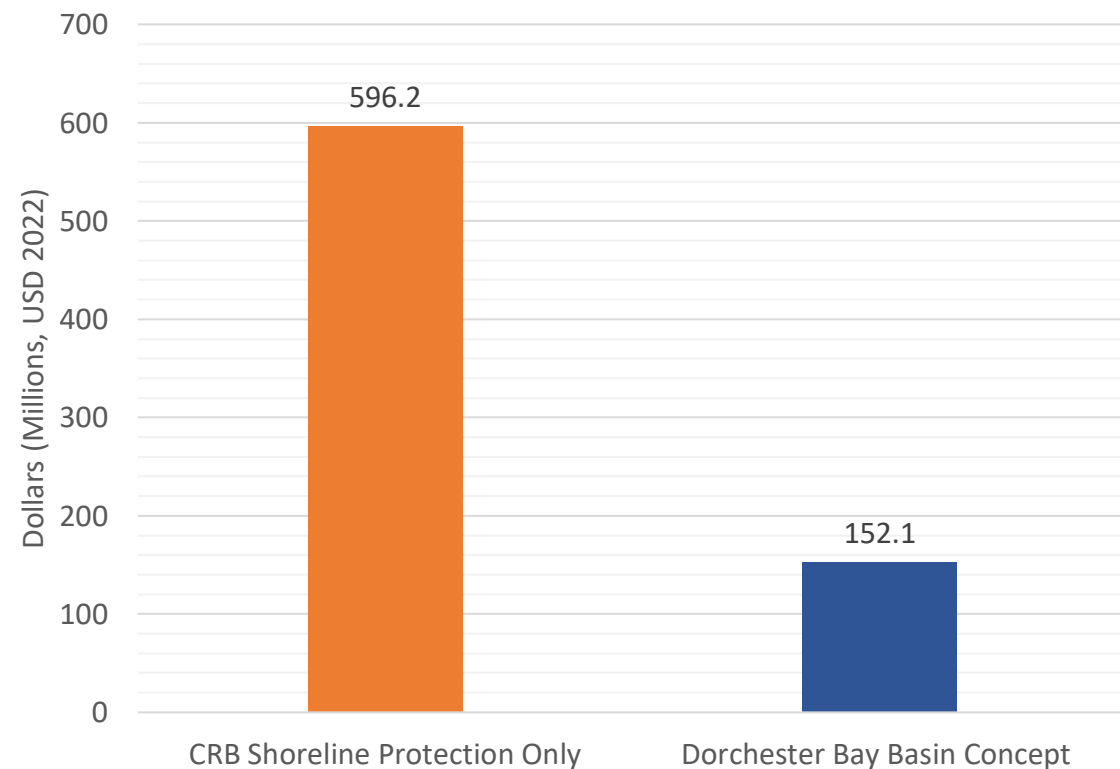
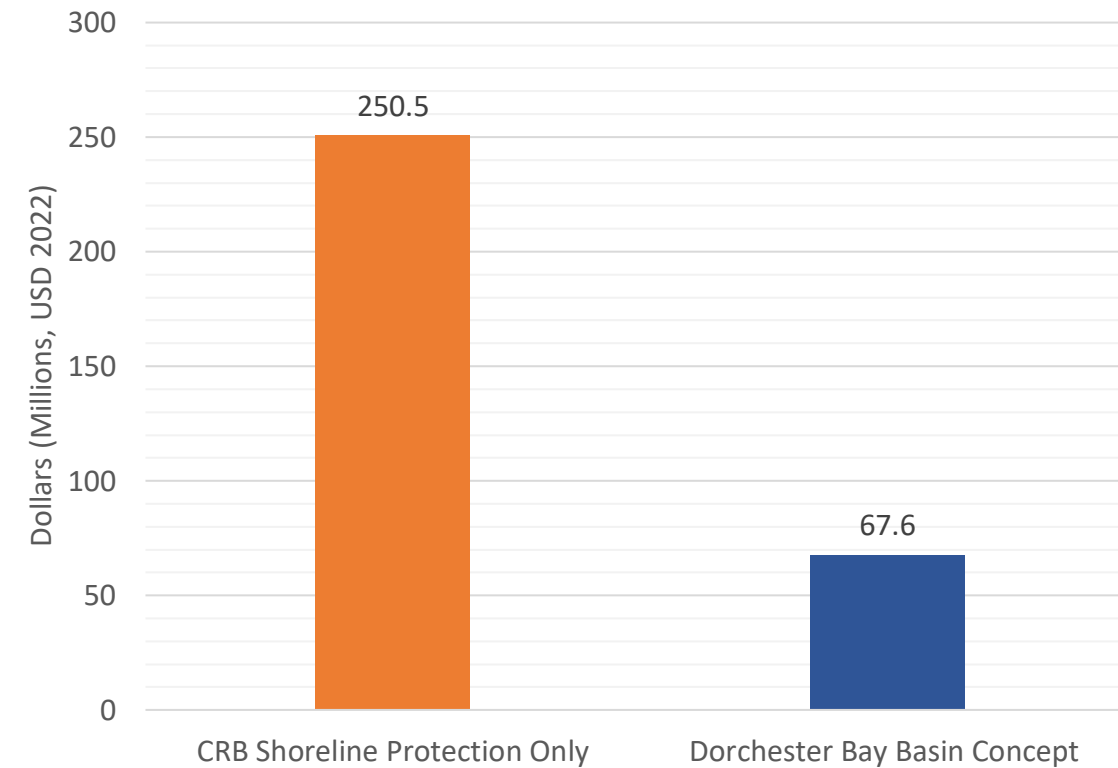


Figure 5: Physical Damage



The flood reduction benefits of the DBB concept were evaluated using the Commission’s 2D Inundation Model by simulating a 100-year tropical storm event with 2070 SLR and storm surge. The figures on the following page depict the peak flooding that was predicted in the drainage area tributary to the DBB with shoreline protection only and with the DBB concept implemented. An analysis of economic losses/physical impacts from flooding under both scenarios was performed by risQ Inc.

Model predictions indicate that **the Dorchester Bay Basin concept reduces physical damage by \$182.9 million, avoids \$941 million in rebuilding costs, and mitigates a GPD loss of \$444.1 million** during a 100-year tropical storm event in 2070 compared to shoreline protection only.

Note: replacement values include the total value of impacted buildings in flooded areas (e.g., impacted buildings are fully replaced), whereas physical damage includes estimated costs to repair flood damage based on predicted flood depths and building characteristics. The values shown are the average of minimum and maximum calculated losses. Refer to the Project's Final Report for more information.

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin





Legend

- Flood Depth > 4 in and < 1 ft
- Flood Depth > 1 ft and < 2 ft
- Flood Depth > 2 ft
- Drainage Area Analyzed

Simulation Parameters

Storm Type	100yr Tropical Storm
Rainfall Depth	9.6 inches
Peak WSE 2070 SLR + 100yr Surge	13.8 feet NAVD88

2070 SLR + 100yr Tropical Storm + Storm Surge
Shoreline Protection Only

2070 SLR + 100yr Tropical Storm + Storm Surge
Dorchester Bay Basin Storage and Tide Gates

Coastal Stormwater Discharge Analysis
 Dorchester Bay Basin

Sheet 12 of 18 November 2022

Cost Estimate and FEMA BRIC Considerations

Capital Cost Estimate

A construction cost estimate for the Dorchester Bay Basin concept was developed for planning purposes. Assumptions for the cost estimate include 15-year escalation to the mid-point of construction and the inclusion of a 50% design contingency. Additionally, for this estimate electrical duct bank allowances were based on their distance to the closest street. The cost of piles below storm drainage runs and structures, hookup costs to existing electrical services, and the cost of microtunneling and jacking were not included in this estimate.

Table 5: Dorchester Bay Basin Cost Estimate Subtotals

Remaining Design Development & Construction Administration (assumed 20% of total less design contingency)	\$24,845,000
Direct Construction Costs	\$48,774,375
Indirect Construction Costs	\$9,754,875
Mark-Up (Including 50% design contingency)	\$125,628,750
Total	\$209,004,000

Table 6: Dorchester Bay Basin Marine Work Cost Estimate Subtotals

	Vertical Lift Gate
Remaining Design Development & Construction Administration	\$14,169,000
Direct & Indirect Construction Costs Total (Marked-Up)	\$76,917,000
Escalation (15 years)	\$56,078,000
Design Contingency (35%)	\$31,881,000
Total	\$179,045,000
* Marked-up costs includes contractor overhead, profit, fees, bond, insurance.	

Social Vulnerability and FEMA BRIC Funding

FEMA BRIC funding prioritizes disadvantaged communities. Table 7 contains a summary of several indicators for the Dorchester Bay Basin tributary area that could be used help characterize the community for future FEMA funding applications and prioritization of projects that benefit disadvantaged communities.

Table 7: Dorchester Bay Basin Tributary Area Social Vulnerability Indicators

Low Income & Persistent Poverty	
Per Capita Income	\$33,671
Below Poverty Line	17%
High Housing Cost Burden	
Stressed Renters (>40% rent-to-income)	39%
Households With Food Insecurity	14%
Racial and Ethnic Segregation	
Asian Population	17%
Black Population	36%
Hispanic Population	17%
White Population	31%
Education and Employment	
Adults Age 25+ Without High School (or equivalent) Degree	18%
Unemployment Rate (Age 16+)	7%

Data provided by risQ inc. from the US census and American Community Survey

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin



Hazen

Planting Palette

A planting palette was developed for the embankment around the Dorchester Bay Basin. After construction, planting of native plant species could provide a public amenity with new green space and environmental benefits associated with native plant species.

Shrubs



Baccharis halimifolia
groundsel tree



Iva frutescens
saltmarsh elder



Prunus maritima
beach plum



Morella pensylvanica
bayberry

Herbaceous and Grasses



Spartina alterniflora
smooth cordgrass



Spartina patens
saltmeadow grass

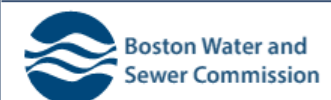


Distichlis spicata
coastal salt grass



Solidago sempervirens
seaside goldenrod

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin



Hazen

Sheet 14 of 18

November 2022

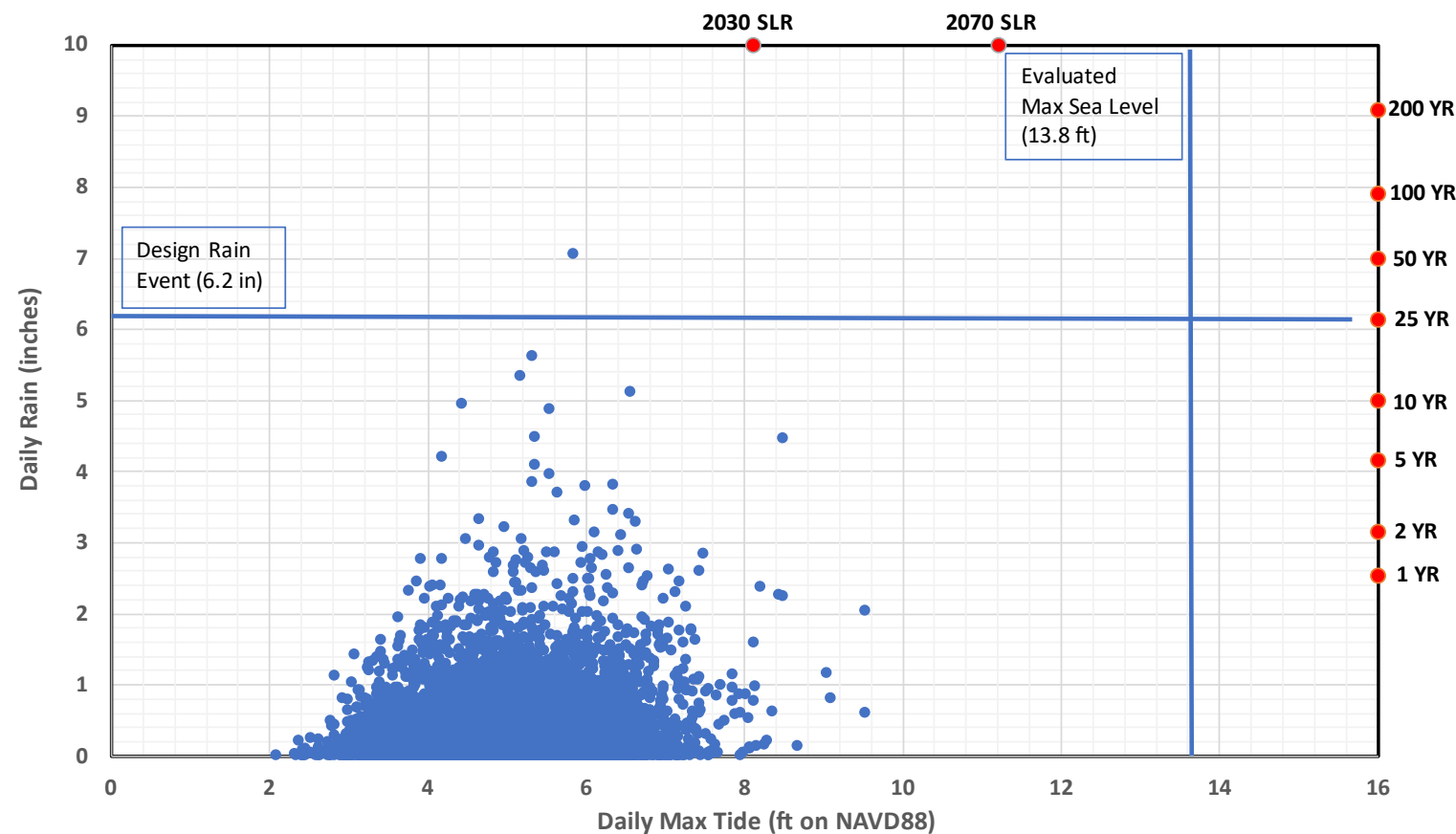
Adaptability and Implementation

Adaptability

Figure 6 below depicts historical daily rainfall totals and tide levels. As shown in this figure, the conditions that were used to design and analyze the DBB storage concept are conservative and represent more extreme conditions than have occurred historically. As such, it is likely that the DBB storage concept will function without the need for a pump station in the future under many conditions. Regardless, the following measures could be implemented to adapt the concept to more severe conditions (additional SLR, more intense rainfall, etc.) in the future:

- Construct a pump station to maintain lower water levels during a storm event
- Construct a pump station to draw down water levels (maximize storage capacity) in DBB before a forecast storm event
- In conjunction with a pump station, dredge DBB to obtain additional usable storage

Figure 6: Design and Analysis Conditions vs. Historical Tide and Rainfall



Implementation Considerations

- Coordination with CRB (and other relevant stakeholders) to construct adequate shoreline protection around the DBB is essential for successful implementation of this concept. To function as designed, the DBB must be fully isolated from high sea levels when the gate is closed; as such, careful coordination with CRB is essential at this location.
- Coordination with the Dorchester Yacht Club should be conducted to ensure gates are sufficiently large to accommodate all anticipated boat traffic.
- The new pipelines that convey flow from adjacent outfalls to the DBB are designed to surcharge. As such, under design conditions, it is important that manhole covers are watertight and securely bolted or fastened in place to prevent flooding.
- The new pipelines that drain higher elevation portions of the tributary areas are designed only to convey flow from areas upstream of their origin. Lower elevation areas with higher flood vulnerability along these pipelines should not be connected to the new pipelines.
- The Neponset River is federally designated superfund site. A survey of hazardous materials, and detailed list of required permits, should be developed before beginning the final design process.
- Active flow control gates at proposed diversion structures could be used to periodically divert flow into the DBB during “normal” tide conditions; this could help prevent sediment deposition in the pipelines.

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin

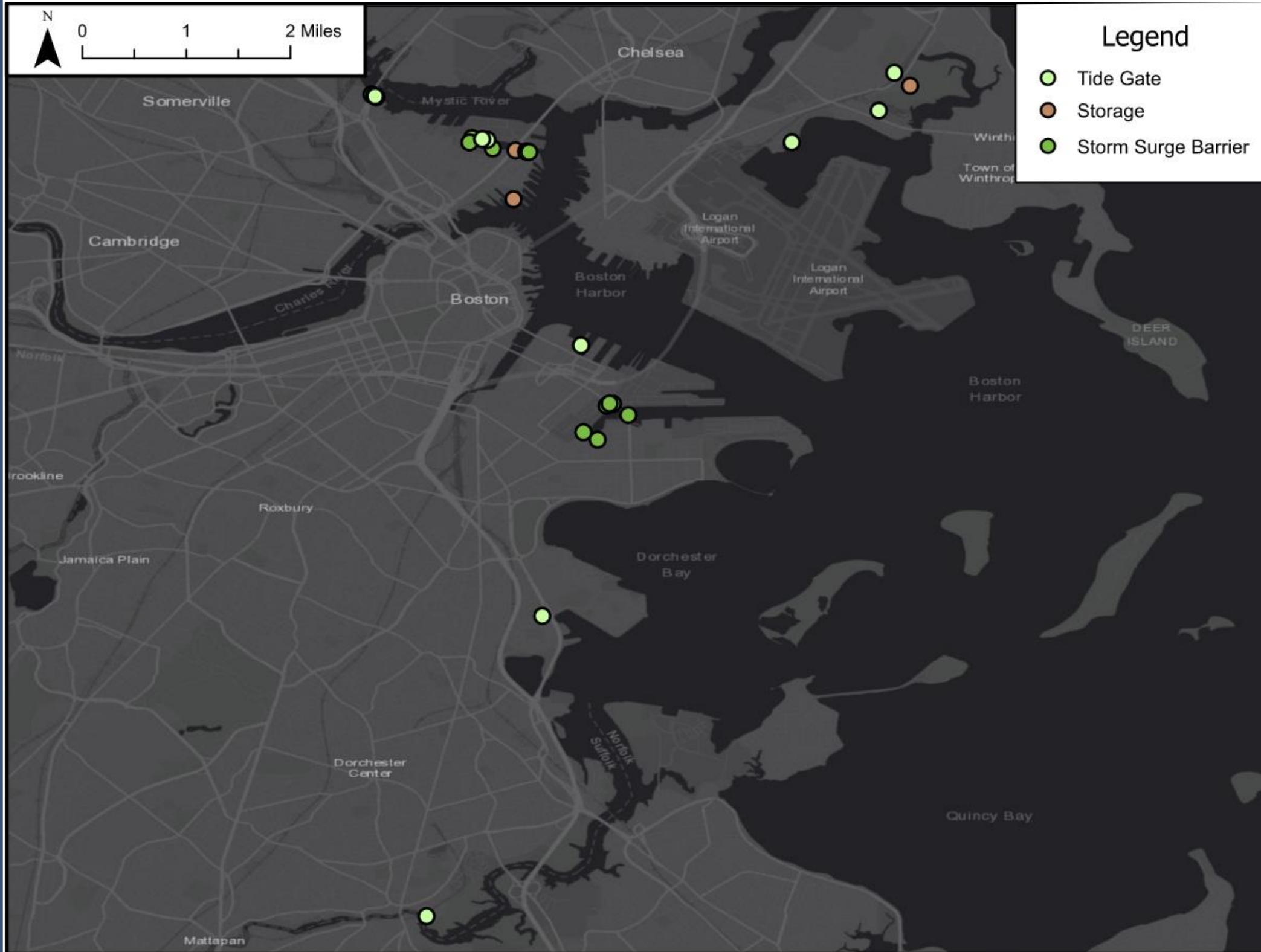


Hazen

Sheet 15 of 18

November 2022

Replicability and Implementation Timeline



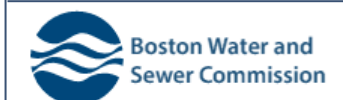
Summary of Similar Concepts

Number of Sites: 27

Vulnerable Area: 499 acres

The map on this sheet depicts other vulnerable outfalls that could utilize elements of the DBB solution including storage, storm surge barriers, and tide gates. Additional detail about these outfalls can be found in the Commission's Coastal Stormwater Discharge Analysis Implementation Timeline.

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin



Hazen

Sheet 16 of 18

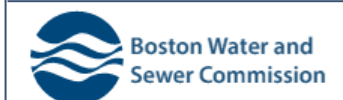
November 2022

ATTACHMENT A
DORCHESTER BAY BASIN STORM SURGE BARRIER CONCEPTUAL DESIGN DRAWINGS
VERTICAL LIFT GATE

A-1: Vertical Lift Gate Overview Plan

A-2: Vertical Lift Gate Foundation and Elevation Plans

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin



Hazen

Sheet 17 of 18

November 2022



A1
S-101 PLAN - STORM SURGE BARRIER - VERTICAL LIFT GATE
SCALE: 1" = 40'

40'-0" 0'-0" 40'-0" 80'-0"
SCALE: 1"=40'

**PRELIMINARY -
CONCEPT LEVEL**

NOTES:

1. THE CONCEPT PLAN VIEWS SHOW PORTIONS OF STORM SURGE BARRIER STRUCTURE THAT PROJECT ABOVE DAILY HIGH WATER LINE. SEE S-400 SERIES SHEETS FOR MULTIVIEWS AND DETAILS ASSOCIATED WITH BELOW WATER AND CHANNEL BED FEATURES (FOUNDATION, SCOUR PROTECTION).
2. SHORELINE INTERFACES, TRANSITIONS, AND TIE-INS SHALL BE DETERMINED DURING DETAILED DESIGN.

Mark	Description	Date	Appr
01	DBE SSB DRAFT CONCEPT FOR CLIENT REVIEW 11/21/2022	11/21/2022	MK

BOSTON WATER AND SEWER COMMISSION
STORM SURGE BARRIER
DORCHESTER BAY BASIN
BOSTON, MA

**PLAN - STORM SURGE BARRIER -
VERTICAL LIFT GATE**

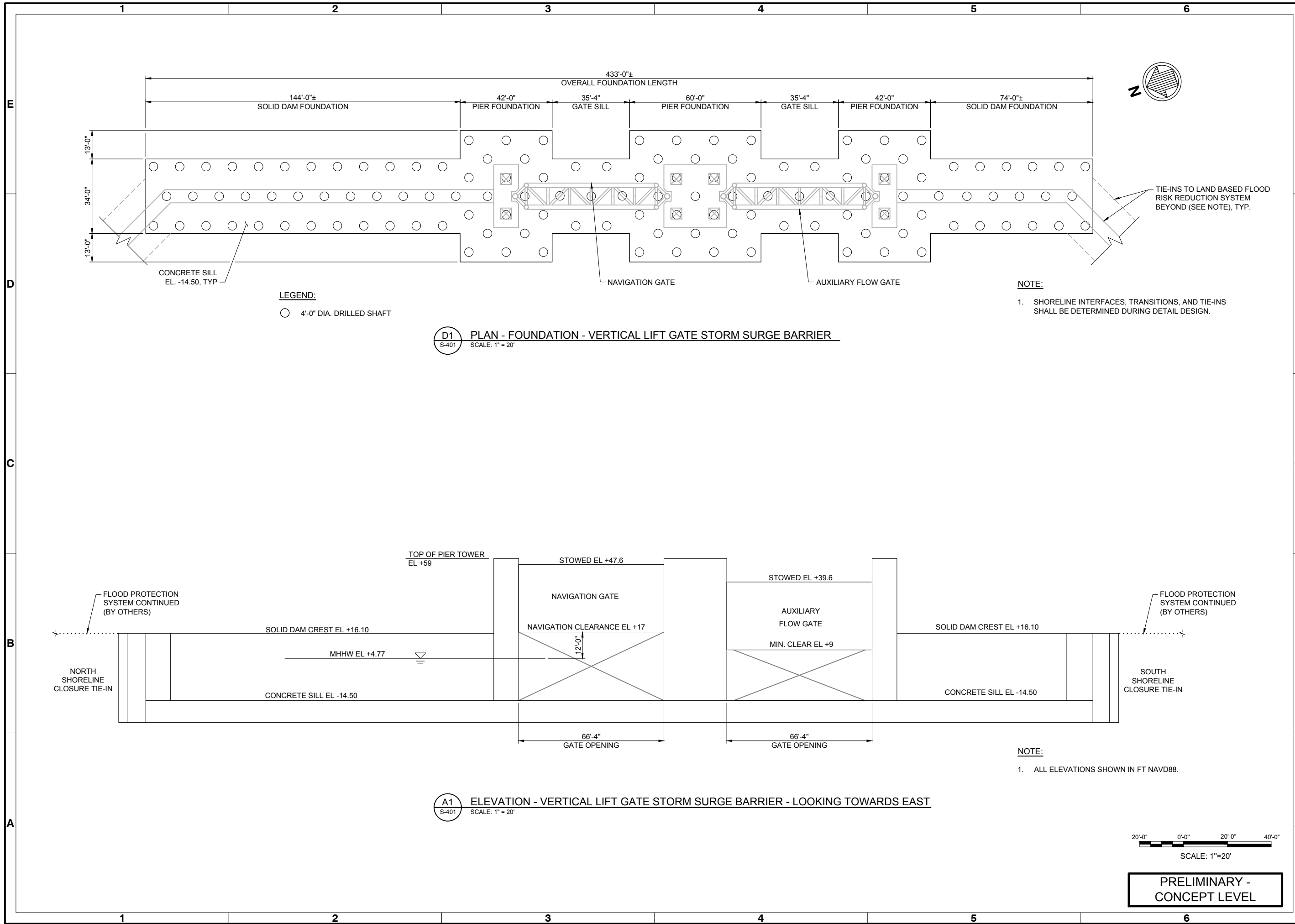
11/21/2022 8:32 PM by CMOYAIGLES/AS

Designed by:	NEJ	Date:	2022-11-21
Drawn by:	CHI	M&N Project No.:	11167
Reviewed by:	MK	Drawing code:	
Submitted by:	MOFFATT & NICHOL	Drawing Scale:	1" = 40' (0 SHEET)

MOFFATT & NICHOL
180 WELLS AVE, SUITE #302
NEWTON, MA 02459

SEAL

Sheet Reference No.
S-101
INDEX: 1 OF 2

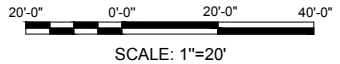


D1
S-401
PLAN - FOUNDATION - VERTICAL LIFT GATE STORM SURGE BARRIER
SCALE: 1" = 20'

A1
S-401
ELEVATION - VERTICAL LIFT GATE STORM SURGE BARRIER - LOOKING TOWARDS EAST
SCALE: 1" = 20'

NOTE:
1. SHORELINE INTERFACES, TRANSITIONS, AND TIE-INS SHALL BE DETERMINED DURING DETAIL DESIGN.

NOTE:
1. ALL ELEVATIONS SHOWN IN FT NAVD88.



PRELIMINARY - CONCEPT LEVEL

Mark	Date	Description
D1	11-21-2022	DBE SSB DRAFT CONCEPT FOR CLIENT REVIEW

**BOSTON WATER AND SEWER COMMISSION
STORM SURGE BARRIER
DORCHESTER BAY BASIN
BOSTON, MA**

MULTIVIEWS - VERTICAL LIFT GATE

Designed by:	NEJ	Date:	2022-11-21
Drawn by:	JCS	M&N Project No.:	11167
Checked by:	CMH	Drawing code:	
Reviewed by:	MK	Drawing Scale:	1:1 (0 SHEET)
Submitted by:	MOFFATT & NICHOL	Per scale:	

MOFFATT & NICHOL
180 WELLS AVE, SUITE #302
NEWTON, MA 02459

moffatt & nichol

SEAL

Sheet Reference No.
S-102
INDEX: 2 OF 2

ATTACHMENT B
PROPOSED STORM DIVERSION PIPE ALIGNMENT DRAWINGS

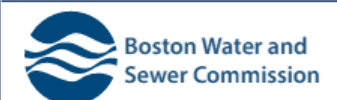
High Elevation Diversion 1: B-1 – B-8, B-27 -- B-31

High Elevation Diversion 2: B-9 – B20, B34 – B35

Outfall 13LSDO090 Diversion: B36 – B47

Outfall 16LSDO122 Diversion: B48 – B55

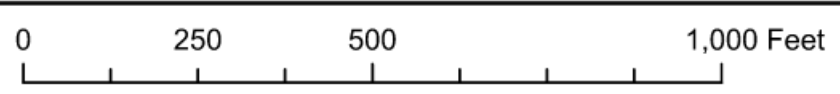
Coastal Stormwater Discharge Analysis
Dorchester Bay Basin



Hazen

Sheet 18 of 18

November 2022



Legend

- Proposed Manhole
- Proposed Outfall
- Existing Outfall
- Proposed Stormwater Pipe
- Existing Storm Sewer Line



Dorchester Bay Basin

High Elevation Diversion – New Pipeline 1

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin

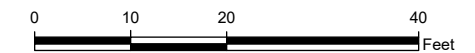




PROP-PIPE-1



Plan
1" = 10'



**PRELIMINARY
DO NOT USE FOR
CONSTRUCTION**

ASSUMPTIONS, DEFINITIONS, AND DISCLAIMERS
 -EXISTING PIPE ALIGNMENTS AND ELEVATION DATA PROVIDED BY BWSC ON 12/21/2020
 -ALL ELEVATIONS THROUGHOUT ARE REFERENCED TO NAVD88 DATUM
 -PROPOSED PIPE AND MANHOLE ALIGNMENTS ARE PRELIMINARY AND CONCEPTUAL
 -DETAILED SURVEY AND AN EVALUATION FOR SUBSURFACE CONFLICTS SHOULD BE PERFORMED BEFORE ADVANCEMENT OF THESE CONCEPTS

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin



Hazen

B-2

November 2022



PROP-PIPE-2



Plan
1" = 10'





**PRELIMINARY
DO NOT USE FOR
CONSTRUCTION**

ASSUMPTIONS, DEFINITIONS, AND DISCLAIMERS

- EXISTING PIPE ALIGNMENTS AND ELEVATION DATA PROVIDED BY BWSC ON 12/21/2020
- ALL ELEVATIONS THROUGHOUT ARE REFERENCED TO NAVD88 DATUM
- PROPOSED PIPE AND MANHOLE ALIGNMENTS ARE PRELIMINARY AND CONCEPTUAL
- DETAILED SURVEY AND AN EVALUATION FOR SUBSURFACE CONFLICTS SHOULD BE PERFORMED BEFORE ADVANCEMENT OF THESE CONCEPTS

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin

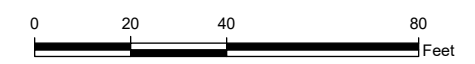
B-3 November 2022



PROP-PIPE-3



Plan
1" = 20'





**PRELIMINARY
DO NOT USE FOR
CONSTRUCTION**

ASSUMPTIONS, DEFINITIONS, AND DISCLAIMERS

- EXISTING PIPE ALIGNMENTS AND ELEVATION DATA PROVIDED BY BWSC ON 12/21/2020
- ALL ELEVATIONS THROUGHOUT ARE REFERENCED TO NAVD88 DATUM
- PROPOSED PIPE AND MANHOLE ALIGNMENTS ARE PRELIMINARY AND CONCEPTUAL
- DETAILED SURVEY AND AN EVALUATION FOR SUBSURFACE CONFLICTS SHOULD BE PERFORMED BEFORE ADVANCEMENT OF THESE CONCEPTS

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin

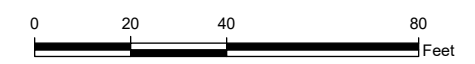
B-4 November 2022



PROP-PIPE-4



Plan
1" = 20'





**PRELIMINARY
DO NOT USE FOR
CONSTRUCTION**

ASSUMPTIONS, DEFINITIONS, AND DISCLAIMERS

- EXISTING PIPE ALIGNMENTS AND ELEVATION DATA PROVIDED BY BWSC ON 12/21/2020
- ALL ELEVATIONS THROUGHOUT ARE REFERENCED TO NAVD88 DATUM
- PROPOSED PIPE AND MANHOLE ALIGNMENTS ARE PRELIMINARY AND CONCEPTUAL
- DETAILED SURVEY AND AN EVALUATION FOR SUBSURFACE CONFLICTS SHOULD BE PERFORMED BEFORE ADVANCEMENT OF THESE CONCEPTS

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin

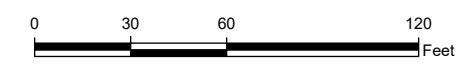
B-5 November 2022



PROP-PIPE-5



Plan
1" = 30'





**PRELIMINARY
DO NOT USE FOR
CONSTRUCTION**

ASSUMPTIONS, DEFINITIONS, AND DISCLAIMERS

- EXISTING PIPE ALIGNMENTS AND ELEVATION DATA PROVIDED BY BWSC ON 12/21/2020
- ALL ELEVATIONS THROUGHOUT ARE REFERENCED TO NAVD88 DATUM
- PROPOSED PIPE AND MANHOLE ALIGNMENTS ARE PRELIMINARY AND CONCEPTUAL
- DETAILED SURVEY AND AN EVALUATION FOR SUBSURFACE CONFLICTS SHOULD BE PERFORMED BEFORE ADVANCEMENT OF THESE CONCEPTS

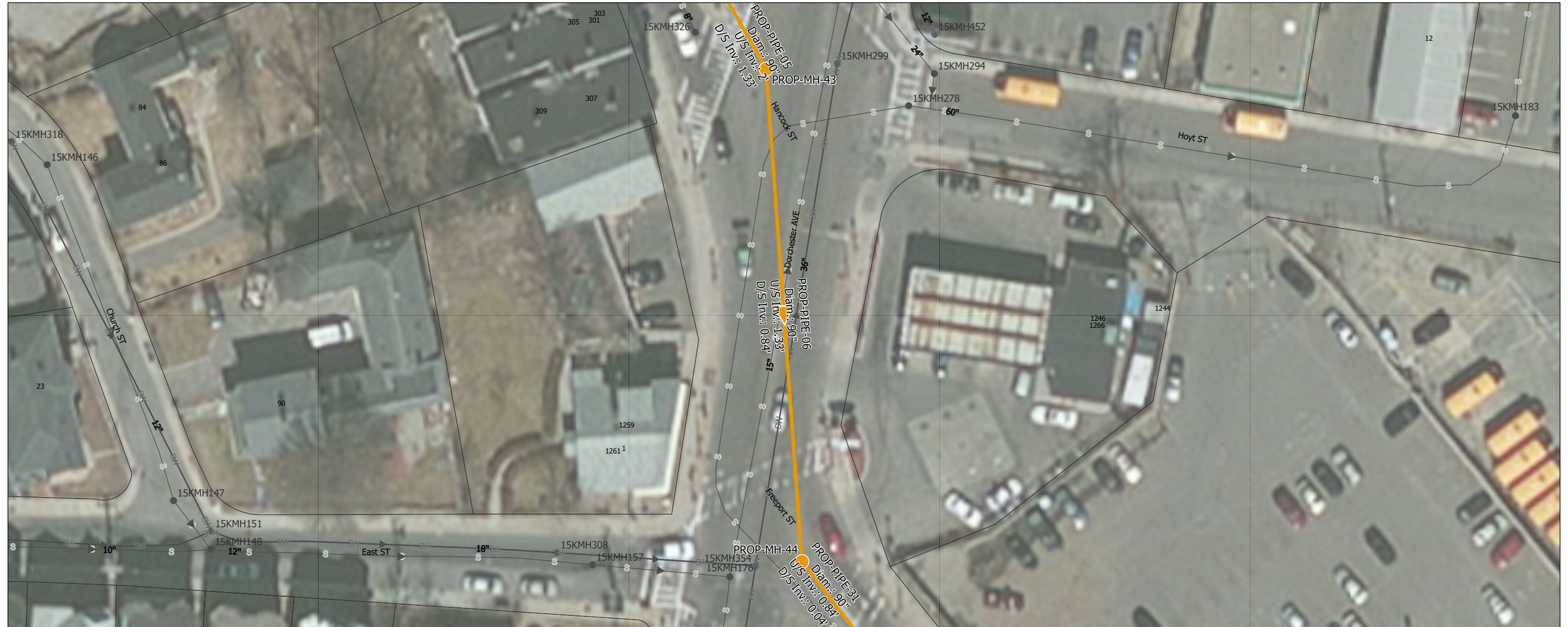
Coastal Stormwater Discharge Analysis
Dorchester Bay Basin

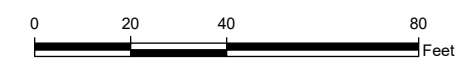
B-6 November 2022



PROP-PIPE-6



Plan
1" = 20'





**PRELIMINARY
DO NOT USE FOR
CONSTRUCTION**

ASSUMPTIONS, DEFINITIONS, AND DISCLAIMERS

- EXISTING PIPE ALIGNMENTS AND ELEVATION DATA PROVIDED BY BWSC ON 12/21/2020
- ALL ELEVATIONS THROUGHOUT ARE REFERENCED TO NAVD88 DATUM
- PROPOSED PIPE AND MANHOLE ALIGNMENTS ARE PRELIMINARY AND CONCEPTUAL
- DETAILED SURVEY AND AN EVALUATION FOR SUBSURFACE CONFLICTS SHOULD BE PERFORMED BEFORE ADVANCEMENT OF THESE CONCEPTS

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin

B-7 November 2022



PROP-PIPE-31



Plan
1" = 30'





**PRELIMINARY
DO NOT USE FOR
CONSTRUCTION**

ASSUMPTIONS, DEFINITIONS, AND DISCLAIMERS

- EXISTING PIPE ALIGNMENTS AND ELEVATION DATA PROVIDED BY BWSC ON 12/21/2020
- ALL ELEVATIONS THROUGHOUT ARE REFERENCED TO NAVD88 DATUM
- PROPOSED PIPE AND MANHOLE ALIGNMENTS ARE PRELIMINARY AND CONCEPTUAL
- DETAILED SURVEY AND AN EVALUATION FOR SUBSURFACE CONFLICTS SHOULD BE PERFORMED BEFORE ADVANCEMENT OF THESE CONCEPTS

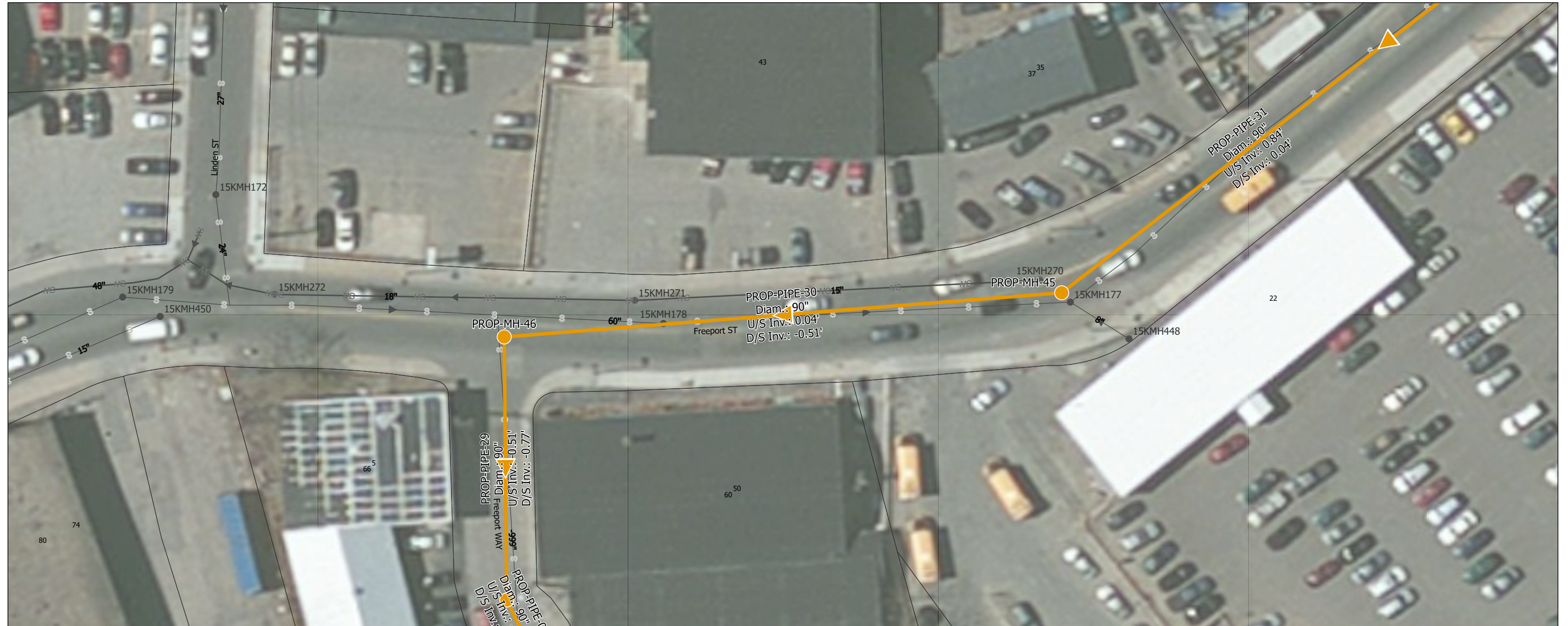
Coastal Stormwater Discharge Analysis
Dorchester Bay Basin

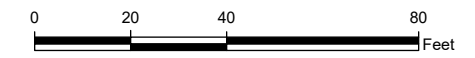
B-8 November 2022



PROP-PIPE-30



Plan
1" = 20'



**PRELIMINARY
DO NOT USE FOR
CONSTRUCTION**

ASSUMPTIONS, DEFINITIONS, AND DISCLAIMERS
 -EXISTING PIPE ALIGNMENTS AND ELEVATION DATA PROVIDED BY BWSC ON 12/21/2020
 -ALL ELEVATIONS THROUGHOUT ARE REFERENCED TO NAVD88 DATUM
 -PROPOSED PIPE AND MANHOLE ALIGNMENTS ARE PRELIMINARY AND CONCEPTUAL
 -DETAILED SURVEY AND AN EVALUATION FOR SUBSURFACE CONFLICTS SHOULD BE PERFORMED BEFORE ADVANCEMENT OF THESE CONCEPTS

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin



Hazen

B-9

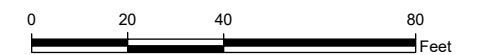
November 2022



PROP-PIPE-29



Plan
1" = 20'



**PRELIMINARY
DO NOT USE FOR
CONSTRUCTION**

ASSUMPTIONS, DEFINITIONS, AND DISCLAIMERS
 -EXISTING PIPE ALIGNMENTS AND ELEVATION DATA PROVIDED BY BWSC ON 12/21/2020
 -ALL ELEVATIONS THROUGHOUT ARE REFERENCED TO NAVD88 DATUM
 -PROPOSED PIPE AND MANHOLE ALIGNMENTS ARE PRELIMINARY AND CONCEPTUAL
 -DETAILED SURVEY AND AN EVALUATION FOR SUBSURFACE CONFLICTS SHOULD BE PERFORMED BEFORE ADVANCEMENT OF THESE CONCEPTS

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin



Hazen

B-10

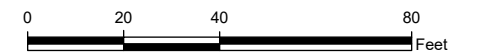
November 2022



PROP-PIPE-7



Plan
1" = 20'



**PRELIMINARY
DO NOT USE FOR
CONSTRUCTION**

ASSUMPTIONS, DEFINITIONS, AND DISCLAIMERS
 -EXISTING PIPE ALIGNMENTS AND ELEVATION DATA PROVIDED BY BWSC ON 12/21/2020
 -ALL ELEVATIONS THROUGHOUT ARE REFERENCED TO NAVD88 DATUM
 -PROPOSED PIPE AND MANHOLE ALIGNMENTS ARE PRELIMINARY AND CONCEPTUAL
 -DETAILED SURVEY AND AN EVALUATION FOR SUBSURFACE CONFLICTS SHOULD BE PERFORMED BEFORE ADVANCEMENT OF THESE CONCEPTS

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin



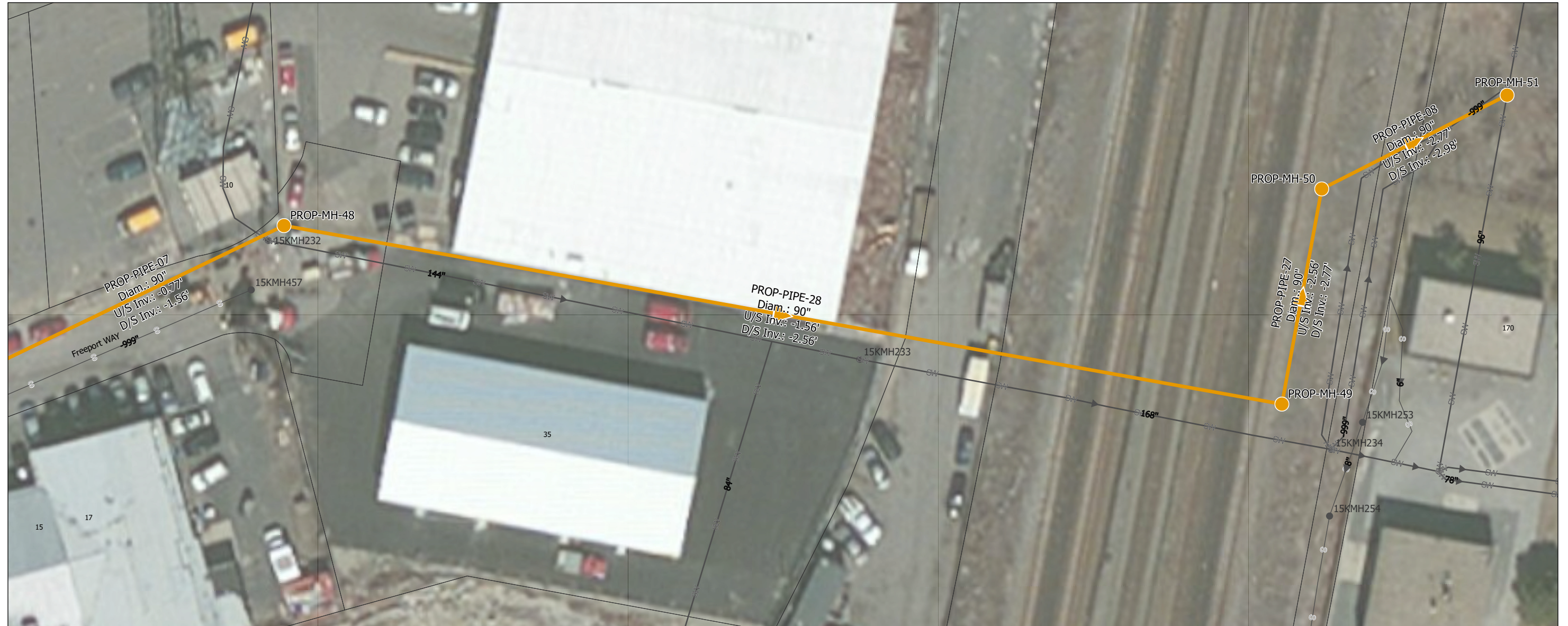
Hazen

B-11

November 2022



PROP-PIPE-28



Plan
1" = 20'



**PRELIMINARY
DO NOT USE FOR
CONSTRUCTION**

ASSUMPTIONS, DEFINITIONS, AND DISCLAIMERS
 -EXISTING PIPE ALIGNMENTS AND ELEVATION DATA PROVIDED BY BWSC ON 12/21/2020
 -ALL ELEVATIONS THROUGHOUT ARE REFERENCED TO NAVD88 DATUM
 -PROPOSED PIPE AND MANHOLE ALIGNMENTS ARE PRELIMINARY AND CONCEPTUAL
 -DETAILED SURVEY AND AN EVALUATION FOR SUBSURFACE CONFLICTS SHOULD BE PERFORMED BEFORE ADVANCEMENT OF THESE CONCEPTS

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin



Hazen

B-12

November 2022



PROP-PIPE-27



Plan
1" = 10'





**PRELIMINARY
DO NOT USE FOR
CONSTRUCTION**

ASSUMPTIONS, DEFINITIONS, AND DISCLAIMERS

- EXISTING PIPE ALIGNMENTS AND ELEVATION DATA PROVIDED BY BWSC ON 12/21/2020
- ALL ELEVATIONS THROUGHOUT ARE REFERENCED TO NAVD88 DATUM
- PROPOSED PIPE AND MANHOLE ALIGNMENTS ARE PRELIMINARY AND CONCEPTUAL
- DETAILED SURVEY AND AN EVALUATION FOR SUBSURFACE CONFLICTS SHOULD BE PERFORMED BEFORE ADVANCEMENT OF THESE CONCEPTS

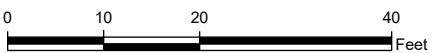
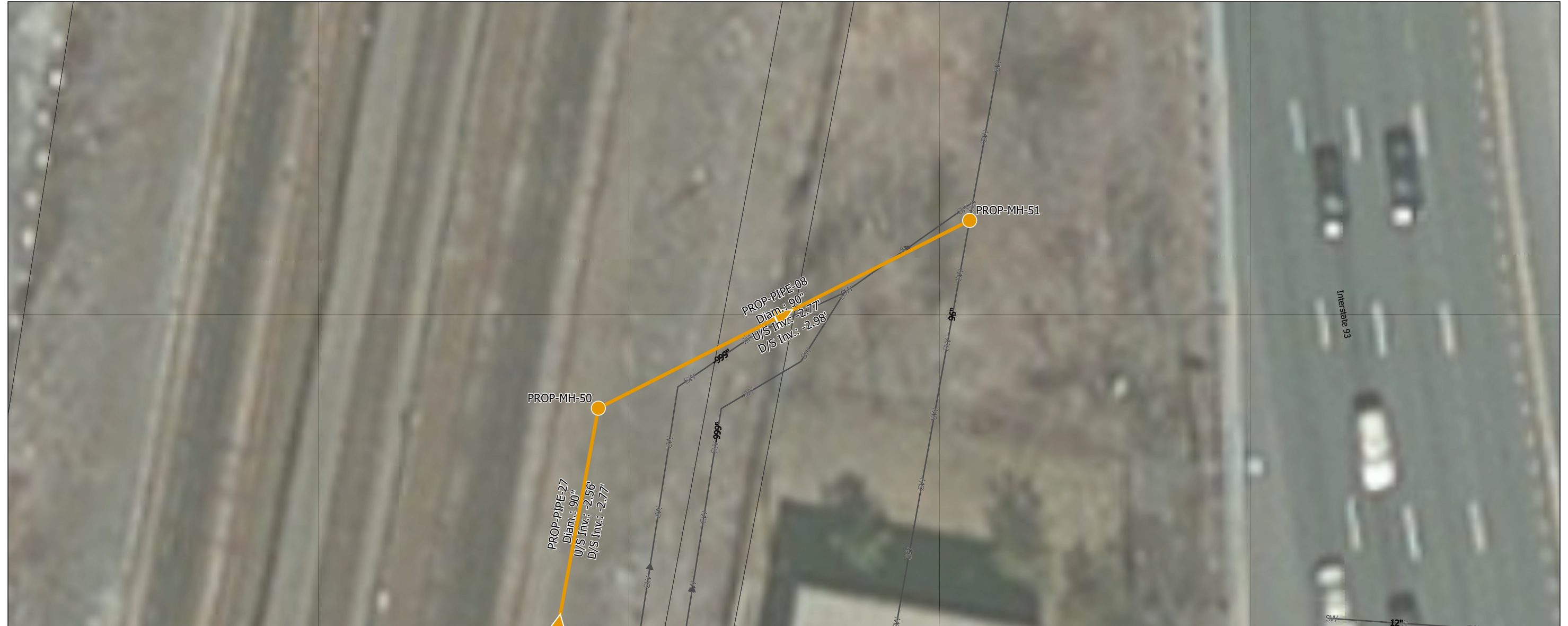
Coastal Stormwater Discharge Analysis
Dorchester Bay Basin

B-13 November 2022



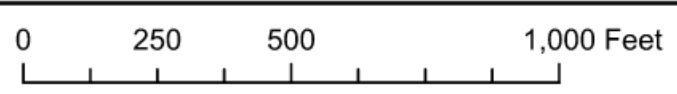
PROP-PIPE-8



Plan
1" = 10'

<p>PRELIMINARY DO NOT USE FOR CONSTRUCTION</p>	<p>ASSUMPTIONS, DEFINITIONS, AND DISCLAIMERS</p>
	<ul style="list-style-type: none"> -EXISTING PIPE ALIGNMENTS AND ELEVATION DATA PROVIDED BY BWSC ON 12/21/2020 -ALL ELEVATIONS THROUGHOUT ARE REFERENCED TO NAVD88 DATUM -PROPOSED PIPE AND MANHOLE ALIGNMENTS ARE PRELIMINARY AND CONCEPTUAL -DETAILED SURVEY AND AN EVALUATION FOR SUBSURFACE CONFLICTS SHOULD BE PERFORMED BEFORE ADVANCEMENT OF THESE CONCEPTS

<p>Coastal Stormwater Discharge Analysis Dorchester Bay Basin</p>	
<p>B-14</p>	<p>November 2022</p>



Legend

- Proposed Manhole
- Proposed Outfall
- Existing Outfall
- ▶ Proposed Stormwater Pipe
- ▶ Existing Storm Sewer Line



Dorchester Bay Basin

High Elevation Diversion – New Pipeline 2

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin





PROP-PIPE-9



Plan
1" = 20'





**PRELIMINARY
DO NOT USE FOR
CONSTRUCTION**

ASSUMPTIONS, DEFINITIONS, AND DISCLAIMERS

- EXISTING PIPE ALIGNMENTS AND ELEVATION DATA PROVIDED BY BWSC ON 12/21/2020
- ALL ELEVATIONS THROUGHOUT ARE REFERENCED TO NAVD88 DATUM
- PROPOSED PIPE AND MANHOLE ALIGNMENTS ARE PRELIMINARY AND CONCEPTUAL
- DETAILED SURVEY AND AN EVALUATION FOR SUBSURFACE CONFLICTS SHOULD BE PERFORMED BEFORE ADVANCEMENT OF THESE CONCEPTS

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin

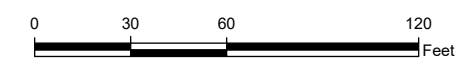
B-16 November 2022



PROP-PIPE-10



Plan
1" = 30'





**PRELIMINARY
DO NOT USE FOR
CONSTRUCTION**

ASSUMPTIONS, DEFINITIONS, AND DISCLAIMERS

- EXISTING PIPE ALIGNMENTS AND ELEVATION DATA PROVIDED BY BWSC ON 12/21/2020
- ALL ELEVATIONS THROUGHOUT ARE REFERENCED TO NAVD88 DATUM
- PROPOSED PIPE AND MANHOLE ALIGNMENTS ARE PRELIMINARY AND CONCEPTUAL
- DETAILED SURVEY AND AN EVALUATION FOR SUBSURFACE CONFLICTS SHOULD BE PERFORMED BEFORE ADVANCEMENT OF THESE CONCEPTS

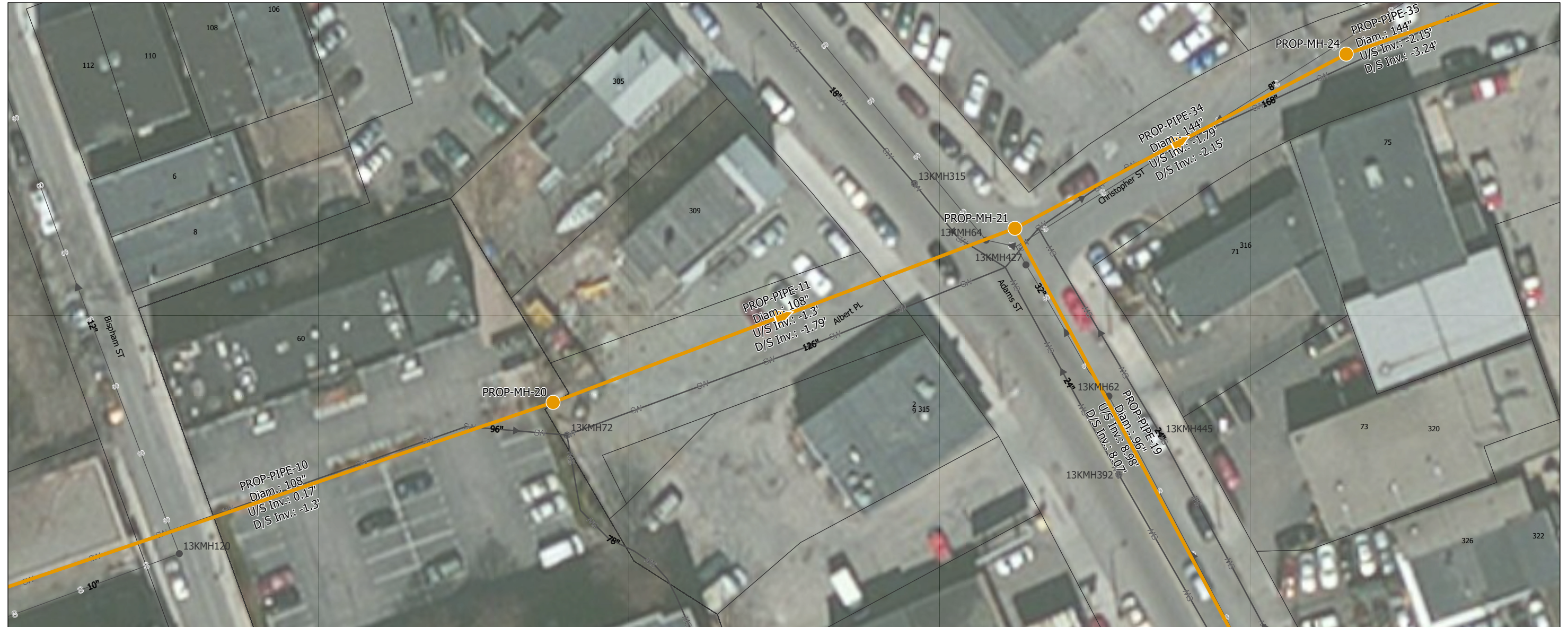
Coastal Stormwater Discharge Analysis
Dorchester Bay Basin

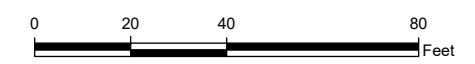
B-17 November 2022



PROP-PIPE-11



Plan
1" = 20'





**PRELIMINARY
DO NOT USE FOR
CONSTRUCTION**

ASSUMPTIONS, DEFINITIONS, AND DISCLAIMERS

- EXISTING PIPE ALIGNMENTS AND ELEVATION DATA PROVIDED BY BWSC ON 12/21/2020
- ALL ELEVATIONS THROUGHOUT ARE REFERENCED TO NAVD88 DATUM
- PROPOSED PIPE AND MANHOLE ALIGNMENTS ARE PRELIMINARY AND CONCEPTUAL
- DETAILED SURVEY AND AN EVALUATION FOR SUBSURFACE CONFLICTS SHOULD BE PERFORMED BEFORE ADVANCEMENT OF THESE CONCEPTS

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin

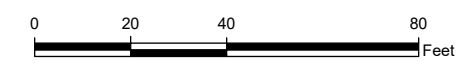
B-18 November 2022



PROP-PIPE-34



Plan
1" = 20'



**PRELIMINARY
DO NOT USE FOR
CONSTRUCTION**

ASSUMPTIONS, DEFINITIONS, AND DISCLAIMERS

- EXISTING PIPE ALIGNMENTS AND ELEVATION DATA PROVIDED BY BWSC ON 12/21/2020
- ALL ELEVATIONS THROUGHOUT ARE REFERENCED TO NAVD88 DATUM
- PROPOSED PIPE AND MANHOLE ALIGNMENTS ARE PRELIMINARY AND CONCEPTUAL
- DETAILED SURVEY AND AN EVALUATION FOR SUBSURFACE CONFLICTS SHOULD BE PERFORMED BEFORE ADVANCEMENT OF THESE CONCEPTS

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin

Boston Water and Sewer Commission

Hazen

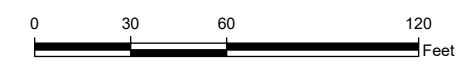
B-19 November 2022



PROP-PIPE-35



Plan
1" = 30'





**PRELIMINARY
DO NOT USE FOR
CONSTRUCTION**

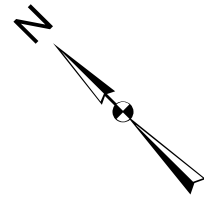
ASSUMPTIONS, DEFINITIONS, AND DISCLAIMERS

- EXISTING PIPE ALIGNMENTS AND ELEVATION DATA PROVIDED BY BWSC ON 12/21/2020
- ALL ELEVATIONS THROUGHOUT ARE REFERENCED TO NAVD88 DATUM
- PROPOSED PIPE AND MANHOLE ALIGNMENTS ARE PRELIMINARY AND CONCEPTUAL
- DETAILED SURVEY AND AN EVALUATION FOR SUBSURFACE CONFLICTS SHOULD BE PERFORMED BEFORE ADVANCEMENT OF THESE CONCEPTS

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin

B-20 November 2022



PROP-PIPE-12



Plan
1" = 50'



**PRELIMINARY
DO NOT USE FOR
CONSTRUCTION**

ASSUMPTIONS, DEFINITIONS, AND DISCLAIMERS
 -EXISTING PIPE ALIGNMENTS AND ELEVATION DATA PROVIDED BY BWSC ON 12/21/2020
 -ALL ELEVATIONS THROUGHOUT ARE REFERENCED TO NAVD88 DATUM
 -PROPOSED PIPE AND MANHOLE ALIGNMENTS ARE PRELIMINARY AND CONCEPTUAL
 -DETAILED SURVEY AND AN EVALUATION FOR SUBSURFACE CONFLICTS SHOULD BE PERFORMED BEFORE ADVANCEMENT OF THESE CONCEPTS

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin

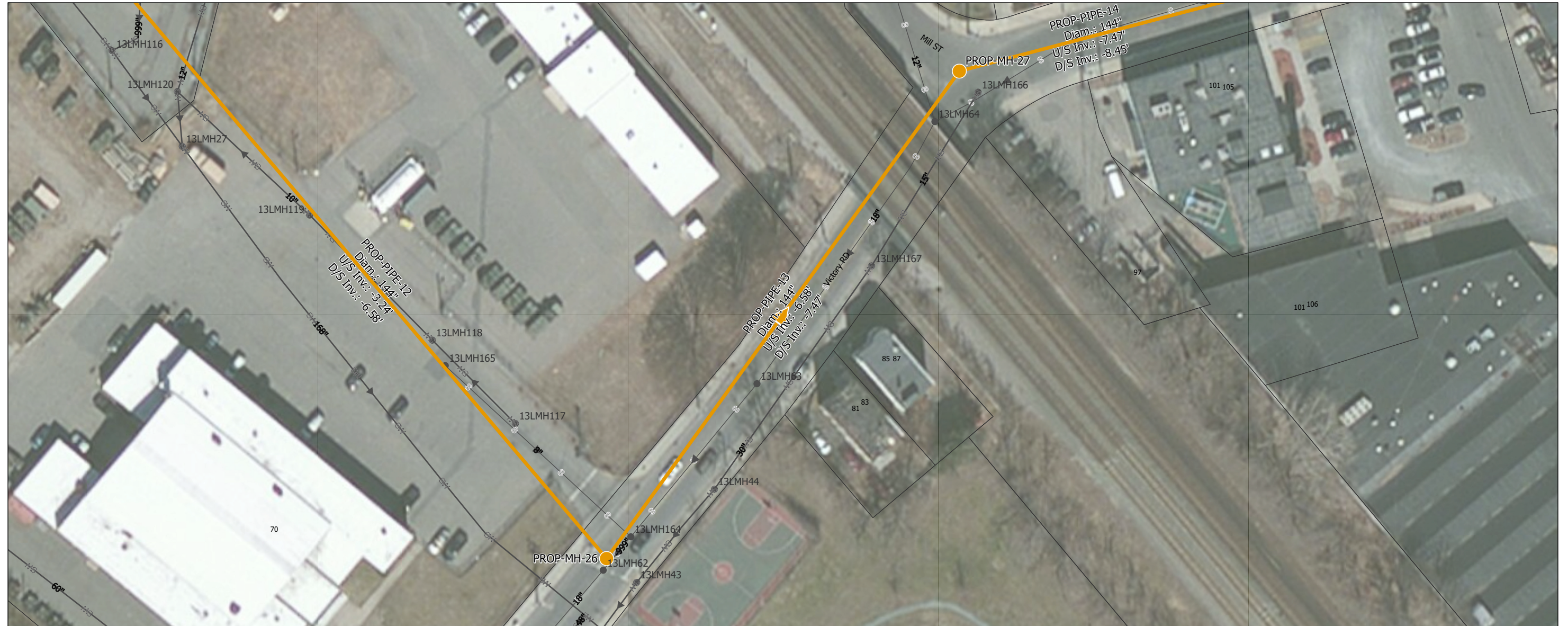


B-21

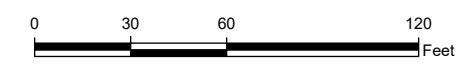
November 2022



PROP-PIPE-13



Plan
1" = 30'





**PRELIMINARY
DO NOT USE FOR
CONSTRUCTION**

ASSUMPTIONS, DEFINITIONS, AND DISCLAIMERS

- EXISTING PIPE ALIGNMENTS AND ELEVATION DATA PROVIDED BY BWSC ON 12/21/2020
- ALL ELEVATIONS THROUGHOUT ARE REFERENCED TO NAVD88 DATUM
- PROPOSED PIPE AND MANHOLE ALIGNMENTS ARE PRELIMINARY AND CONCEPTUAL
- DETAILED SURVEY AND AN EVALUATION FOR SUBSURFACE CONFLICTS SHOULD BE PERFORMED BEFORE ADVANCEMENT OF THESE CONCEPTS

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin

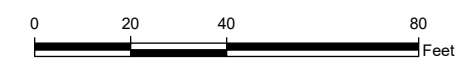
B-22 November 2022



PROP-PIPE-14





Plan
1" = 20'



**PRELIMINARY
DO NOT USE FOR
CONSTRUCTION**

ASSUMPTIONS, DEFINITIONS, AND DISCLAIMERS
 -EXISTING PIPE ALIGNMENTS AND ELEVATION DATA PROVIDED BY BWSC ON 12/21/2020
 -ALL ELEVATIONS THROUGHOUT ARE REFERENCED TO NAVD88 DATUM
 -PROPOSED PIPE AND MANHOLE ALIGNMENTS ARE PRELIMINARY AND CONCEPTUAL
 -DETAILED SURVEY AND AN EVALUATION FOR SUBSURFACE CONFLICTS SHOULD BE PERFORMED BEFORE ADVANCEMENT OF THESE CONCEPTS

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin

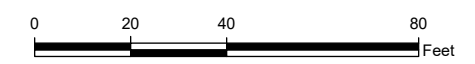
B-23 November 2022



PROP-PIPE-16



Plan
1" = 20'





**PRELIMINARY
DO NOT USE FOR
CONSTRUCTION**

ASSUMPTIONS, DEFINITIONS, AND DISCLAIMERS

- EXISTING PIPE ALIGNMENTS AND ELEVATION DATA PROVIDED BY BWSC ON 12/21/2020
- ALL ELEVATIONS THROUGHOUT ARE REFERENCED TO NAVD88 DATUM
- PROPOSED PIPE AND MANHOLE ALIGNMENTS ARE PRELIMINARY AND CONCEPTUAL
- DETAILED SURVEY AND AN EVALUATION FOR SUBSURFACE CONFLICTS SHOULD BE PERFORMED BEFORE ADVANCEMENT OF THESE CONCEPTS

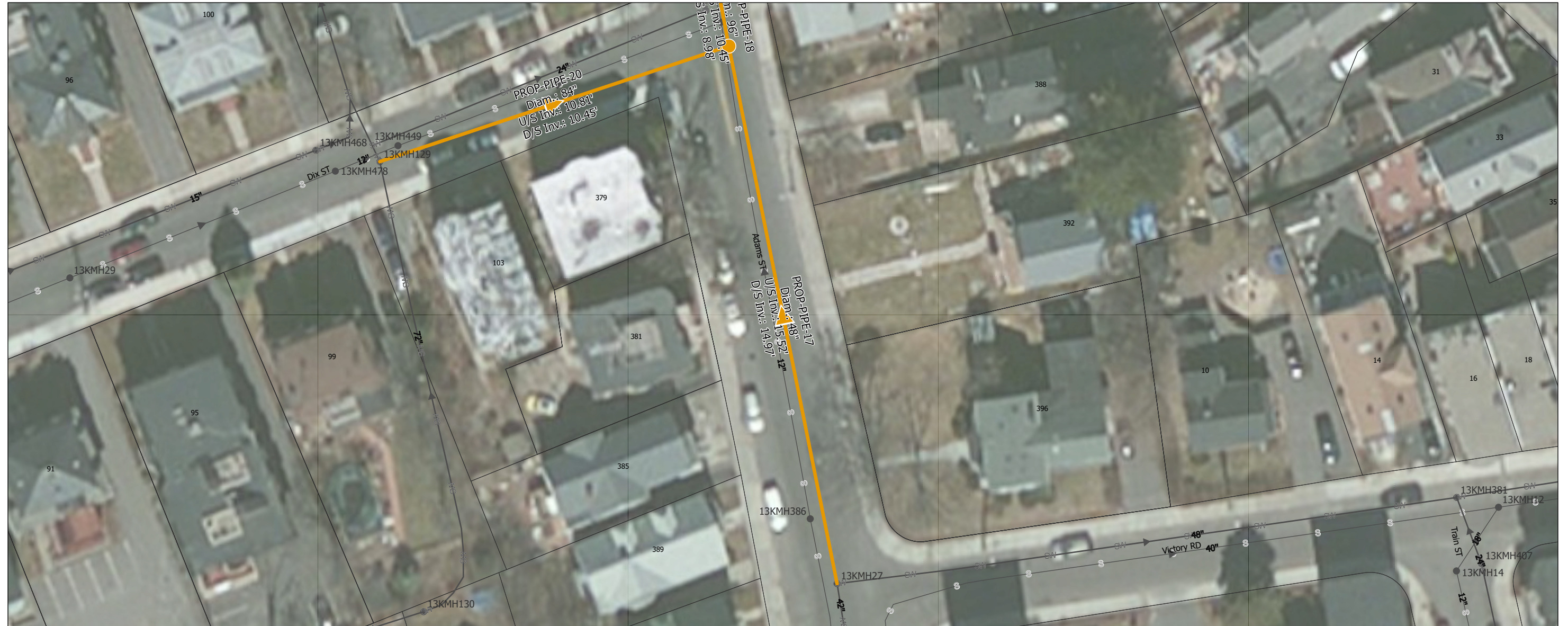
Coastal Stormwater Discharge Analysis
Dorchester Bay Basin

B-25 November 2022



PROP-PIPE-17



Plan
1" = 20'





**PRELIMINARY
DO NOT USE FOR
CONSTRUCTION**

ASSUMPTIONS, DEFINITIONS, AND DISCLAIMERS

- EXISTING PIPE ALIGNMENTS AND ELEVATION DATA PROVIDED BY BWSC ON 12/21/2020
- ALL ELEVATIONS THROUGHOUT ARE REFERENCED TO NAVD88 DATUM
- PROPOSED PIPE AND MANHOLE ALIGNMENTS ARE PRELIMINARY AND CONCEPTUAL
- DETAILED SURVEY AND AN EVALUATION FOR SUBSURFACE CONFLICTS SHOULD BE PERFORMED BEFORE ADVANCEMENT OF THESE CONCEPTS

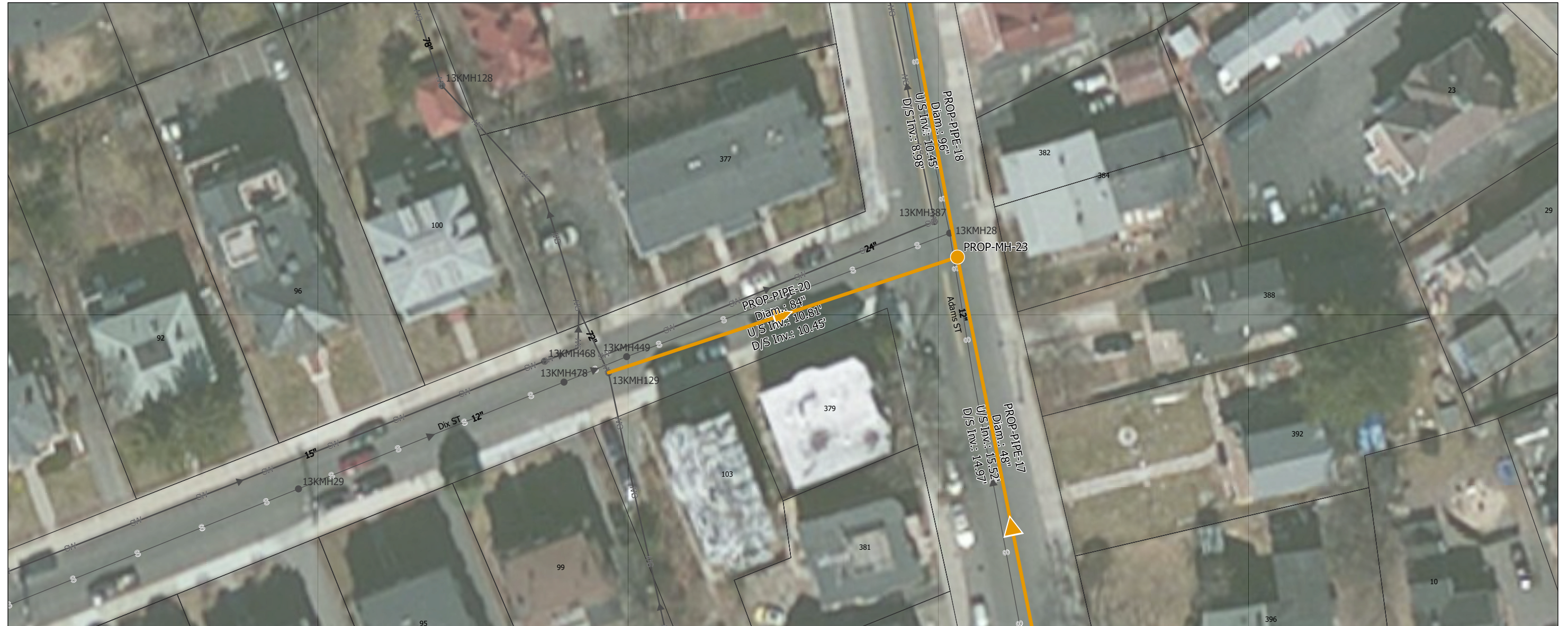
Coastal Stormwater Discharge Analysis
Dorchester Bay Basin

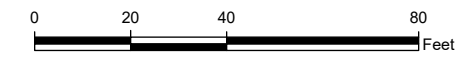
B-26 November 2022



PROP-PIPE-20



Plan
1" = 20'



**PRELIMINARY
DO NOT USE FOR
CONSTRUCTION**

ASSUMPTIONS, DEFINITIONS, AND DISCLAIMERS
 -EXISTING PIPE ALIGNMENTS AND ELEVATION DATA PROVIDED BY BWSC ON 12/21/2020
 -ALL ELEVATIONS THROUGHOUT ARE REFERENCED TO NAVD88 DATUM
 -PROPOSED PIPE AND MANHOLE ALIGNMENTS ARE PRELIMINARY AND CONCEPTUAL
 -DETAILED SURVEY AND AN EVALUATION FOR SUBSURFACE CONFLICTS SHOULD BE PERFORMED BEFORE ADVANCEMENT OF THESE CONCEPTS

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin



B-27

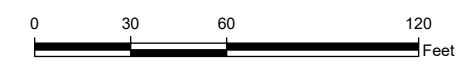
November 2022



PROP-PIPE-18



Plan
1" = 30'



**PRELIMINARY
DO NOT USE FOR
CONSTRUCTION**

ASSUMPTIONS, DEFINITIONS, AND DISCLAIMERS
 -EXISTING PIPE ALIGNMENTS AND ELEVATION DATA PROVIDED BY BWSC ON 12/21/2020
 -ALL ELEVATIONS THROUGHOUT ARE REFERENCED TO NAVD88 DATUM
 -PROPOSED PIPE AND MANHOLE ALIGNMENTS ARE PRELIMINARY AND CONCEPTUAL
 -DETAILED SURVEY AND AN EVALUATION FOR SUBSURFACE CONFLICTS SHOULD BE PERFORMED BEFORE ADVANCEMENT OF THESE CONCEPTS

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin



Hazen

B-28

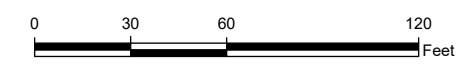
November 2022



PROP-PIPE-19



Plan
1" = 30'





**PRELIMINARY
DO NOT USE FOR
CONSTRUCTION**

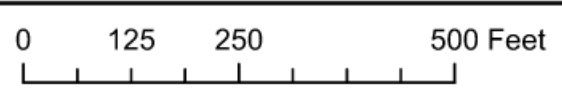
ASSUMPTIONS, DEFINITIONS, AND DISCLAIMERS

- EXISTING PIPE ALIGNMENTS AND ELEVATION DATA PROVIDED BY BWSC ON 12/21/2020
- ALL ELEVATIONS THROUGHOUT ARE REFERENCED TO NAVD88 DATUM
- PROPOSED PIPE AND MANHOLE ALIGNMENTS ARE PRELIMINARY AND CONCEPTUAL
- DETAILED SURVEY AND AN EVALUATION FOR SUBSURFACE CONFLICTS SHOULD BE PERFORMED BEFORE ADVANCEMENT OF THESE CONCEPTS

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin

B-29 November 2022



Legend

- Proposed Manhole
- Proposed Outfall
- Existing Outfall
- Proposed Stormwater Pipe
- Existing Storm Sewer Line



Dorchester Bay Basin

Outfall 13LSDO090 Diversion to Dorchester Bay Basin

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin

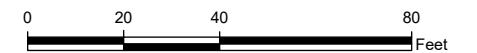




PROP-PIPE-36



Plan
1" = 20'



**PRELIMINARY
DO NOT USE FOR
CONSTRUCTION**

ASSUMPTIONS, DEFINITIONS, AND DISCLAIMERS
 -EXISTING PIPE ALIGNMENTS AND ELEVATION DATA PROVIDED BY BWSC ON 12/21/2020
 -ALL ELEVATIONS THROUGHOUT ARE REFERENCED TO NAVD88 DATUM
 -PROPOSED PIPE AND MANHOLE ALIGNMENTS ARE PRELIMINARY AND CONCEPTUAL
 -DETAILED SURVEY AND AN EVALUATION FOR SUBSURFACE CONFLICTS SHOULD BE PERFORMED BEFORE ADVANCEMENT OF THESE CONCEPTS

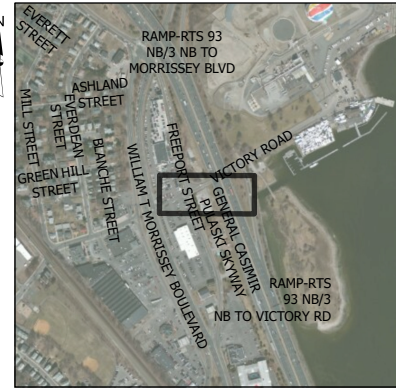
Coastal Stormwater Discharge Analysis
Dorchester Bay Basin



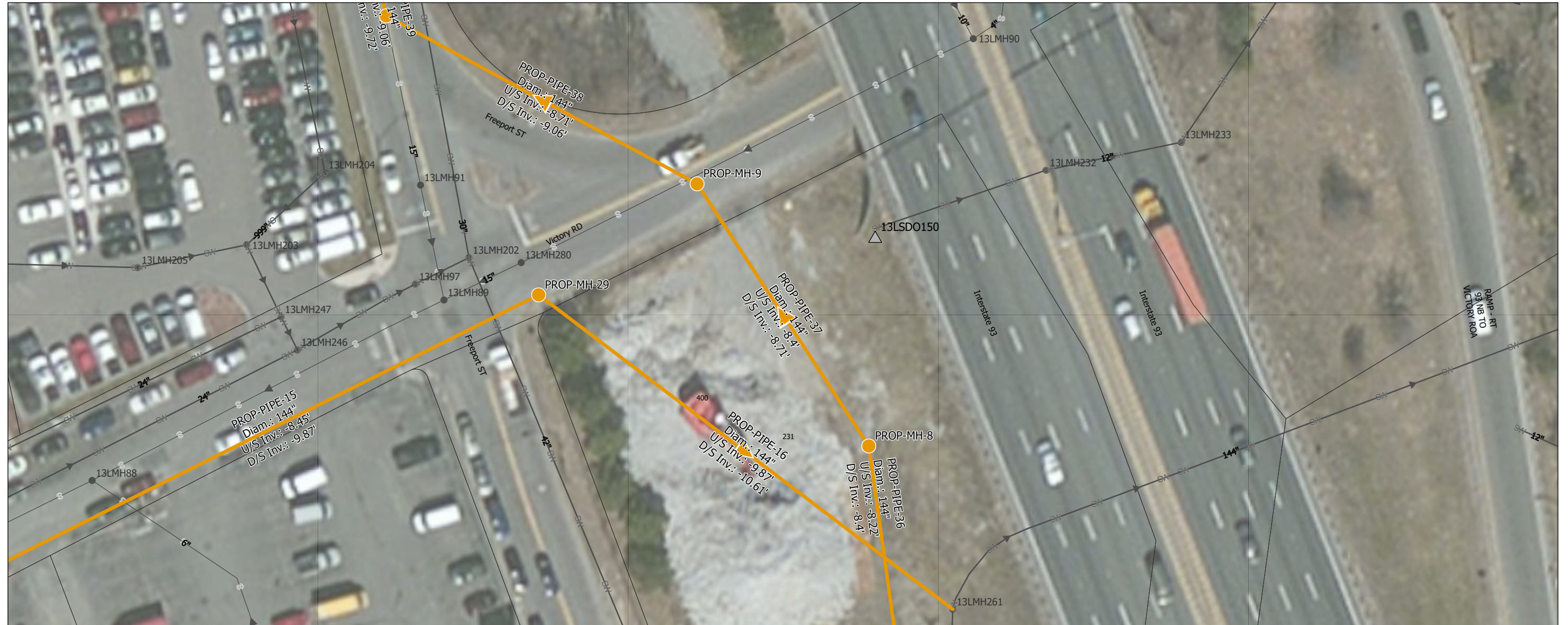
Hazen

B-31

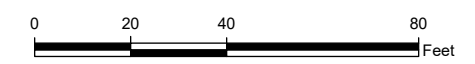
November 2022



PROP-PIPE-37



Plan
1" = 20'





**PRELIMINARY
DO NOT USE FOR
CONSTRUCTION**

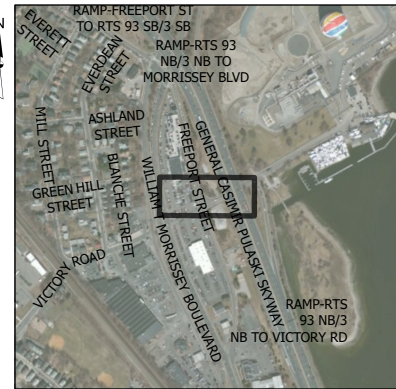
ASSUMPTIONS, DEFINITIONS, AND DISCLAIMERS

- EXISTING PIPE ALIGNMENTS AND ELEVATION DATA PROVIDED BY BWSC ON 12/21/2020
- ALL ELEVATIONS THROUGHOUT ARE REFERENCED TO NAVD88 DATUM
- PROPOSED PIPE AND MANHOLE ALIGNMENTS ARE PRELIMINARY AND CONCEPTUAL
- DETAILED SURVEY AND AN EVALUATION FOR SUBSURFACE CONFLICTS SHOULD BE PERFORMED BEFORE ADVANCEMENT OF THESE CONCEPTS

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin

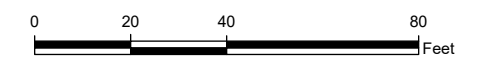
B-32 November 2022



PROP-PIPE-38



Plan
1" = 20'



**PRELIMINARY
DO NOT USE FOR
CONSTRUCTION**

ASSUMPTIONS, DEFINITIONS, AND DISCLAIMERS
 -EXISTING PIPE ALIGNMENTS AND ELEVATION DATA PROVIDED BY BWSC ON 12/21/2020
 -ALL ELEVATIONS THROUGHOUT ARE REFERENCED TO NAVD88 DATUM
 -PROPOSED PIPE AND MANHOLE ALIGNMENTS ARE PRELIMINARY AND CONCEPTUAL
 -DETAILED SURVEY AND AN EVALUATION FOR SUBSURFACE CONFLICTS SHOULD BE PERFORMED BEFORE ADVANCEMENT OF THESE CONCEPTS

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin



Hazen

B-33

November 2022



PROP-PIPE-39



Plan
1" = 30'



**PRELIMINARY
DO NOT USE FOR
CONSTRUCTION**

ASSUMPTIONS, DEFINITIONS, AND DISCLAIMERS
 -EXISTING PIPE ALIGNMENTS AND ELEVATION DATA PROVIDED BY BWSC ON 12/21/2020
 -ALL ELEVATIONS THROUGHOUT ARE REFERENCED TO NAVD88 DATUM
 -PROPOSED PIPE AND MANHOLE ALIGNMENTS ARE PRELIMINARY AND CONCEPTUAL
 -DETAILED SURVEY AND AN EVALUATION FOR SUBSURFACE CONFLICTS SHOULD BE PERFORMED BEFORE ADVANCEMENT OF THESE CONCEPTS

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin



B-34

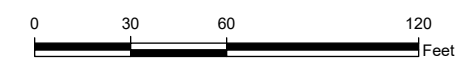
November 2022



PROP-PIPE-40



Plan
1" = 30'





**PRELIMINARY
DO NOT USE FOR
CONSTRUCTION**

ASSUMPTIONS, DEFINITIONS, AND DISCLAIMERS

- EXISTING PIPE ALIGNMENTS AND ELEVATION DATA PROVIDED BY BWSC ON 12/21/2020
- ALL ELEVATIONS THROUGHOUT ARE REFERENCED TO NAVD88 DATUM
- PROPOSED PIPE AND MANHOLE ALIGNMENTS ARE PRELIMINARY AND CONCEPTUAL
- DETAILED SURVEY AND AN EVALUATION FOR SUBSURFACE CONFLICTS SHOULD BE PERFORMED BEFORE ADVANCEMENT OF THESE CONCEPTS

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin

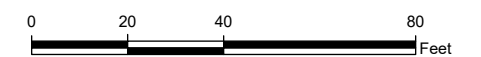
B-35 November 2022



PROP-PIPE-41



Plan
1" = 20'



**PRELIMINARY
DO NOT USE FOR
CONSTRUCTION**

ASSUMPTIONS, DEFINITIONS, AND DISCLAIMERS
 -EXISTING PIPE ALIGNMENTS AND ELEVATION DATA PROVIDED BY BWSC ON 12/21/2020
 -ALL ELEVATIONS THROUGHOUT ARE REFERENCED TO NAVD88 DATUM
 -PROPOSED PIPE AND MANHOLE ALIGNMENTS ARE PRELIMINARY AND CONCEPTUAL
 -DETAILED SURVEY AND AN EVALUATION FOR SUBSURFACE CONFLICTS SHOULD BE PERFORMED BEFORE ADVANCEMENT OF THESE CONCEPTS

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin



Hazen

B-36

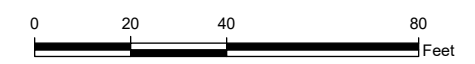
November 2022



PROP-PIPE-42



Plan
1" = 20'





**PRELIMINARY
DO NOT USE FOR
CONSTRUCTION**

ASSUMPTIONS, DEFINITIONS, AND DISCLAIMERS

- EXISTING PIPE ALIGNMENTS AND ELEVATION DATA PROVIDED BY BWSC ON 12/21/2020
- ALL ELEVATIONS THROUGHOUT ARE REFERENCED TO NAVD88 DATUM
- PROPOSED PIPE AND MANHOLE ALIGNMENTS ARE PRELIMINARY AND CONCEPTUAL
- DETAILED SURVEY AND AN EVALUATION FOR SUBSURFACE CONFLICTS SHOULD BE PERFORMED BEFORE ADVANCEMENT OF THESE CONCEPTS

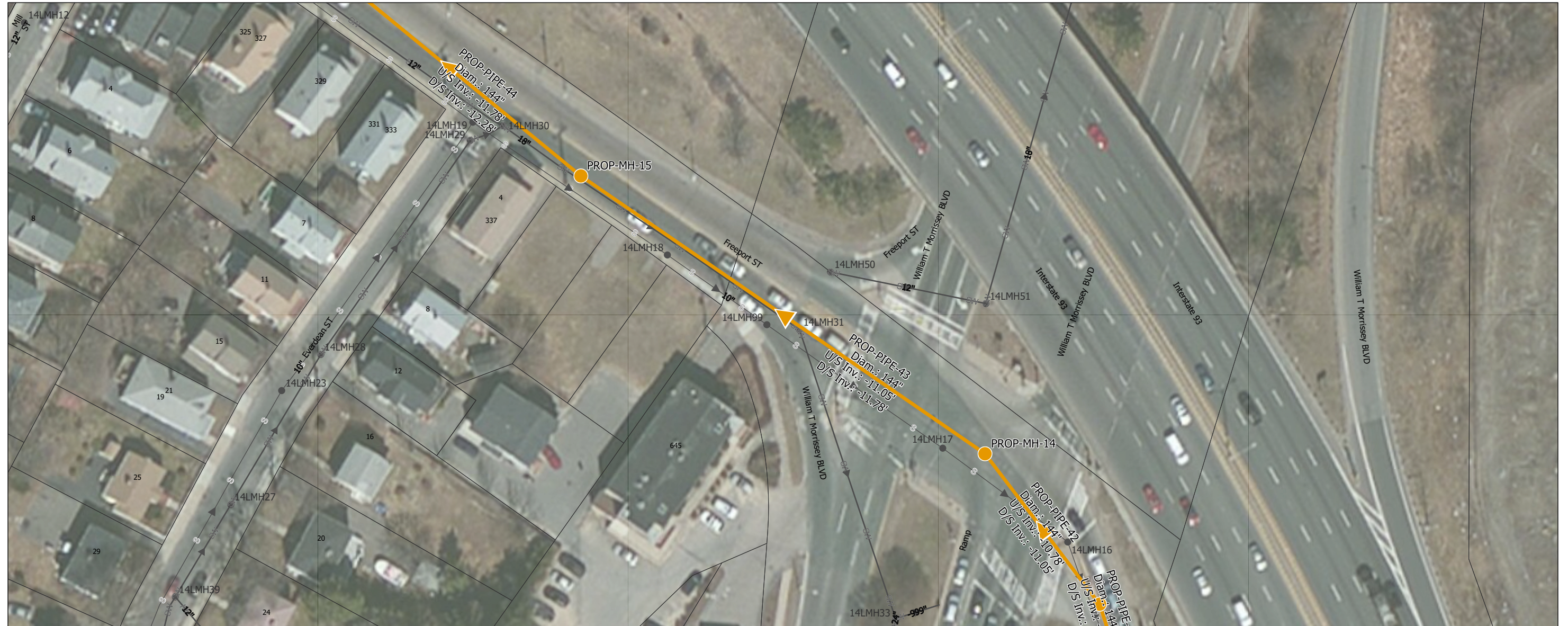
Coastal Stormwater Discharge Analysis
Dorchester Bay Basin

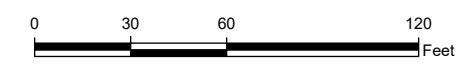
B-37 November 2022



PROP-PIPE-43



Plan
1" = 30'





**PRELIMINARY
DO NOT USE FOR
CONSTRUCTION**

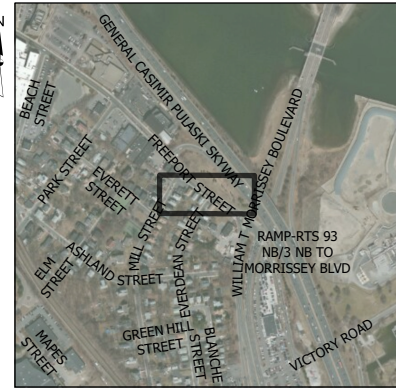
ASSUMPTIONS, DEFINITIONS, AND DISCLAIMERS

- EXISTING PIPE ALIGNMENTS AND ELEVATION DATA PROVIDED BY BWSC ON 12/21/2020
- ALL ELEVATIONS THROUGHOUT ARE REFERENCED TO NAVD88 DATUM
- PROPOSED PIPE AND MANHOLE ALIGNMENTS ARE PRELIMINARY AND CONCEPTUAL
- DETAILED SURVEY AND AN EVALUATION FOR SUBSURFACE CONFLICTS SHOULD BE PERFORMED BEFORE ADVANCEMENT OF THESE CONCEPTS

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin

B-38 November 2022



PROP-PIPE-44



Plan
1" = 20'



**PRELIMINARY
DO NOT USE FOR
CONSTRUCTION**

ASSUMPTIONS, DEFINITIONS, AND DISCLAIMERS
 -EXISTING PIPE ALIGNMENTS AND ELEVATION DATA PROVIDED BY BWSC ON 12/21/2020
 -ALL ELEVATIONS THROUGHOUT ARE REFERENCED TO NAVD88 DATUM
 -PROPOSED PIPE AND MANHOLE ALIGNMENTS ARE PRELIMINARY AND CONCEPTUAL
 -DETAILED SURVEY AND AN EVALUATION FOR SUBSURFACE CONFLICTS SHOULD BE PERFORMED BEFORE ADVANCEMENT OF THESE CONCEPTS

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin



B-39

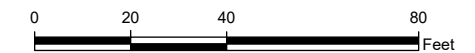
November 2022



PROP-PIPE-45



Plan
1" = 20'



**PRELIMINARY
DO NOT USE FOR
CONSTRUCTION**

ASSUMPTIONS, DEFINITIONS, AND DISCLAIMERS
 -EXISTING PIPE ALIGNMENTS AND ELEVATION DATA PROVIDED BY BWSC ON 12/21/2020
 -ALL ELEVATIONS THROUGHOUT ARE REFERENCED TO NAVD88 DATUM
 -PROPOSED PIPE AND MANHOLE ALIGNMENTS ARE PRELIMINARY AND CONCEPTUAL
 -DETAILED SURVEY AND AN EVALUATION FOR SUBSURFACE CONFLICTS SHOULD BE PERFORMED BEFORE ADVANCEMENT OF THESE CONCEPTS

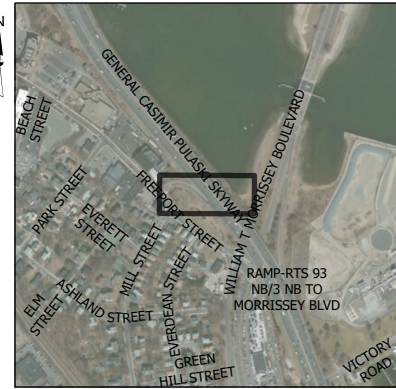
Coastal Stormwater Discharge Analysis
Dorchester Bay Basin



Hazen

B-40

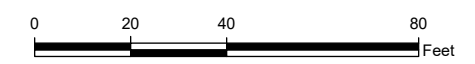
November 2022



PROP-PIPE-46



Plan
1" = 20'





**PRELIMINARY
DO NOT USE FOR
CONSTRUCTION**

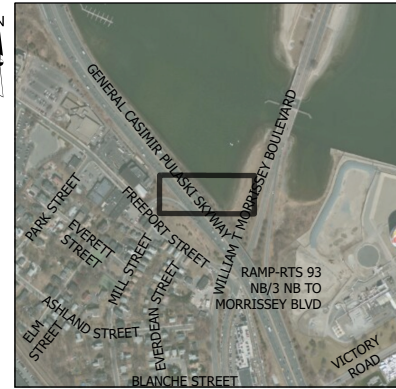
ASSUMPTIONS, DEFINITIONS, AND DISCLAIMERS

- EXISTING PIPE ALIGNMENTS AND ELEVATION DATA PROVIDED BY BWSC ON 12/21/2020
- ALL ELEVATIONS THROUGHOUT ARE REFERENCED TO NAVD88 DATUM
- PROPOSED PIPE AND MANHOLE ALIGNMENTS ARE PRELIMINARY AND CONCEPTUAL
- DETAILED SURVEY AND AN EVALUATION FOR SUBSURFACE CONFLICTS SHOULD BE PERFORMED BEFORE ADVANCEMENT OF THESE CONCEPTS

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin

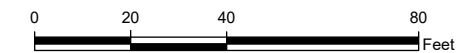
B-41 November 2022



PROP-PIPE-47



Plan
1" = 20'



**PRELIMINARY
DO NOT USE FOR
CONSTRUCTION**

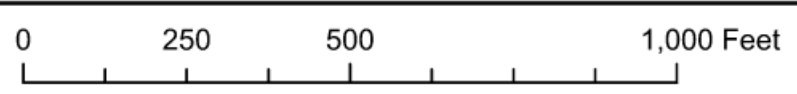
ASSUMPTIONS, DEFINITIONS, AND DISCLAIMERS
 -EXISTING PIPE ALIGNMENTS AND ELEVATION DATA PROVIDED BY BWSC ON 12/21/2020
 -ALL ELEVATIONS THROUGHOUT ARE REFERENCED TO NAVD88 DATUM
 -PROPOSED PIPE AND MANHOLE ALIGNMENTS ARE PRELIMINARY AND CONCEPTUAL
 -DETAILED SURVEY AND AN EVALUATION FOR SUBSURFACE CONFLICTS SHOULD BE PERFORMED BEFORE ADVANCEMENT OF THESE CONCEPTS

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin



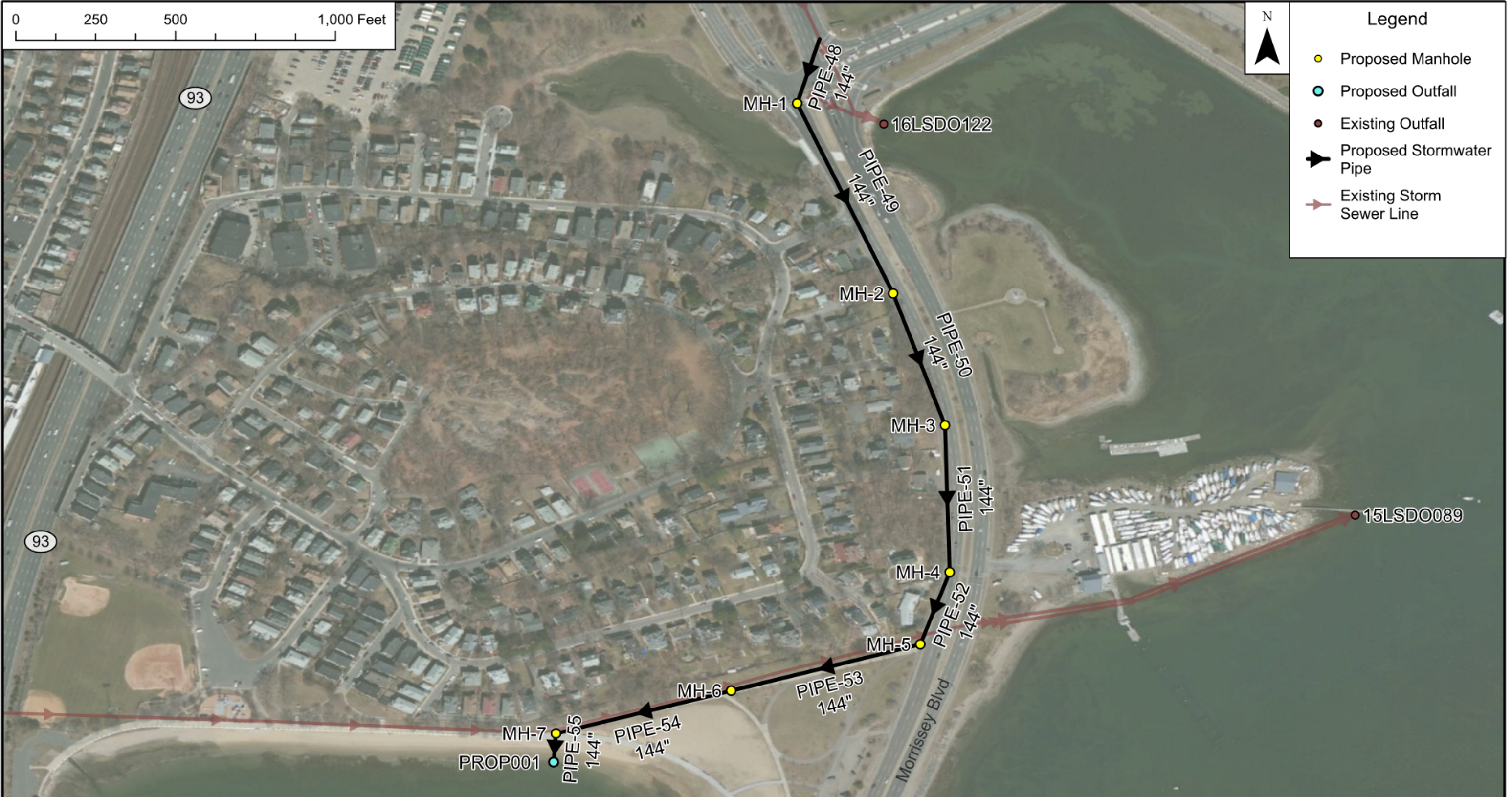
B-42

November 2022



Legend

- Proposed Manhole
- Proposed Outfall
- Existing Outfall
- Proposed Stormwater Pipe
- Existing Storm Sewer Line



Dorchester Bay Basin

Outfall 16LSDO122 Diversion to Dorchester Bay Basin

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin



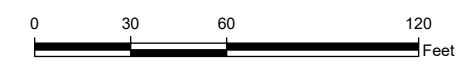
Hazen



PROP-PIPE-48



Plan
1" = 30'





**PRELIMINARY
DO NOT USE FOR
CONSTRUCTION**

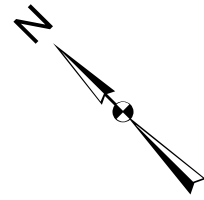
ASSUMPTIONS, DEFINITIONS, AND DISCLAIMERS

- EXISTING PIPE ALIGNMENTS AND ELEVATION DATA PROVIDED BY BWSC ON 12/21/2020
- ALL ELEVATIONS THROUGHOUT ARE REFERENCED TO NAVD88 DATUM
- PROPOSED PIPE AND MANHOLE ALIGNMENTS ARE PRELIMINARY AND CONCEPTUAL
- DETAILED SURVEY AND AN EVALUATION FOR SUBSURFACE CONFLICTS SHOULD BE PERFORMED BEFORE ADVANCEMENT OF THESE CONCEPTS

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin

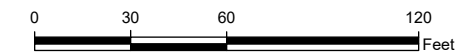
B-44 November 2022



PROP-PIPE-49



Plan
1" = 30'



**PRELIMINARY
DO NOT USE FOR
CONSTRUCTION**

ASSUMPTIONS, DEFINITIONS, AND DISCLAIMERS
 -EXISTING PIPE ALIGNMENTS AND ELEVATION DATA PROVIDED BY BWSC ON 12/21/2020
 -ALL ELEVATIONS THROUGHOUT ARE REFERENCED TO NAVD88 DATUM
 -PROPOSED PIPE AND MANHOLE ALIGNMENTS ARE PRELIMINARY AND CONCEPTUAL
 -DETAILED SURVEY AND AN EVALUATION FOR SUBSURFACE CONFLICTS SHOULD BE PERFORMED BEFORE ADVANCEMENT OF THESE CONCEPTS

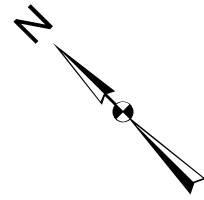
Coastal Stormwater Discharge Analysis
Dorchester Bay Basin



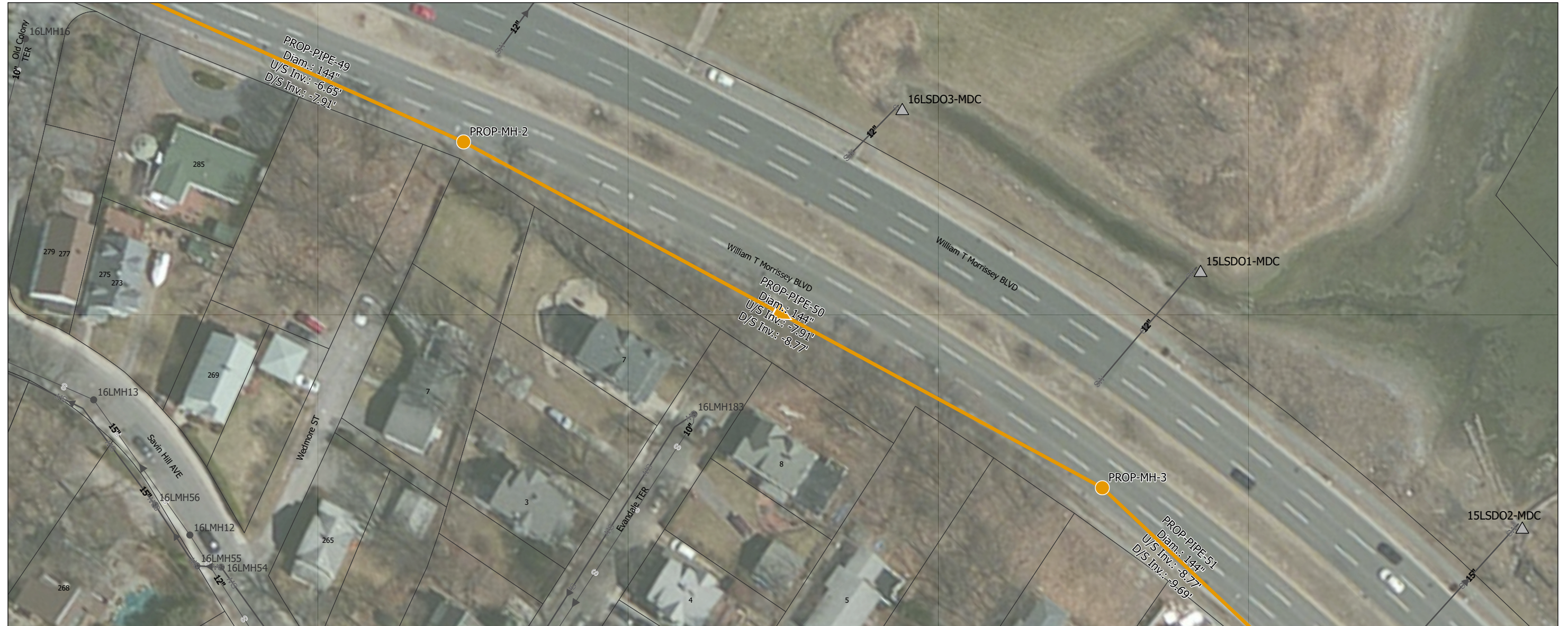
Hazen

B-45

November 2022



PROP-PIPE-50



Plan
1" = 30'



**PRELIMINARY
DO NOT USE FOR
CONSTRUCTION**

ASSUMPTIONS, DEFINITIONS, AND DISCLAIMERS

- EXISTING PIPE ALIGNMENTS AND ELEVATION DATA PROVIDED BY BWSC ON 12/21/2020
- ALL ELEVATIONS THROUGHOUT ARE REFERENCED TO NAVD88 DATUM
- PROPOSED PIPE AND MANHOLE ALIGNMENTS ARE PRELIMINARY AND CONCEPTUAL
- DETAILED SURVEY AND AN EVALUATION FOR SUBSURFACE CONFLICTS SHOULD BE PERFORMED BEFORE ADVANCEMENT OF THESE CONCEPTS

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin

B-46 November 2022



PROP-PIPE-51



Plan
1" = 30'



**PRELIMINARY
DO NOT USE FOR
CONSTRUCTION**

ASSUMPTIONS, DEFINITIONS, AND DISCLAIMERS
 -EXISTING PIPE ALIGNMENTS AND ELEVATION DATA PROVIDED BY BWSC ON 12/21/2020
 -ALL ELEVATIONS THROUGHOUT ARE REFERENCED TO NAVD88 DATUM
 -PROPOSED PIPE AND MANHOLE ALIGNMENTS ARE PRELIMINARY AND CONCEPTUAL
 -DETAILED SURVEY AND AN EVALUATION FOR SUBSURFACE CONFLICTS SHOULD BE PERFORMED BEFORE ADVANCEMENT OF THESE CONCEPTS

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin



Hazen

B-47

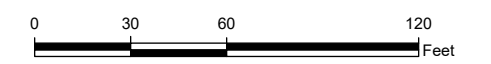
November 2022



PROP-PIPE-52





Plan
1" = 30'



**PRELIMINARY
DO NOT USE FOR
CONSTRUCTION**

ASSUMPTIONS, DEFINITIONS, AND DISCLAIMERS
 -EXISTING PIPE ALIGNMENTS AND ELEVATION DATA PROVIDED BY BWSC ON 12/21/2020
 -ALL ELEVATIONS THROUGHOUT ARE REFERENCED TO NAVD88 DATUM
 -PROPOSED PIPE AND MANHOLE ALIGNMENTS ARE PRELIMINARY AND CONCEPTUAL
 -DETAILED SURVEY AND AN EVALUATION FOR SUBSURFACE CONFLICTS SHOULD BE PERFORMED BEFORE ADVANCEMENT OF THESE CONCEPTS

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin

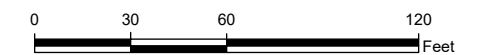
B-48 November 2022



PROP-PIPE-53



Plan
1" = 30'



**PRELIMINARY
DO NOT USE FOR
CONSTRUCTION**

ASSUMPTIONS, DEFINITIONS, AND DISCLAIMERS
 -EXISTING PIPE ALIGNMENTS AND ELEVATION DATA PROVIDED BY BWSC ON 12/21/2020
 -ALL ELEVATIONS THROUGHOUT ARE REFERENCED TO NAVD88 DATUM
 -PROPOSED PIPE AND MANHOLE ALIGNMENTS ARE PRELIMINARY AND CONCEPTUAL
 -DETAILED SURVEY AND AN EVALUATION FOR SUBSURFACE CONFLICTS SHOULD BE PERFORMED BEFORE ADVANCEMENT OF THESE CONCEPTS

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin



Hazen

B-49

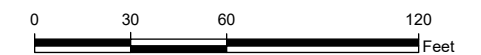
November 2022



PROP-PIPE-54



Plan
1" = 30'



**PRELIMINARY
DO NOT USE FOR
CONSTRUCTION**

ASSUMPTIONS, DEFINITIONS, AND DISCLAIMERS
 -EXISTING PIPE ALIGNMENTS AND ELEVATION DATA PROVIDED BY BWSC ON 12/21/2020
 -ALL ELEVATIONS THROUGHOUT ARE REFERENCED TO NAVD88 DATUM
 -PROPOSED PIPE AND MANHOLE ALIGNMENTS ARE PRELIMINARY AND CONCEPTUAL
 -DETAILED SURVEY AND AN EVALUATION FOR SUBSURFACE CONFLICTS SHOULD BE PERFORMED BEFORE ADVANCEMENT OF THESE CONCEPTS

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin



Hazen

B-50

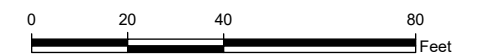
November 2022



PROP-PIPE-55



Plan
1" = 20'



**PRELIMINARY
DO NOT USE FOR
CONSTRUCTION**

ASSUMPTIONS, DEFINITIONS, AND DISCLAIMERS
 -EXISTING PIPE ALIGNMENTS AND ELEVATION DATA PROVIDED BY BWSC ON 12/21/2020
 -ALL ELEVATIONS THROUGHOUT ARE REFERENCED TO NAVD88 DATUM
 -PROPOSED PIPE AND MANHOLE ALIGNMENTS ARE PRELIMINARY AND CONCEPTUAL
 -DETAILED SURVEY AND AN EVALUATION FOR SUBSURFACE CONFLICTS SHOULD BE PERFORMED BEFORE ADVANCEMENT OF THESE CONCEPTS

Coastal Stormwater Discharge Analysis
Dorchester Bay Basin



Hazen

B-51

November 2022