

## FLOOD RISK ASSESSMENT MEMO

Page 1 of 7

### Purpose

The former public works property, located immediately adjacent to the Cathance River, has significant portions of the site that are potentially vulnerable to coastal flooding. Approximately 45% of the site is located within a Federal Emergency Management Agency's (FEMA) special flood hazard area (SFHA), mapped as a coastal AE zone with a base flood elevation (BFE) of 8-feet. Approximately 70% of the property requires buildings to be flood protected to the BFE plus an additional three feet of elevation which is at elevation 11-feet. All elevations refer to the North American Vertical Datum of 1988 (NAVD88) unless otherwise noted.

*See attached Existing Conditions Plan*

The Town's redevelopment master plan for the property has identified a variety of educational and recreational public site improvements including:

- Trails and boardwalks;
- Hand carry boating;
- Visitor parking;
- Natural play;
- Active recreation fields;
- Pavilion, kiosk and picnic area structures;
- Landscape improvements; and
- Shoreline stabilization

Careful consideration of potential flood impacts to these site elements needs to be considered, in order to implement the Town's master plan improvement goals for low-impact, environmentally sensitive development approaches that are safe and sustainable.

This flood assessment looked at a variety of resources and gathered new topographic survey data to perform a detailed review of the potential flood risks to the site and to determine opportunities for removal of areas from the flood zone through a LOMA or LOMR-F process, and to improve resiliency of the site elements to potential impacts from flood risk as appropriate. This information is presented in the attached plans and maps, and on the following tables in the memorandum.

### Findings

1. Detailed topographic survey was provided from Little River Land Survey during June of 2019. Review of this topographic survey data in comparison to the effective 2015 FEMA Flood Insurance Rate Map (FIRM) shows that the SFHA (Zone AE with a BFE of 8-feet) is projected on the property in close proximity to the 8-foot contour produced by LRLS' efforts. (*See attached Existing Conditions Plan*)
2. Historic FIRMs go back to 1976. The initial FEMA mapping showed no SFHAs at the property. The 1987 FIRM showed a SFHA with no elevation. This SFHA covered more of the property than the effective 2015 FIRM SFHA showed. The historic 1997 FIRM showed a similar SFHA to that of the 1987 FIRM and included a BFE of 9-feet NGVD29 (8.32-feet NAVD88).
3. Historic and effective FEMA Flood Insurance Rate Studies have limited data for the Cathance River and no specific Stillwater Flood Elevation Data associated with the property.
4. A 2012 study by Bowdoin College examined potential effects of sea level rise in Bowdoinham. The study looked at stillwater elevation changes of an additional 1, 2, 3 and 6 feet of sea level rise, as well as 2 feet of sea level rise plus 2 feet of storm surge above the stillwater elevation. These scenarios were based on

## FLOOD RISK ASSESSMENT MEMO

Page 2 of 7

previous International Panel on Climate Change predictions as well as inundation conditions associated with the 2007 Patriot's Day storm. The highest sea level rise scenario of 6 feet modeled covers the same approximate area as the effective 2015 FIRM SFHA.

5. Modeling of Sea Lake and Overland Surges from Hurricanes by NOAA and supported by MGS indicated that a Category 1 Hurricane would cause flooding in an area approximately 50% less than the effective 2015 FEMA FIRM SFHA. A Category 1 Hurricane in Maine represents an approximate 100-Year storm event. A Category 2 Hurricane would cause flooding in an area approximate to the effective 2015 FEMA FIRM SFHA. A Category 2 Hurricane in Maine represents an approximate 500-Year storm event.
6. The Town revised its local ordinances regarding building structures in AE Flood Zones, requiring flood proofing to an elevation of the 100-Year Base Flood plus an additional three feet. This exceeds the State's adopted building code standard of BFE+1 foot as the Town anticipates an increased risk of flooding due to potential increases in sea level rise and storm intensities.
7. Given that the detailed topographic survey matches closely to the latest effective FEMA SFHA, there are not likely to be opportunities for removal of areas within the property from the flood zone through a Letter of Map Amendment (LOMA) or Letter of Map Revision-Fill (LOMR-F).
8. Environmental site restrictions from factors other than potential flood risk, are anticipated to be as restrictive and possible more restrictive than FEMA flooding regulations at this site and should be considered concurrently with any proposed shoreline stabilization measures regarding reducing flood risk.
9. The site improvement elements in the redevelopment Master Plan considered the latest FEMA FIRM SFHA and prior detailed topographic site survey from 1995. The updated topographic survey data and review of other readily available site conditions reference resources indicates that the Master Plan site improvement elements are still appropriately located and can be implemented in a manner that meets regulatory flood risk requirements.

## Next Steps

1. Opportunities for improvements to the shoreline will be presented as part of the living shorelines and shoreline access improvements design and permitting efforts for review by the Town and the Maine Coastal Program. These will likely include increased landscape buffers near the shoreline to reduce potential coastal erosion of the embankment, and use of durable materials such as concrete planks for the hand care boat launch to reduce flood damage to areas that will likely be inundated.
2. Future phases of site improvements to implement the Master Plan should consider location of the elements and use of resilient materials to coastal flooding.
3. During the preliminary design process for living shoreline stabilization measures and waterfront access, the project team should discuss the findings of the site investigations completed to-date, along with the pending Maine Department of Environmental Protection (MaineDEP) Sampling and Analysis Plan to determine what strategies for flood risk mitigation can be considered in combination with other environmental site constraints (i.e. contaminated soils, wetlands impacts, preservation of critical flora and fauna habitat...).
4. If the Maine Department of Transportation (MaineDOT) replaces or modifies the bridge crossing at Route 24, a more detailed hydrologic and hydraulic assessment of the Cathance River should be completed at the bridge string line to determine potential changes to flooding at the adjacent Town properties if the channel width is either widened or reduced.

## FLOOD RISK ASSESSMENT MEMO

Page 3 of 7

Category	Parameter	Project Information / Criteria		
<b>General Project Info.</b>	<b>Client</b>	Town of Bowdoinham		
	<b>Street Address</b>	8 River Road, Bowdoinham, Maine 04008		
	<b>Coordinates</b>	44° 0' 18" N, -69° 53' 52.8" W		
	<b>Tax Map Lot/Block</b>	Map U01 Lot 01		
	<b>Lot Area</b>	Approximately 20.1 acres to riverbank		
	<b>Zoning District</b>	Village I District & General Development I Shoreland Zoning District		
	<b>Water Body</b>	Cathance River, Merry Meeting Bay, Atlantic Ocean		
<b>Elevations</b>	<b>NOAA</b>	Harmonic Tidal Station 8418150 Portland, ME Subordinate Tidal Station 8417391 Bowdoinham, Cathance River, ME		
	<b>FEMA</b>	Zone AE – Flood Insurance Rate Map Effective July 16, 2015 Stillwater Elevations – Flood Insurance Study Effective July 16, 2015		
	<b>MaineDEP</b>	Highest Annual Tide Level (HAT) – 2018 Prediction (Bowdoinham, Cathance River)		
<b>Project Elevations</b> <i>*Based on survey by Little River Land Surveying, Inc. dated June 28, 2019 unless otherwise noted.</i>	<b>ELEVATION</b>	<b>CHART</b>	<b>NAVD88</b>	
		(ft)	(ft)	
	Bowdoinham Ordinance - BF +3 FT	15.0	11.0	
	Base Flood Elevation	12.0	8.0	
	500-Year Stillwater	None	Available	
	100-Year Stillwater	None	Available	
	50-Year Stillwater	None	Available	
	10-Year Stillwater	None	Available	
	Highest Annual Tide	7.4	2.9	
	MHHW	9.3	4.7	
	MHW	8.8	4.2	
	NAVD88	4.6	0.0	
MLW	-0.3	-4.9		
MLLW	-0.6	-5.3		

**FLOOD RISK ASSESSMENT MEMO**

Page 4 of 7

Category	Parameter	Project Information / Criteria
<b>Existing Conditions</b>	<b>Property</b>	<p>The property at 8 River Road is an approximate 20-acre lot which served as the Town of Bowdoinham’s Public Works Facility in the recent past. The eastern portion of the property abuts State Route 24 (River Road) and the town-owned Philip-Mailly Waterfront Park property. The northerly edge of the property abuts a state-owned Maine Central Railroad corridor. The southerly edge of the property fronts along the Cathance River. The westerly edge of the property abuts an undeveloped parcel within the Towns Residential-Agricultural zoning district.</p> <p>Approximately 18.1 acres or 90% of the property is located upland of the highest annual tide level.</p> <p>Approximately 9.1 acres or 45% of the property is located within the current FEMA 100-Year AE flood zone.</p> <p>Approximately 14.1 acres or 70% of the property is located within areas required by the Town’s ordinances to be flood protected to the FEMA 100-year base flood elevation plus three (3) additional feet.</p>



**FLOOD RISK ASSESSMENT MEMO**

Category	Parameter	Project Information / Criteria
	<b>Topography</b>	<p>The topography is generally flat on the easterly half of the property with an avg slope of about 2% from the Maine Central Railroad (10-foot avg elevation) sloping down to the Cathance River (2.9-foot highest annual tide level).</p> <p>The topography rises to 20-feet on the westerly half of the property with an average slope of about 8% from the Maine Central Railroad and abutting undeveloped property (20-foot peak elevation) sloping down to the Cathance River (2.9-foot highest annual tide level).</p>
	<b>Site Features</b>	<p>The easterly half of the property has been significantly developed over a long period of time. Most recently it has been used for Public Works Department equipment and materials, storage and staging operations. Approximately 50% of this area is covered with impervious surfaces (gravel access drives, concrete or gravel surfaced material and equipment storage areas, a 40-foot by 100-foot garage building, small storage shed and a former residential 28-foot by 38-foot building).</p> <p>The site is accessed by a gravel drive off of River Route (Route 24) at the northeastern corner of the property. A portion of this access drive is within the State of Maine’s Central Railroad corridor. The remainder is on land deeded to the Town from the State, with reserved rights by the State to the remaining railroad track in this area and the perpetual right to operate trains for the movements of goods and/or people.</p> <p>Stormwater is conveyed across the site by overland sheet flow into mostly grassed swales and corrugated metal or polyethylene culvert pipes, from the Maine Central Railroad and River Road, discharging into the Cathance River.</p>



*Shoreline behind Public Works Garage Looking North*



*Site Drainage Pipe Outfall & Swale to Cathance River*

## FLOOD RISK ASSESSMENT MEMO

Page 6 of 7

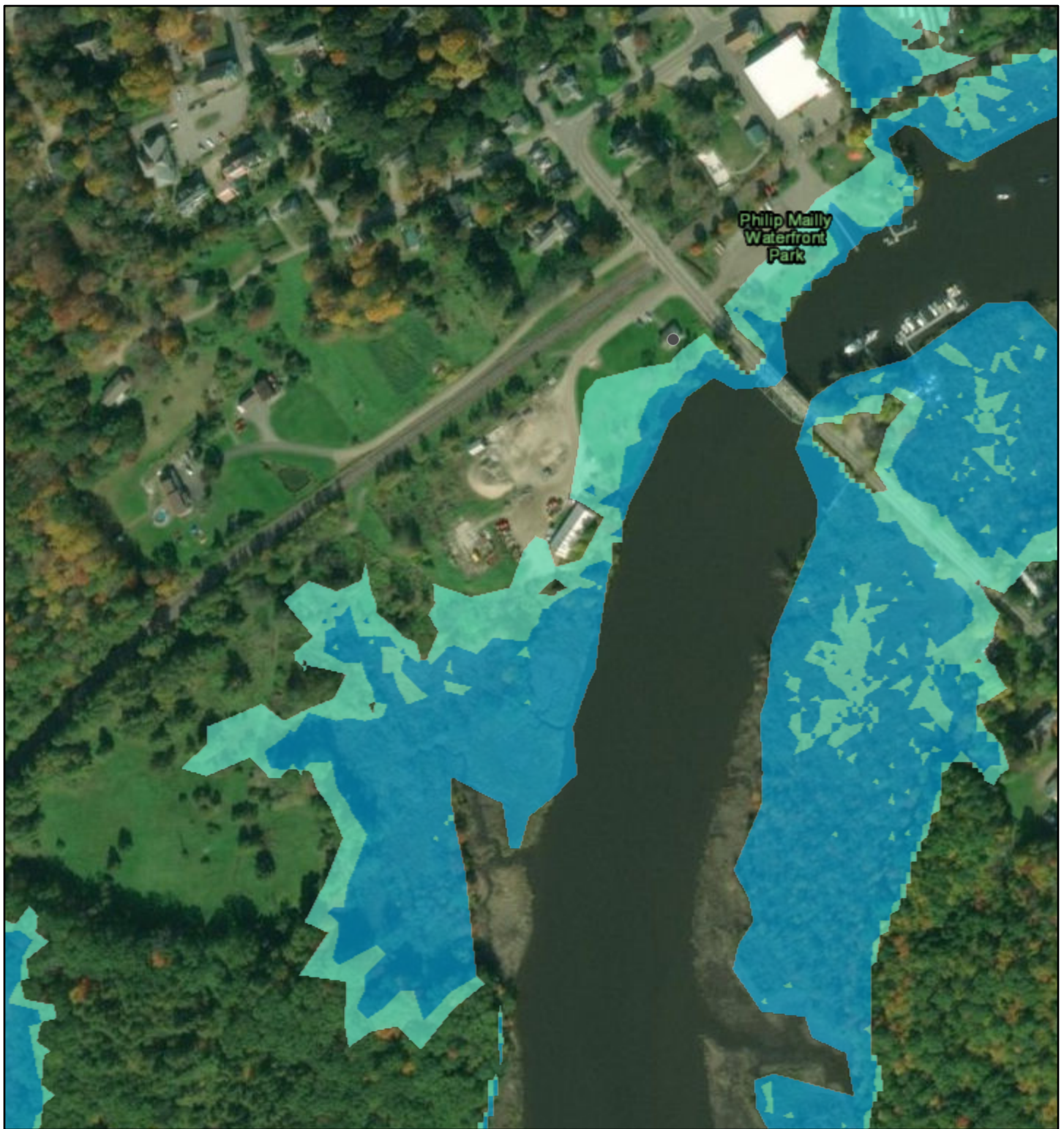
Category	Parameter	Project Information / Criteria
	<b>Vegetation</b>	<p>The easterly half of the property consists mostly of lawn and meadow areas with some mature trees, scrub growth and invasive plant growth along the immediate shoreline.</p> <p>The fringe marsh area has a variety of aquatic sedges near the shoreline and more scrub growth and invasive species along the upland perimeter.</p> <p>The westerly, upland areas of the property have grass and meadow clearings with some mature stands of deciduous and evergreen trees.</p>
	<b>Environmentally Sensitive Areas</b>	<p>The HAT elevation defines the boundary of the coastal wetland of the Cathance River. There is a regulatory setback of 75 feet upland from this natural protected resource boundary shown on the plans.</p> <p>An environmental site assessment was performed by Stantec during June of 2019. It identified a freshwater tidal marsh and several wetland areas upland of the HAT boundary. It also identified a potential significant vernal pool which is shown with a 250-foot regulatory buffer around it on the plans.</p> <p>The State Department of Inland Fisheries and Wildlife has identified the wetlands on the site and a 250-foot upland zone as Inland Waterfowl and Wading Bird Habitat. Their recommendation is to avoid these areas, including no clearing of vegetation. They also recommend a 100-foot vegetated buffer be maintained along the Cathance River, and tributary streams and associated fringe and floodplain wetlands for support fisheries habitat.</p> <p>The United States Fish and Wildlife Services department has identified the potential for presence of two rare, threatened or endangered species including Northern Long-Eared Bat and Atlantic Salmon within the site.</p>
<b>Existing Subgrade Conditions</b>	<b>Subsurface Materials</b>	<p>The shoreline shows remnants of buried wooden cribwork exposed in the embankment along the river edge. Evidence of metal, glass, rubber tires and wood suggest a history of dumping and filling over the existing substrate of the site. Odors and visual evidence of petroleum has also been observed along the shoreline in the vicinity of the Public Works Garage. The Maine Department of Environmental Protection is currently performing a Sampling and Analysis Plan screening level assessment of the potential materials of concern at the site and their potential impact to human health and/or the environment.</p>

## FLOOD RISK ASSESSMENT MEMO

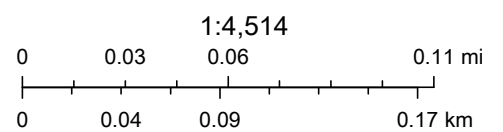
Page 7 of 7

<b>Reference Materials</b>	<p>Topographic Survey by Little River Land Surveying, Inc. for the Town of Bowdoin – June 29, 2019 <i>Topographic Survey, Town of Bowdoinham, 8 River Road, Bowdoinham, ME</i></p> <p>Boundary Survey by Harty Land Surveying for the Town of Bowdoin – April 24, 1998 <i>Central Chemical Corp. Property, 8 River Road, Bowdoinham, ME</i></p> <p>County Registry of Deeds – <i>Governor’s Deed 11877 &amp; Warranty Deed 08135</i></p> <p>Federal Emergency Management Agency</p> <ul style="list-style-type: none"><li>- July 16, 2015 effective <i>Flood Insurance Rate Map (FIRM)</i>, and <i>Flood Insurance Study (FIS)</i></li><li>- December 3, 1976 historic <i>Flood Hazard Boundary Map H-01-16</i></li><li>- May 19, 1987 historic <i>FIRM 230119 0001-0010 B</i></li><li>- November 19, 1997 historic <i>FIRM 230119 0015 C</i> and <i>FIS</i></li></ul> <p>Comprehensive Plan, Town of Bowdoinham - 2014 <i>Sea Level Rise and Climate Change Adaptation Goals and Strategies</i></p> <p>Public Works Department Staff Observations, Town of Bowdoinham – <i>Telephone Discussion During 2019 with Baker Design Consultants</i></p> <ul style="list-style-type: none"><li>• No significant flooding has occurred in the past 17 years.</li><li>• No significant flooding has resulted from ice flows and blockage at the River Road (Route 24) bridge.</li><li>• The highest recalled flooding occurrence in the past 17 years had flood waters approaching the public works garage building but stopping just short of reaching the foundation.</li><li>• On most given years during astronomically high tide cycles, flood waters crest the top of the riverbank and minor flooding occurs immediately along the shoreline edge.</li></ul> <p>Comprehensive Plan, Town of Bowdoinham - 2014 <i>Sea Level Rise and Climate Change Adaptation Goals and Strategies</i></p> <p>Sampling and Analysis Plan, Maine Department of Environmental Protection – April 26, 2019 <i>Sampling and Analysis Plan for Central Chemical Company, Bowdoinham, Maine</i></p> <p>Tidal Station Data, National Oceanic and Atmospheric Administration</p> <p>Environmental Site Assessment, Stantec – June 27, 2019 <i>Wetland and Watercourse Delineation and Ecological Assessment Report, Public Works Site Redevelopment, Bowdoinham, Maine</i></p> <p>Phase I Environmental Site Assessment, Pine Tree Engineering – April, 1998 <i>Central Chemical Co. Center Street Facility Environmental Site Assessment Phase I, Bowdoinham, Maine</i></p> <p>Sea Level Rise Study, Bowdoin College – November 13, 2012 <i>Impacts of Sea Level Rise In Bowdoinham, ME</i></p> <p>Storm Surge, NOAA, Maine Geological Survey – <i>Sea Lake and Overland Surges from Hurricanes Category 1 Hurricane Modeling</i></p>
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# 8 River Road, Bowdoinham, ME - SLOSH Map, CAT 1 Hurricane



8/2/2019, 3:23:16 PM



Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community, Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Maine Geological Survey



**NOTES TO USERS**

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations (BFEs)** and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) Report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS Report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

**Coastal Base Flood Elevations** shown on this map apply only landward of 0.0 North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study Report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study Report for this jurisdiction.

The AE Zone category has been divided by a **Limit of Moderate Wave Action (LMWA)**. The LMWA represents the approximate landward limit of the 1.5-foot breaking wave. The effects of wave hazards between the VE Zone and the LMWA (or between the shoreline and the LMWA for areas where VE Zones are not identified) will be similar to, but less severe than those in the VE Zone.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study Report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 19. The **horizontal datum** was NAD 83, GRS 1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov> or contact the National Geodetic Survey at the following address:

NGS Information Services  
NOAA, NNGS12  
National Geodetic Survey  
SSMC-3, #9202  
1315 East-West Highway  
Silver Spring, Maryland 20910-3282  
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at <http://www.ngs.noaa.gov>.

**Base Map** information shown on this FIRM was derived from the Maine Office of Geographic Information Systems (MEGIS) at a scale of 1:6,000 or better from photography dated May 2013.

The **profile baselines** depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the **profile baseline**, in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables for multiple streams in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

**Corporate limits** shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

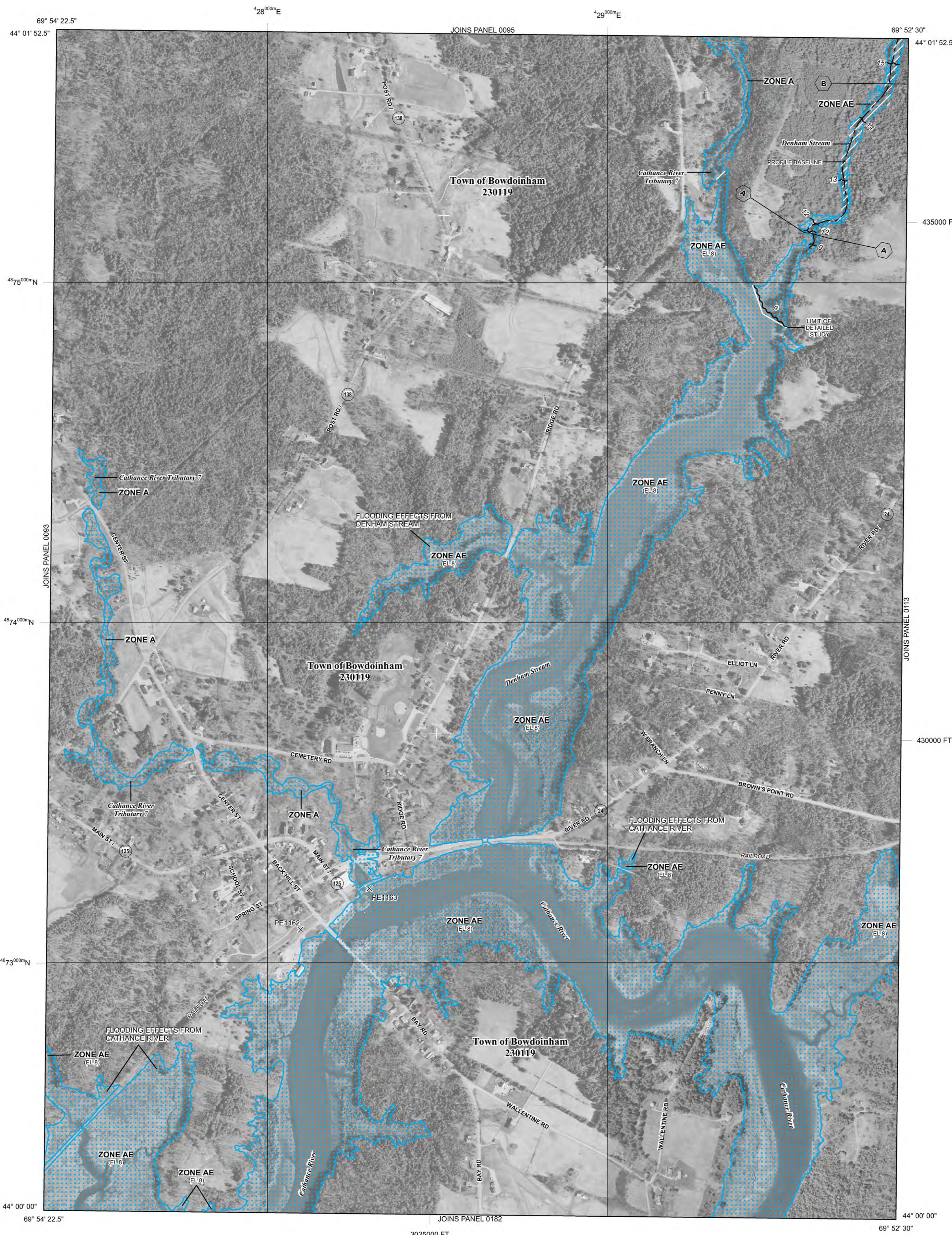
Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

For information on available products associated with this FIRM visit the **Map Service Center (MSC)** website at <http://msc.fema.gov>. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the MSC website.

If you have **questions about this map**, how to order products, or the National Flood Insurance Program in general, please call the **FEMA Map Information eXchange (FMIX)** at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov/business/infp>.

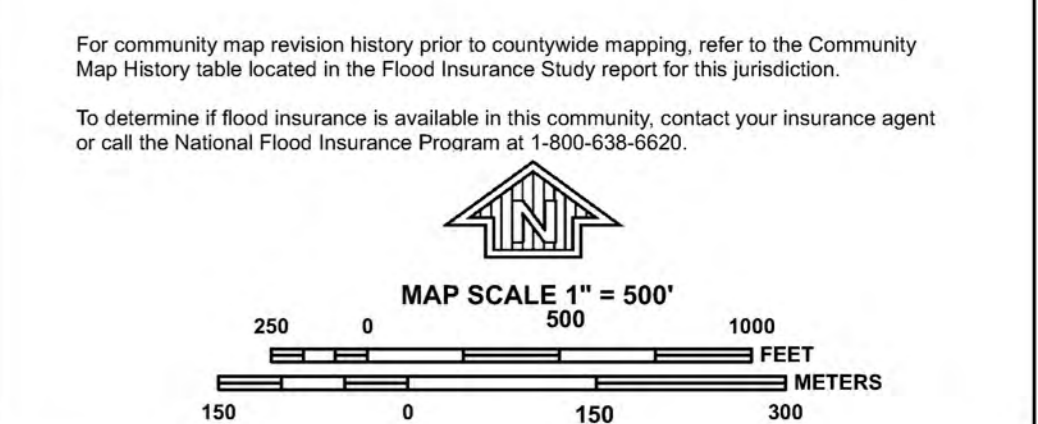
**State of Maine Floodway Note:** Under the Maine Revised Statutes Annotated (M.R.S.A.) Title 30 § 439-A, 7C where the floodway is not designated on the Flood Insurance Rate Map, the floodway is considered to be the channel of a river or other water course and the adjacent land areas to a distance of one-half the width of the floodplain, as measured from the normal high water mark to the upland limit of the floodplain, unless a technical evaluation certified by a registered professional engineer is provided demonstrating the actual floodway based upon approved FEMA modeling methods.

Only coastal structures that are certified to provide protection from the 1-percent-chance annual flood are shown on this panel. However, all structures taken into consideration for the purpose of coastal flood hazard analysis and mapping are present in the DFIRM database in S\_Gen\_Struct.



**LEGEND**

- SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD. The 1% annual chance flood (100-year flood), also known as the base flood, is the flood area that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.
  - ZONE A** No Base Flood Elevations determined.
  - ZONE AE** Base Flood Elevations determined.
  - ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
  - ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
  - ZONE AR** Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently derelict. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
  - ZONE A99** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
  - ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
  - ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.
  - FLOODWAY AREAS IN ZONE AE. The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.
  - OTHER FLOOD AREAS
  - ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
  - OTHER AREAS**
  - ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.
  - ZONE D** Areas in which flood hazards are undetermined, but possible.
  - COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS
  - OTHERWISE PROTECTED AREAS (OPAs)
- CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.
- 1% Annual Chance Floodplain Boundary
  - Floodway boundary
  - Zone D boundary
  - CBRS and OPA boundary
  - Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities.
  - Limit of Moderate Wave Action
  - Limit of Moderate Wave Action coincident with Zone Break
  - Base Flood Elevation line and value; elevation in feet\*
  - Base Flood Elevation value where uniform within zone; elevation in feet\*
- \*Referenced to the North American Vertical Datum of 1988
- Cross section line
  - Transect line
  - 45° 02' 08" 93° 02' 12" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83) Western Hemisphere
  - 3100000 FT 5000-foot ticks: Maine State Plane West Zone (FIPS Zone 1802), Transverse Mercator projection
  - 1000-meter Universal Transverse Mercator grid values, zone 19
  - DX5510 Bench mark (see explanation in Notes to Users section of this FIRM panel)
  - River Mile
- MAP REPOSITORIES  
Refer to Map Repositories list on Map Index
- EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP  
July 16, 2015
- EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL



**NATIONAL FLOOD INSURANCE PROGRAM**

**PANEL 0094F**

**FIRM**  
**FLOOD INSURANCE RATE MAP**  
**SAGadahoc COUNTY,**  
**MAINE**  
**(ALL JURISDICTIONS)**

**PANEL 94 OF 375**  
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

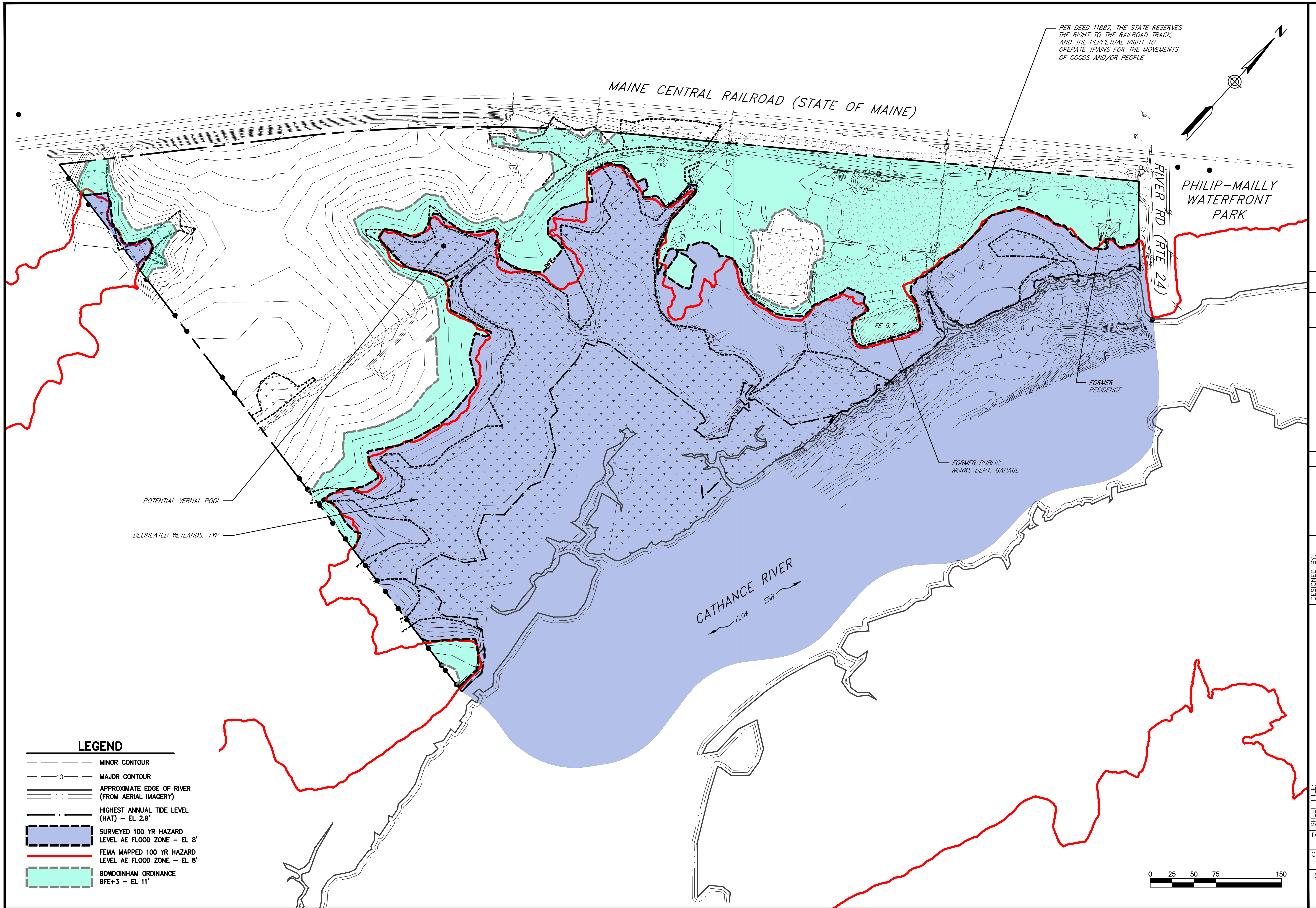
COMMUNITY	NUMBER	PANEL	SUFFIX
BOWDOINHAM, TOWN OF	230119	0094	F

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

**MAP NUMBER**  
**23023C0094F**  
**EFFECTIVE DATE**  
**JULY 16, 2015**

**Federal Emergency Management Agency**

x:\18\18-20 bowdoinham waterfront\phaseb-livingshorelines\cad\18-20 bowdoinham civil 3d new.dwg 8/5/2019



**BAKER DESIGN CONSULTANTS**  
Civil, Marine, and Structural Engineering  
7 Spruce Road • Freeport • Maine • 04032 • 207-866-9724 • info@bakerdesignconsultants.com

DESIGNED BY:	TJP
DRAWN BY:	MMC
CHECKED BY:	BJB
SCALE:	AS SHOWN

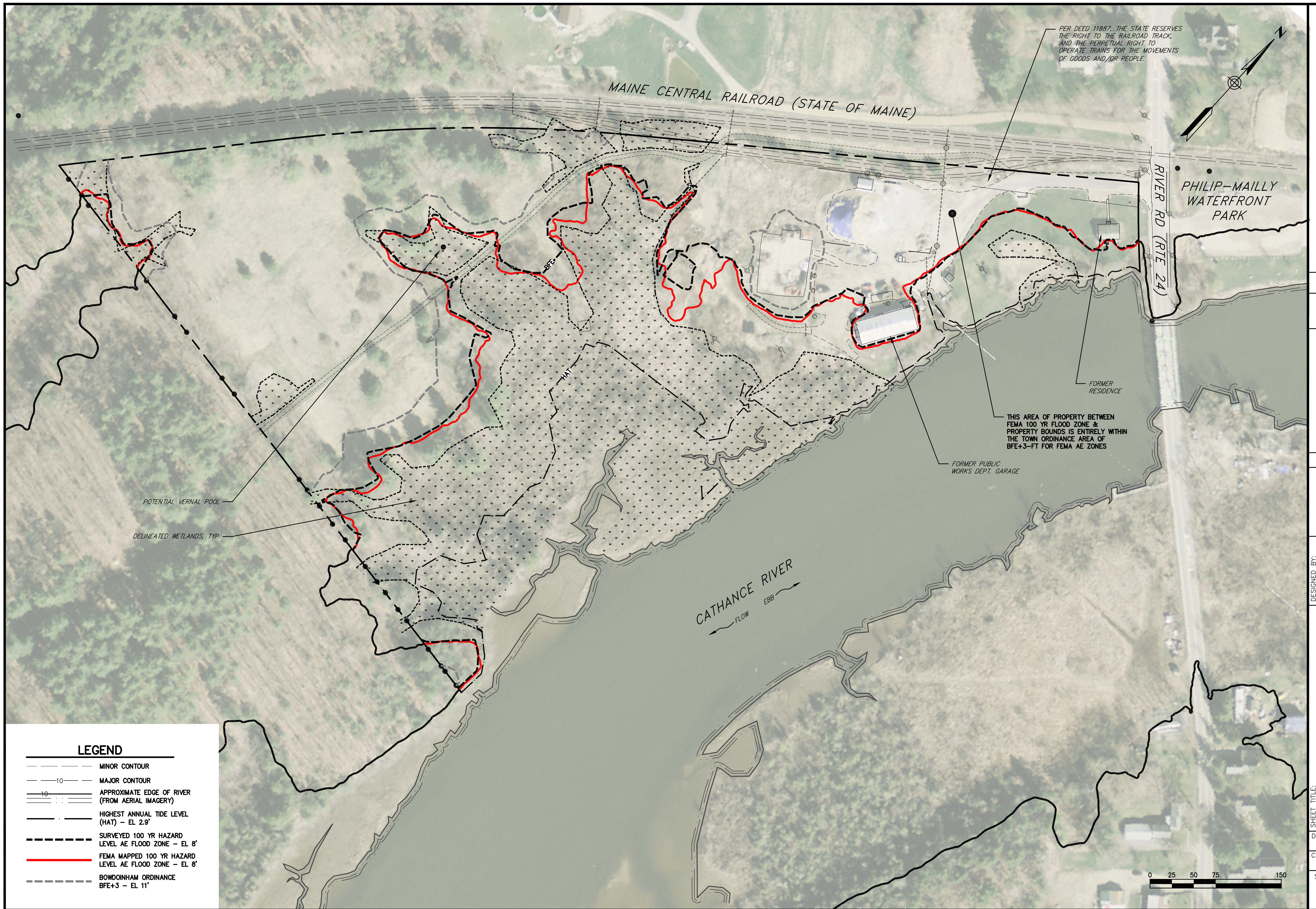
**EXISTING CONDITIONS PLAN**

PROJECT: TOWN OF BOWDOINHAM, MAINE  
**SHORELINE STABILIZATION & WATERFRONT ACCESS**

DATE	JULY 2019
CONTRACT NO.	18-20
SHEET NO.	C-1
REV.	A

ISSUED FOR REVIEW	NO.	08.02.19	TJP
SUBMISSION	NO.		INT.

x:\18\18-20 bowdoinham waterfront\phaseb-livingshorelines\cad\18-20 bowdoinham civil 3d new.dwg 8/5/2019



PER DEED 11887, THE STATE RESERVES THE RIGHT TO THE RAILROAD TRACK, AND THE PERPETUAL RIGHT TO OPERATE TRAINS FOR THE MOVEMENTS OF GOODS AND/OR PEOPLE.

THIS AREA OF PROPERTY BETWEEN FEMA 100 YR FLOOD ZONE & PROPERTY BOUNDS IS ENTIRELY WITHIN THE TOWN ORDINANCE AREA OF BFE+3-FT FOR FEMA AE ZONES

FORMER PUBLIC WORKS DEPT. GARAGE

FORMER RESIDENCE

POTENTIAL VERNAL POOL

DELINEATED WETLANDS, TYP

MAINE CENTRAL RAILROAD (STATE OF MAINE)

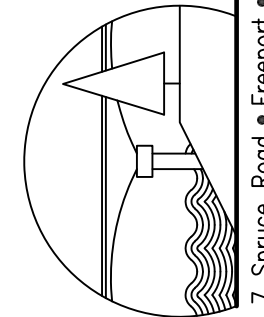
PHILIP-MALLY WATERFRONT PARK

RIVER RD (RTE 24)

CATHANCE RIVER  
FLOW EBB

**LEGEND**

- MINOR CONTOUR
- 10- MAJOR CONTOUR
- 10- APPROXIMATE EDGE OF RIVER (FROM AERIAL IMAGERY)
- HIGHEST ANNUAL TIDE LEVEL (HAT) - EL. 2.9'
- SURVEYED 100 YR HAZARD LEVEL AE FLOOD ZONE - EL. 8'
- FEMA MAPPED 100 YR HAZARD LEVEL AE FLOOD ZONE - EL. 8'
- BOWDOINHAM ORDINANCE BFE+3 - EL. 11'

 <p><b>BAKER DESIGN CONSULTANTS</b> Civil, Marine, and Structural Engineering 7 Spruce Road • Freeport • Maine • 04032 • 207-866-9724 • info@bakerdcsignconsultants.com</p>		TJP	INT.
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