GROWING AREA WAD

New Hampshire Border to Cape Arundel, Kennebunkport

Sanitary Survey Report

2009 - 2020

Final

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Sanitary Survey Officer signature: ______________________ **Date:________8/11/22_______**

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Executive Summary

This is a Sanitary Survey report for Growing Area WAD (Growing Areas WA, WB, WC, and WD) written in compliance with the requirements of the 2019 Model Ordinance and the National Shellfish Sanitation Program. Triennial reports for Growing Area WAD were completed in 2013, 2016, and 2019. There are no classification changes planned for 2021 in Growing Area WAD. There were no actual pollution sources found during routine shoreline survey. Access was denied at four properties. Water quality has remained consistent overall. The next sanitary survey is due in 2032 and the next triennial in 2023.

Description of Growing Area

Growing Area WA is located in southern York County in Maine. It includes the towns of South Berwick, Eliot, Kittery, and the Isle of Shoals. Portsmouth Harbor is used extensively by a large lobster fishing fleet, charter fishing vessels, commercial fishermen, excursion boats to the Isles of Shoals situated nine miles offshore, and local and transient boats based at or visiting the boating facilities in the area. Major pollution sources on the Maine side of the Piscataqua River, within Growing Area WA, include the South Berwick WWTP, Kittery WWTP, and the Portsmouth Naval Shipyard. There are several marinas and large boat mooring areas. The Piscataqua River is also the receiving waters for the waste treatment facilities in Portsmouth, Kittery, and Newington, New Hampshire. There are four active overboard discharges (OBDs) within Growing Area WA.

The area is heavily developed with many retail stores, highways, and major travel routes. Land use in the Piscataqua River watershed is characterized as densely developed with high levels of impervious surfaces which contribute to increased flow of storm water into the river. Numerous small parcels of municipal and privately managed conservation land areas are located throughout the watershed. Many areas within the watershed provide significant habitat for inland and coastal wading birds and waterfowl, as well as a small area of nesting seabirds.

The Isles of Shoals is comprised of nine rocky islands six miles off the New Hampshire and Maine coast. There are no year-round residences on the Isle of Shoals. There is White Island Light, the Oceanic Hotel, a few summer houses, and the Shoals Marine Research Laboratory. Various excursion boat companies cruise to the Shoals but since the Shoals are privately owned, stopovers are not always included in cruises or are limited.

In Growing Area WA, there are three kelp Limited Purpose Aquaculture permits (LPAs) and one shellfish aquaculture lease. There are two wet storage permits issued, one is flow through and one is recirculating.

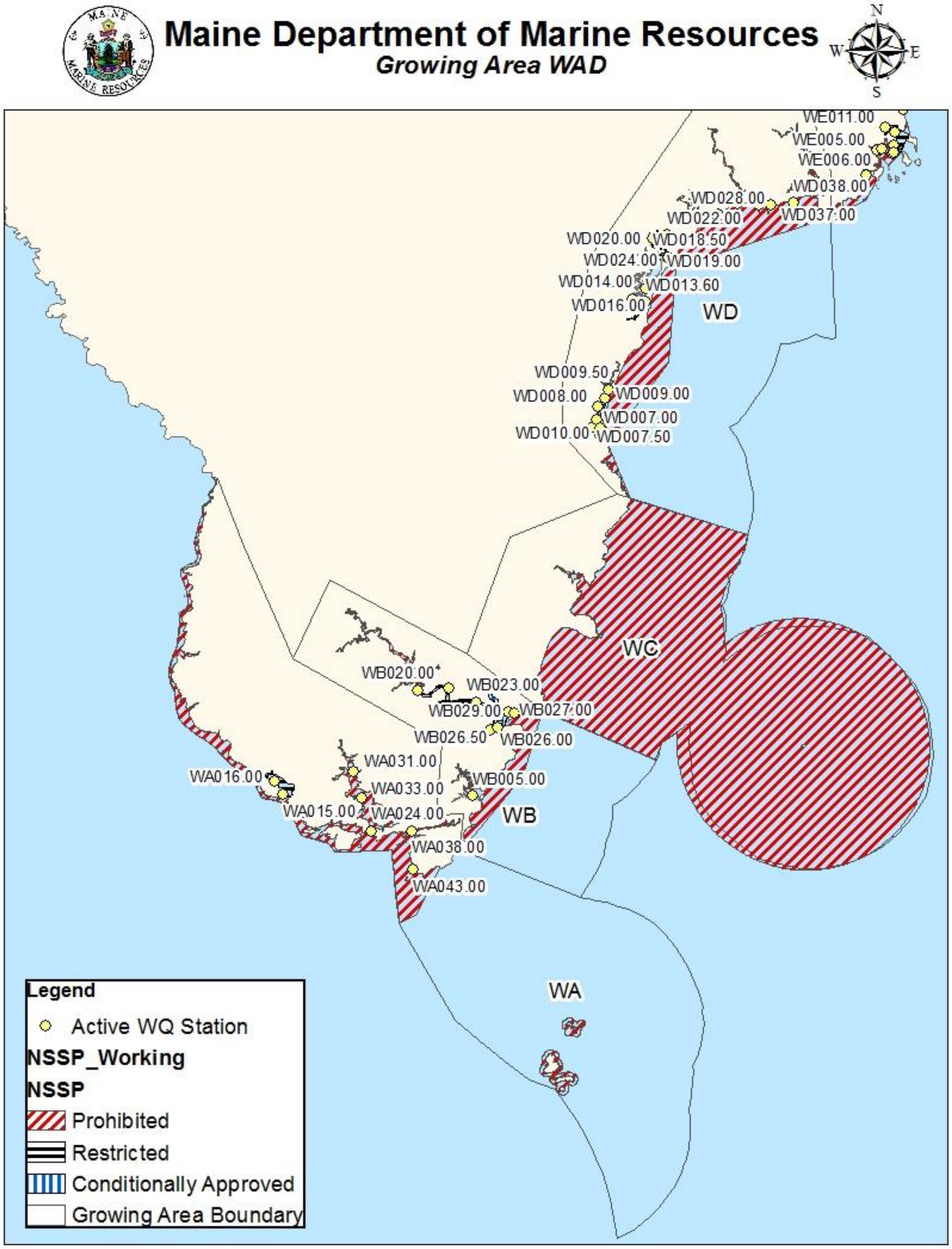
Growing area WB includes small portions of the towns of Kittery and York in Southern Maine. The growing area boundary begins at Sisters Point Kittery and includes Seapoint Beach, Brave Boat Harbor, and the York River ending at the northeast end of Western Beach, just outside the York River. There are no active OBDs. There are no shellfish aquaculture leases and no LPAs.

Growing Area WC is entirely classified as Prohibited (Figure 1).

Growing Area WD includes the towns of York, Ogunquit, Wells, Kennebunk, and Kennebunkport. It includes five main rivers; Ogunquit, Webhannet, Little, Mousam and Kennebunk. Existing pollution sources in this growing area include four municipal WWTPs, five marinas, and three active OBDs. There are five shellfish aquaculture leases and four shellfish LPAs.

Below is a map, Figure 1, showing active water quality stations within Growing Area boundaries. Closures within the growing area can be found in legal notices in DMR central files or on the DMR website.

Figure 1. Growing Area WAD, Overview Map.



History of Growing Area Classification

Reclassification addendums to the sanitary survey report are in the DMR central files.

Pollution Sources Survey

Summary of Sources and Location

The growing area shoreline is divided into two-mile segments that are identified using unique Growing Area Shoreline Survey Identification (GASSID) numbers. All properties and potential pollution sources within 250 feet of the shoreline are identified and inspected. The inspection includes a property description, physical address, location of the septic system, and any other relevant potential or actual pollution sources. A GPS point to identify the source location(s) and the data are entered electronically in the field and stored in DMR central files.

Figure 2. Growing Area WAD, Pollution Map A.

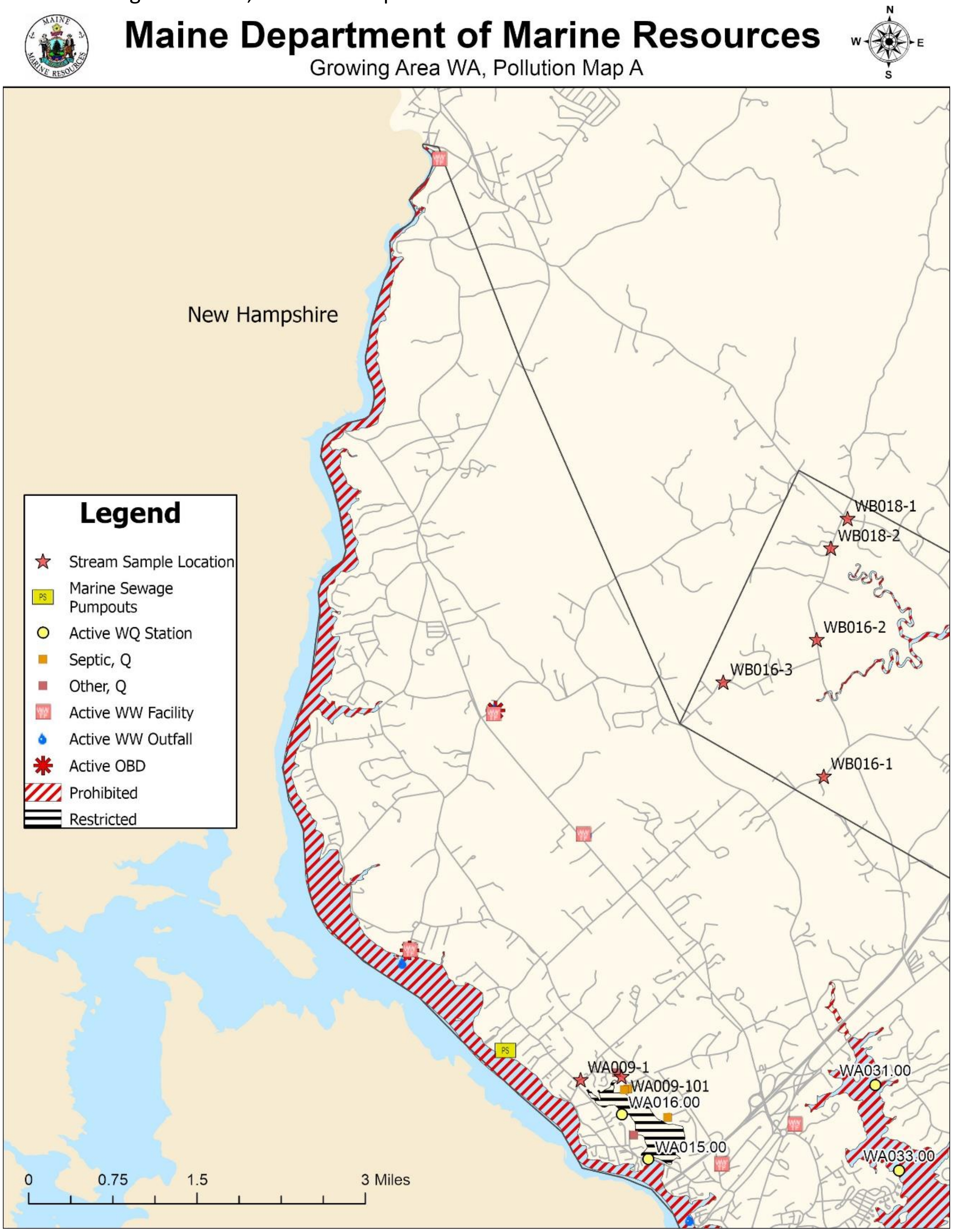


Figure 3. Growing Area WAD, Pollution Map B.

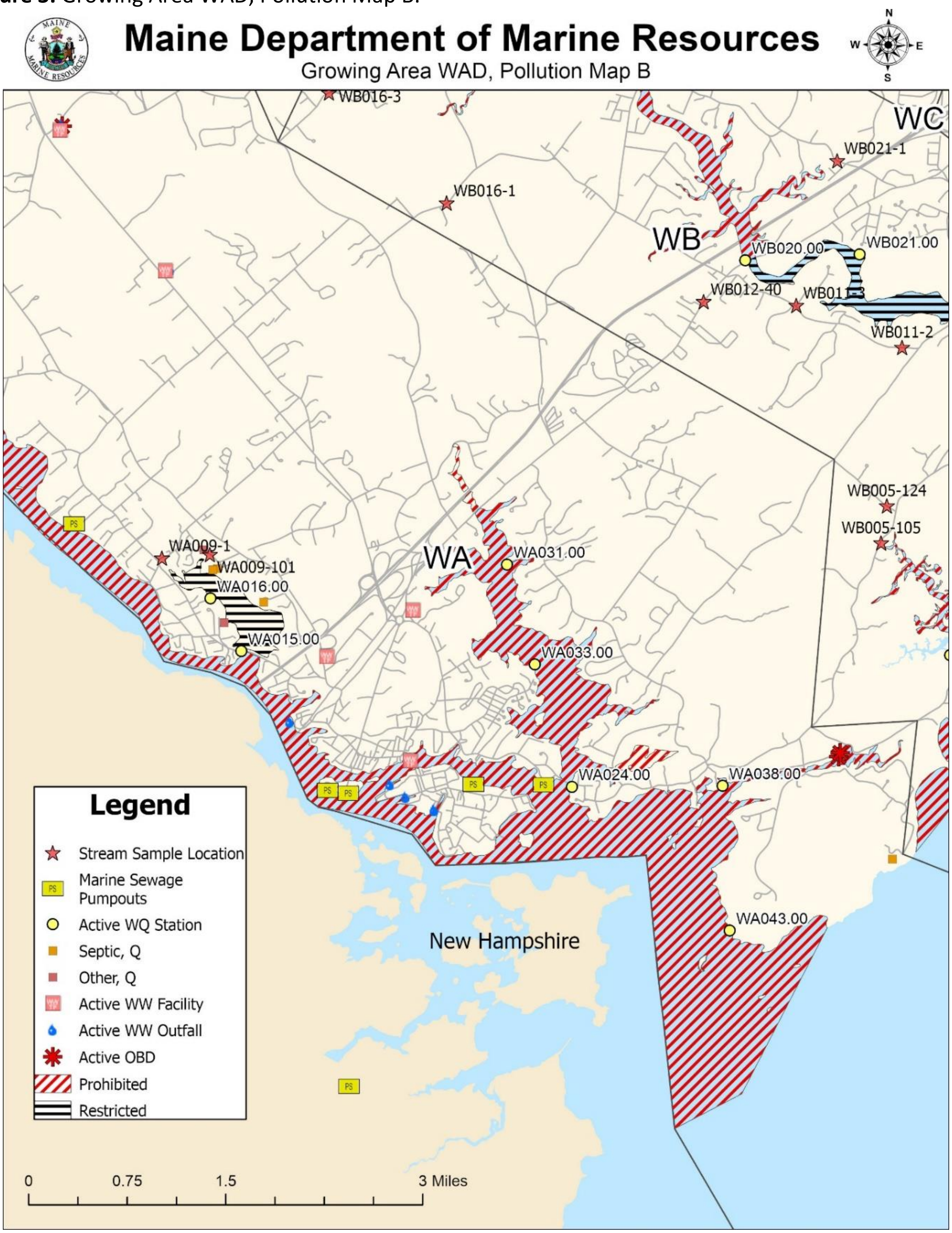


Figure 4. Growing Area WAD, Pollution Map C.

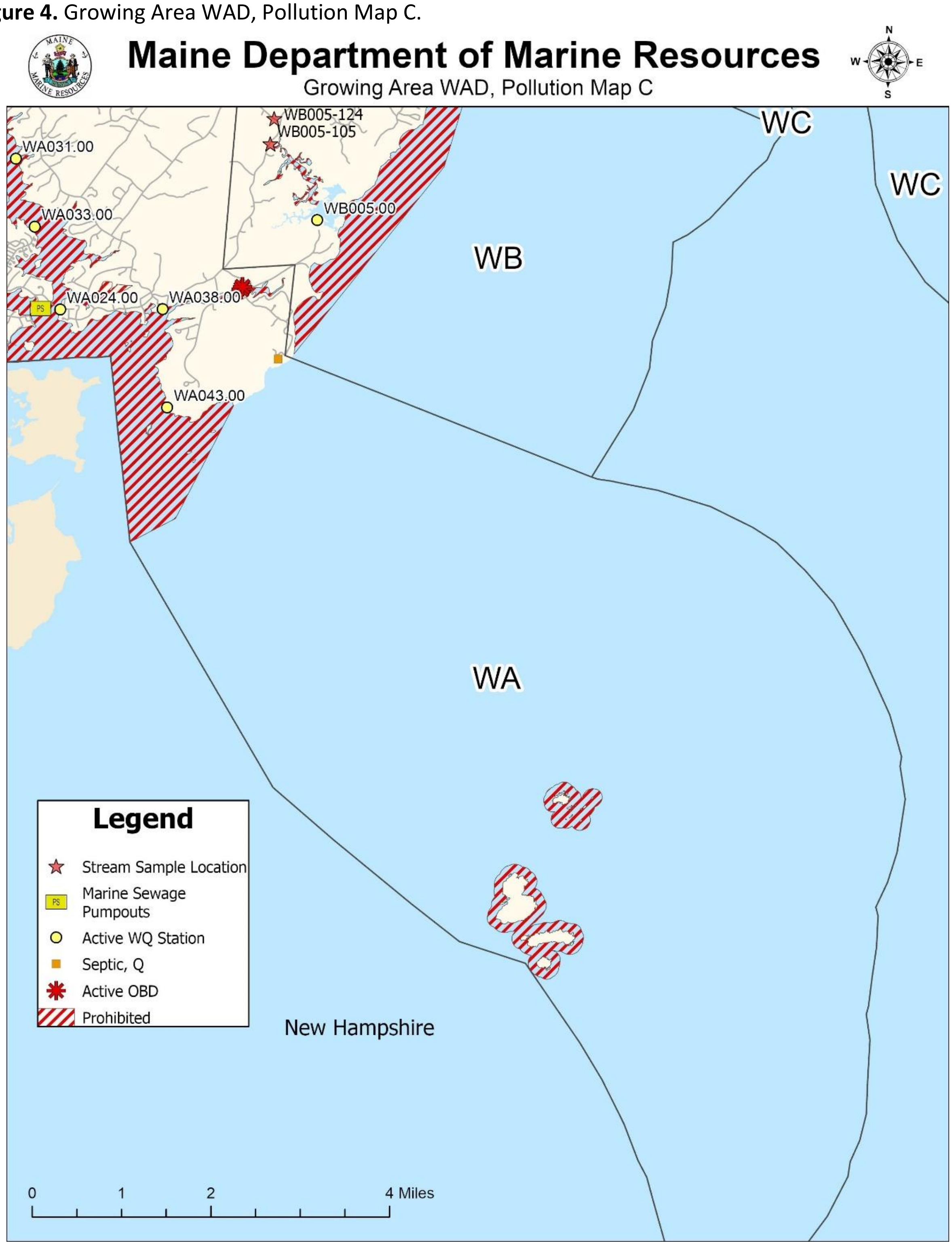


Figure 5. Growing Area WAD, Pollution Map D.

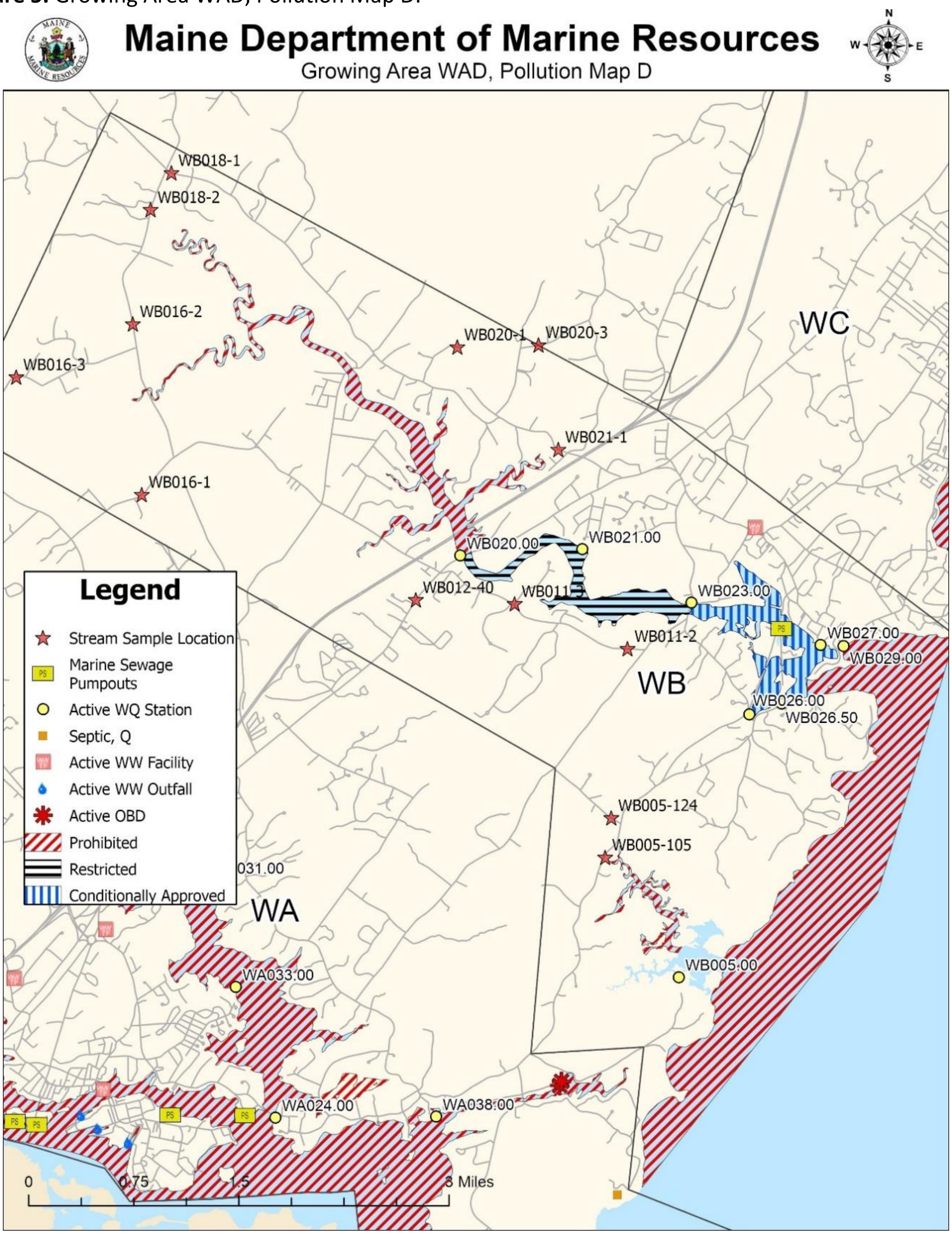


Figure 6. Growing Area WAD, Pollution Map E.

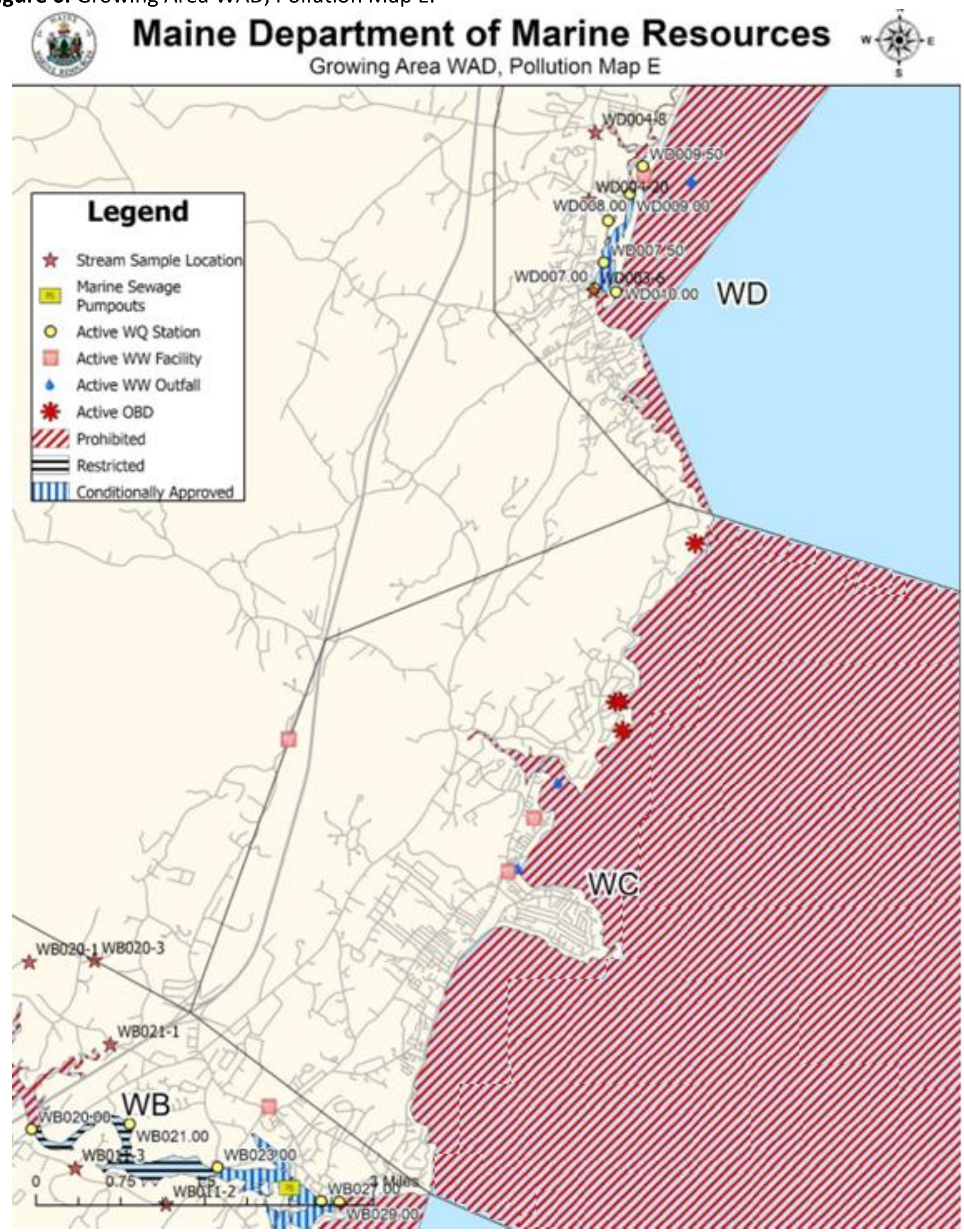
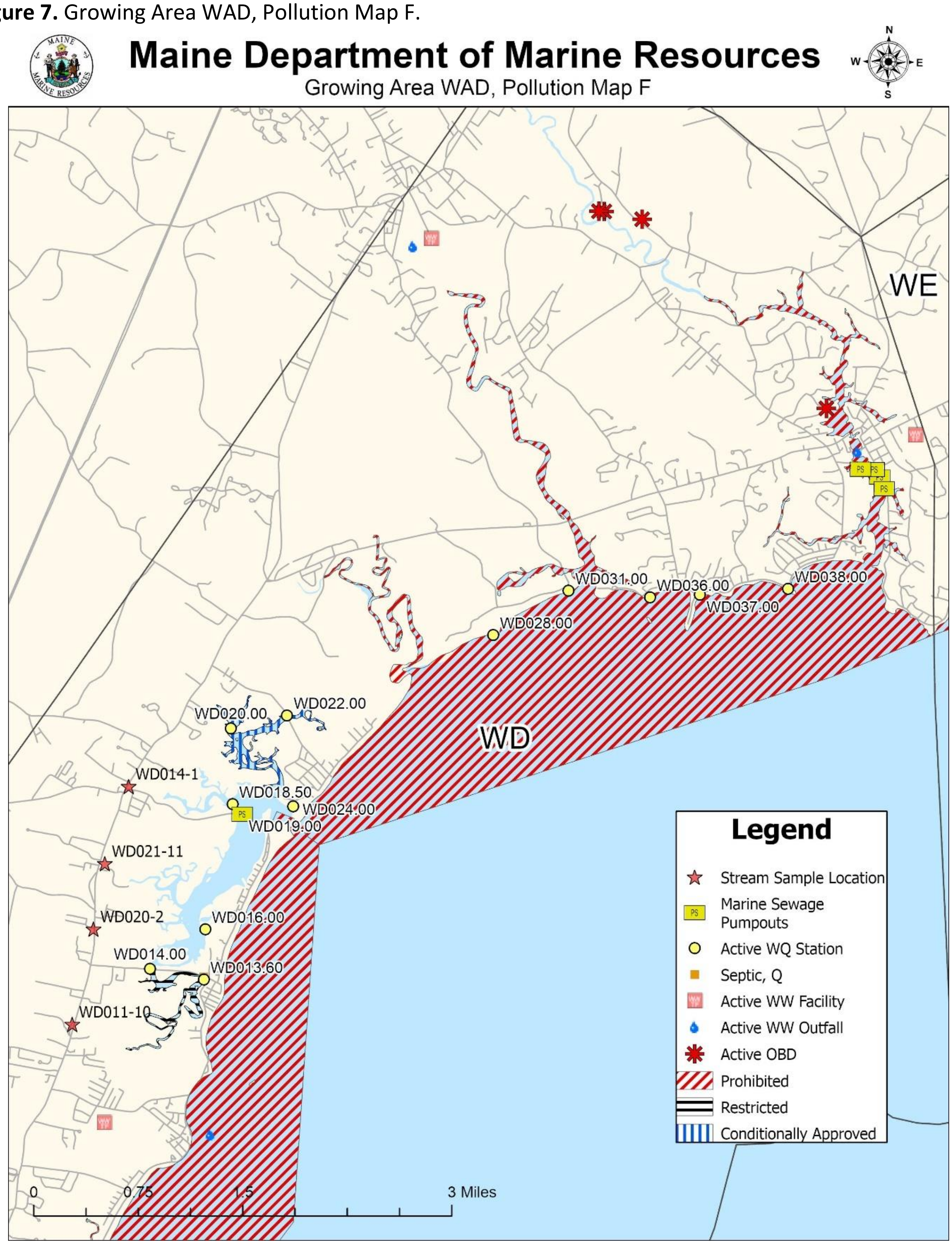


Figure 7. Growing Area WAD, Pollution Map F.



State and Federal Licensed Waste Discharge Permits

Overboard Discharges (OBDs)

There are 12 overboard discharges (OBDs) that discharge their treated effluent into the waters of Growing Area WAD (Figures 2-7). One OBD was removed from the Mousam River, Kennebunk (DEP OBD ID #3464) in 2020, and a total of seven other OBDs have been removed over the past twelve review years.

An overboard discharge (OBD) is the discharge of wastewater from residential, commercial, and publicly owned facilities to Maine's streams, rivers lakes, and the ocean. Commercial and residential discharges of sanitary waste have been regulated since the mid-1970's when most direct discharges of untreated waste were banned. Between 1974 and 1987 most of the "straight pipes" were connected to publicly-owned treatment works or replaced with standard septic systems. Overboard discharge treatment systems were installed for those facilities that were unable to connect to publicly-owned treatment works or unable to install a septic system because of poor soil conditions or small lot sizes.

All overboard discharge systems include a process to clarify the wastewater and disinfect it prior to discharge. There are two general types of treatment systems; mechanical package plants and sand filters. Sand filter systems consist of a septic tank and a sand filter. In such systems, the wastewater is first directed to a holding tank where the wastewater solids are settled out and undergo partial microbial digestion. The partially treated wastewater then flows from the tank into a sand filter, consisting of distribution pipes, layers of stone and filter sand, and collection pipes within a plastic liner. The wastewater is biologically treated as it filters down through the sand, and is then collected and discharged to a disinfection unit. Mechanical package plants consist of a tank, where waste is mechanically broken up, mixed and aerated; mechanical systems require electric power, and must have an operating alarm on a separate electrical circuit that will activate if the treatment unit malfunctions due to a power failure. The aerated treated wastewater is held in a calm condition for a time, allowing for solids to settle and for the waste to be partially digested by naturally occurring bacteria. The clarified water from the tank is then pumped off the top into a disinfection unit. There are two types of disinfection units, UV and chlorinators (most common). In a chlorinator, the treated water contacts chlorine tablets and remains in a tank for at least 20 minutes where bacteria and other pathogens are killed. The treated and disinfected water is discharged from the disinfection unit to below the low water mark of the receiving waterbody (the ocean, a river, or a stream) via an outfall pipe.

OBDs are licensed and inspected by the Maine Department of Environmental Protection. At each inspection, DEP looks for tags on each treatment unit identifying the service contractor and the last date of service. If an OBD is not properly maintained, or if the OBD malfunctions, it has the potential to directly discharge untreated wastewater to the shore; therefore, preventative closures are implemented surrounding every OBD located in Growing Area WAD (Table 1). The size of each closure is determined based on a dilution, using the permitted flow rate of the OBD (in gallons per day, GPD), and the depth of the receiving water that each OBD discharges to; the fecal concentration used for this dilution calculation is $1.4X10^5$ FC /100 ml. Single OBD systems associated with more than one residence will have multiple permit IDs. All current closures are of adequate size to protect public health.

Table 1. Overboard Discharges (OBDs).

Growing Area	Section	OBD ID	Location	Receiving Waterbody	Flow (gpd)	Acres Needed for Closure	Current Prohibited Acreage
WA	P1	883	Eliot	Piscataqua River	20000	204.57	1225
WA	P1	2417	Eliot	Sturgeon Creek	15000	102.29	
WA	P1	2975	Kittery	Chauncey Creek	300	18.41	2288
WA	P1	7605	Kittery	Chauncey Creek	450	27.62	
WC	P1	2334	York	Atlantic Ocean	300	3.68	2460
WC	P1	3082	York	Atlantic Ocean	300	3.68	
WC	P1	3304	York	Atlantic Ocean	300	3.68	
WC	P1	6278	York	Atlantic Ocean	300	3.68	
WD	P1	1523	Arundel	Saunders Brook	300	6.14	2771
WD	P1	6120	Arundel	Kennebunk River	300	6.14	
WD	P1	7254	Arundel	Kennebunk River	300	6.14	
WD	P1	2719	Kennebunk	Kennebunk River	300	6.14	

National Pollutant Discharge Elimination System (NPDES)

Table 2. NPDES Permitted Discharges.

Growing Area	Section	Permit ID	Type	Facility	Receiving Waterbody
WA	P1	ME0100820	WWTF	South Berwick	Salmon Falls River
WA	P1	ME0021059	OBD Outfall	Riverview Homeowners Assoc	Piscataqua River
WA	P1	MEU508225	Car Wash Facility	York	Ground Water
WA	P1	ME0100285	WWTF	Kittery	Piscataqua River

Growing Area	Section	Permit ID	Type	Facility	Receiving Waterbody
WA	P1	ME0000868	Dry Dock Wastewater	Portsmouth Naval Shipyard	Piscataqua River
WB	P2	ME0101222	WWTF	York	Cape Neddick Harbor
WB	P2	ME0036749	Non-contact cooling water	The Goldenrod	Atlantic Ocean
WD	P2	ME0100986	WWTF	Ogunquit	Atlantic Ocean
WD	P2	ME0100790	WWTF	Wells	Atlantic Ocean
WD	P1	ME0100935	WWTF	Kennebunk	Mousam River
WD	P1	ME0101184	WWTF	Kennebunkport	Kennebunk River

There are seven wastewater treatment facilities in Growing Area WAD (Table 2). There are additional WWTPs located in New Hampshire that impact water quality in Maine. These are not listed in the NPDES permitted discharges table. Since 2017, the WWTP inspection reports have been available in DMR central files.

Dover, NH Wastewater Treatment Facility: The Dover WWTF is a secondary wastewater treatment facility located on the upper Piscataqua River approximately 2.8 miles north (upstream) of Dover Point, Dover, New Hampshire. This plant was constructed in 1991, has a monthly average flow of 2.96 MGD, employs an activated sludge treatment process, and uses ultraviolet light for disinfection (a backup chlorination disinfection system is available). Water depth at the outfall is about 23 feet. The plant is required by NPDES permit to immediately notify NHDES/Watershed Management Bureau in the event of a discharge of raw or improperly treated sewage, as well as incidents of improperly disinfected effluent or invalid effluent test results. The NHDES, in turn, notifies MEDMR. The WWTF installed a Supervisory Control and Data Acquisition (SCADA) system to integrate the monitoring all WWTF treatment processes. The Dover wastewater treatment facility (WWTF) has the potential to affect the growing waters and shellstock within the Salmon Falls and upper Piscataqua Rivers. A flooding tide dye/dilution study of the Dover wastewater treatment facility effluent's impact on both rivers was conducted in June 2004, while an ebbing tide study was performed in September 2004. The dye studies determined the current Prohibited area from roughly one mile north of the Interstate 95 bridge in Kittery to the Route 101 bridge in Eliot. The current Prohibited area, the entire Piscataqua River is 3, 514 acres (in Maine waters) and is appropriate in size.

Portsmouth, NH Wastewater Treatment Facility: The Portsmouth WWTF is called the Peirce Island WWTF due to its location on the southeast portion of Peirce Island. Constructed in 1964, it is a primary wastewater treatment facility last renovated in 2001. It has a design flow of 4.8 MGD. Wastewater disinfection occurs yearly with sodium hypochlorite and is dechlorinated using sodium bisulfite. The outfall is located east of Peirce Island and southwest of Seavey Island. In December 2012, the U.S. Food and Drug Administration and NHDES conducted a hydrographic dye study of the Portsmouth municipal WWTF on Peirce Island (Ao et.al, 2017). The 2012 study includes a simulation of a hypothetical disinfection failure at the WWTF, using an effluent fecal coliform concentration assumption of 1,000,000 FC/100ml. This rather high assumption is based on repeated sampling of pre-disinfection effluent at the facility and is much higher than an assumption that would be appropriate for a secondary treatment facility. The 2012 study indicates that for a disinfection failure occurring at slack low tide, insufficiently diluted effluent would reach Little Bay, NH during the first flooding tide, in approximately 4.5 hours, and would travel throughout Little Bay during that first flood tide. New Hampshire allows harvest in Little Bay only on Saturdays to allow for adequate time to be notified of a failure at the Portsmouth treatment plant. The entire Maine side of the Piscataqua River is classified as Prohibited, which is sufficient for this outfall. The Portsmouth WWTF upgrade to secondary treatment, which is expected to dramatically reduce effluent MSC levels, is scheduled for completion in April 2020. At that time, the Piscataqua River may be reassessed for a possible closure reduction.

Rollinsford, NH Wastewater Treatment Facility: The Rollinsford WWTF is a secondary wastewater treatment facility located on the Salmon Falls River approximately 0.75 miles north (upstream) of the South Berwick head-of-tide dam. This plant was constructed in the 1960’s, has an average monthly flow of 0.11 MGD and uses chlorination for disinfection. The outfall is a straight pipe, located on the bank of the river in a concrete headwall. Water depth at the outfall is determined by the amount of water held back by the South Berwick dam but is in the range of 3-5 feet. The plant is required by NPDES permit to immediately notify NHDES in the event of a discharge of raw sewage or bypass of the disinfection system. The NHDES, in turn, notifies MEDMR. Although there is no SCADA system at the WWTF, some parts of the sewage collection infrastructure (pump stations, wells) are monitored by SCADA for operational problems. While a failure of the disinfection system could possibly adversely affect the water quality of a portion of the Salmon Falls River, it’s highly unlikely the effects would extend beyond the area of the Salmon Falls River, which is classified as Prohibited. The Salmon River then flows into the Piscataqua River, which is also classified as Prohibited.

South Berwick, ME Wastewater Treatment Facility: The South Berwick WWTF is a tertiary wastewater treatment facility located on the Salmon Falls and upper Piscataqua Rivers approximately 7.4 miles north (upstream) of Dover Point, Dover, New Hampshire. This plant was constructed in 1996, has an average monthly flow of 0.57 MGD and uses chlorination for disinfection. The outfall is a straight pipe which has a dilution factor of 9:1 under low tide conditions. Water depth at the outfall is in the range of three to four feet at low tide. The plant is required by MEPDES permit to immediately notify MEDEP in the event of a discharge of raw sewage or bypass of the disinfection system. The WWTF has a SCADA system to integrate the monitoring all WWTF treatment processes. The South Berwick WWTF has the potential to affect the growing waters and shellstock within the Salmon Falls and upper Piscataqua Rivers. The downstream boundary of this zone intersects with the upper portion of the Dover WWTF prohibited area. The northern portion of the upper Piscataqua River and the entire Salmon Falls River, to the head-of-tide dam, has been classified as Prohibited in part because of this potential influence. The dilution calculation using 0.57 MGD with a fecal load of 1.4 x 10^5 in 15 feet of water requires 1,166 acres to be Prohibited. The current

Prohibited area is sufficient at 3, 514 acres (1,225 acres from the upper Piscataqua River and 2,288 acres from Portsmouth Harbor) in Maine boundary waters.

Kittery, ME Wastewater Treatment Plant: The Kittery wastewater treatment facility is permitted for 2.5 million gallons per day (NPDES permit number ME100285). Flows are typically well below 2.5 mgd, although the facility does receive additional inflow and infiltration during wet weather events. Secondary effluent is seasonally disinfected (May15-Sept30) using sodium hypochlorite, with sodium bisulfite used for dechlorination. The wastewater treatment facility itself is located approximately 3,000 feet from the effluent discharge location in the Piscataqua River. Treated effluent is not continuously discharged, but rather is released in timed “decants.” A typical decant schedule would involve thirteen decants through the day, each lasting 30-60 minutes and discharging 50,000-150,000 gallons of treated effluent per decant. Treated effluent is discharged through a single 24-inch pipe submerged in approximately 17 feet of water along the shore of the Piscataqua River. Effluent is chlorinated during the period of May 15-September 30. The dilution calculation using 2.5 MGD with a fecal load of 1.4 x 10^5 into 17 feet of water requires 4,512 acres to be Prohibited. The current Prohibited area in Maine waters is 3, 514 acres, however, half of the Piscataqua River is in New Hampshire waters providing a roughly two-fold increase in acreage which is sufficient.

York, ME Wastewater Treatment Plant: The York WWTP is permitted to discharge 3.0 MGD of secondary treated wastewater to Cape Neddick Harbor in York, Maine. The dilution calculation using 3.0 MGD with a fecal load of 1.4 x 10^5 into 29 feet of water requires 3,175 acres to be Prohibited. The current Prohibited area is sufficient at 42,370 acres.

Ogunquit, ME Wastewater Treatment Plant: The collection system consists of eleven miles of pipe and twelve pump stations. The collection system is separate from the storm water collection system. This facility provides a secondary level of treatment via an activated sludge system. The treatment process includes an influent flow meter, a bar screen, grit chamber, four aeration basins (totaling 532,00 gallons) with fine bubble diffused aeration, two secondary clarifiers (each 45 feet in diameter and 12 feet deep) and a serpentine chlorine contact tank with a volume of 66,000 gallons followed by a flow meter. The effluent is disinfected on a year-round basis with sodium hypochlorite and de-chlorinated with sodium bisulfite. The plant is permitted to discharge 1.28 MGD of secondary treated wastewater to the Atlantic Ocean. The dilution calculation using 1.28 MGD with a fecal load of 1.4 x 10^5 into 45 feet of water requires 872 acres to be Prohibited. The closure is appropriate at 2,477 acres.

Wells, ME Wastewater Treatment Plant: Wells has a collection system that is 35 miles in length and is a completely separated system. There are nine pump stations with audible and visible alarms, each with emergency generators. There are no significant industrial users within the collection system. Waste water passes through a vortex grit system and then into a splitter box that controls flow to the six 100,000-gallon capacity aeration tanks. During the summer, four of the six tanks are used and during the remainder of the year one tank is used. After Labor Day, three tanks are emptied, cleaned, and left on standby. There are two 250,000-gallon secondary clarifiers. From the clarifier, flow passes to one of two chlorine contact tanks where it is disinfected with sodium hypochlorite based on flow and chlorine residual. Dechlorination is done with sodium bisulfite. The plant is permitted to discharge 2.0 MGD of secondary treated wastewater to the Atlantic Ocean. The dilution calculations using 2.0 MGD with a fecal load of 1.4 x 10^5 into 27 feet of water requires 2,273 acres to be Prohibited. The closure is appropriate at 2,477 acres.

Kennebunk, ME Wastewater Treatment Plant: The collection system is 99% separated sewage that is roughly 38 miles in length with 24 pumps stations. All pump stations have on-site generators to provide back-up power or are fitted with receptacles where portable generators can be used to supply power in the event of a power failure. Waste waters receive a preliminary level of treatment via a step-screen and grit removal followed by flow measurement via a 9 –inch Parshall flume. Waste waters then receive a primary level of treatment via two primary clarifiers measuring 45 feet in diameter with sidewall depths of 12 feet. Secondary treatment is done with three trains of three high density rotating biological contractors (RBC's). After biological treatment waste water is conveyed to two secondary clarifiers. As part of a recent upgrade, a recycle stream from the secondary clarifiers was added so that the RBC basins also act as activated sludge tanks. Also included in the facility improvements are the addition of chlorine tanks. Waste water is disinfected with sodium hypochlorite and dechlorinated with sodium bisulfite prior to being discharged to the Mousam River. The plant is permitted to discharge secondary treated wastewater to the Mousam River in Kennebunk, Maine. The dilution calculation using 1.31 MGD with a fecal load of 1.4 x 10^5 in 15 feet of water requires 2,679 acres to be Prohibited. The Prohibited area is sufficient at 2,771 acres.

Kennebunkport, ME Wastewater Treatment Plant: The Kennebunkport WWTP is permitted to discharge 0.70 MGD of secondary treated municipal wastewater to the Kennebunk River in Kennebunkport, Maine. The dilution calculation using 0.70 MGD and 1.4 x 10^5 fecal load into 11 feet of water requires 1,953 acres to be Prohibited. The current Prohibited area is sufficient at 2,771 acres.

Residential

All residential pollution sources are reported to the local plumbing inspector (LPI). Once the system has been documented as being fixed, staff members from DMR can re-assess the water quality data and shoreline survey information to determine if the area is safe for shellfish harvest. There are no known residential pollution sources in growing area WAD.

Industrial Pollution

Shellfish, as filter feeders, readily accumulate substances from the water column or the sediments in which they live. The types of poisonous or deleterious substances that have been recovered from shellfish in the Piscataqua River include heavy metals, pesticides, petroleum products, polycyclic aromatic hydrocarbons (PAHs), and polychlorinated biphenyls (PCBs). The sources of these contaminants are sewage, dredging operations, sludge dumps, and oil spills. The Portsmouth Naval Shipyard is a source for many of the industrial pollutants. This area is classified as Prohibited due to the combination of wastewater outfalls and industrial pollution.

Marinas

The marina community in Maine only operates for a portion of the year due to adverse winter weather conditions. The management of marinas in Maine allows for shellfish growing areas to be available to harvesters, for at least a portion of the year, to direct market harvest by utilizing conditional area management plans. Of the eight marinas within Growing Area WAD, one has a classification of Conditionally Approved, while the rest are in Prohibited areas.

The York Marina is located in the York River. The marina operates from May 1 through November 30. They have 48 slips and one mooring, of which only five or six have heads. The marina provides two onshore, sewered toilets. The marina calculation, which can be found in the DMR central files, indicates that 73 acres are needed to dilute potential pollution from 50 boats. The conditionally approved area around the marina is 185 acres.

Table 3. Growing Area WAD Marinas.

Growing Area	Section	Name	Town	Waterbody	Classification
WA	P1	Marina (Great Cove)	Eliot	Piscataqua River	Prohibited
WB	CA1	Marina	York	York River	Conditionally Approved
WD	P1	Chicks Marina	Kennebunk	Kennebunk River	Prohibited
WD	P1	Kennebunk Marina	Kennebunk	Kennebunk River	Prohibited
WD	P1	Arundel Yacht Club	Kennebunk	Kennebunk River	Prohibited
WD	P1	Arundel Wharf	Kennebunk	Kennebunk River	Prohibited
WD	P1	Yachtsman Lodge	Kennebunk	Kennebunk River	Prohibited
WD	P1	Federal Jacks	Kennebunk	Kennebunk River	Prohibited

Storm Water

Storm water runoff is generated when precipitation from rain and snowmelt events flows over land or impervious surfaces and does not percolate into the ground. As the runoff flows over the land or impervious surfaces (paved streets, parking lots, and building rooftops), it accumulates debris, chemicals, sediment or other pollutants that could adversely affect water quality if the runoff is discharged untreated (US EPA 2009). Thus, storm water pollution is caused by the daily activities of people within the watershed. Currently, polluted storm water is the largest source of water quality problems in the United States.

The primary method to control storm water discharges is the use of best management practices (BMPs). In addition, most major storm water discharges are considered point sources and require coverage under a NPDES permit. In 1990, under authority of the Clean Water Act, the U.S. EPA promulgated Phase I of its storm water management program, requiring permitting through the National Pollution Discharge Elimination System (NPDES). The Phase I program covered three categories of discharges: (1) "medium" and "large" Municipal Separate Storm Sewer Systems (MS4s) generally serving populations over 100,000, (2) construction activity disturbing five acres of land or greater, and (3) ten categories of industrial activity. In 1999, US EPA issued Phase II of the storm water management program, expanding the Phase I program to include all urbanized areas and smaller construction sites.

Although it is a federal program, EPA has delegated its authority to the Maine DEP to administer the Phase II Small MS4 General Permit. Under the Small MS4 GP, each municipality must implement the following six Minimum Control Measures: (1) Public education and outreach, (2) Public participation, (3) Illicit discharge detection and elimination, (4) Construction site storm water runoff control, (5) Post-construction storm water management, and (6) Pollution prevention/good housekeeping. The permit requires each city or town to develop a draft Storm Water Management Plan that establishes measurable goals for each of the Minimum Control Measures. The City or Town must document the implementation of the Plan, and provide annual reports to the Maine DEP. Currently the discharge of storm water from 30 Maine municipalities is regulated under the Phase II Small MS4 General Permit however, no municipalities located within the boundaries of growing area EI fall under these regulations. Additionally, the Maine Storm Water Management Law provides storm water standards for projects located in organized areas that include one acre of more of disturbed area (Maine DEP 2009).

Along roadways, several storm water pipes and ditches of varying diameters were identified during shoreline surveys. Most drain into large prohibited areas that include wastewater treatment plant outfalls, licensed discharge outfalls, and marinas. Water sampling stations on the margins of these closures meet Approved criteria. No specific impact from storm water has been identified.

Non-Point Pollution Sources

Non-point source (NPS) pollution is water pollution affecting a water body from diffuse sources, such as polluted runoff from agricultural areas draining into a river, significant rainfall, high river flows or astronomical high tides. Nonpoint source pollution can be contrasted with point source pollution, where discharges occur to a body of water at a sole location, such as discharges from a chemical factory, urban runoff from a roadway storm drain, or from ships at sea. NPS may derive from various sources with no specific solution to rectify the problem, making it difficult to regulate. Freshwater streams, drainage from rainstorm runoff, and tidal creeks are the major source of non-point discharge into Growing Area WAD. A total of 241 samples were taken from freshwater streams during the review period (Table 4, Figures 2-7). Streams associated with consistently high scores are monitored to determine if they affect the water quality of growing area waters.

Table 4. Stream Samples in Growing Area WAD.

Scores > 163 cfu/100ml are highlighted in red.

Location ID	Sample Date	Pollution Type	Score	Salinity
WA005-1	4/6/2015	Stream	7.3	0
WA005-1	8/18/2015	Stream	300	0
WA005-1	9/23/2015	Stream	500	0
WA005-1	4/6/2016	Stream	7.3	0
WA005-1	6/10/2016	Stream	>1600	0
WA005-1	9/13/2016	Stream	840	0
WA005-1	10/11/2016	Stream	600	0
WA005-2	4/6/2015	Stream	4	0
WA005-2	8/18/2015	Stream	400	0
WA005-2	9/23/2015	Stream	240	0
WA005-2	4/6/2016	Stream	4	0
WA005-2	6/7/2016	Stream	1080	0
WA005-2	9/13/2016	Stream	1600	0
WA006-1	4/6/2015	Stream	4	0
WA006-1	8/18/2015	Stream	82	22
WA006-1	9/23/2015	Stream	31	26
WA006-1	4/6/2016	Stream	6	0
WA006-1	6/6/2016	Stream	>1600	0
WA007-1	4/6/2015	Stream	<2	0
WA007-1	9/23/2015	Stream	2	0
WA007-1	4/6/2016	Stream	2	0
WA007-1	6/6/2016	Stream	>1600	0
WA007-1	9/13/2016	Stream	<2	0
WA007-2	4/6/2015	Stream	<2	0
WA007-2	8/18/2015	Stream	>1600	0
WA007-2	9/23/2015	Stream	>1600	0
WA007-2	4/6/2016	Stream	5.5	0
WA007-2	6/6/2016	Stream	>1600	0
WA009-1	6/17/2009	Stream	36	1
WA009-1	4/6/2015	Stream	13	0
WA009-1	8/18/2015	Stream	920	0
WA009-1	9/23/2015	Stream	400	0
WA009-1	4/6/2016	Stream	50	0
WA009-1	6/6/2016	Stream	>1600	0

Location ID	Sample Date	Pollution Type	Score	Salinity
WA009-1	9/14/2016	Stream	820	0
WA009-1	10/11/2016	Stream	280	0
WA009-1	6/13/2018	Stream	96	0
WA009-1	8/30/2018	Stream	740	0
WA009-1	10/3/2018	Stream	>1600	0
WA009-1	10/28/2019	Stream	380	0
WA009-1	11/19/2019	Stream	620	0
WA009-101	6/17/2009	Stream	108	0
WA009-101	4/6/2015	Stream	140	0
WA009-101	8/18/2015	Stream	>1600	0
WA009-101	9/23/2015	Stream	980	0
WA009-101	4/6/2016	Stream	10	0
WA009-101	6/6/2016	Stream	>1600	0
WA009-101	9/14/2016	Stream	>1600	0
WA009-101	5/30/2018	Stream	520	1
WA009-101	6/13/2018	Stream	340	0
WA009-101	10/3/2018	Stream	320	0
WA009-101	9/25/2019	Stream	>1600	0
WA009-101	10/28/2019	Stream	320	0
WA009-101	11/19/2019	Stream	>1600	0
WA013-1	4/6/2016	Stream	4	0
WA013-1	6/6/2016	Stream	1280	0
WA013-1	10/11/2016	Stream	700	0
WA014-102	6/17/2009	Stream	320	0
WA014-102	4/6/2016	Stream	74	0
WA014-102	6/6/2016	Stream	>1600	0
WA014-102	9/13/2016	Stream	>1600	0
WA014-102	10/11/2016	Stream	>1600	0
WA014-103	4/6/2016	Stream	6	0
WA014-103	6/6/2016	Stream	>1600	0
WA014-103	9/13/2016	Stream	>1600	0
WA014-103	10/11/2016	Stream	>1600	0
WA014-104	4/6/2016	Stream	<2	26
WA014-104	6/6/2016	Stream	940	0
WA014-104	9/13/2016	Stream	160	2
WA014-104	10/11/2016	Stream	2	30

Location ID	Sample Date	Pollution Type	Score	Salinity
WA015-2	6/17/2009	Stream	98	0
WA015-2	4/6/2016	Stream	<2	0
WA015-2	6/6/2016	Stream	>1600	0
WA015-3	4/6/2016	Stream	6	0
WA015-3	6/6/2016	Stream	>1600	0
WA015-3	9/21/2016	Stream	9.1	30
WA015-4	4/6/2016	Stream	2	18
WA015-4	6/6/2016	Stream	>1600	0
WA016-103	6/17/2009	Stream	33	0
WA016-106	4/6/2016	Stream	<2	0
WA016-106	6/6/2016	Stream	>1600	0
WA016-106	9/21/2016	Stream	1100	20
WA016-3	6/17/2009	Stream	116	0
WA016-3	4/6/2016	Stream	4	0
WA016-3	6/6/2016	Stream	>1600	0
WA016-3	9/21/2016	Stream	720	0
WA016-3	10/11/2016	Stream	>1600	0
WA017-104	6/17/2009	Stream	54	0
WA017-104	4/6/2016	Stream	<2	0
WA017-104	6/6/2016	Stream	>1600	0
WA017-104	10/11/2016	Stream	220	0
WB005-105	9/14/2010	Stream	960	0
WB005-105	11/1/2010	Stream	4	0
WB005-105	5/30/2018	Stream	29	0
WB005-105	6/13/2018	Stream	62	25
WB005-105	8/29/2018	Stream	180	0
WB005-105	10/3/2018	Stream	18	0
WB005-105	9/25/2019	Stream	340	21
WB005-105	10/28/2019	Stream	35	24
WB005-105	11/19/2019	Stream	>1600	0
WB005-111	5/30/2018	Stream	140	4
WB005-111	6/13/2018	Stream	134	28
WB005-111	10/3/2018	Stream	320	6
WB005-112	5/30/2018	Stream	36	0
WB005-112	6/13/2018	Stream	5.5	0
WB005-112	10/3/2018	Stream	92	0

Location ID	Sample Date	Pollution Type	Score	Salinity
WB009-106	10/2/2012	Stream	48	0
WB009-106	10/12/2012	Stream	48	0
WB009-106	5/30/2018	Stream	18	1
WB009-106	6/13/2018	Stream	8	29
WB009-106	8/29/2018	Stream	88	0
WB009-106	10/3/2018	Stream	50	0
WB009-4	10/12/2012	Stream	400	0
WB009-5	9/14/2010	Stream	520	0
WB009-5	11/1/2010	Stream	92	0
WB009-5	10/2/2012	Stream	240	2
WB009-5	10/2/2012	Stream	240	2
WB009-5	5/30/2018	Stream	240	0
WB009-5	6/13/2018	Stream	104	0
WB009-5	8/29/2018	Stream	116	0
WB009-5	10/3/2018	Stream	620	0
WB009-5	10/28/2019	Stream	1120	0
WB009-5	11/19/2019	Stream	520	0
WB011-1	4/6/2015	Stream	<2	0
WB011-1	8/18/2015	Stream	84	0
WB011-1	9/23/2015	Stream	240	0
WB011-1	5/30/2018	Stream	46	1
WB011-1	10/3/2018	Stream	400	0
WB011-1	10/28/2019	Stream	196	0
WB011-1	11/19/2019	Stream	240	0
WB011-2	4/6/2015	Stream	8	0
WB011-2	8/18/2015	Stream	134	0
WB011-2	9/23/2015	Stream	340	0
WB011-2	5/30/2018	Stream	84	0
WB011-2	6/13/2018	Stream	36	0
WB011-2	10/3/2018	Stream	300	0
WB011-2	9/25/2019	Stream	<2	0
WB011-2	10/28/2019	Stream	122	0
WB011-2	11/19/2019	Stream	540	0
WB011-3	4/6/2015	Stream	12	0
WB011-3	8/18/2015	Stream	>1600	0
WB011-3	5/30/2018	Stream	380	0

Location ID	Sample Date	Pollution Type	Score	Salinity
WB011-3	10/3/2018	Stream	>1600	0
WB011-3	10/28/2019	Stream	580	0
WB011-3	11/19/2019	Stream	>1600	0
WB012-1	4/6/2015	Stream	140	0
WB012-1	8/18/2015	Stream	72	0
WB012-1	9/23/2015	Stream	14	0
WB013-1	8/18/2015	Stream	1160	0
WB013-1	9/23/2015	Stream	>1600	0
WB020-1	8/18/2015	Stream	260	0
WB020-1	9/23/2015	Stream	60	0
WB021-1	8/18/2015	Stream	280	4
WB021-1	9/23/2015	Stream	660	0
WB021-2	8/18/2015	Stream	200	8
WB021-2	9/23/2015	Stream	78	20
WB023-1	4/6/2015	Stream	56	0
WB023-1	8/18/2015	Stream	260	0
WB023-1	9/23/2015	Stream	138	0
WB024-2	5/30/2018	Stream	36	1
WB024-2	6/13/2018	Stream	62	25
WB024-2	8/29/2018	Stream	16	0
WB024-2	10/3/2018	Stream	1000	0
WB024-2	10/28/2019	Stream	300	22
WB024-2	11/19/2019	Stream	20	0
WD003-6	9/14/2010	Stream	112	26
WD003-6	11/1/2010	Stream	4	0
WD003-6	8/18/2015	Stream	100	0
WD003-6	8/31/2015	Stream	2	30
WD003-6	9/28/2015	Stream	13	26
WD003-6	5/30/2018	Stream	90	7
WD003-6	6/13/2018	Stream	100	24
WD003-6	9/10/2018	Stream	80	5
WD003-6	10/30/2018	Stream	90	0
WD004-17	8/18/2015	Stream	22	0
WD004-17	8/31/2015	Stream	156	30
WD004-17	9/29/2015	Stream	500	30
WD004-18	5/30/2018	Stream	14	1

Location ID	Sample Date	Pollution Type	Score	Salinity
WD004-18	6/13/2018	Stream	4	0
WD004-18	9/10/2018	Stream	74	0
WD004-18	10/30/2018	Stream	148	0
WD004-19	5/30/2018	Stream	26	1
WD004-19	6/13/2018	Stream	4	0
WD004-19	10/30/2018	Stream	34	0
WD004-7	9/14/2010	Stream	68	0
WD004-7	11/1/2010	Stream	27	0
WD004-7	8/18/2015	Stream	220	0
WD004-7	8/31/2015	Stream	110	30
WD004-7	9/29/2015	Stream	380	10
WD004-8	9/14/2010	Stream	1180	0
WD004-8	11/1/2010	Stream	42	0
WD004-8	8/18/2015	Stream	94	0
WD004-8	8/31/2015	Stream	100	0
WD004-8	9/29/2015	Stream	31	0
WD004-8	5/30/2018	Stream	42	1
WD004-8	6/13/2018	Stream	780	0
WD004-8	9/10/2018	Stream	280	0
WD004-8	10/30/2018	Stream	126	0
WD004-8	9/25/2019	Stream	94	0
WD004-8	10/28/2019	Stream	260	0
WD004-8	11/19/2019	Stream	94	0
WD011-10	6/29/2015	Stream	560	0
WD011-10	8/18/2015	Stream	20	0
WD011-10	8/31/2015	Stream	60	2
WD011-10	9/28/2015	Stream	66	0
WD014-1	6/29/2015	Stream	260	0
WD014-1	8/18/2015	Stream	220	0
WD014-1	8/31/2015	Stream	260	0
WD014-1	5/30/2018	Stream	20	0
WD014-1	6/13/2018	Stream	16	0
WD014-1	9/10/2018	Stream	320	0
WD014-1	10/30/2018	Stream	40	0
WD014-1	9/25/2019	Stream	<2	0
WD014-1	10/28/2019	Stream	152	0

Location ID	Sample Date	Pollution Type	Score	Salinity
WD014-1	11/19/2019	Stream	136	0
WD014-2	6/29/2015	Stream	600	0
WD014-2	8/18/2015	Stream	102	0
WD014-2	8/31/2015	Stream	104	0
WD020-1	6/29/2015	Stream	660	0
WD020-2	6/29/2015	Stream	92	0
WD020-2	8/18/2015	Stream	88	0
WD020-2	8/31/2015	Stream	16	0
WD021-11	6/29/2015	Stream	680	0
WD021-11	8/18/2015	Stream	72	0
WD021-11	8/31/2015	Stream	120	0
WD021-11	5/30/2018	Stream	22	0
WD021-11	6/13/2018	Stream	92	0
WD021-11	9/10/2018	Stream	380	0
WD021-11	10/30/2018	Stream	96	0
WD021-11	9/25/2019	Stream	280	0
WD021-11	10/28/2019	Stream	80	0
WD023-12	6/29/2015	Stream	280	0
WD023-12	8/18/2015	Stream	31	0
WD023-12	8/31/2015	Stream	29	0
WD023-13	5/30/2018	Stream	6	0
WD023-13	6/13/2018	Stream	92	0
WD023-13	9/10/2018	Stream	420	0
WD023-13	10/30/2018	Stream	124	0
WD023-13	9/25/2019	Stream	<2	0
WD023-13	10/28/2019	Stream	240	0
WD023-13	11/19/2019	Stream	82	0

Agricultural Activities

There are no large-scale agricultural activities in Growing Area WAD. Pollution from small agriculture operations can be introduced into the growing area as nonpoint source pollution transported by runoff from large rainfall or snowmelt events. Smaller farms are encouraged to follow best management practices to help avoid effects animal waste and agricultural pollutants can have on water quality. No small farms appear to be directly impacting the growing area.

Domestic Animals and Wildlife Activity

The salt marshes and mudflats of the growing area provide valuable habitat to a variety of wildlife. Commonly observed bird species include a variety of gulls, sea and inland ducks, cormorants, geese, great blue herons, egrets, and others. Mammals living within the growing area include dogs, cats, whitetail deer, muskrat, squirrels, chipmunks, rabbits, mice, bats, skunks, raccoons, and others. Migratory waterfowl numbers begin to increase in the early autumn months and typically peak in late fall. Although large numbers of birds can pose a threat to the growing area water quality, such occurrences are very difficult to document. Water quality is monitored in these areas and all stations currently meet NSSP requirements.

Recreation Areas (beaches, trails, campgrounds, etc.)

The concern for actual or potential pollution from recreational areas is because many of them allow dogs and some have bathroom facilities. Activities at the recreational areas may contribute to water quality problems by placing added pressure on the watershed. For instance, they may contribute to erosion (trails, building footbridges, etc.), dog waste not picked up may accumulate and wash off after rainfall, new trails may be put into areas that didn't have human activity before and they may put added pressure on wildlife to congregate in other places where we may see water quality decline.

Growing area WAD is heavily used by recreational folks, especially during the summer months. There are several day-use beaches. Some of the more popular locations are Short Sands Beach, Little Beach, Ogunquit Beach, Moody Beach, Crescent Beach, Wells Beach, Drakes Island Beach, Parsons Beach, and Goochs Beach. Most of these are within large prohibited areas. If they are not within a prohibited area, water quality is monitored regularly.

Hydrographic and Meteorological Assessment

Tides

Coastal Maine experiences a mixed, semi-diurnal tide, with diurnal inequalities that are more pronounced on spring tides. Except for very few isolated areas with extensive saltwater marshes, tides are not considered to be contributors to fecal contamination. The mean tidal range for the southern Maine coastline is nine feet. Unlike areas with small diurnal tides, this extreme volume exchange results in significant bacterial dilutions. Currents in the area are predominantly driven by the tides.

Rainfall

Precipitation is generally not evenly distributed throughout the year. Spring and fall tend to be the wetter times of the year. Much of the precipitation in the winter comes as snow and may affect runoff rates in spring upon melting. Flood closures are implemented when areas receive greater than two inches of rainfall in a twenty-four-hour period. Rainfall is monitored by numerous rain gauges located along the entire Maine coast and reported primarily through the Weather Underground website. Some areas of Maine have documented fecal influences resulting from rainfall of greater than one inch in a twenty-four-hour period. These areas are considered rainfall conditional areas and are Conditionally

Approved based on the one-inch closure trigger. No rainfall areas have been identified in Growing Area WAD.

Maine DMR is working collaboratively with the University of Maine on a statewide coastal project determining how various watershed characteristics influence fecal contamination of marine waters during rainfall events. This research clusters watersheds based on similar characteristics then models how rainfall and associated pollution is distributed. The model is being refined to incorporate margin watershed influences.

Winds

Migratory weather systems cause winds that frequently change in strength and direction. Gulf of Maine winds are generally westerly, but often take on a northerly component in winter and a southerly one in summer. Strongest winds are generated by lows and cold fronts in fall and winter and by fronts and thunderstorms during spring and summer. Extreme winds are usually associated with a hurricane or severe nor'easter and can reach 125 knots. In Maine, wind is not a contributor to fecal pollution because marine currents are primarily influenced by the size and duration of the normal tidal cycle.

River Discharge

There is one large river discharge and several smaller river discharges into Growing Area WAD. The Piscataqua River is the largest river discharge. It forms a portion of the border between Maine and New Hampshire. The river is tidal along its length and experiences a mixed, semi-diurnal tide. The main channel is about 100 yards wide and eight to 28 feet deep at high water. At low water, flats and sand bars of various sizes are exposed. Freshwater enters the tidal water of the Piscataqua River from many different rivers. The entire length of the river and extended out through the mouth is classified as Prohibited due to numerous treatment plant outfalls and historically poor water quality. The Little River, Mousam River, and Kennebunk River also discharge into the growing area, but are classified as Prohibited due to the presence of wastewater treatment plants. The York River, Ogunquit River, and Webhannet are also discharges into the growing area. These rivers have NSSP classifications that allow shellfish harvest and are monitored regularly by our water quality stations.

Hydrographic Influence

Water circulation in southern Maine is dominated by tides. The tidal range is nine feet. Tides are caused by the gravitational effects of the moon and sun on the ocean. Other influences are heavy rainfall, low barometric pressure, and strong onshore winds which will increase tides. Tide levels fluctuate during the month based on the positions of the sun, moon, and earth. These fluctuations and the speed and direction of the tidal currents constantly change during a tidal cycle. Tidal currents have the greatest energy when water is pushed in and out of bays and channels during the highest and lowest tide levels.

Water Quality Studies

Most marine fecal pollution of Maine waters comes from non-point sources. DMR uses Systematic Random Sampling (SRS) to monitor this influence and uses a pre-established schedule at an adequate frequency to capture all meteorological, hydrographic and/or other pollution events that trigger non-point pollution contribution. Using SRS will detect intermittent and unfavorable change in water quality and the program accepts the estimated 90th percentile (P90) as the standard to measure variance of a data set.

There were 34 active water sampling stations and zero investigative stations in Growing Area WAD during the 2020 sampling year. Sampling stations are shown in the overview maps in Figures 1-7. It is recognized that access, icing, and safety considerations prevent some stations from being sampled on scheduled dates. Currently, all stations in Growing Area WAD meet their current NSSP classification standard.

Water Quality Discussion and Classification Determination

P90s for all active stations were calculated and all stations meet their classification standards (Table 5).

P90 calculations for stations with a minimum of 30 samples. Geomeans and P90s not meeting current classifications are highlighted in red.

Table 5. P90s for Approved, Restricted, and Prohibited stations.

Station	Class	Count	GM	SDV	MAX	P90	Min_Date
WA015.00	R	30	5.2	0.67	1700	38	2/9/2016
WA016.00	R	30	5.9	0.67	1140	43.2	2/9/2016
WA024.00	P	30	3.4	0.43	132	12.3	2/9/2016
WA031.00	P	30	6.8	0.62	360	43.7	2/9/2016
WA033.00	P	30	5.2	0.47	134	21.4	2/9/2016
WA038.00	P	30	4.5	0.51	300	20.5	2/9/2016
WA043.00	P	30	3.3	0.45	82	12.6	2/29/2016
WB005.00	A	30	2.5	0.33	34	6.6	3/28/2016
WB020.00	P	30	7.9	0.58	132	45	9/28/2015
WB021.00	R	30	4.4	0.39	24	14.1	2/9/2016
WB029.00	P	30	2.9	0.33	38	7.7	2/9/2016
WD008.00	P	30	20.1	0.8	960	217.8	3/29/2016
WD009.50	P	30	14.9	0.75	260	136.6	3/29/2016
WD010.00	P	30	3.4	0.41	60	11.5	3/29/2016

Station	Class	Count	GM	SDV	MAX	P90	Min_Date
WD013.60	R	30	6.5	0.6	320	39.3	10/23/2017
WD014.00	A	30	3.6	0.37	34	11.1	9/20/2017
WD016.00	A	30	4.4	0.5	54	19.6	9/20/2017
WD018.50	A	30	3.5	0.46	46	14.2	3/29/2016
WD019.00	A	30	2.4	0.29	38	5.7	9/20/2017
WD024.00	A	30	2.1	0.17	10	3.6	9/20/2017
WD028.00	P	30	3.1	0.38	44	9.6	12/8/2015
WD031.00	P	30	3.5	0.37	26	10.6	3/29/2016
WD036.00	P	30	4.5	0.55	380	23	5/9/2016
WD037.00	P	30	4.2	0.48	50	17.3	3/29/2016
WD038.00	P	30	4.3	0.44	66	16.1	3/29/2016

Emergency Closures: The reports summarizing emergency closures such as flood and biotoxin closures for the entire state are in the DMR central files.

Reclassifications: Reclassification addendums to the sanitary survey report are in the DMR central files.

CAMP Reviews, Inspection Reports, and Performance Standards

York River Marina Conditional Area

The York River is located in York. A portion of the river is classified as Conditionally Approved based on marina with an open status of December 1st to April 30th. The boundary description in the legal notice is as follows: “east of Sewalls bridge; AND west of a line drawn from the most western point of Stage Neck running south to a red painted post on the opposite shore (closed May 1st through November 30th). Water quality in the area is monitored by stations WB 23, 26, 26.5, and 27. Marine Patrol and/or local Shellfish Wardens monitor illegal harvesting activity for this area during the closed period. This conditional area continues to follow the management plan.

Table 6. P90s for York River Marina Conditional Area.

Station	Class	Count	GM	SDV	MAX	P90	Min_Date
WB023.00	CA	30	2.4	0.2	12	4.4	1/6/2014
WB026.00	CA	30	5.4	0.51	74	24.5	1/6/2014
WB026.50	CA	30	2	0.09	4	2.7	2/27/2012
WB027.00	CA	30	2.2	0.19	10	4	1/6/2014

Ogunquit River Seasonal Conditional Area
A portion of the Ogunquit River is classified as Conditionally Approved based on season with an open status of November 1st to April 30th. The boundary description in the legal notice is as follows: "south of a line starting from the northeast corner of the boat ramp at the Ocean Street footbridge and running east to a red painted post on the opposite shore; AND east of a line starting from the southern tip of an unnamed point of land located on the western shore of the Ogunquit River and running southwest across a sandbar to a red painted post located on the shore in front of The Dunes on the Waterfront Hotel; AND north of a line created by the Beech St bridge (closed May 1st through October 31st)." Water quality in the area is monitored by stations WD 7, 7.5, and 9. Marine Patrol and/or local Shellfish Wardens monitor illegal harvesting activity for this area during the closed period. This conditional area continues to follow the management plan.

Table 7. P90s for Ogunquit River Seasonal Conditional Area.

Station	Class	Count	GM	SDV	MAX	P90	Min_Date
WD007.00	CA	30	6	0.51	66	27.7	3/29/2016
WD007.50	CA	30	4.9	0.55	112	25.7	3/29/2016
WD009.00	CA	30	4.9	0.51	52	22.2	3/29/2016

Webhannet River Seasonal Conditional Area
The Webhannet River is located in Wells. A portion of the river is classified as Conditionally Approved based on season with an open status of November 1st through July 31st. The boundary description in the legal notice is as follows: "north of a line beginning at the prominent point at the end of Jetty Ln running west to the opposite shore (closed August 1st through October 31st)." Water quality in the area is monitored by stations WD 20 and 22. Marine Patrol and/or local Shellfish Wardens monitor illegal harvesting activity for this area during the closed period. This conditional area continues to follow the management plan.

Table 8. P90s for Webhannet River Seasonal Conditional Area.

Station	Class	Count	GM	SDV	MAX	P90	Min_Date
WD020.00	CA	30	4.5	0.58	1140	25.8	3/29/2017
WD022.00	CA	30	5.8	0.46	118	23	4/10/2017

Recommendations for Future Work

No stations in Growing Area WAD require a downgrade due to end of year 2020 P90 scores. In March of 2021, the Prohibited area that encompassed the entire coastline within Growing Area WC was extended out to the 3-mile line. This was due to an administrative change and was not the result of poor water quality scores. For more information, see “WC_Downgrade_2021” in the DMR central files. Maps included in this report show that administrative change. There are no planned upgrades for Growing Area WAD. All stations met or exceeded their required sample count.

Table 9. Count Table, Growing Area WAD, 2020.

Station	Class	C	O	X	Total	Samples Required	Comments
WA015.00	R		6		6	6	
WA016.00	R		6		6	6	
WA024.00	P	6			6	6	
WA028.00	P	1			1	N/A	Station Deactivated
WA029.10	P	1			1	N/A	Station Deactivated
WA031.00	P	6			6	6	
WA032.00	X			1	1	N/A	Station Deactivated
WA033.00	P	6			6	6	
WA033.50	X			1	1	N/A	Station Deactivated
WA038.00	P	6			6	6	
WA043.00	P	6			6	6	
WB005.00	A		6		6	6	
WB020.00	P	6			6	6	
WB021.00	R		6		6	6	
WB023.00	CA	3	3		6	6	
WB026.00	CA	3	3		6	6	
WB026.50	CA	3	3		6	6	
WB027.00	CA	3	3		6	6	
WB029.00	P	6			6	6	
WD007.00	CA	3	6		9	6	
WD007.50	CA	3	6		9	6	
WD008.00	P	6			6	6	
WD009.00	CA	3	6		9	6	
WD009.50	P	6			6	6	
WD010.00	P	6			6	6	

Station	Class	C	O	X	Total	Samples Required	Comments
WD013.60	A		2		2	6	Classification change from A to R 04/2020
	R		4		4		
WD014.00	A		6		6	6	
WD016.00	A		6		6	6	
WD018.50	A		6		6	6	
WD019.00	A		6		6	6	
WD020.00	CA		7		7	6	
WD022.00	CA		7		7	6	
WD024.00	A		6		6	6	
WD028.00	P	6			6	6	
WD031.00	P	6			6	6	
WD036.00	P	6			6	6	
WD037.00	P	6			6	6	
WD038.00	P	6			6	6	

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United States Environmental Protection Agency; https://www.epa.gov/

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WAD Triennial Report; 2019. DMR central files.

WB Sanitary Survey Report; 2012. DMR central files.

WD Sanitary Survey Report; 2010. DMR central files.

Appendix A.

Key to Water Quality Table Headers

Station = water quality monitoring station

Class = classification assigned to the station; Prohibited (P), Restricted (R), Conditionally Restricted (CR), Conditionally Approved (CA) and Approved (A).

Count = the number of samples evaluated for classification, must be a minimum of 30.

GM = means the antilog (base 10) of the arithmetic mean of the sample result logarithm (base 10).

SDV = standard deviation

Max = maximum score of the 30 data points in the count column

P90 = 90th percentile, Approved standard is 31, Restricted standard is 163

Min_Date = oldest date sampled included in the calculations.

X = investigative station