South Carolina Department of Environmental Services

OFFICE OF LAW ENFORCEMENT

SHELLFISH MANAGEMENT AREA 12B

2025 ANNUAL UPDATE COMPREHENSIVE REPORT

Shellfish Sanitation Program
Office of Law Enforcement
2600 Bull Street
Columbia, SC 29201

SC DEPARTMENT *of* ENVIRONMENTAL SERVICES

September 2025

SHELLFISH MANAGEMENT AREA 12B 2025 ANNUAL UPDATE COMPREHENSIVE REPORT

[Data Through December 2024]

SC DEPARTMENT *of* ENVIRONMENTAL SERVICES

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2025 ANNUAL UPDATE COMPREHENSIVE REPORT
Shellfish Management Area 12B

Data Inclusive Dates:
01/01/22 thru 12/31/24

Classification Change:
__X__ Yes ____ No

Shoreline Survey Completed: Yes

(I)ncreased/(D)ecreased/(N)one:
__I__ Approved
__N__ Conditionally Approved
__I__ Restricted
__N__ Prohibited

Prior Report & Date: 2024 Annual Update Comprehensive Report

SUMMARY

Shellfish Management Area 12B (SFMA 12B) has several classification changes for the 2025 Annual Update Comprehensive Report. Those waters that extend from the border of SFMA 13 encompassing Station 12B-52 which includes: Sand Creek, Whooping Island Creek, and Steamboat Creek down to Station 12B-37 (Steamboat Creek at Russel Creek) have been updated to Approved. Station 12B-52 will become a boundary station. Waters East of Station 12B-02 to the boundary of SFMA's 12A and 11 will be downgraded to Restricted.

On September 30, 2022, SFMA 12B was closed as a precautionary closure due to the Hurricane Warning from Hurricane Ian. SFMA 12B was not affected by an exceedance in rainfall due to the hurricane and was opened on October 2, 2022. On August 6-8, 2024, Tropical Storm Debby brought a significant amount of rain to SFMA 12B triggering a precautionary rainfall closure. On September 27th, 2024, Hurricane Helene also impacted areas of Charleston, SC. However, in SFMA 12B, Hurricane Helene did not produce more than 4 inches of rain in a 24-hour period. As a result, SFMA 12B was not affected. The annual precipitation total recorded for SFMA 12B in 2024 was 61.11 inches, which was above the 10-year average of 57.62 inches. Increased development continues to impact water quality in SFMA 12B due to non-point source pollution.

INTRODUCTION

PURPOSE AND SCOPE

The authority to regulate the harvest, sanitation, processing, and handling of shellfish is granted to the South Carolina Department of Environmental Services by Section 44-1-140 of the Code of Laws of South Carolina, 1976, as amended. The Department promulgated Regulation 61-47, which provides the rules used to implement this authority and outlines the requirements applied in regulating shellfish sanitation in the State. This regulation specifically addresses classification of shellfish harvesting areas and requires that all areas be examined by sanitary and bacteriological surveys and classified into an appropriate shellfish harvesting classification.

The United States Food and Drug Administration (USFDA) use The National Shellfish Sanitation Program's (NSSP) *Guide for the Control of Molluscan Shellfish* to evaluate state shellfish sanitation programs. The NSSP Model Ordinance requires that a sanitary survey be in place for each growing area prior to its use as a source of shellfish for human consumption and prior to the area's classification as Approved, Conditionally Approved, Restricted, or Conditionally Restricted. Each sanitary survey shall be updated on an annual basis and accurately reflect changes which have occurred within the area. Requirement of the annual reevaluation include, at a minimum, field observations of pollution sources, an analysis of water quality data consisting of the past year's data in combination with appropriate previously collected data, review of reports and effluent samples from pollution sources, and review of performance standards for discharges impacting the growing area. A brief report documenting the findings shall also be provided.

The following criteria consistent with the NSSP Model Ordinance and S.C. Regulation 61-47 are used in establishing shellfish harvesting classifications:

Approved Area - Growing areas shall be classified approved when the sanitary survey concludes that fecal material, pathogenic microorganisms, and poisonous or deleterious substances are not present in concentrations that would render shellfish unsafe for human consumption. Approved classifications shall be determined upon a sanitary survey that includes water samples collected from stations in the designated area adjacent to actual or potential sources of pollution. For waters sampled under adverse pollution conditions, the median fecal coliform Most Probable Number (MPN) or the geometric mean MPN shall not exceed fourteen per one hundred milliliters, nor shall more than ten percent of the samples exceed a fecal coliform MPN of forty-three per one hundred milliliters (per five tube decimal dilution). For waters sampled under a systematic random sampling plan, the geometric mean fecal coliform MPN shall not exceed fourteen per one hundred milliliters, nor shall the estimated ninetieth percentile exceed an MPN of forty-three per one hundred milliliters (per five tube decimal dilution). Computation of the estimated ninetieth percentile shall be determined using the National Shellfish Sanitation Program Guide for the Control of Molluscan Shellfish methodology.

Conditionally Approved Area - Growing areas may be classified conditionally approved when they are subject to temporary conditions of actual or potential pollution. When such events are predictable, as in non-point source pollution from rainfall runoff or discharge of a major river, a management plan describing conditions under which harvesting will be allowed shall be adopted by the Department prior to classifying an area as conditionally approved. Where appropriate, the management plan for each conditionally approved area shall include performance standards for sources of controllable pollution (e.g., wastewater treatment and collection systems), evaluation of each source of pollution, and means of rapidly closing and subsequently reopening areas to shellfish harvesting. Memorandums of agreements shall be a part of these management plans where appropriate. Shellfish shall not be directly marketed from a conditionally approved area until conditions for an approved classification have been met for a period of time likely to ensure the shellfish are safe for consumption. Shellstock from conditionally approved areas that have been subjected to temporary conditions of actual or potential pollution may be relayed to approved areas for purification or depurated through controlled purification operations only by special permit issued by the Department.

Restricted Area - Growing areas shall be classified restricted when sanitary survey data show a

moderate degree of pollution or the presence of deleterious or poisonous substances to a degree that may cause the water quality to fluctuate unpredictably or at such a frequency that a conditionally approved classification is not feasible. Shellfish may be harvested from areas classified as restricted only for the purposes of relaying or depuration and only by special permit issued by the Department and under Department supervision. The suitability of restricted areas for harvesting of shellstock for relay or depuration purposes may be determined through the use of comparison studies of background tissue samples with post-process tissue samples, as well as other process verification techniques deemed appropriate by the Department. For restricted areas to be utilized as a source of shellstock for depuration, or as source water for depuration, the fecal coliform geometric mean MPN of restricted waters sampled under adverse pollution conditions shall not exceed eighty-eight per one hundred milliliters nor shall more than ten percent of the samples exceed a MPN of two hundred and sixty per one hundred milliliters for a five-tube decimal dilution test. For waters sampled under a systematic random sampling plan, the fecal coliform geometric mean MPN shall not exceed eighty-eight per one hundred milliliters nor shall the estimated ninetieth percentile exceed an MPN of two hundred and sixty (five tube decimal dilution). Computation of the estimated ninetieth percentile shall be obtained using the National Shellfish Sanitation Program Guide for the Control of Molluscan Shellfish methodology.

Conditionally Restricted Area - Growing areas may be classified conditionally restricted when they are subject to temporary conditions of actual or potential pollution. When such events are predictable, as in the malfunction of wastewater treatment facilities, non-point source pollution from rainfall runoff, discharge of a major river or potential discharges from dock or harbor facilities that may affect water quality, a management plan describing conditions under which harvesting will be allowed shall be prepared by the Department prior to classifying an area as conditionally restricted. Where appropriate, the management plan for each conditionally restricted area shall include performance standards for sources of controllable pollution, e.g., wastewater treatment and collection systems and an evaluation of each source of pollution, and description of the means of rapidly closing and subsequent reopening areas to shellfish harvesting. Memorandums of agreements shall be a part of these management plans where appropriate. Shellfish may be harvested from areas classified as conditionally restricted only for the purposes of relaying or depuration and only by permit issued by the Department and under Department supervision. For conditionally restricted areas to be utilized as a source of shellstock for depuration, the fecal coliform geometric mean MPN of conditionally restricted waters sampled under adverse pollution conditions shall not exceed eighty-eight per one hundred milliliters nor shall more than ten percent of the samples exceed a MPN of two hundred and sixty per one hundred milliliters for a five-tube decimal dilution test. For waters sampled under a systematic random sampling plan, the fecal coliform geometric mean MPN shall not exceed eighty-eight per one hundred milliliters nor shall the estimated ninetieth percentile exceed an MPN of two hundred and sixty per one hundred milliliters (five tube decimal dilution). Computation of the estimated ninetieth percentile shall be obtained using the National Shellfish Sanitation Program Guide for the Control of Molluscan Shellfish methodology.

Prohibited Area - Growing areas shall be classified prohibited if there is no current sanitary survey report or if the sanitary survey report or monitoring data show unsafe levels of fecal material, pathogenic microorganisms, or poisonous or deleterious substances in the growing area or otherwise indicate that such substances could potentially reach quantities that could render shellfish unfit or unsafe for human consumption.

BACKGROUND INFORMATION

This sanitary survey evaluates the current harvesting classification of shellfish growing waters designated as Shellfish Management Area 12B. SFMA 12B consists of approximately 31,125 acres of shellfish growing area habitat located in Charleston County, South Carolina. The area consists of the Dawho, North Edisto and Wadmalaw Rivers, as well as Wadmalaw Sound. Additionally, SFMA 12B includes Leadenwah, Ocella, Russel, Sand, Steamboat, Tom Point, Toogoodoo and Westbank Creeks, as well as portions of the Atlantic Intracoastal Waterway (AIWW). SFMA 12B is bounded to the east by Wadmalaw Island and to the north by State Roads 162 and 164. State Road 174 and Edisto Island define the western border. The southern boundary is the Atlantic Ocean.

The shellfish industry in South Carolina is based primarily on the harvest of the eastern oyster (*Crassostrea virginica*) and hard clams, which include both the northern clam (*Mercenaria mercenaria*) and several small populations of the southern clam (*Mercenaria campechiensis*). The ribbed mussel (*Geukensia demissa*) is also harvested in South Carolina on a small scale, primarily recreationally. Areas in South Carolina designated for commercial harvest by the South Carolina Department of Natural Resources (SCDNR) include State Shellfish Grounds, Culture permits, Mariculture permits and Kings Grant areas. The South Carolina Department of Environmental Services will disallow the harvesting of shellfish within SFMA 12B, for direct marketing purposes, from the restricted waters listed below in the Recommendations.

There are four (4) State Shellfish Grounds (SSG's) within Area 12B: S161, S168, S182, and S187. There are also four (4) Recreational Shellfish Grounds (R) located in Leadenwah Creek. There are six (6) Culture Permits (C) and four (4) Mariculture Permit (M) leases within the area.

The shellfish harvesting season in South Carolina typically extends from October 1 through May 31. The South Carolina Department of Natural Resources (SCDNR) has the authority to alter the shellfish harvesting season for resource management purposes and grant permits for year-round mariculture operations. Additionally, the South Carolina Department of Environmental Services has the authority to prohibit shellfish harvesting when necessary to ensure that shellfish harvested in South Carolina waters are safe for human consumption.

The harvesting classifications of SFMA 12B **prior** to this sanitary survey were as follows:

PROHIBITED

1. Those waters within 1000 feet of the Metal Trades repair facility in Wadmalaw River.

RESTRICTED

1. Those waters of Toogoodoo Creek and Swinton Creek and all adjacent marshlands from their headwaters to Station 12B-34.
2. East of Station 12B-02 to the boundary of SFMA's 12A and 11.
3. Those waters of Russel Creek and all adjacent marshlands from its headwaters to Station 12B-43.
4. Those waters of Leadenwah Creek and all adjacent marshlands from its headwaters to Station

12B-55.

5. Those waters of the Dawho River and all adjacent marshlands from its headwaters and border with SFMA 13 to Station 12B-05 (Dawho River, AIWW Marker #110).
6. Those waters that extend from the border of SFMA 13 encompassing Station 12B-52 which includes: Sand Creek, Whooping Island Creek, and Steamboat Creek down to Station 12B-37 (Steamboat Creek at Russel Creek).

CONDITIONALLY APPROVED

None

APPROVED

All other waters of SFMA 12B.

Station Addition/Deactivation/Modification: None

POLLUTION SOURCE SURVEY

SURVEY PROCEDURES

Shoreline surveys of SFMA 12B are conducted by the South Carolina Department of Environmental Services (SCDES), Office of Law Enforcement, Lowcountry – Charleston Shellfish Sanitation Program staff**,** by watercraft, vehicle, and on foot, during the survey period and are ongoing. Previous shoreline survey efforts conducted by the Office of Coastal Resource Management (OCRM) will continue to be documented.

OCRM developed GIS shapefiles documenting rural, non-MS4 (Municipal separate storm sewer system) areas in Charleston County on septic tanks. A one-mile buffer was drawn around all impaired shellfish water bodies in the county. County parcel data was cross referenced with Department septic tank permit data in those areas to develop shapefiles of all parcels on septic tanks, to include the number of tanks on the property and the property owner's names(s) and address(s). A physical shoreline survey of these same areas was conducted, taking GPS coordinates of any observed animal farms, to include the parcel information of the farm, the type and number of animals observed, and their distance from shellfish harvesting waters. Together, the septic data and animal farm data should provide focus for future shoreline survey efforts in locating and evaluating potential non-point source impacts near impaired shellfish harvesting waters.

POINT SOURCE POLLUTION

A. **Municipal and Community Waste Treatment Facilities** - There are no permitted wastewater treatment plants (WWTP) within SFMA 12B. The Towns of Hollywood and Meggett's wastewater collection systems serve the homes in the northern portion of the area. The Plum Island WWTP (SC0021229), operated by Charleston Water Systems, receives wastewater from Hollywood and Meggett; however, Plum Island is located on the Ashley River adjacent to Dill Creek, and discharges treated wastewater into the Charleston Harbor (SFMA

10B). The Town of Hollywood had 8 (eight) reported sanitary sewer overflows (SSO's) for 2022-2024. In 2022, Charleston Water System had two (2) sanitary sewer overflows (SSOs) that may have impacted the northern portions of SFMAs 11 and 12B, however, the areas that may have been impacted were classified as Restricted for shellfish harvesting. In 2023, 1,550 gallons were released but no SFMA was affected. In 2024, Tropical Storm Debby impacted SFMA 12B with several SSO's from the storm event.

Sanitary Sewer Overflows – Hollywood/Meggett – 2022-2024				
Date	**Location**	**Gallons Released**	**Waterbody Entered**	**Comments**
6/21/2022	In front of pump house	600	N/A	Air Release Valve blew off. Blowing sewage in the air in front of the station.
9/30/2022	Hollywood Sewer Collection System	1,700	N/A	Hurricane Ian
11/9/2022	Davidson Rd Town of Hollywood	1,500	N/A	Line ruptured
10/5/2023	Near marsh on right side of Dawson Creek	1,500	No	Broken sewer line due to a concrete truck.
7/27/2024	Hollywood Sewer Collection System	2,000	N/A	
8/6/2024	Hollywood Sewer Collection System	1,300,000	N/A	Tropical Storm Debby
8/8/2024	Hollywood Sewer Collection System	2,500	N/A	Tropical Storm Debby
9/4/2024	Hollywood Sewer Collection System	1,500	N/A	Tropical Storm Debby

B. Industrial Waste (Discharges)

National Pollutant Discharge Elimination System (NPDES) Permitted Facilities		
Permit #	**Facility Name**	**Facility Type – Outfall Type**
SCG730686	West Bank Const/Russel Creek	Borrow Pit - Discharge
SCG730114	Rentz Land Clearing/Rentz	Borrow Pit - Discharge

	Mine	
SCG730436	L Dean Weaver/Vanness Mine	Borrow Pit - Discharge
SC0047848	Bears Bluff Fish Hatchery	Aquaculture - Discharge
SC0040401	Paradise Shrimp Farms of SC	Aquaculture – Discharge - **Inactive**

There are five permitted industrial wastewater facilities located within the boundaries of SFMA 12B. Rentz Land Clearing and Mine (SCG730114), L Dean Weaver (SCG7300436) and West Bank Construction (SCG730686) have been issued permits for dewatering concerns associated with land clearing and borrow pit excavations. Groundwater and solids are permitted for discharge under a general mining permit; there are no hazardous bacteriological or chemical components. Although these facts suggest no impact from these sources, discharge sites are shown on the Potential Pollution Sources map. The other two operations are Bears Bluff National Fish Hatchery (SC0047848) and Paradise Shrimp Farms of South Carolina (SC0040401). Both of these facilities produce aquaculture products. Bears Bluff National Fish Hatchery located on Wadmalaw Island, SC, discharges to Wee Creek on the Wadmalaw River. There is no fecal coliform component to its discharge. All facilities are depicted on the attached Potential Pollution Source Map.

C. **Marinas** – In 2007, prompted by the Department's Bureau of Coastal Management (BCM and formally known as the Office of Coastal Resource Management-OCRM) marina definition change, the Shellfish Sanitation Program adopted the following marina definition. S.C. Regulation 61-47, Shellfish defines Marina as any of the following: 1) locked harbor facility; 2) any facility which provides fueling, pump-out, maintenance or repair services (regardless of length); or, 3) any facility which has permanent docking space of 250 linear feet or greater. 4) Any water area with a structure which is used for docking or otherwise mooring vessels and constructed to provide temporary or permanent docking space for more than ten boats. 5) A dry stack facility. The Department is currently in the process of identifying all facilities meeting the new marina definition. Once identified, they will be mapped, and adequate closure zones established to protect public health.

Prior to the 2007 definition change, there was one marina located within SFMA 12B. Metal Trades Inc., located on the Wadmalaw River on Yonges Island, performs large-scale repairs of barges and ships while on land. Minimal repairs occur while the ships are in the water. There is no fueling service available at Metal Trades. Sewage pump-out of vessels undergoing repairs is accomplished via contract with various environmental companies, which haul sewage off-site by truck and sanitize vessel sewage holding tanks. Stephens Towing Company accomplishes the tugboat service and towing of vessels undergoing repairs at Metal Trades. They are located on the same property as Metal Trades. They have approximately 500 feet of docking space as well as additional mooring space for barges and 8 tug/towboats. They have diesel fuel on-site, but their tanks are currently empty, as it is currently cheaper to purchase fuel elsewhere. There is no sewage pump-out available; pump-out is accomplished by truck as necessary. An Administratively Prohibited closure zone exists around these facilities. Table #7 is included at the end of the report, providing additional details on SFMA 12B boat docking facilities. Included in that table is Simmons Bluff Marina and Boat Harbor, a proposed recreational marina adjacent to Metal Trades that was never permitted. This facility is included in this report for informational purposes only.

D. **Radionuclides** - Sources of radionuclides have not been identified within SFMA 12B and no other sources of poisonous or deleterious substances have been identified within the area.

NONPOINT SOURCE POLLUTION

A. **Urban and Suburban Stormwater Runoff** - Previous shoreline surveys conducted in SFMA 12B revealed the highest concentration of homes to be throughout the northern most portion of the area. Single-family homes continue to be built along almost every water body within the area. Land clearing, associated with this new construction, can accelerate shoreline erosion. Stormwater runoff impacts water quality by transporting fecal coliform bacteria from land to the shellfish growing area.

Portions of the AIWW require routine maintenance dredging. The Army Corps of Engineers has not conducted any dredging projects in the Area recently.

The uplands surrounding the shellfish growing waters of SFMA 12B consist of various soil textures defined by the United States Department of Agriculture (USDA), Soil Conservation Service (1971) utilizing general classifications and descriptions. Although lands within the area consist of numerous soil types, the area north of the Dawho and Wadmalaw Rivers and Wadmalaw Sound is generally comprised of Yonges-Hockley-Edisto soils, and occur on a low, broad plain and contain randomly spaced drainage ways that lead to tidal streams. The area south of the Dawho and Wadmalaw Rivers and Wadmalaw Sound is generally comprised of Kiawah-Seabrook-Dawhoo soils, and occurs on low, broad ridges and long, narrow-to-broad depressions in areas roughly parallel with the coastline. The USDA (1971) further describes these soils similarly as "moderately well drained to very poorly drained, nearly level to depressional, sandy soils."

B. **Agricultural Runoff** - There are no permitted agricultural facilities located in SFMA 12B. However, previous shoreline surveys have identified seven animal farms adjacent to both Tom Point and Toogoodoo Creeks. There are a multitude of single-family homes with one to four horses located on each property. Slann Island Plantation, located along the upper portion of the Dawho River near Station 12B-53, has the potential to board anywhere from 150 to 300 animals. In addition, there are extensive agricultural crop farms within the area.

C. **Individual Sewage Treatment and Disposal Systems** - Nearly all homes adjacent to shellfish growing waters within SFMA 12B are served by individual septic systems. Public sewers only serve areas within the town limits of Hollywood and Meggett. Each system requires inspection by the SCDES Lowcountry – Charleston, On-site Wastewater Section and approval before final installation.

D. **Wildlife and Domestic Animals** - SFMA 12B supports a large population of domestic animals attributable to the number of private residences along the shores, including the documented animal farms. The area supports a moderate amount of wildlife, primarily various types of waterfowl and marine mammals. The area has an extensive network of small tidal creeks. This creek system provides a possible conduit for animal fecal coliform bacteria to be transported to the adjacent growing waters.

Deveaux Bank Heritage Preserve is a DNR managed heritage preserve, a sandspit island in the mouth of the North Edisto River. The preserve is one of the most significant sea and shorebird nesting areas in South Carolina, containing 10 species and 8,436 nests in 1998. The preserve contained the largest pelican rookeries in the state with 1,696 nests in 1998. Due to bird nesting activity, this Preserve is closed year-round above the high tide line to public use (Source: http://www.dnr.sc.gov/managed/index.html). It is a likely contributor to observed fecal coliform levels in the area during times of heavy bird activity; however, those levels are also likely mitigated by its proximity to ocean water tidal flushing through North Edisto Inlet.

E. **Boat Traffic** - Recreational boat traffic is moderate in the area throughout the year. Commercial traffic in the AIWW is light and consists primarily of tugs and barges. Commercial fisheries boats, ranging in size from 16 to 50 feet, operate as long as the product demand exists. During the recreational shrimp-baiting season, typically extending from mid-September through mid-November, recreational traffic is heavy.

F. **Hydrographic and Habitat Modification** - Hydrographic and habitat modification in estuarine areas requires both State and Federal approval. Portions of the AIWW require maintenance dredging. The U.S. Army Corps of Engineers utilizes designated tracts of land adjacent to the AIWW as dredge spoil sites.

NATURALLY OCCURRING PATHOGENS

A. Marine Biotoxins - Bivalve shellfish contamination from marine biotoxins has not been shown to be a human health concern within SFMA 12B. During the winter and spring of 1988, South Carolina experienced an occurrence of "Red Tide", specifically *Ptychodiscus brevis* (*K. brevis*), which affected water quality in Area 01. There have been no documented reoccurrences of this organism at levels requiring emergency response in South Carolina waters subsequent to the 1988 event. The Department participates in a State Task Group on Toxic Algae and operates a toxic algae emergency response team. The Department also has a Marine Biotoxin Contingency Plan in place that must be evaluated and updated annually.

B. ***Vibrio Management Plan*** – Because State water temperatures exceed 81 degrees Fahrenheit (F) during June through September, *Vibrio* management controls must be implemented during these months. Management controls for permitted Aquaculture facilities are specifically addressed in R.61-47. The season for wild-stock harvest is currently closed from June 1 through September 30th. The Department is currently not opposed to the issuance of special wild-stock harvest permits to Certified Shippers during the closed season as long as special permit conditions are included. Special permit conditions for maricultured triploid oysters during the vibrio control months must include current R.61-47 and NSSP temperature control requirements to be included in the Certified Shipper's HACCP plan.

HYDROGRAPHIC AND METEOROLOGICAL CHARACTERISTICS

PHYSIOGRAPHY

Shellfish Management Area 12B currently consists of the waters of the Dawho, North Edisto and

Wadmalaw Rivers; Wadmalaw Sound along with Leadenwah, Ocella, Russel, Sand, Steamboat, Tom Point, Toogoodoo Westbank, and Whooping Island Creeks and the Atlantic Intracoastal Waterway (AIWW). The entire area is tidally influenced by the Atlantic Ocean through the North Edisto Inlet. The creeks within the area range from 30 to 700 feet in width and range from 2 to 45 feet in depth. The entire area is approximately 10 miles wide (west to east) and 14 miles long (north to south).

Tides in SFMA 12B are semidiurnal, consisting of two low and two high tides occurring each lunar day. Mean tidal ranges in the North Edisto River at Bluff Point are 5.5 feet during normal tides and 7.7 feet during spring tides. Wind direction and intensity, as well as atmospheric pressure, typically cause variations in predicted tidal ranges.

Precipitation in SFMA 12B is heaviest during late summer and early autumn. Tropical storms and hurricanes occasionally produce extremely large amounts of rainfall. During winter months heavy rainfall events are uncommon, yet occasional intense thunderstorms associated with rapidly moving low-pressure systems generate heavy rains. Precipitation rarely occurs in the form of snow or ice. Spring weather patterns may be dynamic with associated thunderstorms and severe weather conditions.

In 2017, the collection of rainfall data has been improved for a more consistent, accurate, and reliable data set that can be accessed directly from a shellfish staff member's computer or phone. With assistance from the National Weather Service's Southeastern River Forecast Center, the development of the South Carolina Shellfish Rainfall Program was introduced and utilized. This new technology provides shellfish program staff with real-time daily updates for rainfall accumulation in each of the South Carolina shellfish growing management areas, as well as providing critical triggers that alert staff to when rainfall thresholds for closures are exceeded.

During the past several years this area has been impacted by major storms. On September 30, 2022, SFMA 12B was closed as a precautionary closure due to the Hurricane Warning from Hurricane Ian but the area was not affected by a rainfall exceedance due to the hurricane and was opened on October 2, 2022. On December 18th, 2023, SFMA 12B received 2.06 inches of rain in a 24-hour period due to a Nor'easter storm event. While other growing areas were closed due to over four inches of rain in 24-hours, SFMA 12B was not affected. On August 6-8, 2024, Tropical Storm Debby brought a significant amount of rain to SFMA 12B, triggering a precautionary rainfall closure. On September 27th, 2024, Hurricane Helene also impacted areas of Charleston, SC. However, in SFMA 12B, Hurricane Helene did not produce more than 4 inches of rain in a 24-hour period. As a result, SFMA 12B was not affected. The annual precipitation total recorded for SFMA 12B in 2024 was 61.11 inches, which was above the 10-year average of 57.62 inches.

Prevailing winds along the central portion of the South Carolina coast are from the south and west during spring and summer and from the north during autumn and winter. Wind speeds are generally less than 15 miles per hour (mph); however, strong weather systems may generate winds more than 25 mph. Tropical storms and hurricanes occur occasionally.

Freshwater influence is primarily due to rainfall, however, freshwater inflow into Area 12B enters through the Dawhoo River via the South Edisto River.

WATER QUALITY STUDIES

DESCRIPTION OF THE PROGRAM

The Department currently utilizes a systematic random sampling (SRS) strategy within SFMA 12B in lieu of sampling under adverse pollution conditions. In order to comply with NSSP guidelines, a minimum of thirty samples are required to be collected and analyzed from each station during the review period. Sampling dates are computer generated prior to the beginning of each quarterly period thereby insuring random selection with respect to tidal stage and weather. Day of week selection criteria is limited to Mondays, Tuesdays and Wednesdays due to shipping requirements and laboratory manpower constraints. Sample schedules are rarely altered.

During July 1998, an updated shellfish water quality data scheduling and collection procedure was formalized. Samples utilized for classification purposes are limited to those samples collected in accordance with the SRS for a 36-month period beginning January 1 and ending December 31. This allows for a maximum of 36 samples per station, yet provides a six-sample "cushion" (above the NSSP required 30 minimum) for broken sample bottles, lab error, breakdowns, etc. This also allows each annual reports water quality data to meet the requirements for the NSSP Triennial Review sampling criteria.

Eight hundred and eighty-nine (889) SRS routine surface water quality samples (<1.0 ft. deep) were collected for bacteriological analyses and classification purposes from twenty-seven (27) active water quality sampling stations in SFMA 12B during the period 01/01/22 through 12/31/24. Multiple special samples were taken for non-classification purposes, associated with reopening the area following precautionary closures. Samples were collected in 120 ml amber glass bottles, immediately placed on ice and transported to the South Carolina Department of Environmental Services, Lowcountry – Charleston Laboratory in North Charleston, South Carolina. An additional 120 ml water sample was included with each shipment for the purpose of temperature control. At the laboratory, sample sets exceeding a 30-hour holding time or containing a temperature control more than 10 degrees Centigrade were discarded (APHA, 1970).

Surface water temperatures were measured utilizing hand-held, laboratory-quality calibrated centigrade thermometers. Salinity measurements were measured in the laboratory using an automatic temperature compensated refractometer. Additional field data include ambient air temperature, wind direction, tidal stage and date and time of sampling.

MONITORING RESULTS

Stations 12B-43A and 12B-45 exceeded a fecal coliform geometric mean MPN value of 14.

No station exceeded a fecal coliform geometric mean MPN value of 88.

Stations 12B-02, 12B-09, 12B-35, 12B-43A, 12B-45, 12B-53, and 12B-56 exceeded a fecal coliform MPN estimated 90th percentile value of 43.

No station exceeded an estimated 90th percentile fecal coliform MPN value of 260.

CONCLUSIONS

Based on the review of fecal coliform bacteriological data and the pollution source survey, non-point source pollution appears to be a major source of pollution within SFMA 12B.

NONPOINT SOURCE RUNOFF

Stormwater runoff appears to be the major source of fecal coliform bacteria throughout the area. Wildlife and domestic animal populations likely contribute to poor water quality within the area. There are a large number of livestock farms located along the Toogoodoo and Tom Point Creeks and the Dawho River. The livestock have been noted directly on the shoreline and wading in the creeks, which flow into these water bodies.

RECOMMENDATIONS

The shoreline survey and bacteriological data review recommend the following harvesting classification of SFMA 12B:

PROHIBITED

1. Those waters within 1000 feet of the Metal Trades repair facility in Wadmalaw River.

RESTRICTED

1. Those waters of Toogoodoo Creek and Swinton Creek and all adjacent marshlands from their headwaters to Station 12B-34.
2. Those waters of Russel Creek and all adjacent marshlands from its headwaters to Station 12B-43.
3. Those waters of Leadenwah Creek and all adjacent marshlands from its headwaters to Station 12B-55.
4. Those waters of the Dawho River and all adjacent marshlands from its headwaters and border with SFMA 13 to Station 12B-05 (Dawho River, AIWW Marker #110).
5. East of Station 12B-02 to the boundary of SFMA's 12A and 11.

CONDITIONALLY APPROVED

None

APPROVED

1. Those waters that extend from the border of SFMA 13 encompassing Station 12B-52 which includes: Sand Creek, Whooping Island Creek, and Steamboat Creek down to Station 12B-37 (Steamboat Creek at Russel Creek).

All other waters of SFMA 12B.

Station Addition/Deactivation/Modification: None

Analysis of sampling data for SFMA 12B demonstrates the probability of a significant impact from rainfall exceeding 4.00" in a 24-hour period. Therefore, a precautionary closure of SFMA 12B will be implemented following rainfall events of greater than 4.00" in a 24-hour period, as measured by the National Weather Service's Southeastern River Forecast Center. This methodology is associated with the concept of the Probable Maximum Precipitation (PMP). The National Weather Service publishes PMP estimates for the coastal United States in a series of hydro-meteorological reports (HMRs) (*National Weather Service*). PMP estimates for South Carolina's growing areas are derived from HMRs 51, 52, and 53 (*National Research Council, 1985*).

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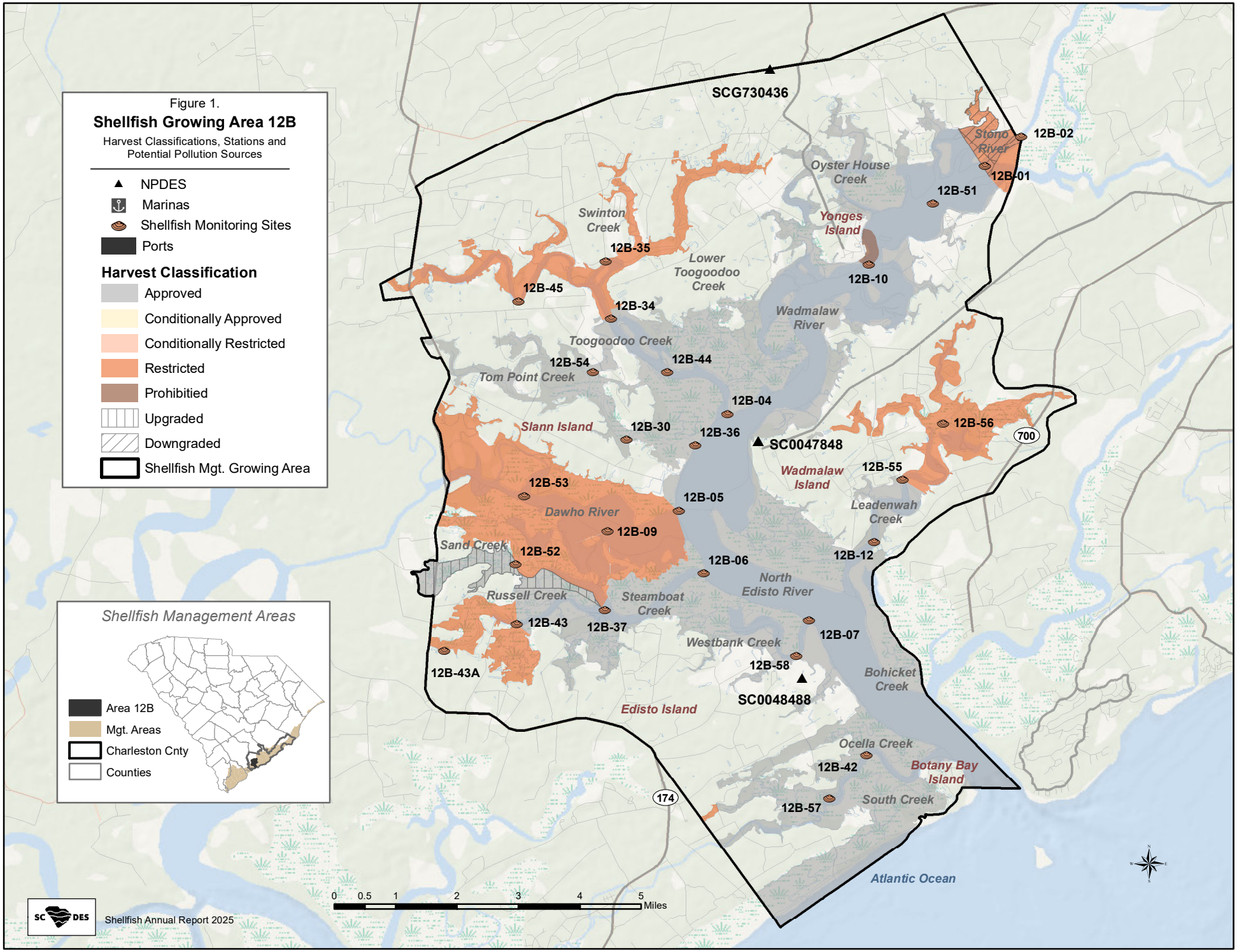

Figure 1.
Shellfish Growing Area 12B
Harvest Classifications, Stations and Potential Pollution Sources
NPDES
Marinas
Shellfish Monitoring Sites
Ports
Harvest Classification
Approved
Conditionally Approved
Conditionally Restricted
Restricted
Prohibitied
Upgraded
Downgraded
Shellfish Mgt. Growing Area
Shellfish Management Areas
Area 12B
Mgt. Areas
Charleston Cnty
Counties
SCG730436
SC0047848
SC0048488
12B-01
12B-02
12B-04
12B-05
12B-06
12B-07
12B-09
12B-10
12B-12
12B-30
12B-34
12B-35
12B-36
12B-37
12B-42
12B-43
12B-43A
12B-44
12B-45
12B-51
12B-52
12B-53
12B-54
12B-55
12B-56
12B-57
12B-58
Stono River
Oyster House Creek
Yonges Island
Swinton Creek
Lower Toogoodoo Creek
Wadmalaw River
Toogoodoo Creek
Tom Point Creek
Slann Island
Wadmalaw Island
Leadenwah Creek
Dawho River
Sand Creek
Russell Creek
Steamboat Creek
North Edisto River
Westbank Creek
Bohicket Creek
Edisto Island
Ocella Creek
Botany Bay Island
South Creek
Atlantic Ocean
700
174
0 0.5 1 2 3 4 5 Miles
SC DES
Shellfish Annual Report 2025

Figure 2. - Shellfish Management Area 12B - Point Source Map

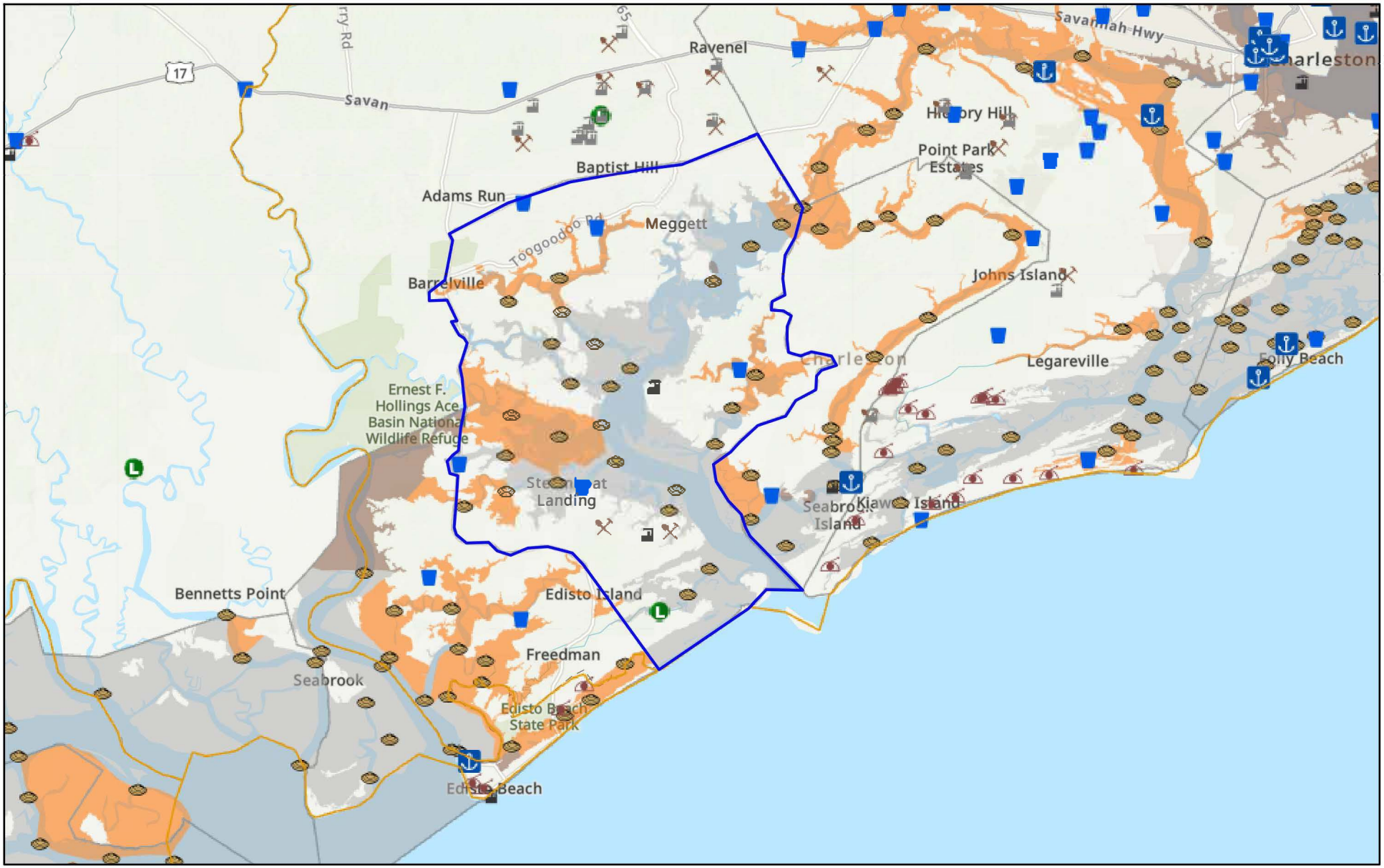


TABLE #1
Shellfish Management Area 12B
Water Quality Sampling Stations Description

Station	Description
12B-01	Church Creek at AIWW, Marker #77
12B-02	AIWW at Goshen Point, Marker #69
12B-04	Toogoodoo Creek at AIWW
12B-05	Dawho River, AIWW Marker #110
12B-06	Steamboat Creek at North Edisto River, Marker #2
12B-07	Westbank Creek at North Edisto River
12B-09	Dawho River, AIWW Marker #119
12B-10	AIWW at southern boundary of closure zone for Metal Trades
12B-12	Leadenwah Creek, 1 mile from confluence with North Edisto River
12B-30	Tom Point Creek at Park Island
12B-34	Toogoodoo Creek at last creek before fork
12B-35	Lower Toogoodoo Creek at the public boat ramp
12B-36	Tom Point Creek at AIWW
12B-37	Steamboat Creek at Russel Creek
12B-42	Ocella Creek at headwaters
12B-43	Russel Creek at estuary entering Sunbelt Clam Farms
12B-43A	Russel Creek at Creek Farm Rd.
12B-44	Toogoodoo Creek midway between Stations 12B-04 and 12B-34
12B-45	Toogoodoo Creek, second bend from confluence with Lower Toogoodoo Creek
12B-51	Wadmalaw Sound, AIWW Marker #80
12B-52	Whooping Island Creek at Steamboat Creek
12B-53	Dawho River, AIWW Marker #126
12B-54	Tom Point Creek, third bend upstream of Station 12B-30
12B-55	Leadenwah Creek, third bend upstream of Station 12B-12
12B-56	Leadenwah Creek, after fourth bend at the fork
12B-57	Oscella Creek at fork
12B-58	Westbank Creek at first bend

(**Total Active – 27**)

TABLE #2

Shellfish Management Area 12B
FECAL COLIFORM BACTERIOLOGICAL DATA SUMMARY
From Shellfish Water Quality Sampling Stations Between

January 01, 2022 to December 31, 2024

Station #	1	2	4	5	6	7	9	10	12	30
SAMPLES	33	33	33	33	33	33	33	33	33	33
GEOMEAN	7	9.8	3.4	3.5	3.5	3.5	9.6	6.7	3.5	7.3
90TH %ILE	26	50	9	11	10	9	51	26	11	24
WATER QLTY	A	R	A	A	A	A	R	A	A	A
CLASSIFICATION	R	R	A	R	A	A	R	P	A	A

Station #	34	35	36	37	42	43	43A	44	45	51
SAMPLES	33	33	33	33	33	32	33	33	33	33
GEOMEAN	8.4	11.4	3.6	4.4	3.8	8.5	17.1	5.1	19.4	5.4
90TH %ILE	32	52	10	18	11	24	70	16	64	20
WATER QLTY	A	R	A	A	A	A	R	A	R	A
CLASSIFICATION	R	R	A	A	A	R	R	A	R	A

Station #	52	53	54	55	56	57	58
SAMPLES	32	33	33	33	33	33	33
GEOMEAN	10.6	13.2	11.1	6.3	11.7	6.4	6.4
90TH %ILE	43	77	34	23	52	24	27
WATER QLTY	A	R	A	A	R	A	A
CLASSIFICATION	R	R	A	R	R	A	A

A - Approved **CA** - Conditionally Approved **R** - Restricted
RND - Restricted/No Depuration **P** - Prohibited

TABLE #3 Fecal Coliform Historical Trend Sheet											
Area 12B Stations 90th%ile Values for Past Annual Updates Related to Rainfall											
Station #	**2024**	**2023**	**2022**	**2021**	**2020**	**2019**	**2018**	**2017**	**2016**	**2015**	**2014**
12B-01	26	25	25	25	31	35	42	49	55	52	25
12B-02	50	38	37	35	50	51	53	52	60	55	35
12B-04	9	13	15	16	17	15	16	14	12	10	8
12B-05	11	13	16	16	16	12	14	14	16	12	9
12B-06	10	12	13	14	28	29	34	21	18	13	7
12B-07	9	10	10	15	19	21	17	13	11	8	5
12B-09	51	50	40	33	33	29	42	35	32	23	22
12B-10	26	17	21	19	30	23	29	18	20	17	15
12B-12	11	9	12	13	23	21	26	22	20	15	9
12B-30	24	25	31	36	39	34	34	31	30	21	18
12B-34	32	32	43	45	57	42	39	27	27	24	17
12B-35	52	53	80	81	125	82	81	39	47	47	37
12B-36	10	12	19	22	31	24	27	24	23	18	11
12B-37	18	16	18	25	33	36	32	24	17	15	11
12B-42	11	16	18	18	13	14	17	16	12	12	9
12B-43	24	28	34	35	32	39	36	35	30	30	22
12B-43A	70	78	88	87	66	56	54	98	86	80	31
12B-44	16	16	26	34	44	26	26	19	19	16	12
12B-45	64	66	64	68	82	83	75	75	77	82	50
12B-51	20	23	24	28	24	24	23	25	23	24	17
12B-52	43	46	47	42	31	40	44	49	27	21	16
12B-53	77	82	83	86	101	98	97	73	64	45	42
12B-54	34	32	40	40	41	39	42	53	44	35	19
12B-55	23	18	22	29	47	47	50	45	40	27	18
12B-56	52	51	59	66	94	93	74	59	48	59	35
12B-57	24	27	23	23	20	24	28	34	29	24	11
12B-58	27	24	24	20	28	27	43	40	31	15	8
Annual Rainfall (in inches)	**61.11**	**52.72**	**57.85**	**57.28**	**55.92**	**51.45**	**55.84**	**58.9**	**62.08**	**67.67**	**53.05**
ND = No Data RED = Impaired Water Quality *** Due to a malfunction the rain gauge only collected partial data.**											

TABLE #4

WATER QUALITY
SAMPLING STATIONS DATA

Shellfish Management Area 12B

Detailed data for each shellfish monitoring station listed in this report's "Fecal Coliform Bacteriological Data Summary Table" and in other shellfish reports, can be obtained by writing South Carolina's Department of Environmental Services – Freedom of Information office at the address below.

Freedom of Information
SC Dept. of Environmental Services
2600 Bull Street
Columbia, SC 29201

Any explanation or clarity needed on the report's content can be obtained by contacting the preparer(s), and/or reviewer(s) listed on the cover page.

TABLE #5

RAINFALL DATA

Shellfish Management Area 12B

Source:

2022-2024 Data
National Weather Service - Southeastern River Forecast Center
Edisto Island, South Carolina

2022 Annual Rainfall Summary
Source: National Weather Service - Southeastern River Forecast Center
Location: Edisto Island, South Carolina

2022	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1				0.23			0.24		0.28	2.07		0.26
2							2.71	0.01	1.92			
3	0.05											
4						0.17		0.05	0.09			
5	0.01	0.42			0.01	0.92	0.01					
6	0.02			0.87		1.00	0.05	0.15	0.18		0.02	0.20
7		0.10		0.73	0.05			0.04				
8		0.05		0.13		0.11	0.29	0.26				
9			0.51			0.15	0.15	0.12	1.87			
10	0.24		0.24			0.28	1.35		3.89			0.10
11							1.54	0.01	0.02		1.83	
12			0.07			0.34	0.01	0.29	0.02	0.01	0.06	0.04
13		0.06	0.04		0.22			0.32		1.95		
14					0.20		0.11					
15							0.10					0.13
16	0.26		0.05				0.34				0.22	0.18
17	0.95	0.12	0.13	0.06	0.05	0.10	0.01	0.45				
18		0.01		0.48		0.23	0.38	0.09	0.01			
19		0.04	0.09	0.08				1.22	0.10			
20			0.05				1.05	0.95	0.04		0.04	
21	0.17						1.51	0.03				0.94
22	0.25	0.01			0.02			0.33				0.37
23					1.58		2.49	0.50	0.06			0.06
24			0.52		0.01	0.03	0.01	0.38				
25			0.67				0.15	0.01				
26								1.32			0.02	
27				0.16	0.78		0.01	0.09			0.01	
28		0.04			0.16			0.08			0.03	
29	0.02					1.48		0.66		0.06		
30						0.90		1.50	2.07	0.11		0.02
31					0.09			0.21		0.12		0.06
Total	**1.97**	**0.85**	**2.37**	**2.74**	**3.17**	**5.71**	**12.51**	**9.07**	**10.55**	**4.32**	**2.23**	**2.36**

***Days highlighted indicate 4 or more inches of rain in a 24 hour period. Blank fields indicate no rainfall.**

*** Sample dates are indicated in blue.** | **ND = No Data** | **ANNUAL RAINFALL** | **57.85**

2023 Annual Rainfall Summary
Source: National Weather Service - Southeastern River Forecast Center
Location: Edisto Island, South Carolina

2023	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	0.04	0.01			0.14			0.82				
2												
3		0.39	0.04			0.02						0.05
4		0.21	0.06	0.20		0.11		0.01				0.01
5	0.33	0.02					0.24	1.69				
6		0.09			0.02		1.11					
7						0.31		0.13				
8				0.03	0.01	1.08	0.37	0.25				
9	0.02			0.68	0.06	0.01	0.27	0.05				
10		0.03	0.23		0.01		0.07		0.04			
11		0.69	0.44				0.32		0.23			0.21
12		1.54				0.61		0.05	0.04	0.71	0.07	
13	0.27	0.09	0.46			0.97			0.45	0.43	0.07	
14	0.05			0.25			0.01	0.01	0.72	0.19		
15				0.07	0.02	0.50			0.37			
16				0.05		0.09	0.01	0.19			0.02	
17				0.04	0.07			2.55			0.07	1.10
18		0.08	0.36		0.35		0.08	0.09	2.19		0.07	2.06
19			0.17		0.38	0.01						
20						1.41	0.08	0.12				
21						0.25	0.04		0.01	0.58	0.21	
22	0.12			0.29	0.13	0.54	0.06		0.02		0.66	
23	1.42		0.07	0.46		0.80					0.39	
24					0.01	0.04	0.98				0.05	
25		0.57									0.05	0.02
26	0.50			0.02	0.01							1.45
27				0.01	1.90	0.03	0.01		0.27		0.22	1.99
28			0.14	0.47	0.25		0.20					
29			0.04				0.56	0.01				
30	0.82			0.54			0.51	1.41				
31	0.30						0.63	1.92				
Total	**3.87**	**3.72**	**2.01**	**3.11**	**3.36**	**6.78**	**5.55**	**9.30**	**4.34**	**1.91**	**1.88**	**6.89**

***Days highlighted indicate 4 or more inches of rain in a 24 hour period. Blank fields indicate no rainfall.**

*** Sample dates are indicated in blue.** | **ND = No Data** | **ANNUAL RAINFALL** | **52.72**

2024 Annual Rainfall Summary
Source: National Weather Service - Southeastern River Forecast Center
Location: Edisto Island, South Carolina

2024	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1			0.03		0.18		0.01	0.01				
2	0.02		2.66		0.19		2.06		0.01			
3				0.01				0.31	0.31			
4	0.08			0.89				0.29				
5		1.29						0.50		0.05	0.37	
6	0.36	0.62	0.23		0.03	2.10		*9.82	0.02		0.10	
7	0.10		0.62		0.22	0.01		*1.50	0.22		1.27	
8								*0.83	0.10		0.69	
9	0.05		0.97				0.11	*1.63	0.66			
10	1.36		2.34		0.71	0.69	0.12	0.01		0.11		0.10
11				1.76	0.13		0.16	0.01			0.05	0.08
12		0.07		1.89			0.03				0.15	0.18
13	0.07	1.46					0.27	0.03	0.04			
14					0.09		0.18		0.05			
15					0.69		0.01		0.05		0.14	
16			0.06						0.04			
17												
18			0.03									0.04
19					0.43							
20				0.01	0.89		0.99		0.11		0.03	
21						*0.52	0.78		0.04			
22				0.57			0.14					
23			1.01			0.19						
24	0.01	0.14	0.01			0.34						0.51
25	0.04	0.01			0.96	0.05	0.71					0.03
26							1.55		0.10			
27			0.01				0.82		1.77		0.01	0.81
28	0.01		0.74			1.09						0.08
29			0.03			0.05					0.12	0.09
30						0.01	0.01	0.02		0.08	0.01	0.89
31	0.07							0.01				
Total	**2.17**	**3.59**	**8.74**	**5.13**	**4.52**	**4.53**	**7.95**	**14.97**	**3.52**	**0.24**	**2.94**	**2.81**

***Days highlighted indicate 4 or more inches of rain in a 24 hour period. Blank fields indicate no rainfall.**

*** Sample dates are indicated in blue.** | **ND = No Data** | **ANNUAL RAINFALL** | **61.11**

TABLE #6

Shellfish Management Area 12B
Precautionary & Pollution Event Closures
2022 – 2024

Event	Date(s)	Sample Date(s)	Opening Date	Comments
Hurricane Ian	9/30/2022	N/A	10/2/2022	SFMA 12B was closed as a precautionary closure due to the Hurricane Warning. Area 12B was not affected by any exceedances in rainfall due to the hurricane.
Tropical Storm Debby	8/6/24 – 8/8/24	8/12/2024	8/15/2024	SFMA 11 was closed as a precautionary closure due to excessive rainfall within a 24-hour period from TS Debby.

TABLE #7
Shellfish Management Area 12B
MARINA INVENTORY

Marina	Total Slips/Linear Ft	Pump-out Facility	Fuel Dock
Metal Trades, Inc.	75 ft	Yes	Diesel
Stevens Towing Company, Inc.	510 ft	Yes	Diesel