South Carolina Department of Environmental Services

OFFICE OF LAW ENFORCEMENT

SHELLFISH MANAGEMENT AREA 20

2024 ANNUAL UPDATE COMPREHENSIVE REPORT

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

SC DEPARTMENT *of* ENVIRONMENTAL SERVICES

September 2024

SHELLFISH MANAGEMENT AREA 20
2024 ANNUAL UPDATE
COMPREHENSIVE REPORT

[Data Through December 2023]

SC DEPARTMENT *of*
ENVIRONMENTAL
SERVICES

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Data Inclusive Dates:
01/01/21 thru 12/31/23

Classification Change:
__X__ Yes __ No

Shoreline Survey Completed: Yes

Prior Report & Date: 2023 Annual Update

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

SUMMARY

For the current three-year review period, bacteriological water quality data in Shellfish Management Area 20 (SFMA 20) remained somewhat consistent to water quality data reported in the previous Annual Update. There was an upgrade in water quality at station 20-16, opening the headwaters of Broad Creek to shellfish harvesting for the upcoming season. This will affect one Culture ground (C031) in Broad Creek. There will be one classification change recommended for the 2024-2025 shellfish harvesting season.

As a result of the continued shoreline reconnaissance, it was identified that several watercraft remain moored in a portion of Broad Creek near the Palmetto Bay Marina. As a precautionary measure in the continued protection of public health, associated with the consumption of raw shellfish, the department will continue to implement a Conditionally Closed Management Plan to provide another level of protection from shellfish product harvested from this area. This management plan will remain in effect until the department is satisfied that no possible illicit discharges from these vessels will occur on any occasion, that adversely affect water quality and the safe consumption of shellfish.

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 (SCDES) 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 National Shellfish Sanitation Program (NSSP) Guide for the Control of Molluscan Shellfish is used by the United States Food and Drug Administration (USFDA) 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 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 by 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

Shellfish Management Area 20 consists of approximately 22,448 acres of shellfish growing area habitat in Beaufort County, South Carolina. The area is comprised of Calibogue Sound and the Skull, Mackay, Jarvis, Old House, and Broad Creek tributaries. The area's northern boundary

originates near the Colleton River, then follows the shoreline of Port Royal Sound, crosses the mouth of Mackay and Skull Creeks, and continues to the Atlantic Ocean. The eastern boundary and southern boundaries are defined by the Atlantic Ocean. The western boundary extends northward through the lower portions of Bull Island and May River.

The majority of SFMA 20 is moderately developed. The Hilton Head Island area supports dense development that includes many golf course neighborhoods, shopping malls, restaurants, and marinas. During summer months, the average population increases to 70,000 due to tourism in the area. Major holiday periods result in population peaks of approximately 100,000.

The shellfish industry in South Carolina is based on the harvest of the eastern oyster (*Crassostrea virginica*) and hard clams (*Mercenaria mercenaria*). Areas in South Carolina designated for commercial harvest by the South Carolina Department of Natural Resources (SCDNR) include State shellfish grounds, Culture permits, and Kings Grant areas.

SFMA 20 encompasses eleven (11) shellfish Culture Permit (C) areas: C009, C027, C031, C032, C033, C043, C047, C049, C050, C053, and C054. The public is allowed to harvest on seven (7) State Shellfish Grounds (SSG): S005 on Haig Point; S029 on Jarvis Creek; S030 in Broad Creek; S032 at Buckingham Landing; S033 in Mackay Creek; S038 is Skull Creek and S048 on Hilton Head Island. Recreational harvesting by properly licensed individuals is allowed on two (2) Public Shellfish Grounds (R036 and R037) located on Pinckney Island. SFMA 20 has three (3) Mariculture permit areas: M010, M601B, and M602B. Recreational harvesting is allowed for clams and oysters in all approved areas, and commercial harvesting by licensed individuals is allowed, subject to seasons established by SCDNR.

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 20 **prior** to this sanitary survey were as follows:

PROHIBITED

1. Waters adjacent to Harbor Town Marina and approximately 1000 feet northeast and southeast; approximately 1000 feet adjacent to South Beach Marina, including all areas inshore (southeast) of an imaginary line extending from the offshore edge of the South Beach Marina closure zone to the offshore edge of the harbor Town Marina closure zone.
2. Waters approximately 1000 feet adjacent to Moss Creek Marina; approximately 1000 feet adjacent to Skull Creek marina; approximately 1000 feet adjacent to Outdoor Resorts Marina.
3. Waters within approximately 1000 feet of the marinas and docking facilities in Broad Creek. These facilities include Palmetto Bay Marina, Shelter Cove Marina, Wexford Harbor, Broad Creek Marina, and the Long Cove community dock.
4. Waters adjacent to the boat docking facilities at Villages on Skull Creek, Hilton Head Plantation, Baynard Cove, Gull Point community, and Schillings Boat House.

5. Waters in Broad Creek adjacent to the Sea Pines WWTP outfall approximately 1000 feet north and south of the mouth of Lawton Creek.
6. Folly Creek, the entire tributary to its confluence with the Atlantic Ocean.
7. Fish Haul Creek, from its headwaters to its confluence with the Port Royal Sound.

RESTRICTED

1. Broad Creek, from Station 20-25 and continuing upstream including station 20-16 and all headwaters.
2. Jarvis Creek, entire waterbody.

CONDITIONALLY APPROVED

None

APPROVED

1. Mackay Creek, entire water body excluding the Prohibited zone around Windmill Harbor
2. Moss Creek, entire waterbody excluding the Prohibited zone.
3. Skull Creek, entire waterbody excluding all Prohibited zones.
4. Old House Creek, entire waterbody.
5. Bass Creek, entire waterbody.
6. Bryan Creek, entire waterbody.
7. Broad Creek, entire waterbody excluding all Prohibited and Restricted zones.
8. May River, from its confluence with the Calibogue Sound to the boundary of SFMA 20.

Station Addition/Re/Deactivation/Modification: None

POLLUTION SOURCE SURVEY

SURVEY PROCEDURES

The South Carolina Department of Environmental Services (SCDES), Beaufort, Shellfish Sanitation Staff, routinely conducts shoreline survey activities in SFMA 20. Extensive visual examination of lands adjacent to the waters of SFMA 20 was conducted to determine type of activities, location of significant concentrations of domestic animals and other actual and potential sources of pollution entering shellfish growing waters.

POINT SOURCE POLLUTION

A. Municipal and Community Waste Treatment Facilities- There are no direct discharges of wastewater into SFMA 20 shellfish growing waters. Treated effluent is typically used for spray irrigation of golf courses and landscape areas. Wetland areas are also used for disposal of treated effluent, particularly during periods when the golf courses are extremely wet and cannot use the water. Central sewer services are provided for most structures on Hilton Head Island; however, some homes still utilize septic tanks for wastewater treatment and disposal. Many of the homes adjacent to the northern shore of Broad Creek use septic tanks. South Island PSD reports that in the last five years they have provided sewer services to 560 lots in Sea Pines Plantation previously utilizing septic tanks.

B. Industrial Waste - Industrial wastewater discharges have not been permitted within SFMA 20.

C. Marinas – In 2007, prompted by the Department's Bureau of Coastal Management (BCM and previously known as the Office of Coastal Resource Management – OCRM) marina definition change, the Shellfish Sanitation Section incorporated the following 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); (3) any facility which has effective docking space of greater than 250 linear feet or provides moorage for more than 10 boats; (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, such as a mooring field; or (5) a dry stack facility.

There are twelve (12) permitted marinas in SFMA 20. A list is included in this update as Table #7. Additionally, a non-permitted mooring field has been identified in Broad Creek, west/northwest of Palmetto Bay Marina. Because of its identification as a potential pollution source and its location within an area that is currently "Approved", the area surrounding the mooring field/anchorage area will be placed in a "Conditionally Restricted" status.

D. Radionuclides– The Savannah River is the nearest potential source of radionuclides in SFMA 20. Due to concerns related to the Department of Energy - Savannah River site (DOE-SR), the Savannah River is routinely monitored for radionuclide impacts. Radiological monitoring of surface water is conducted on and adjacent to the Savannah River Site. Routine samples from surface water locations are collected weekly for tritium analysis. Samples are also collected weekly from each location to produce a monthly composite. The monthly composites from each location are analyzed for gross alpha, gross beta and beta-gamma-emitting radionuclides. An annual report is generated and can be reviewed at:

www.scdhec.gov/HomeAndEnvironment/Pollution/DHECPollutionMonitoringServices

This report has summarized that very low doses of radionuclides are present in the Savannah River that are located near the southern portion of SFMA 19 that can affect waters located on Fields Cut leading from the Savannah River to the confluence of the Wright River. All portions of the Savannah River within South Carolina, as well as Fields Cut (Savannah River to the Wright River near Station 19-22) are administratively Prohibited to shellfish harvest. No radiological adversities exist affecting water quality for shellfish harvesting. Since 2010,

the ESOP has been tasked to conduct mercury monitoring that may affect South Carolina waters located in or near SFMA 20. Current Fish Advisory postings can be located at:

www.scdhec.gov/fish

NONPOINT SOURCE POLLUTION

A. **Urban and Suburban Stormwater Runoff** - Stormwater runoff may impact water quality by transporting fecal coliform bacteria (and other pollutants) from land to the shellfish growing area. Stormwater from roads, residences, and agricultural land is directed to the lowest point of elevation - typically the nearest creek or marsh. In addition, there are freshwater wetland areas, ditches, and impoundments that drain into tidal creeks.

Beaufort County enacted a Stormwater Management Utility which was established by county ordinance in 2001 and amended and enacted most recently in 2015. The Stormwater Utility is guided by a Comprehensive Master Plan and a Stormwater Management Utility Board which is dedicated to stormwater-related activities. The Comprehensive Master Plan identified nine (9) program elements that the utility must address. These elements include Stormwater Control Regulations, Water Quality Controls for Existing Developments, Water Quality Monitoring, Annual Maintenance, Inventory of Secondary Stormwater Management Systems, Additional and On-going studies and analysis, Public Information, and Utility Administration.

The Comprehensive Master Plan is funded through the fees collected by Beaufort County. The Master Plan was designed to identify problem areas related to stormwater, and to recommend a plan to solve problems and better control the impacts on receiving waters in Beaufort County. The Stormwater Management Utility also partners with four Municipalities which include: The Town of Hilton Head Island IGA, Town of Bluffton IGA, Town of Port Royal IGA, and the City of Beaufort IGA. The above information was gathered from the Beaufort County Stormwater webpage which can be found at:

https://www.beaufortcountysc.gov/stormwater/index.html

The Beaufort County Manual for Stormwater Best Management Practices and Design Practices (BMP's) was developed in May 2010 and most recently revised in 2018. This manual has recommended policies and standards for stormwater pollution control for new developments, policies and standards for existing developments, and structural BMP design guidelines. This manual also has the Average Annual Fecal Coliform Runoff Load Calculations for various land uses with percentage reductions required to meet fecal coliform loading targets. This manual not only requires pollutant removal, but also considers stormwater volume control to meet the County's antidegradation goals. Sec. 99-107 of the County Codes sets requirements for on-site stormwater systems: enforcement, methods, and inspections.

On June 4, 2014, the South Carolina Department of Health & Environmental Control designated Beaufort County as a Municipal Separate Storm Sewer System (MS4). MS4 is a component of the National Pollutant Discharge Elimination System (NPDES). The notice of intent was submitted, and the expected effective date was October 1, 2015 (Beaufort County Stormwater Utility, 2015).

Most land disturbing activities in South Carolina must comply with the Stormwater Management and Sediment Reduction Act of 1991. The final regulations, effective on June 28, 2002, establish the procedures and minimum standards for a statewide stormwater management program. For activities in the eight coastal counties, additional water quality requirements are imposed. For all projects, regardless of size, which are located within one-half mile of a receiving water body in the coastal zone, the criteria for permanent water quality ponds having a permanent pool are that they are designed to store the first inch of runoff from the entire site over a 24-hour period or storage of the first one inch of runoff from the built-upon portion of the property, whichever is greater. Storage may be accomplished through retention, detention, or infiltration systems, as appropriate for the specific site. In addition, for those projects that are located within 1000 feet of shellfish beds, the first one and one-half inches of runoff from the built-upon portion of the property must be retained on site. Since 1992, these regulations have been applied to the development of residential subdivisions, golf courses, and business areas.

Within the planned communities on the island, the stormwater drainage systems typically consist of an arrangement of inter-connecting ditches and lagoons. The majority of the island's stormwater is directed to Broad Creek. Broad Creek receives stormwater from five major drainage systems. They include: The Port Royal Plantation system, Palmetto Dunes, Wexford/Shipyard Plantation, Sea Pines/Lawton canal, and Indigo Plantation. Sampling conducted during the Broad Creek Non-Point Source Assessment study completed in 1995-1996 confirmed the presence of high levels of fecal coliform associated with the low salinity waters of the drainage systems. In the summer of 1996, The Town of Hilton Head was awarded a Section 319 mini grant to study non-point source pollution in Broad Creek. The study found that correlations of fecal coliform concentrations with salinity and rainfall indicate that the contamination occurs in stormwater runoff rather than from other sources such as sewage discharged from marinas. The report identified two primary NPS pollution inputs to Broad Creek which were the headwaters region and Lawton Creek.

B. Agricultural Runoff - There are no large-scale commercial agriculture operations such as herds of cattle or farming activities in SFMA 20.

C. Individual Sewage Treatment and Disposal (ISTD) Systems - The majority of Hilton Head Island is served by sewer, though some homes still utilize septic tanks for wastewater treatment and disposal. Many of the homes adjacent to the northern shore of Broad Creek use septic tanks.

D. Wildlife and Domestic Animals - This area supports populations of white-tailed deer, raccoons, wading birds, migratory waterfowl, and other wildlife, which may contribute to fecal coliform levels in some areas. Domestic animals present in the area include dogs, cats, goats, and horses which are in Sea Pines Plantation at Lawton Stables. Another small horse stable operation was noticed on Paddocks Boulevard adjacent to Jarvis Creek.

E. Boat Traffic - Calibogue Sound provides access to the Atlantic Ocean for commercial and recreational vessels. The Atlantic Intracoastal Waterway (AIWW) runs through Skull Creek and Calibogue Sound to the Cooper River and, eventually, to the Savannah River. Tugs and barges, commercial and recreational vessels utilize this North/South route. The greatest amount of boat traffic occurs during the summer months.

F. Hydrologic and Habitat Modification - Hydrologic and habitat modification in estuarine areas requires both State and federal approval.

NATURALLY OCCURRING PATHOGENS

A. Marine Biotoxins – Bivalve shellfish contamination from marine biotoxins has not been shown to be a human health concern within SFMA 20. 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 other coastal areas of the state. There have been no documented reoccurrences of this organism at levels requiring emergency response in South Carolina waters after the 1988 event. Due to the vast media coverage of events related to *Pfiesteria pisicida*, 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 if special permit conditions are included. Special permit conditions for mariculture 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

The majority of SFMA 20 is part of the Savannah River estuary, a coastal plain system that includes the New, Wright, and Savannah Rivers and several tributaries of Savannah River (e.g., Front, Back, and Middle Rivers and the South Channel). The salinity structure is primarily determined by controlled releases of freshwater from impoundments on Savannah River and its tributaries. The New River receives freshwater input from the Great Swamp. The Wright River receives most of its freshwater input from Savannah River via Fields Cut (AIWW). The highest river discharge usually occurs in late winter and early spring due to heavy precipitation in the Blue Ridge and Piedmont areas; lowest discharge occurs during late summer and fall.

The average depth of the estuary is approximately 5 meters at mid-tide level. Navigational channels in the lower Savannah and Front Rivers, downstream from Highway 17, range from 9m to 12m in depth and facilitate the intrusion of saltwater into the estuary. The conversion of thousands of acres of saltwater wetlands into diked disposal areas on the South Carolina side could also have altered flow patterns and salinity regimes.

Tides in SFMA 20 are semidiurnal, consisting of two low and high tides each lunar day. Mean tidal range is 7.0 feet during normal tides and 8.9 feet above mean low water during spring tides. The greatest tidal ranges of the year typically occur around the full moon during the months of

September through December. There is considerable variation in the normal tide range due to the prevailing strength and direction of winds.

A tidal node just northeast of May River separates the Broad River estuary and the Savannah River estuary. Skull and Mackey Creeks and their tributaries are part of the Broad River estuary. The Broad River estuary is a drowned river valley system and the largest of Sea Island Coastal Region estuaries (219 square kilometers). This estuary, which includes Broad River, Beaufort River, Port Royal Sound, and several tidal tributaries, includes an extensive system of marshes, tidal creeks, and Sea Islands.

Most tidal exchange occurs through the entrance to Savannah River, primarily through the North Channel; however, limited exchange occurs with the Broad River estuary through Calibogue Sound. The salinity structure is primarily determined by controlled releases of freshwater from impoundments on Savannah River and its tributaries. (NOAA, 1994).

Hilton Head Island is a coastal barrier island of approximately 22,000 acres. The highest point on the island is 28 feet above mean sea level (msl) with the average being approximately 14 feet above msl. Flooding and stormwater drainage have become critical issues on the island due to the low elevations and relatively flat topography.

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.

The ten-year average annual rainfall amount for SFMA 20 is 47.24 inches. The annual rainfall total for 2023 was 50.95 inches. Typically, 40% of the annual rainfall falls in the three-month period from June to August. Weather patterns during this time are often characterized by thunderstorms and thundershower activity of short duration. In addition, these three months also have the highest numbers of days with rainfall greater than 1.00". The months of December through March historically have the greatest number of days with rainfall exceeding 0.10" and 0.50". Rainfall events during these months are typically of a longer duration.

The prevailing wind direction during January through February is generally from the west to northwest with an average speed of 8-12 MPH. During the months of March through August, wind direction is typically a southerly component at an average speed of 7-10 MPH. September through December normally maintains a north-north easterly wind direction with an average speed of 6-8 MPH. (NOAA).

WATER QUALITY STUDIES

DESCRIPTION OF PROGRAM

The Department utilizes a systematic random sampling (SRS) strategy within SFMA 20 in lieu of sampling under adverse pollution conditions. 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 calendar year 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 data analysis 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 samples, lab error, breakdowns, etc. This also allows each annual report to meet the NSSP Triennial Review sampling criteria.

During the period 01/01/21 through 12/31/23, eight-hundred and sixty (860) surface water samples (<1.0 ft. deep) were collected at the twenty-four (24) currently active SFMA 20 monitoring stations for bacteriological analyses. Samples were collected in 120 ml bottles, immediately placed on ice and transported to the South Carolina Department of Environmental Services, Beaufort laboratory in Burton, South Carolina. An additional 120 ml water sample was included with each shipment as a temperature control. Upon receipt at the laboratory, sample sets that exceeded a 30-hour holding time or contained a temperature control >10 degrees Celsius were discarded. Samples collected after September 1,1986 have been analyzed using the five-tube/three dilution modified A-1 method described by Nuefeld (1985).

Surface water temperatures were measured utilizing hand-held, laboratory-quality calibrated centigrade thermometers. Salinity measurements were measured in the laboratory using automatic temperature compensated refractometers. Additional field data include ambient air temperature, wind direction, tidal stage and date and time of sampling. Tidal stages were determined using the National Oceanic and Atmospheric Administration, 2018 Tides and Currents Predictions website located at http://tidesandcurrents.noaa.gov.

The report, *A Baseline Assessment of Environmental and Biological Conditions in Broad Creek and the Okatie River, Beaufort County, South Carolina* was published in the spring of 2000. The study, conducted by SCDHEC, SCDNR, and the NOAA (National Ocean Service), involved a comprehensive assessment of overall water quality, sediment quality, and biological conditions of the two study areas. The report states that system wide, fecal coliform bacteria concentrations were higher in Broad Creek than in the Okatie River. Bio typing of the fecal coliform samples that were E. coli positive indicated that Broad Creek had both a higher incidence of E. coli in the samples and a higher percentage of antibiotic resistant strains that were indicative of human sources than the Okatie River. There was also a clear association of areas with high E. coli counts related to human sources and obvious pollution sources (land application of treated wastewater and septic tanks) in Broad Creek. However, most stations in both Broad Creek (53.3%) and the Okatie River (80%) were negative for the antibiotic resistance tests used for typing probable sources. This suggests that animal wastes are a major contributor of the fecal coliform levels observed in both systems.

MONITORING RESULTS

For the three-year review period associated with this annual update, twenty-three (23) shellfish monitoring stations met the statistical criteria to remain in the Approved classification. Sample

Stations 20-02, 20-03, 20-04A, 20-05, 20-06, 20-07, 20-09, 20-10, 20-11, 20-12, 20-13, 20-15A, 20-16, 20-17B, 20-18, 20-19A, 20-20A, 20-22, 20-24, 20-25, 20-26, 20-28, and 20-29 all met the criteria for an Approved Classification.

Station 20-23 exceeded a fecal coliform MPN estimated 90th percentile value of 43, thus warranting the Restricted classification. A fecal coliform bacteriological data summary is included in this report as Table # 2.

CONCLUSIONS AND RECOMMENDATIONS

One classification change is recommended for the 2024-2025 shellfish harvesting season in SFMA 20. Broad creek will open at station 20-16, this will completely open the whole creek to shellfish harvest except for Prohibited areas around marinas.

Based on review of fecal coliform bacteriological data and the pollution source survey, SFMA 20 is impacted by three sources of actual or potential pollution.

Point Source Pollution

Numerous point sources such as wastewater treatment facilities and marinas are located within SFMA 20. Administratively Prohibited closures are established around these pollution sources.

Non-Point Source Runoff

Stormwater runoff appears to be the major source of fecal coliform bacteria contamination in SFMA 20. Stormwater runoff from roads or parking lots discharges directly into the creeks or marsh or enters stormwater lagoons that are usually inter-connected and eventually discharged to a creek. Possible sources of fecal coliform bacteria contamination include pets, wildlife, domestic animals such as horses and cows, failing septic systems, and drainage from roads and freshwater wetlands.

Individual Sewage Treatment and Disposal Systems (ISTDS)

ISTDS or a municipal central sewer services homes adjacent to shellfish waters in SFMA 20 and are also possible pollution sources. Homes in older developed areas utilize ISTDS while newer developments are tied into municipal central sewer. Soils in most areas are suitable for ISTDS and systems should operate properly if maintained. Older systems represent a potential source of fecal coliform contamination particularly during periods of heavy rainfall.

Sewage overflows are infrequent and will continue to be managed in accordance with National Shellfish Sanitation Program emergency closure guidelines.

All existing marinas should retain their administrative Prohibited Classification. Additionally, during the harvest season, all Approved portions of the estuary should continue to be placed under a precautionary closure upon issuance of an official National Weather Service Hurricane Warning or upon receipt of four or more inches of rainfall within twenty-four hours, as recorded by the National Weather Service, Southeastern River Forecast Center.

Based upon the findings of this Annual Update, the following classification is recommended:

PROHIBITED

1. Waters adjacent to Harbor Town Marina and approximately 1000 feet northeast and southeast; approximately 1000 feet adjacent to South Beach Marina, including all areas inshore (southeast) of an imaginary line extending from the offshore edge of the South Beach Marina closure zone to the offshore edge of the harbor Town Marina closure zone.
2. Waters approximately 1000 feet adjacent to Moss Creek Marina; approximately 1000 feet adjacent to Skull Creek marina; approximately 1000 feet adjacent to Outdoor Resorts Marina.
3. Waters within approximately 1000 feet of the marinas and docking facilities in Broad Creek. These facilities include Palmetto Bay Marina, Shelter Cove Marina, Wexford Harbor, Broad Creek Marina, and the Long Cove community dock.
4. Waters adjacent to the boat docking facilities at Villages on Skull Creek, Hilton Head Plantation, Baynard Cove, Gull Point community, and Schillings Boat House.
5. Waters in Broad Creek adjacent to the Sea Pines WWTP outfall approximately 1000 feet north and south of the mouth of Lawton Creek.
6. Folly Creek, the entire tributary to its confluence with the Atlantic Ocean.
7. Fish Haul Creek, from its headwaters to its confluence with the Port Royal Sound.

RESTRICTED

1. Jarvis Creek, entire waterbody.

CONDITIONALLY APPROVED

None

APPROVED

1. Mackay Creek, entire water body excluding the Prohibited zone around Windmill Harbor
2. Moss Creek, entire waterbody excluding the Prohibited zone.
3. Skull Creek, entire waterbody excluding all Prohibited zones.
4. Old House Creek, entire waterbody.
5. Bass Creek, entire waterbody.
6. Bryan Creek, entire waterbody.
7. Broad Creek, entire waterbody excluding all Prohibited zones.
8. May River, from its confluence with the Calibogue Sound to the boundary of SFMA 20.

Station Addition/Re/Deactivation/Modification: None

Analysis of sampling data for SFMA 20 demonstrates the probability of a significant impact from rainfall exceeding 4.00" in a 24-hour period. Therefore, a precautionary closure of SFMA 20 will be implemented following rainfall events of greater than 4.00" in a 24-hour period, as

measured by the National Weather Service, Southeastern River Forecast Center. This methodology is associated with the concept of the Probable Maximum Precipitation (PMP). PMP estimates for the coastal United States have been published in a series of hydro-meteorological reports (HMRs) by the National Weather Service (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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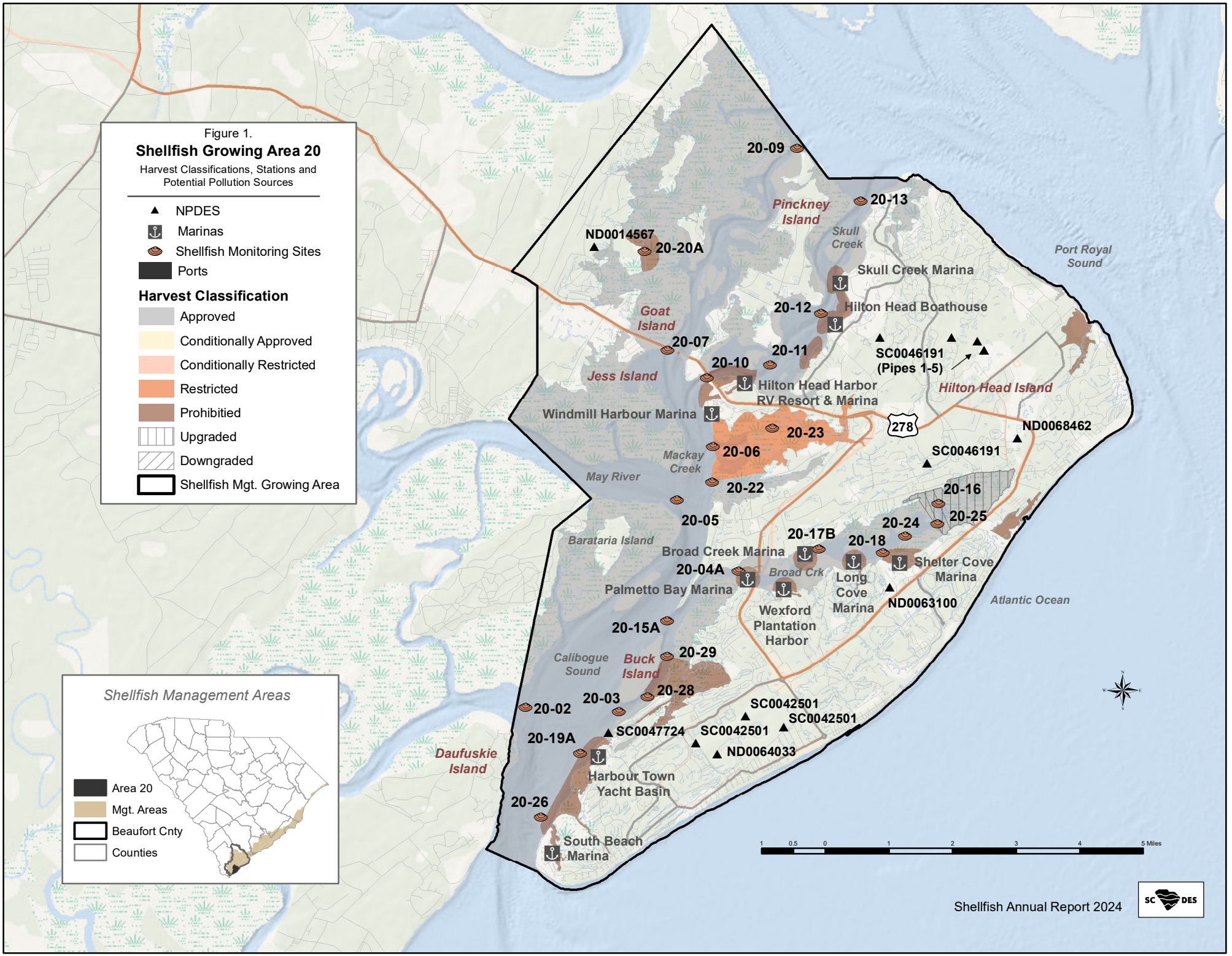
Figure 1.
Shellfish Growing Area 20
Harvest Classifications, Stations and Potential Pollution Sources
NPDES
Marinas
Shellfish Monitoring Sites
Ports
Harvest Classification
Approved
Conditionally Approved
Conditionally Restricted
Restricted
Prohibited
Upgraded
Downgraded
Shellfish Mgt. Growing Area
Shellfish Management Areas
Area 20
Mgt. Areas
Beaufort Cnty
Counties
20-09
20-13
Pinckney Island
Skull Creek
Port Royal Sound
ND0014567
20-20A
Skull Creek Marina
20-12
Hilton Head Boathouse
Goat Island
20-07
20-11
SC0046191 (Pipes 1-5)
20-10
Jess Island
Hilton Head Harbor RV Resort & Marina
Hilton Head Island
Windmill Harbour Marina
278
ND0068462
20-23
SC0046191
Mackay Creek
20-06
May River
20-22
20-16
20-05
20-25
20-24
Barataria Island
20-17B
20-18
Broad Creek Marina
Shelter Cove Marina
20-04A
Broad Crk
Long Cove Marina
Palmetto Bay Marina
ND0063100
Atlantic Ocean
Wexford Plantation Harbor
20-15A
20-29
Calibogue Sound
Buck Island
20-28
20-03
20-02
SC0042501
SC0042501
20-19A
SC0047724
SC0042501
ND0064033
Daufuskie Island
Harbour Town Yacht Basin
20-26
South Beach Marina
1 0.5 0 1 2 3 4 5 Miles
Shellfish Annual Report 2024
SC DES

TABLE # 1
Shellfish Management Area 20
WATER QUALITY SAMPLING STATIONS DESCRIPTION

Station	Description
20-02	Calibogue Sound, Marker 32
20-03	Shark Bank and Broad Creek, Marker 2
20-04A	Broad Creek at Palmetto Bay Marina CSZ
20-05	May River at Calibogue Sound
20-06	Jarvis Creek at Calibogue Sound
20-07	Buckingham Landing at bridge
20-09	Mackey Creek and Chechessee River
20-10	Skull Creek at small creek from Mariner's Cove
20-11	Skull Creek, Marker 19
20-12	Skull Creek behind Hilton Head Seafood Company
20-13	Skull Creek and Port Royal Sound
20-15A	Broad Creek at Calibogue Sound- North end of Buck Island
20-16	Creek behind Lynn Smith's Oyster Plant at Broad Creek
20-17B	Broad Creek at Broad Creek Marina CZ
20-18	Shelter Cove Marina
20-19A	Broad Creek at Harbour Town Marina CZ
20-20A	Moss Creek Marina CZ
20-22	Old House Creek at Calibogue Sound
20-23	Jarvis Creek at first major 'T'
20-24	Broad Creek at 1st major creek upstream of Station 18
20-25…….	Broad Creek at confluence of channel leading to Old Oyster Factory
20-26	Northwest of South Beach Marina closure zone
20-28	Broad Creek at Southern boundary of South Island WWTP Prohibited closure zone
20-29	Broad Creek at Northern boundary of South Island WWTP Prohibited closure zone

(**Total Active - 24**)

TABLE #2

Shellfish Management Area 20
Fecal Coliform Bacteriological Data Summary
From Shellfish Water Quality Sampling Stations Between

January 01, 2021 to December 31, 2023

Station #	02	03	04A	05	06	07	09	10	11	12
Samples	36	36	36	36	36	36	35	36	36	36
Geometric Mean	2.3	2.5	4.4	2.2	3.5	2.8	2.3	2.2	2.5	2.3
90th percentile	5	6	18	4	13	7	5	6	7	5
Water Quality	A	A	A	A	A	A	A	A	A	A
Classification	A	A	P	A	R	A	A	P	A	P

Station #	13	15A	16	17B	18	19A	20A	22	23	24
Samples	36	36	36	36	35	35	36	36	36	36
Geometric Mean	2.5	3.1	9	5.9	6.3	2.5	3.2	3.1	6.6	6
90th percentile	7	9	42	20	30	6	9	12	44	27
Water Quality	A	A	A	A	A	A	A	A	R	A
Classification	A	A	A	P	P	P	P	R	R	A

Station #	25	26	28	29
Samples	36	35	36	36
Geometric Mean	6	2	3.1	3.6
90th percentile	24	4	9	15
Water Quality	A	A	A	A
Classification	A	P	P	P

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

TABLE #3

Fecal Coliform Historical Trend Sheet

Area 20Stations 90th%ile Values for Annual Updates Related to Rainfall

Station #	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
20-02	5	5	6	5	4	4	6	7	7	6	6
20-03	6	7	11	13	10	11	11	18	13	15	8
20-04A	18	14	18	20	16	20	23	27	19	20	16
20-05	4	6	6	5	3	3	3	3	3	3	3
20-06	13	10	8	10	9	11	9	8	6	6	5
20-07	7	10	10	8	3	4	4	4	4	4	3
20-09	5	4	4	4	4	3	2	3	3	5	5
20-10	6	4	4	5	3	3	5	5	7	5	5
20-11	7	5	7	5	4	3	5	6	5	5	5
20-12	5	5	5	4	3	4	5	5	4	5	6
20-13	7	7	7	7	4	4	4	5	5	5	5
20-15A	9	10	10	11	9	8	6	8	9	13	14
20-16	42	57	52	53	41	49	44	39	28	26	26
20-17B	20	17	23	25	23	17	13	11	10	12	20
20-18	30	29	29	29	28	27	25	16	13	13	15
20-19A	6	6	10	19	19	19	12	14	11	9	8
20-20A	9	10	11	13	9	10	10	11	9	12	11
20-22	12	8	13	24	21	28	16	16	6	4	4
20-23	44	47	48	65	52	65	58	42	25	23	15
20-24	27	25	42	52	44	34	25	22	15	12	11
20-25	24	36	34	52	42	47	37	26	19	17	15
20-26	4	4	5	5	6	4	6	11	10	13	12
20-28	9	15	19	23	12	13	11	26	18	19	6
20-29	15	14	20	22	15	16	12	14	11	15	13
Annual Rainfall (inches)	**50.95**	**48.13**	**57.15**	**46.23**	**51.41**	**45.22**	**46.38**	**39.10**	**42.92**	**44.93**	**50.09**

ND = No Data Red = Impaired Water Quality

TABLE #4

WATER QUALITY SAMPLING STATION DATA

Shellfish Management Area 20

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 20

Source:

2021 – 2023 Data
National Weather Service - Southeastern River Forecast Center
Location: Hilton Head Island, South Carolina

2021 Annual Rainfall Summary
Source: National Weather Service - Southeastern River Forecast Center
Location: Hilton Head Island, South Carolina

2021	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1		0.61		0.19								
2	0.06		0.14			0.04	0.05	0.03				
3	0.21		2.40			0.01	0.19	0.28				
4			0.10			0.06		1.47				
5						0.36		0.01				
6		0.12				0.03		0.53	0.03	0.88	0.55	
7		0.34				0.02	0.21	0.05		1.34	2.01	
8	0.23					0.07	*5.68	0.04			0.07	
9							0.03	0.26	0.66	0.27		0.36
10		0.17		0.04		0.12		0.01	0.82	0.04		
11		0.23		0.05		0.03	0.12	0.04				
12	0.03	0.04			0.71	0.14	0.37					0.07
13		0.12			0.40	1.13		0.01				
14	0.01	0.73				0.09	0.15					
15		1.13					0.01	0.05				
16	0.25	0.19				0.30		0.13	0.20			
17			0.03	0.05				0.84	0.17	0.01		0.21
18		0.01		0.01				0.20	0.06			
19		0.29	0.46				0.02	0.09				
20		0.31				0.06	0.27		0.76			0.10
21			0.99			0.20	0.58		*8.34			0.14
22	0.18		0.39			0.02	0.05	0.92	0.66			0.16
23	0.31	0.07				0.84	0.59	1.02	0.04		0.01	
24								0.08				
25				2.79						1.47		
26							0.02			0.15	0.02	
27	0.07					0.09	0.41					
28	0.37					0.02	0.89					
29			0.06			1.68				1.48		
30					0.09							
31			0.04									0.04
Total	1.72	4.36	4.61	3.13	1.20	5.31	9.64	6.06	11.74	5.64	2.66	1.08

*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 | 57.15

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

2022	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	0.01			0.19		0.13	0.64		0.03	0.19		0.09
2							0.45	0.03	0.25			
3	0.03	0.01							0.64			
4						0.01		0.06	0.03			
5	0.01	0.17				0.20		0.09	0.32		0.02	
6		0.01		0.36		0.14	0.05	0.15	0.15		0.07	0.07
7		0.31		0.25	0.03	0.07		0.27				
8		0.09		0.08		0.09	1.01	0.31				
9			0.19			0.89	0.04	0.20	1.23			
10	0.37		0.27			0.23	1.92		1.51			0.32
11							0.95	0.01	0.03		1.82	
12			0.09			1.16	0.55	0.59	0.06	0.01	0.06	
13		0.02	0.06		0.17		0.12	0.41	0.01	1.11		
14		0.01					0.24					
15						0.05	0.26				0.07	0.11
16	0.15		0.05				0.06				0.05	0.20
17	1.32		0.09	0.04								
18				0.42		0.28	0.30	0.02	0.08			
19		0.24	0.16	0.15			0.51	2.28	0.01			
20			0.15				0.21	0.32	0.02		0.03	0.08
21	0.35						1.19					1.23
22	0.23	0.02			0.02			0.65				0.11
23					2.00		0.59	1.53				0.07
24			0.57		0.20	0.20		0.19				
25			0.52				0.01	0.03			0.01	
26					0.03			0.97			0.03	
27				0.71	1.66				0.05		0.08	
28		0.22			0.07			0.01			0.09	
29						0.23		0.47				
30						0.33		2.62	1.22	0.06		0.02
31					0.03							0.04
Total	**2.47**	**1.10**	**2.15**	**2.20**	**4.21**	**4.01**	**9.10**	**11.21**	**5.64**	**1.37**	**2.33**	**2.34**

*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	48.13

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

2023	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	0.02	0.03			0.02			0.05	0.18		0.02	
2												0.01
3		0.09	0.01					0.12				0.04
4		0.14	0.10	0.09			0.01	0.09				0.01
5	0.56						0.08	0.12				
6					0.11		0.59					
7							0.62	0.27				
8				0.04		0.20	0.06	0.02	0.02			
9				0.39		0.05	1.11	0.42	0.03			
10		0.02	0.23						0.12			
11		0.91	0.18				1.10		0.43			0.24
12		1.94				1.45		0.44	0.01	0.91		
13	0.52	0.02	0.34	0.01		0.07			0.56	0.42	0.01	
14	0.02			0.54		0.11	0.01	0.02		0.18		
15				0.09	0.02	0.94			0.56			
16						0.17	0.17	1.23			0.17	
17				0.02				0.53			0.45	1.59
18		0.05	0.82		0.28		0.02	0.01	0.88		0.02	3.87
19			0.52		0.66							
20	0.01					0.40	0.06	0.06				
21					0.01	0.88	0.01	0.04	0.05	0.42	0.11	
22	0.31				0.35	0.33	0.04	0.04			0.86	
23	0.96		0.01	0.04	0.06	0.48					0.17	
24						0.04	0.72				0.06	
25		0.03					0.52				0.05	0.01
26	0.49		0.11	0.03	0.01							0.69
27			0.02	0.01	1.60	0.06			0.62		0.23	0.12
28			0.41	0.84	1.00		0.52					
29			0.11				1.46	0.95				
30	1.43			0.60			0.05	1.00				
31	0.28						0.40	1.18				
Total	**4.60**	**3.23**	**2.86**	**2.70**	**4.12**	**5.18**	**7.55**	**6.59**	**3.46**	**1.93**	**2.15**	**6.58**

***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** | **50.95**

TABLE #6
Shellfish Management Area 20
Precautionary & Pollution Event Closures
2021 – 2023

Event	Date(s)	Sample Date(s)	Opening Date	Comments
5.68” of rainfall	7/8/2021	7/12/2021	7/13/2021	Special samples conducted and SFMA 20 reopened.
8.34” of rainfall	9/21/2021	9/23/2021 9/27/2021	9/28/2021	Special samples conducted and SFMA 20 reopened.

TABLE #7
Shellfish Management Area 20
MARINA INVENTORY

Marina	Total Slips	Pump-out Facility	Fuel Dock
Broad Creek	45	Yes	Yes
Harbor Town	100	Yes	Yes
Hilton Head Harbor RV	100	Yes	Yes
Long Cove	89	Yes	No
Moss Creek	70	No	No
Palmetto Bay	90	Yes	Yes
Hilton Head Boathouse	Dry Stack	Yes	Yes
Shelter Cove	179	Yes	Yes
Skull Creek	166	Yes	Yes
South Beach	100	No	Yes
Wexford Harbor	135 Private / 280 Rent	Yes	No
Windmill Harbor	258	Yes	Yes

Hilton Head Island Yacht Club Mooring Field Conditionally Restricted Area Management Plan
2024 Shellfish Management Area 20 Annual Update

I. Area Description and Background Information

A. The current classification map defining the Conditionally Restricted area boundaries are:

On Broad Creek, centered approximately 300 meters west of the Palmetto Bay Marina, and encompasses the permitted mooring field and extends from its center out to 1000 feet in all directions.

B. Hilton Head Island Yacht Club Mooring Field was first classified as Conditionally Restricted in the 2010 Annual Update. A portion of the Conditionally Restricted area is leased by SCDNR to individuals (commercial leases) as Culture Permit C027 and as a State Shellfish Ground S030.

C. No shellfish monitoring stations will be included within this Conditionally Restricted area along Broad Creek.

D. There are no mariculture operations in Broad Creek that are associated with this Conditionally Restricted area. Shellfish harvesting season typically extends from October 1 through May 31; however, the South Carolina Department of Natural Resources has the authority to modify these dates.

II. Factors Indicating Suitability of Hilton Head Island Yacht Club Mooring Field as a Conditionally Restricted Area

A. The major pollution source adversely affecting water quality in and surrounding the Hilton Head Island Yacht Club Mooring Field along the Broad Creek is nonpoint source in origin.

B. Broad Creek receives no substantial freshwater input other than rainfall and associated runoff.

C. Broad Creek has an adequate tidal range to allow sufficient exchange with coastal ocean waters. This exchange results in a typical salinity range of 24 ppt to 30 ppt. Depressed salinities are usually due to rainfall and are temporary.

D. Hilton Head Island Yacht Club Mooring Field along Broad Creek is relatively small geographically and does not present major patrol difficulties.

III. Predictable Pollution Events That Cause Closure

Boat Mooring Field/Anchorage Impacts

1. High-density boat mooring field/anchorage areas have the potential to adversely impact water quality.

2. The Hilton Head Island Yacht Club Mooring Field has four permitted mooring field/anchorage buoys located west of the Palmetto Bay Marina Prohibited closure zone and the Mooring Field shall remain in the closed status when "live aboard" vessels are present.

IV. Implementation of a Conditional Area Closure

The South Carolina Department of Environmental Services (SCDES), Office of Law Enforcement, Beaufort Shellfish Regional Manager is the responsible party for determining compliance with all aspects of this plan, including tracking the number of boats within this established mooring field and ensuring the compliance, and notification procedures are properly recorded. If the Regional Manager shall be unavailable, another employee shall be designated responsible for tracking, compliance, and notification procedures.

The mooring field will continue to be identified on shellfish management area maps as a conditional area in the closed status until the area no longer meets the definition of a marina in Shellfish Regulation 61-47, or unless other conditions are met as per section V of this management plan.

A. Enforcement of Closures

SCDES is the agency responsible for public health protection. This includes public notice and closures of shellfish management areas.

SCDES, Office of Law Enforcement, Beaufort Shellfish Officers shall ensure that the areas are patrolled at a frequency adequate to prevent illegal harvesting. Documentation of these patrols shall be maintained. SCDES Shellfish Officers may coordinate with other law enforcement officers to insure adequate area coverage.

V. Control Elements Used to Reopen the Conditionally Restricted Area.

The opening of the closure area because of changes in the conditions prescribed by the management plan criteria shall adhere to the following control elements.

A. The area shall remain closed when "live aboard" vessels are observed each month within the Hilton Head Yacht Club Mooring Field and remain closed until determined by the Department when any potential adverse conditions are no longer a threat to public health and the safe harvesting of shellfish.

B. The bacteriological water quality at all stations located within, or on the boundary of, the Conditionally Restricted area shall be assessed prior to reopening. Additional special sampling may be necessary to determine any conditions that warrant an open status of the closure area. If special sampling is determined necessary for re-opening the Conditional Restricted area, these special samples must not exceed a fecal

coliform MPN of 14.

C. SCDES, Office of Law Enforcement, Beaufort Shellfish Program staff and the State Shellfish Program Manager (or his designee) shall concur on the decision to reopen the area.

D. SCDES Office of Law Enforcement, Beaufort Shellfish Program staff shall notify SCDNR, Division of Commercial Fisheries Management, of the opening following an issuance of the news release. Openings shall be coordinated with SCDNR Law Enforcement at the area level.

E. Local Certified Shellstock Shippers shall be notified by SCDES of the opening as soon as possible.

VI. Management Plan Evaluation

This plan shall be evaluated once per year and included as a part of the Shellfish Management Area 20 Annual Update.

Hilton Head Island Yacht Club Mooring Field Conditional Area Management Plan Evaluation.

A. Background Information

The following is a description of the recommended Conditionally Restricted areas as indicated in the Shellfish Management Area 20 – 2024 Annual Update:

On Broad Creek, centered approximately 300 meters west of the Palmetto Bay Marina, and encompasses the permitted mooring field and extends from its center out to 1000 feet in all directions.

The evaluation period is CY 2023. This Conditionally Restricted area was based on "live aboard" vessels visually observed monthly as determined by scheduled and non-schedule patrolling and shellfish water quality-monitoring events.

There is no mariculture activity within this area therefore year-round harvesting is not allowed.

B. Reevaluation of Conditional Classification

The following table is a summary of the conditional closed area based upon number of boats each month observed and recorded during 2023:

Closure Verified	Number of Observed Boats	Observed Date	Reopening Date
January 2023	8	01/09/2023	N/A
February 2023	8	02/01/2023	N/A

March 2023	10	03/07/2023	N/A
April 2023	5	04/17/2023	N/A
May 2023	5	05/03/2023	N/A
June 2023	5	06/26/2023	N/A
July 2023	5	07/18/2023	N/A
August 2023	5	08/07/2023	N/A
September 2023	5	09/06/2023	N/A
October 2023	7	10/17/2023	N/A
November 2023	8	11/01/2023	N/A
December 2023	4	12/18/2023	N/A

Compliance – The Hilton Head Island Yacht Club Mooring Field Conditional Management Area was managed in accordance with the plan. Analysis of water quality is based upon the potential adverse conditions associated with mooring "live aboard" vessels.

Cooperation – Cooperation by the Hilton Head Island Yacht Club to decrease the amount of moored "live aboard" vessels within this closure area may help to lift these restrictive conditions along Broad Creek.

Evaluation of Water Quality with Respect to the Bacteriological Standards - For the review period (January 1, 2021, through December 31, 2023) no sampling stations were required. However, due to potential water quality variability, along with the knowledge that any suspect inadvertent or intentional release of on-board sewage can have an adverse impact on water quality and public health, special sampling may be necessary before this closure is classified as Approved.

C. Recommendations

Annually evaluate to determine opening of the Hilton Head Island Yacht Club Mooring Field when "live aboard" vessels are no longer observed and water quality meets NSSP MO approved status criteria.