South Carolina Department of Environmental Services

OFFICE OF LAW ENFORCEMENT

SHELLFISH MANAGEMENT AREA 18

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 18
2025 ANNUAL UPDATE
COMPREHENSIVE REPORT

[Data Through December 2024]

SC DEPARTMENT *of*
ENVIRONMENTAL
SERVICES

Prepared By:

Josh Reid, Regional Shellfish Program Manager
Office of Law Enforcement
1911 Boundary St., Suite 104
Beaufort, South Carolina 29902

Reviewer:

Mike Marshall, State Shellfish Program Manager
Office of Law Enforcement
927 Shine Avenue
Myrtle Beach, South Carolina 29577



TABLE OF CONTENTS
Shellfish Management Area 18 Annual Update Comprehensive Report

Summary 2
Introduction 2
Pollution Source Survey 5
Survey Procedures 5
Point Source Pollution 6
A. Municipal and Community Waste Treatment Facilities 6
B. Industrial Waste 6
C. Marinas 6
D. Radionuclides 6
Non-point Source Pollution 6
A. Urban and Suburban Stormwater Runoff 6
B. Agricultural Runoff 7
C. Individual Sewage Treatment and Disposal Systems 8
D. Wildlife and Domestic Animals 8
E. Boat Traffic 8
F. Hydrographic and Habitat Modification 8
Naturally Occurring Pathogens 8
A. Marine Biotoxins 8
B. *Vibrio Management Plan* 8
Hydrographic and Meteorological Characteristics 8
Water Quality Studies 9
Conclusions 10
Recommendations 10
References 12

Figures and Tables

Figures:

(1) Shellfish Growing Area 18 Map 13
(2) Shellfish Growing Area 18 Point Source Map 14

Tables:

(1) Shellfish Water Quality Sampling Stations Description 15
(2) Fecal Coliform Bacteriological Data Summary
(*January 01, 2022 - December 31, 2024*) 16
(3) Fecal Coliform Historical Trend Sheet 17
(4) Water Quality Sampling Station Data 18
(5) Rainfall Data (*January 01, 2022 - December 31, 2024)* 19
(6) Precautionary & Pollution Event Closures 23
(7) Marina Inventory 24

2025 ANNUAL UPDATE COMPREHENSIVE REPORT
Shellfish Management Area 18

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

Classification Change:
___Yes __X__ No

Shoreline Survey Completed: Yes

Prior Report & Date: 2024 Annual Update Comprehensive Report

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

SUMMARY

The review of bacteriological water quality monitoring data for Shellfish Management Area 18 (SFMA 18) associated with this 2025 Annual Update Comprehensive Report indicated that water quality has remained relatively the same. There are no changes in classification for the upcoming 2025-2026 shellfish harvesting season.

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 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 using 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 18 consists of 12,118 acres of shellfish growing area habitat in Beaufort County. It is comprised of the Colleton and Okatie Rivers and their tributaries including Chechessee, Callawassie, and Sawmill Creeks.

The area's northern boundary runs between the intersection of Highway 170 and Highway 278 and the Chechessee River. The eastern boundary runs along the western shore of the Chechessee River to the mouth of Colleton River then to Highway 278. Highway 278 defines the area's southern boundary. The western boundary runs along Highway 170/278.

Before the 2002 increase of rural development, this area was mainly forested and used for agricultural purposes such as timber or farming. Most of the land is now developed and used for housing, golf courses, and commercial purposes. Most of the shellfish resource and harvesting activity continue to occur in the lower portion of the Okatie and in the Colleton River.

The shellfish industry in South Carolina is based mainly on the harvest of the eastern oyster (*Crassostrea virginica*) and hard clams (*Mercenaria sp.*). 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.

There are three (3) shellfish culture permits in SFMA 18 which include: C048, C054, and C057. The

public is allowed to harvest on one state shellfish ground in SFMA 18, S058, which is in Chechessee Creek. Recreational harvesting is allowed for clams and oysters in this area, and commercial harvesting by licensed individuals is currently allowed, subject to seasons established by SCDNR. Recreational harvesting only is allowed on the Chechessee Point Public Shellfish Ground (R061) in Chechessee Creek.

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

PROHIBITED

None

RESTRICTED

1. Okatie River and tributaries, from its headwaters to station 18-07 near Oldfield's community dock.

CONDITIONALLY APPROVED

None

APPROVED

1. Chechessee Creek, entire waterbody.
2. Okatie and Colleton River, from sample station 18-07 past station 18-05 to the boundary of SFMA 18.
3. Calawassie Creek, entire waterbody.
4. Sawmill Creek, entire waterbody.

Station Addition/Re/Deactivation/Modification: None

POLLUTION SOURCE SURVEY

SURVEY PROCEDURES

The South Carolina Department of Environmental Services (SCDES), Lowcountry – Beaufort, Shellfish Sanitation Staff, routinely conducts shoreline survey activities in SFMA 18. Extensive visual examination of lands adjacent to the waters of SFMA 18 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** – Most of the wastewater facilities are located outside of the boundary of SFMA 18 and therefore are not shown on the map of Potential Pollution Sources. However, treated effluent from these plants is typically disposed of on golf courses in SFMA 18. The Beaufort Jasper Water & Sewer Authority (BJWSA) Okatie Water Reclamation Facility (SC0047279 and ND007404), located in adjacent Shellfish Management Area 19, is permitted to dispose of treated effluent at Island West Golf course, Indigo Plantation, Del Webb, and Rose Hill Plantation in SFMA 18. The plant also has permitted discharges (SC0047279) to the Great Swamp wetlands to the New River, as well as Dell Webb's Sun City Hilton Head wetlands to the New River. Callawassie Island WWTP disposes of its treated effluent on its golf course. Spring Island WWTP utilizes spray irrigation to dispose of treated effluent onto 150 acres at the Old Tabby Golf Course. Treated effluent is piped from the Bluffton Regional WWTP to a holding tank at Colleton River Plantation, where it is applied onto the golf courses. BJWSA Rose Hill WWTP is being used as a lift station to pump wastewater into the Okatie Water Reclamation plant and reclaimed water is returned to be spray irrigated at its Equestrian Paddocks area, Rose Hill Golf Course, Western Nine Fairways, Block "X", Block "B-6", Belfair Plantation golf course, and Old Carolina Golf Links. BJWSA Bluffton WWTP has discontinued disposal of treated effluent at the Hilton Head National golf course and Colleton River Plantation golf course. This plant now will be used to store reclaimed water.

B. **Industrial Waste** - Industrial wastewater discharges have not been permitted within SFMA 18.

C. **Marinas** – In 2007, prompted by the Department's Bureau of Coastal Management (BCM and formerly 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 no marinas currently established in SFMA 18.

D. **Radionuclides** - Sources of radionuclides have not been identified within SFMA 18, and no other sources of poisonous or deleterious substances have been identified within the area.

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.

B. Agricultural Runoff – Numerous cattle and horses are located near the headwaters of the Okatie River. A waste management plan was developed to control runoff into the river. Manure from horses is collected and mixed with sawdust to be applied to the land on Spring Island. The SCDNR Waddell Mariculture Center is a mariculture research facility located adjacent to the Colleton River, which pumps water out and discharges it back into an area adjacent to the Colleton River.

C. **Individual Sewage Treatment and Disposal (ISTD) Systems** - Most homes in SFMA 18 utilize sewers for wastewater disposal. Older homes adjacent to the Okatie River and Chechessee Creek areas utilize ISTDS.

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, horses, and goats.

E. **Boat Traffic** - The Colleton River and Chechessee Creek provide access to Broad River and Port Royal Sound and the Atlantic Ocean for commercial and recreational vessels. There is only one public landing located within the growing area and a few private landings.

F. **Hydrologic and Habitat Modification** - Hydrographic and habitat modification in estuarine areas requires both State and Federal approval. No modifications were approved for SFMA 18 for this annual review period.

NATURALLY OCCURRING PATHOGENS

A. **Marine Biotoxins** - 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 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 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

Shellfish Management Area 18 is part of the Broad River estuary, which 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. The average depth of the estuary is approximately 7 meters at mid tide level. Broad and deep natural channels exist throughout Port Royal Sound, Beaufort River, and major tidal tributaries. Large shoal areas occur primarily in the Beaufort River and Port Royal Sound (NOAA, 1994).

Tides in SFMA 18 are semidiurnal, consisting of two low and high tides each lunar day. Mean tidal range is 5.9 feet during normal tides and 6.9 feet during spring tides. The greatest tidal ranges of the year typically occur around 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.

In 2017, the collection of rainfall data was 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 18 totals 48.08 inches. The annual rainfall amount for 2024 was 58.63 inches. Typically, 40% of the annual rainfall falls in the three-month period from June to August. Weather patterns during this period 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 and September through December normally maintains a north-north easterly wind direction with an average speed of 6-8 MPH (NOAA).

There are no freshwater rivers that discharge directly into SFMA 18. The salinity structure of the Broad River estuary is primarily determined by the seasonal freshwater discharge from the Coosawhatchie and Pocotaligo Rivers and mean salinities vary with less than 5 ppt between typical high and low salinity periods.

WATER QUALITY STUDIES

DESCRIPTION OF PROGRAM

The Department utilizes a systematic random sampling (SRS) strategy within SFMA 18 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 01/01/22 through 12/31/24, five hundred and ninety-five (595) surface water samples (<1.0 ft. deep) were collected at the seventeen (17) currently active SFMA 18 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, Environmental Affairs, Lowcountry – 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 C. 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, 2017 Tides and Currents Predictions website located at http://tidesandcurrents.noaa.gov/curr_pred.html.

MONITORING RESULTS

Stations 18-01, 18-02, 18-03, 18-04, 18-05, 18-06, 18-07, 18-09, 18-10, 18-11, 18-12, 18-13, 18-14, and 18-15 met the criteria for an Approved classification.

Stations 18-08, 18-16, and 18-17 exceed a fecal coliform MPN geometric mean value of 14.

Stations 18-08, 18-16, and 18-17 exceed a fecal coliform MPN estimated 90th percentile value of 43.

No station exceeded a geometric mean of 88 or a 90th percentile of 260.

A fecal coliform bacteriological data summary is included as Table # 2.

CONCLUSIONS AND RECOMMENDATIONS

During this review period, the fecal coliform bacteriological data showed no changes in water quality. There will be no classification changes recommended for the 2025-2026 shellfish harvesting season.

SFMA 18 is affected by three sources of actual or potential pollution: Non-Point Source Runoff, Individual Sewage Treatment and Disposal Systems (ISTDS) and Freshwater Inflow.

There are no permitted point source discharges or marinas located within SFMA 18. Stormwater runoff appears to be the major source of fecal coliform bacteria contamination in SFMA 18. The area is experiencing continued development. Large tracts of forest and farmland adjacent to the Colleton and Okatie Rivers are in the process of being developed or have recently been developed. Increases in impervious surface result in an increase in the volume of stormwater runoff that transports fecal coliform bacteria and other pollutants to shellfish waters.

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.

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

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 Comprehensive Report, the following classification is recommended:

PROHIBITED

None

RESTRICTED

1. Okatie River and tributaries, from its headwaters to station 18-07 near Oldfield's community dock.

CONDITIONALLY APPROVED

None

APPROVED

1. Chechessee Creek, entire waterbody.
2. Okatie and Colleton River, from sample station 18-07 past station 18-05 to the boundary of SFMA 18.
3. Calawassie Creek, entire waterbody.
4. Sawmill Creek, entire waterbody.

Station Addition/Re/Deactivation/Modification: None

Analysis of sampling data for SFMA 18 demonstrates the probability of a significant impact from rainfall exceeding 4.00" in a 24-hour period. Therefore, a precautionary closure of SFMA 18 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). 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).

REFERENCES

American Public Health Association, Inc., 1970. *Recommended Procedures for the Examination of Seawater and Shellfish.* Fourth Edition. American Public Health Association, Inc., New York, N.Y. 105 p.

Beaufort County Stormwater Utility, Beaufort County Stormwater Management Plan, Beaufort County Beaufort, SC.

Beaufort County Stormwater Utility. (2015 Aug 24). MS4 Reg History 08242015.pdf. <http://www.bcgov.net/departments/Engineering-and-Infrastructure/stormwater-management/documents/MS4%20reg%20history%2008242015.pdf >

National Oceanic and Atmospheric Administration, 1994. *Salinity Characteristics of South Atlantic Estuaries*. National Oceanic and Atmospheric Administration, Silver Spring, Md.

National Research Council, 1985, *Safety of Dams - Flood and Earthquake Criteria* National Academy Press, Washington DC.

National Weather Service. The National Oceanic and Atmospheric Administration. *Precipitation Frequency Atlas of the Western US: NOAA Atlas II*. Superintendent of Documents, US Government Printing Office - Washington DC.

NOAA, National Weather Service database.

Nuefeld, N. 1985. "Procedures for the Bacteriological Examination of Seawater and Shellfish". In: A.E. Greenberg and D.A. Hunt (eds.) *Laboratory Procedures for the Examination of Seawater and Shellfish, Fifth Edition.* American Public Health Association, Washington, D.C. p. 37-63.

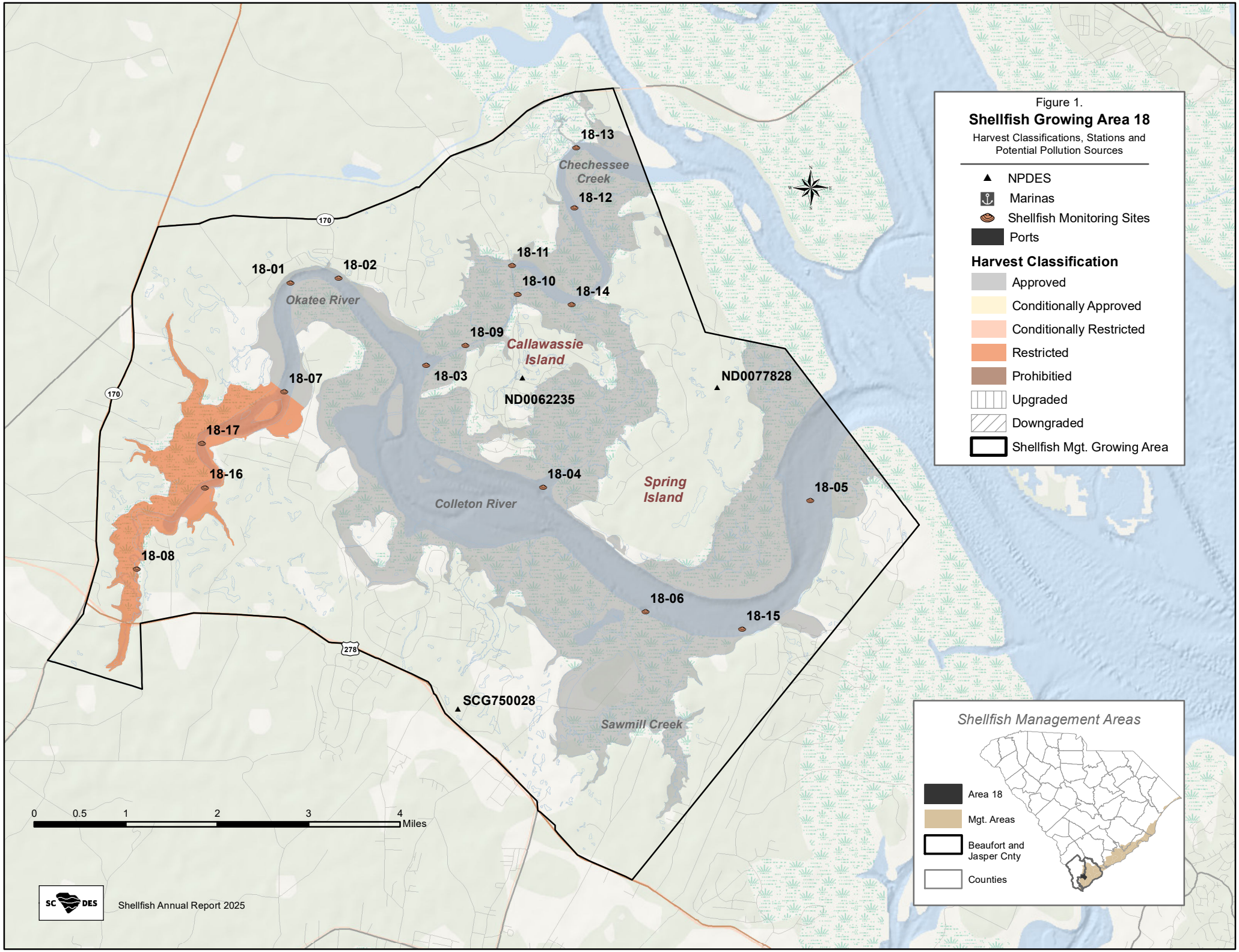

Figure 1.
Shellfish Growing Area 18
Harvest Classifications, Stations and Potential Pollution Sources
NPDES
Marinas
Shellfish Monitoring Sites
Ports
Harvest Classification
Approved
Conditionally Approved
Conditionally Restricted
Restricted
Prohibitied
Upgraded
Downgraded
Shellfish Mgt. Growing Area
18-13
Chechessee Creek
18-12
18-11
18-10
18-14
18-01
18-02
Okatee River
18-09
Callawassie Island
18-03
ND0062235
18-07
ND0077828
18-17
18-16
18-04
Spring Island
Colleton River
18-05
18-08
18-06
18-15
SCG750028
Sawmill Creek
170
278
0 0.5 1 2 3 4 Miles
Shellfish Management Areas
Area 18
Mgt. Areas
Beaufort and Jasper Cnty
Counties
SC DES
Shellfish Annual Report 2025

Figure 2. - Shellfish Management Area 18 - Point Source Map

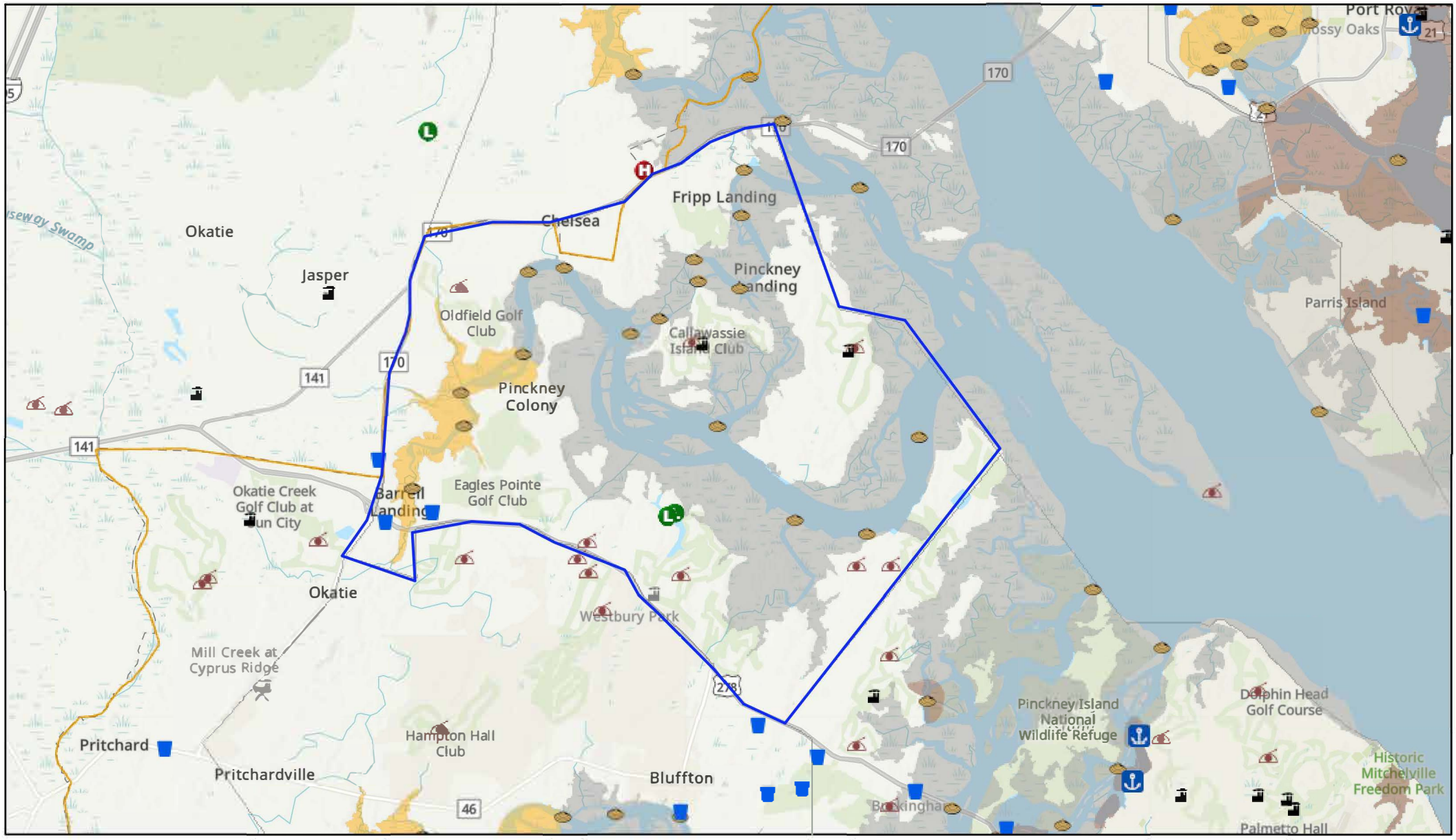


TABLE # 1
Shellfish Management Area 18
WATER QUALITY SAMPLING STATIONS DESCRIPTION

Station	Description
18-01	Okatie River at Camp St. Mary's Dock
18-02	Okatie River Behind Bailey's Oyster Dock
18-03	Chechessee Creek at Okatie River
18-04	Callawassie Creek at Colleton River, Mouth of Creek
18-05	Callawassie Creek at Colleton Creek at Tree Line
18-06	Sawmill Creek at Colleton Creek
18-07	Okatie River at Indigo Plantation
18-08	Okatie River at Dock without House
18-09	First Unnamed Tributary in Chechessee Creek from Colleton River
18-10	Second Bridge to Callawassie Island
18-11	First Bridge to Callawassie Island
18-12	Series of Unnamed Tributaries in Chechessee Creek
18-13	First Unnamed Tributary to Chechessee Point in Chechessee Creek
18-14	Tributary from Spring Island Shrimp Pond
18-15	Dock at Waddell Mariculture Center
18-16	Okatie River at confluence of Pinckney Colony tributary
18-17	Okatie River at confluence of Cherry Point tributary

(**Total Active - 17**)

TABLE #2

Shellfish Management Area 18
Fecal Coliform Bacteriological Data Summary
From Shellfish Water Quality Sampling Stations Between

January 01, 2022 to December 31, 2024

Station #	01	02	03	04	05	06	07	08	09	10	11
SAMPLES	35	35	35	35	35	35	35	35	35	35	35
GEOMEAN	5.7	5.5	3.2	2.7	2.1	2.8	7.6	36.6	7.8	10.4	8.6
90TH %ILE	18	15	7	6	4	7	27	128	27	31	37
WATER QLTY	A	A	A	A	A	A	A	R	A	A	A
CLASSIFICATION	A	A	A	A	A	A	R	R	A	A	A

Station #	12	13	14	15	16	17
SAMPLES	35	35	35	35	35	35
GEOMEAN	4.1	2.9	6	2.6	18.2	15.4
90TH %ILE	14	7	20	6	53	46
WATER QLTY	A	A	A	A	R	R
CLASSIFICATION	A	A	A	A	R	R

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

TABLE #3 Fecal Coliform Historical Trend Sheet											
Area 18 Stations 90th%ile Values for Annual Updates Related to Rainfall											
Station #	**2024**	**2023**	**2022**	**2021**	**2020**	**2019**	**2018**	**2017**	**2016**	**2015**	**2014**
18-01	18	18	24	32	30	31	35	31	34	20	26
18-02	15	12	15	22	26	25	25	21	24	16	19
18-03	7	8	16	20	22	22	27	28	28	19	16
18-04	6	10	10	11	10	10	15	11	15	10	14
18-05	4	3	3	3	4	4	4	4	4	4	3
18-06	7	10	11	12	11	10	14	14	23	17	21
18-07	27	25	25	38	50	49	61	50	58	33	38
18-08	128	141	186	335	338	360	327	264	364	263	485
18-09	27	23	34	40	56	45	66	47	66	34	38
18-10	31	25	24	27	33	34	45	41	34	26	25
18-11	37	31	36	54	50	44	58	49	50	28	30
18-12	14	11	10	14	14	17	38	39	34	11	13
18-13	7	7	10	13	12	10	16	16	18	10	12
18-14	20	24	29	28	30	30	45	33	31	20	25
18-15	6	5	7	6	6	5	6	6	6	5	8
18-16	53	47	72	110	127	113	137	116	146	71	146
18-17	46	46	58	71	94	90	100	76	88	60	97
Annual Rainfall (inches)	**58.63**	**51.29**	**44.20**	**60.40**	**48.17**	**46.67**	**51.98**	**51.20**	**39.10**	**42.92**	**44.93**
ND = No Data Red = Impaired Water Quality											

TABLE #4

WATER QUALITY
SAMPLING STATION DATA

Shellfish Management Area 18

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 18

Source:

2022 – 2024 Data
National Weather Service - Southeastern River Forecast Center
Location: Hilton Head Island, South Carolina

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	0.03			0.29		0.03	0.47		0.10	0.24		0.13
2							0.49		1.13			
3	0.10	0.01				0.45			0.09			
4					0.01	0.03		0.51	0.08			
5		0.41			0.02	0.59		0.01	0.64		0.02	
6				0.54		0.14	0.05	0.05	0.28		0.06	0.06
7	0.01	0.41		0.32	0.08	0.03	0.01	0.05				
8		0.06		0.01		0.15	0.49	0.11				
9			0.16			0.63	0.20	0.37	0.67			
10	0.37		0.27			0.04	1.28		1.27			0.49
11	0.01						0.64	0.01			2.07	
12			0.06			0.94	0.25	0.52	0.46		0.11	
13		0.02	0.07		0.36		0.04	0.24		0.94		
14					0.01		0.06					
15						0.03	0.64				0.21	0.10
16	0.14		0.04		0.02		0.03				0.06	0.18
17	1.27		0.10				0.02					
18		0.02		0.15		0.62	0.05	0.01	0.05			0.01
19		0.27	0.24	0.10			0.13	0.86	0.02			
20			0.07				0.18	0.70	0.01		0.04	0.08
21	0.40						0.40	0.01				1.23
22	0.24	0.01			0.04		0.01	1.31				0.15
23					1.11		1.00	0.72			0.01	0.08
24			0.43		0.07	0.48		0.43				
25			0.38				0.21	0.03			0.01	
26	0.01				0.02			0.57			0.03	
27				0.91	0.56						0.06	
28		0.21			0.45			0.05			0.07	
29						0.98	0.06	0.25				
30					0.02	0.11		2.02	1.09	0.07		0.03
31					0.01			0.01				0.05
Total	**2.58**	**1.42**	**1.82**	**2.32**	**2.78**	**5.25**	**6.71**	**8.84**	**5.89**	**1.25**	**2.75**	**2.59**

***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** | **44.20**

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	0.03	0.01			0.04	0.01		0.10			0.05	
2												0.01
3		0.12	0.02					0.13				0.06
4		0.16	0.07	0.15		0.06		0.13				
5	0.51						0.18	0.18				
6					0.12		0.30					
7							0.65	0.44				
8				0.08	0.02	0.25	0.11	0.02				
9	0.01			0.52	0.01	0.03	0.28	0.23	0.05			
10		0.02	0.18						0.33			
11		0.80	0.19				1.22	0.01	0.49			0.20
12		2.20				0.94		0.27	0.22	0.95	0.01	
13	0.78	0.06	0.45	0.01		0.01	0.10		0.79	0.49	0.01	
14	0.03			0.38		0.03	0.15		0.01	0.14		
15				0.10		1.21			0.55			
16						0.16	0.25	0.94			0.15	
17				0.01				0.21			0.25	1.69
18		0.06	0.59		0.42		0.06		0.67			3.94
19			0.35		0.92	0.07						
20	0.01					0.48	0.07	0.15				
21					0.01	0.57	0.01	0.07	0.01	0.37	0.14	
22	0.30				0.53	0.33	0.05	0.10	0.06		0.82	
23	1.38			0.05		0.59	0.01				0.23	
24						0.08	1.04				0.08	
25		0.02					0.17				0.01	
26	0.65		0.13	0.05	0.01			0.03				0.76
27				0.02	1.41	0.04			0.44		0.25	0.21
28			0.34	0.84	0.88		0.46					
29			0.16				1.53	0.60				
30	1.42			0.72			0.06	0.93				
31	0.36						0.49	1.55				
Total	**5.48**	**3.45**	**2.48**	**2.93**	**4.37**	**4.86**	**7.19**	**6.09**	**3.62**	**1.95**	**2.00**	**6.87**

***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** | **51.29**

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

2024	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1			0.04		0.29		0.15	0.07				
2	0.03		2.51				0.86		0.07			
3							0.04	0.26	0.23			
4	0.07			0.83				0.39				
5		1.47			0.10			0.23		0.03	0.18	
6	0.88	0.32	0.61		0.08	2.00		***7.91**	0.05	0.01		
7	0.32		0.39		0.53			1.52	0.48		1.48	
8								0.92	0.16		1.03	
9	0.12		1.04				0.23	0.33	0.62			
10	1.26		1.00		0.99	0.10	0.40			0.06		0.05
11				3.14	0.29	0.22					0.08	0.07
12		0.07		0.35				0.86				0.21
13	0.37	1.26					0.05		0.05			
14					0.11		0.18		0.01		0.01	
15					0.40		0.02				0.14	
16			0.13						0.01			
17												
18			0.06		0.03		0.05					0.04
19					0.42		0.02		0.04			
20					1.24		1.86		0.04		0.04	
21							1.05					
22				0.77		0.47	0.17					
23			0.92			0.08	0.19					
24	0.10	0.07	0.14									0.45
25	0.25				0.81		0.22					
26					0.29		0.78		1.05			
27			0.13				0.17		1.41			0.13
28	0.01		0.90			0.28						0.52
29			0.03			0.11					0.27	1.29
30						0.04	0.07	0.02		0.01	0.04	0.74
31	0.04											
Total	**3.45**	**3.19**	**7.90**	**5.09**	**5.58**	**3.30**	**6.51**	**12.51**	**4.22**	**0.11**	**3.27**	**3.50**

***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** | **58.63**

TABLE #6
Shellfish Management Area 18
Precautionary & Pollution Event Closures
2022 – 2024

Event	Date(s)	Sample Date(s)	Opening Date	Comments
Tropical Storm Debby	8/6/2024	N/A	N/A	Storm produced 7.91 inches of rainfall. Shellfish harvesting season was closed and no summer harvest operations were being conducted.

TABLE #7
Shellfish Management Area 18
MARINA INVENTORY

Marina	Total Slips	Pump-out Facility	Fuel Dock
None	N/A	N/A	N/A