Appendix III

Use Support Methodology
and
Use Support Ratings

Multiple-Category Use Support Methods

A. Introduction to Use Support

Surface waters are classified according to their best intended uses. Determining how well a waterbody supports its uses (*use support* status) is an important method of interpreting water quality data and assessing water quality.

Surface waters are rated *Supporting and Impaired*. These ratings refer to whether the classified uses of the water (such as water supply, aquatic life protection and recreation) are being met. For example, waters classified for fish consumption, aquatic life protection and secondary recreation (Class C for freshwater or SC for saltwater) are rated Supporting if data used to determine use support meet certain criteria. Waters are rated as Impaired if these criteria were not met. Waters with inconclusive data are listed as Not Rated. Waters lacking data are listed as No Data. More specific methods are presented in Part C of this appendix.

In previous use support assessments, surface waters were rated fully supporting (FS), partially supporting (PS), not supporting (NS) and not rated (NR). FS was used to identify waters that were meeting their designated uses. Impaired waters were rated PS and NS, depending on their degree of degradation. NR was used to identify waters lacking data or having inconclusive data. The 2002 Integrated Water Quality Monitoring and Assessment Report Guidance issued by the US Environmental Protection Agency (EPA) requested that states no longer subdivide the Impaired category. In agreement with this guidance, North Carolina no longer subdivides the Impaired category and rates waters as Supporting, Impaired, Not Rated or No Data.

Historically, the Supporting use support rating was also subdivided into fully supporting (FS) and fully supporting but threatened (ST). ST was used to identify waters that were fully supporting but had some notable water quality concerns and could represent constant, degrading or improving water quality conditions. North Carolina's past use of ST was very different from that of the EPA, which uses the rating to identify waters that demonstrate declining water quality conditions (EPA Guidelines for Preparation of the Comprehensive State Water Quality Assessments [305(b) Reports] and Electronic Updates, 1997). Given the difference between the EPA and North Carolina definitions of ST and the resulting confusion that arose from this difference, North Carolina no longer subdivides the Supporting category. However, these waters and the specific water quality concerns are identified in the Section B subbasin chapters so that data, management and the need to address the identified concerns are presented.

B. Interpretation of Data and Information

Data used in use support assessments include biological, chemical/physical, lakes assessments, fish consumption advisories from the NC Department of Health and Human Services, and swimming advisories and shellfish sanitation growing area classifications from the NC Division of Environmental Health (as appropriate). Available land cover and land use information is also used, along with annual water supply reports from regional water treatment plant consultants. Although there is a general procedure for analyzing the data and information for determining use support ratings, each waterbody is reviewed individually, and best professional judgment is applied during these determinations.

When interpreting the use support ratings, it is important to understand its associated limitations and degree of uncertainty. The assessments are not intended to provide precise conclusions about pollutant budgets for specific watersheds. Rather, the intent of use support assessments is to gain an overall picture of water quality for the five-year assessment window, to describe how well surface waters support the uses for which they were classified, and to document the potential contribution made by different pollution sources.

It is also important to understand that use support methods continue to improve over time, and the information and technology used to make use support determinations also continues to become more accurate. These improvements sometimes make it difficult to make generalizations comparing water quality between basin plans. However, technology and methods improvements result in more scientifically sound use support assessments.

C. Assessment Methodology

Beginning in 2003 with the *Lumber River Basinwide Water Quality Plan*, DWQ assesses ecosystem health and human health risk using six use support categories: aquatic life, fish consumption, recreation, water supply, shellfish harvesting and "other" uses. These categories are tied to the uses associated with the primary classifications applied to NC rivers and streams. A single water could have more than one use support rating corresponding to one or more of the six use support categories, as shown in the table below. For many waters, a use support category will not be applicable (N/A) to the classification of that water (e.g., shellfish harvesting is only applied to Class SA waters). A full description of the classifications is available in the DWQ document: *Classifications and Water Quality Standards Applicable to Surface Waters of North Carolina* (15A NCAC 2b .0100 and .0200).

	Use Support Categories					
Primary Classification	**Ecosystem Approach**	**Human Health Approach**				
	Aquatic Life	**Fish Consumption**	**Primary/ Secondary Recreation**	**Water Supply**	**Shellfish Harvesting**	**Other**
C	X	X	X	N/A	N/A	X
SC	X	X	X	N/A	N/A	X
B	X	X	X	N/A	N/A	X
SB	X	X	X	N/A	N/A	X
SA	X	X	X	N/A	X	X
WS I – WS IV	X	X	X	X	N/A	X

Many types of information are used to determine use support ratings and to identify causes and sources of water quality impairment. A use support data file is maintained for each of the 17 river basins. All existing data pertaining to a stream segment for each applicable use support category are entered into record and include, but are not limited to, use support ratings, basis of assessment, biological data, ambient monitoring data, problem parameters and potential sources. The following describes the data and methodologies used to make use support assessments for

the surface water classifications (described in Section A, Chapter 3 of each basin plan) using the six use support categories. These methods will continue to be refined as additional information becomes available.

Basis of Assessment

Assessments are made on an overall basis of either monitored (M) or evaluated (E), depending on the level of information available. A monitored rating is based on the most recent five-year data window and site-specific data and is therefore treated with more confidence than an evaluated rating.

Summary of Basis for Assigning Use Support Ratings to Surface Waters			
Use Support Status	**Overall Basis**	**Specific Basis**	**Description**
Supporting/ Impaired	Monitored	Monitored (M)	Monitored stream segments[a] with data[b] ≤5[c] years old where a bioclassification has been assigned to the sampling site and/or ambient and/or fish tissue data exist and/or DEH shellfish growing area data and/or information on posted swimming closures are available; may be applied to any use support category being assessed.
Not Rated		Monitored (M)	Monitored stream segments[a] with data[b] ≤5[c] years old where a bioclassification has not been assigned to the sampling site; can only be applied to the Aquatic Life use support category.
Supporting		Monitored/ Evaluated (ME)	Stream segment[a] is not monitored, but is assigned a use support rating based on another segment of same stream for which data[b] ≤5[c] years old are available where a bioclassification has been assigned to the sampling site and/or ambient data are available and the segment is given a Supporting rating; can only be applied to the Aquatic Life use support category.
Supporting	Evaluated	Evaluated (E)	Applied to unmonitored streams that are direct or indirect tributaries to monitored stream segments rated Supporting in the Aquatic Life use support category that share similar land use to the monitored stream segment; waters in the Water Supply use support category where no significant problems have been noted in the Regional Surface Water Supply Reports; waters in the Fish Consumption use support category in river basins within the regional fish consumption advice area.
Impaired		Evaluated (E)	Only applied to waters in the Fish Consumption use support category in river basins within the regional fish consumption advice area.
Not Rated		Evaluated (E)	Unmonitored streams that receive effluent from a NPDES discharger that has been found to be in "significant noncompliance" or has failed three or more WET tests during the two-year review period; only applied to the Aquatic Life use support category.
No Data (ND)			Insufficient or no data available to determine use support; includes unmonitored streams that are direct or indirect tributaries to stream segments rated Impaired.

a) A stream segment is a stream, or a portion thereof, listed in the Classifications and Water Quality Standards for a river basin. Each segment is assigned a unique identification number (index number).
b) Major data sources include benthic macroinvertebrate and fish community bioclassifications and chemical/physical monitoring data.
c) From the year that basin monitoring was done.

Supporting ratings are extrapolated up tributaries from monitored streams when there are no problematic dischargers with permit violations or changes in land use/cover. Supporting ratings may also be applied to unmonitored tributaries where there is little land disturbance (e.g.,

national forests and wildlife refuges, wilderness areas or state natural areas). Problem parameters or sources (except general NPS) are not applied to unmonitored tributaries. Impaired ratings are not extrapolated to unmonitored tributaries.

Problem Parameters

Where an ambient parameter is identified as a potential concern, the parameter is listed in the DWQ database and use support summary table. Where habitat degradation is identified by DWQ biologists based on site visits, it is listed and attempts are made to identify the type of habitat degradation (e.g., sedimentation, loss of woody habitat, loss of pools, loss of riffles, channelization, lack of riparian vegetation, streambed scour and bank erosion). Habitat evaluation methods are being developed to better identify specific types of habitat degradation.

Potential Sources

General nonpoint sources (NPS) and point sources (PS) of pollution are identified where there is sufficient information.

Aquatic Life Use Support

The aquatic life use support category is an ecosystem approach to assess whether aquatic life (benthic macroinvertebrates and fish) can live and reproduce in the waters. This category is applied to all waters of the state. Biological data, ambient monitoring data and NPDES discharger data are all considered in assessing the aquatic life use support category. The following is a description of each data type and methods used to assess how well a water is meeting the criteria for aquatic life protection.

Biological Data

There are two main types of biological data: benthic marcoinvertebrate and fish community. Where recent data for both benthic macroinvertebrates and fish communities are available, both are evaluated in assessing use support. It is important to note that where both ambient monitoring data and biological data are available, biological data are given greater weight. This is particularly true when ambient chemical and biological data are conflicting. When these two indicators conflict, additional information is gathered (e.g., land use and land use changes, etc.) and best professional judgement is used to determine an appropriate use support rating.

In special situations, where there are currently insufficient biological data available, the basinwide planner will make a request of the DWQ Environmental Sciences Branch to determine whether a biological survey is appropriate. If a biological survey is appropriate, the use support rating will be determined by the bioclassification resulting from the survey. If a biological survey is not appropriate, then the stream will be Not Rated.

Benthic Macroinvertebrate Bioclassifications

Criteria have been developed to assign bioclassifications ranging from Poor to Excellent to most benthic macroinvertebrate samples based on the number of taxa present in the pollution intolerant aquatic insect groups of *Ephemeroptera, Plecoptera* and *Trichoptera* (EPTs) and the

Biotic Index (BI), which summarizes tolerance data for all taxa in each collection. The benthic macroinvertebrate bioclassifications are translated into use support ratings according to the following scheme:

Bioclassification	Use Support Rating
Excellent	Supporting
Good	Supporting
Good-Fair	Supporting
Fair	Impaired
Poor	Impaired

Due to the increased emphasis placed on Fair or Poor bioclassifications and the borderline nature of some bioclassification scores, sites should be resampled within 12 to 24 months after a Fair rating is obtained in 1999 and beyond, if this Fair rating will result in a lower use support rating or if data are from a site never sampled before. This resampling will be done to validate the Fair bioclassification. Such sites will not be given a use support rating until the second sample is obtained. The table below shows how a final use support rating is obtained for sites that are resampled.

New Benthic Macroinvertebrate Classifications (1999 and Beyond) and Data Causing a Decline in Use Support Ratings

Pre-1999 Bioclassification	1st Sample Bioclassification	Draft Use Support Rating	2nd Sample Bioclassification	Final Use Support Rating
N/A	Fair	Not Rated; resample	Good-Fair, Good or Excellent	Supporting
N/A	Fair	Not Rated; resample	Fair or Poor	Impaired
N/A	Poor	Impaired	N/A	Impaired
Good-Fair, Good or Excellent	Fair	Not Rated; resample	Good-Fair, Good or Excellent	Supporting
Good-Fair, Good or Excellent	Fair	Not Rated; resample	Fair or Poor	Impaired
Good-Fair, Good or Excellent	Poor	Impaired	N/A	Impaired

N/A – Not Applicable NR = Not Rated

The use of benthic macroinvertebrate data can be limited in some waters. The accumulation of swamp stream data over nearly a decade suggests that not all swamp streams support similar fauna. The development of swamp stream criteria is complex, and one set of criteria is not appropriate for all swamp streams. Benthic macroinvertebrate data will not be used in waters characterized or classified by DWQ as swamp waters until the bioclassification criteria for these waters can be used with confidence. Benthic macroinvertebrate data are also not used to develop use support ratings for estuarine waters. Until bioclassification criteria for swamp and estuarine waters are developed, a designation of Not Rated will be used, and these waters will be listed as Not Rated for aquatic life use support assessments.

Benthic macroinvertebrate data are used to provide bioclassifications for high elevation trout streams. The benthic macroinvertebrate data, while not a direct measure of the trout population, are a robust measure of stream integrity. Loss of canopy, increase in stream temperature, increased nutrients, toxicity and increased sedimentation will affect the benthic macroinvertebrate and fish communities. For these reasons, the benthic macroinvertebrate bioclassifications provide a valuable assessment of the integrity of trout waters.

A designation of Not Impaired may be used for flowing waters that are too small to be assigned a bioclassification (less than 4 meters in width), but meet the criteria for a Good-Fair or higher bioclassification using the standard qualitative and EPT criteria. This designation will translate into a use support rating of Supporting.

Fish Community Bioclassifications

The North Carolina Index of Biotic Integrity (NCIBI) is a method for assessing a stream's biological integrity by examining the structure and health of its fish community. The NCIBI incorporates information about species richness and composition, indicator species, trophic function, abundance and condition, and reproductive function. The NCIBI is translated into use support ratings according to the following scheme:

NCIBI	Use Support Rating
Excellent	Supporting
Good	Supporting
Good-Fair	Supporting
Fair	Impaired
Poor	Impaired

The NCIBI was recently revised by DWQ (NCDENR, 2001). Currently, the focus of using and applying the NCIBI is restricted to wadeable streams that can be sampled by a crew of four persons. Infrequently, larger wadeable streams can be sampled if there is a crew of six persons. The bioclassifications and criteria have also been recalibrated against regional reference site data (NCDENR, 2000a, 2000b and 2001a).

NCIBI criteria are applicable only to wadeable streams in the following river basins: Broad, Catawba, Savannah, Yadkin-Pee Dee, Cape Fear, Neuse, Roanoke, Tar-Pamlico, French Broad, Hiwassee, Little Tennessee, New and Watauga. Additionally, the NCIBI criteria are only applicable to streams in the piedmont portion of the Cape Fear, Neuse, Roanoke and Tar-Pamlico River basins. The definition of the "piedmont" for these four river basins is based upon a map of North Carolina watersheds (Fels, 1997). Specifically:

- In the Cape Fear River basin – all waters except for those draining the Sandhills in Moore, Lee and Harnett counties and the entire basin upstream of Lillington, NC.
- In the Neuse River basin -- the entire basin above Smithfield and Wilson, except for the south and southwest portions of Johnston County and eastern two-thirds of Wilson County.
- In the Roanoke River basin -- the entire basin in North Carolina upstream of Roanoke Rapids, NC and a small area between Roanoke Rapids and Halifax, NC.

- In the Tar-Pamlico River basin -- the entire basin above Rocky Mount, except for the lower southeastern one-half of Halifax County and the extreme eastern portion of Nash County.

NCIBI criteria have not been developed for:

- Streams in the Broad, Catawba, Yadkin-Pee Dee, Savannah, French Broad, Hiwassee, Little Tennessee, New and Watauga River basins which are characterized as wadeable first to third order streams with small watersheds, naturally low fish species diversity, coldwater temperatures, and high gradient plunge-pool flows. Such streams are typically thought of as "Southern Appalachian Trout Streams".
- Wadeable streams in the Sandhills ecoregion of the Cape Fear, Lumber and Yadkin-Pee Dee River basins.
- Wadeable streams and swamps in the coastal plain region of the Cape Fear, Chowan, Lumber, Neuse, Pasquotank, Roanoke, Tar-Pamlico and White Oak River basins.
- All nonwadeable and large streams and rivers throughout the state.

Due to the increased emphasis placed on Fair or Poor bioclassifications and the borderline nature of some bioclassification scores, sites should be resampled within 12 to 24 months after a Fair rating is obtained in 1999 and beyond, if this Fair rating will result in a lower use support rating or if data are from a site never sampled before. This resampling will be done to validate the Fair bioclassification. Such sites will not be given a use support rating until the second sample is obtained. The table below shows how a final use support rating is obtained for sites that are resampled.

New Fish Community Classifications (1999 and Beyond) and Data Causing a Decline in Use Support Ratings				
Pre-1999 Bioclassification	**1st Sample Bioclassification**	**Draft Use Support Rating**	**2nd Sample Bioclassification**	**Final Use Support Rating**
N/A	Fair	Not Rated; resample	Good-Fair, Good or Excellent	Supporting
N/A	Fair	Not Rated; resample	Fair or Poor	Impaired
N/A	Poor	Impaired	N/A	Impaired
Good-Fair, Good or Excellent	Fair	Not Rated; resample	Good-Fair, Good or Excellent	Supporting
Good-Fair, Good or Excellent	Fair	Not Rated; resample	Fair or Poor	Impaired
Good-Fair, Good or Excellent	Poor	Impaired	N/A	Impaired

N/A – Not Applicable NR = Not Rated

Ambient Monitoring Data

Chemical/physical water quality data are collected through the DWQ Ambient Monitoring System. These data are downloaded from the Surface Water Information Management System for analysis. Total number of samples and percent of samples exceeding the NC water quality standards are evaluated for the development of use support ratings along with other data or alone

when other data are not available. Where both ambient data and biological data are available, biological data are given greater weight.

When reviewing ambient data, a five-year window that ends on August 31 of the year of biological sampling is used. For example, if biological data are collected in a basin in 2000, then the five-year window for the ambient data would be September 1, 1995 to August 31, 2000. Selected ambient parameters are used to assess aquatic life use support. These parameters include ammonia, dissolved oxygen, pH, chloride, arsenic, cadmium, chromium, nickel and lead. These parameters are measured against standards for a minimum of ten samples as follows:

Standards Violation	Rating
Criterion exceeded ≤10%	Supporting
Criterion exceeded 11-25%	Impaired

Data for copper, iron and zinc are not used according to the scheme outlined above. These metals have action level standards because they are generally not bioaccumulative and have variable toxicity to aquatic life depending on chemical form, solubility and stream characteristics. In order for an action level standard to be violated, there must be a toxicological test that documents an impact on a sensitive aquatic organism. The action level standard is used to screen waters for potential problems with copper, iron and zinc.

Metals data for copper and iron are screened at the 85th percentile of five years of ambient data ending on August 31 of the year of biological sampling. Sites, other than estuarine and swamp waters, with an 85th percentile of ≥20 µg/l of copper and/or ≥2000 µg/l of iron are identified and flagged for instream chronic toxicity testing by DWQ. Chronic toxicity testing in estuarine and swamp waters is not ecologically meaningful. Criteria are still being developed for zinc. If a stream does not have biological data that would deem a Supporting rating, then the stream can be rated Impaired for aquatic life if instream chronic toxicity is found. Criteria for evaluating instream chronic toxicity are three chronic pass/fail tests over three months using *Ceriodaphnia*. Two fails result in an Impaired rating.

It is important to note that some waters may exhibit characteristics outside the numerical standards due to natural conditions (e.g., many swamp waters are characterized by low pH and dissolved oxygen). These natural conditions do not constitute a violation of water quality standards.

NPDES Discharger Data

Aquatic Toxicity Data

For facilities that perform Whole Effluent Toxicity (WET) tests according to state NPDES discharge permit requirements, a review of the results of a five-year window that ends on August 31 of the year of biological sampling is used. For example, if biological data are collected in a basin in 2000, then the five-year window for the aquatic toxicity data would be September 1, 1995 to August 31, 2000. If a stream with a WET test facility has not been sampled for instream chronic toxicity, biological community data or has no ambient data, and that facility has failed three or more WET tests in the most recent two years, the stream is Not Rated. If failures continue, DWQ will work with the facility to correct the failures and assess stream impacts

before the next basin sampling cycle begins with either a biological survey or instream chronic toxicity testing, if possible.

Discharge Effluent Data

NPDES effluent data are reviewed by analyzing monthly averages of water quality parameters over a two-year period of data ending on August 31 of the year of biological sampling in a basin. Prior to May 31, 2000, facilities were screened for criterion 40 percent in excess of state water quality standards for conventional pollutant limitations or 20 percent in excess of state water quality standards for toxic pollutants for two or more months during two consecutive quarters, or chronic violations of either conventional or toxic pollutant limitations for four or more months during two consecutive quarters.

After May 31, 2000, facilities are screened for criterion 20 percent in excess of state water quality standards for both conventional and toxic pollutants for two or more months during two consecutive quarters, or chronic violations of either conventional or toxic pollutant limitations for four or more months during two consecutive quarters. Streams with discharges that are in excess of permit limits will not be rated if no biological or ambient monitoring data are available. Therefore, streams will not be rated Impaired based on effluent data alone. Appropriate DWQ staff will be given a list of these facilities for follow-up.

Fish Consumption Use Support

The fish consumption use support category is a human health approach to assess whether humans can safely consume fish from a water. This use support category is applied to all waters of the state. The use support rating is assigned using fish consumption advisories or advice as issued by the NC Department of Health and Human Services (NCDHHS). If a limited fish consumption advisory or a no consumption advisory is posted at the time of use support assessment, the water is rated Impaired.

The NCDHHS has developed regional fish consumption advice (all water south and east of I-85) for certain fish species shown to have elevated levels of mercury in their tissue. These fish species include shark, swordfish, king mackerel and tilefish, as well as largemouth bass, bowfin (or blackfish) and chain pickerel (or jack). This regional advice is used to determine use support for the fish consumption category. It is recognized that bowfin only live and reproduce in waters of the piedmont and coastal plain. Therefore, the use support ratings will be based on the combination of the current regional fish consumption advice and the documented presence of bowfin in each river basin as found in *Freshwater Fisheries of North Carolina* (Menhinick, 1991). In river basins where there are documented populations of bowfin (Roanoke, Chowan, Pasquotank, White Oak, Lumber, Neuse, Tar-Pamlico, Cape Fear, Yadkin-Pee Dee and Catawba), all waters will be rated Impaired for the fish consumption category. In river basins where there are no documented populations of bowfin (Little Tennesee, Hiwassee, Savannah, Watauga, New, French Broad and Broad), the waters will be rated Supporting for the fish consumption category unless there is a site-specific advisory.

In order to separate this regional advice from other fish consumption advisories and to identify actual fish populations with high levels of mercury, only waters with fish tissue monitoring data are presented on the use support maps and in the use support summary tables of the basin plans.

A review of the methods for assessing the fish consumption use support category is being conducted and these methods may be modified in the future.

Recreation Use Support

This human health related use support category evaluates waters for the support of primary recreation activities such as swimming, water-skiing, skin diving and similar uses usually involving human body contact with water where such activities take place in an organized manner or on a frequent basis. Waters of the state designated for supporting these uses are classified as Class B, SB and SA waters. This use support category also evaluates whether waters support secondary recreation activities such as wading, boating and other uses not involving human body contact with water, and activities involving human body contact with water where such activities take place on an infrequent, unorganized or incidental basis. Waters of the state designated for supporting these uses are classified as Class C, SC and WS waters. The use support ratings applied to this category are based on the North Carolina water quality standard for fecal coliform bacteria where data are available or where swimming advisories are posted by local and state health agencies.

Water quality standards for fecal coliform bacteria are intended to ensure safe use of waters for recreation (refer to Administrative Code Section 15A NCAC 2B .0200). The North Carolina fecal coliform bacteria standard is not to exceed the geometric mean of 200 colonies per 100 ml of at least five samples over a 30-day period and not to exceed 400 colonies per 100 ml in more than 20 percent of the samples during the same period. The 200 colonies per 100 ml standard is intended to ensure that waters are safe enough for water contact through recreation.

Beginning in the summer of 1997, the Division of Environmental Health (DEH) began testing coastal recreation waters (beaches) for fecal coliform bacteria levels to assess the relative safety of these waters for swimming. The Shellfish Sanitation Section of DEH routinely tests approximately 275 coastal sites once a week during the tourist recreational season (April to September), less often the rest of the year. These tests give researchers and the public a gauge of bacteria levels along the North Carolina coast. If an area has elevated bacteria levels, health officials will advise that people not swim there by posting a swimming advisory in the area, and by notifying the local media and county health department.

The Division of Water Quality (DWQ) does not have a comprehensive weekly monitoring program to assess inland waters for fecal coliform bacteria levels. North Carolina has more than 37,000 miles of inland waters, and resources are not sufficient to perform comprehensive weekly bacteria monitoring. Rather, DWQ conducts monthly ambient water quality monitoring at approximately 375 locations across the state. These monthly samplings include fecal coliform bacteria testing of selected lakes, rivers and streams. Ambient water quality samples are routinely collected and sent to DWQ laboratories for analysis using EPA approved laboratory methods, with the exception that sample holding times are not typically within the prescribed six-hour limit. These data collection and analysis restrictions may impact the quality assurance of the sample results.

Because use support decisions are made in conjunction with the development of DWQ's basinwide water quality management strategies, all available information and data are evaluated for use support ratings using a five-year assessment period. A five-year data window that ends

on August 31 of the year of biological sampling is used. For example, if biological data are collected in a basin in 2000, then the five-year window for the fecal coliform data and swimming advisories would be September 1, 1995 to August 31, 2000. However, an annual screening review of all DWQ ambient fecal coliform data is conducted by DWQ to assess the need for additional monitoring or the need for immediate action by the local or state health agencies to protect public health. In most cases, management strategies to correct waters considered to be Impaired due to elevated fecal coliform bacteria levels may require substantial resources and time. Therefore, impairment decisions for bacteria must be made using sound science and data.

Decades of monitoring experience have demonstrated that bacteria concentrations may fluctuate widely in surface waters over a period of time. Thus, a five-year data window and multiple sampling efforts are used to evaluate waters against the North Carolina water quality standard for recreational use support. This level of sampling is needed before waters should be considered Impaired, and therefore, in need of TMDL's or other management strategies. This procedure, however, does not preclude any health agency from immediately posting health advisories to warn recreational users of a temporary increase in health risks related to bacterial contamination or other health related episodes.

Each March, DWQ staff will review bacteria data collections from ambient monitoring stations statewide for the previous sampling year. Locations with annual geometric means greater than 200 colonies per 100 ml, or when more than 20 percent of the samples are greater than 400 colonies per 100 ml, are identified for potential follow-up monitoring conducted five times within 30 days as specified by the state fecal coliform bacteria standard. In addition, appropriate health agencies are notified of these locations. If an initial five times within 30 days sampling indicates a geometric mean greater than 200 colonies per 100 ml, or more than 20 percent of these samples exceed 400 colonies per 100 ml, then the location will continue to be sampled for bacteria persistence. If bacteria concentrations exceed either portion of the state standard, the data are sent to DEH and the local county health director to determine the need for posting swimming advisories. DWQ regional offices will also be notified.

Due to limited resources, and the higher risk to human health, primary recreation waters (Class B, SB and SA) will be given monitoring priority for additional five times within 30 days sampling. Follow-up water quality sampling for Class C waters will be performed as resources permit. Any waters on the 303(d) list of Impaired waters for fecal coliform will receive a low priority for additional monitoring because these waters will be further assessed for TMDL development.

Recreational use support decisions are based on a review of both DWQ and DEH monitoring data for the five-year data window. A formal solicitation for readily available and suitable fecal coliform bacteria monitoring data from other sources is conducted in accordance with EPA Section 303(d) guidance. Recreational use support assessments include an annual review of all readily available DWQ ambient monitoring data and may include additional sampling of five times within 30 days. The use support impairment status of any given water and the resulting listing of that water on the State 303(d) List will be determined using two procedures.

Monitored Class B, SB and SA waters are rated Supporting for primary recreation if the geometric mean over the five-year data window is less than or equal to 200 colonies per 100 ml, and if less than 20 percent of these samples did not exceed 400 colonies per 100 ml. These

waters will be rated Impaired if either portion of these state standards are not met, or if additional five times within 30 days sampling exceeded either portion of the state standard. Monitored Class C, SC and WS waters are rated Impaired if a fecal coliform standard has been exceeded for that waterbody during the five-year data window and subsequent monitoring of five times within 30 days exceeded the 200 colonies per 100 ml geomean, or greater than 20 percent of these samples exceeded 400 colonies per 100 ml over the five-year data window. These waters are rated Supporting for secondary recreation if neither portion of the state standard is exceeded. Waters without sufficient fecal coliform data or swimming advisories are Not Rated and waters with no data are noted as having No Data.

DWQ attempts to determine if there are any inland swimming areas monitored by county or local health departments or estuarine (Class SA and SB) waters as assessed by DEH. Each January, DEH, county or local health departments are asked to list those waters which were posted with swimming advisories in the previous year. When reviewing DEH fecal coliform data and local swimming advisories, the same five-year window that ends on August 31 of the year of biological sampling is used. If a water was posted with a swimming advisory for at least two months within the five-year data window, it is further evaluated for the persistence of elevated fecal coliform bacteria levels. Those waters posted with swimming advisories for more than two months in the five-year data window are rated Impaired unless county or state health agencies believe that the cause of the swimming advisory is not persistent. If DEH has no data on an estuarine water, that water will not be rated for recreational uses.

Shellfish Harvesting Use Support

The shellfish harvesting use support category is a human health approach to assess whether shellfish can be commercially harvested and is therefore applied only to Class SA waters. The following data sources are used to determine use support ratings for shellfish waters and to determine causes and sources of impairment for these waters.

Division of Environmental Health (DEH) Shellfish Sanitation Surveys

DEH is required to classify all shellfish growing areas as to their suitability for shellfish harvesting. Estuarine waters are delineated according to DEH shellfish management areas (e.g., Outer Banks, Area H-5) which include Class SA, SB and SC waters. DEH samples growing areas regularly and reevaluates the areas by conducting shellfish sanitation surveys every three years to determine if their classification is still applicable. DEH classifications may be changed after the most recent sanitary survey. Classifications are based on DEH fecal coliform bacteria sampling, locations of pollution sources, and the availability of the shellfish resource. Growing waters are classified as follows:

DEH Classification	DEH Criteria
Approved (APP)	**Fecal Coliform Standard for Systematic Random Sampling:** The median fecal coliform Most Probable Number (MPN) or the geometric mean MPN of the water shall not exceed 14 per 100 milliliters (ml), and the estimated 90th percentile shall not exceed an MPN of 43 MPN per 100 ml for a 5-tube decimal dilution test. **Fecal Coliform Standard for Adverse Pollution Conditions Sampling:** The median fecal coliform or geometric mean MPN of the water shall not exceed 14 per 100 ml, and not more than 10 percent of the samples shall exceed 43 MPN per 100 ml for a 5-tube decimal dilution test.
Conditionally Approved-Open (CAO)	Sanitary Survey indicates an area can meet approved area criteria for a reasonable period of time, and the pollutant event is known and predictable and can be managed by a plan. These areas tend to be open more frequently than closed.
Conditionally Approved-Closed (CAC)	Sanitary Survey indicates an area can meet approved area criteria for a reasonable period of time, and the pollutant event is known and predictable and can be managed by a plan. These areas tend to be closed more frequently than open.
Restricted (RES)	Sanitary Survey indicates limited degree of pollution, and the area is not contaminated to the extent that consumption of shellfish could be hazardous after controlled depuration or relaying.
Prohibited (PRO)	No Sanitary Survey; point source discharges; marinas; data do not meet criteria for Approved, Conditionally Approved or Restricted Classification.

Assigning Use Support Ratings to Shellfish Harvesting Waters (Class SA)

It is important to note that DEH classifies all actual and potential growing areas (which includes all saltwater and brackish water areas) for their suitability for shellfish harvesting. Thus, the DWQ Class SA waters must be separated out and rated for shellfish harvesting use support. The acreage of Supporting and Impaired waters are calculated using GIS showing DWQ and DEH classifications as attribute information. However, the DEH "Closed" polygon coverage includes CAC, RES and PRO classifications, and it is not currently possible to separate out the PRO from the RES areas. Therefore, these areas are a combined polygon coverage, and DWQ rates these waters as Impaired.

DWQ use support ratings may be assigned to separate segments within DEH management areas. In assessing use support, the DEH classifications and management strategies are only applicable to those areas that DWQ Class SA (shellfish harvesting waters). This will result in a difference of acreage between DEH areas classified as CAC, PRO, RES and DWQ waters rated as Impaired. For example, if DEH classifies a 20-acre area CAC, but only ten acres are Class SA, only those ten acres of Class SA waters are rated as Impaired.

Sources of fecal coliform bacteria are more difficult to separate out for Class SA areas. DEH describes the potential sources in the sanitary surveys, but they do not describe specific areas affected by these sources. Therefore, in the past, DEH identified the same sources for all Class SA sections of an entire management area (e.g., urban runoff and septic systems). Until a better way to pinpoint sources is developed, this procedure will continue to be used. A point source discharge is only listed as a potential source when NPDES permit limits are exceeded.

DWQ and DEH are developing the database and expertise necessary to assess shellfish harvesting use support using a frequency of closures-based approach. This database will allow DWQ to better assess the extent and duration of closures in Class SA waters. These tools will not be available for use support determinations in Class SA waters for the 2001 White Oak, 2002 Neuse and 2003 Lumber River basin use support assessments. DWQ believes it is important to identify frequency of closures in these waters, so an interim methodology will be used based on existing databases and GIS shapefiles. There will likely be changes in reported acreages in future assessments using the permanent methods and tools that result from this project. DWQ and DEH hope to have these tools fully developed for using the frequency of closure-based methods for the 2005 Cape Fear River use support assessment and basin plan.

Interim Frequency of Closure-Based Assessment Methodology

The interim method will be used for the 2001 White Oak, 2002 Neuse and 2003 Lumber River basin use support assessments. Shellfish harvesting use support ratings for Class SA waters using the interim methodology are summarized below.

Interim Frequency of Closure-Based Use Support Ratings

Percent of Time Closed within Basin Data Window	DEH Growing Area Classification	DWQ Use Support Rating
N/A	Approved*	Supporting
Closed ≤10% of data window	Portion of CAO closed ≤10% of data window	Supporting
Closed >10% of the data window	Portion of CAO closed >10% of data window	Impaired
N/A	CAC and P/R**	Impaired

* Approved waters are closed only during extreme meteorological events (hurricanes).

** CAC and P/R waters are rarely opened to shellfish harvesting.

For CAO areas, DWQ will work with DEH to determine the number of days and acreages that CAO Class SA waters were closed to shellfish harvesting during a five-year window of data that ends on August 31 of the year of biological sampling. For example, if biological data are collected in a basin in 2000, then the five-year window for data review would be September 1, 1995 to August 31, 2000. For each growing area with CAO Class SA waters, DEH and DWQ staff will define subareas within the CAO area that were opened and closed at the same time. The number of days these CAO areas were closed will be determined using DEH proclamation summary sheets and the original proclamations.

The number of days that APP areas in the growing area were closed due to preemptive closures because of named storms is not counted. For example, all waters in growing area E-9 were preemptively closed for Hurricane Fran on September 5, 1996. APP waters were reopened September 20, 1996. Nelson Bay (CAO) was reopened September 30, 1996. This area was considered closed for ten days after the APP waters were reopened.

Proposed Permanent Frequency of Closure-Based Assessment Methodology

Over the next few years DWQ, DEH, Division of Coastal Management (DCM) and Division of Marine Fisheries (DMF) will be engaged in developing a fully functionally database with related georeferenced (GIS) shellfish harvesting areas. The new database and GIS tools will be valuable for the above agencies to continue to work together to better serve the public. DWQ proposes to use information generated by these new tools to do frequency of closure-based shellfish harvesting use support assessments in Class SA waters, starting with the 2005 Cape Fear River basin use support assessment.

Using the new database with georeferenced areas and monitoring sites, DEH will be able to report the number of days each area was closed excluding closures related to named storms. The percent of the five-year data window that individual Class SA waters are closed will be used to make use support determinations for areas that are classified by DEH as CAO. PRO, RES and CAC areas will be rated Impaired, and CAO areas will be rated Supporting or Impaired based on the methodology outlined above in the interim methods. Growing areas that have been reclassified by DEH during the data window from a lower classification to APP will be rated FS. Areas that are reclassified from APP to CAO during the data window will be rated as described above in the interim methods, taking into account the total days closed during the data window, including when the area was classified as APP.

Water Supply Use Support

This use support category is used to assess all Class WS waters and is a human health approach to assess whether a water can be used for water supply purposes. Many drinking water supplies in NC are drawn from human-made reservoirs that often have multiple uses.

Water supply use support is assessed using information from the seven regional water treatment plant (WTP) consultants. Each January, the WTP consultants submit a spreadsheet listing closures and water intake switch-overs for all water treatment plants in their region. This spreadsheet describes the length and time of the event, contact information for the WTP, and the reason for the closure or switch.

The WTP consultants' spreadsheets are reviewed to determine if any closures/switches were due to water quality concerns. Those closures/switches due to water quantity problems and reservoir turnovers are not considered for use support. The frequency and duration of closures/switches due to water quality concerns are considered when assessing use support. In general, North Carolina's surface water supplies are currently rated Supporting. Specific criteria for rating waters Impaired are yet to be determined.

Other Uses: All Waters in the State

This category of use will be assessed infrequently but could be applied to any water in the state. Examples of uses that could fall into this category are aesthetics and industrial and agricultural water supply. This category allows for the assessment of any use that is not considered for aquatic life, primary/secondary recreation, fish consumption, shellfish harvesting or water supply.

D. Use of Outside Data

DWQ actively solicits outside data and information in the year before biological sampling in a particular basin. The solicitation allows approximately 60 days for data to be submitted. Data from sources outside DWQ are screened for data quality and quantity. If data are of sufficient quality and quantity, they may be incorporated into use support assessments. A minimum of ten samples for more than a one-year period is needed to be considered for use support assessments.

The way the solicited data are used depends on the degree of quality assurance and quality control of the collection and analysis of the data as detailed in the 303(d) report and shown in the table below. Level 1 data can be used with the same confidence as DWQ data to determine use support ratings. Level 2 or Level 3 data may be used to help identify causes of pollution and problem parameters. They may also be used to limit the extrapolation of use support ratings up or down a stream segment from a DWQ monitoring location. Where outside data indicate a potential problem, DWQ evaluates the existing DWQ biological and ambient monitoring site locations for adjustment as appropriate.

Criteria Levels for Use of Outside Data in Use Support Assessments

Criteria	Level 1	Level 2	Level 3
Monitoring frequency of at least 10 samples for more than a one-year period	Yes	Yes/No	No
Monitoring locations appropriately sited and mapped	Yes	Yes	No
State certified laboratory used for analysis according to 15A NCAC 2B .0103	Yes	Yes/No	No
Quality assurance plan available describing sample collection and handling	Yes, rigorous scrutiny	Yes/No	No

F. Nutrient Enrichment Issues

One of the main causes of impacts to lakes is nutrient enrichment, or eutrophication. Several water quality variables help to describe the level of eutrophication. These include pH, chlorophyll *a*, dissolved oxygen, phosphorus, nitrogen, turbidity, total dissolved gases and other quantitative indicators, some of which have specific water quality standards. It is generally agreed that excessive amounts of nitrogen and phosphorus are the principal culprits in eutrophication related use impairment. These variables are important concerns; however, climate, hydrology and biological response factors (chlorophyll, phytoplankton, fish kills, etc.) are also essential to evaluate because they may control the frequency of episodes related to potential use impairment. In addition, many of North Carolina's lakes are human-made reservoirs that do not mimic natural systems.

Violations of water quality standards in lakes or estuaries are not equated with use impairment unless uses are not met. DWQ does not determine eutrophication related use impairment with the quantitative assessment of an individual water quality variable (i.e., chlorophyll *a*). Likewise, DWQ does not depend on a fixed index composed of several water quality variables,

which does not have the flexibility to adapt to numerous hydrological situations, to determine use impairment. Instead, the weight of evidence approach is used to determine use support in lakes. This approach can be flexibly applied depending on the amount and quality of available information. The approach uses the following sources of information:

- Multiple quantitative water quality variables (e.g., dissolved oxygen, chlorophyll *a*)
- Third party reports
- Analysis of water quality or aesthetic complaints, and taste and odor observations
- Algal bloom reports
- Macrophyte observations
- Fish kill reports
- Frequency of noxious algal activity
- Reports/observations of the NC Wildlife Resources Commission, lake associations and water treatment plant operators

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____. 2000b. *Fish Community Metric Re-Calibration and Biocriteria Development for the Outer Piedmont (Cape Fear, Neuse, Roanoke and Tar River Basins)*. October 17, 2000. *Ibid*.

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Name	Assessment Unit Number	Description	Class	Subbasin	Length/ Area		Rating	Basis	Source	Problem Parameter(s)	Potential Sources
TAR RIVER	28-(1)	From source to a point 0.6 mile upstream of Oxford Water Supply	WS-IV NSW	03-03-01	20.1	mi.	S	M			
Shelton Creek	28-4	From source to Tar River	WS-IV NSW	03-03-01	13.9	mi.	S	M			
North Fork Tar River	28-5	From source to Tar River	WS-IV NSW	03-03-01	8.8	mi.	S	M			
TAR RIVER	28-(5.3)	From a point 0.6 mile upstream from Oxford Water Supply to Oxford Water Supply Intake	WS-IV NSW CA	03-03-01	0.5	mi.	S	ME			
TAR RIVER	28-(5.7)	From Oxford Water Supply Intake to a point 0.6 mile upstream of Taylors Creek	WS-V NSW	03-03-01	20.5	mi.	S	M			
Fishing Creek	28-11e	From Coon Creek to Tar River	C NSW	03-03-01	6.1	mi.	S	M	np	Cause Unknown	Major Municipal Point Source,Urban Runoff/Storm Sewers
Fishing Creek	28-11c	From #1 outfall to SR 1608	C NSW	03-03-01	0.9	mi.	I	ME	p, np	Cause Unknown, Selenium	Major Municipal Point Source,Urban Runoff/Storm Sewers
Fishing Creek	28-11d	From SR 1608 to Coon Creek	C NSW	03-03-01	1.0	mi.	I	M	p, np	Cause Unknown	Major Municipal Point Source,Urban Runoff/Storm Sewers
Hachers Run (Devin Lake)	28-11-3-(1)	From source to dam at Devin Lake	WS-II NSW CA	03-03-01	98.9	ac.	S	M	np	Algal blooms	Source Unknown
Coon Creek	28-11-5	From source to Fishing Creek	C NSW	03-03-01	10.1	mi.	S	M	np		
Middle Creek	28-15	From source to Tar River	C NSW	03-03-01	8.4	mi.	S	M		Habitat degradation	Source Unknown
TAR RIVER	28-(15.5)	From a point 0.6 mile upstream of Taylors Creek to a point 0.3 mile downstream of Coole Creek	WS-IV NSW	03-03-01	14.8	mi.	S	M			
Tabbs Creek	28-17-(0.5)b	From Poplar Creek to Vance County SR 1100	C NSW	03-03-01	12.0	mi.	S	M	np	Habitat degradation	Agriculture
Lynch Creek	28-21-(0.7)	From Vance County SR 1547 to Tar River	WS-IV NSW	03-03-01	9.2	mi.	S	M			

Name	Assessment Unit Number	Description	Class	Subbasin	Length/ Area		Rating	Basis	Source	Problem Parameter(s)	Potential Sources
TAR RIVER	28-(24.3)	From a point 0.3 mile downstream of Coole Creek to Louisburg Water Supply Intake	WS-IV NSW CA	03-03-01	0.6	mi.	S	ME			
TAR RIVER	28-(24.7)a	From Louisburg Water Supply Intake to Cypress Creek	WS-V NSW	03-03-01	20.3	mi.	S	M			
Cedar Creek	28-29-(2)b	From Franklinton Branch to Tar River	C NSW	03-03-01	12.1	mi.	S	M		Habitat degradation	Source Unknown
Crooked Creek	28-30b	From NC 98 to Tar River	C NSW	03-03-01	5.4	mi.	S	M			
TAR RIVER	28-(36)	From Nash County SR 1933 to a point 4,000 feet upstream from dam at City of Rocky Mount Reservoir	WS-IV&B NSW CA	03-03-02	618.8	ac.	S	M		Algal blooms	Source Unknown
Sapony Creek	28-55-(1)	From source to mouth of Gabe Branch	C NSW	03-03-02	7.7	mi.	S	M			
TAR RIVER	28-(63)	From a point 4,000 feet upstream from dam at City of Rocky Mount Reservoir to dam at City of Rocky Mount Reservoir	WS-IV NSW CA	03-03-02	98.8	ac.	S	M		Algal blooms	Source Unknown
Stony Creek (Boddies Millpond)	28-68a	From source to Lassiters Creek	C NSW	03-03-02	19.4	mi.	S	M	np	Habitat degradation	Urban Runoff/Storm Sewers
Pigbasket Creek	28-68-3-(2)	From Nash County SR 1425 to Stony Creek	C NSW	03-03-02	11.2	mi.	NR	M			
TAR RIVER	28-(69)	From dam at Rocky Mount Mills to a point 0.9 mile downstream of Buck Swamp	C NSW	03-03-02	11.3	mi.	S	M	p, np	Habitat degradation	Urban Runoff/Storm Sewers
TAR RIVER	28-(74)a	From a point 0.9 mile downstream of Buck Swamp to Subbasin 03-03-02 / 03-03-03 boundary	WS-IV NSW	03-03-02	21.0	mi.	S	M	p, np	Habitat degradation	Urban Runoff/Storm Sewers
Beech Branch	28-75-(4)	From Falling Run to Tar River	WS-IV NSW	03-03-02	1.0	mi.	NR	M		Habitat degradation	Source Unknown
Swift Creek	28-78-(0.5)	From source to a point 1.4 miles upstream of Edgecombe County SR 1409	C NSW	03-03-02	37.7	mi.	S	M			
Martin Creek	28-78-1-3	From source to Sandy Creek	C NSW	03-03-02	4.2	mi.	NR	M			

Name	Assessment Unit Number	Description	Class	Subbasin	Length/ Area	Rating	Basis	Source	Problem Parameter(s)	Potential Sources
Weaver Creek	28-78-1-7	From source to Southerlands Pond	C NSW	03-03-02	6.5 mi.	NR	M			
Sandy Creek	28-78-1-(8)b	From NC 401to NC Hwy. 561	B NSW	03-03-02	11.3 mi.	S	M			
Sandy Creek	28-78-1-(8)a	From dam at Southerlands Pond to NC Hwy.401	B NSW	03-03-02	3.8 mi.	S	M	np		
Flatrock Creek	28-78-1-12	From source to Sandy Creek	B NSW	03-03-02	9.1 mi.	S	M			
Sandy Creek	28-78-1-(14)	From NC Hwy. 561 to Swift Creek	C NSW	03-03-02	20.3 mi.	S	M	np		
Red Bud Creek	28-78-1-17	From source to Sandy Creek	C NSW	03-03-02	10.6 mi.	S	M			
Swift Creek	28-78-(6.5)	From a point 1.4 miles upstream of Edgecombe County SR 1409 to Tar River	WS-IV NSW	03-03-02	10.0 mi.	S	M		Habitat degradation	Source Unknown
Whiteoak Swamp	28-78-7-(2)	From a point 1.8 miles upstream of Edgecombe County SR 1428 to Swift Cr.	WS-IV NSW	03-03-02	2.8 mi.	S	M		Habitat degradation	Source Unknown
TAR RIVER	28-(74)b	From subbasin 03-03-02 / 03-03-03 boundary to a point 0.5 mile upstream of Tarboro Water Supply Intake	WS-IV NSW	03-03-03	2.3 mi.	S	ME			
TAR RIVER	28-(79.5)	From a point 0.5 mile upstream of Tarboro Water Supply Intake to Tarboro Water Supply Intake	WS-IV NSW CA	03-03-03	0.5 mi.	S	ME			
TAR RIVER	28-(80)	From Tarboro Raw Water Supply Intake to Suggs Creek	C NSW	03-03-03	14.8 mi.	S	M			
Cokey Swamp	28-83-3a	From source to Dickson Branch	C NSW	03-03-03	8.6 mi.	I	M	np	Habitat degradation	Urban Runoff/Storm Sewers
Sasnett Mill Branch	28-83-3-3	From source to Cokey Swamp	C NSW	03-03-03	3.1 mi.	NR	M			
Bynums Mill Creek	28-83-4	From source to Town Creek	C NSW	03-03-03	9.7 mi.	I	M	p, np	Habitat degradation	Source Unknown
TAR RIVER	28-(84)a	From Suggs Creek to Subbasin 03-03-03 / 03-03-05 boundary	WS-IV NSW	03-03-03	6.3 mi.	S	M			
Otter Creek	28-86-(0.3)	From source to a point 0.7 mile upstream of Kitten Creek	C NSW	03-03-03	13.9 mi.	S	M			

Name	Assessment Unit Number	Description	Class	Subbasin	Length/ Area		Rating	Basis	Source	Problem Parameter(s)	Potential Sources
Conetoe Creek	28-87-(0.5)a	From source to SR 1516	C NSW	03-03-03	3.9	mi.	NR	M	np	Habitat degradation, Pesticides, Organic Enrichment	Channelization, Agriculture, Concentrated Animal Feeding Operations
Conetoe Creek	28-87-(0.5)d	From Crisp Creek to Pitt County SR 1404	C NSW	03-03-03	6.7	mi.	I	M	np	Habitat degradation, Pesticides, Organic Enrichment	Channelization, Agriculture, Concentrated Animal Feeding Operations
Conetoe Creek	28-87-(0.5)c	From 1350 meters North of NC 42 to Crisp Creek	C NSW	03-03-03	1.5	mi.	S	M	np	Habitat degradation, Pesticides, Organic Enrichment	Channelization, Agriculture, Concentrated Animal Feeding Operations
Conetoe Creek	28-87-(0.5)b	From SR 1516 to 1350 meters North of NC 42	C NSW	03-03-03	5.9	mi.	I	M	np	Habitat degradation, Pesticides, Organic Enrichment	Channelization, Agriculture, Concentrated Animal Feeding Operations
Crisp Creek	28-87-1	From source to Conetoe Creek	C NSW	03-03-03	8.7	mi.	I	M	np	Habitat degradation, Pesticides	Agriculture
Ballahack Canal	28-87-1.2	From source to Conetoe Creek	C NSW	03-03-03	8.4	mi.	I	M	np	Habitat degradation, Pesticides	Agriculture
Fishing Creek	28-79-(1)	From source to Shocco Creek	C NSW	03-03-04	36.7	mi.	S	M			
Fishing Creek	28-79-(21)	From Shocco Creek to Little Fishing Creek	WS-V NSW	03-03-04	16.7	mi.	S	ME			
Shocco Creek	28-79-22	From source to Fishing Creek	C NSW	03-03-04	28.7	mi.	S	M			
Little Fishing Creek	28-79-25	From source to Fishing Creek	C NSW	03-03-04	31.4	mi.	S	M			
Reedy Creek	28-79-25-5	From source to Little Fishing Creek	C NSW	03-03-04	20.5	mi.	S	M			
Bear Swamp	28-79-25-7	From source to Little Fishing Creek	C NSW	03-03-04	13.6	mi.	S	M			

Name	Assessment Unit Number	Description	Class	Subbasin	Length/ Area		Rating	Basis	Source	Problem Parameter(s)	Potential Sources
Fishing Creek	28-79-(25.5)	From Little Fishing Creek to a point 0.6 mile upstream of Enfield Raw Water Supply Intake	WS-IV NSW	03-03-04	14.7	mi.	S	ME			
Rocky Swamp (Bellamy Lake)	28-79-28-(0.7)	From a point 1.0 mile downstream of NC Hwy. 561 to Fishing Creek	WS-IV NSW	03-03-04	10.6	mi.	S	M			
Fishing Creek	28-79-(28.5)	From a point 0.6 mile upstream of Enfield Raw Water Supply to Enfield Raw Water Supply Intake	WS-IV NSW CA	03-03-04	0.6	mi.	S	ME			
Fishing Creek	28-79-(29)	From Enfield Raw Water Supply Intake to a point 1.7 miles downstream of Beech Swamp	C NSW	03-03-04	24.3	mi.	S	M		Habitat degradation, Pesticides, Algal blooms	Agriculture
Beech Swamp	28-79-30	From source to Fishing Creek	C Sw NSW	03-03-04	13.1	mi.	S	M	np	Cause Unknown	Minor Municipal Point Source
Fishing Creek	28-79-(30.5)	From a point 1.7 miles downstream of Beech Swamp to Tar River	WS-IV NSW	03-03-04	17.1	mi.	S	M	np	Algal blooms	Source Unknown
Deep Creek	28-79-32-(0.5)	From source to a point 1.3 miles upstream of NC Hwy. 97	C NSW	03-03-04	19.8	mi.	S	M		Habitat degradation	Source Unknown
Savage Mill Run	28-79-32-4	From source to Deep Creek	WS-IV NSW	03-03-04	4.2	mi.	NR	M			
TAR RIVER	28-(94)	From Greenville Raw Water Supply Intake to a point 1.2 miles downstream of the mouth of Broad Run	C NSW	03-03-05	13.1	mi.	NR	ME			
Parker Creek	28-95	From source to Tar River	C NSW	03-03-05	7.3	mi.	NR	M		Habitat degradation	Urban Runoff/Storm Sewers
Hardee Creek	28-97	From source to Tar River	C NSW	03-03-05	5.6	mi.	S	M			
TAR RIVER	28-(99.5)	From a point 1.2 miles downstream of the mouth of Broad Run to the upstream side of the mouth of Tranters Creek	B NSW	03-03-05	10.3	mi.	NR	M			
Grindle Creek	28-100b	From Whichard Branch to Tar River	C NSW	03-03-05	14.2	mi.	S	M		Habitat degradation	Agriculture
Whichard Branch	28-100-2	From source to Grindle Creek	C NSW	03-03-05	6.6	mi.	S	M		Habitat degradation	Agriculture

Name	Assessment Unit Number	Description	Class	Subbasin	Length/ Area		Rating	Basis	Source	Problem Parameter(s)	Potential Sources
Chicod Creek	28-101	From source to Tar River	C NSW	03-03-05	14.1	mi.	I	M	np	Habitat degradation	Agriculture
Tranters Creek	28-103a	From source to subbasin 03-03-05 / 03-03-06 boundary	C Sw NSW	03-03-06	37.8	mi.	S	M			
Tranters Creek	28-103b	From subbasin 03-03-05 / 03-03-06 boundary to Tar River	C Sw NSW	03-03-06	0.9	mi.	S	ME			
Flat Swamp	28-103-2b	From 1.5 miles downstream of Robersonville WWTP discharge to Tranters Creek	C Sw NSW	03-03-06	1.5	mi.	S	M	p, np	Habitat degradation	Other Urban Runoff
Horsepen Swamp	28-103-10	From source to Tranters Creek	C Sw NSW	03-03-06	6.0	mi.	S	M			
Old Ford Swamp	28-103-14-1	From source to Aggie Run	C Sw NSW	03-03-06	5.1	mi.	S	M			
Latham Creek	28-103-14-2	From source to Aggie Run	C Sw NSW	03-03-06	2.7	mi.	S	M			
TAR RIVER	28-(102.5)	From the upstream side of the mouth of Tranters Creek to mouth at US Hwy. 17 bridge at Washington	C NSW	03-03-07	338.0	ac.	I	M	p, np	Chlorophyll *a*	other
Kennedy Creek	28-104	From source to Tar River	C NSW	03-03-07	32.0	ac.	I	ME	p, np	Chlorophyll *a*	other
PAMLICO RIVER	29-(1)	From US Hwy. 17 bridge (mouth of Tar River) at Washington to a line projected from the downstream Corporate Limit Line of the Town of Washington Park in a southwesterly direction across Pamlico River to a Point of Land 800 yards downstream from Rodman Point	SC NSW	03-03-07	739.5	ac.	I	M	p, np	Chlorophyll *a*	other
Rodman Creek	29-4-(2)	From a point one-half mile above mouth to Pamlico River	SC NSW	03-03-07	19.1	ac.	I	ME	p, np	Chlorophyll *a*	other

Name	Assessment Unit Number	Description	Class	Subbasin	Length/ Area		Rating	Basis	Source	Problem Parameter(s)	Potential Sources
PAMLICO RIVER	29-(5)a	From a line projected from the downstream Corporate Limit Line of the Town of Washington Park in a southwesterly direction across Pamlico River to a Point of Land 800 yards downstream from Rodman Point to a line across Pamlico River 798 meters downstream of Cals Creek on the south shore to 3.75 kilometers upstream of Broad Creek on the north shore.	SB NSW	03-03-07	1,765.6	ac.	I	M	p, np	Chlorophyll *a*	other
PAMLICO RIVER	29-(5)b	From a line across Pamlico River 798 meters downstream of Cals Creek on the south shore to 3.75 kilometers upstream of Broad Creek on the north shore to a line across Pamlico River from Cousin Point to Hickory Point	SB NSW	03-03-07	28,452.2	ac.	S	M			
Chocowinity Bay	29-6-(1)	From source to a line across the Bay from the upstream mouth of Cedar Creek to the upstream mouth of Silas Creek	SC NSW	03-03-07	389.6	ac.	I	ME	p, np	Chlorophyll *a*	other
Chocowinity Bay	29-6-(5)	From a line across the Bay from the upstream mouth of Cedar Creek to the upstream mouth of Silas Creek to Pamlico River	SB NSW	03-03-07	503.2	ac.	I	M	p, np	Chlorophyll *a*	other
Blounts Bay (inside a line from Hill Point to Mauls Point)	29-9	From source to Pamlico River	SB NSW	03-03-07	2,101.2	ac.	NR	M		Chlorophyll *a*	other
Beaverdam Swamp	29-10-2	From source to Broad Creek	C NSW	03-03-07	4.3	mi.	S	M		Habitat degradation	Source Unknown
Bath Creek	29-19-(5.5)	From a line across Bath Creek from Long Point to Pamlico River	SB NSW	03-03-07	861.2	ac.	S	M			
Durham Creek	29-21-(1)	From source to a point 2.0 miles upstream from Tan Swamp	C NSW	03-03-07	9.9	mi.	NR	M			

Name	Assessment Unit Number	Description	Class	Subbasin	Length/ Area		Rating	Basis	Source	Problem Parameter(s)	Potential Sources
PAMLICO RIVER	29-(27)	From a line across Pamlico River from Cousin Point to Hickory Point to a line across Pamlico River from Roos Point to Persimmon Tree Point	SA NSW	03-03-07	33,766.4	ac.	S	M			
Pungo River	29-34-(5)	From Shallop Creek to US Hwy. 264 at Leechville	SC NSW	03-03-07	253.1	ac.	NR	M			
Pungo River	29-34-(12)a	From US Hwy. 264 at Leechville to a line across Pungo River from Woodstock Point to Quilley Point excluding DEH Swimming area near mouth of Pantego Creek	SB NSW	03-03-07	15,409.8	ac.	S	M			
Pungo River	29-34-(12)b	Area extending 200 feet east and west along the north shore of the Pungo River and extending out 200 feet into the river. The area starts 126 meters east of the mouth Pantego Creek.	SB NSW	03-03-07	2.8	ac.	S	ME			
Pantego Creek	29-34-34-(2)	From US Hwy. 264 at Pantego to Pungo River	SC NSW	03-03-07	952.4	ac.	I	M	np	Chlorophyll *a*	other
Pungo Creek	29-34-35	From source to Pungo River	SC NSW	03-03-07	1,701.6	ac.	I	M	np	Chlorophyll *a*	other
Acre Swamp	29-34-35-1-1	From source to Pungo Swamp	C Sw NSW	03-03-07	7.5	mi.	NR	M			
Pungo River	29-34-(38)	From a line across Pungo River from Woodstock Point to Quilley Point to Pamlico River	SA NSW	03-03-07	10,367.8	ac.	S	M			

Name	Assessment Unit Number	Description	Class	Subbasin	Length/ Area		Rating	Basis	Source	Problem Parameter(s)	Potential Sources
PAMLICO RIVER AND PAMLICO SOUND	29-(40.5)a	From a line across Pamlico River from Roos Point to Persimmon Tree Point to Pamlico Sound and Pamlico Sound within a line beginning at Sandy Point and extending southerly to northeast tip of Ocracoke Island, thence along the Ocean Side of Ocracoke Island to its southwest tip, thence northwesterly to Little Propoise Point, exclusive of the ORW area described below, also excluding DEH closed areas at mouth of Middleton Creek, mouth of Long Creek, at mouth of Far Creek and adjacent to Ocracoke.	SA	03-03-07	457,942.0	ac.	S	ME			
Pamlico Sound Swanquarter Bay/Juniper Bay ORW Area, including the Northeast Swanquarter Bay Area	29-46.5	All waters within a line beginning at Juniper Bay Point and running due South to Lat. 35 18’00", Long 76 13’20", thence due west to Lat. 35 18’00", Long 76 20’00", thence northwest to Shell Point	SA ORW	03-03-07	11,670.0	ac.	S	ME			
Lake Mattamuskeet	29-57-1-1	Entire Lake	SC	03-03-07	40,314.1	ac.	S	M			

NOTES

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"Habitat degradation" is identified where there is a notable reduction in habitat diversity or change in habitat quality. This term includes sedimentation, bank erosion, channelization, lack of riparian vegetation, loss of pools or riffles, loss of woody habitat, and stream bed scour.

ABBREVIATION KEY

M = Monitored	I = Impaired	p = Point Source Pollution (Major source)
S = Supporting	NR = Not Rated	np = Nonpoint Source Pollution

Name	Assessment Unit Number	Description	Class	Subbasin	Length/ Area		Rating	Basis
TAR RIVER	28-(5.7)	From Oxford Water Supply Intake to a point 0.6 mile upstream of Taylors Creek	WS-V NSW	03-03-01	20.5	mi	S	M
Fishing Creek	28-11e	From Coon Creek to Tar River	C NSW	03-03-01	6.1	mi	S	M
TAR RIVER	28-(24.7)a	From Louisburg Water Supply Intake to Cypress Creek	WS-V NSW	03-03-01	20.3	mi	S	M
TAR RIVER	28-(69)	From dam at Rocky Mount Mills to a point 0.9 mile downstream of Buck Swamp	C NSW	03-03-02	11.3	mi	S	M
TAR RIVER	28-(74)a	From a point 0.9 mile downstream of Buck Swamp to Subbasin 03-03-02/03-03-03 boundary	WS-IV NSW	03-03-02	21.0	mi	S	M
Swift Creek	28-78-(0.5)	From source to a point 1.4 miles upstream of Edgecombe County SR 1409	C NSW	03-03-02	37.7	mi	S	M
Sandy Creek	28-78-1-(8)b	From NC 401to NC Hwy. 561	B NSW	03-03-02	11.3	mi	S	M
Fishing Creek	28-79-(29)	From Enfield Raw Water Supply Intake to a point 1.7 miles downstream of Beech Swamp	C NSW	03-03-04	24.3	mi	S	M
TAR RIVER	28-(80)	From Tarboro Raw Water Supply Intake to Suggs Creek	C NSW	03-03-03	14.8	mi	S	M
TAR RIVER	28-(84)a	From Suggs Creek to Subbasin 03-03-03/03-03-05 boundary	WS-IV NSW	03-03-03	6.3	mi	S	M
Conetoe Creek	28-87-(0.5)d	From Crisp Creek to Pitt County SR 1404	C NSW	03-03-03	6.7	mi	S	M
TAR RIVER	28-(99.5)	From a point 1.2 miles downstream of the mouth of Broad Run to the upstream side of the mouth of Tranters Creek	B NSW	03-03-05	10.3	mi	S	M
Chicod Creek	28-101	From source to Tar River	C NSW	03-03-05	14.1	mi	S	M
Tranters Creek	28-103a	From source to subbasin 03-03-05/03-03-06 boundary	C Sw NSW	03-03-06	37.8	mi	S	M
PAMLICO RIVER	29-(1)	From US Hwy. 17 bridge (mouth of Tar River) at Washington to a line projected from the downstream Corporate Limit Line of the Town of Washington Park in a southwesterly direction across Pamlico River to a Point of Land 800 yards downstream from Rodman Point	SC NSW	03-03-07	739.5	ac	S	M
PAMLICO RIVER	29-(5)a	From a line projected from the downstream Corporate Limit Line of the Town of Washington Park in a southwesterly direction across Pamlico River to a Point of Land 800 yards downstream from Rodman Point to a line across Pamlico River 798 meters downstream of Cals Creek on the south shore to 3.75 kilometers upstream of Broad Creek on the north shore.	SB NSW	03-03-07	1765.6	ac	S	M
PAMLICO RIVER	29-(5)b	From a line across Pamlico River 798 meters downstream of Cals Creek on the south shore to 3.75 kilometers upstream of Broad Creek on the north shore to a line across Pamlico River from Cousin Point to Hickory Point	SB NSW	03-03-07	28452.2	ac	S	M

Chocowinity Bay	29-6-(5)	From a line across the Bay from the upstream mouth of Cedar Creek to the upstream mouth of Silas Creek to Pamlico River	SB NSW	03-03-07	503.2	ac	S	M
Blounts Bay (inside a line from Hill Point to Mauls Point)	29-9	From source to Pamlico River	SB NSW	03-03-07	2101.2	ac	S	M
Broad Creek	29-10-(3)	From a point 1.0 mile above Beaufort County SR 1325 to Pamlico River	SB NSW	03-03-07	368.1	ac	S	M
Little Goose Creek	29-11-(2)	From a point 0.5 mile below Beaufort County SR 1334 to Pamlico River	SC NSW	03-03-07	141.2	ac	S	M
Bath Creek	29-19-(5.5)	From a line across Bath Creek from Long Point to Pamlico River	SB NSW	03-03-07	861.2	ac	S	M
PAMLICO RIVER	29-(27)	From a line across Pamlico River from Cousin Point to Hickory Point to a line across Pamlico River from Roos Point to Persimmon Tree Point	SA NSW	03-03-07	33766.4	ac	S	M
Pungo River	29-34-(12)a	From US Hwy. 264 at Leechville to a line across Pungo River from Woodstock Point to Quilley Point excluding DEH Swimming area near mouth of Pantego Creek	SB NSW	03-03-07	15409.8	ac	S	M
Pungo River	29-34-(12)b	Area extending 200 feet east and west along the north shore of the Pungo River and extending out 200 feet into the river. The area starts 126 meters east of the mouth Pantego Creek.	SB NSW	03-03-07	2.8	ac	I	M
Pantego Creek	29-34-34-(2)	From US Hwy. 264 at Pantego to Pungo River	SC NSW	03-03-07	952.4	ac	S	M
Pungo Creek	29-34-35	From source to Pungo River	SC NSW	03-03-07	1701.6	ac	S	M
Pungo River	29-34-(38)	From a line across Pungo River from Woodstock Point to Quilley Point to Pamlico River	SA NSW	03-03-07	10367.8	ac	S	M
Swanquarter Bay	29-49a	DEH closed area west of Swanquarter	SA ORW	03-03-08	136.2	ac	S	M

NOTES

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ABBREVIATION KEY

p = Point Source Pollution (Major source)

np = Nonpoint Source Pollution

M = Monitored

S = Supporting

I = Impaired

NR = Not Rated

Name	Assessment Unit Number	Description	Class	Subbasin	Length/ Area		Rating	Basis	DEH Class	DEH Area	Potential Source
PAMLICO RIVER	29-(27)	From a line across Pamlico River from Cousin Point to Hickory Point to a line across Pamlico River from Roos Point to Persimmon Tree Point	SA NSW	03-03-07	33,766.4	ac	S	M	app		
South Creek	29-28-(6.5)	From Deephole Point to Pamlico River	SA NSW	03-03-07	3,073.5	ac	I	M	pro	G-12	Source Unknown
Whitehurst Creek	29-28-7-(2)	From NC Hwy. 306 to South Creek	SA NSW	03-03-07	15.6	ac	I	M	pro	G-12	Source Unknown
Jacks Creek	29-28-8-(2)	From a point 0.2 mile downstream from Beaufort County SR 1942 to South Creek	SA NSW	03-03-07	8.8	ac	I	M	pro	G-12	Source Unknown
Little Creek	29-28-9-(2)	From a point three-fourths mile above mouth to South Creek	SA NSW	03-03-07	21.3	ac	I	M	pro	G-12	Source Unknown
Jacobs Creek	29-28-10-(2)	From a point 0.5 mile above mouth to South Creek	SA NSW	03-03-07	13.4	ac	I	M	pro	G-12	Source Unknown
Drinkwater Creek	29-28-10-3-(2)	From a point 0.5 mile above mouth to Jacobs Creek	SA NSW	03-03-07	10.3	ac	I	M	pro	G-12	Source Unknown
Short Creek	29-28-11	From source to South Creek	SA NSW	03-03-07	6.5	ac	I	M	pro	G-12	Source Unknown
Tooley Creek	29-28-12-(2)	From a point 0.5 mile below Beaufort County SR 1945 to South Creek	SA NSW	03-03-07	15.4	ac	I	M	pro	G-12	Source Unknown
Long Creek	29-28-13-(2)	From a point 1.5 miles above mouth to South Creek	SA NSW	03-03-07	30.4	ac	I	M	pro	G-12	Source Unknown
Schooner Creek	29-28-14	From source to South Creek	SA NSW	03-03-07	0.6	mi	I	M	pro	G-12	Source Unknown
Bond Creek	29-28-15-(2)	From Beaufort County SR 1912 to South Creek	SA NSW	03-03-07	373.2	ac	I	M	pro	G-12	Source Unknown
Alligator Gut	29-28-15-3	From source to Bond Creek	SA NSW	03-03-07	3.2	ac	I	M	pro	G-12	Source Unknown
Flannigan Gut	29-28-15-4	From source to Bond Creek	SA NSW	03-03-07	4.0	ac	I	M	pro	G-12	Source Unknown
Muddy Creek	29-28-15-5-(2)	From Beaufort County SR 1912 to Bond Creek	SA NSW	03-03-07	97.2	ac	I	M	pro	G-12	Source Unknown
Robin Gut	29-28-15-5-3	From source to Muddy Creek	SA NSW	03-03-07	0.2	ac	I	M	pro	G-12	Source Unknown
Wilson Gut	29-28-15-5-4	From source to Muddy Creek	SA NSW	03-03-07	0.1	ac	I	M	pro	G-12	Source Unknown
Sheepskin Creek	29-28-15-5-5	From source to Muddy Creek	SA NSW	03-03-07	1.6	ac	I	M	pro	G-12	Source Unknown

Name	Assessment Unit Number	Description	Class	Subbasin	Length/ Area		Rating	Basis	DEH Class	DEH Area	Potential Source
North Creek	29-29-(2)b	From mouth of Frying Pan Creek to Pamlico River	SA NSW	03-03-07	190.2	ac	S	M	app		
North Creek	29-29-(2)a	From Beaufort County SR 1722 at Ransomville to mouth of Frying Pan Creek	SA NSW	03-03-07	162.0	ac	I	M	pro	G-1	Source Unknown
Garrett Gut	29-29-4	From source to North Creek	SA NSW	03-03-07	8.0	ac	I	M	pro	G-1	Source Unknown
East Fork North Creek	29-29-5	From source to North Creek	SA NSW	03-03-07	126.0	ac	S	M	app		
Ross Creek	29-29-5-1	From source to East Fork North Creek	SA NSW	03-03-07	77.9	ac	S	M	app		
Bailey Creek	29-29-5-2	From source to East Fork North Creek	SA NSW	03-03-07	78.3	ac	S	M	app		
Frying Pan Creek	29-29-6	From source to North Creek	SA NSW	03-03-07	62.5	ac	S	M	app		
Little Ease Creek	29-29-7	From source to North Creek	SA NSW	03-03-07	31.3	ac	S	M	app		
Davis Creek	29-30	From source to Pamlico River	SA NSW	03-03-07	13.1	ac	S	M	app		
Strawhorn Creek	29-31	From source to Pamlico River	SA NSW	03-03-07	13.8	ac	S	M	app		
Cypress Branch	29-31-1	From source to Strawhorn Creek	SA NSW	03-03-07	16.6	ac	S	M	app		
East Prong Cypress Branch	29-31-1-1	From source to Cypress Branch	SA NSW	03-03-07	4.6	ac	S	M	app		
Reed Hammock Ditch	29-32	From source to Pamlico River	SA NSW	03-03-07	21.5	ac	S	M	app		
Goose Creek	29-33	From source to Pamlico River	SA NSW	03-03-07	1,280.9	ac	S	M	app		
Upper Spring Creek	29-33-1	From source to Goose Creek	SA NSW	03-03-07	427.1	ac	S	M	app		
Intracoastal Waterway	29-33-1-1	From NC Hwy. 304 to Upper Spring Creek	SA NSW	03-03-07	45.9	ac	S	M	app		
Hunting Creek	29-33-1-2	From source to Upper Spring Creek	SA NSW	03-03-07	1.2	mi	S	M	app		
Cow Gallus Creek	29-33-1-3	From source to Upper Spring Creek	SA NSW	03-03-07	3.4	ac	S	M	app		
Campbell Creek	29-33-2-(2)	From NC Hwy. 33 to Goose Creek	SA NSW	03-03-07	487.6	ac	S	M	app		
Lee Creek	29-33-2-12	From source to Campbell Creek	SA NSW	03-03-07	14.8	ac	S	M	app		
Carrie Creek	29-33-2-13	From source to Campbell Creek	SA NSW	03-03-07	2.2	ac	S	M	app		
Smith Creek	29-33-2-14	From source to Campbell Creek	SA NSW	03-03-07	20.7	ac	S	M	app		

Name	Assessment Unit Number	Description	Class	Subbasin	Length/ Area		Rating	Basis	DEH Class	DEH Area	Potential Source
Camphion Gut	29-33-2-15	From source to Campbell Creek	SA NSW	03-03-07	0.2	mi	S	M	app		
Cuff Tarkiln Creek	29-33-2-16	From source to Campbell Creek	SA NSW	03-03-07	12.8	ac	S	M	app		
Myrtle March Gut	29-33-2-17	From source to Campbell Creek	SA NSW	03-03-07	0.6	ac	S	M	app		
Pasture Gut	29-33-2-18	From source to Campbell Creek	SA NSW	03-03-07	7.9	ac	S	M	app		
Eastham Creek	29-33-3a	From source to line 966 meters west of mouth of Eastham Creek	SA NSW	03-03-07	62.5	ac	I	M	pro	G-1	Source Unknown
Eastham Creek	29-33-3b	From line 966 meters west of mouth of Eastham Creek to Goose Creek	SA NSW	03-03-07	192.5	ac	S	M	app		
Alligator Creek	29-33-3-1	From source to Eastham Creek	SA NSW	03-03-07	1.8	ac	I	M	pro	G-1	Source Unknown
Long Creek	29-33-3-2	From source to Eastham Creek	SA NSW	03-03-07	1.1	ac	I	M	pro	G-3	Source Unknown
Slade Landing Creek	29-33-3-3	From source to Eastham Creek	SA NSW	03-03-07	12.7	ac	S	M	app		
Mallard Creek	29-33-3-4	From source to Eastham Creek	SA NSW	03-03-07	8.3	ac	S	M	app		
Otter Creek	29-33-3-5	From source to Eastham Creek	SA NSW	03-03-07	1.0	ac	S	M	app		
Mud Gut	29-33-4	From source to Goose Creek	SA NSW	03-03-07	4.2	ac	S	M	app		
Sand Beach Creek	29-33-5	From source to Goose Creek	SA NSW	03-03-07	2.9	ac	S	M	app		
Snode Creek	29-33-6	From source to Goose Creek	SA NSW	03-03-07	118.0	ac	S	M	app		
Neezar Gut	29-33-6-1	From source to Snode Creek	SA NSW	03-03-07	0.8	ac	S	M	app		
Tetterton Gut	29-33-6-2	From source to Snode Creek	SA NSW	03-03-07	0.6	mi	S	M	app		
Big Pond Gut	29-33-6-3	From source to Snode Creek	SA NSW	03-03-07	0.8	ac	S	M	app		
Schoolhouse Gut	29-33-6-4	From source to Snode Creek	SA NSW	03-03-07	1.8	ac	S	M	app		
Northeast Prong	29-33-6-5	From source to Snode Creek	SA NSW	03-03-07	2.0	ac	S	M	app		
Facing Gut	29-33-6-6	From source to Snode Creek	SA NSW	03-03-07	2.4	ac	S	M	app		
Wilkerson Creek	29-33-7	From source to Goose Creek	SA NSW	03-03-07	3.7	ac	S	M	app		
Peterson Creek	29-33-8	From source to Goose Creek	SA NSW	03-03-07	16.7	ac	S	M	app		
Paton Creek	29-33-9	From source to Goose Creek	SA NSW	03-03-07	13.5	ac	S	M	app		
Dixon Creek	29-33-10	From source to Goose Creek	SA NSW	03-03-07	44.4	ac	S	M	app		
Big Marsh Gut	29-33-10-1	From source to Dixon Creek	SA NSW	03-03-07	2.6	ac	S	M	app		
Convoy Gut	29-33-10-2	From source to Dixon Creek	SA NSW	03-03-07	10.5	ac	S	M	app		
Lower Spring Creek	29-33-11	From source to Goose Creek	SA NSW	03-03-07	151.8	ac	S	M	app		
Pitch Hole Gut	29-33-11-1	From source to Lower Spring Creek	SA NSW	03-03-07	4.7	ac	S	M	app		
Persimmon Tree Landing Gut	29-33-11-2	From source to Lower Spring Creek	SA NSW	03-03-07	3.1	ac	S	M	app		

Name	Assessment Unit Number	Description	Class	Subbasin	Length/ Area		Rating	Basis	DEH Class	DEH Area	Potential Source
Tar Landing Gut	29-33-11-3	From source to Lower Spring Creek	SA NSW	03-03-07	2.4	ac	S	M	app		
Gray Gut	29-33-11-4	From source to Lower Spring Creek	SA NSW	03-03-07	4.9	ac	S	M	app		
Mill Creek	29-33-11-5	From source to Lower Spring Creek	SA NSW	03-03-07	5.6	ac	S	M	app		
Betty Creek	29-33-11-6	From source to Lower Spring Creek	SA NSW	03-03-07	33.6	ac	S	M	app		
Overton Creek	29-33-11-7	From source to Lower Spring Creek	SA NSW	03-03-07	14.1	ac	S	M	app		
Old House Cove	29-33-11-8	From source to Lower Spring Creek	SA NSW	03-03-07	3.9	ac	S	M	app		
Hatter Creek	29-33-12	From source to Goose Creek	SA NSW	03-03-07	12.5	ac	S	M	app		
Pungo River	29-34-(38)	From a line across Pungo River from Woodstock Point to Quilley Point to Pamlico River	SA NSW	03-03-07	10,367.8	ac	S	M	app		
Sparrows Gut	29-34-39	From source to Pungo River	SA NSW	03-03-07	1.8	mi	S	M	app		
Slade Creek	29-34-40b	From a line 169 meters north of mouth of Chruch Creek to Pungo River	SA NSW	03-03-07	137.0	ac	S	M	app		
Slade Creek	29-34-40a	From source to a line 169 meters north of mouth of Chruch Creek	SA NSW	03-03-07	591.0	ac	I	M	pro	G-8	Source Unknown
Jones Creek	29-34-40-1	From source to Slade Creek	SA NSW	03-03-07	15.1	ac	I	M	pro	G-8	Source Unknown
Jarvis Creek	29-34-40-2	From source to Slade Creek	SA NSW	03-03-07	8.0	ac	I	M	pro	G-8	Source Unknown
Raffing Creek	29-34-40-3	From source to Slade Creek	SA NSW	03-03-07	5.0	ac	I	M	pro	G-8	Source Unknown
Becky Creek (Becky Branch)	29-34-40-4	From source to Slade Creek	SA NSW	03-03-07	19.6	ac	I	M	pro	G-8	Source Unknown
Neal Creek	29-34-40-5	From source to Slade Creek	SA NSW	03-03-07	68.0	ac	I	M	pro	G-8	Source Unknown
Wood Creek	29-34-40-6	From source to Slade Creek	SA NSW	03-03-07	26.7	ac	I	M	pro	G-8	Source Unknown
Spellman Creek	29-34-40-7	From source to Slade Creek	SA NSW	03-03-07	15.2	ac	I	M	pro	G-8	Source Unknown
Speer Creek	29-34-40-8	From source to Slade Creek	SA NSW	03-03-07	10.7	ac	I	M	pro	G-8	Source Unknown
Church Creek	29-34-40-9	From source to Slade Creek	SA NSW	03-03-07	15.6	ac	S	M	app		
Speer Gut	29-34-40-9-1	From source to Church Street	SA NSW	03-03-07	2.1	ac	S	M	app		
Allison Creek	29-34-40-10	From source to Slade Creek	SA NSW	03-03-07	1.2	mi	S	M	app		

Name	Assessment Unit Number	Description	Class	Subbasin	Length/ Area		Rating	Basis	DEH Class	DEH Area	Potential Source
Foreman Creek	29-34-40-10-1	From source to Allison Creek	SA NSW	03-03-07	13.0	ac	S	M	app		
Jordan Creek	29-34-41b	From a line crossing the river 90 meters west of Snederker Gut to Pungo River	SA NSW	03-03-07	43.1	ac	S	M	app		
Jordan Creek	29-34-41a	From source to a line crossing the river 90 meters west of Snederker Gut	SA NSW	03-03-07	90.0	ac	I	M	pro	G-8	Source Unknown
Alligator Gut	29-34-41-1	From source to Jordan Creek	SA NSW	03-03-07	14.7	ac	S	M	app		
Snederker Gut	29-34-41-2	From source to Jordan Creek	SA NSW	03-03-07	3.4	ac	S	M	app		
Spring Creek	29-34-41-3	From source to Jordan Creek	SA NSW	03-03-07	14.7	ac	S	M	app		
Tarkiln Creek Bay	29-34-42	Entire Bay	SA NSW	03-03-07	73.5	ac	S	M	app		
Tarkiln Creek	29-34-42-1	From source to Tarkiln Creek Bay	SA NSW	03-03-07	5.7	ac	S	M	app		
Great Gut	29-34-43	From source to Pungo River	SA NSW	03-03-07	16.7	ac	S	M	app		
Little Gut	29-34-44	From source to Pungo River	SA NSW	03-03-07	8.1	ac	S	M	app		
Island Creek	29-34-45	From source to Pungo River	SA NSW	03-03-07	29.2	ac	S	M	app		
Fortescue Creek	29-34-46	From source to Pungo River	SA NSW	03-03-07	315.9	ac	S	M	app		
Log Creek	29-34-46-1	From source to Fortescue Creek	SA NSW	03-03-07	16.2	ac	S	M	app		
Old Field Creek	29-34-46-2	From source to Fortescue Creek	SA NSW	03-03-07	2.4	ac	S	M	app		
Seer Creek	29-34-46-3	From source to Fortescue Creek	SA NSW	03-03-07	5.3	ac	S	M	app		
Snell Creek	29-34-46-4	From source to Fortescue Creek	SA NSW	03-03-07	21.0	ac	S	M	app		
Cox Creek	29-34-46-5	From source to Fortescue Creek	SA NSW	03-03-07	3.4	ac	S	M	app		
Warner Creek	29-34-46-6	From source to Fortescue Creek	SA NSW	03-03-07	62.0	ac	S	M	app		
Salt Pit Creek	29-34-46-7	From source to Fortescue Creek	SA NSW	03-03-07	2.3	ac	S	M	app		
Pasture Creek	29-34-46-8	From source to Fortescue Creek	SA NSW	03-03-07	15.5	ac	S	M	app		
Dixon Creek	29-34-46-9	From source to Fortescue Creek	SA NSW	03-03-07	26.5	ac	S	M	app		
Liniar Bay	29-34-47	Entire Bay	SA NSW	03-03-07	55.5	ac	S	M	app		
Satterthwaite Creek	29-34-48a	From source to line crossing 520 meters northwest of Pungo River	SA NSW	03-03-07	85.8	ac	I	M	pro	G-2	Source Unknown
Satterthwaite Creek	29-34-48b	From a line crossing 520 meters northwest of Pungo River to the Pungo River	SA NSW	03-03-07	38.2	ac	S	M	app		
Wrights Creek	29-34-49	From source to Pungo River	SA NSW	03-03-07	40.1	ac	I	M	pro	G-2	Source Unknown
North Prong Wrights Creek	29-34-49-1	From source to Wrights Creek	SA NSW	03-03-07	37.6	ac	I	M	pro	G-2	Source Unknown

Name	Assessment Unit Number	Description	Class	Subbasin	Length/ Area		Rating	Basis	DEH Class	DEH Area	Potential Source
South Prong Wrights Creek	29-34-49-2	From source to Wrights Creek	SA NSW	03-03-07	45.2	ac	I	M	pro	G-2	Source Unknown
Bradley Creek	29-34-49-2-1	From source to South Prong Wrights	SA NSW	03-03-07	9.6	ac	I	M	pro	G-2	Source Unknown
Crooked Creek	29-34-50	From source to Pungo River	SA NSW	03-03-07	31.0	ac	S	M	app		
Hobb Creek	29-34-51	From source to Pungo River	SA NSW	03-03-07	5.5	ac	S	M	app		
Great Gut Bay	29-34-52	Entire Bay	SA NSW	03-03-07	49.9	ac	S	M	app		
Great Gut	29-34-52-1	From source to Great Gut Bay	SA NSW	03-03-07	0.2	mi	S	M	app		
Oyster Creek	29-35b	From a line 274 meters east of Duck Creek to Pamlico River	SA NSW	03-03-07	422.1	ac	S	M	app		
Oyster Creek	29-35a	From source to a line 274 meters east of Duck Creek	SA NSW	03-03-07	117.6	ac	I	M	pro	G-2	Source Unknown
Bill Daniels Gut	29-35-1	From source to Oyster Creek	SA NSW	03-03-07	1.7	ac	I	M	pro	G-2	Source Unknown
Bill Gut	29-35-2	From source to Oyster Creek	SA NSW	03-03-07	6.2	ac	I	M	pro	G-2	Source Unknown
River Ditch	29-35-3	From source to Oyster Creek	SA NSW	03-03-07	8.4	ac	I	M	pro	G-2	Source Unknown
Duck Creek	29-35-4	From source to Oyster Creek	SA NSW	03-03-07	13.8	ac	S	M	app		
Cedar Island Thorofare	29-35-5	From source to Oyster Creek	SA NSW	03-03-07	3.9	ac	S	M	app		
Middle Prong Oyster Creek	29-35-6	From source to Oyster Creek	SA NSW	03-03-07	439.9	ac	S	M	app		
Wallace Caraway Gut	29-35-6-1	From source to Middle Prong Oyster Creek	SA NSW	03-03-07	13.8	ac	S	M	app		
Sampson Landing Creek	29-35-6-2	From source to Middle Prong Oyster Creek	SA NSW	03-03-07	0.5	mi	S	M	app		
James Creek	29-35-6-3	From source to Middle Prong Oyster Creek	SA NSW	03-03-07	144.0	ac	S	M	app		
Israel Gut	29-35-6-3-1	From source to James Creek	SA NSW	03-03-07	14.9	ac	S	M	app		
Horse Island Creek	29-35-6-3-2	From source to James Creek	SA NSW	03-03-07	5.6	ac	S	M	app		
Cow Creek	29-35-6-3-3	From source to James Creek	SA NSW	03-03-07	5.1	ac	S	M	app		
Clark Creek	29-35-6-4	From source to Middle Prong Oyster Creek	SA NSW	03-03-07	127.4	ac	S	M	app		
Little Clark Creek	29-35-6-4-1	From source to Clark Creek	SA NSW	03-03-07	18.0	ac	S	M	app		
Boat Creek	29-35-6-4-2	From source to Clark Creek	SA NSW	03-03-07	9.5	ac	S	M	app		
Abel Bay	29-36	Entire Bay	SA NSW	03-03-07	232.0	ac	S	M	app		
Bell Bay	29-36-1	Entire Bay	SA NSW	03-03-07	76.4	ac	S	M	app		

Name	Assessment Unit Number	Description	Class	Subbasin	Length/ Area		Rating	Basis	DEH Class	DEH Area	Potential Source
Bell Creek	29-36-1-1	From source to Bell Bay	SA NSW	03-03-07	1.2	mi	S	M	app		
Berry Creek	29-36-1-2	From source to Bell Bay	SA NSW	03-03-07	25.5	ac	S	M	app		
Box Creek	29-36-1-3	From source to Bell Bay	SA NSW	03-03-07	48.2	ac	S	M	app		
Marie Creek	29-36-2	From source to Abel Bay	SA NSW	03-03-07	5.4	ac	S	M	app		
Boar Creek	29-37	From source to Pamlico River	SA NSW	03-03-07	0.6	mi	S	M	app		
Willow Creek	29-38	From source to Pamlico River	SA NSW	03-03-07	19.1	ac	S	M	app		
Marsh Rock Creek	29-39	From source to Pamlico River	SA NSW	03-03-07	2.3	ac	S	M	app		
Long Creek	29-40	From source to Pamlico River	SA NSW	03-03-07	21.7	ac	S	M	app		
PAMLICO RIVER AND PAMLICO SOUND	29-(40.5)e	DEH closed areas adjacent to Ocracoke	SA	03-03-08	48.9	ac	I	M	pro	G-6	Source Unknown
PAMLICO RIVER AND PAMLICO SOUND	29-(40.5)c	DEH closed areas at mouth Long Creek	SA	03-03-08	0.4	ac	I	M	pro	G-3	Source Unknown
PAMLICO RIVER AND PAMLICO SOUND	29-(40.5)d	DEH closed areas at mouth Far Creek	SA	03-03-08	120.0	ac	I	M	pro	G-5	Source Unknown
PAMLICO RIVER AND PAMLICO SOUND	29-(40.5)a	From a line across Pamlico River from Roos Point to Persimmon Tree Point to Pamlico Sound and Pamlico Sound within a line beginning at Sandy Point and extending southerly to northeast tip of Ocracoke Island, thence along the Ocean Side of Ocracoke Island to its southwest tip, thence northwesterly to Little Propoise Point, exclusive of the ORW area described below, also excluding DEH closed areas at mouth of Middleton Creek, mouth of Long Creek, at mouth of Far Creek and adjacent to Ocracoke.	SA	03-03-08	457,942.0	ac	S	M	app		

Name	Assessment Unit Number	Description	Class	Subbasin	Length/ Area		Rating	Basis	DEH Class	DEH Area	Potential Source
PAMLICO RIVER AND PAMLICO SOUND	29-(40.5)b	DEH closed areas at mouth of Middleton Creek	SA	03-03-08	48.7	ac	I	M	pro	G-5	Source Unknown
Mouse Harbor	29-41	Entire Bay	SA	03-03-07	774.4	ac	S	M	app		
Mouse Harbor Ditch	29-41-1	From source to Mouse Harbor	SA	03-03-07	2.0	ac	S	M	app		
Southward Bay	29-41-2	Entire Bay	SA	03-03-07	345.8	ac	S	M	app		
Cedar Creek	29-41-2-1	From source to Southward Bay	SA	03-03-07	2.1	mi	S	M	app		
Island Creeks	29-41-2-2	From sources to Southward Bay	SA	03-03-07	43.8	ac	S	M	app		
Voliva Cove	29-41-2-3	Entire Cove	SA	03-03-07	30.9	ac	S	M	app		
Fate Cove	29-41-2-4	Entire Cove	SA	03-03-07	14.6	ac	S	M	app		
House Cove	29-41-2-5	Entire Cove	SA	03-03-07	28.4	ac	S	M	app		
Hog Cove	29-41-3	Entire Cove	SA	03-03-07	15.5	ac	S	M	app		
Flat Cove	29-41-4	Entire Cove	SA	03-03-07	11.0	ac	S	M	app		
Oak Cove	29-41-5	Entire Cove	SA	03-03-07	15.9	ac	S	M	app		
Long Creek	29-41-6	From source to Mouse Harbor	SA	03-03-07	84.7	ac	S	M	app		
Lighthouse Creek	29-41-7	From source to Mouse Harbor	SA	03-03-07	9.1	ac	S	M	app		
Spencer Bay	29-42	Entire Bay	SA	03-03-08	1,164.3	ac	S	M	app		
Germantown Bay	29-42-1a	From source to a line starting at mouth of Long Creek extending across Bay to a point 77 meters south of Midgette Creek	SA	03-03-08	179.7	ac	I	M	pro	G-3	Source Unknown
Germantown Bay	29-42-1b	Entire Bay except DEH closed area in northern part of bay	SA	03-03-08	319.5	ac	S	M	app		
Long Creek	29-42-1-1	From source to Germantown Bay	SA	03-03-08	53.6	ac	I	M	pro	G-3	Source Unknown
Midgette Creek	29-42-1-2	From source to Germantown Bay	SA	03-03-08	8.4	ac	I	M	pro	G-3	Source Unknown
Little Hammock Creek	29-42-1-3	From source to Germantown Bay	SA	03-03-08	8.7	ac	S	M	app		
Swan Creek (Swine Creek)	29-42-1-4	From source to Germantown Bay	SA	03-03-08	9.7	ac	S	M	app		
Jeanette Creek	29-42-1-5	From source to Germantown Bay	SA	03-03-08	12.0	ac	S	M	app		
Ditch Creek	29-42-1-6	From source to Germantown Bay	SA	03-03-08	13.1	ac	S	M	app		
Chellybelle Creek	29-42-2	From source to Spencer Bay	SA	03-03-08	21.8	ac	S	M	app		
House Creek	29-42-3	From source to Spencer Bay	SA	03-03-08	30.1	ac	S	M	app		
Striking Bay	29-43	Entire Bay	SA	03-03-08	182.2	ac	S	M	app		

Name	Assessment Unit Number	Description	Class	Subbasin	Length/ Area		Rating	Basis	DEH Class	DEH Area	Potential Source
Rose Bay	29-44b	Entire Bay except DEH closed area in northern part of bay	SA	03-03-08	7,258.3	ac	S	M	app		
Rose Bay	29-44a	From source to a line 600 meters south of mouth of Rose Bay Creek	SA	03-03-08	318.0	ac	I	M	pro	G-3	Source Unknown
Rose Bay Creek	29-44-1	From source to Rose Bay	SA	03-03-08	154.3	ac	I	M	pro	G-3	Source Unknown
Tooley Creek	29-44-2	From source to Rose Bay	SA	03-03-08	191.2	ac	S	M	app		
Lighwood Snag Bay	29-44-3	Entire Bay	SA	03-03-08	172.1	ac	S	M	app		
Middle Shoal Creek (Mill Show Creek)	29-44-4	From source to Rose Bay	SA	03-03-08	21.2	ac	S	M	app		
Deep Bay	29-44-5	Entire Bay	SA	03-03-08	1,632.4	ac	S	M	app		
Old Haulover	29-44-5-1	From source to Deep Bay	SA	03-03-08	28.9	ac	S	M	app		
The Haulover	29-44-5-2	From Swanquarter Bay to Deep Bay	SA	03-03-08	2.7	ac	S	M	app		
Bernice Creek	29-44-5-3	From source to Deep Bay	SA	03-03-08	21.3	ac	S	M	app		
Middle Creek	29-44-5-4	From source to Deep Bay	SA	03-03-08	11.9	ac	S	M	app		
Drum Cove	29-44-5-5	Entire Cove	SA	03-03-08	39.2	ac	S	M	app		
Tolers Bay	29-45	Entire Bay	SA	03-03-08	120.8	ac	S	M	app		
White Perch Bay	29-46	Entire Bay	SA	03-03-08	97.9	ac	S	M	app		
Pamlico Sound Swanquarter Bay/Juniper Bay ORW Area, including the Northeast Swanquarter Bay Area	29-46.5	All waters within a line beginning at Juniper Bay Point and running due South to Lat. 35 18’00", Long 76 13’20", thence due west to Lat. 35 18’00", Long 76 20’00", thence northwest to Shell Point	SA ORW	03-03-08	11,670.0	ac	S	M	app		
Shell Bay	29-47	Entire Bay	SA ORW	03-03-08	2,063.4	ac	S	M	app		
Judith Narrows	29-47-1	From White Perch Bay to Shell Bay	SA ORW	03-03-08	84.4	ac	S	M	app		
The Blowout	29-47-2	From Bernice Creek to Shell Bay	SA	03-03-08	1.2	ac	S	M	app		
Shell Narrows	29-47-3	From Swanquarter Bay to Shell Bay	SA ORW	03-03-08	298.5	ac	S	M	app		
Smokehouse Cove	29-48	Entire Cove	SA ORW	03-03-08	43.6	ac	S	M	app		

Name	Assessment Unit Number	Description	Class	Subbasin	Length/ Area		Rating	Basis	DEH Class	DEH Area	Potential Source
Swanquarter Bay	29-49a	DEH closed area west of Swanquarter	SA ORW	03-03-08	136.2	ac	I	M	pro	G-3	Source Unknown
Swanquarter Bay	29-49b	Entire Bay except for closed area near Swanquarter	SA ORW	03-03-08	4,986.8	ac	S	M	app		
Shingle Creek	29-49-1	From source to Swanquarter Bay	SA ORW	03-03-08	7.4	ac	S	M	app		
Cowpen Creek	29-49-2	From source to Swanquarter Bay	SA ORW	03-03-08	61.0	ac	S	M	app		
Oyster Creek	29-49-3a	From source to a line 990 meters east of Swanquarter Bay	SA ORW	03-03-08	35.3	ac	I	M	pro	G-3	Source Unknown
Oyster Creek	29-49-3b	From a line 990 meters east of Swanquarter Bay to Swanquarter Bay	SA ORW	03-03-08	87.9	ac	S	M	app		
Eastard Bay	29-49-4	Entire Bay	SA ORW	03-03-08	154.5	ac	S	M	app		
Caffee Bay	29-49-5	Entire Bay	SA ORW	03-03-08	477.7	ac	S	M	app		
Island Creek	29-49-5-1	From source to Caffee Bay	SA	03-03-08	14.3	ac	S	M	app		
Crab Cove (Crabb Cove)	29-50	Entire Cove	SA ORW	03-03-08	73.4	ac	S	M	app		
Great Island Narrows	29-51	From Juniper Bay to Swanquarter Bay	SA ORW	03-03-08	1,809.4	ac	S	M	app		
Raccoon Creek	29-51-1	From source to Great Island Narrows	SA	03-03-08	5.8	ac	S	M	app		
Juniper Bay	29-52a	Source to a line crossing the river at mouth of Rattlesnake Creek	SA ORW	03-03-08	66.6	ac	I	M	pro	G-4	Source Unknown
Juniper Bay	29-52b	From mouth of Rattlesnake Creek to Pamlico Sound	SA ORW	03-03-08	1,980.0	ac	S	M	app		
Northwest Creek	29-52-2	From source to Juniper Bay	SA	03-03-08	19.4	ac	I	M	pro	G-3	Source Unknown
Rattlesnake Creek	29-52-3	From source to Juniper Bay	SA	03-03-08	4.4	ac	S	M	app		
Old Haulover	29-52-4	From source to Juniper Bay	SA	03-03-08	19.7	ac	S	M	app		
Doe Creek	29-52-5	From source to Juniper Bay	SA ORW	03-03-08	23.0	ac	S	M	app		
Buck Creek	29-52-6	From source to Juniper Bay	SA ORW	03-03-08	57.3	ac	S	M	app		
Laurel Creek	29-52-7	From source to Juniper Bay	SA ORW	03-03-08	8.4	ac	S	M	app		
Cunning Harbor Bay	29-53	Entire Bay	SA	03-03-08	282.0	ac	S	M	app		
West Bluff Bay	29-54	Entire Bay	SA	03-03-08	1,191.9	ac	S	M	app		
Southwest Bay	29-55	Entire Bay	SA	03-03-08	214.0	ac	S	M	app		
East Bluff Bay	29-56	Entire Bay	SA	03-03-08	499.0	ac	S	M	app		
Harbor Creek	29-56-1	From source to East Bluff Bay	SA	03-03-08	3.8	ac	S	M	app		

Name	Assessment Unit Number	Description	Class	Subbasin	Length/ Area		Rating	Basis	DEH Class	DEH Area	Potential Source
Juniper Creek	29-56-2	From source to East Bluff Bay	SA	03-03-08	14.6	ac	S	M	app		
Sage Bay	29-57	Entire Bay	SA	03-03-08	50.1	ac	S	M	app		
Sanger Creek	29-58	From source to Pamlico Sound	SA	03-03-08	8.7	ac	S	M	app		
Middle Creek	29-59	From source to Pamlico Sound	SA	03-03-08	10.0	ac	S	M	app		
Wysocking Bay	29-60b	Entire Bay except for area 1000 meters north of Mackay Point	SA	03-03-08	3,262.2	ac	S	M	app		
Wysocking Bay	29-60a	From source to 1000 meters north of Mackay Point	SA	03-03-08	126.3	ac	I	M	pro	G-4	Source Unknown
Hickory Creek Bay	29-60-1	Entire Bay	SA	03-03-08	35.5	ac	S	M	app		
Hickory Creek	29-60-1-1	From source to Hickory Creek Bay	SA	03-03-08	7.8	ac	S	M	app		
Old Hill Bay	29-60-2	Entire Bay	SA	03-03-08	208.6	ac	S	M	app		
Douglas Bay	29-60-3	Entire Bay	SA	03-03-08	203.4	ac	S	M	app		
Lone Tree Creek	29-60-5	From source to Wysocking Bay	SA	03-03-08	151.7	ac	S	M	app		
Hillerys Cove	29-61	Entire Cove	SA	03-03-08	43.5	ac	S	M	app		
Jeanette Creek	29-64	From source to Pamlico Sound	SA	03-03-08	9.1	ac	S	M	app		
Back Creek	29-65	From source to Pamlico Sound	SA	03-03-08	38.7	ac	S	M	app		
Middle Town Creek	29-66	From source to Pamlico Sound	SA	03-03-08	71.5	ac	I	M	pro	G-5	Source Unknown
Cedar Creek	29-67	From source to Pamlico Sound	SA	03-03-08	12.2	ac	I	M	pro	G-5	Source Unknown
Burrus Creek	29-68	From source to Pamlico Sound	SA	03-03-08	0.9	mi	S	M	app		
Lone Tree Creek	29-69	From source to Pamlico Sound	SA	03-03-08	1.8	ac	I	M	pro	G-5	Source Unknown
Far Creek	29-70-(4)	From a line extending due north and due south across Far Creek at flash beacon #9 to Pamlico Sound	SA	03-03-08	389.5	ac	I	M	pro	G-5	Source Unknown
Waupopin Creek	29-70-5-(3)	From a line beginning on the southwestern side of Waupopin Creek 300 yards from its junction with Far Creek, and running due northeast to the northeastern shore of Waupopin Creek to Far Creek	SA	03-03-08	96.2	ac	I	M	pro	G-5	Source Unknown
Oyster Creek	29-70-6	From source to Far Creek	SA	03-03-08	50.1	ac	I	M	pro	G-5	Source Unknown
Berrys Bay	29-71a	DEH closed area in northern part of bay	SA	03-03-08	12.5	ac	I	M	pro	G-5	Source Unknown

Name	Assessment Unit Number	Description	Class	Subbasin	Length/ Area		Rating	Basis	DEH Class	DEH Area	Potential Source
Berrys Bay	29-71b	Entire Bay except closed area in northern part of bay	SA	03-03-08	395.2	ac	S	M	app		
Otter Creek	29-72b	From southern bay of Otter Creek to Pamlico Sound	SA	03-03-08	377.7	ac	S	M	app		
Otter Creek	29-72a	Southern bay of Otter Creek	SA	03-03-08	56.9	ac	S	M	app		
Long Shoal River	29-73-(2)b	From a line extending river 506 meters south of Deep Creek to Pamlico Sound excluding area at 5th Avenue Pump canal	SA	03-03-08	2,641.0	ac	S	M	app		
Long Shoal River	29-73-(2)c	DEH closed area at 5th Avenue pump canal	SA	03-03-08	35.2	ac	I	M	pro	G-5	Source Unknown
Long Shoal River	29-73-(2)a	From US Hwy. 264 to line extending river 506 meters south of Deep Creek	SA	03-03-08	419.8	ac	I	M	pro	G-5	Source Unknown
Deep Creek	29-73-4	From source to Long Shoal River	SA	03-03-08	45.8	ac	S	M	app		
Muddy Creek	29-73-5	From source to Long Shoal River	SA	03-03-08	49.2	ac	S	M	app		
Clark Creek	29-73-6	From source to Long Shoal River	SA	03-03-08	5.7	ac	S	M	app		
Broad Creek	29-73-7	From source to Long Shoal River	SA	03-03-08	101.6	ac	S	M	app		
Pains Bay	29-74	Entire Bay	SA	03-03-08	4.6	mi	S	M	app		
Pains Creek	29-74-1	From source to Pains Bay	SA	03-03-08	1,205.4	ac	S	M	app		
Parched Corn Bay	29-75	Entire Bay	SA	03-03-08	907.2	ac	S	M	app		
Sandy Bay	29-76	Entire Bay	SA	03-03-08	280.0	ac	S	M	app		
Cockrel Creek	29-77	From source to Pamlico Sound	SA	03-03-08	9.0	ac	S	M	app		
Shingle Creek	29-78	From source to Pamlico Sound	SA	03-03-08	10.7	ac	S	M	app		
North Bitterwash Creek	29-79	From source to Pamlico Sound	SA	03-03-08	6.4	ac	S	M	app		
South Bitterwash Creek	29-80	From source to Pamlico Sound	SA	03-03-08	8.7	ac	S	M	app		
Knoll Creek	29-81	From source to Pamlico Sound	SA	03-03-08	10.8	ac	S	M	app		
Knoll House Creek	29-82	From source to Pamlico Sound	SA	03-03-08	2.4	ac	S	M	app		
Try Yard Creek	29-83	From source to Pamlico Sound	SA	03-03-08	10.1	ac	S	M	app		
Little Swash Opening	29-84	From source to Pamlico Sound	SA	03-03-08	12.1	ac	S	M	app		
Old Hammock Creek	29-85	From source to Pamlico Sound	SA	03-03-08	1.5	ac	S	M	app		

Name	Assessment Unit Number	Description	Class	Subbasin	Length/ Area		Rating	Basis	DEH Class	DEH Area	Potential Source
Island Creek	29-86	From source to Pamlico Sound	SA	03-03-08	1.4	ac	S	M	app		
Sand Hole Creek	29-87	From source to Pamlico Sound	SA	03-03-08	3.9	ac	S	M	app		
Northern Pond	29-88	Entire Pond	SA	03-03-08	4.9	ac	S	M	app		
Mary Anns Pond	29-89	Entire Pond	SA	03-03-08	2.9	ac	S	M	app		
Old Slough	29-91	From source to Pamlico Sound	SA	03-03-08	3.1	ac	S	M	app		

NOTES

"Rating" = Use Support Rating

"Basis" = Rating basis

"Habitat degradation" is identified where there is a notable reduction in habitat diversity or change in habitat quality. This term includes sedimentation, bank erosion, channelization, lack of riparian vegetation, loss of pools or riffles, loss of woody habitat, and streambed scour.

ABBREVIATION KEY

p = Point Source Pollution (Major source)

np = Nonpoint Source Pollution

M = Monitored

S = Supporting

I = Impaired

NR = Not Rated

DEH Class

pro = prohibited to shellfish harvesting

app = approved for shellfish harvesting