Chapter 2 -
White Oak River Subbasin 03-05-02
Includes New River, Northeast Creek and ICWW

2.1 Water Quality Overview

Subbasin 03-05-02 at a Glance

Land and Water Area (sq. mi.)	
Total area:	462
Land area:	419
Water area:	43
Population Statistics	
1998 Est. Pop.:	84,359 people
Pop. Density:	201 persons / mi^2
Land Cover (%)	
Forest / Wetland:	67
Surface Water:	9
Urban:	4
Cultivated Crop:	13
Pasture / Managed Herbaceous:	7
Water Area	
Stream Miles:	208
Estuarine Acres:	21,865
Coastal Miles:	15
Shellfish Harvest Acres:	11,122

This subbasin includes the New River, its tributaries and several small coastal streams as well as the Intracoastal Waterway (ICWW). It is located in the western portion of the White Oak River basin and lies entirely within Onslow County. A map of this subbasin including water quality sampling locations is presented in Figure B-3. Biological ratings as well as ambient water quality information at these sites are presented in Table B-3. Use support ratings for monitored waters are presented in Table B-4.

This is the most densely populated area in the basin, with populations projected to increase by 15,000 people by 2010. Most of the development in this subbasin is on the New River: Richlands near the headwaters, the City of Jacksonville and Camp Lejeune Military Reservation in the middle reaches, and Sneads Ferry near the mouth. There are many animal operations and agricultural land use in the headwaters area north of Richlands.

Nutrient enrichment has been a significant problem in the estuarine portions of the New River, and periodic elevated fecal coliform bacteria levels also appear to be a recurring problem in this subbasin. Jacksonville removed its discharge from the upper New River estuary in 1998, and Camp Lejeune consolidated its seven discharges into one tertiary treatment facility also in 1998. These discharges were considered a major source of nutrients into the upper estuarine portions of the New River. Preliminary results of a DWQ phytoplankton study in the New River indicate reductions in algal blooms since the discharges were removed.

Most of the waters in this subbasin are estuarine. The headwaters of the New River, Southwest Creek and Northeast Creek drain swampy areas and have a supplemental classification of nutrient sensitive waters (NSW). Refer to page 62 for more information on NSW waters. The New River near Jacksonville is classified for primary recreation. The lower estuary of the New River near Sneads Ferry is classified for shellfish harvesting.

Figure B-3 New River Subbasin 03-05-02

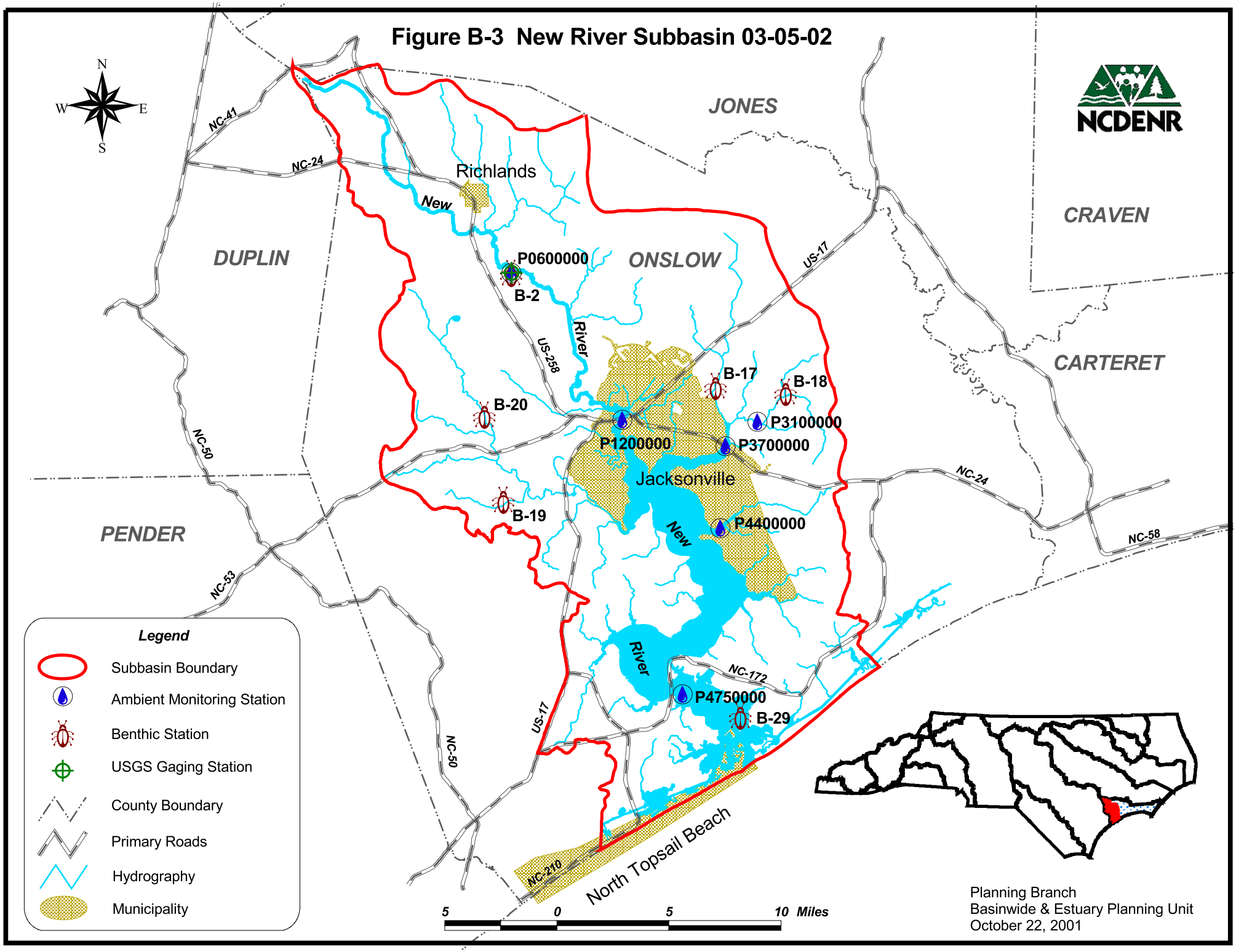

Table B-3 DWQ Monitoring Locations and Benthic Macroinvertebrate Bioclassifications (1999) for White Oak River Subbasin 03-05-02

Site	Stream	County	Road	Bioclassification
Benthic Macroinvertebrates				
B-2*	New River	Onslow	SR 1314	Good-Fair
B-17	Northeast Creek	Onslow	SR 1434	Not Rated
B-18	Little Northeast Creek	Onslow	SR 1423	Not Rated
B-19	Harris Creek	Onslow	SR 1109	Not Rated
B-20	Southwest Creek	Onslow	SR 1213	Not Rated
B-29*	New River	Onslow	Sneads Ferry	Not Rated
Ambient Monitoring				**Parameters In Excess of State Standards**
P0600000	New River	Onslow	SR 1314	
P1200000	New River	Onslow	US 17	DO, pH, chlor *a*
P3100000	Little Northeast Creek	Onslow	SR 1406	DO
P3700000	Northeast Creek	Onslow	NC 24	DO, pH, chlor *a*
P4400000	Wallace Creek	Onslow	R Drive	chlor *a*
P4750000	New River	Onslow	Sneads Ferry	

* Historical data are available; refer to Appendix III.

** Assessment period 9/1/94 to 8/31/99

Table B-4 Use Support Ratings for Monitored Waters in Subbasin 03-05-02

Use Support Category	Use Support Ratings				
	FS	**PS**	**NS**	**NR**	**Total**
Aquatic Life and Secondary Recreation	28.4 mi. 17,997.8 ac	0	0	43.8 mi. 680 ac 15 coastal mi.*	72.2 mi. 18,677.8 ac 15 coastal mi.*
Fish Consumption	0	31.3 mi. 15 coastal mi.*	0	0	31.3 mi. 15 coastal mi.*
Primary Recreation	0 mi. 9,051.1 ac 15 coastal mi.*	0	0	9.3 mi. 2,520 ac	9.3 mi. 11,571.1 ac 15 coastal mi.*
Shellfish Harvesting	2.3 mi. 8,692 ac	0 mi. 1,711 ac	2.7 mi. 720 ac	0	5.0 mi. 11,123 ac

* Refers to miles along Atlantic coastline.

For more information, refer to the *White Oak River Basinwide Assessment Report* (June 2000) or contact Environmental Sciences Branch at (919) 733-9960 or visit the web site at http://www.esb.enr.state.nc.us/.

2.2 Status and Recommendations for Previously Impaired Waters

This section reviews the status of recommendations made in the 1997 White Oak River Basinwide Water Quality Management Plan, reviews current status and use support ratings, and makes recommendations for the next five years. Little Northeast Creek, lower Southwest Creek and upper estuarine portions of the New River were considered impaired and are discussed in this section. Previously impaired Class SA waters are discussed in Section 2.4 below.

Little Northeast Creek – C NSW (8.3 miles from source to Northeast Creek)

Status of 1997 Recommendations
Little Northeast Creek was considered impaired because of low dissolved oxygen (DO) recorded at the monitoring station on Little Northeast Creek. At that time, the source of the low dissolved oxygen was attributed to both point (four minor discharges with permitted flow of 0.155 MGD) and nonpoint sources, possibly from residential development in the watershed. Because a reliable model to assess assimilative capacity in Little Northeast Creek had not been developed, it was recommended that the four discharges should pursue non-discharge alternatives as soon as possible. All four facilities are currently discharging to Little Northeast Creek.

Current Status
Little Northeast Creek (8.3 miles) is currently not rated (NR) for aquatic life/secondary recreation. The low DO consistently recorded at the monitoring station (AMS P3100000) on Little Northeast Creek is indicative of swamp drainage in this watershed. There was one significant violation above the permitted limit of 30 mg/l BOD_5 from Sentry Utilities. DWQ biologists indicated that the benthic macroinvertebrate community in this creek was healthy. However, a bioclassification was not assigned because the criteria for evaluating benthic macroinvertebrate communities in swampy waters are in draft form.

Although fish tissue samples were not collected in Little Northeast Creek, it is considered partially supporting (PS) for the fish consumption use support category because of a statewide fish consumption advisory for bowfin. Refer to page 61 for more information on this issue.

2001 Recommendations
The four minor discharges in Little Northeast Creek should continue to pursue alternatives to discharge. DWQ will continue to monitor Little Northeast Creek to assess the impacts of development and the eventual removal of the discharges. Criteria to assess the benthic macroinvertebrate communities in swampy waters should be finalized in the near future. DWQ will pursue the reclassification of Little Northeast Creek and its indexed tributaries from Class C NSW to Class C NSW Sw to reflect the swampy conditions in this watershed. Refer to page 62 for more information on the New River NSW strategy.

Southwest Creek – C NSW (19.3 miles from source to Mill Run)
C HQW NSW (1.5 miles from Mill Run to New River)

Status of 1997 Recommendations
Southwest Creek (lower 1.5 miles) was considered impaired because of low dissolved oxygen (DO) in conjunction with algal blooms in the New River estuary. The algal blooms were associated with high nutrient levels in wastewater being discharged by the City of Jacksonville into Wilson Bay (upper New River estuary) and seven discharges from Camp Lejeune. As part of the New River NSW strategy, it was recommended that dischargers pursue options other than discharge to the New River estuarine waters. The City of Jacksonville is now land applying waste and ceased to discharge into the New River in 1998. Camp Lejeune has consolidated its discharges into one advanced wastewater treatment facility at Frenchs Creek. Since then, there has been a noted decline in algal blooms in the estuarine portion of Southwest Creek (DWQ special study, not yet published).

Current Status
Southwest Creek (20.8 miles from source to New River) is currently not rated (NR) for aquatic life and secondary recreation. The upper 19 miles of Southwest Creek are characteristic of swampy waters. DWQ biologists indicated that the benthic macroinvertebrate community in this creek showed moderate impacts; however, a bioclassification was not assigned because the criteria for evaluating benthic macroinvertebrate communities in swampy waters are in draft form.

Although fish tissue samples were not collected in Southwest Creek, it is considered partially supporting (PS) on an evaluated basis for the fish consumption use support category because of a statewide consumption advisory for bowfin. Refer to page 61 for more information on this issue.

2001 Recommendations
Because of the nutrient sensitive nature of Southwest Creek, no new or expanding discharges should be permitted. Criteria to assess the benthic macroinvertebrate communities in swampy waters should be finalized in the near future. DWQ will pursue the reclassification of Southwest Creek (upper 19.3 miles) and its indexed tributaries from Class C NSW to Class C NSW Sw to identify the swampy conditions that have been observed in this watershed. The lower 1.5 miles of Southwest Creek should be reclassified from C HQW NSW to SC HQW NSW to reflect the estuarine nature of this segment. Refer to page 62 for more information on the New River NSW strategy.

New River – C NSW (28.35 miles from source to Blues Creek)
SB NSW (116 acres from Blues Creek to US 17 Bridge)
SB HQW NSW (49 acres from US 17 Bridge to Rail Line Bridge)
SC NSW (397 acres from Rail Line Bridge to Mumford Point)

Status of 1997 Recommendations
The upper estuarine segments of the New River (SB and SC) were considered impaired because of low dissolved oxygen (DO) and high chlorophyll *a* in conjunction with algal blooms. The algal blooms were associated with high nutrient levels in wastewater being discharged by the City of Jacksonville into Wilson Bay (upper New River estuary) and three discharges from Camp

Lejeune. As part of the New River NSW strategy, it was recommended that discharges pursue options other than discharge to New River estuarine waters. The City of Jacksonville is now land applying waste and ceased to discharge into the New River in 1998. Camp Lejeune has consolidated its discharges into one tertiary treatment facility at Hadnot Point. Since then, there has been a noted decline in algal blooms in the estuarine portion of the New River (DWQ special study, not yet published).

Current Status

Preliminary results of a DWQ phytoplankton study in the New River estuary indicate that algal blooms have decreased in frequency, extent and severity since 1998.

Although fish tissue samples were not collected in these segments of New River estuary (SB and SC), they are considered partially supporting (PS) for the fish consumption use support category because of a statewide consumption advisory for bowfin. Fish tissue samples were collected in the upper New River (C NSW, 28.35 miles from source to Blues Creek). None of the samples were in excess of state standards. However, because bowfin were collected and because of a statewide consumption advisory for bowfin, this segment is currently partially supporting (PS) on a monitored basis for the fish consumption use support category. Refer to page 61 for more information on this issue.

The upper two segments of the New River estuary (Class SB, 165 acres) are classified for primary recreation. During this assessment period, there were no swimming advisories in place in these two segments. Based on DWQ ambient monitoring station data and DEH beach monitoring program reports, these segments are currently rated fully supporting (FS) for primary recreation. Because these waters are in a heavily urbanized area, caution should be used when swimming in these waters. The former Wilson Bay WWTP is being converted to an environmental education center (refer to page 104).

2001 Recommendations

Jacksonville will be developing a stormwater program as part of Phase II requirements. DWQ recommends that the city consider protection of primary recreation as well as aquatic life in the New River estuary as part of the stormwater program. Refer to page 58 for more information on urban stormwater runoff.

DWQ will continue to monitor nutrients in the New River to assess the risk of algal blooms to aquatic life. Refer to page 62 for more information on the New River NSW strategy.

North Carolina Water Resources Program with the City of Jacksonville is restoring five acres at Sturgeon City to a brackish marsh to treat stormwater runoff. Refer to page 104.

2.3 Status and Recommendations for Newly Impaired Waters

All waters in subbasin 03-05-02 are currently partially supporting (PS) the fish consumption use support category on an evaluated basis because of a statewide fish consumption advisory for bowfin. Fish tissue samples were collected from Northeast Creek, Brinson Creek and the New River (discussed above in 2.2) in this subbasin. Fifteen miles of Atlantic coastline in this subbasin are currently partially supporting (PS) the fish consumption use support category

because of a consumption advisory for king mackerel. Refer to page 61 for more information on this issue. There are no other newly impaired waters in this subbasin. Impaired Class SA waters are discussed below in Section 2.4.

Northeast Creek – C NSW (10.3 miles from source to NC 24)
Brinson Creek – C NSW (2.9 miles from source to New River)

Fish tissue samples were collected in these two streams. None of the samples were in excess of state standards; however, because bowfin were collected and because of a statewide consumption advisory for bowfin, this segment is currently partially supporting (PS) on a monitored basis for fish consumption. Therefore, these segments are currently partially supporting (PS) on a monitored basis for the fish consumption use support category. Refer to page 61 for more information on this issue.

2.4 Impaired Class SA Waters

There are 11,122 acres and 5.1 stream miles of Class SA waters in subbasin 03-05-02 that were assessed in the shellfish harvesting use support category. In this subbasin, 2,431 acres (22%) are considered impaired in the shellfish harvesting use support category. Refer to Figure B-4 to identify locations of DEH SS growing areas and growing area classifications. Refer to page 49 for DEH SS growing area criteria. Data for making use support determinations were provided by DEH SS (refer to page 40). The larger water areas in this subbasin are described below with reference to DEH SS growing areas. The problem parameter for all waters listed below is fecal coliform bacteria contamination. Refer to page 49 for recommendations to address impaired Class SA waters.

The differences in acreage estimates between years are not necessarily related to changes in water quality, but to different methods of estimating acreage and changes in use support methodology. For more information on changes in use support methodology, refer to page 51. Refer to Appendix III for use support methodology and a complete listing of individual monitored waters.

Stones Bay and New River Tributaries (Area C-2 and C-3)

There are 339 acres in Stones Bay, the New River and smaller tributaries including Stones Creek, Everett Creek, Wheeler Creek and Millstone Creek that are not supporting shellfish harvesting. These areas are DEH SS classified as prohibited/restricted and permanently closed to shellfish harvesting. Most of land around these tributaries drains Camp Lejeune. Potential sources of pollution include runoff from subdivisions, septic systems and wildlife. Failing septic systems have been noted at a mobile home park on Wheeler Creek. There has been little noted change in bacteriological water quality in these areas (NCDENR, 1998d and NCDENR, 1999).

Fullards Creek, Rogers Bay, Chadwick Bay, Alligator Bay and ICWW (Area B-9 and C-1)

There are 167 acres of Fullards Creek, Alligator Bay and tributaries that are not supporting shellfish harvesting. These areas are DEH SS classified as prohibited/restricted and permanently

closed to shellfish harvesting. Rogers Bay (51 acres) is also not supporting shellfish harvesting. Rogers Bay is DEH SS classified as conditionally approved-closed and was closed to shellfish harvesting most of the assessment period. The ICWW, Alligator Bay and Chadwicks Bay are rated partially supporting. These areas are DEH SS classified as conditionally approved-open and were closed to shellfish harvesting from 12.2 percent to 12.5 percent of the five-year assessment period. There are also 875 acres of ORW waters impaired in this subbasin. Potential sources of pollution include runoff from subdivisions and wildlife. There were also noted problems with septic systems along the ICWW (DENR, 1998d).

Salliers Bay, Gillets Creek, Freemans Creek and ICWW (Area C-4)

There are 80 acres of Salliers Bay, Gillets and the ICWW that are not supporting shellfish harvesting. These areas are DEH SS classified as prohibited/restricted and permanently closed to shellfish harvesting. Freemans Creek (65 acres) is also not supporting shellfish harvesting. Freemans Creek is DEH SS classified as conditionally approved-closed and was closed to shellfish harvesting most of the assessment period. The ICWW (154 acres) in the eastern half of the subbasin is rated partially supporting. This area is DEH SS classified as conditionally approved-open and was closed to shellfish harvesting 11.4 percent of the five-year assessment period. The 68,000 gallons per day Camp Lejeune WWTP outfall at Onslow Beach was removed. There are few permanent residents in the area. Potential sources of pollution include runoff from forest clearing and wildlife (DENR, 1998c).

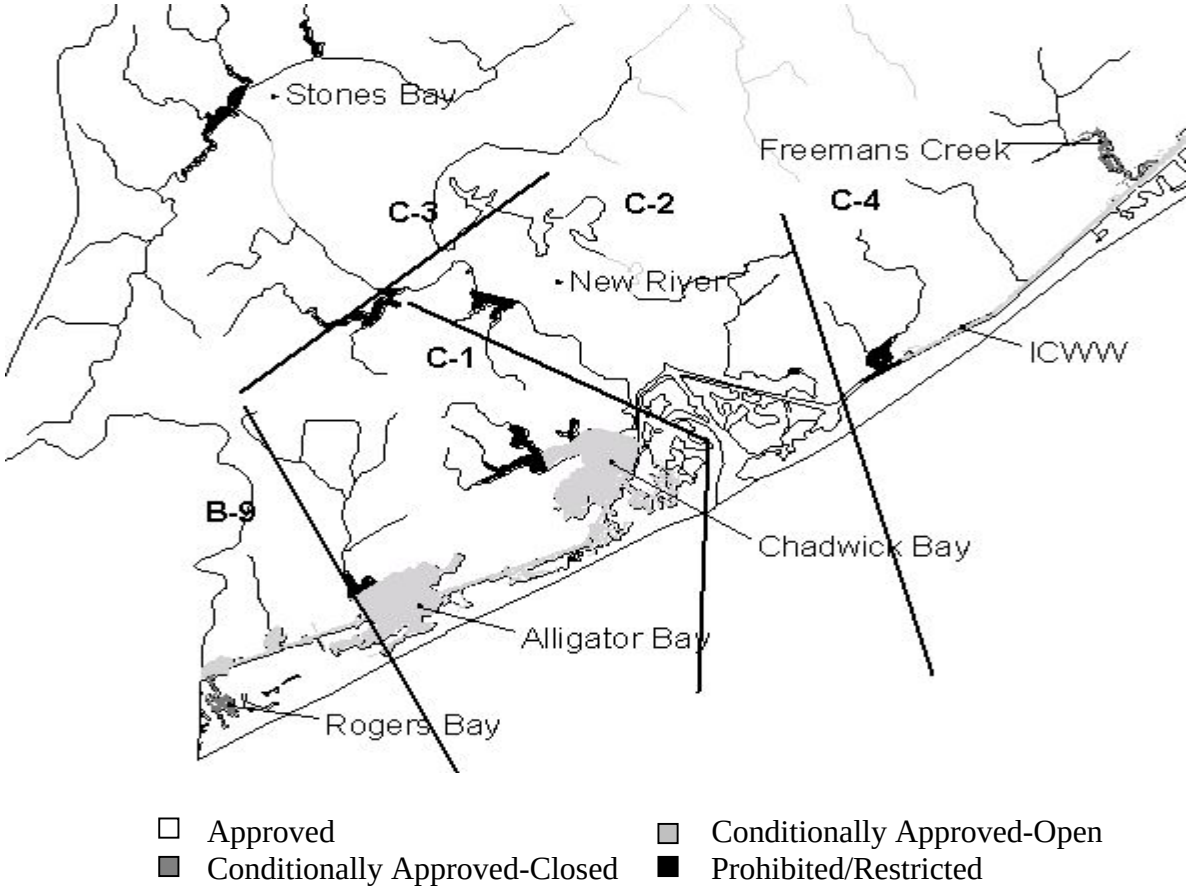

Figure B-4 DEH Shellfish Growing Area Classifications in Subbasin 03-05-02

2.5 303(d) Listed Waters

Little Northeast Creek (8.3 miles) and Southwest Creek (2.6 miles) are on the year 2000 303(d) list. These waters are discussed above. There are 1,163 acres in DEH growing areas C1, C2, C3, C4 and B9 also on the 303(d) list because they were classified by DEH Shellfish Sanitation as prohibited/restricted. The reported acreages for these areas were based on DEH Shellfish Sanitation growing area acreage estimates. Refer to Appendix IV for more information on the state's 303(d) list and listing requirements.

2.6 Others Issues and Recommendations

Nonpoint Source Issues in the Upper New River

Although the aquatic life/secondary recreation use support category in the upper New River (C NSW from source to Blues Creek, 28.35 miles) is not currently impaired, there are indications of nutrient loading, channelization, habitat removal and habitat degradation. Continued development, road building, wetland ditching and draining, and poor de-snagging practices have the potential to cause degradation of aquatic habitats and water quality in the upper New River as well as increase the potential for eutrophication problems in the New River estuary. These land uses should implement best management practices to reduce water quality impacts.

The City of Jacksonville with CWMTF funding developed a stormwater project. Refer to page 104 for more information on this project.

New River Restricted Areas Reclassifications to SA

DWQ and DEH SS are pursuing the reclassifications of New River Restricted #1 and #2 from Class C to Class SA. These two areas were originally classified as C waters to identify the buffer zones around two Camp Lejeune discharges. These discharges were removed in 1998, and DEH SS has reclassified these areas to approved after extensive sampling of waters and shellfish meats (NCDENR, 1998d).

NC Wetlands Restoration Program Local Watershed Plan

The NCWRP will be developing a local watershed plan for areas of subbasin 03-05-02 including Bachelors Delight Swamp, Juniper Swamp, Squires Run, Wilson Bay and the upper New River. Refer to page 103 for more information on this program.