

Camp Lejeune  
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Danny DOB

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REPORT OF SANITARY SURVEY

SNEADS FERRY AREA

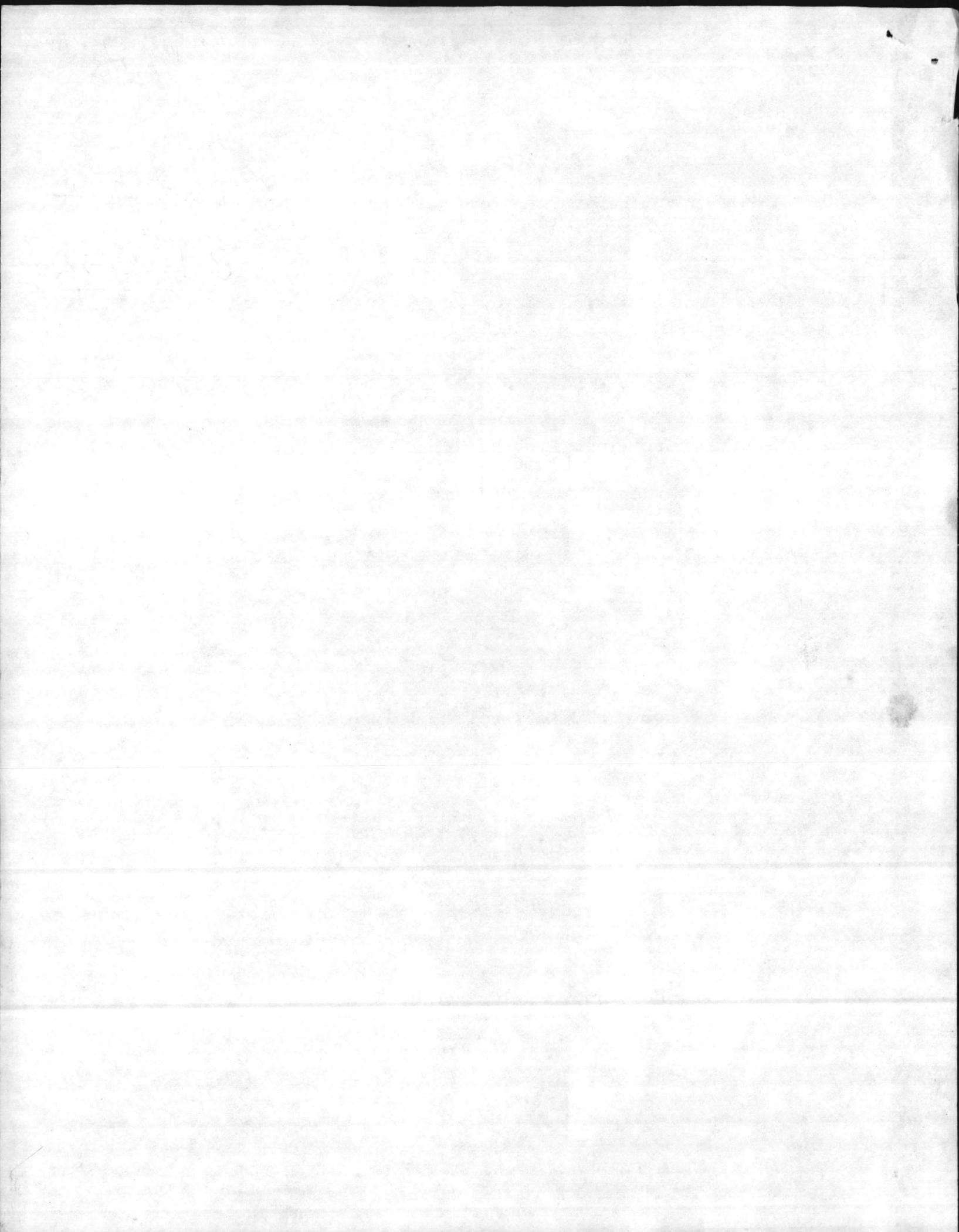
AREA C-2

MARCH 1982 - MAY 1983

SEPTEMBER 1983

CHS S.J.P.	
Permit	VOL.
OLD	525 K
NEW	600 K

NH<sub>3</sub> }  
N<sub>2</sub> } NO LIMIT  
PO<sub>4</sub> }  
Fe<sub>2</sub> } —



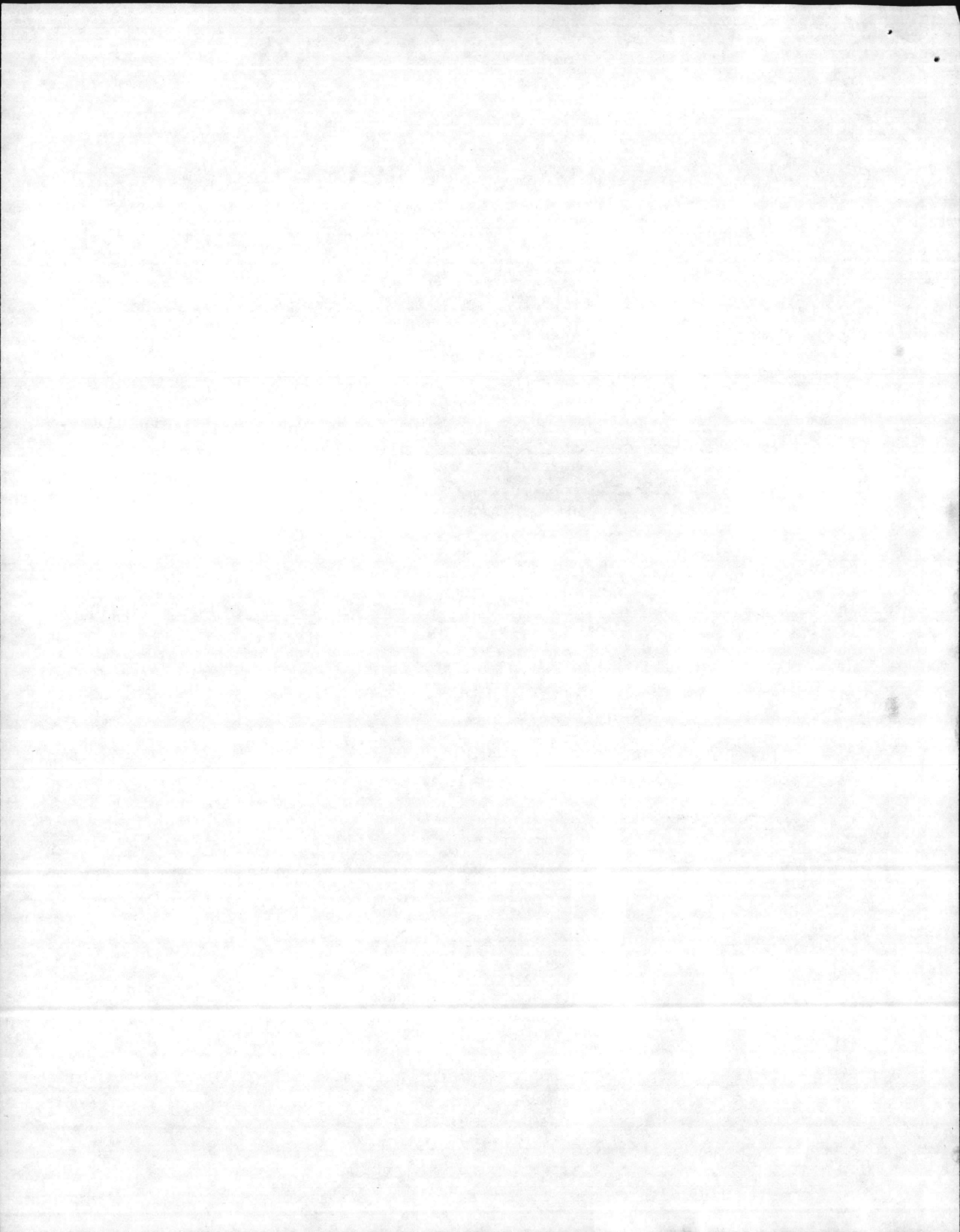
AREA C-2

- EXHIBIT I. AREA MAP AND STATION LOCATIONS
- EXHIBIT II SHORELINE SURVEY ROUTE
- EXHIBIT III SEWAGE VIOLATIONS
- EXHIBIT IV MARINAS, SEWAGE TREATMENT PLANTS, AND HAZARDOUS WASTE DUMP
- EXHIBIT V BACTERIOLOGICAL RESULTS AND MPN MEDIANS
- EXHIBIT VI PROCLAMATION AND CLOSED AREA MAP



Preface

Total Acres.....	3100.
Prohibited Acres.....	183.
Oyster Production.....	Fair.
Clam Production.....	Fair.
Commercial Value.....	Fair.
Recommended Changes.....	Closed 60 Acres.



REPORT OF SANITARY SURVEY

SNEADS FERRY AREA

AREA C-2

By

SHELLFISH SANITATION PROGRAM

NORTH CAROLINA DIVISION OF HEALTH SERVICES

I. INTRODUCTION

Area C-2 is composed of the waters of Wards Channel, Mile Hammock Bay, Howards Bay, Trap Bay, Toms Creek, Traps Creek, Courthouse Bay, Ellis Cove Sneads Creek, Fannie Creek, Wheeler Creek, and New River between Sneads Ferry Bridge, Highway #172, and New River Inlet. (See Exhibit I for area map.)

There are approximately 3100 acres of water in this area. The communities of Sneads Ferry, Peru, and Courthouse Bay Military Installation, Camp Lejeune, are located in C-2. The total watershed of this section is approximately 10 square miles of land area.

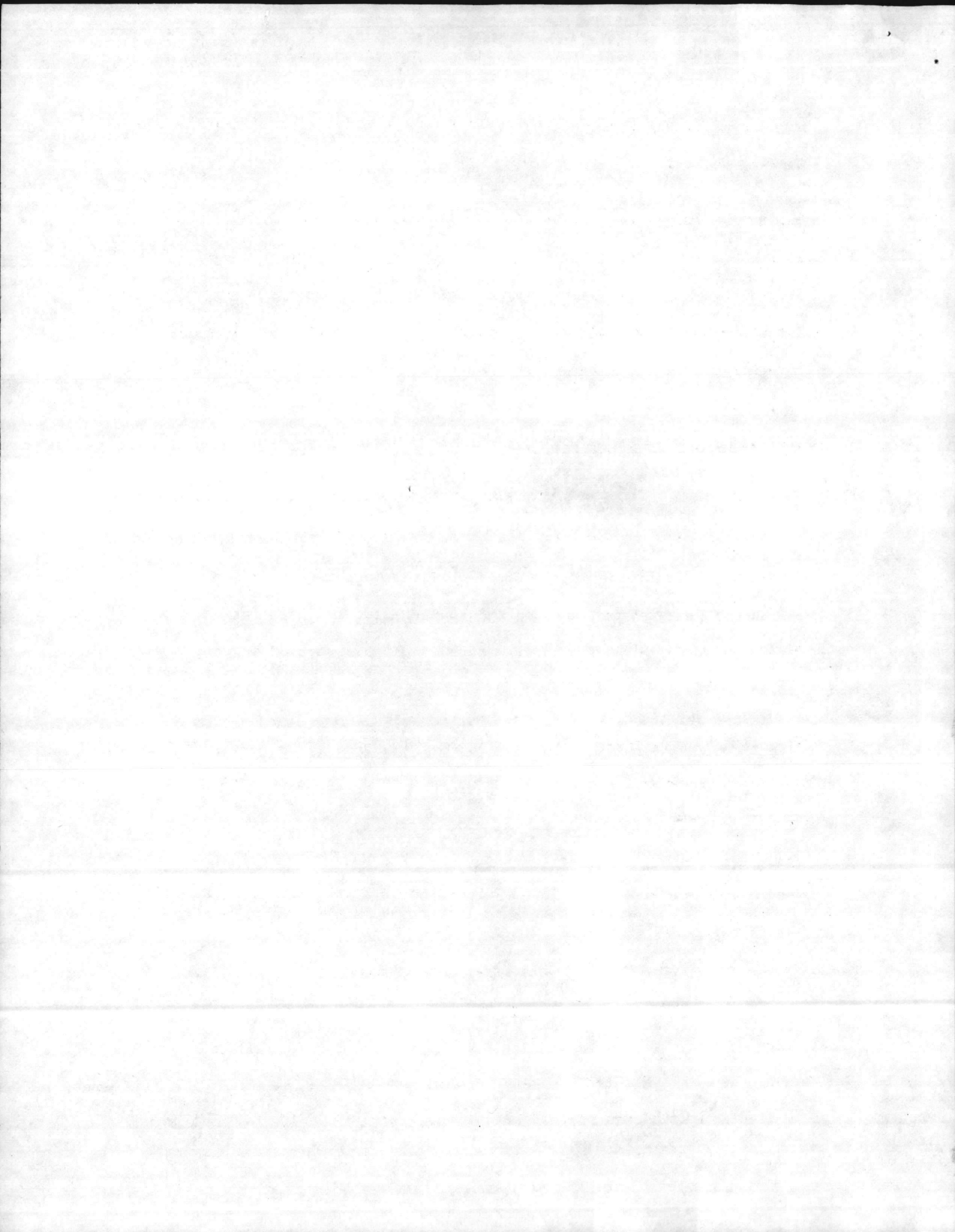
The civilian population is approximately 1500 with an unknown number of military personnel located on the north side of the area.

II. SHORELINE SURVEY OF SOURCES OF POLLUTION

A comprehensive shoreline survey of Area C-2 was begun on February 16, 1983, and completed on May 5, 1983. Ralph Johnson of the Shellfish Sanitation staff conducted the survey.

This area is located in Onslow County and the survey was conducted with the full cooperation of the Onslow County Health Department.

A portion of Area C-2 is located within the confines of Camp Lejeune, United States Marine Corps Reservation. Permission to survey within the





boundaries of the base was requested from the office (staff) of the Commanding General.

During the survey all accessible residences, businesses, and places of public assembly adjacent to or in close proximity to estuarine waters were visited. All establishments in which people were found in attendance were inspected for sewage disposal malfunctions or violations. A total of 189 visits were made with 135 inspections being conducted. Notices of Violations were issued in cases where violations were found. Twenty three (23) notices were issued. See Exhibit III for the violations.

Area C-2 has a multitude of different soil classifications, according to the Barrier Islands publication of the United States Department of Agriculture, Soils Conservation Service, previous survey reports, and the Onslow County Land Use Plan report. Many of these soils have slight to severe limitations for the installation of conventional septic tank systems.

In general, the route followed in this survey is the same route covered in the 1979 comprehensive survey. However, the area visited for physical inspectional purposes has been reduced. Visits and inspections were conducted only on land areas contiguous to estuarine waters. The survey started at the east end of County Road (S.R.) #1515, adjacent to New River. From this starting point the survey proceeded in a northwesterly direction along the southwestern shoreline of New River and adjacent estuarine waters. All accessible roads, streets, driveways, and dirt paths contiguous to estuarine waters were checked. The survey continued in a northwesterly direction to a point where Hwy #172 crosses New River (Sneads Ferry Bridge) and enters Camp Lejeune. The survey stopped at this point and picked up at the end of Mile Hammock Road on Camp Lejeune. The survey continued in a westerly direction along the northeastern shoreline of the ICWW and associated



estuarine waters to New River. The survey continued northwesterly along the northeastern shoreline of New River, stopping at the Sneads Ferry Bridge (Hwy #172), Pollocks Point. (See Exhibit II for shoreline survey route.)

Area C-2 is located in the Stump Sound Township. The township had a 1980 population of 5,933. Five hundred and forty one (541) visits were made in the 1979 comprehensive survey. This figure multiplied by 2.75 (population per household in 1980 census for Onslow County) equals 1,488. Some development has occurred since the 1979 survey. A few of the homes visited in the 1979 survey were summer or weekend homes. A very rough estimate of the civilian population of the area is approximately 1,500. The portion of Area C-2 located on Camp Lejeune has an unknown permanent and transient population. The overall population of this portion fluctuates with the number of military personnel involved in military maneuvers.

The following is an informational list of marinas, marina-type docks, campgrounds; and a sewage treatment plant (STP), and a hazardous waste dump.

1. Red's Boat Repair and Dockage

Location - S.R. #1542 (Sneads Ferry) on New River

Wet Slips - None, general dockage

Permanent Boats - 10

Boats with Marine Heads - One

Pump-Out Service - None

Service - Rail for repairs

General - No bathroom facilities

2. L. T. Everett & Sons Seafood, Inc.

Location - S.R. #1542 (Sneads Ferry) on New River (Fulcher Landing)

Wet Slips - None, general dockage

Permanent Boats - 12



Boats with Marine Heads - 5

Pump-Out Service - None

Transient-Type Boats - Unknown (commercial boats unload catch - no tourist type transients)

3. J. R. Yopp Tackle Shop

Location - S.R. #1541 (Sneads Ferry) on New River (Fulcher Landing)

Wet Slips - None, general dockage

Permanent Boats - 5

Boats with Marine Heads - 3

Transient Boats - Unknown

Pump-Out Service - None

Service - Public boat ramp

General - Bathroom facilities (septic tank system)

4. Sneads Ferry Seafood

Location - S.R. #1541 (Sneads Ferry) on New River (Fulcher Landing)

Wet Slips - None, general dockage

Permanent Boats - None

Usage - Commercial fishing boats unload their catch

Pump-Out Service - None

5. Bowman's Seafood

Location - S.R. #1543 (Sneads Ferry) on New River (adjacent to Fulcher Landing)

Wet Slips - None, general dockage

Permanent Boats - 8

Boats with Marine Heads - One

Pump-Out Service - None

6. B. F. (Tim) Millis Seafood

Location - S.R. #1541 (Sneads Ferry) on Wheeler Creek, adjacent to New River



Wet Slips - None, general dockage

Permanent Boats - 10

Boats with Marine Heads - One

Transient Boats - 5 (commercial-type fishing boats)

Pump-Out Service - None

General - Possible violation of Department of Natural Resources and Community Development (NRCD) outfall standards - This information was given to NRCD, Wrightsville Beach, N. C.

7. Gulf Atlantic Seafood (Old name-Jack Millis Fish House)

Location - Intersection of S.R. #1541 and S.R. #1557 (Sneads Ferry) on Wheeler Creek, adjacent to New River.

Wet Slips - None, general dockage

Permanent Boats - 8

Boats with Marine Heads - One

Transient Boats - Unknown

Pump-Out Service - None

8. Tammy Huies Seafood

Location - Intersection of S.R. #1541 and S.R. #1557 (Sneads Ferry) on Wheeler Creek, adjacent to New River

Wet Slips - None, general dockage

Permanent Boats - 5

Boats with Marine Heads - None

Transient Boats - None

Pump-Out Service - None

9. Bills Place

Location - Private dirt path off Hwy #172 on Fannie Creek, adjacent to New River

General - Previously small skiff-type boats docked here and/or were rented to fishermen. The business is now defunct. Three (3) small skiffs





(privately owned) are docked at this facility.

10. William T. Davis Fish House

Location - End of S.R. #1558 on New River

Wet slips - None, general dockage

Permanent Boats - 3

Boats with marine heads - One

Transient Boats - None

Pump-Out Service - None

11. Old Ferry Marina

Location - Private dirt path off Hwy #172, adjacent to New River

Wet Slips - Total is unknown

Permanent Boats - This marina has 14 permanent boats; however, the basin contains approximately 12 other permanent boats.

Boats with marine heads - The 14 boats associated with the marina have portable heads. Several of the other boats moored in the basin are of sufficient size to have permanent heads.

Transient Boats - 30 to 40 per year

Pump-Out Service - None

Service - Public boat ramp and rail for repair service

12. Yopp's Marina and Campgrounds

Location - Hwy #172 on New River at Sneads Ferry Bridge

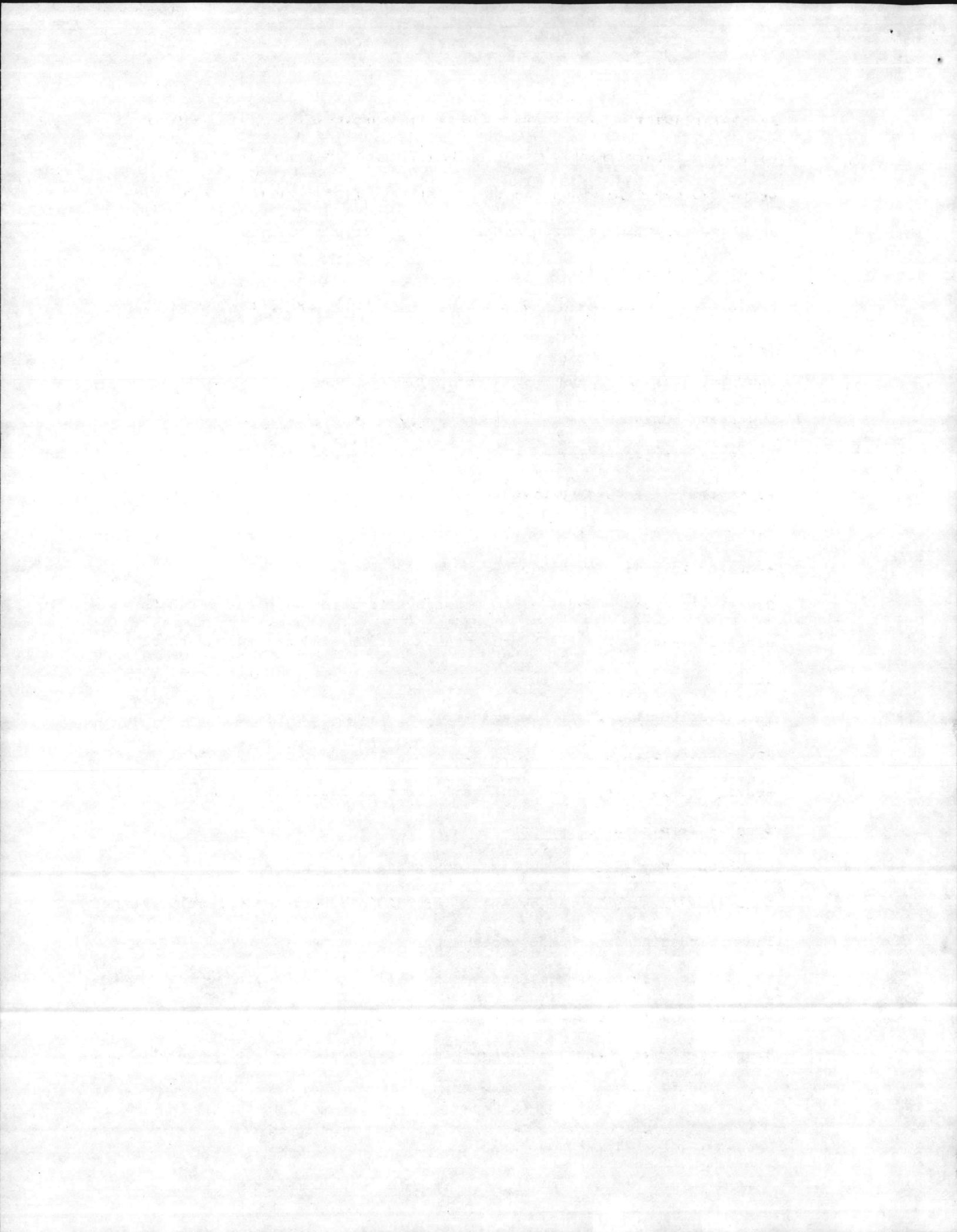
General - Apparently the ownership of this property has recently changed.

The marina and campgrounds were empty at the time of survey. General information is that the establishment will open for business later this year.

13. Bluebird Tactical Landing Zone (TLZ) United States Marine Corps (USMC)  
Camp Lejeune

Location - End of Mile Hammock Road on Mile Hammock Bay, Camp Lejeune

Dockage - General dockage



Permanent Boats - None known - These docking facilities are used by various military craft. Civilian boats can be observed moored in this protected bay throughout the year. Fifteen (15) civilian boats have been observed moored there at one time.

Pump-Out Service - None

General - Privies and porta-johns are used by the military for bathroom facilities.

#### 14. Courthouse Bay Sewage Treatment Plant (STP)

Location - On dirt path off the end of Harvey Street, Camp Lejeune, on New River at Creels Point

Type System - Secondary trickling filter system with post chlorination

Maximum Design Capacity - 525,000 gpd

Average Flow - 300,000 to 350,000 gpd

Outfall Location - New River between Creels Point and Wilkins Bluff

General - Possible future plans to enlarge this system and build a holding lagoon to equalize the amount of waste treated by this plant in a given time period. - Storm water run-off from parking lots and streets has been routed to the plant for treatment in the past two years. Civil Service personnel operate this plant for the military and data is furnished to NRCD.

#### 15. Courthouse Bay Marina, USMC

Location - End of Harvey Street, Harvey Point, Camp Lejeune on Courthouse Bay

Wet Slips - Six slips with general dockage

Permanent Boats - Unknown, observed two (2) boats docked

Boats with Marine Heads - Unknown, observed one (1) boat docked of sufficient size for a permanent head

Pump-Out Service - None observed



General - Military personnel basically use this facility.

#### 16. USMC Amtrack Facility

Location - Boat Basin Road, Camp Lejeune on Courthouse Bay

Permanent Boats - Two (2), civilian-type boats were observed docked at this facility. An unknown number of military personnel carriers (amtracks) are stored and serviced at this location.

#### 17. Hazardous Waste Dump, USMC

Location - Southwest side of New River, Stones Bay, approximately  $\frac{1}{2}$  mile or less southwest of the River and approximately 1.1 miles northwest of the mouth of Everett Creek on Camp Lejeune - This location is physically in Area C-3 upstream of Area C-2.

General - This discontinued hazardous waste dump was opened in the 50's and closed on or about 1976. Drainage from this general location flows into New River. This dump is under the jurisdiction of the Federal Government's Environmental Protection Agency (EPA). Environmental Management personnel at Camp Lejeune interviewed did not possess data pertinent to the type of waste buried, amount, or environmental hazards, if any, posed by this dump.

See Exhibit IV for the mapped locations.

Area C-2 does have some private boat docks. The number or size of the boats that use this dockage is unknown. No large concentrations of animals were observed.

Area C-2 has two (2) small creeks and a STP outfall location closed to the harvest of shellfish. These closures are Fannie Creek, Wheeler Creek, and a buffer zone around the outfall for the Courthouse Bay STP, located in the vicinity of Creels Point, in New River.

Area C-2 does not have any on site sources for waste from heavy industry.



Chemical controls used on the sparse agricultural crops, lawns, and gardens do represent possible sources for chemical pollutants. Environmental Management personnel at Camp Lejeune apply chemical controls (sevin-dust) for ticks, machine fog for mosquitoes, and treat fences with a herbicide (2-4-D) for weed control. No on site radiological sources were found in the area.

Solid waste is collected by a green box system and disposed of in a county landfill outside Area C-2. The solid waste from Camp Lejeune is collected by the base maintenance office or civilian contractors and transported to a landfill located on Camp Lejeune. This landfill site is located outside Area C-2. Several scattered trash piles were observed along the shoreline (civilian section) of New River in the vicinity of Sneads Ferry.

The vegetation found in Area C-2, in general, is consistent with vegetation found in eastern or southeastern North Carolina.

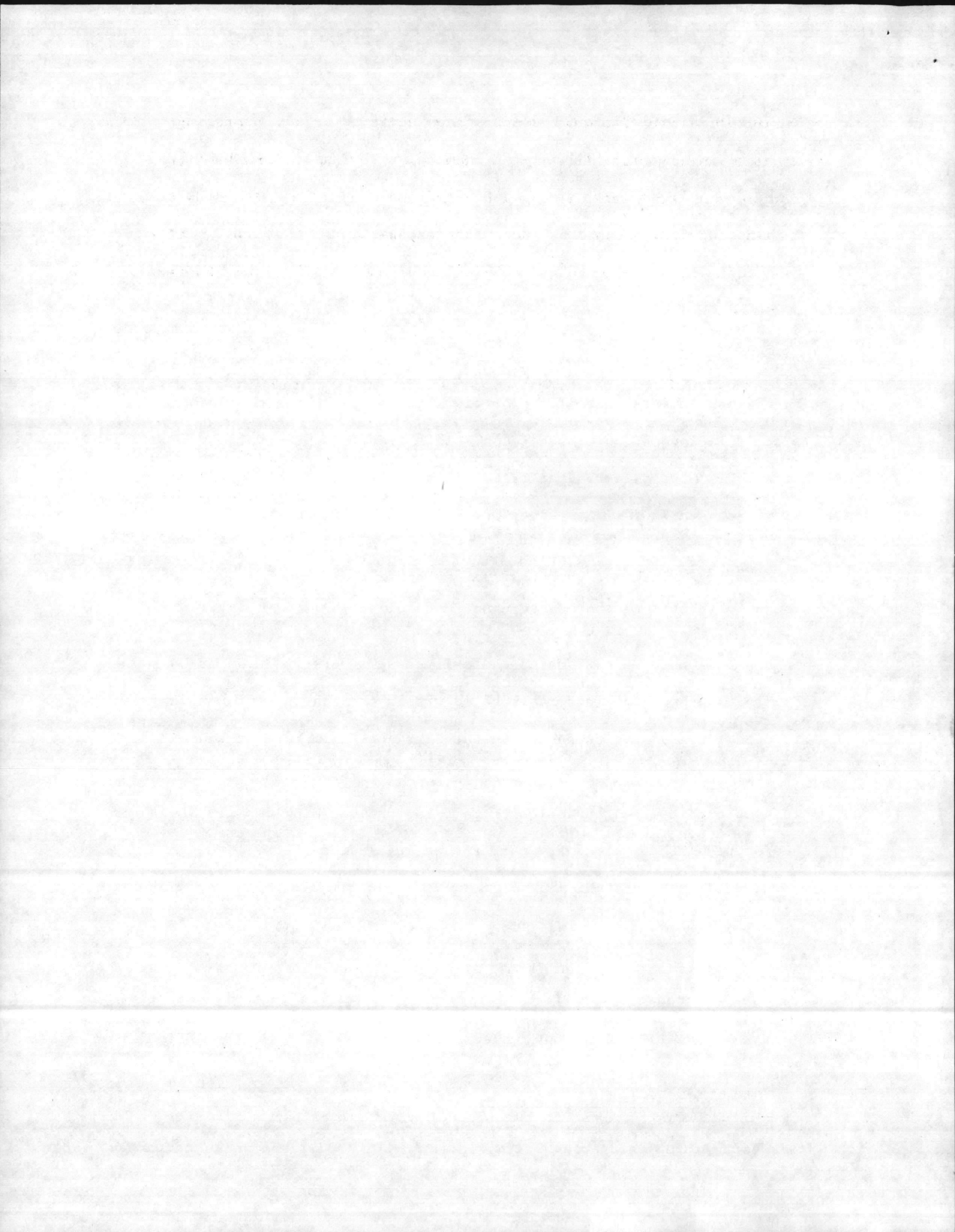
In conclusion, Area C-2 drains basically a semi-rural section of Onslow County. Much of the landmass located within the confines of Camp Lejeune is used for training purposes. Sneads Ferry has a mixture of dense and scattered development. The probability of the remaining undeveloped land located outside the boundaries of Camp Lejeune becoming densely developed and/or populated in the very near future is predictable.

### III. EVALUATION OF HYDROGRAPHIC FACTORS RESPONSIBLE FOR SPREAD OF POLLUTION

The only sewage treatment plant that discharges directly into the waters of Area C-2 is located on the east side of the River and is the disposal unit of the Courthouse Bay Military Installation. Results indicate that the plant is operating efficiently and the buffer zone around the plant is adequate.

### IV. BACTERIOLOGICAL SURVEY OF SHELLFISH GROWING WATERS AS INDICATED

The bacteriological survey was begun in March, 1982, and concluded in May, 1983.

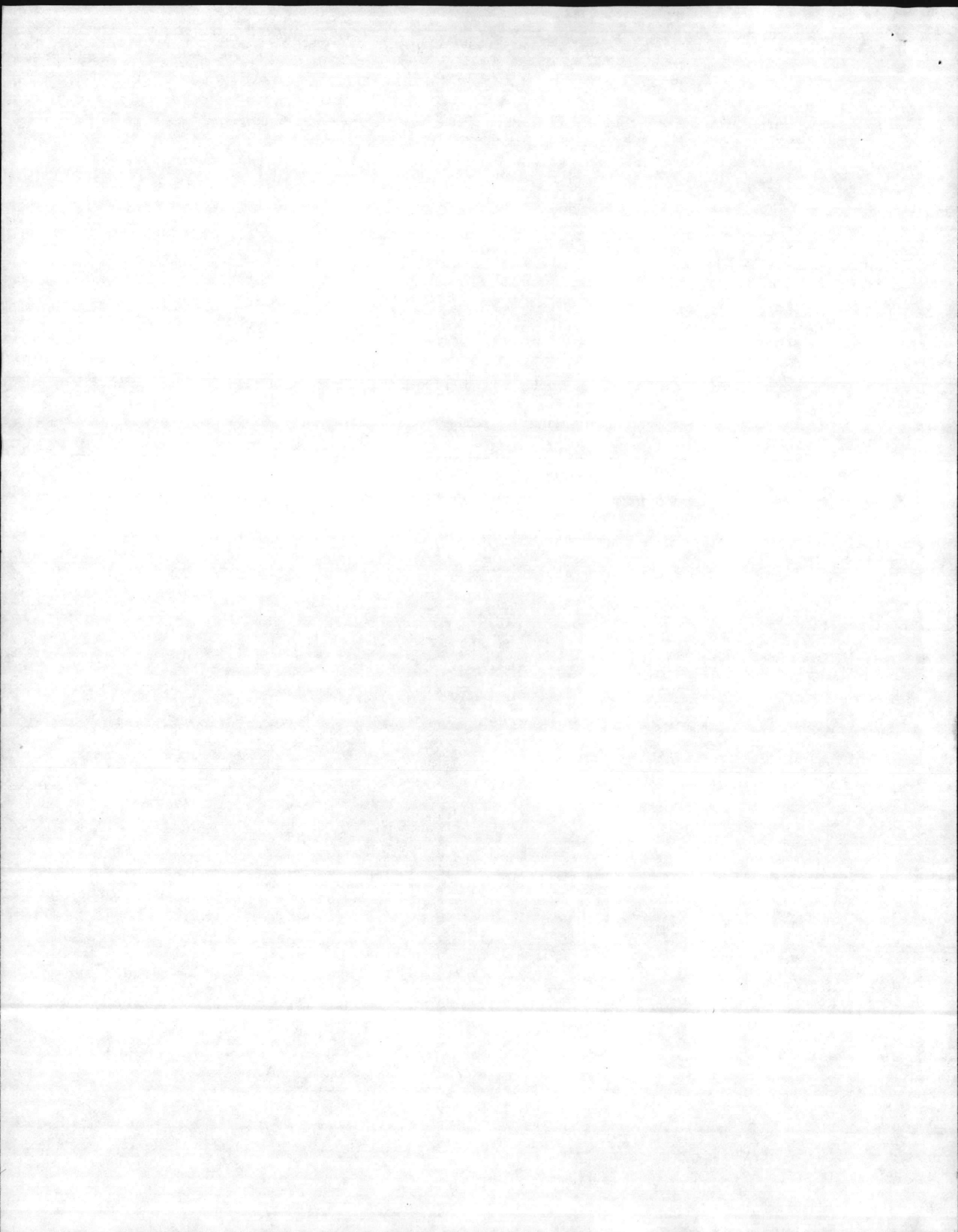


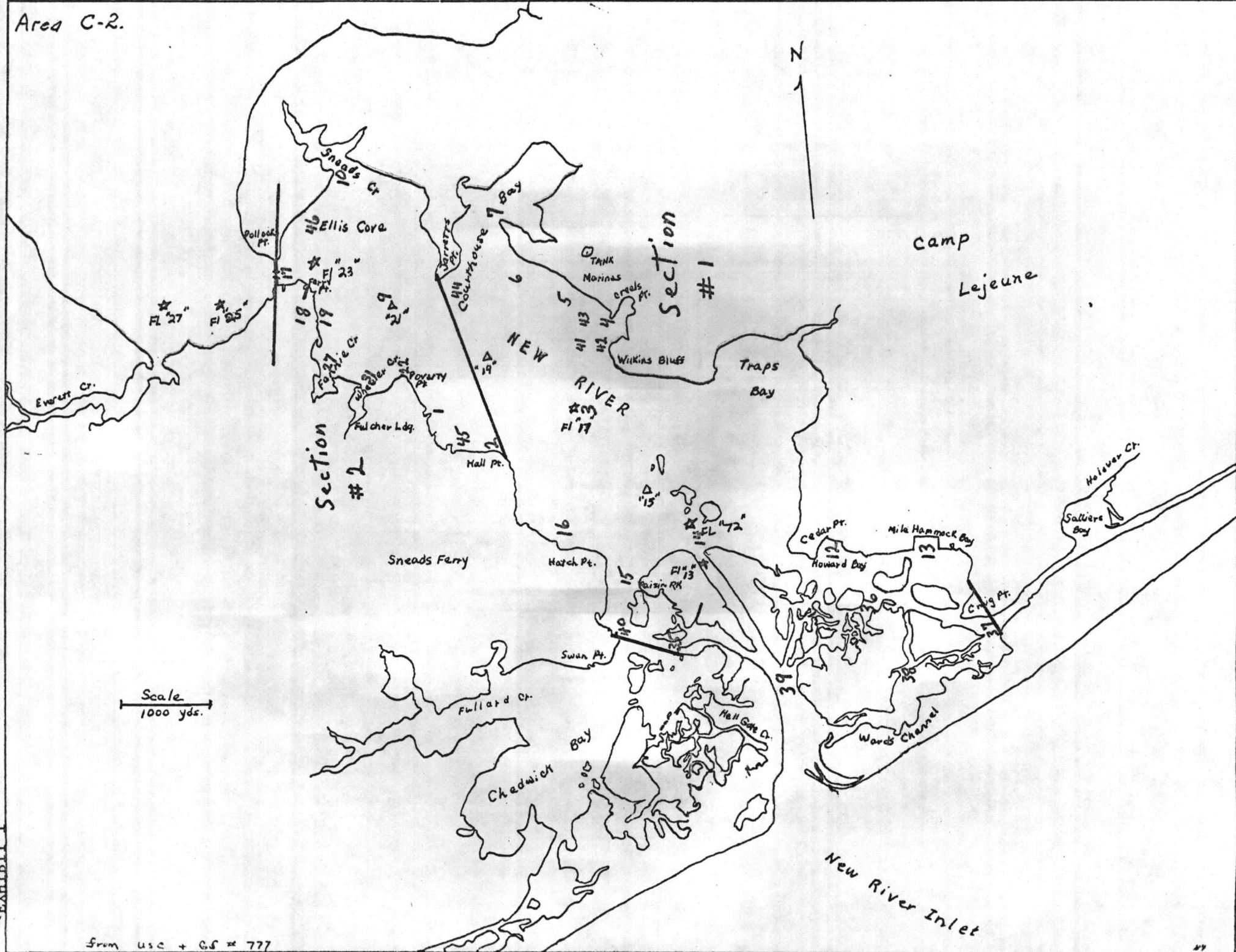


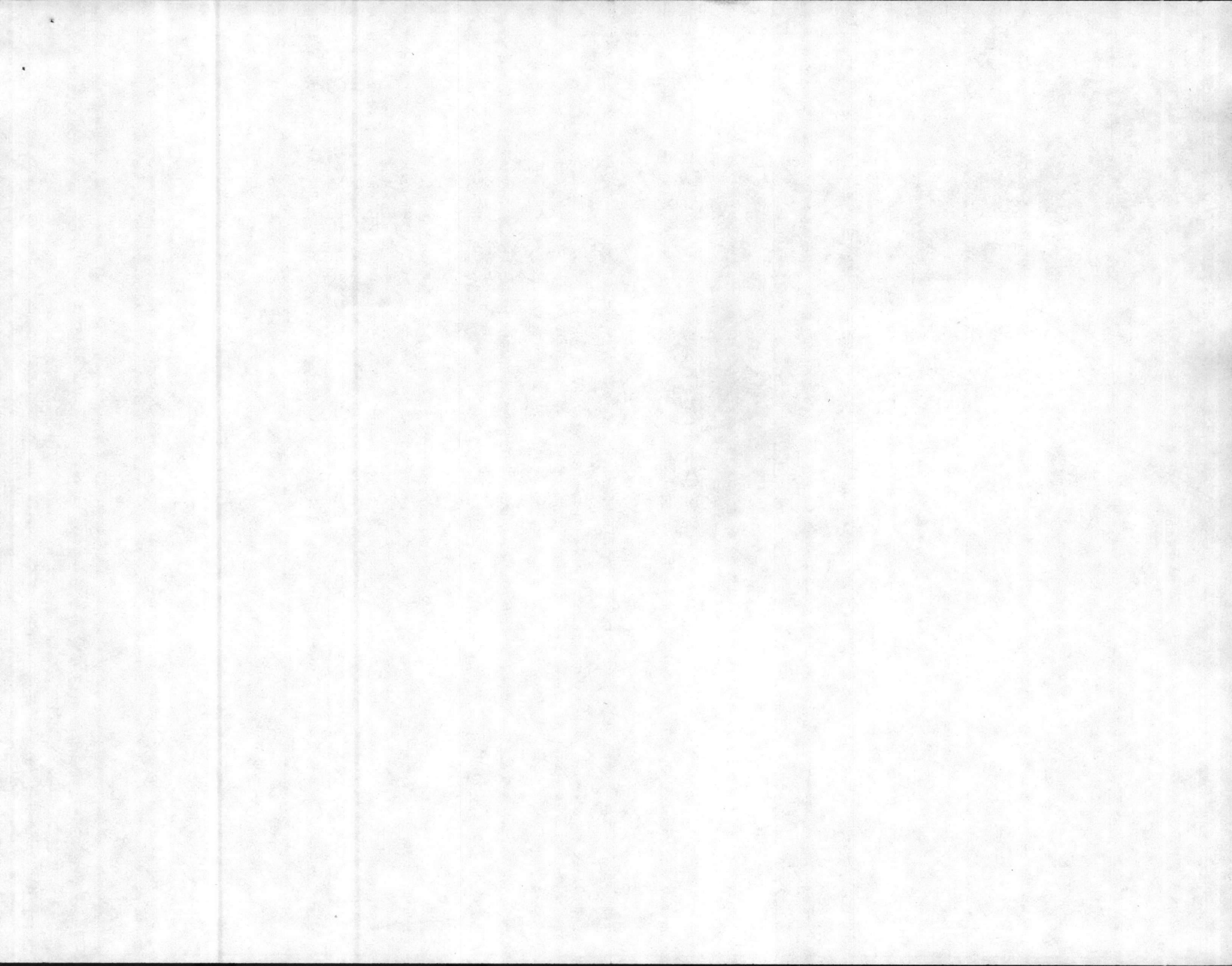
During the survey 295 water samples were collected from 28 stations. (See Exhibit I for station locations.) Results indicate that much of the area continues to have satisfactory bacteriological results. The only exception to this is the Wheeler Creek and Fannie Creek section. Fecal coliform levels have increased in both Creeks. (See Exhibit V for all bacteriological results.)

V. SUMMARY AND RESULTANT AREA CLASSIFICATION

Most of Area C-2 remains much as it was on the last survey. The exception is the Wheeler Creek and Fannie Creek prohibited area. The 10% rule was exceeded at stations outside the prohibited area boundary line. It is, therefore, necessary to recommend additional closure in this section. The remainder of the area will continue as presently classified. (See Exhibit VI for proclamation and closed area map.)

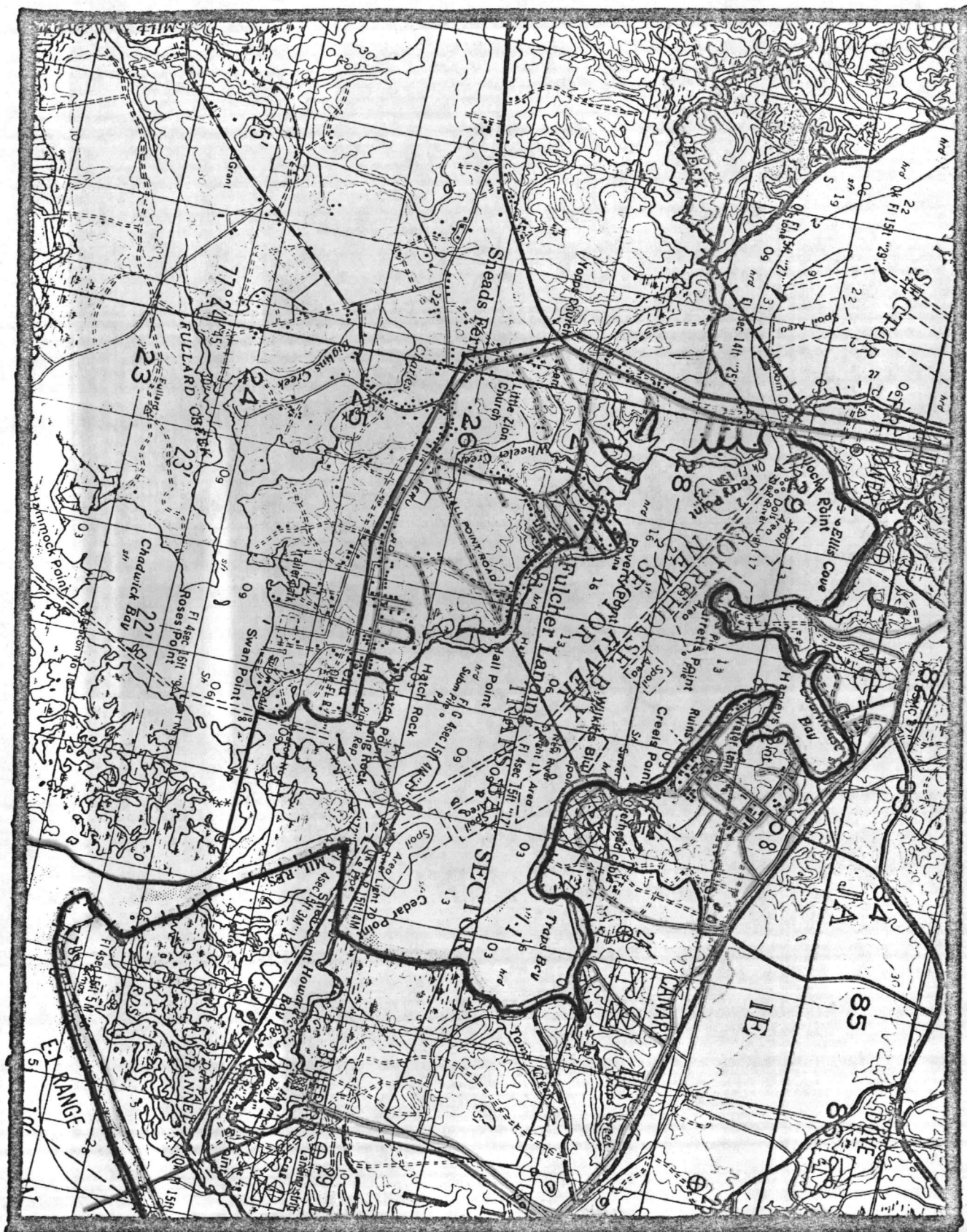






SHORELINE SURVEY ROUTE

AREA C - 2



( GREEN - BOUNDARIES ) ( YELLOW - VISUAL INSPECTION )  
( RED - PHYSICAL INSPECTION ) ( BLUE - CAMP LEJEUNE )



## SHORELINE SURVEY DATA

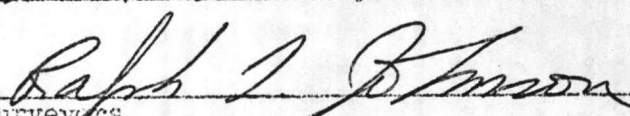
BASIN Area C - 2

COUNTY Onslow

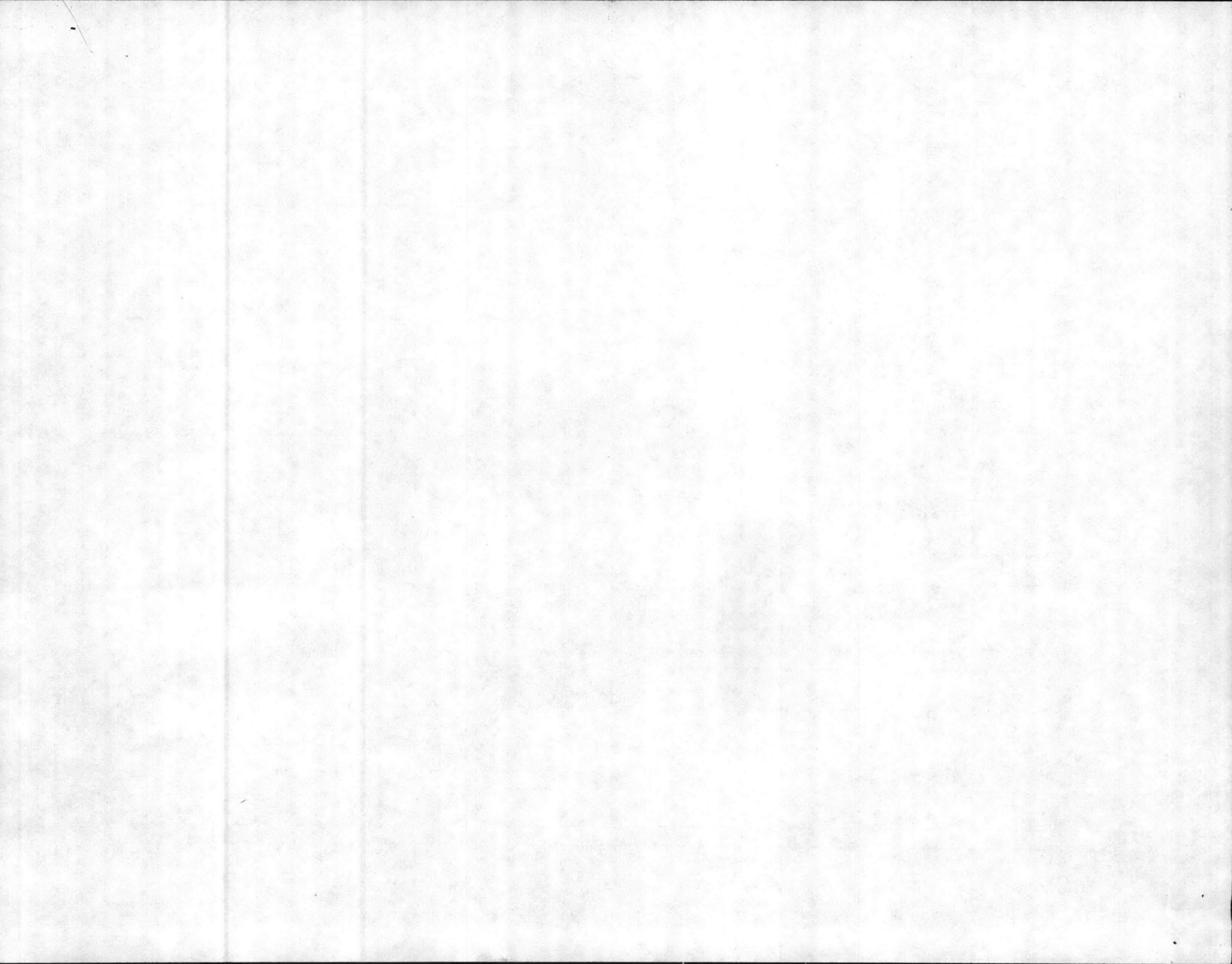
DATE 8-2-83

No.	VIOLATION Date	Owner	Tenant	Location	Violation	Date Corrected
1	2-16-83	Mr. Edward English	Unknown	P.O. Box 94 Sneads Ferry, N.C. 28460	Kitchen Waste and Washing Machine Waste to System	
2	2-16-83	Mrs. Vera M. Smith	Mr. John Williams	156 Cannady Rd. Jacksonville, N.C. 28540	Repair Drainfield and Washing waste to System	
3	2-16-83	Mr. Richard Richman		Rt.#1 Box 132 Sneads Ferry, N.C. 28460	Washing Machine Waste to be included in System	
4	3-10-83	Mrs. Clara Everett	Mr. Ray Liverman	P.O. Box 304 Sneads Ferry, N.C. 28460	Repair septic tank, drainfield, and grease trap	
5	3-10-83	Mr. Charles Norris		Rt.#1 Box 103 Sneads Ferry, N.C. 28460	Washing Machine plumbing to be connected.	
6	3-16-83	Mr. Arther Everett	Mr. Bill Daughtry	Box 165 Sneads Ferry, N.C. 28460	Septic Tank top needs repair	
7	3-16-83	Mrs. Uldine Johnson	Mr. Dennis Pleasants	4125 Tabor Church Rd. Fayetteville, N.C. 28301	Grease trap repair and Washing Waste to System	
8	3-16-83	Mr. John Bowman		Rt.#1 Box 164E Sneads Ferry, N.C. 28460	Connect inside bath shower to System	
9	3-16-83	Mr. Arther Everett	Mrs. Lydia Burrough	Box 165 Sneads Ferry, N.C. 28460	Washing Machine waste to System	
10	3-29-83	Mr. D.A. Thompson Sr.		Rt.#1 Box 162 Sneads Ferry, N.C. 28460	Repair Grease Trap in System	
11	3-29-83	Mr. Arther Everett	Mr. Greg Dimaggio	Box 1655 Sneads Ferry, N.C. 28460	Repair plumbing to Kitchen Sink	
12	3-29-83	Mr. Arther Everett	Mr. Ron Wingo	Box 165 Sneads Ferry, N.C. 28460	Washing and Kitchen Waste to be included.	
13	3-29-83	Mr. Larry Rolton		P.O. Box 668 Sneads Ferry, N.C. 28460	Repair Septic Tank Field & Include Washing Waste	
14	3-29-83	Ennett Realty	Mr. Gary Benard	Sneads Ferry, N.C. 28460	Washing Machine waste to System	
15	4-6-83	Mrs. Robert McIntyre	Mr. Jimmy Jones	P.O. Box 478 Sneads Ferry, N.C. 28460	Repair or replace System	

Total Violations \_\_\_\_\_

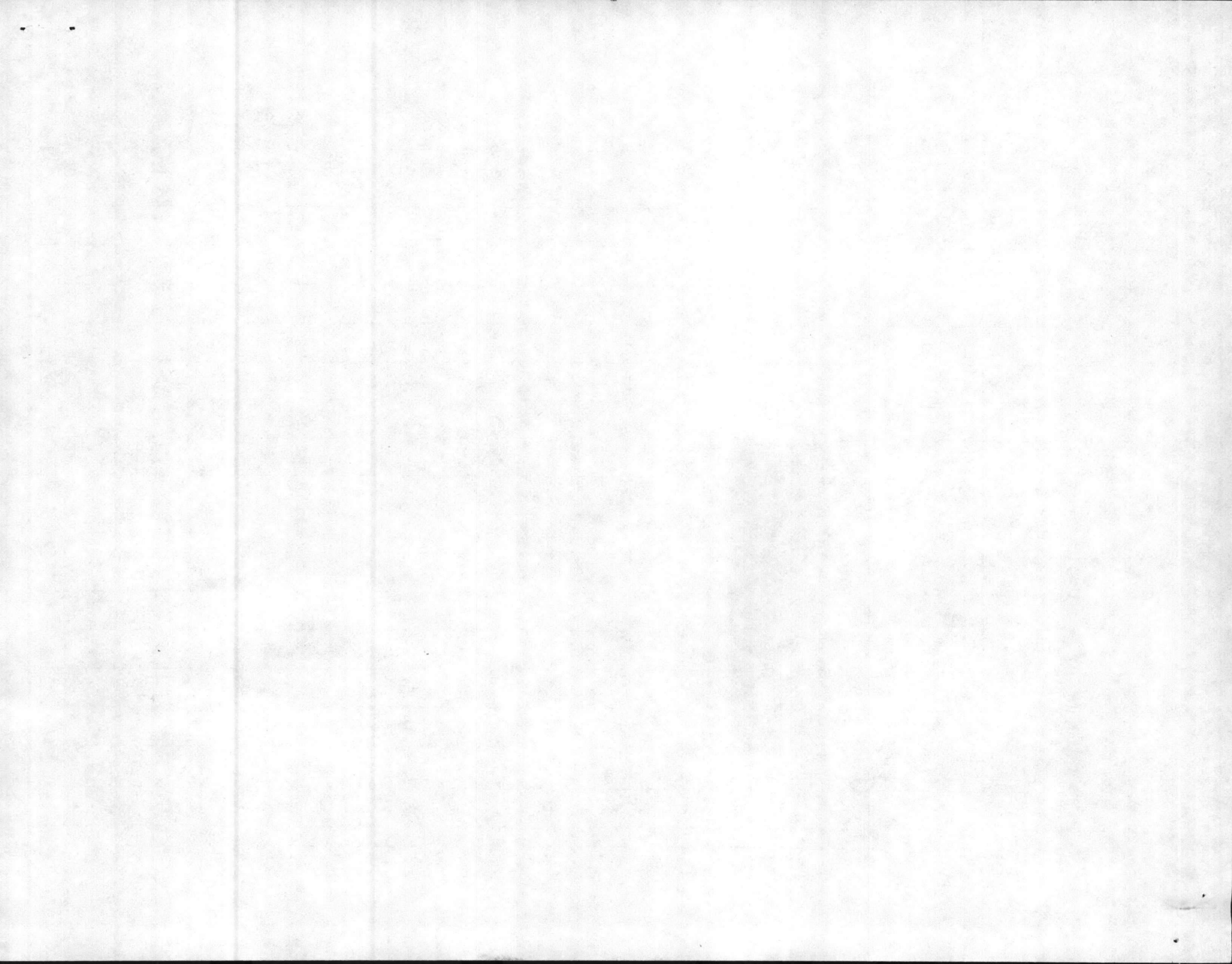

  
Surveyors

Cumulative Total Corrections \_\_\_\_\_







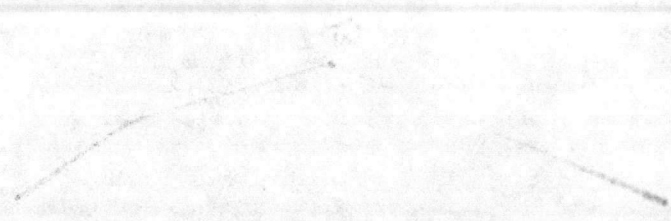
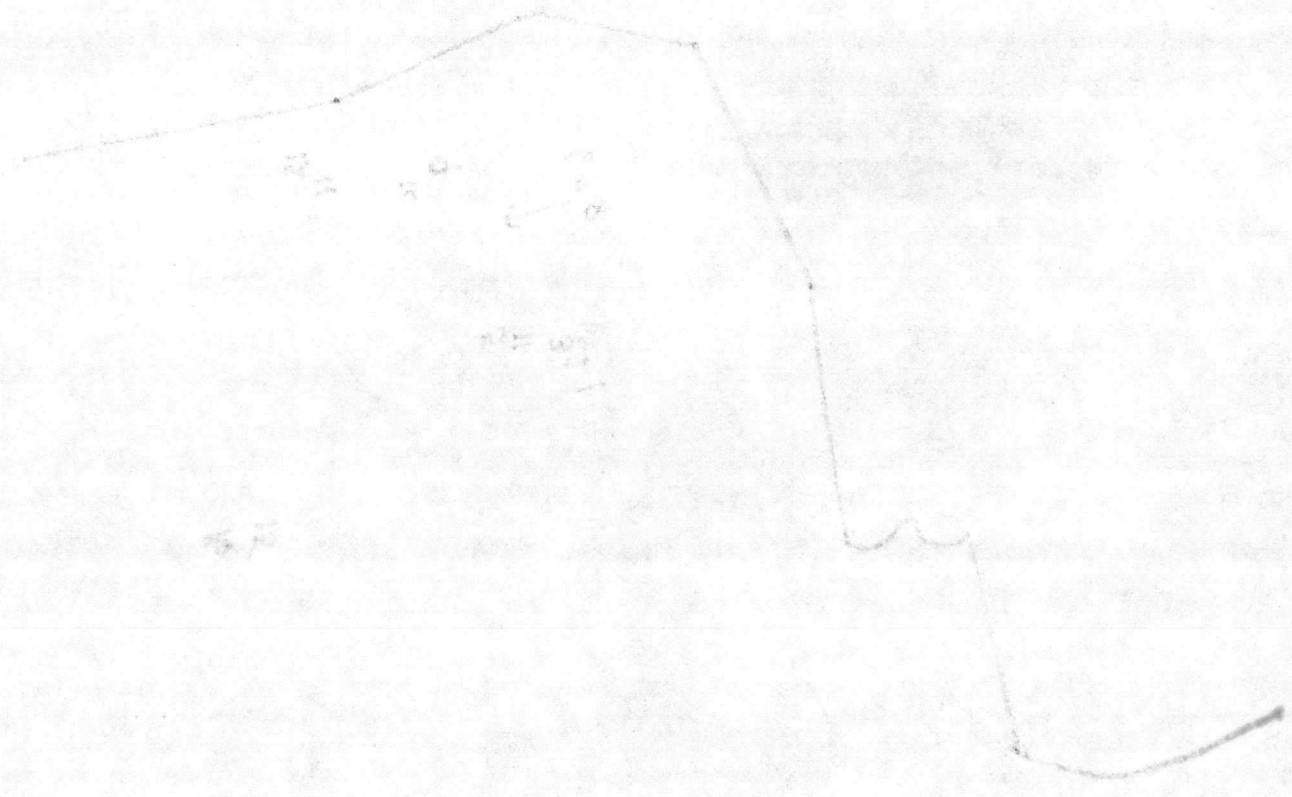


MARINAS , MARINA-TYPE DOCKS , CAMPOUND , MILITARY DOCKS , SEWAGE TREATMENT PLANT , AND HAZARDOUS WASTE DUMP

AREA C - 2



100



STATION NOS.	3/3/82	4/19/82	7/22/82	9/27/82	11/8/82	12/8/82	1/25/83	2/17/83	4/20/83	4/25/83	5/17/83			m.l.d.
3	22	<1.8	<1.8	4.5	<1.8	7.8	4.0	4.5	7.8	<1.8	4.5			4.0
4	23	4.5	<1.8	<1.8	<1.8	<1.8	<1.8	2.0	<1.8	4.0	<1.8			<1.8
5	7.8	2.0	<1.8	<1.8	<1.8	6.1	<1.8	6.8	2.0	4.5	4.5			2.0
6	17	<1.8	2.0	4.5	<1.8	17	2.0	2.0	13	<1.8	7.8			2.0
7	2.0		7.8	6.8	<1.8	23	<1.8	7.8	7.8	21	4.5			7.3
8														
11	13	2.0	4.5	7.8	<1.8	6.8	1.8	7.8	<1.8	<1.8	2.0			2.0
12	1.8	11	33	4.5	2.0	22	<1.8	34	13	13	2.0			11
13	<1.8	26	13	6.8	13	17	<1.8	13	49	23	<1.8			13
14	23	<1.8	<1.8	4.5	2.0	7.8	2.0	13	4.5	2.0	6.8			4.5
15	<1.8	<1.8	7.8	<1.8	2.0	9.2	4.5	33	17	13	22			7.8
16	14	4.5	2.0	<1.8	4.5	33	13	17	4.0	1.8	<1.8			4.5
35														
36	4.5	17	<1.8	13	1.8	7.8	<1.8	49	7.8	4.5	<1.8			4.5
37	6.8	33	1.8	11	<1.8	33	2.0	130	23	13	<1.8			11
39														
40	4.5	7.8	<1.8	4.5	2.0	4.5	2.0	70	4.0	4.5	2.0			4.5
41														
42	13	2.0	7.8	2.0	<1.8	7.8	<1.8	13	4.0	13	4.0			4.0
43														
44	17	<1.8	4.5	4.0	<1.8	6.8	1.8	4.5	4.5	4.5	4.0			4.5

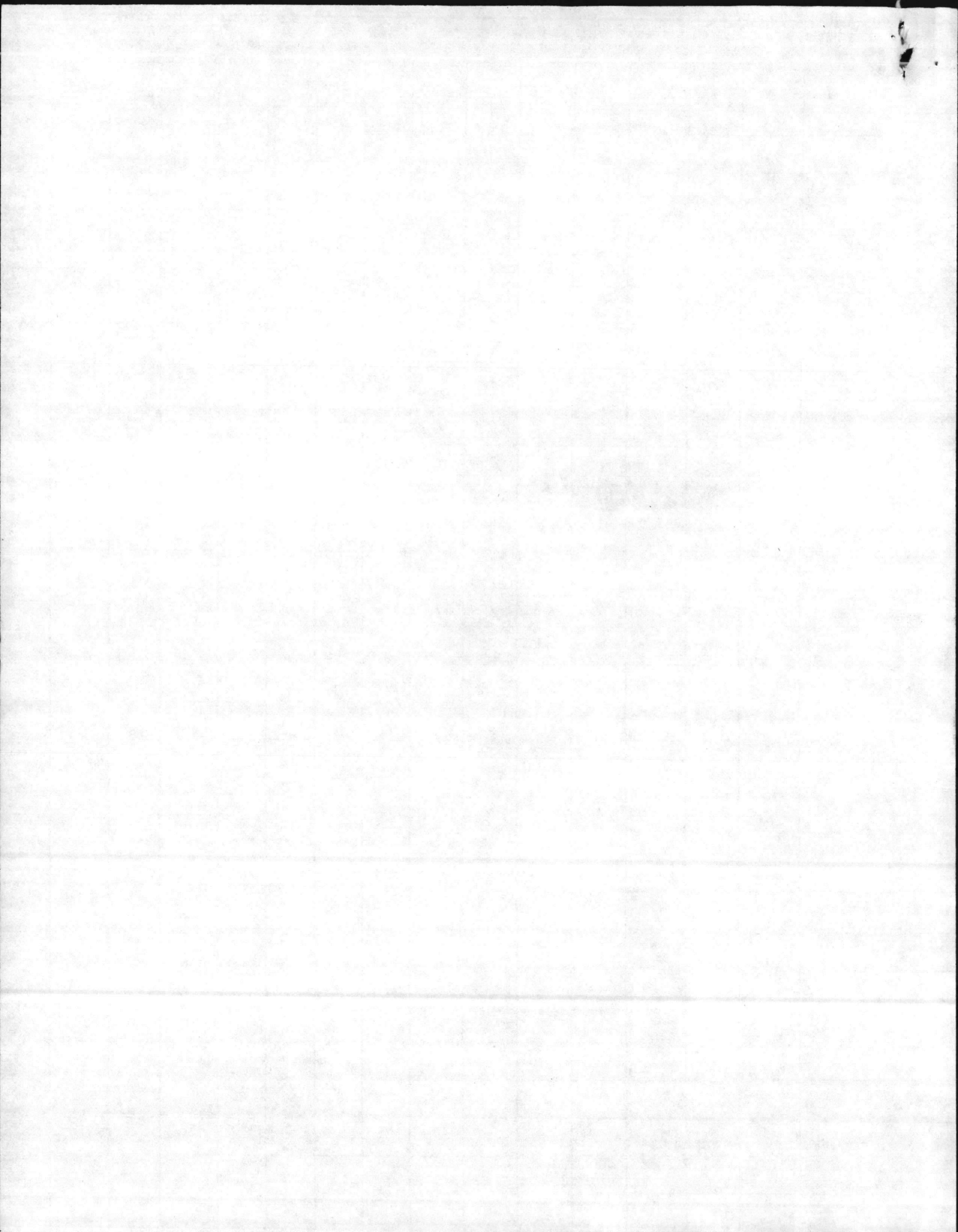








EXHIBIT VI



# North Carolina Department of Natural Resources & Community Development

James B. Hunt, Jr., Governor

Joseph W. Grimsley, Secretary

DIVISION OF  
MARINE FISHERIESRobert K. Mahood  
Director

Telephone 919 726-7021

## PROCLAMATION

### RE: SHELLFISH POLLUTED AREA

By virtue of the authority vested in me as Secretary of the North Carolina Department of Natural Resources and Community Development, and upon the recommendation of Robert K. Mahood, Director, Division of Marine Fisheries, and Dr. Ronald H. Levine, Director, Division of Health Services, North Carolina Department of Human Resources, it is hereby announced that the following changes in shellfish harvesting areas will take effect immediately:

No person shall take or attempt to take, any oysters or clams or possess, sell or offer for sale any oysters or clams taken from the following polluted areas:

#### ONSLow COUNTY - FANNIE CREEK/WHEELER CREEK

All waters of Fannie Creek and Wheeler Creek, south of a line drawn from the northwest shore of Fannie Creek, at  $34^{\circ} 34' 18''$  N -  $77^{\circ} 23' 39''$  W; thence in a straight line to a point on Poverty Point, at  $34^{\circ} 34' 07''$  N -  $77^{\circ} 23' 05''$  W. (CLOSES APPROXIMATELY 60 ACRES)

#### ONSLow COUNTY - QUEEN CREEK/DICKS CREEK

1. All those waters in Queen Creek upstream of a line beginning at a point on the east shore at  $34^{\circ} 41' 03''$  N -  $77^{\circ} 09' 43''$  W; thence in a straight line to the west shore at  $34^{\circ} 40' 49''$  N -  $77^{\circ} 10' 00''$  W.
2. All those waters in Dicks Creek upstream of a straight line beginning at a point on the south shore at  $34^{\circ} 39' 51''$  N -  $77^{\circ} 09' 10''$  W; thence in a straight line to the north shore at  $34^{\circ} 40' 09''$  N -  $77^{\circ} 09' 20''$  W. (CLOSES APPROXIMATELY 150 ACRES)

NOTES: [1] This proclamation is issued under the authority of G. S. 113-182 and N. C. Marine Fisheries Regulation 15 NCAC 3B .1101.

[2] This action replaces N. C. Marine Fisheries Regulation 15 NCAC 3B .1111 (23) (a) (i) & (ii); amends N. C. Marine Fisheries Regulation 15 NCAC 3B .1111 (21) (c) and adds (d).

[3] Shaded areas on maps indicate areas closed to shellfishing.

BY AUTHORITY OF THE SECRETARY OF THE DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT.

September 14, 1983

8:30 A.M.

PA-5-83/84

/sh

BY:

*Robert K. Mahood*  
Robert K. Mahood, Director  
Division of Marine Fisheries

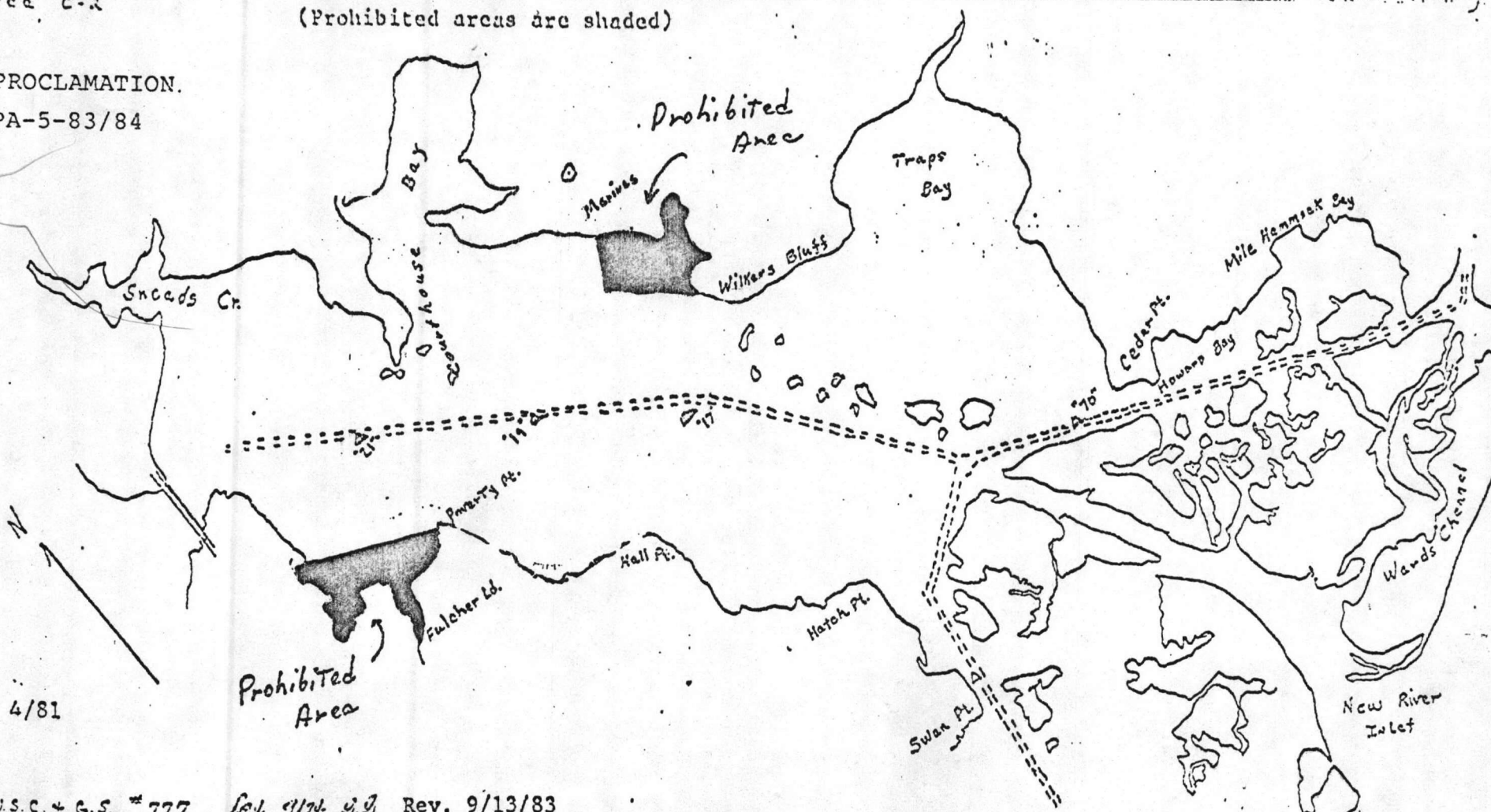
(Prohibited areas are shaded)

PROCLAMATION.

PA-5-83/84

Rev. 4/81

U.S.C. & G.S. # 777 Sec. 474, 2, Rev. 9/13/83



No person shall take or attempt to take, any oysters or clams or possess, sell, or offer for sale, any oysters or clams taken from the following areas, at any time:

Sneads Ferry Area:

Fannie and Wheeler Creeks - All waters of Fannie Creek and Wheeler Creek south of a line drawn from the northwest shore of Fannie Creek, at 34° 34' 18" N - 77° 23' 39" W; thence in a straight line to a point on Poverty Point, at 34° 34' 07" N 77° 23' 05" W.

Wilkins Bluff - All waters bounded by a line beginning at a point at 34° 34' 37" N - 77° 21' 55" W; thence in a straight line to a point at 34° 34' 26" N - 77° 22' 00" W, in the bay; thence to a point at Wilkins Bluff at 34° 34' 13" N - 77° 21' 40" W; thence north along the shoreline to the point of beginning.

*Jda*, *Domy* ~~*WA*~~

T-6284/2

REPORT OF SANITARY SURVEY

STONES BAY AREA

AREA C-3

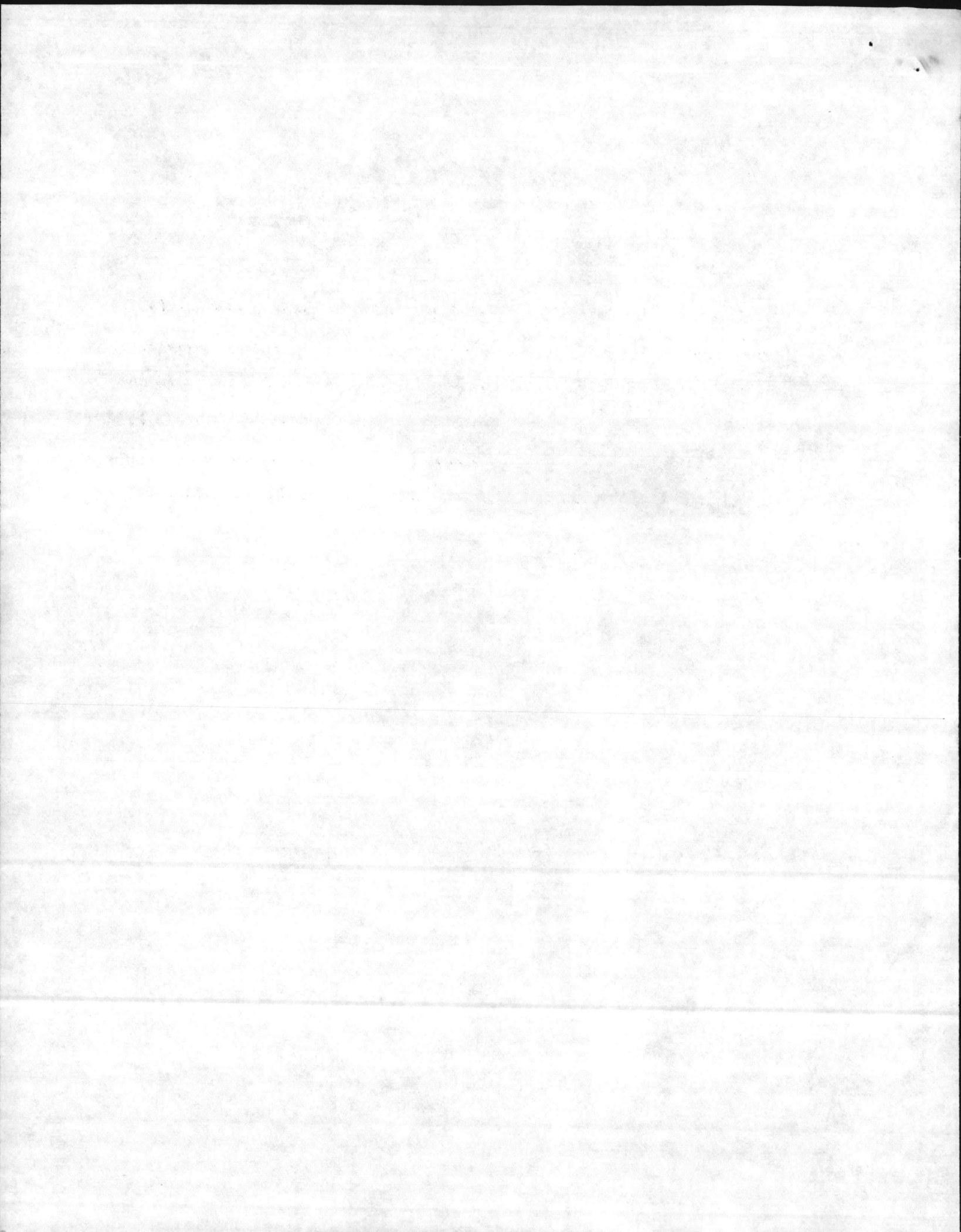
SEPTEMBER 1984 - SEPTEMBER 1985

JANUARY 1986



AREA C-3

- EXHIBIT I AREA MAP AND STATION LOCATIONS
- EXHIBIT II SHORELINE SURVEY ROUTE AND STP LOCATIONS
- EXHIBIT III SEWAGE VIOLATIONS
- EXHIBIT IV BACTERIOLOGICAL RESULTS AND MPN MEDIANS
- EXHIBIT V PROHIBITED AREA MAP



Preface

Total Acres	-----15,025.
Prohibited Acres	-----7,165.
Oyster Production	-----Fair to Good.
Clam Production	-----Fair.
Commercial Value	-----Fair.
Recommended Changes	-----None.





REPORT OF SANITARY SURVEY

STONES BAY AREA

AREA C-3

By

SHELLFISH SANITATION PROGRAM  
NORTH CAROLINA DIVISION OF HEALTH SERVICES

I. INTRODUCTION

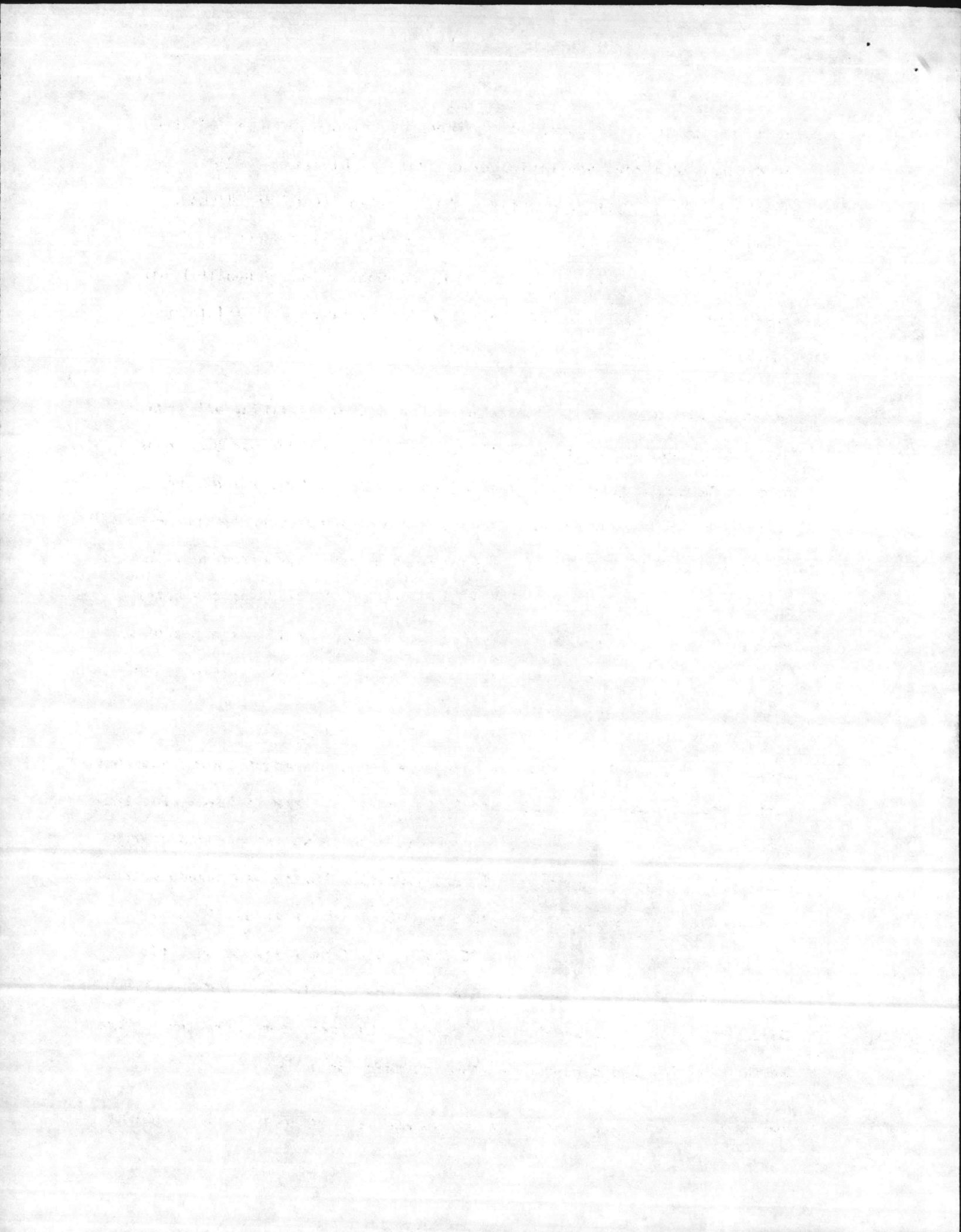
Area C-3 is composed of all the waters of New River and its tributaries from Highway 172 Bridge at Sneads Ferry upstream to Jacksonville, N. C. (See Exhibit I for area map.) The watershed for Area C-3 consists of approximately 240 square miles and contains the Camp Lejeune Marine Base, the city of Jacksonville, and numerous communities and sub-divisions to the headwaters at Richlands, N. C. The total population in the watershed is estimated at 85,000. The actual population of the immediate watershed is estimated at 616.

There are a number of sewage treatment plants (STP's) located on the New River watershed. Many were described in the 1984 evaluation report and those descriptions will not be included in this report.

II. SHORELINE SURVEY OF SOURCES OF POLLUTION

A comprehensive shoreline survey was begun in Area C-3 on August 7, 1985, and was completed on September 2, 1985. Anne Schmitzer of the Shellfish Sanitation staff conducted the survey.

A significant amount of Area C-3 is comprised of the U. S. Marine Corps Base, Camp Lejeune. Civilian areas in Onslow County within the survey area include the town of Dixon and part of Sneads Ferry. On August 2, 1985, written permission was received through the Commanding General to visit the base and conduct the survey. It was established that permission for



future surveys may be requested by telephone through Mr. Danny Sharpe of the Natural Resources and Environmental Affairs Division (NREAD). On August 19, 1985, prior to surveying the civilian areas, Mr. Richard Koonce, Environmental Health Supervisor for the Onslow County Health Department was notified and agreed that the Onslow County Health Department would do all necessary follow-up work to correct any violations issued in this area.

The route within the Camp Lejeune Base consisted of visiting all sewage treatment plants on the base, with the assistance of Mr. Dan Becker of NREAD. The route outside of Camp Lejeune begins on Hwy. 172 at the Sneads Ferry Bridge and runs south. The route turns westerly onto Hwy. 210. At the end of Hwy. 210, Hwy. 17 is taken in a northerly direction. The survey ends on Hwy. 17 roughly 0.5 miles north of SR #1103 at the intersection of a small unnamed subdivision. (See Exhibit II for a map of the route.) Yellow indicates route followed while red denotes areas actually surveyed. C-3 boundaries are marked in green.

Along this route all residences, businesses, and places of public assembly, either directly on or in close proximity to water, were visited. For this reason, much of the area surveyed previously which was not in close proximity to water was excluded. A Sewage Violation Notice was issued whenever a violation or malfunctioning system was observed. A total of 88 visits were made, with 60 inspections. Of these, one Sewage Violation Notice was issued. A copy of this was hand-delivered to the Onslow County Health Department. At the time of this report, it has not been corrected. (See Exhibit III for the type and location of this violation.)

Two methods of sewage disposal occur in Area C-3. Camp Lejeune is served

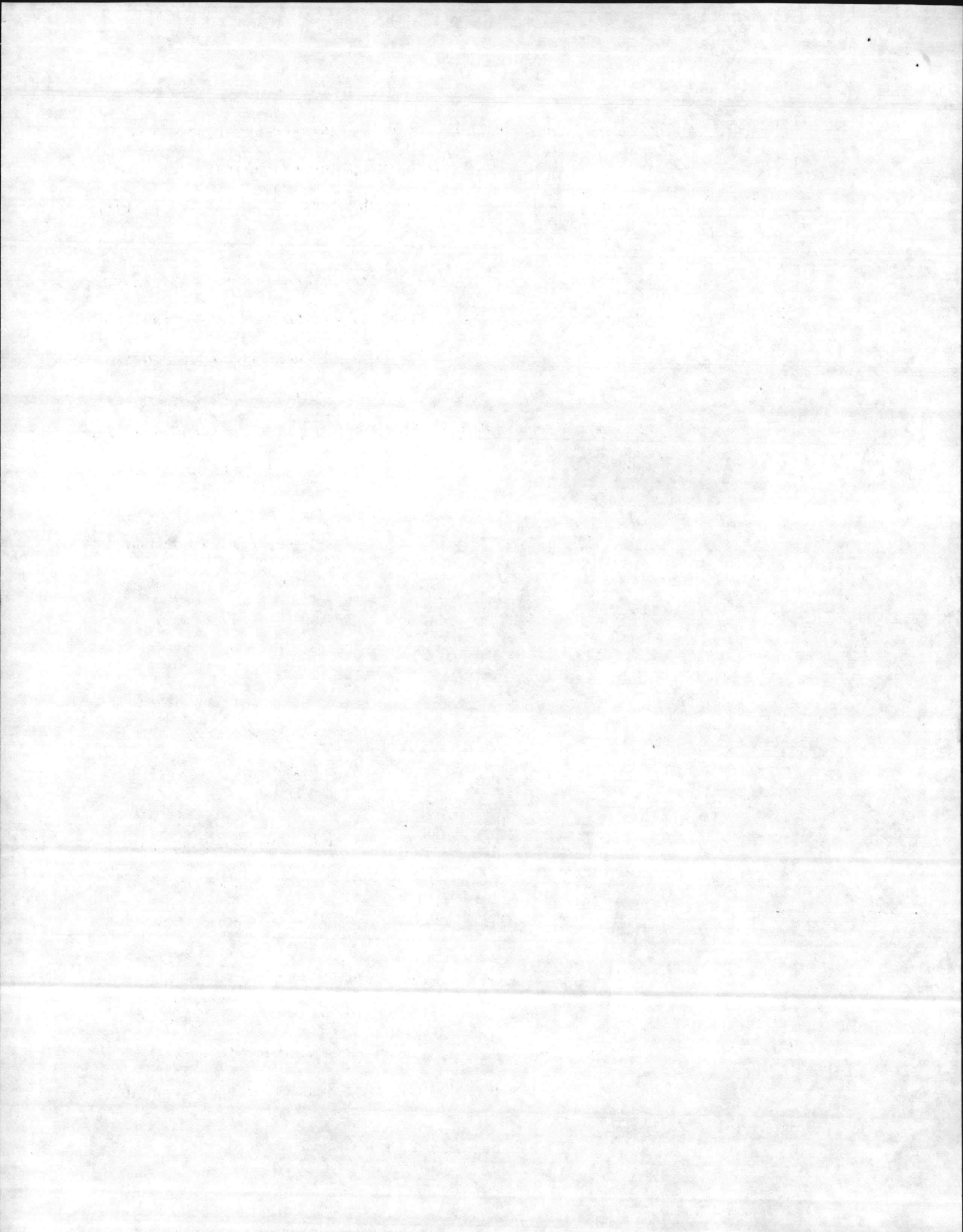


by several sewage treatment plants while the Dixon and Sneads Ferry area is served by individual septic tanks. North of the C-3 area, but within the New River Sub-basin, many sewage treatment plants serve the public. These discharges into the upper New River and its tributaries will be discussed in more detail further in the report. According to the Onslow County Planning Commission, population on the Marine Corps Base includes approximately 35,000 military and 11,000 civilians. Outside of the Marine Corps Base, the population of the immediate C-3 watershed is estimated at approximately 616. This includes only those living in the area actually surveyed.

The following is a list of sewage treatment plants (STP's) and marinas observed in Area C-3. (Exhibit II shows the physical locations of these sites.)

1. Hadnot Point STP: The location of this STP is the east side of New River, north of Frenchs Creek, Camp Lejeune. No changes have been made to this plant since the 1984 report. The average actual flow is now 4.4 million gpd. This plant is stationed with an operator 24 hours a day. The only problem mentioned at this plant is the potential damage to the digester, due to oil penetration into the system. Oil skimmers, or pollution abatement devices, are placed in certain storm drain ditches where excess run-off occurs. During heavy rains the oil may not be stopped but flows over the skimmers and continues into the sewage system. Better communication between the Roads and Grounds Base Maintenance, which regulates these devices, and the STP operators could eliminate this problem.

2. Rifle Range STP: The location of this STP is on the west side of New River, Camp Lejeune, between Stones Creek and Everett Creek. With a



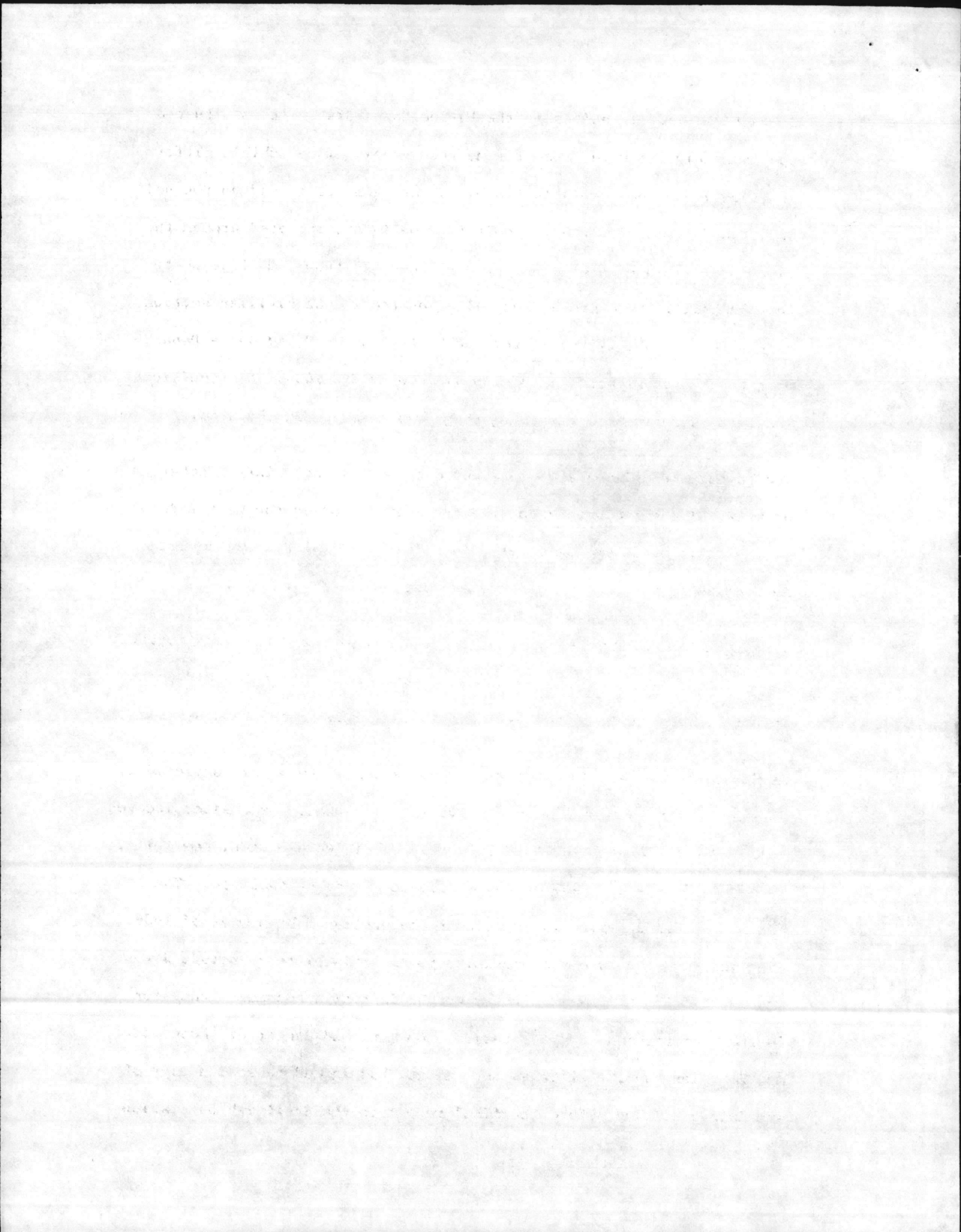
design flow of 395,000 gpd, this plant now has an average actual flow of 250,000 gpd. This STP is stationed with an operator 8 hours a day. No changes have been made to this plant since the 1984 report and no problems were reported.

3. Old Ferry Fish Company: This marina is located on Hwy. 172 on New River beside the Sneads Ferry Bridge, north side. Four to five trawlers use this facility year round, in addition to a various number of other boats temporarily docking. No pump out service is available.

4. Dixon Elementary and High School STP: This plant is located at the intersection of Hwy. 17 and Hwy. 210. The number of students using this facility has remained nearly the same, with this year's total estimate of 1,570 children. Five thousand gallons of space from the 25,000 gpd plant have been converted to an equilization tank to relieve peak usage times. The average actual flow is approximately the same as the 1984 report, 10,000 gpd.

5. Waste water treatment facilities: According to the Division of Environmental Management (DEM) there are 32 waste water treatment facilities north of the C-3 area which discharge into the New River sub-basin. The total possible discharge based on their design capacities would be 10.5 million gpd. This includes plants from both the Marine Corps Base and civilian areas within Onslow County. All are monitored regularly and monthly reports are required to be sent to DEM.

People from several homes with septic tank systems mentioned the inability to flush their toilets during heavy rains. None were found failing at the time of the survey. The low density and somewhat far distance of these homes in the C-3 area indicates that the potential damage to shellfish waters would be slight.



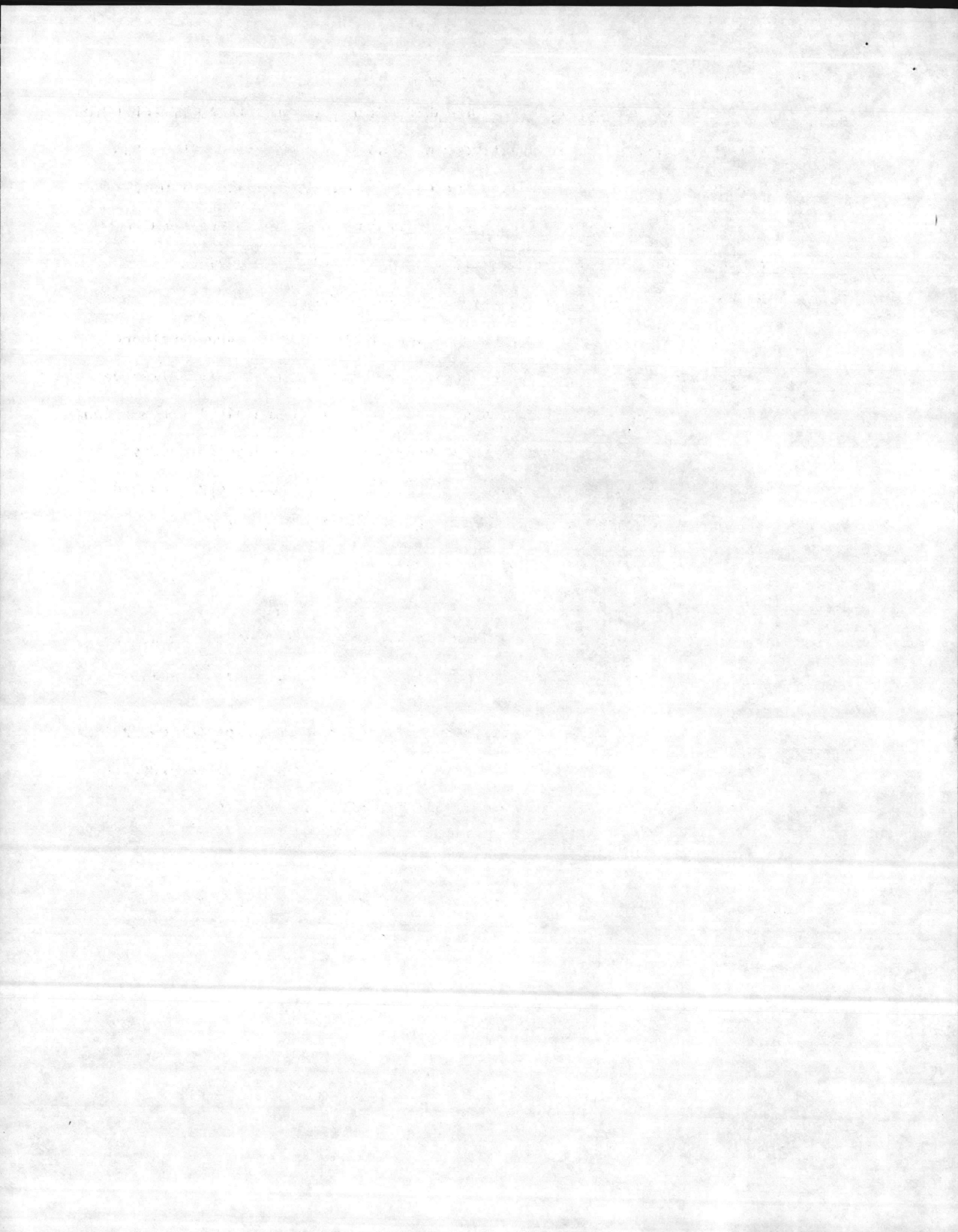


One active landfill exists on the Marine Corps Base. It is situated approximately 1.5 miles from the nearest creek. (See Exhibit II for location.) Besides domestic trash, oil and gas are spread on the soil to dry and are then buried. Monitoring wells are operated around the site. Base maintenance carries all solid waste from Camp Lejeune to this landfill. There are no landfills located in the civilian section of Area C-3. Solid waste is removed by the County Solid Waste Department to a landfill north of Jacksonville near SR# 1409. No significant scattered dumping of trash or garbage was observed in the area.

Two homes in the Dixon area were noted to be raising a large number of animals. These areas were located off a dirt road on the west side of Hwy. 210, in close proximity of Stones Creek. Total animals included approximately 6 hogs, 30 chickens, 25 ducks, and 50 guineas.

The vegetation of Area C-3 is basically mixed pine and hardwood forests. The soils in this area vary in drainage abilities. Wetness would be the primary factor limiting the use of this soil with septic tank systems.

As discussed in the 1984 report, further studies are being conducted to assess the environmental impact of various hazardous waste sites located on the Marine Corps Base, Camp Lejeune. Public water wells, new wells, stream surface water, and stream sediments are being analysed. The conclusive final report is expected to be published by summer of 1986. Six sites located in close proximity to shellfish waters include Sites #2, 24, 28, 69, 6, and 48. Refer to the Initial Assessment Study for further information on the location, content, and danger of these sites. Mr. Bob Alexander, Facilities Department, has agreed to send a copy of any data published before the final report to the Shellfish Sanitation Office.



### III. EVALUATION OF HYDROGRAPHIC FACTORS RESPONSIBLE FOR THE SPREAD OF POLLUTION

There are a number of sewage treatment plants in this area. These have been mentioned in the shoreline survey section. Drogue studies were conducted in the River during the 1977 evaluation. There has been no change in current patterns noted during this evaluation period.

### IV. BACTERIOLOGICAL SURVEY OF SHELLFISH GROWING WATERS

The bacteriological survey was begun in September, 1985, and concluded in September, 1985. During the survey 235 water samples were collected from 20 stations located throughout the area. (See Exhibit I for station locations.) Results indicate only three stations with unsatisfactory results. They are Stations #24, #30, and #34. All other stations had satisfactory results with medians ranging from less than 1.8 to 3.2. (See Exhibit IV for bacteriological results.)

### V. SUMMARY AND RESULTANT AREA CLASSIFICATION

Water quality in Area C-3 continues to be satisfactory at most stations. The only unsatisfactory stations are located within prohibited areas.

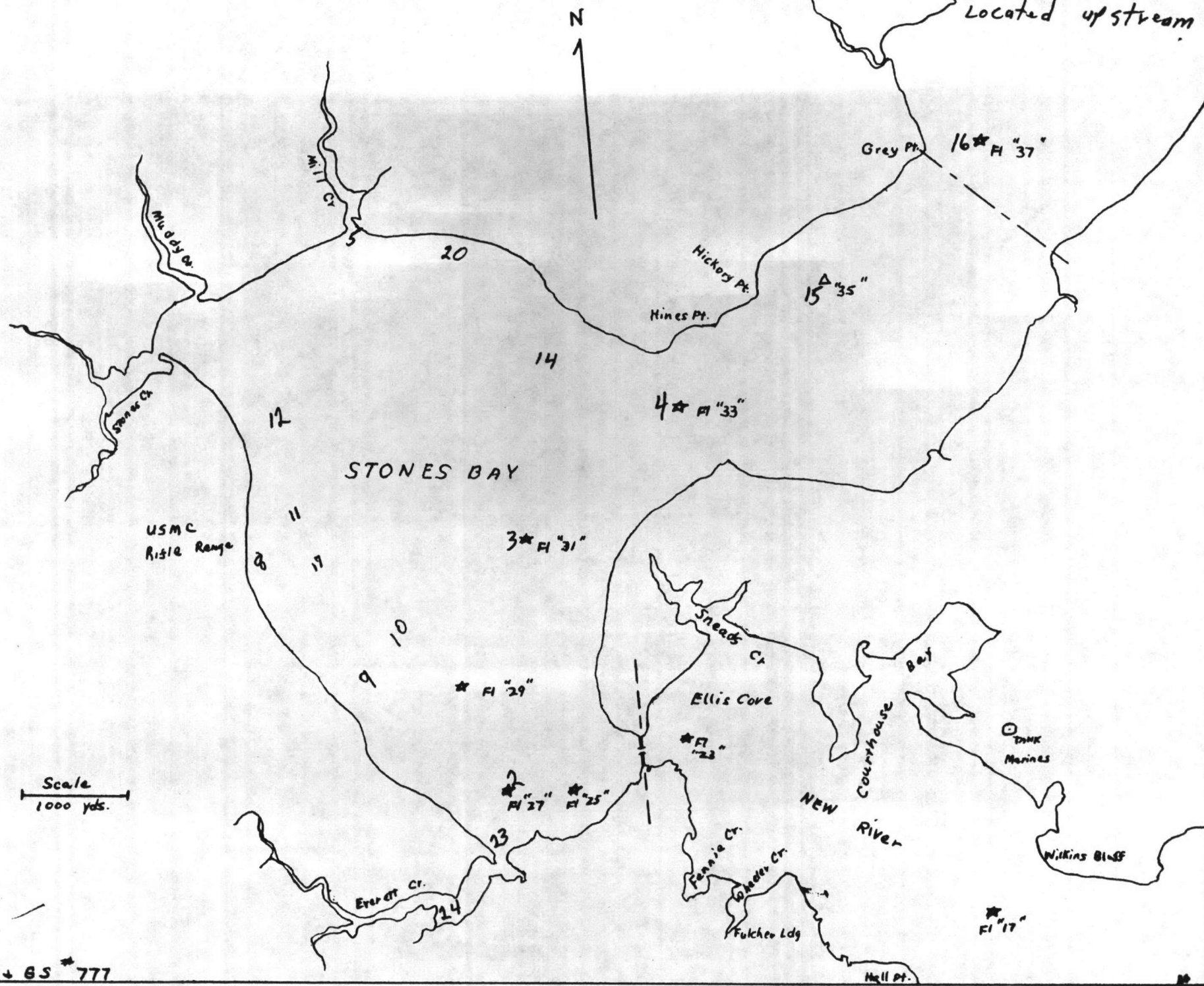
The shoreline surveyed did not reveal any new sources of pollution in the area. The U. S. Marine Base treatment plants appear to be properly maintained and buffer zones around all outfalls are adequate.

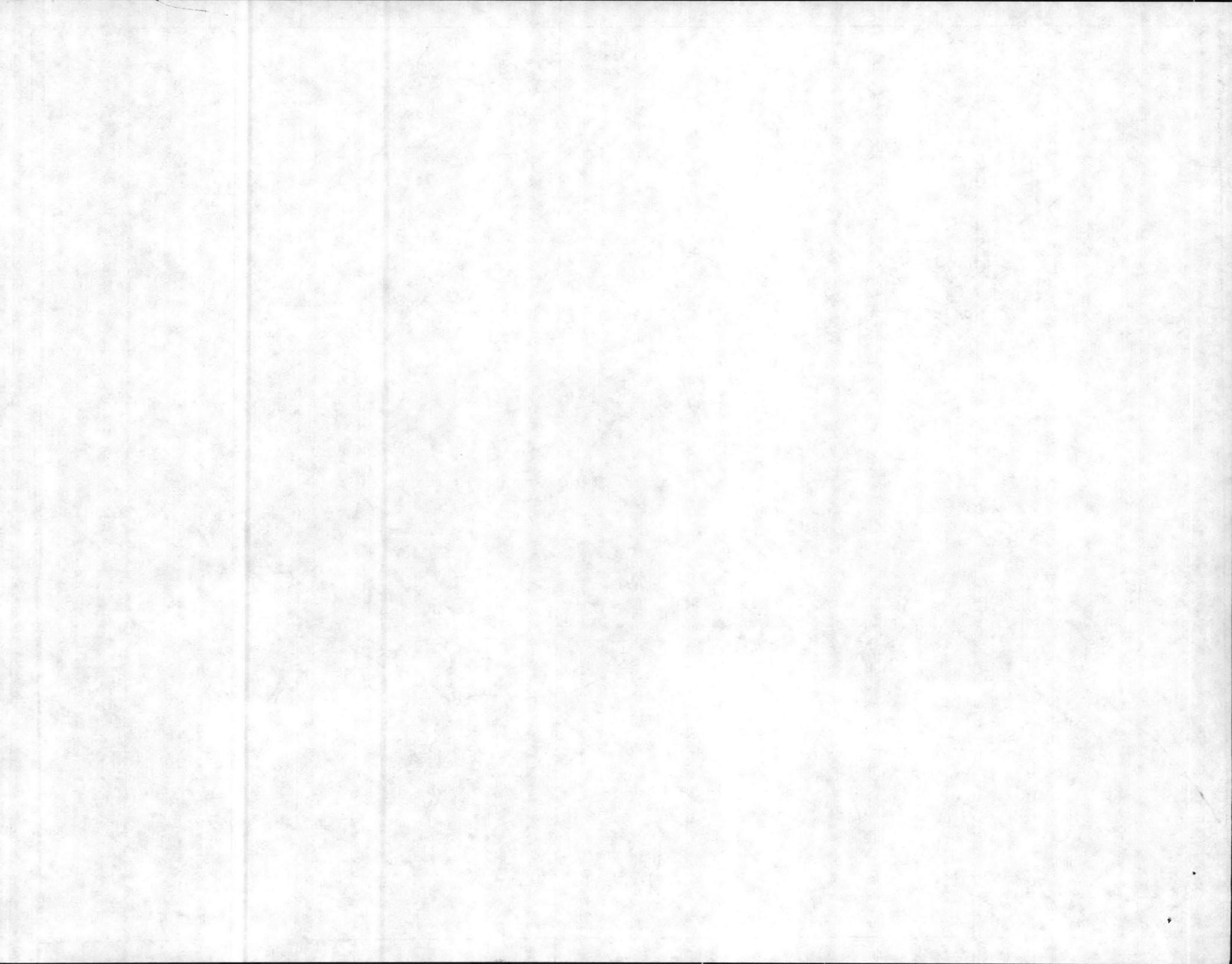
It is, therefore, recommended that no changes be made in water classification of Area C-3. (See Exhibit V for prohibited area map.)



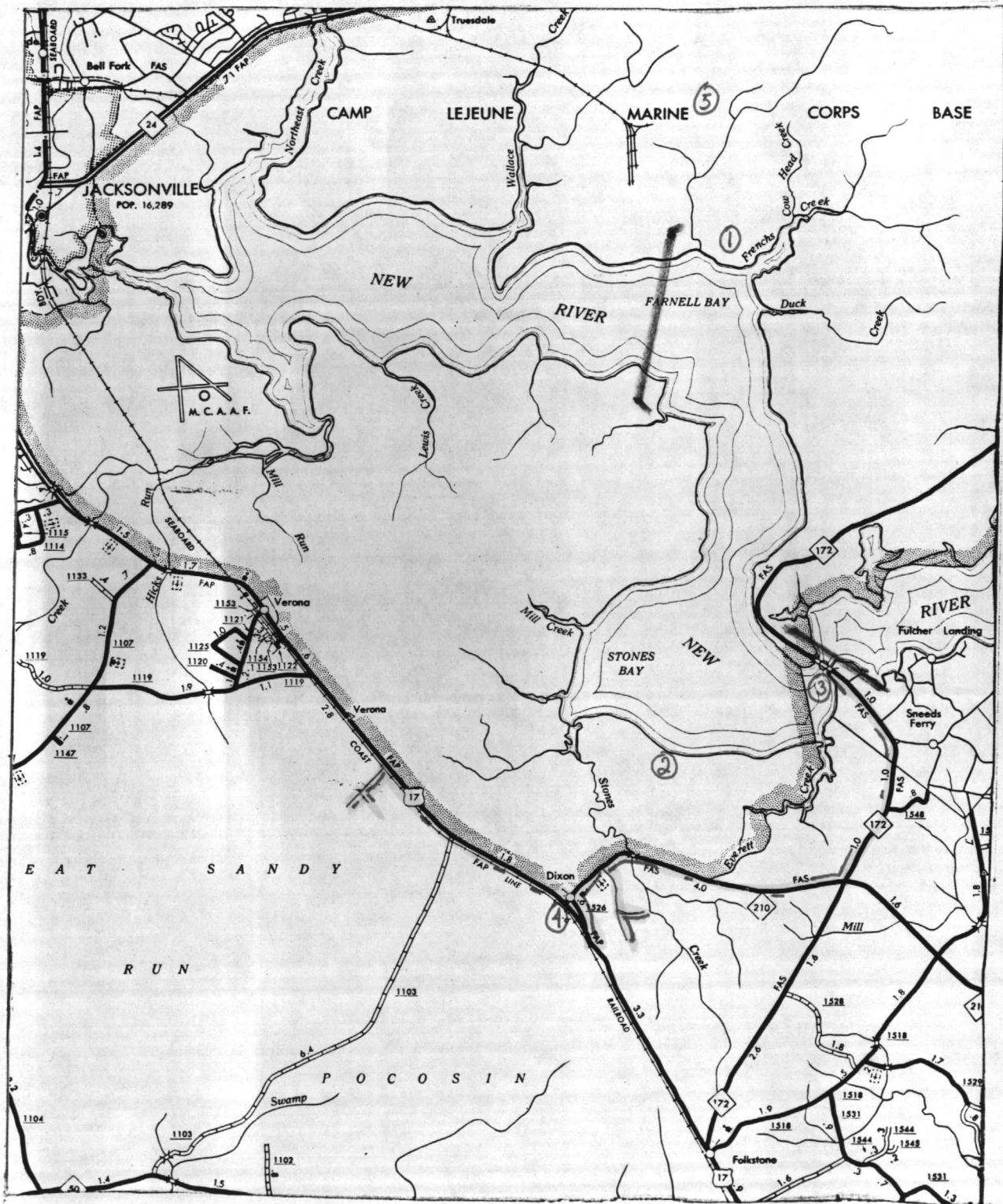
Area C-3

Sta. # 26, 27, 30 & 34  
Located upstream





Shoreline Survey Route  
Area C-3



- ① Hadnot Point STP
- ② Rifle Range STP
- ③ Old Ferry Fish Co.
- ④ Dixon School STP
- ⑤ Camp Lejeune Landfill

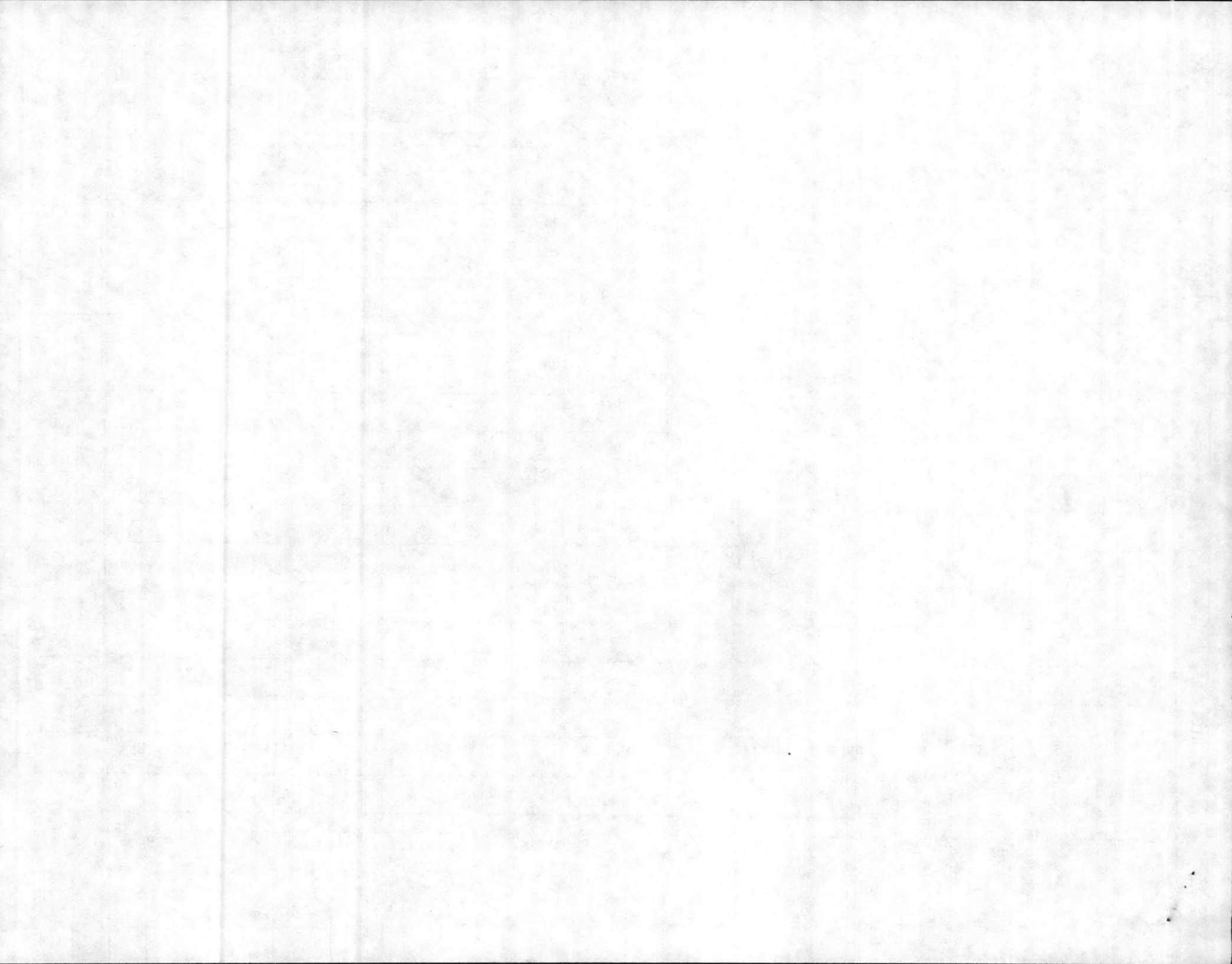
1970  
1971

1972  
1973

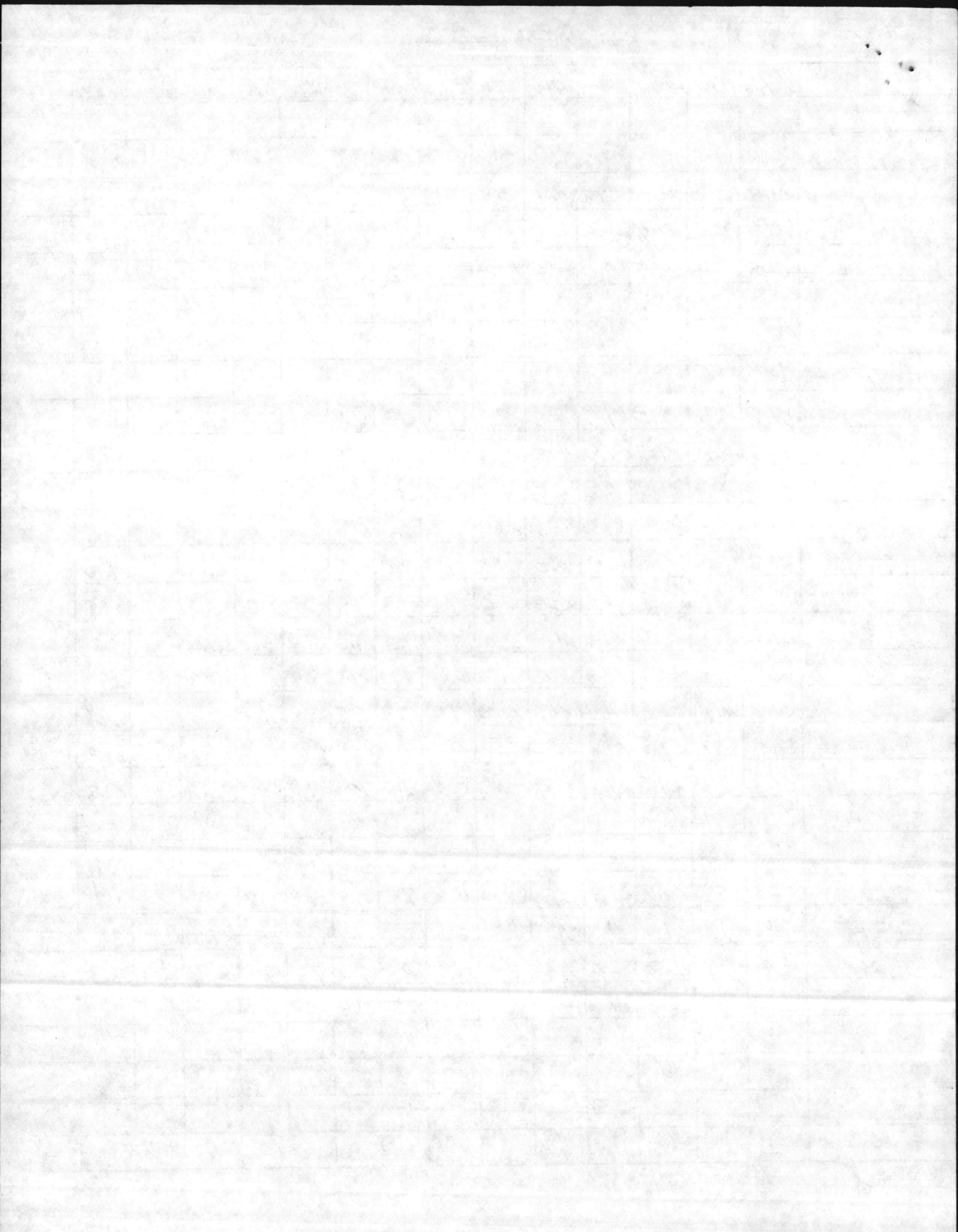
1974  
1975  
1976

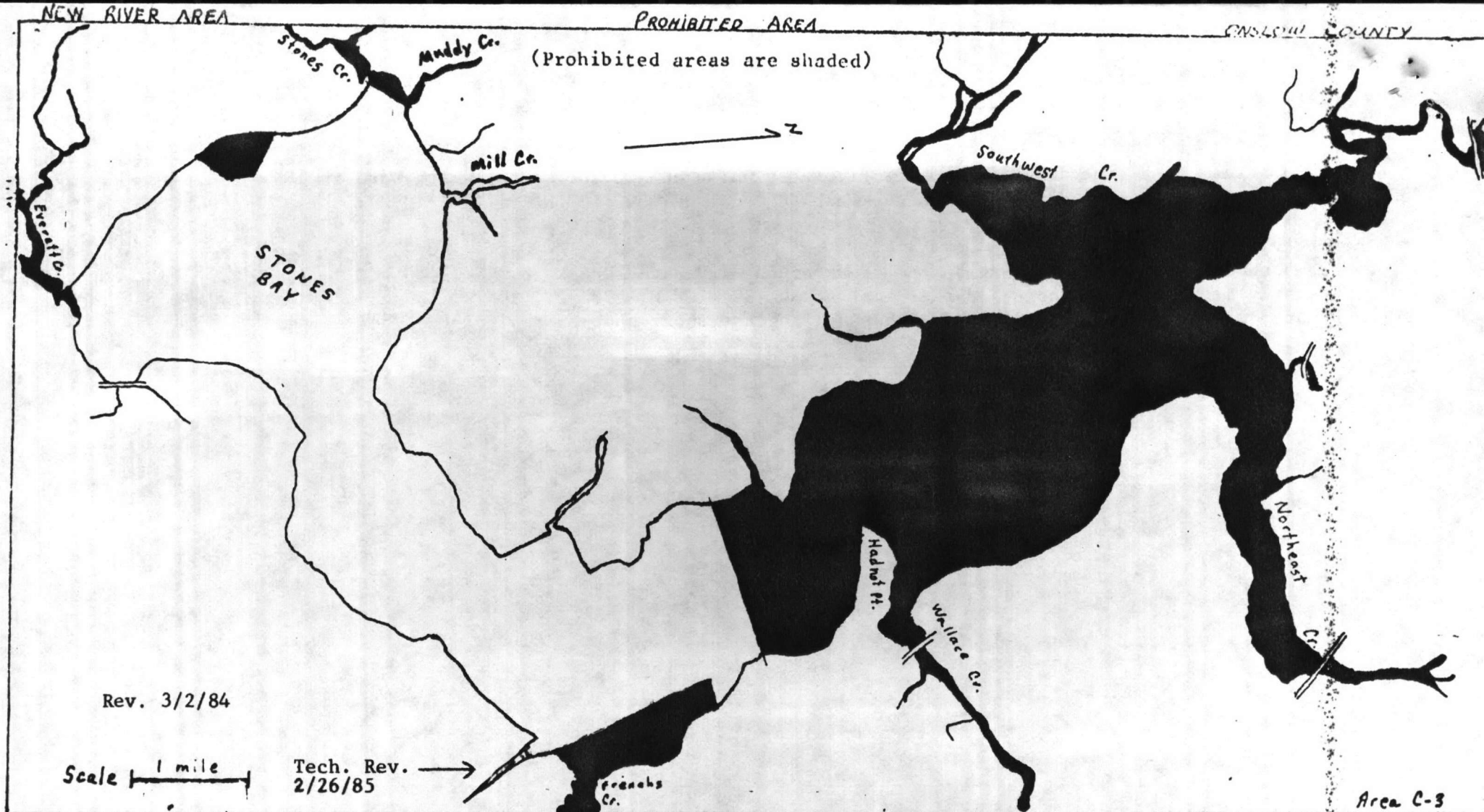






STATION NOS.	9/4/84	10/6/84	1/29/85	2/25/85	3/12/85	4/2/85	4/17/85	5/6/85	6/3/85	7/16/85	8/9/85	9/4/85	med.
1													
2	<1.8	17	<1.8	2.0	2.0	2.0	<1.8	2.0	<1.8	2.0	13	<1.8	2.0
3	<1.8	2.0	<1.8	<1.8	<1.8	<1.8	4.5	4.5	<1.8	<1.8	220	<1.8	<1.8
4	<1.8	4.5	<1.8	<1.8	<1.8	<1.8	2.0	<1.8	<1.8	<1.8	23	<1.8	<1.8
5	<1.8	1.8	<1.8	2.0	<1.8	13	2.0	13	<1.8	<1.8	79	<1.8	1.8
5A													
6													
7													
8	<1.8	23	2.0	<1.8	4.5	<1.8	<1.8	<1.8	<1.8	<1.8	79	<1.8	<1.8
9	<1.8	4.5	<1.8	13	4.5	<1.8	<1.8	2.0	<1.8	<1.8	540	<1.8	<1.8
10	<1.8	21	<1.8	2.0	4.5	4.5	<1.8	<1.8	<1.8	<1.8	17	<1.8	<1.8
11	<1.8	2.0	<1.8	<1.8	4.5	<1.8	<1.8	2.0	<1.8	<1.8	170	<1.8	<1.8
12	<1.8	13	<1.8	7.8	2.0	2.0	<1.8	2.0	<1.8	<1.8	79	<1.8	2.0
14	2.0	4.5	<1.8	<1.8	<1.8	2.0	<1.8	<1.8	<1.8	<1.8	240	2.0	<1.8
15	<1.8	4.5	<1.8	<1.8	<1.8	2.0	1.8	4.5	<1.8	<1.8	350	<1.8	1.8
16	<1.8	4.5	4.5	<1.8	2.0	2.0	2.0	17	<1.8	<1.8	13	<1.8	2.0
17	<1.8	4.5	<1.8	<1.8	<1.8	<1.8	<1.8	9.3	<1.8	<1.8	7.8	<1.8	<1.8
20	2.0	2.0	<1.8	<1.8	<1.8	<1.8	<1.8	13	<1.8	<1.8	13	<1.8	<1.8
23	<1.8	23	<1.8	<1.8	2.0	<1.8	<1.8	2.0	14	<1.8	540	<1.8	<1.8
23A													
24	6.8	240				31		170	2.0	<1.8	>1600		31
26	<1.8	4.5	<1.8	<1.8	33	2.0	1.8	7.8	<1.8	<1.8	7.8	<1.8	1.8
27	<1.8	33	<1.8	<1.8	4.5	13	6.8	11	<1.8	<1.8	350	<1.8	3.2
30	<1.8	79	1.8	2.0	1.8	4.5	33	27	<1.8	4.5	920	2.0	3.3
34	2.0	7.8	2.0	<1.8	49	2.0	4.5	13	<1.8	11	49	2.0	3.3





**New River Area:**

No person shall take or attempt to take, any oysters or clams or possess, sell, or offer for sale, any oysters or clams taken from the following polluted areas: (See back of sheet for continued description.)

**Everett Creek:**

In Everett Creek and its tributaries, south and west of a line drawn from a point on the west shore,  $34^{\circ} 34' 18''$  N -  $77^{\circ} 24' 55''$  W; thence  $94^{\circ}$  M, 550 yards to a point on the east shore,  $34^{\circ} 34' 18''$  N -  $77^{\circ} 24' 35''$  W.

**In Stones Bay:**

All waters bounded by a line beginning at a point on the west shore at  $34^{\circ} 35' 16''$  N -  $77^{\circ} 26' 05''$  W; thence 675 yards in a northeasterly direction to a point in the Bay at  $34^{\circ} 35' 31''$  N -  $77^{\circ} 25' 51''$  W; thence 500 yards in a northerly direction to a point at  $34^{\circ} 35' 45''$  N -  $77^{\circ} 25' 51''$  W; thence 800 yards in a northwesterly direction to a point on shore at  $34^{\circ} 35' 52''$  N -  $77^{\circ} 26' 17''$  W; thence along the shore in a southerly direction to point of beginning.

Stones Creek:

All waters upstream of a line near the mouth of Stones Creek beginning at a point on the south shore at  $34^{\circ} 36' 33''$  N -  $77^{\circ} 26' 44''$  W; thence to a point on the north shore at  $34^{\circ} 36' 52''$  N -  $77^{\circ} 26' 36''$  W.

New River:

All waters upstream of a line drawn across New River beginning at a point on the west shore at  $34^{\circ} 39' 18''$  N -  $77^{\circ} 22' 55''$  W; thence through Channel Marker #42 to the east shore at  $34^{\circ} 39' 44''$  N -  $77^{\circ} 21' 29''$  W.

Frenchs Creek:

All waters bounded by a line beginning on the shore south of Frenchs Creek at  $34^{\circ} 38' 05''$  N -  $77^{\circ} 20' 33''$  W; thence in a northwesterly direction to a point in the River at  $34^{\circ} 39' 10''$  N -  $77^{\circ} 21' 10''$  W; thence in an easterly direction to the shore at  $34^{\circ} 39' 13''$  N -  $77^{\circ} 20' 58''$  W; thence along the shore back to the point of beginning.

Review and Comment  
Relative to Camp Lejeune

NPDES, And Public  
Relations *★*

Danna

REPORT OF SANITARY SURVEY

Range Control  
no live fining in  
that area.

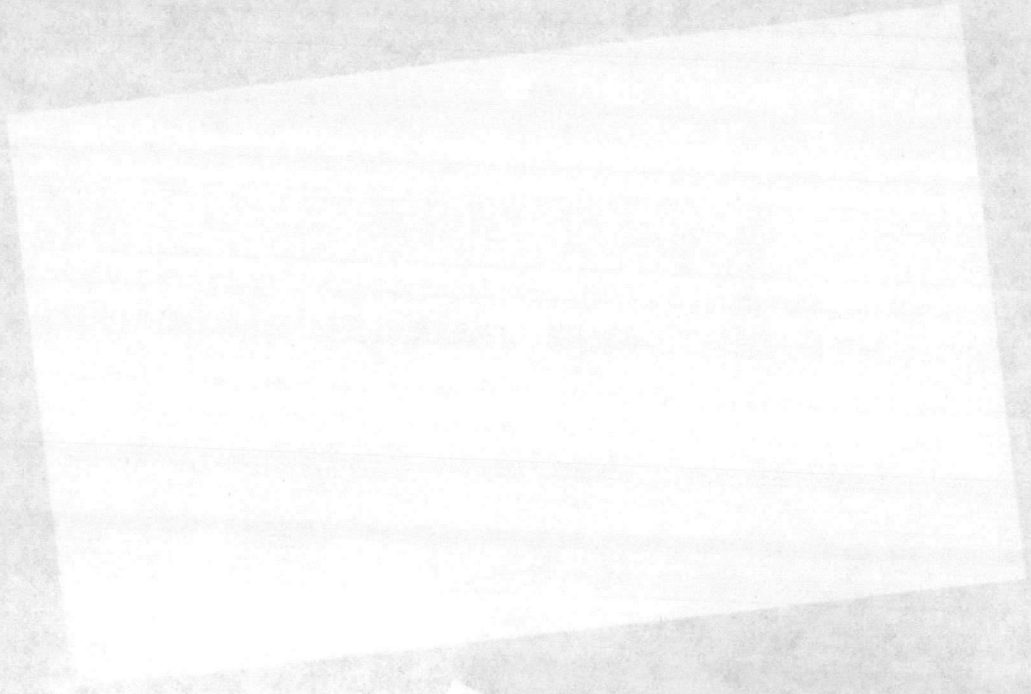
1-25-90  
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pot

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MARCH 1984 - AUGUST 1984

NOVEMBER 1984



SANITARY ST

HURST BEACH AREA

AREA C-4

MARCH 1985 - AUGUST 1985

NOVEMBER 1985



REPORT OF SANITARY SURVEY

HURST BEACH AREA

AREA C-4

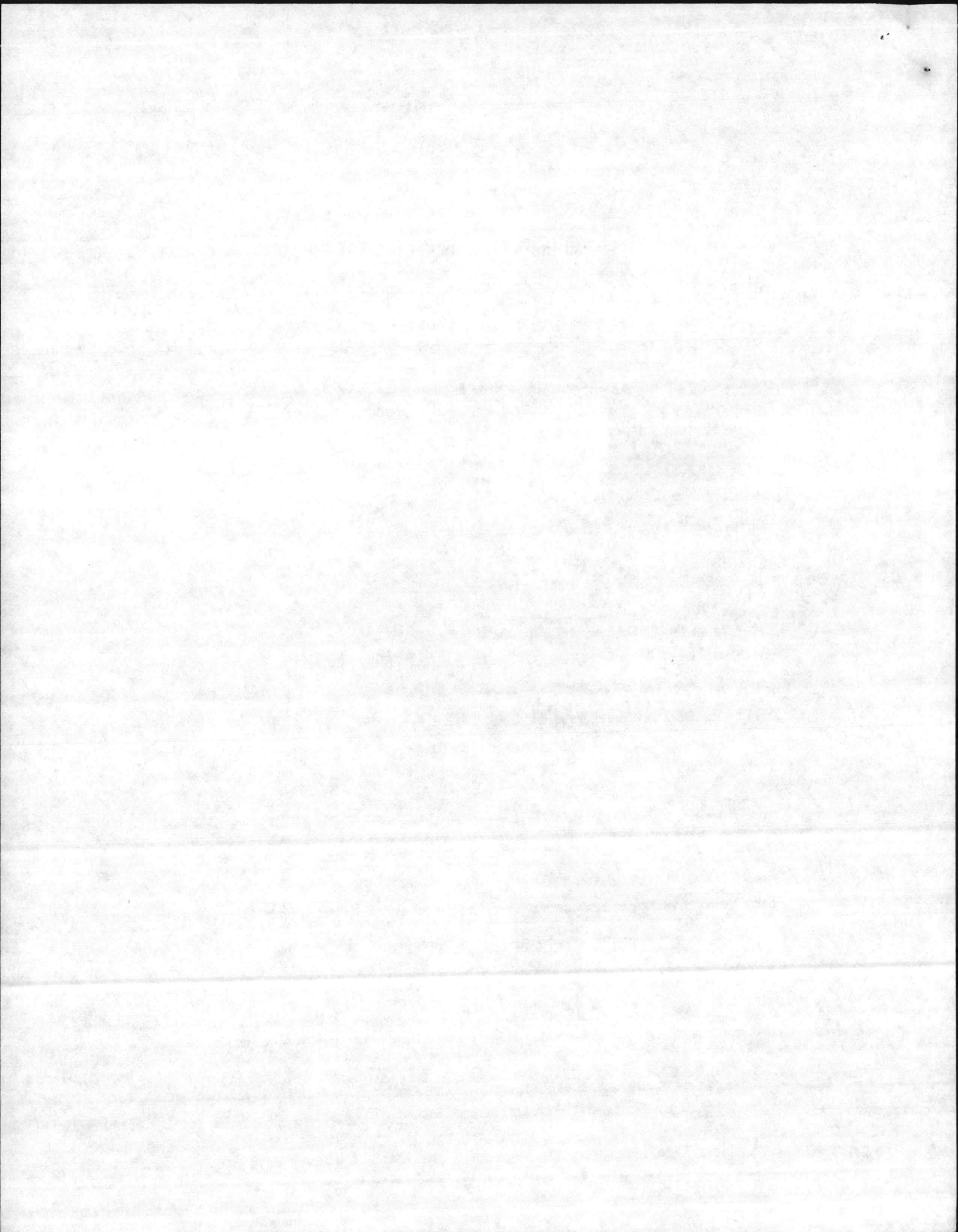
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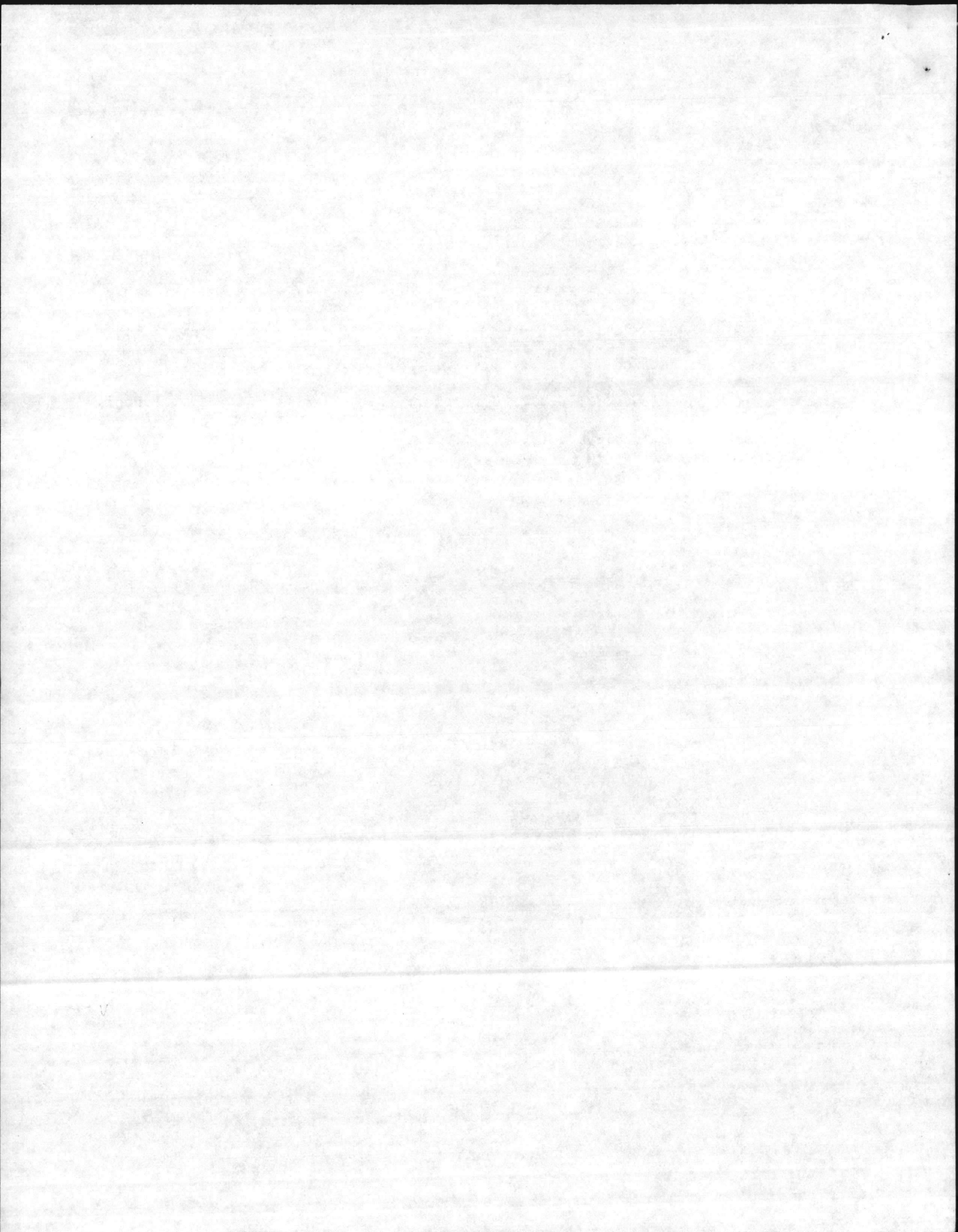
AREA C-4

- EXHIBIT I            AREA MAP AND STATION LOCATIONS
- EXHIBIT II           SHORELINE SURVEY ROUTE
- EXHIBIT III          BACTERIOLOGICAL RESULTS AND MPN MEDIANS
- EXHIBIT IV           PROCLAMATION AND PROHIBITED AREA MAP



Preface

Total Acreage.....500.  
Prohibited Acreage.....160.  
Oyster Production.....Poor.  
Clam Production.....Poor.  
Commercial Value.....Poor.  
Recommended Changes.....Closed 75 Acres.



# REPORT OF SANITARY SURVEY

## HURST BEACH AREA

### AREA C-4

By

#### SHELLFISH SANITATION PROGRAM NORTH CAROLINA DIVISION OF HEALTH SERVICES

#### I. INTRODUCTION

Area C-4 is composed of the waters of the ICWW and its tributaries between Marker #65 at Craig Point and Marker #59 at Shacklefoot Channel. Included in this area are Salliers Bay, Holover Creek, Gillets Creek, Freeman Creek, Browns Creek, Banks Channel, and Browns Inlet. The watershed for this area consists of approximately 16 square miles. The entire area lies within the boundary of a United States Marine Corps Reservation. There is very little shellfishing done in this area, although there are clams and oysters of the "cluster" variety found in Salliers Bay and in the creeks and tributaries near Browns Inlet. (See Exhibit I for map of area.)

#### II. SHORELINE SURVEY OF SOURCES OF POLLUTION

A comprehensive shoreline survey of Area C-4 was conducted on August 7, 1985, by Anne Schmitzer of the Shellfish Sanitation staff.

Area C-4 is located entirely within the Camp Lejeune Base in Onslow County. On August 2, 1985, written permission was received through the Commanding General to visit the base and conduct the survey. It was established that permission for future surveys may be requested by telephone through Mr. Danny Sharpe of the Natural Resources and Environmental Affairs Division (NREAD).

The route began on Hwy 172 at the intersection of Mile Hammock Road.





Proceeding easterly along Hwy 172, the survey ends on Hwy 172 also, at the intersection of SR#1503. (See Exhibit II for a map of the route.) Mr. Dan Becker of NREAD accompanied the sanitarian on this survey and provided information on development and sewage disposal in this area.

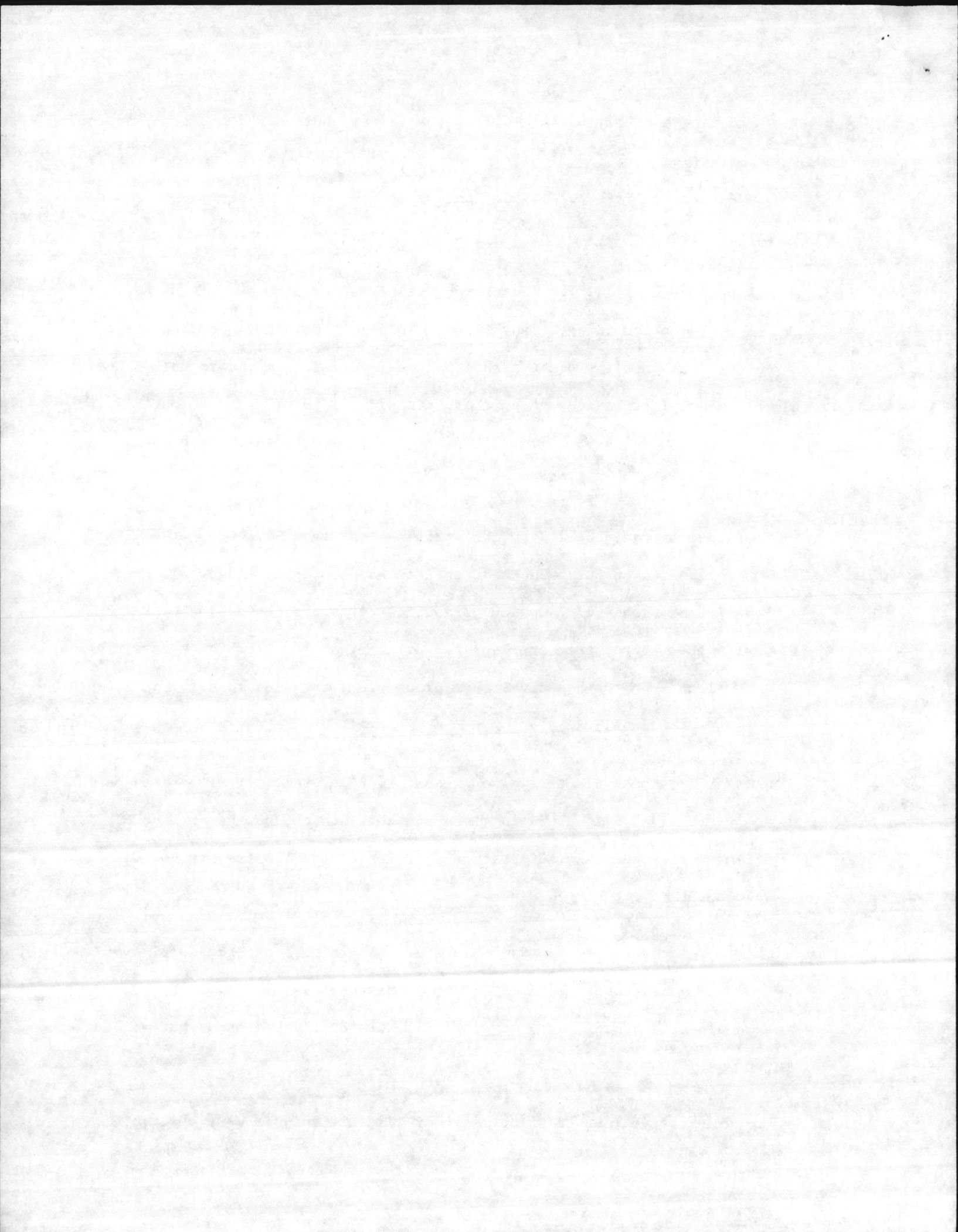
All permanent facilities located on Hurst Beach are connected to the Onslow Beach Sewage Treatment Plant. This includes barracks, mess hall, and various institutions typical of a self-contained military unit. The treatment plant is located on the south side of the ICWW. The outfall is closest to Sampling Station #5A in the ICWW. No changes have been made in this plant since the 1983 report. (See Exhibit II for locations.)

There are three Special Services Campsites in Area C-4. Campsites #1 and #3 are located on Hurst Beach on the east side of the bridge, close to Sampling Station #6. Campsite #2 is located on the north side of the ICWW beside the water treatment plant and directly across from the sewage treatment plant. No changes have taken place since the 1983 report. The degree of usage varies seasonally.

A water treatment plant is also present in this area. It is located on the north side of the ICWW in close proximity to the southwest side of Gillets Creek, north of Campsite #2. Refer to the 1983 report for details. No changes have occurred since then.

There are no sanitary landfills in Area C-4 and no scattered dumping of trash or garbage was noted. Solid waste disposal is maintained by the Base and carried to a sanitary landfill outside the C-4 area, but within the Base.

No large concentrations of domestic or wildlife animals were observed.



Many species of migrating birds are known to pass through this region periodically.

Vegetation in Area C-4 differs on both sides of the ICWW. On the north side of the ICWW, on the mainland, a developed mixture of hardwood and pine forest exists, which would reduce run-off to the water. On the south side of the ICWW, on Hurst Beach, vegetation is typical of a coastal barrier island.

According to the U. S. Department of Agriculture, Soil Conservation Service, soil in Area C-4 is typical of coastal plains and barrier islands. On both sides of the ICWW, the soil immediately on the water is subject to flooding and poor drainage. Slightly further away from the water, soil conditions improve quickly.

No chemical or industrial pollution was observed in this area. There is a record of hazardous waste site in the area but it was not considered to have contributed any significant contamination to the shellfish waters. Refer to the "Initial Study of Marine Corp Base, Camp Lejeune 1983" for further details.

### III. EVALUATIONS OF HYDROGRAPHIC FACTORS RESPONSIBLE FOR SPREAD OF POLLUTION

The watershed of Area C-4 is small and drains, with one exception, undeveloped marshland and woodlands. The one exception is the military complex located at Onslow Beach. This office-barracks complex is served by the only sewage treatment plant in the area. The currents in the area are affected by Browns Inlet located on the eastern end of the area. Salinities range between 20 ppt and 34 ppt, with fresh water run-off having little effect during normal conditions.

### IV. BACTERIOLOGICAL SURVEY OF SHELLFISH GROWING WATERS

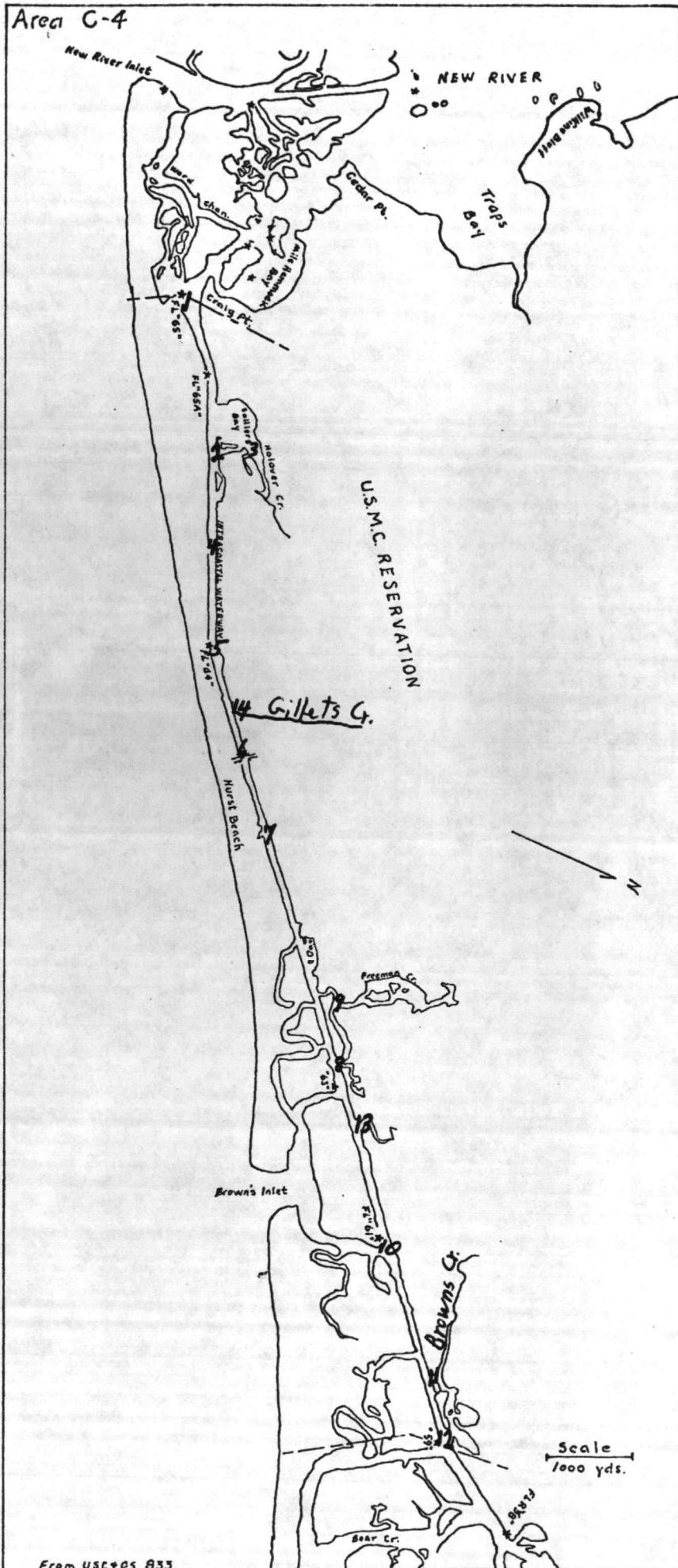


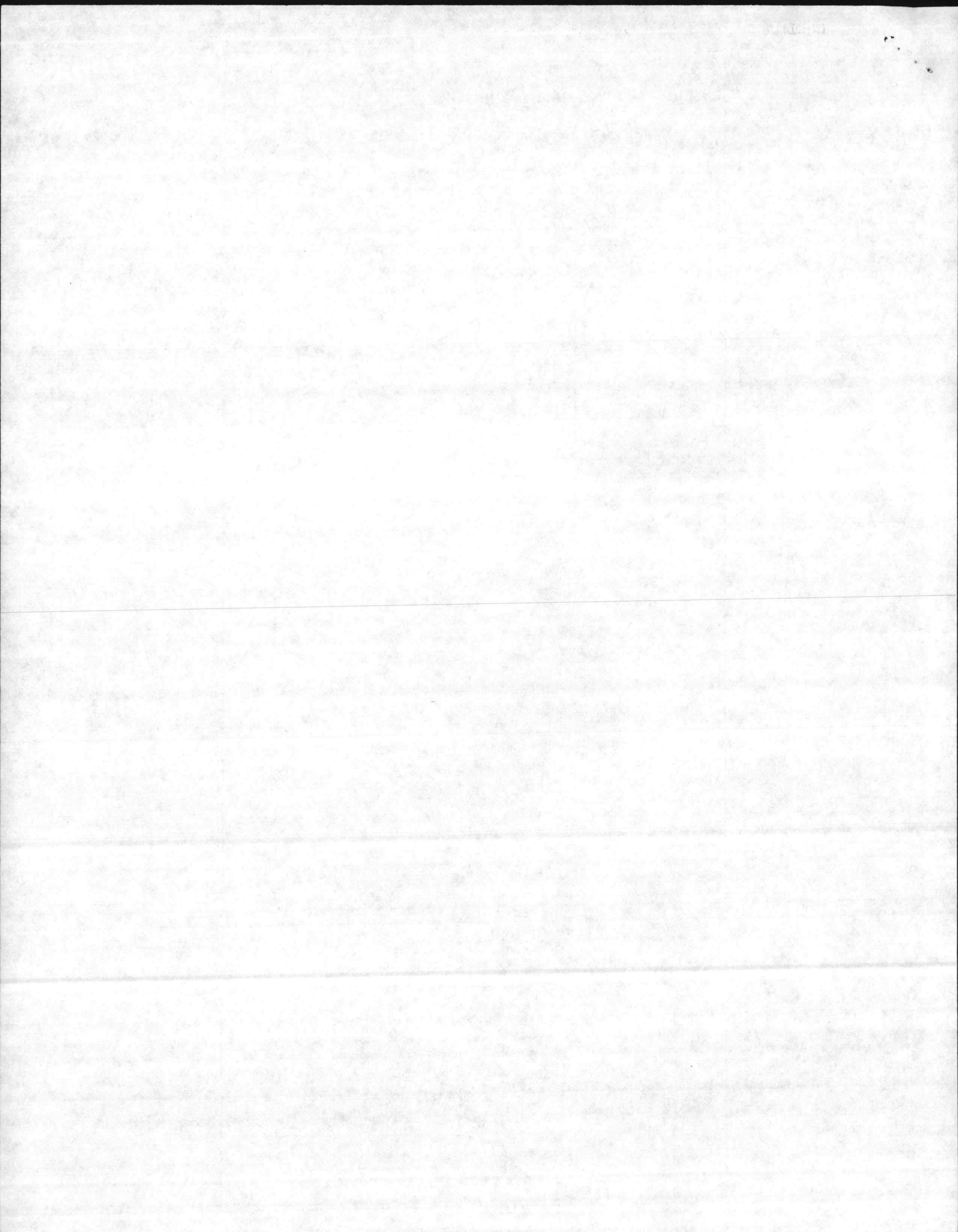
The bacteriological survey was begun in March, 1984, and concluded in April, 1985. During the survey 157 water samples were collected from 15 water sampling stations. (See Exhibit I for station locations.) All stations had fecal coliform medians that were below 14, but two stations exceeded the 10% rule. Station #14, located at the mouth of Gillets Creek near the Hurst Beach STP, is presently in the prohibited area. Station #2, located near the mouth of Salliers Bay, is presently in approved waters. The remainder of the area has shown little change since the last survey. (See Exhibit III for fecal coliform results from all stations.)

V. SUMMARY AND RESULTANT AREA CLASSIFICATION

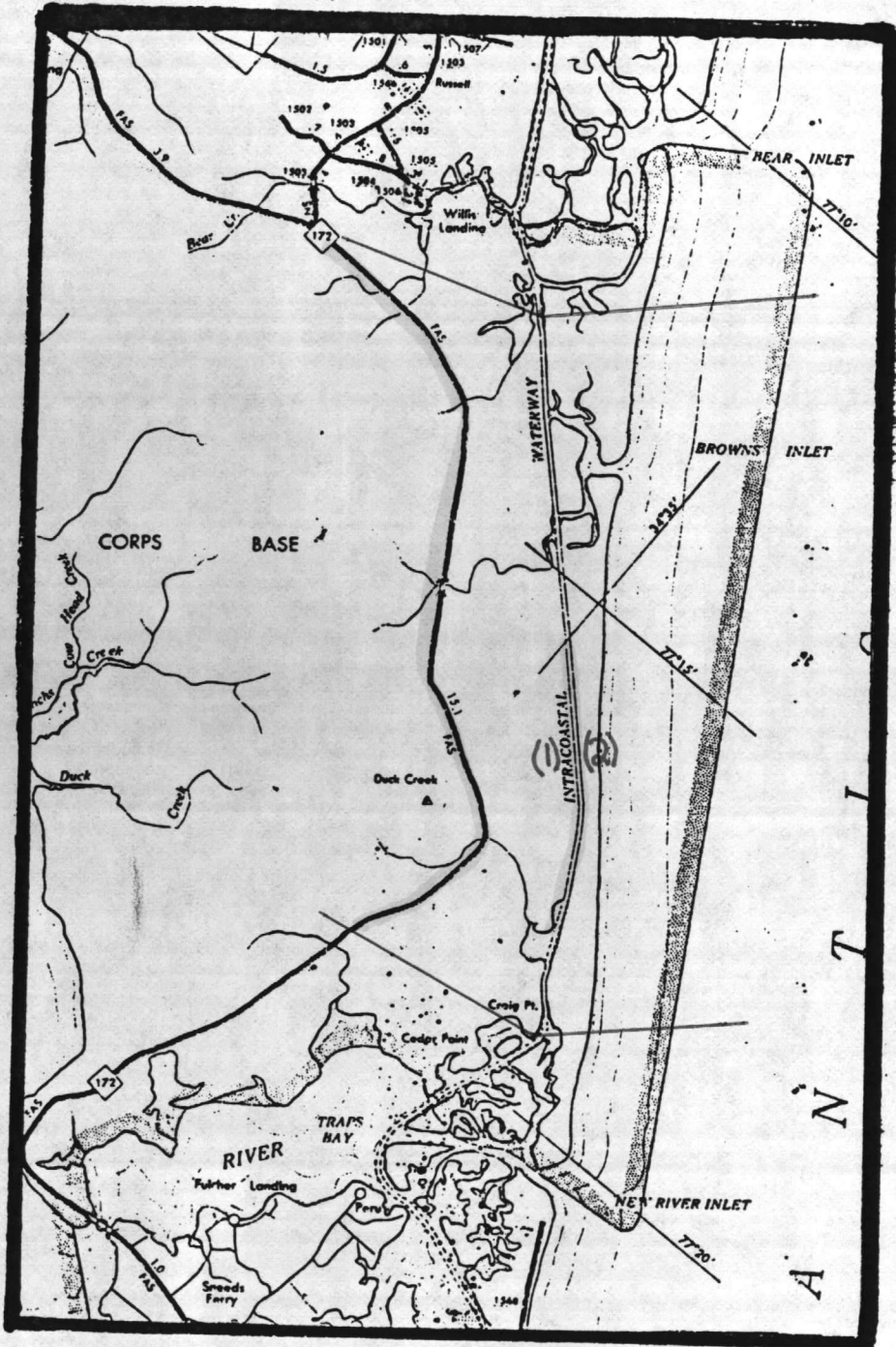
The only change to be recommended in this area at this time is the closure of additional waters west of the STP at Hurst Beach. This recommendation will include Station #2, at the mouth of Salliers Bay and Station #3 in Salliers Bay. This action will close an additional 75 acres in this area. No other changes are needed in the area. (See Exhibit IV for proclamation and prohibited area map.)





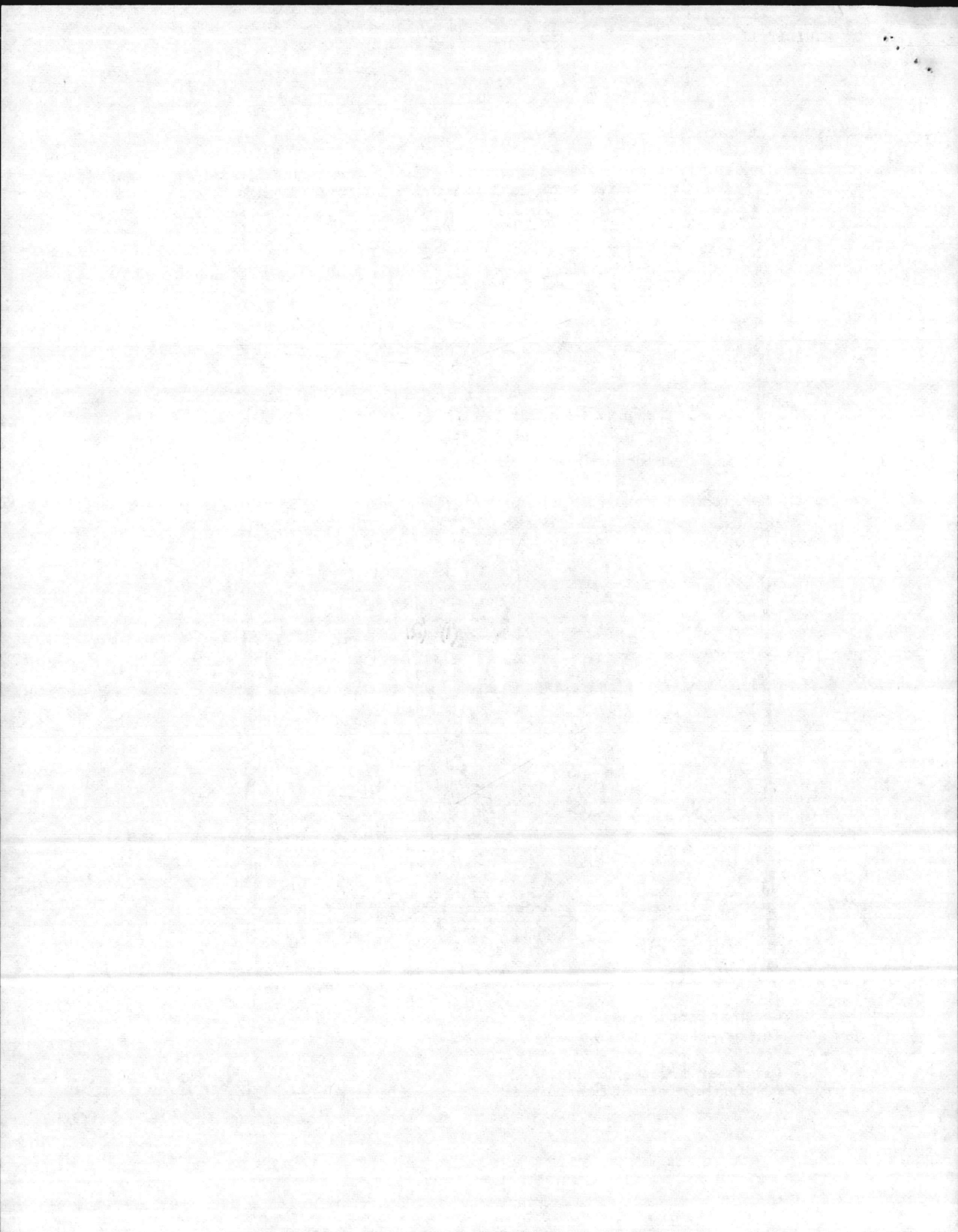




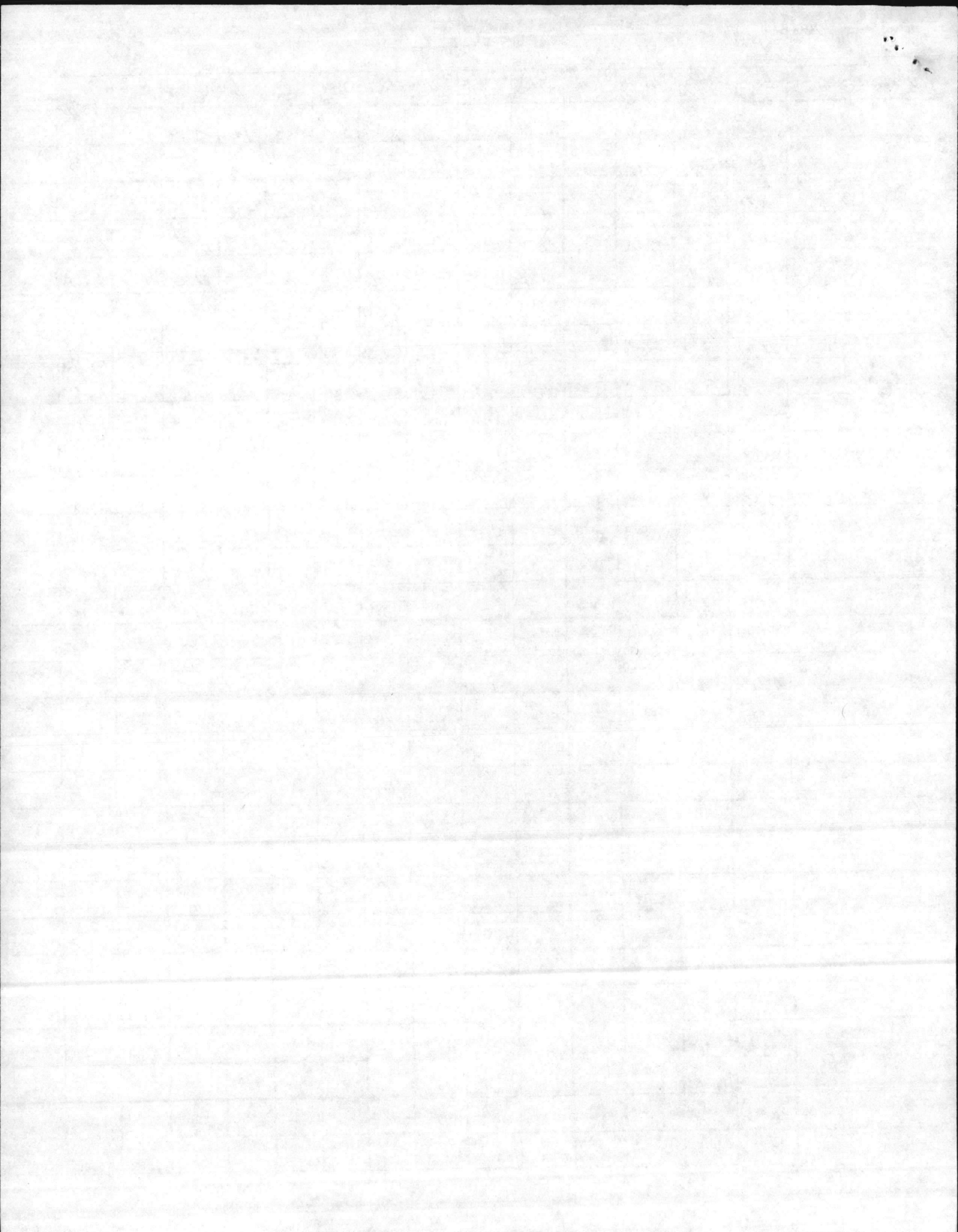


Green - Boundaries  
Yellow - Route followed

- (1) Water treatment plant
- (2) Onslow Beach STP



STATION NOS.	3/27/84	4/9/84	5/16/84	5/21/84	6/5/84	6/14/84	7/9/84	1/28/85	2/29/85	3/12/85	4/2/85	4/17/85	M.d.
1	4.5	2.0	4.5		2.0	2.0	<1.8	<1.8	6.8	<1.8	4.0	<1.8	2.0
2	4.5	4.9	2.0		130	<1.8	7.8	<1.8	23	2.0	13	7.8	7.8
3	2.0	22	33		49	2.0	7.8	2.0	17	4.5	41		12.4
4	2.0	<1.8	2.0		4.5	<1.8	<1.8	<1.8	13	<1.8	<1.8	<1.8	<1.8
5	6.8	4.0	<1.8		6.8	2.0	3.7	2.0	4.5	<1.8	2.0	2.0	2.0
5A	2.0	<1.8	1.8		<1.8	2.0	<1.8	<1.8	2.0	<1.8	6.8		1.8
6	2.0	2.0	7.8		33	<1.8	<1.8	2.0	<1.8	<1.8	7.8	<1.8	2.0
7	<1.8	2.0		2.0	22	2.0	<1.8	<1.8	23	<1.8	13	2.0	2.0
8	2.0	13		7.8	13	<1.8	13	2.0		4.5	23	4.5	6.2
9	7.8	34		7.8	17	1.8	2.0	<1.8		2.0	7.8	2.0	4.9
10	4.0	7.8		1.8	4.0	17	2.0	2.0		4.5	<1.8	2.0	2.9
11	13	23		6.8	49	4.5	<1.8	<1.8		2.0	<1.8	2.0	3.3
12	7.8	4.0		33	13	2.0	17	2.0		4.5	4.5	<1.8	4.5
13	130	7.8		<1.8	33	2.0	2.0	2.0		2.0	2.0	<1.8	2.0
14	49	17	4.5		350	2.0	<1.8	2.0	2.0	<1.8	79	130	4.5





State of North Carolina  
 Department of Natural Resources and Community Development  
 Division of Marine Fisheries  
 P.O. Box 769 • Morehead City, North Carolina 28557

James G. Martin, Governor  
 S. Thomas Rhodes, Secretary

Robert K. Mahood, Director  
 (919) 726-7021

PROCLAMATION

RE: SHELLFISH POLLUTED AREA

By virtue of the authority vested in me as Secretary of the North Carolina Department of Natural Resources and Community Development, and upon the recommendation of Robert K. Mahood, Director, Division of Marine Fisheries, and Dr. Ronald H. Levine, Director, Division of Health Services, North Carolina Department of Human Resources, it is hereby announced that the following changes in shellfish harvesting areas will take effect immediately:

No person shall take or attempt to take any oysters or clams, or possess, sell or offer for sale any oysters or clams taken from the following polluted area:

ONSLow COUNTY

Hurst Beach Area - Beginning at a point on the north shore of the Intracoastal Waterway at 34° 34' 44" N - 77° 15' 54" W; thence 120 yards, to a point on the south shore at 34° 34' 43" N - 77° 15' 52" W; thence in a southerly direction along the south shore to a point at 34° 33' 01" N - 77° 18' 39" W; thence through Channel Marker #65A to the north shore at 34° 33' 04" N - 77° 18' 41" W; thence along the north shore back to the point of beginning to include Salliers Bay, the Intracoastal Waterway and all tributaries.

- NOTES: [a] This proclamation is issued under the authority of G. S. 113-182 and N. C. Marine Fisheries Regulation 15 NCAC 3B .1101 and 15 NCAC 3B .0901 (b).
- [b] This action replaces N. C. Marine Fisheries Regulation 15 NCAC 3B .1111 (23) (h) and closes approximately 75 additional acres in this area.
- [c] Shaded areas on the attached map indicate areas closed to shellfishing.

BY AUTHORITY OF THE SECRETARY OF THE DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT.

BY:

*Robert K. Mahood*  
 Robert K. Mahood, Director  
 Division of Marine Fisheries

October 22, 1985  
 4:00 P.M.  
 PA-30-85/86  
 /sh

HURST BEACH

PROHIBITED AREA

PROCLAMATION PA-30-85/86

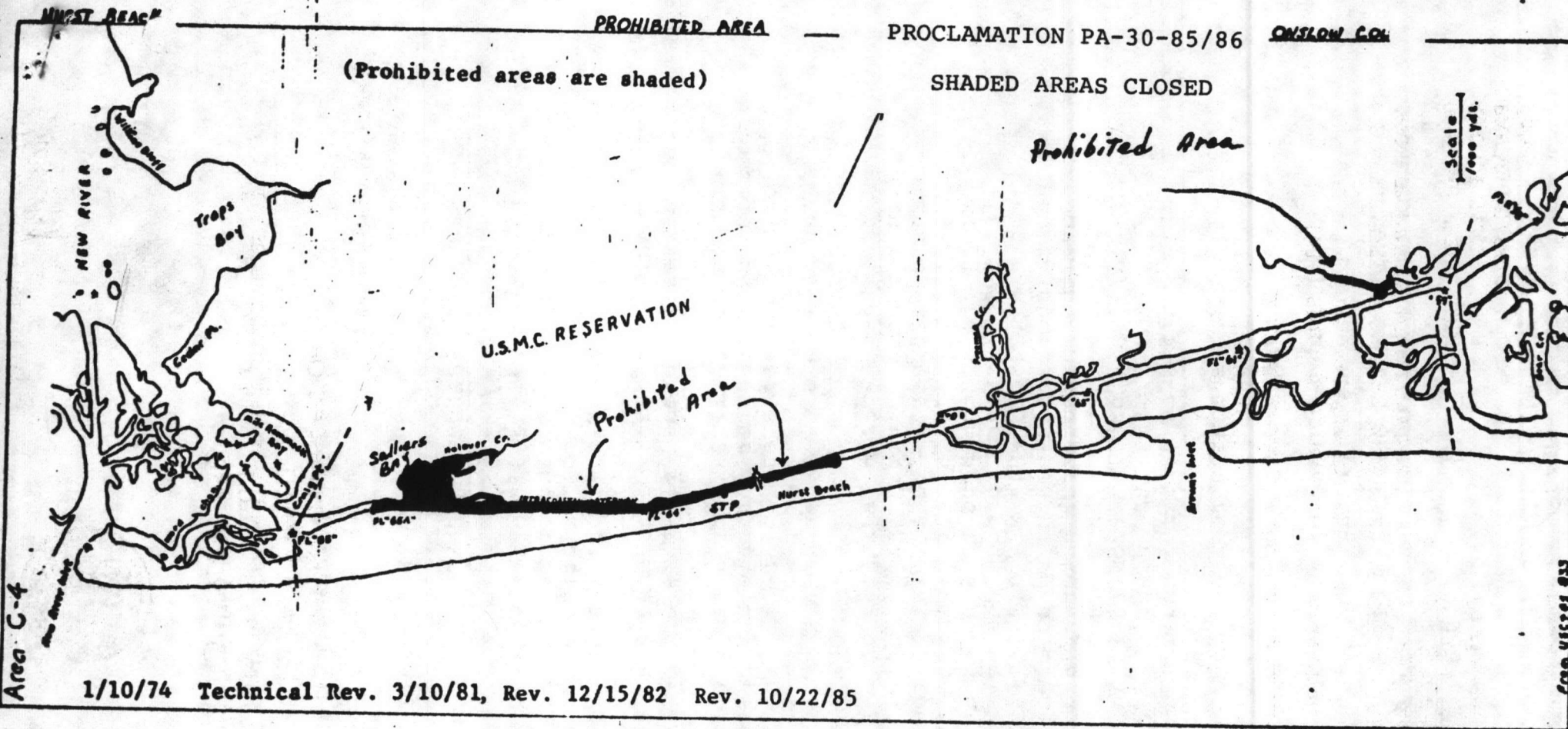
ONSTLOW CO.

(Prohibited areas are shaded)

SHADED AREAS CLOSED

Prohibited Area

Scale  
1000 yds.



1/10/74 Technical Rev. 3/10/81, Rev. 12/15/82 Rev. 10/22/85

No person shall take or attempt to take any oysters or clams or possess, sell, or offer for sale any oysters or clams taken from the following areas, at any time:

Hurst Beach Area:

Beginning at a point on the north shore of the Intracoastal Waterway at 34° 34' 44" N - 77° 15' 54" W; thence 120 yards, to a point on the south shore at 34° 34' 43" N - 77° 15' 52" W; thence in a southerly direction along the south shore to a point at 34° 33' 01" N - 77° 18' 39" W; thence through Channel Marker #65A to the north shore at 34° 33' 04" N - 77° 18' 41" W; thence along the north shore back to the point of beginning, to include Salliers Bay, the Intracoastal Waterway and all tributaries.

Browns Creek

All those waters upstream from a line beginning at a point on the west shore of the Creek at 34° 37' 06" N - 77° 13' 03" W; thence to a point on island at 34° 37' 10" N - 77° 12' 58" W; thence to a point on the north shore at 34° 37' 13" N - 77° 13' 03" W.

Dang DDS

6285/1

~~6284/2~~

6280/4  
FAC

MAR 24 1986

Mr. James Lewis  
NC Division of Health Services  
Shellfish Sanitation Section  
P.O. Box 769  
Morehead City, North Carolina 28557

RE: POLLUTION CONTROLS AT BASE  
MARINAS

Dear Mr. Lewis:

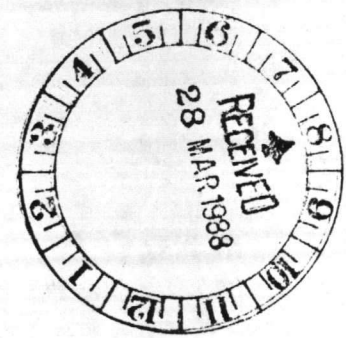
Following your recent visit here, we have initiated action to prevent pollution discharges from sanitary facilities at the Courthouse Bay and Gottschalk Marinas. Action has been accomplished with the cooperation of the Morale, Welfare and Recreation personnel who operate these marinas. Additionally, projects are being designed to remodel the Courthouse Bay Marina and eliminate all discharges of sanitary wastewater to surface waters.

We trust these actions will retain the water quality around these marinas for the classified uses under state regulations. If you have further questions on this matter, please contact Mr. Bob Alexander, MCB, Environmental Engineer, 451-3034.

Sincerely,

T. J. DALZELL  
Colonel, U. S. Marine Corps  
Assistant Chief of Staff, Facilities  
By direction of the Commanding General

Blind copy to:  
AC/S, MWR  
→ NREAD  
EnvEngr



1788

~~1788~~



CHB = COURTHOUSE BAY

WW = WASTEWATER

BLDG = BUILDING

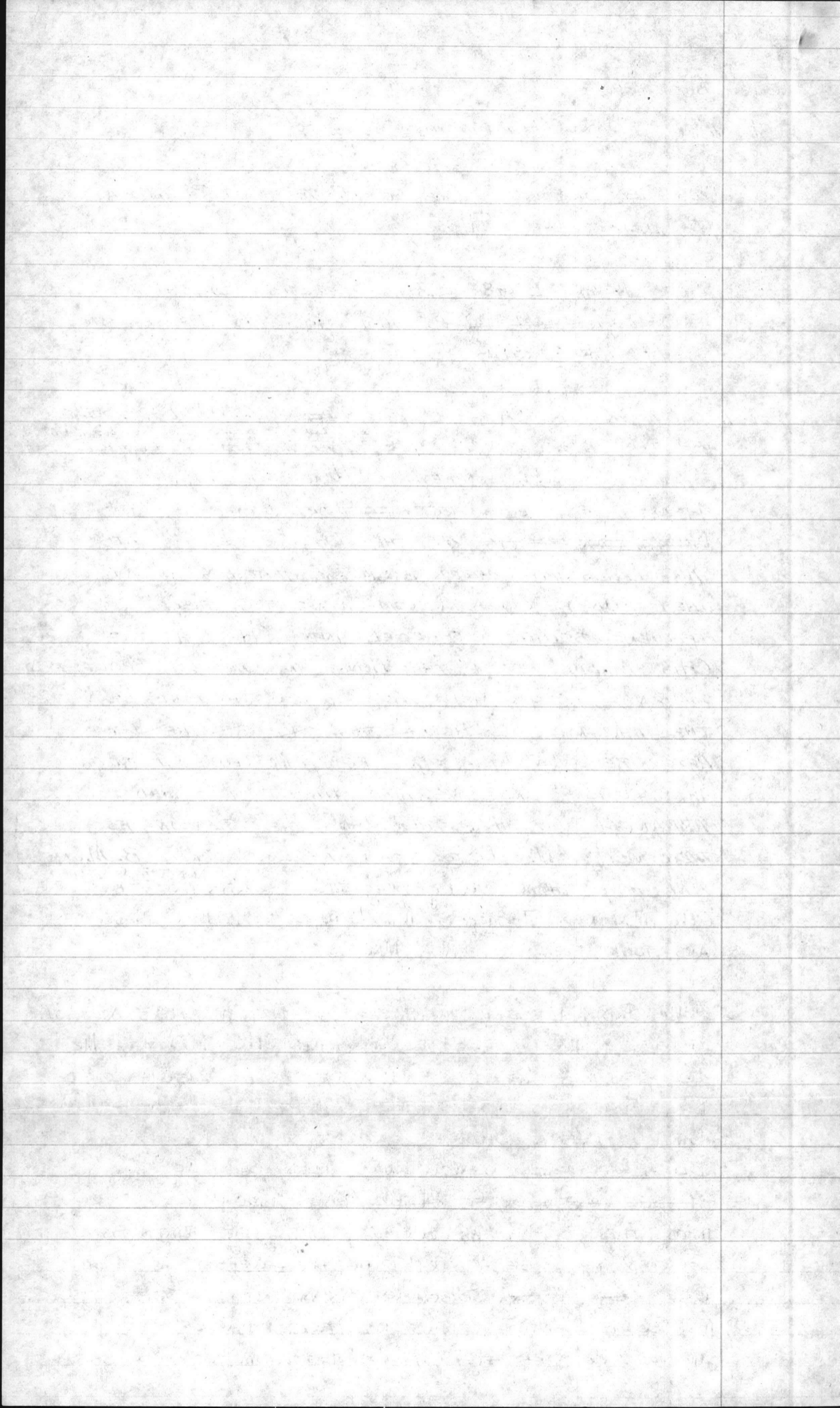
B. MAIN = BASE MAINTENANCE

FROM: ~~DR~~ SUPERVISORY CHEMIST, EC+MS, ENVIR BR, NREAD  
TO MEMO TO THE RECORD

SUBJ: ~~HA MARCH~~ 1988 VISIT SHELLFISH JANITATION  
@ ~~OFFICE, EHS, DHS~~ VISIT TO CHB MARINA ON  
16 MARCH 1988

1. ON 16 MARCH 1988, I MET ~~WITH~~ JAMES LEWIS, JR  
OF THE MOREHEAD CITY OFFICE <sup>AND LORI BROOKS OF THE WILMINGTON</sup> ~~AT~~ OF THE SHELLFISH <sup>OFFICE</sup>  
JANITATION, ENVIRONMENTAL HEALTH SECTION, N.C. DIV OF  
HEALTH SERVICES ~~AND WITH LORI BROOKS OF THE~~  
~~WILMINGTON OFFICE~~ AT THE SNEADS FERRY GATE.  
MR. LEWIS HAD CALLED EARLIER THAT DAY TO SAY  
THEY HAD RECEIVED A COMPLAINT THAT THERE WAS  
EFFLUENT BEING DISCHARGED INTO CHB AT THE  
CHB MARINA FROM THE BLDG AND HE HAD REQUESTED  
SOMEONE ACCOMPANY THEM WHEN THEY VISITED  
THE MARINA. I ~~PICKED THEM UP AT THE GATE~~  
AFTER RECEIVING THE CALL FROM MR. LEWIS, I CALLED  
MR. ELSTON AND INFORMED HIM THAT I HAD  
ARRANGED TO MEET THEM AND THE REASON FOR  
THEIR VISIT. MR. ELSTON SAID HE WOULD CALL B. MAIN,  
AND HAVE THEM CHECK OUT THE HEADS <sup>AND THE WW LINES</sup> AT THE  
CHB MARINA. I <sup>UP AT 1100</sup> PICKED <sup>THE</sup> MR. LEWIS AND MS BROOKS  
AND TOOK THEM TO THE CHB MARINA.

2. MR. PAUL HANSEN, MANAGER OF THE MARINAS AT CAMP  
LEJEUNE, WAS WAITING FOR US AT CHB MARINA. MR.  
LEWIS ASKED ~~IF~~ IF ANY WATER WAS DISCHARGED  
DIRECTLY INTO CHB. MR. HANSEN SAID THAT TWO  
SINKS AND A SHOWER LOCATED IN THE MARINA  
BLDG, ~~WAS USED~~ WHICH WAS USED BY THE <sup>DUTY</sup> MARINE,  
~~ON SECURITY DUTY 24 HRS/DAY~~, DISCHARGED DIRECTLY  
INTO THE BAY. MR. HANSEN SAID THE BATHROOMS  
LOCATED IN A SEPARATE BLDG, <sup>WHICH WERE</sup> ~~AND WERE~~ FOR PUBLIC  
USE, ~~WAS LOCAT~~ DISCHARGED ~~IN~~ INTO A SEPTIC TANK.  
MR. LEWIS SAID IT WAS NOT ACCEPTABLE TO HAVE  
ANY WASTEWATER, EVEN IF ITS JUST FROM SINKS + SHOWERS,



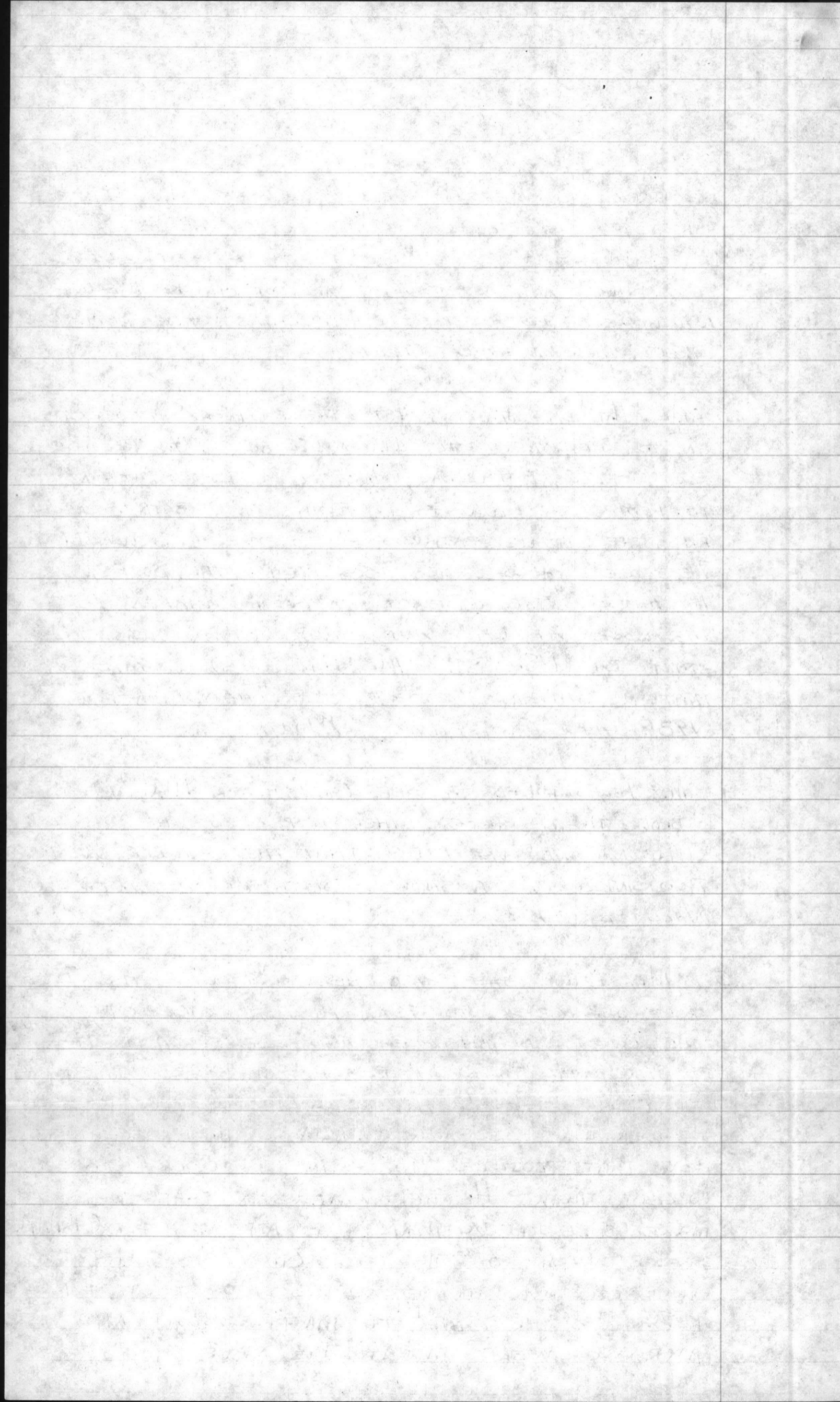
WWTP = WASTEWATER TREATMENT PLANT

DISCHARGING DIRECTLY INTO THE BAY. MR. LEWIS ASKED IF THERE WERE ANY OTHER FACILITIES DISCHARGING DIRECTLY. MR. HANSEN SAID THERE WERE TWO SINKS AND A SHOWER AT GOTTSCHALK MARINA WHICH WERE ONLY FOR THE DUTY MARINES THAT DISCHARGED DIRECTLY INTO WALLACE CREEK.

3. MR. HANSEN STATED THAT THERE WERE PROJECTS IN TO REMODEL THE MARINA BLDG, A TO PROVIDE FOR A FULL BATHROOM, INSTALL A LIFT STATION TO PUMP THE WW ~~TO~~ FROM THE NEW BATHROOM AND THE PUBLIC BATHROOMS TO THE CHB WWTP. THE PROJECT ALSO CALLED FOR REDOING THE DOCKS. MR. HANSEN <sup>SAID</sup> THE CONTRACT HAD BEEN AWARDED FOR THE WORK AT CHB AND CONSTRUCTION WAS TO START BY 1 SEP 88. MR. HANSEN ALSO SAID THAT A SIMILAR PROJECT WAS SCHEDULED FOR 1989 AT GOTTSCHALK MARINA.

4. MR. LEWIS ASKED TO SEE GOTTSCHALK MARINA SO I DROVE THEM THERE. THEY INSPECTED THE MARINA AND VERIFIED THAT THERE WERE ONLY TWO SINKS AND A SHOWER DISCHARGING INTO WALLACE CREEK.

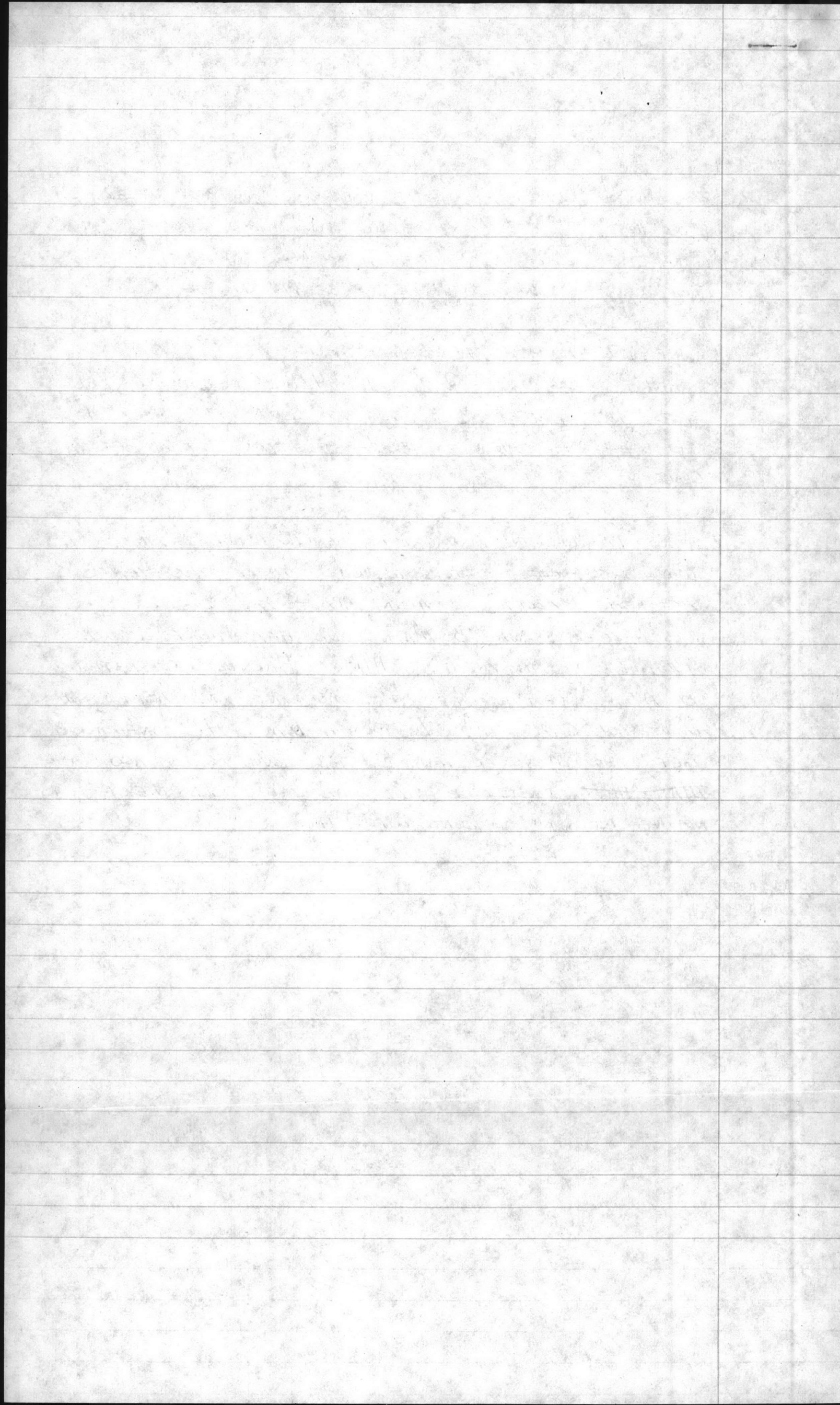
5. MR. LEWIS ~~STAF~~ SAID HE WOULD GIVE THE BASE ABOUT ONE WEEK TO PLAN HOW TO CORRECT THE DIRECT DISCHARGES AND ~~SE~~ SUBMIT <sup>THE PLANS</sup> THEM TO HIM. HE SAID IF HE DID NOT HEAR SOMETHING ~~FOR~~ FROM US ~~TO~~ HE WOULD WRITE US A NOTICE OF VIOLATION FOR EACH MARINA. HE WAS GLAD TO HEAR THAT PROJECTS WERE IN THE WORKS TO CORRECT THEM. HE RECOMMENDED THAT WE MAKE SURE EVERYTHING WAS APPROVED BY CAMA BEFORE WORKING ON THE DOCKS. ~~AS~~ AS FOR CHB SINCE CONSTRUCTION IS SUPPOSE TO START BY 1 SEP 88 HE GAVE <sup>ME</sup> THE IMPRESSION AN ARRANGEMENT MIGHT BE ABLE TO



BE MADE FOR ~~ONE~~ A TEMPORARY SOLUTION. ~~UNDER~~  
HOWEVER SINCE GOTTSCHALK MARINA'S PROJECT IS  
NOT SCHEDULED FOR ANOTHER YEAR SOMETHING  
PERMANENT WOULD HAVE TO BE ARRANGED.

6. ONE SIDE POINT, AFTER LOOKING AT THE SEPTIC  
TANK COVERS AT CHB, MR. LEWIS RECOMMENDED  
~~BE~~ THAT BETTER CAPS BE INSTALLED FOR SAFETY  
AS WELL AS AND TO ~~KEEP~~ THE TANK FROM BECOMING  
CLOGGED.

7. ~~AS~~ FINALLY, THE MANAGER AT THE CHB MARINA SAID THAT  
WHEN SHE ~~SAID~~ STARTED TO WORK THERE TWO YEARS  
AGO SHE CALLED B. MAIN ABOUT THE DIRECT  
DISCHARGES AND B. MAIN TOLD HER THERE WAS NO  
PROBLEM WITH THEM. MAJOR HARGUS, OPERATIONS  
B. MAIN, CAUGHT ME THIS MORNING AND ASKED ~~IF~~  
ABOUT MY CHB TRIP, <sup>AND</sup> I TOLD ~~HE~~ HIM. HE CONFIRMED  
THAT THE MANAGER HAD CALLED TWO YEARS AGO ~~AND~~  
~~THAT HE DIDN'T SEE~~ AND HAD BEEN TOLD THERE WAS  
NOTHING NOTHING WRONG WITH IT.



NATURAL RESOURCES AND ENVIRONMENTAL AFFAIRS  
Marine Corps Base  
Camp Lejeune, North Carolina 28542

17 MAR 88

Date

From: Director.

To: Deputy, AC/S, Facilities.

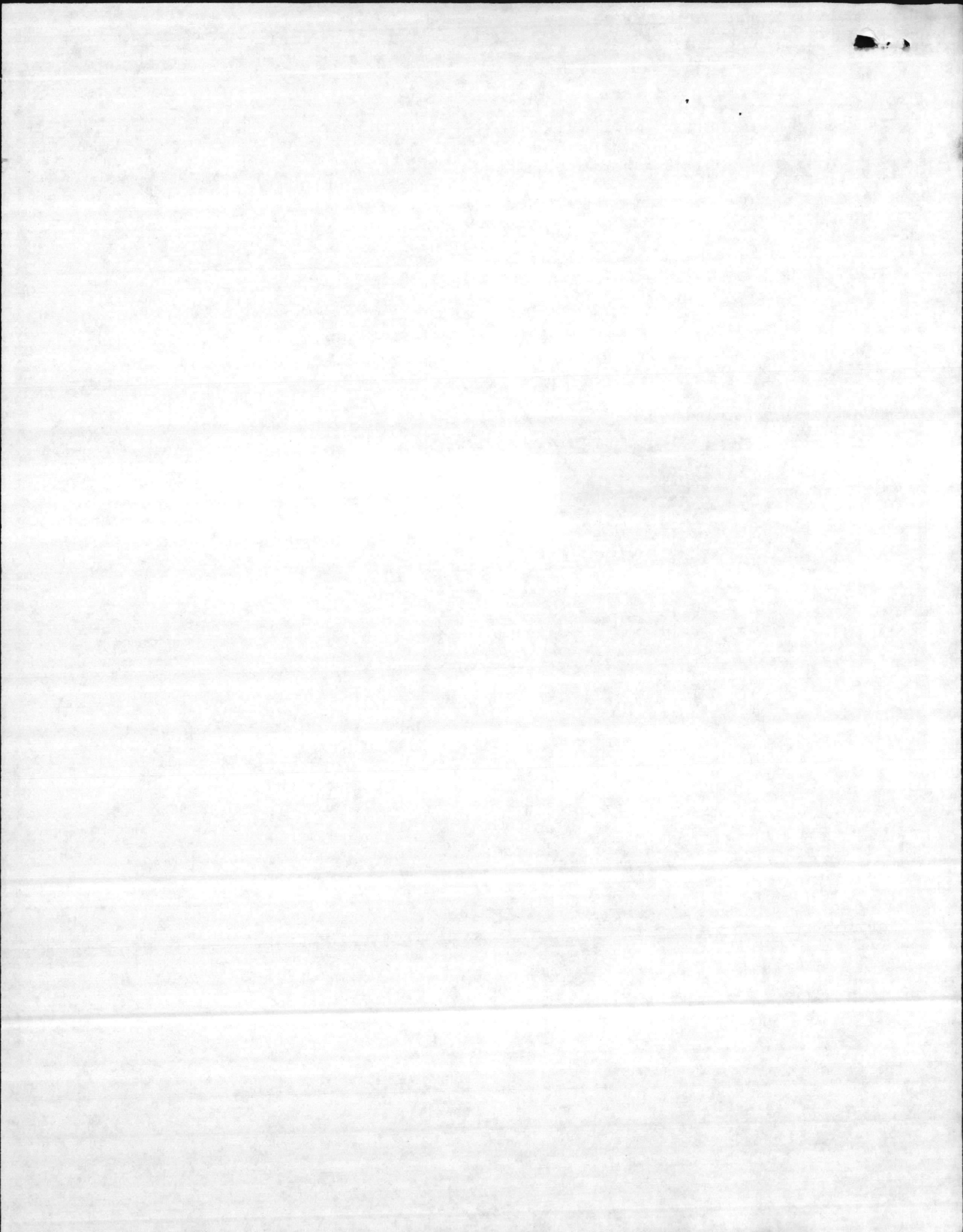
Subj: State Inspection of MARINAS Relative  
To UNAUTHORIZED WASTEWATER DISCHARGES.

Enclosure(1) Supervisory Chemist Memo to  
the Record dtd 17 Mar 88

1. The enclosure is provided per  
your request.

V/R

D. Stange





March 17, 1988

Subj: SHELLFISH SANITATION VISIT TO COURTHOUSE BAY ON  
16 MARCH 1988

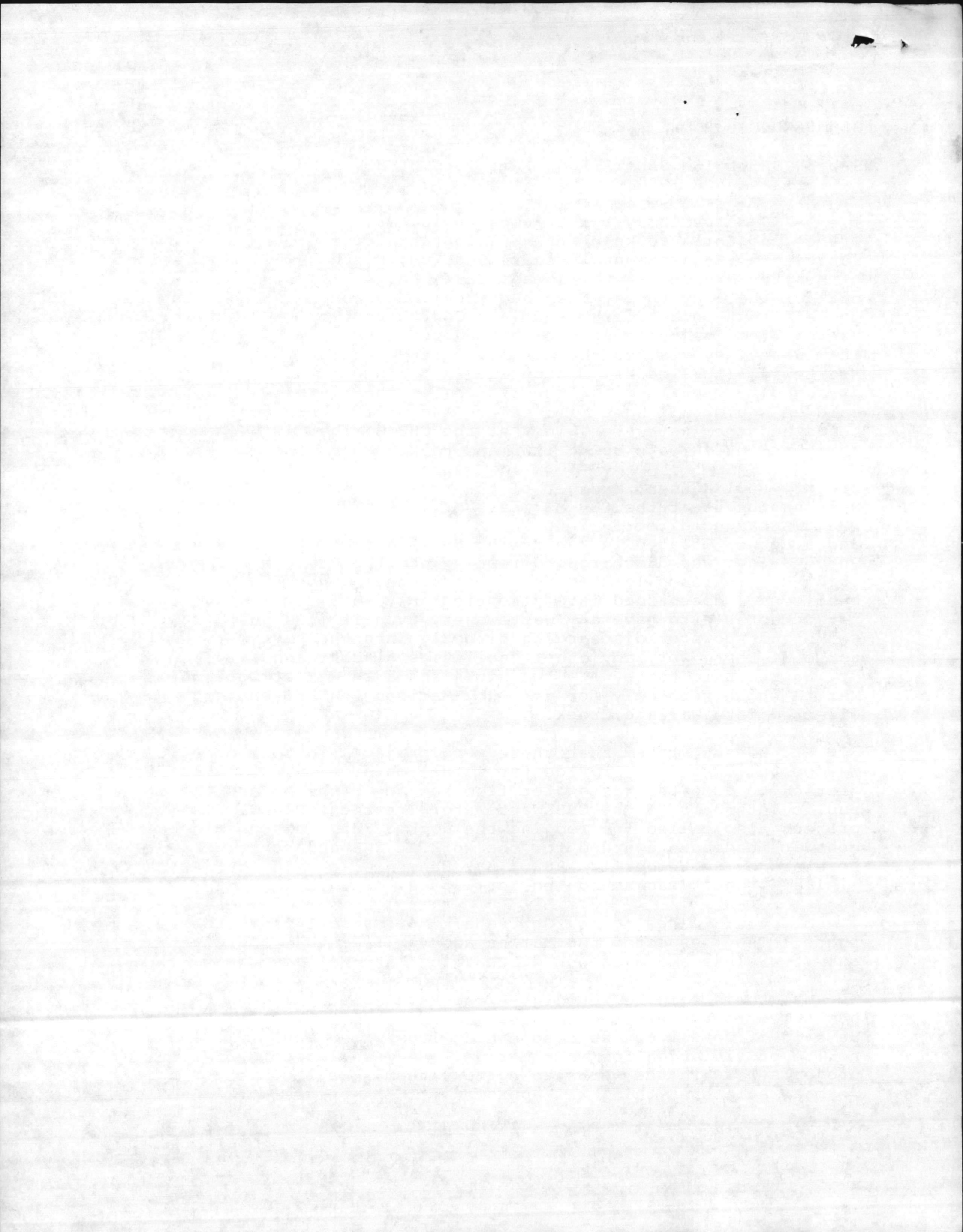
1. On 16 March 1988, I met James Lewis, Jr. of the Morehead City Office and Lori Brooks of the Wilmington Office of the Shellfish Sanitation, Environmental Health Section, North Carolina Division of Health Services at the Sneads Ferry Gate. Mr. Lewis had called earlier that day to say they had received a complaint that there was effluent being discharged into Courthouse Bay (CHB) at the CHB Marina from the building; and he had requested someone accompany them when they visited the Marina. After receiving the call from Mr. Lewis, I called Mr. Elston and informed him that I had arranged to meet them and the reason for their visit. Mr. Elston said he would call Base Maintenance and have them check out the heads and the wastewater lines at the CHB Marina. I picked Mr. Lewis and Ms. Brooks up at 1100 and took them to the CHB Marina.

2. Mr. Paul Hansen, Manager of the Marinas at Camp Lejeune, was waiting for us at the CHB Marina. Mr. Lewis asked if any water was discharged directly into CHB. Mr. Hansen said that two sinks and a shower located in the Marina building, which was used by the Duty Marine, was discharged directly into the Bay. Mr. Hansen said the bathrooms located in a separate building, which were for public use, discharged into a septic tank. Mr. Lewis said it was not acceptable to have any wastewater, even if it's just from sinks and showers, discharging directly into the Bay. Mr. Lewis asked if there were any other facilities discharging directly. Mr. Hansen said there were two sinks and a shower at Gottschalk Marina which were only for the Duty Marines that discharged directed into Wallace Creek.

3. Mr. Hansen stated that there were projects in to remodel the Marine building - to provide for a full bathroom, install a lift station to pump the wastewater from the new bathroom and the public bathrooms to the CHB Wastewater Treatment Plant. The project also called for redoing the docks. Mr. Hansen said the contract had been awarded for the work at CHB and construction was to start by September 1, 1988. Mr. Hansen also said that a similar project was scheduled for 1989 at Gottschalk Marina.

4. Mr. Lewis asked to see Gottschalk Marina so I drove them there. They inspected the Marina and verified that there were only two sinks and a shower discharging into Wallace Creek.

5. Mr. Lewis said he would give the Base about one week to plan how to correct the direct discharges and submit the plan to him. He said if he did not hear something from us he would write us a notice of violation for each Marina. He was glad to hear that projects were in the works to correct them. He recommended that we make sure everything was approved by CAMA before working on the



docks. As for CHB, since construction is suppose to start by September 1, 1988, he gave me the impression an arrangement might be made for a temporary solution. However, since Gottschalk Marina's project is not scheduled for another year, something permanent would have to be arranged.

6. One side point, after looking at the septic tank covers at CHB, Mr. Lewis recommended that better caps be installed for safety and to keep the tank from becoming clogged.

7. Finally, the Manager at the CHB Marina said that when she started to work there two years ago she called Base Maintenance about the direct discharges and Base Maintenance told her there was no problem with them. Major Hargus, Operations, Base Maintenance, caught me this morning and asked about my CHB trip and I told him. He confirmed that the Manager had called two years ago and had been told there was nothing wrong with it.

*Elizabeth A. Betz*  
ELIZABETH A. BETZ  
Supervisory Chemist

3.10  
1.8

1.8  
1.8

MEMO FOR BILLY

PAUL HANSEN WAS PRESENT

1 SHOWER - 2 SINKS IN KITCHEN - IS GOING

OVER BOARD

Scotch® 7660 "Post-it" Telephone Message Pad

To Julian  
Date 3/15 Time 0935

WHILE YOU WERE OUT

M. JAMES LEWIS / GEORGE GILBERT

of DEPT. OF HUMAN RESOURCES

Phone No. 919-726-6827

TELEPHONED	PLEASE CALL
WAS IN TO SEE YOU	WILL CALL BACK
WANTS TO SEE YOU	<b>URGENT</b>
RETURNED YOUR CALL	

Message 1100 - Maine Coast  
Home Bay. Recharging  
directly over board.  
effluent - lab, sink

Operator J.

TANK

FOR CORRECTION.

ALSO THAT THE SAME.

INAS 24 HRS

WORKS HAS AWARDED CONTRACT

TO PUT A LIFT STATION AND PUMP.

CONSTRUCTION IN AUG 88 @ CHB

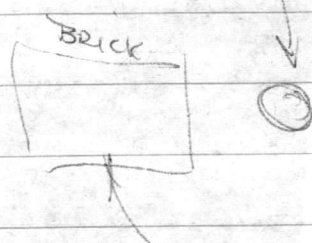
CAMA - CONTACT PRESTON PATE

TO CHECK WORK @ CHB

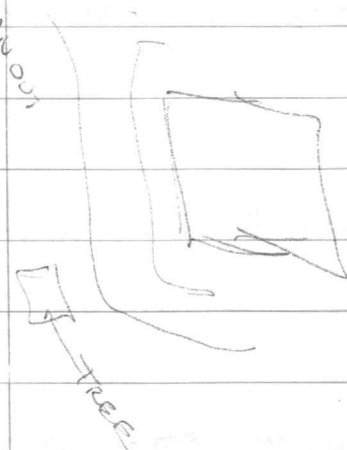
CONSTRUCTION ~~IN~~ ON GOTSCHACK MARINA

89.

IF A CLEANOUT  
PIPE NEEDS  
A CAP



IF PART OF SEPTIC  
TANK NEEDS A TIGHTER LID



WHAT IS  
THIS

A hand-drawn diagram of a rectangular septic tank lid with a jagged hole in the center. An arrow points from the text 'WHAT IS THIS' to the hole.

MEMO FOR BILLY

PAUL HANSEN WAS PRESENT

1 SHOWER ~ 2 SINKS IN KITCHEN - IS GOING  
OVERBOARD.

HEAD IS ON SEPTIC TANK

1 WEEK TO PLAN FOR CORRECTION.

GOTTSCHALK MARINA IS ALSO ~~THE~~ THE SAME.

DUTY IS IN BOTH MARINAS 24 HRS

PUBLIC WORKS HAS AWARDED CONTRACT  
TO PUT A LIFT STATION AND PUMP.

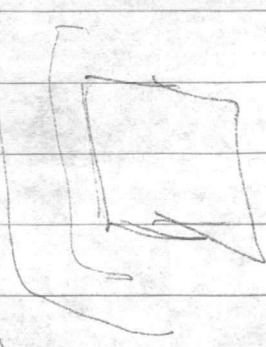
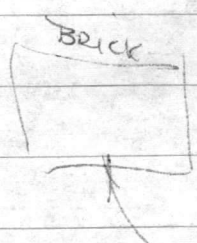
CONSTRUCTION IN AUG 88 @ CHB

CAMA - CONTACT PRESTON PATE

to CHECK WORK @ CHB

CONSTRUCTION ~~IN~~ ON GOTTSCHALK MARINA  
89.

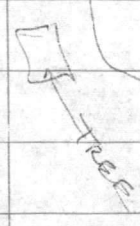
IF A CLEANOUT  
PIPE NEEDS  
A CAP



WHAT IS  
THIS



IF PART OF SEPTIC  
TANK NEEDS A TIGHTER LID





JAMES LEWIS, SHELLFISH SANITATION, M.C.

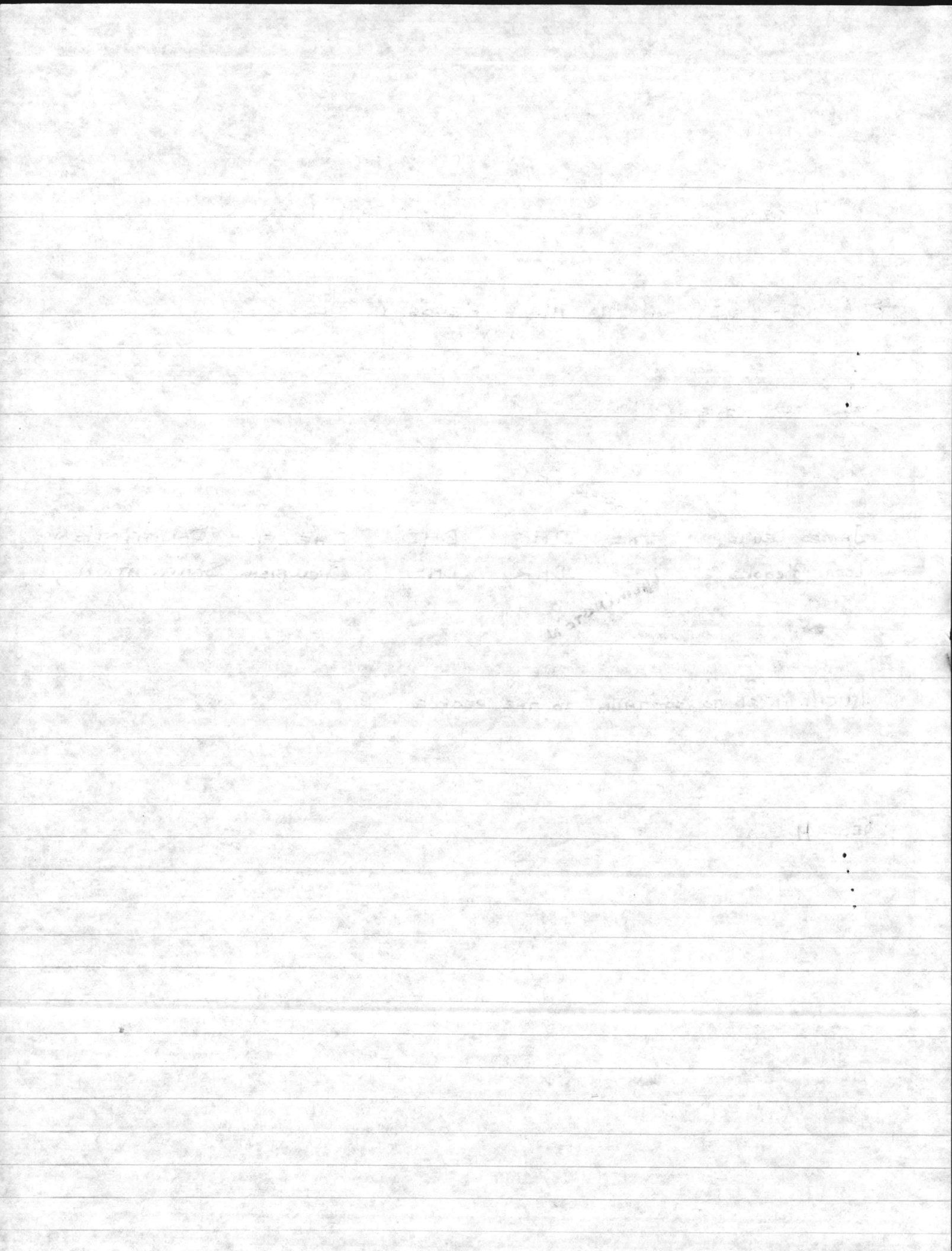
→ COURTHOUSE BAY MARINA - HEADS IN BLDG.

SWEDS FERRY GATE @ 11:00

	MOREHEAD CITY			
JAMES LEWIS	<del>SHR</del>	DHR	DHS	SHELLFISH SANITATION,
LORI BROOKS		DHR	DHS	SHELLFISH SANITATION,
	WILMINGTON,			

MIGHT NEED TO TALK TO THE PEOPLE

RED HONDA



~~Jul W~~  
~~5-78-85~~

Danny ~~DRS~~

Camp Lejeune

REPORT OF SANITARY SURVEY

BEAR CREEK AREA

AREA D-1

JULY 1984 - APRIL 1985

MAY 1985



AREA D-1

EXHIBIT I      AREA MAP AND STATION LOCATIONS

EXHIBIT II     BACTERIOLOGICAL RESULTS AND MPN MEDIANS

EXHIBIT III    PROHIBITED AREA MAP



## Preface

Total Acreage	-----	700.
Prohibited Acreage	-----	70.
Oyster Production	-----	Fair.
Clam Production	-----	Fair.
Commercial Value	-----	Fair.
Recommended Changes	-----	None.





REPORT OF SANITARY SURVEY

BEAR CREEK AREA

AREA D-1

By

SHELLFISH SANITATION PROGRAM  
NORTH CAROLINA DIVISION OF HEALTH SERVICES

I. INTRODUCTION

Area D-1 is composed of the waters of Saunders Creek, Bear Creek, and all waters between Beacon #55 and Beacon #59 in the ICWW. Bear Inlet and all creeks and marshes between the Inlet and the community of Bear Creek are included in the area. (See Exhibit I for area map.)

This is a small area and is flushed primarily by the tidal waters of Bear Inlet. Browns Inlet and New River Inlet also affect the western most section of this area.

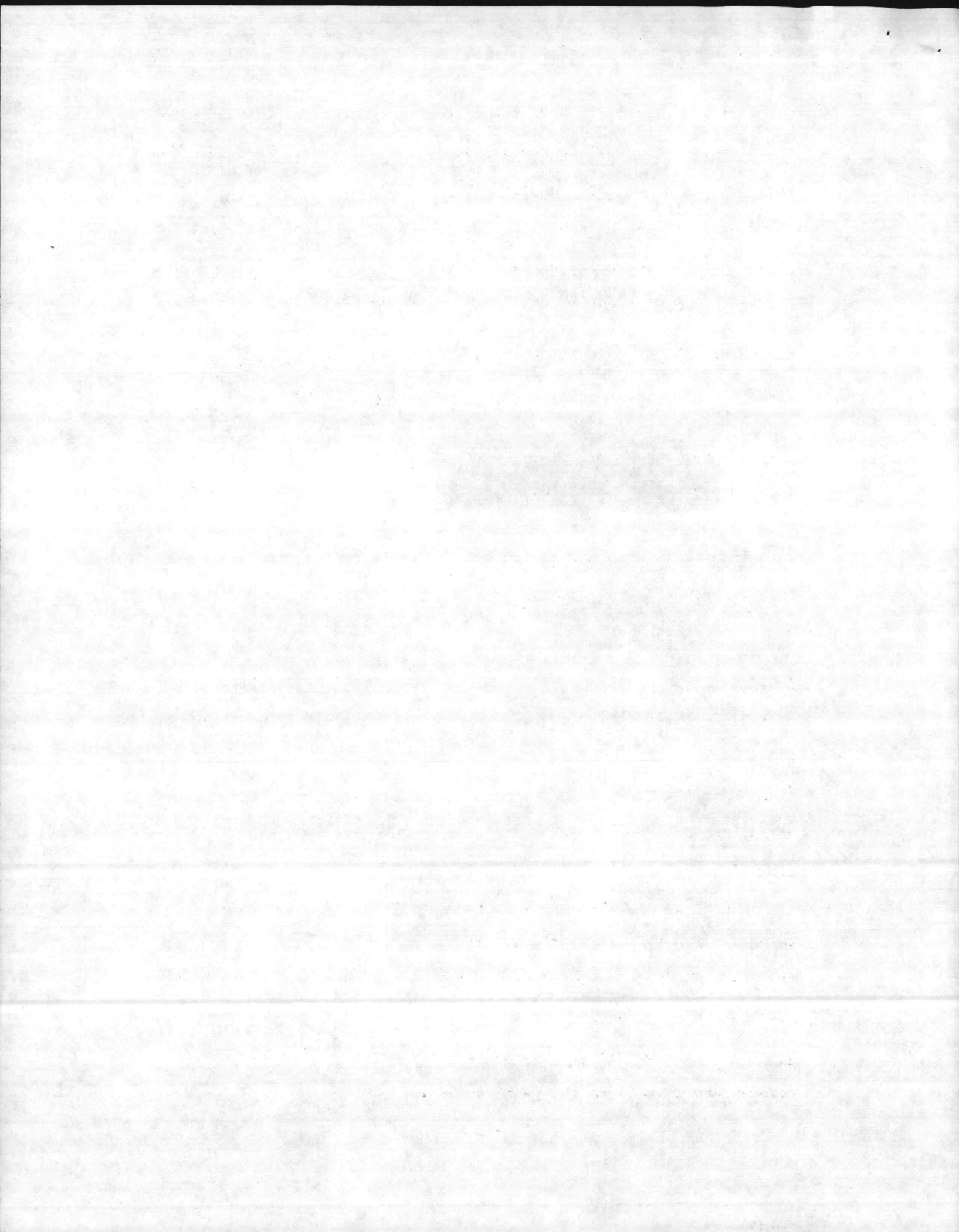
Oysters and clams grow well throughout the area. Most of the oysters are utilized locally, while clams are shipped to markets outside of North Carolina.

The western section of the area is within the military reservation at Camp Lejeune and contains no permanent population. The entire population of the area is approximately 1000.

II. SHORELINE SURVEY OF SOURCES OF POLLUTION

A spot-check shoreline survey of Area D-1 was conducted on September 4, 1984. Ralph Johnson of the Shellfish Sanitation staff conducted the survey.

Area D-1 is located in Onslow County. Mr. Richard Koonce, Sanitarian Supervisor, Environmental Health Section, Onslow County Health Department,



was notified prior to the survey that a spot-check survey was to be conducted. Individual sewage systems are not inspected during a spot-check shoreline survey. A portion of Area D-1 is located within the boundaries of Camp Lejeune. Mr. Danny Sharpe, Natural Resources Environmental Affairs, Camp Lejeune was telephoned to obtain information on any changes or development in this portion of the area.

Pertinent information was obtained for an update on changes in the area since the last comprehensive shoreline survey in 1982.

The following is a listing of information obtained during the survey.

(1) Murry Chris Craft (Old Name- Uniflite)

Location - end of county road (SR) #1507 on Goose Creek, adjacent to the Intracoastal Waterway (ICWW)

Wet slips - Five, the boat ramp is considered the 5th slip.

Permanent boats - none

Boats with marine heads - The company docks boats for repairs. These boats do contain marine heads. Supposedly these boats are not occupied during the dockage.

Pump-out service - none

Sewage system - large septic tank system - No problems were reported.

Service - rail for repairs

Chemical usage - acetone, methyl ethyl ketone, fiber glass mat resin, paints, paint thinner, and fuel oils

Changes - The four campers previously located in the rear of this business have been removed.

General - This company builds and repairs boats. Ownership of the company has changed in the past two years.



(2) Willis Landing

Location - end of SR#1505 on Bear Creek

Wet slips - 12 to 14 and general dockage - The wet slips have been added since the last report.

Permanent boats - variable, observed 5 small boats and one house boat docked (9-4-84)

Boats with marine heads - one

Boats used as permanent residences - unknown - The owner of the house boat was not present.

Pump-out service - none observed

Boat ramp - yes

Structures - small building

Sewage system - None, bathroom facilities are not provided at this location.

(3) Onslow County Board of Education Wilderness Area (Not in the Last Report)

Location - intersection of Hiway #172 and SR#1503 adjacent to the headwaters of Bear Creek

General - This wilderness area is being developed by the Onslow County Board of Education. Nature trails, bathroom facilities, (septic tank system), and sheltered picnic facilities are to be installed.

(4) Developing Residential Sites

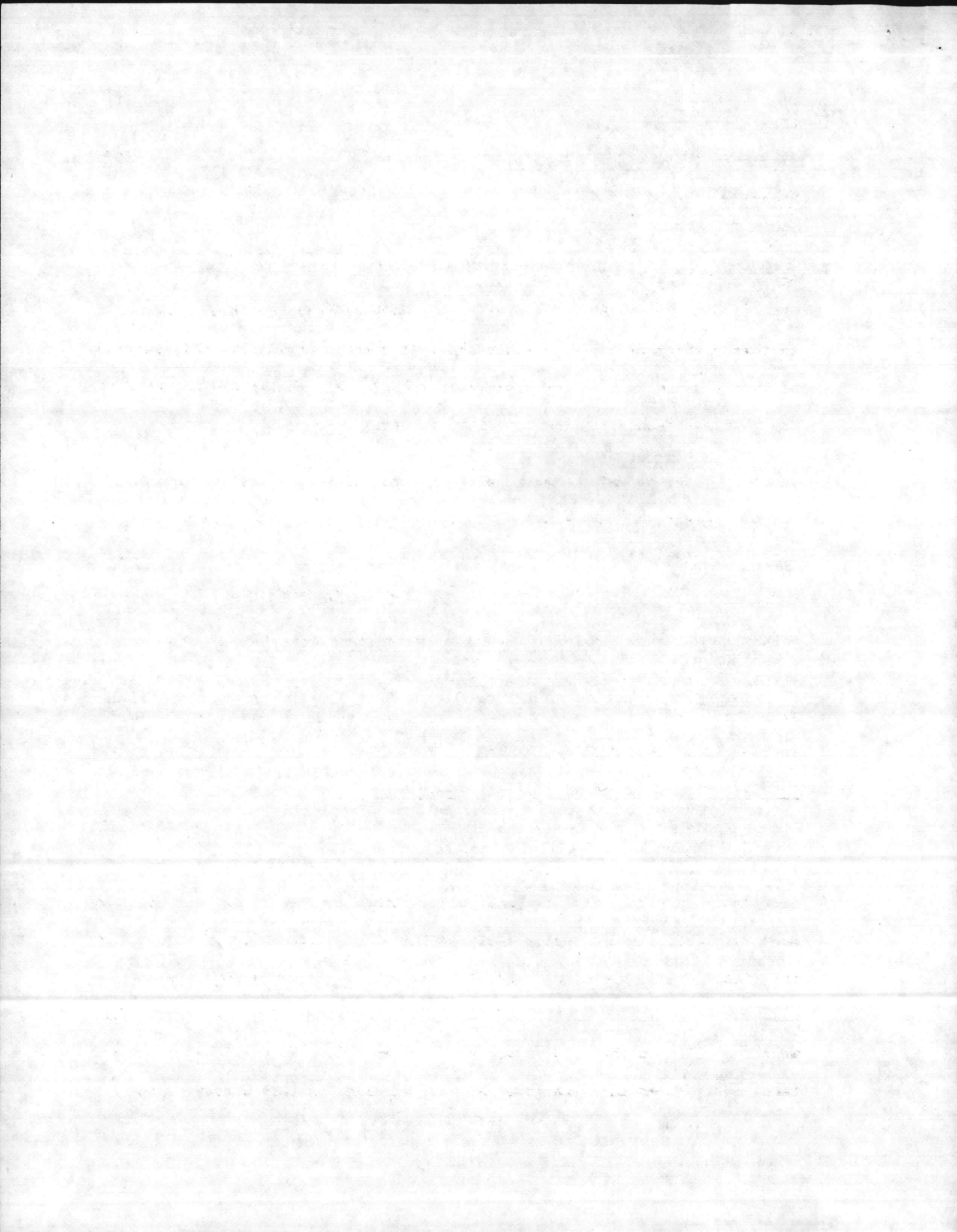
Vista Cay (single family units)

Location - SR#1503

Lots - Phase I: 62 lots, Phase II: more than 135 lots

Millbridge Acres (single family units)

Location - SR#1503



Lots - 17

Glencroft (single family units)

Location - SR#1503

Lots - 18

(5) Camp Lejeune

General - Mr. Danny Sharpe reported that no basic changes have occurred in this portion of the area since the last survey. Primarily this section of Camp Lejeune is used for training purposes. Mr. Sharpe did not know of any changes planned for the immediate future.

In conclusion, no major changes were observed since the last survey that would alter present day estuarine water quality. Development is not occurring as rapidly in Area D-1 as other areas.

### III. EVALUATIONS OF HYDROGRAPHIC FACTORS RESPONSIBLE FOR THE SPREAD OF POLLUTION

Drogue studies conducted during past studies of this area indicate that under normal conditions falling waters from Bear Creek are influenced by Brown and New River Inlets. Salinities are generally high in the area, ranging from 25-34 ppt, indicating little influence from fresh water run-off.

### IV. BACTERIOLOGICAL SURVEY OF SHELLFISH GROWING WATERS

The bacteriological survey was begun in July, 1984, and concluded in April, 1985. During the survey 128 water samples were collected from 13 sampling stations. (See Exhibit I for station locations.) Results indicate improvement in bacteriological water quality. The only station with an unsatisfactory fecal coliform median is Station #4, with a median of 20. Station #4 also was in violation of the 10% rule. Station #3 has improved from a fecal median of 15.5 on the 1983 survey to a 7.8 on this survey. It appears that fecal coliform medians are lower at most stations on this survey. (See





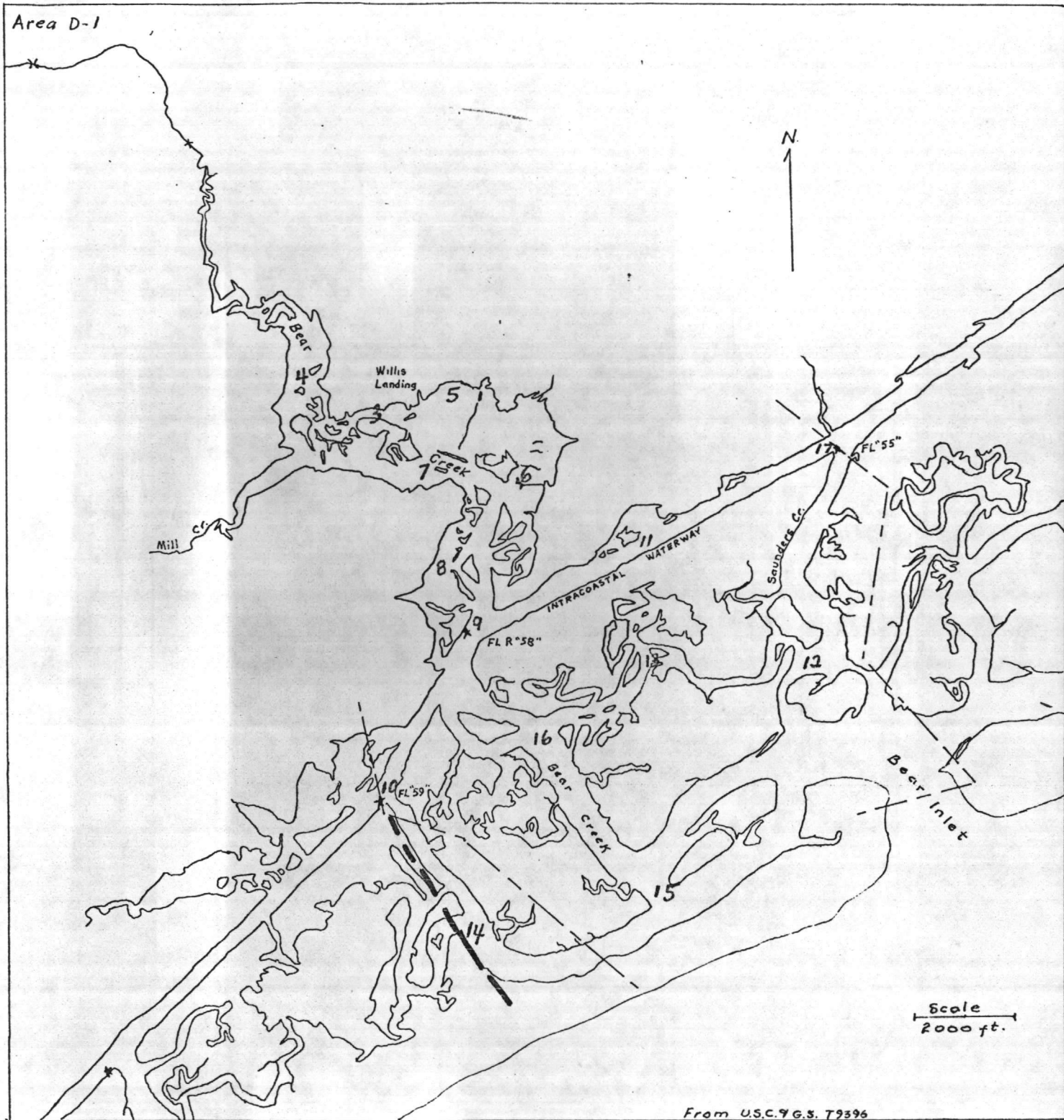
Exhibit II for bacteriological results and MPN medians.)

V. SUMMARY AND RESULTANT AREA CLASSIFICATION

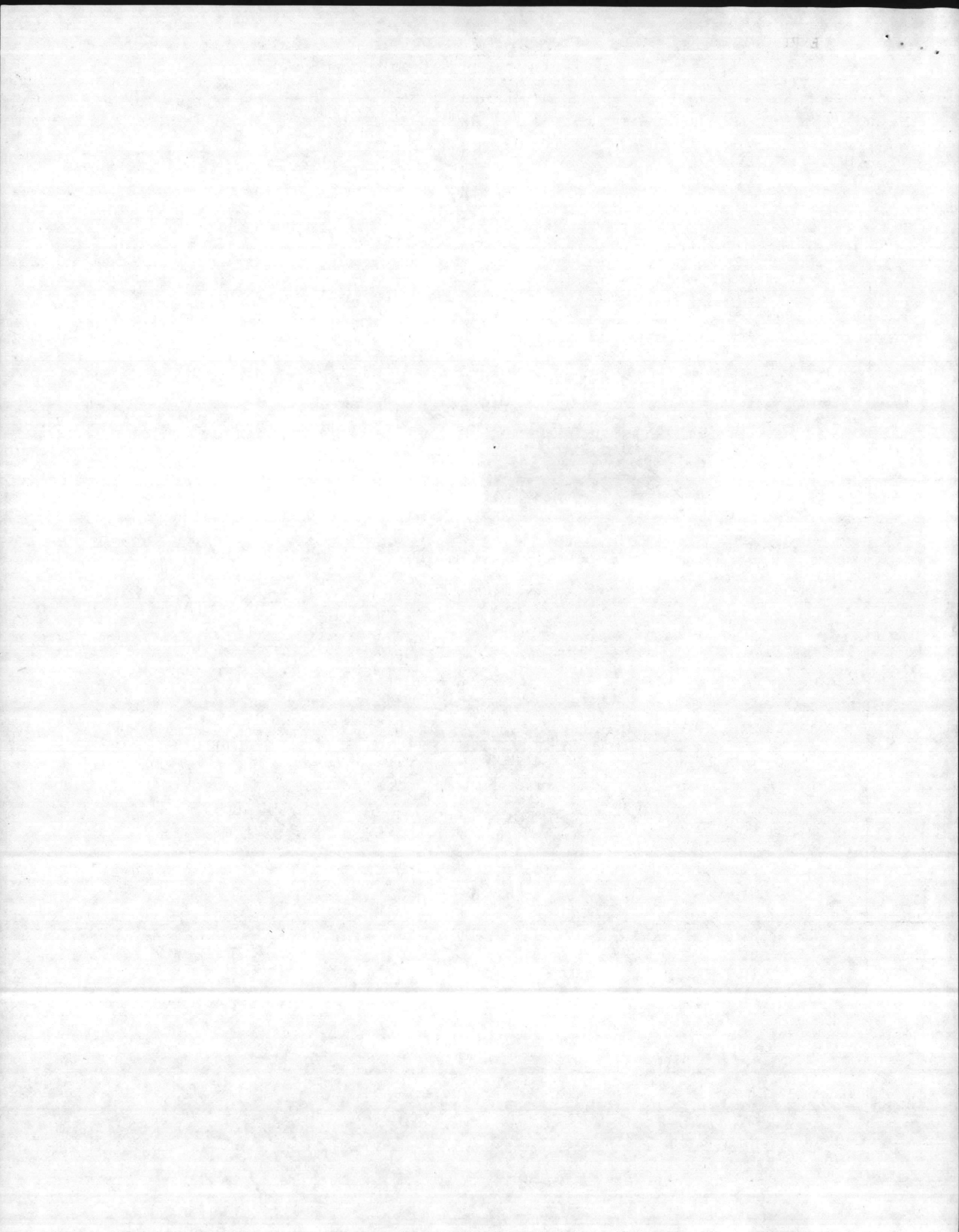
Improvements have been noted in the area during this survey. Station #4 in Bear Creek is the only station with unsatisfactory results. Station #3, located in prohibited waters, has been satisfactory during most of the survey. The last two samples collected at this station were unsatisfactory, and it is not felt that we should recommend additional openings at this time. We will check the area during the fall; and if the water quality is still satisfactory, additional waters may be opened for shellfishing. (See Exhibit III for prohibited area map.)



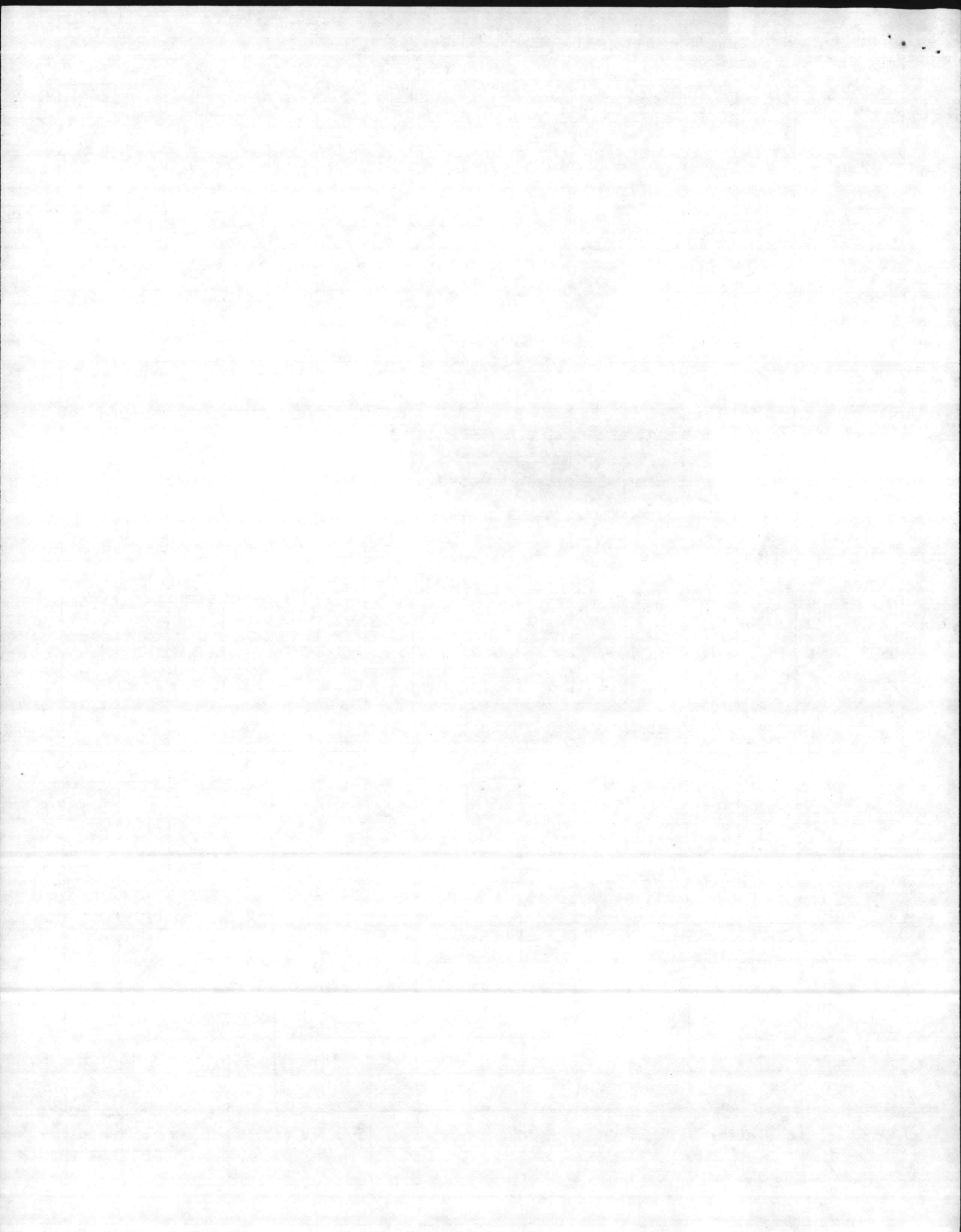
AREA MAP AND STATION LOCATIONS



From U.S.C. & G.S. T9396

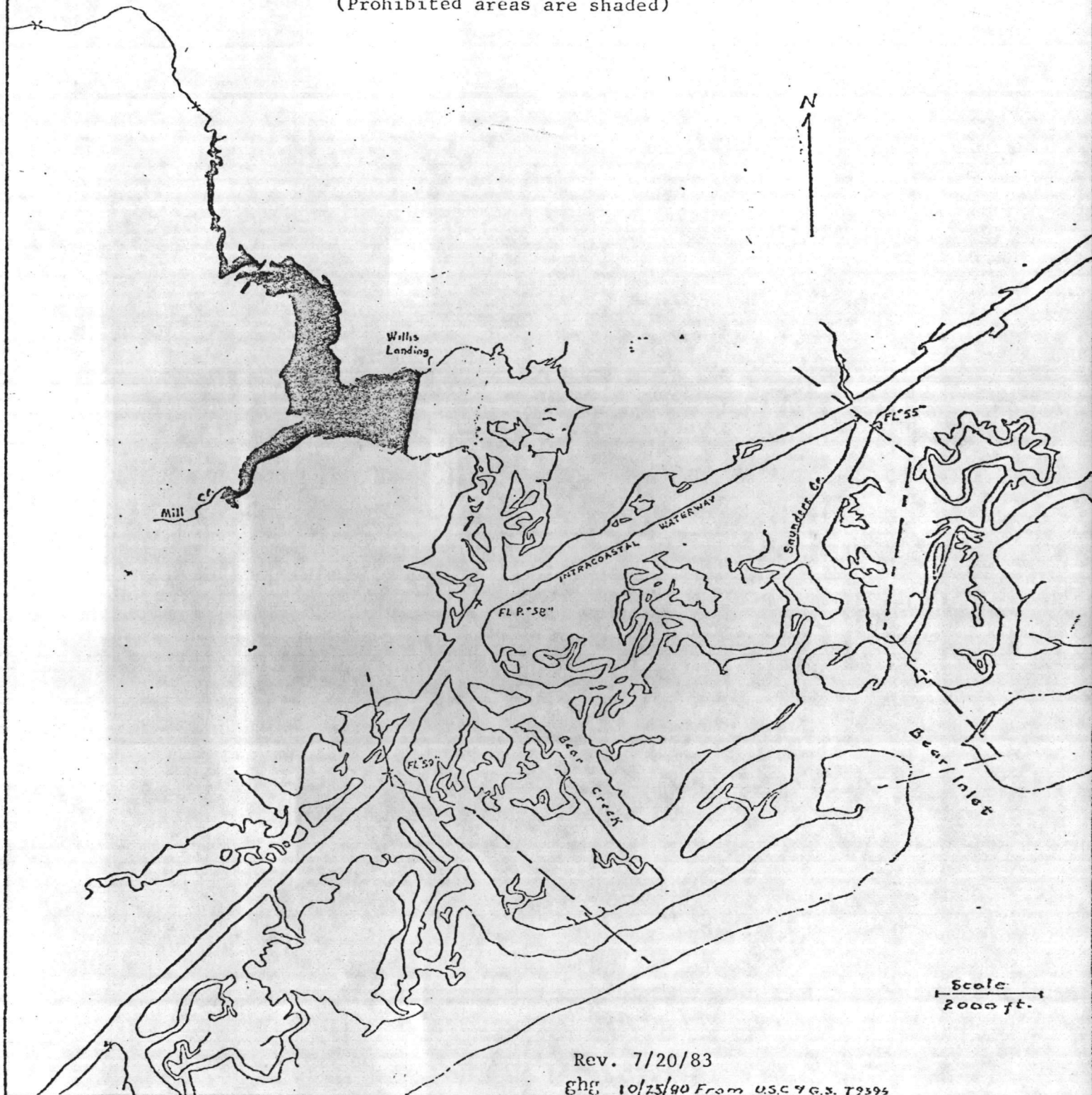






Area D-1

(Prohibited areas are shaded)

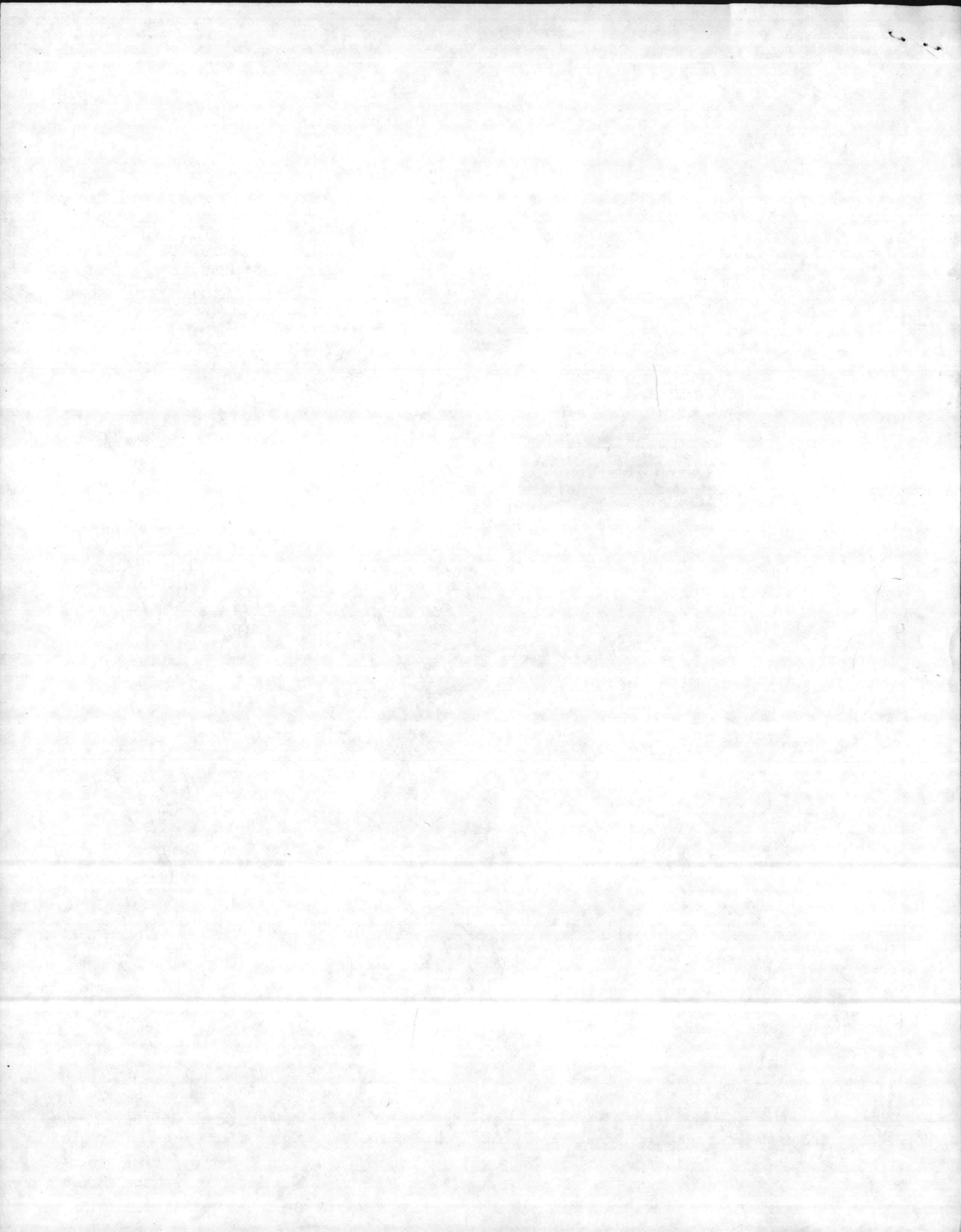


Rev. 7/20/83  
ghg 10/25/90 From USC 7 G.S. 72395

No person shall take or attempt to take any oysters or clams or possess, sell, or offer for sale any oysters or clams taken from the following area, at any time:

BEAR CREEK AREA

All those waters upstream from a line drawn across the Creek beginning at a point on the north shore at 34° 38' 42" N - 77° 12' 33" W; thence to the south shore at 34° 38' 27" N - 77° 12' 40" W.





12-1-86

Note:

Copy of this report was  
mailed to Mr. Danny Sharpe,  
Base Maintenance Officer,  
USMC Base, Cherry St, N.C.  
on 11-4-85.

1-8-87

JLW TO Lab

\_\_\_\_\_ in  
our files from \_\_\_\_\_

If we can serve you further at

Sinc



Mrs.  
Prep

DHS 1351 (Revised 12/81)  
Vital Records

*Duplicate*  
*Copy 12-1-86*

REPORT OF SANITARY SURVEY

HURST BEACH AREA

AREA C-4

MARCH 1984 - AUGUST 1985

NOVEMBER 1985



AREA C-4

- EXHIBIT I            AREA MAP AND STATION LOCATIONS
- EXHIBIT II           SHORELINE SURVEY ROUTE
- EXHIBIT III          BACTERIOLOGICAL RESULTS AND MPN MEDIANS
- EXHIBIT IV           PROCLAMATION AND PROHIBITED AREA MAP



Preface

Total Acreage.....	500.
Prohibited Acreage.....	160.
Oyster Production.....	Poor.
Clam Production.....	Poor.
Commercial Value.....	Poor.
Recommended Changes.....	Closed 75 Acres.





# REPORT OF SANITARY SURVEY

## HURST BEACH AREA

### AREA C-4

By

#### SHELLFISH SANITATION PROGRAM NORTH CAROLINA DIVISION OF HEALTH SERVICES

#### I. INTRODUCTION

Area C-4 is composed of the waters of the ICWW and its tributaries between Marker #65 at Craig Point and Marker #59 at Shacklefoot Channel. Included in this area are Salliers Bay, Holover Creek, Gillets Creek, Freeman Creek, Browns Creek, Banks Channel, and Browns Inlet. The watershed for this area consists of approximately 16 square miles. The entire area lies within the boundary of a United States Marine Corps Reservation. There is very little shellfishing done in this area, although there are clams and oysters of the "cluster" variety found in Salliers Bay and in the creeks and tributaries near Browns Inlet. (See Exhibit I for map of area.)

#### II. SHORELINE SURVEY OF SOURCES OF POLLUTION

A comprehensive shoreline survey of Area C-4 was conducted on August 7, 1985, by Anne Schmitzer of the Shellfish Sanitation staff.

Area C-4 is located entirely within the Camp Lejeune Base in Onslow County. On August 2, 1985, written permission was received through the Commanding General to visit the base and conduct the survey. It was established that permission for future surveys may be requested by telephone through Mr. Danny Sharpe of the Natural Resources and Environmental Affairs Division (NREAD).

The route began on Hwy 172 at the intersection of Mile Hammock Road.



Proceeding easterly along Hwy 172, the survey ends on Hwy 172 also, at the intersection of SR#1503. (See Exhibit II for a map of the route.) Mr. Dan Becker of NREAD accompanied the sanitarian on this survey and provided information on development and sewage disposal in this area.

All permanent facilities located on Hurst Beach are connected to the Onslow Beach Sewage Treatment Plant. This includes barracks, mess hall, and various institutions typical of a self-contained military unit. The treatment plant is located on the south side of the ICWW. The outfall is closest to Sampling Station #5A in the ICWW. No changes have been made in this plant since the 1983 report. (See Exhibit II for locations.)

There are three Special Services Campsites in Area C-4. Campsites #1 and #3 are located on Hurst Beach on the east side of the bridge, close to Sampling Station #6. Campsite #2 is located on the north side of the ICWW beside the water treatment plant and directly across from the sewage treatment plant. No changes have taken place since the 1983 report. The degree of usage varies seasonally.

A water treatment plant is also present in this area. It is located on the north side of the ICWW in close proximity to the southwest side of Gillets Creek, north of Campsite #2. Refer to the 1983 report for details. No changes have occurred since then.

There are no sanitary landfills in Area C-4 and no scattered dumping of trash or garbage was noted. Solid waste disposal is maintained by the Base and carried to a sanitary landfill outside the C-4 area, but within the Base.

No large concentrations of domestic or wildlife animals were observed.



Many species of migrating birds are known to pass through this region periodically.

Vegetation in Area C-4 differs on both sides of the ICWW. On the north side of the ICWW, on the mainland, a developed mixture of hardwood and pine forest exists, which would reduce run-off to the water. On the south side of the ICWW, on Hurst Beach, vegetation is typical of a coastal barrier island.

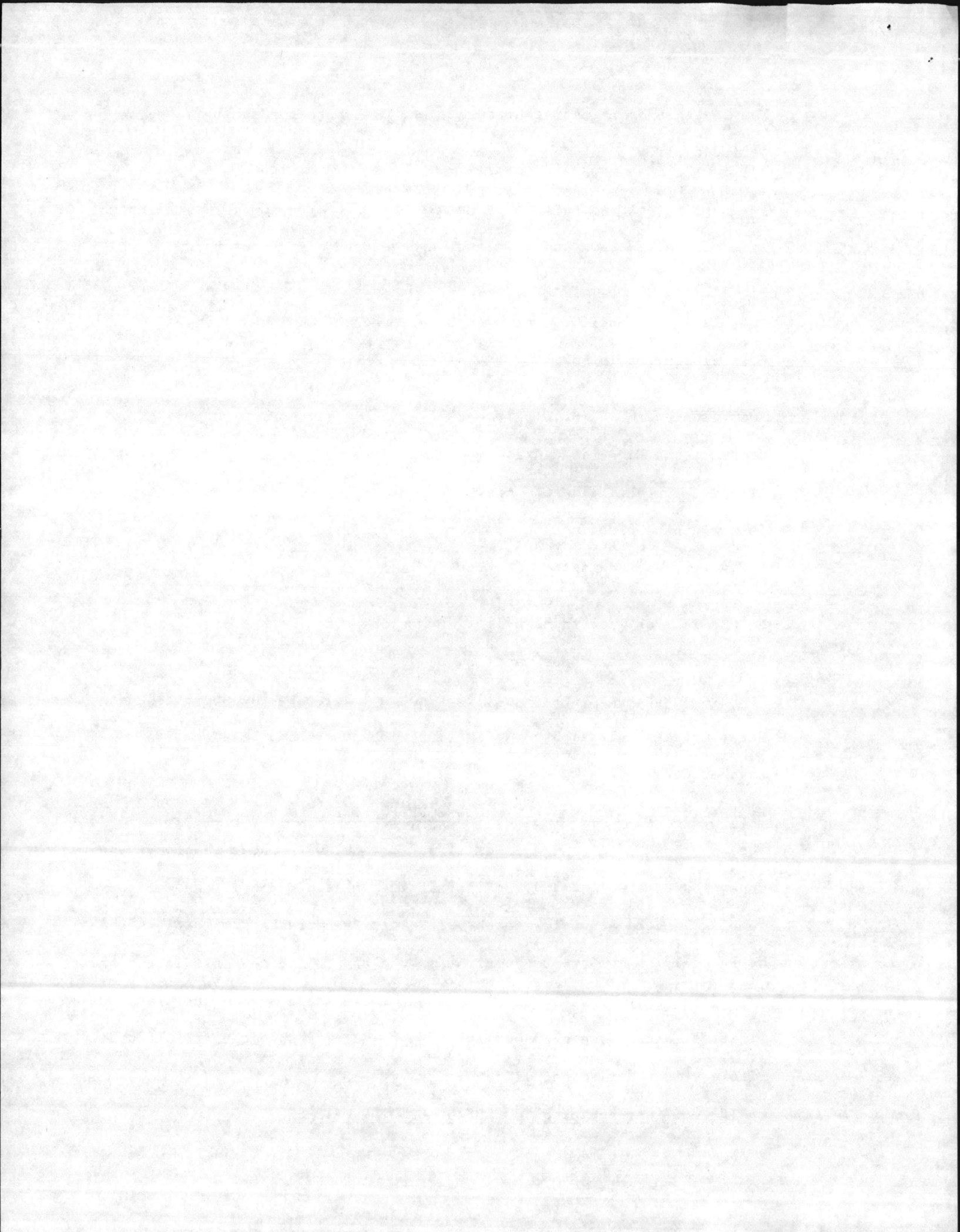
According to the U. S. Department of Agriculture, Soil Conservation Service, soil in Area C-4 is typical of coastal plains and barrier islands. On both sides of the ICWW, the soil immediately on the water is subject to flooding and poor drainage. Slightly further away from the water, soil conditions improve quickly.

No chemical or industrial pollution was observed in this area. There is a record of hazardous waste site in the area but it was not considered to have contributed any significant contamination to the shellfish waters. Refer to the "Initial Study of Marine Corp Base, Camp Lejeune 1983" for further details.

### III. EVALUATIONS OF HYDROGRAPHIC FACTORS RESPONSIBLE FOR SPREAD OF POLLUTION

The watershed of Area C-4 is small and drains, with one exception, undeveloped marshland and woodlands. The one exception is the military complex located at Onslow Beach. This office-barracks complex is served by the only sewage treatment plant in the area. The currents in the area are affected by Browns Inlet located on the eastern end of the area. Salinities range between 20 ppt and 34 ppt, with fresh water run-off having little effect during normal conditions.

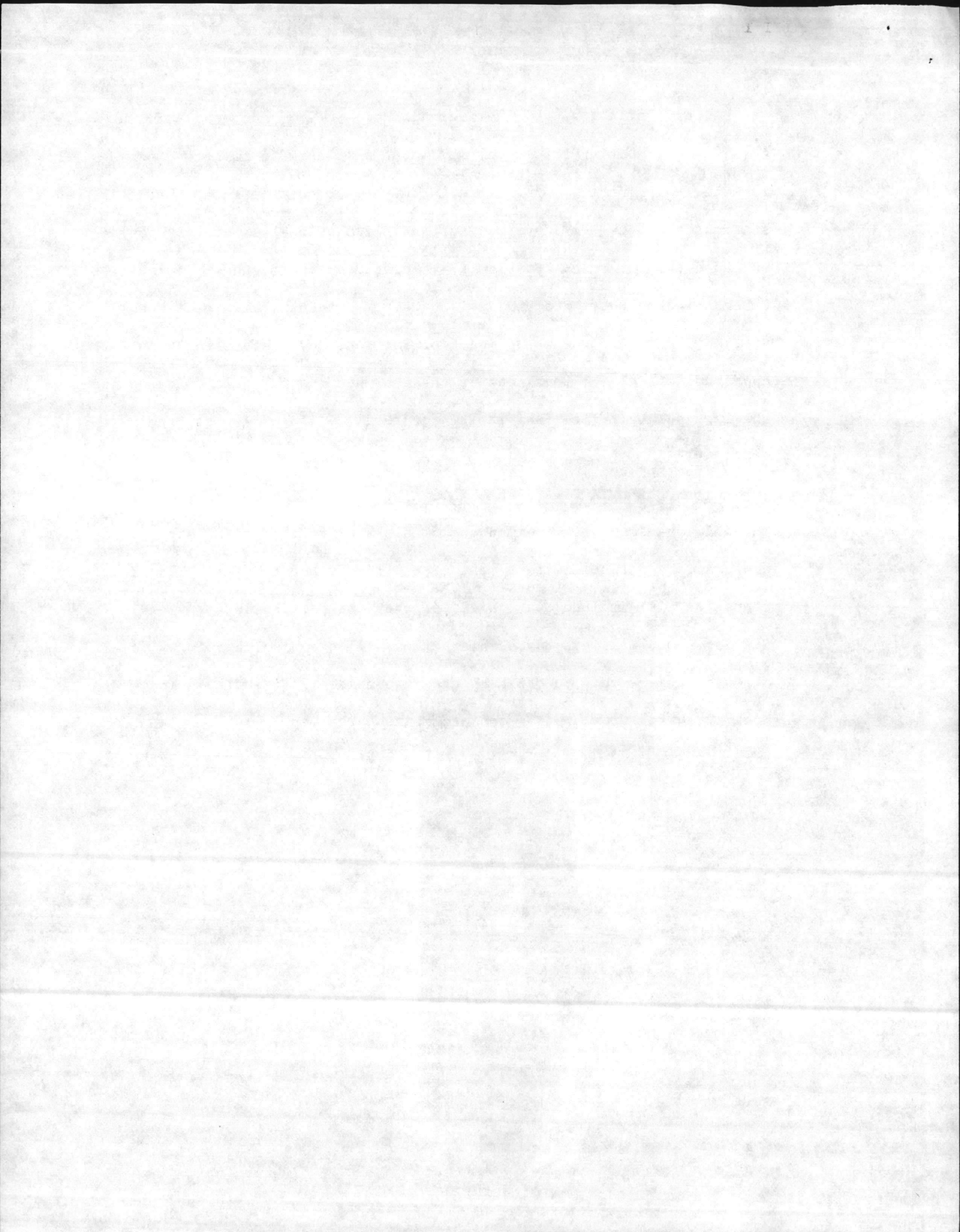
### IV. BACTERIOLOGICAL SURVEY OF SHELLFISH GROWING WATERS



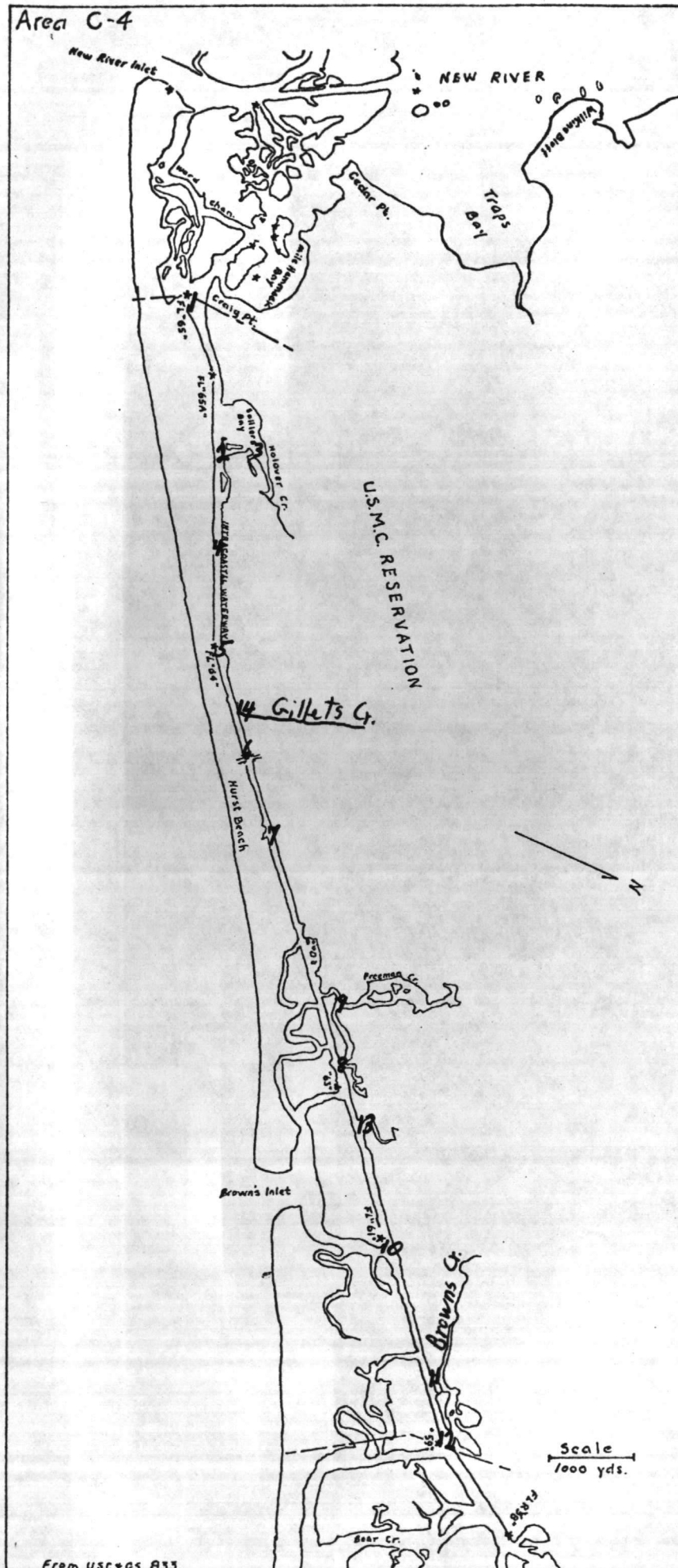
The bacteriological survey was begun in March, 1984, and concluded in April, 1985. During the survey 157 water samples were collected from 15 water sampling stations. (See Exhibit I for station locations.) All stations had fecal coliform medians that were below 14, but two stations exceeded the 10% rule. Station #14, located at the mouth of Gillets Creek near the Hurst Beach STP, is presently in the prohibited area. Station #2, located near the mouth of Salliers Bay, is presently in approved waters. The remainder of the area has shown little change since the last survey. (See Exhibit III for fecal coliform results from all stations.)

V. SUMMARY AND RESULTANT AREA CLASSIFICATION

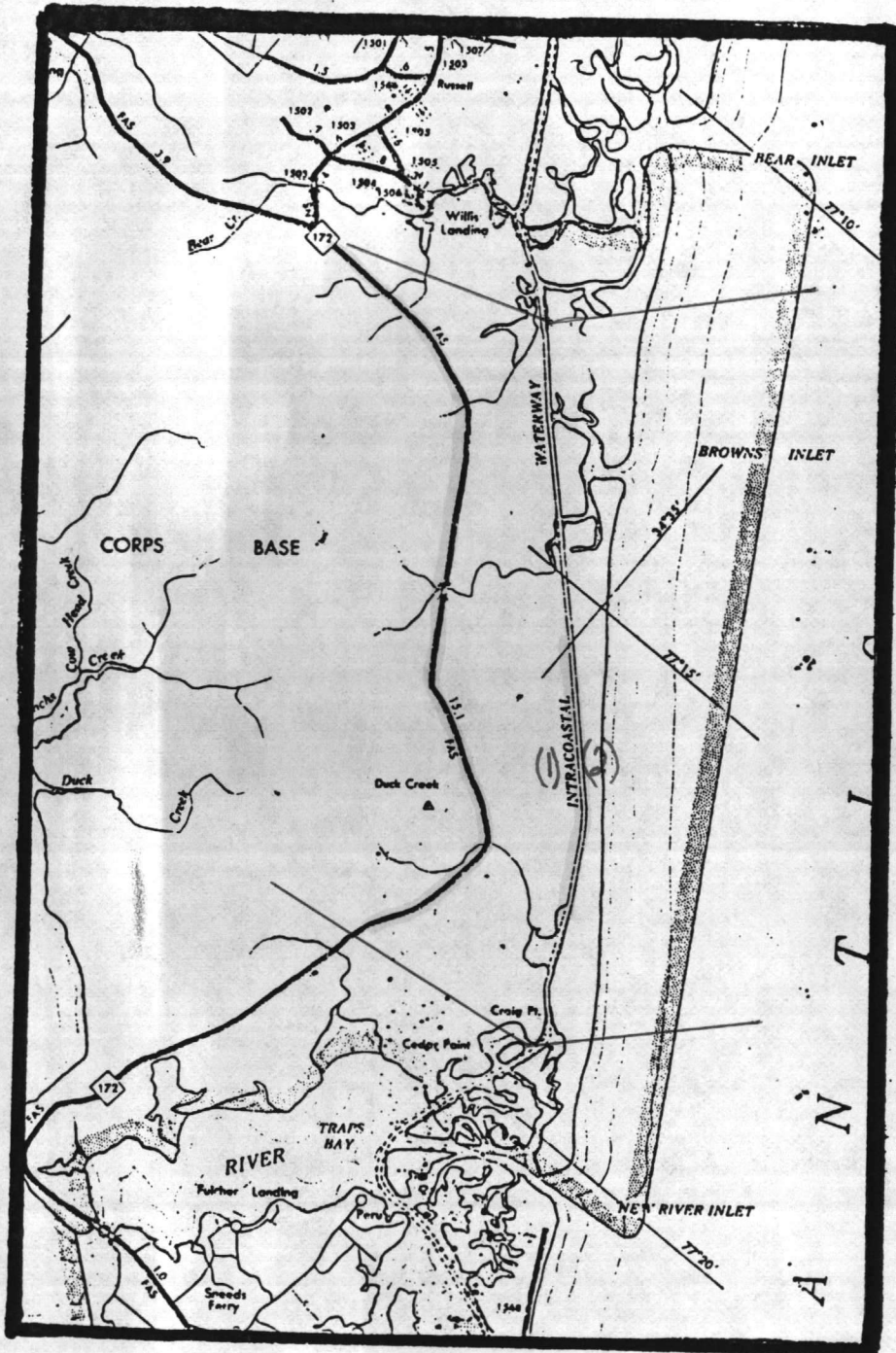
The only change to be recommended in this area at this time is the closure of additional waters west of the STP at Hurst Beach. This recommendation will include Station #2, at the mouth of Salliers Bay and Station #3 in Salliers Bay. This action will close an additional 75 acres in this area. No other changes are needed in the area. (See Exhibit IV for proclamation and prohibited area map.)





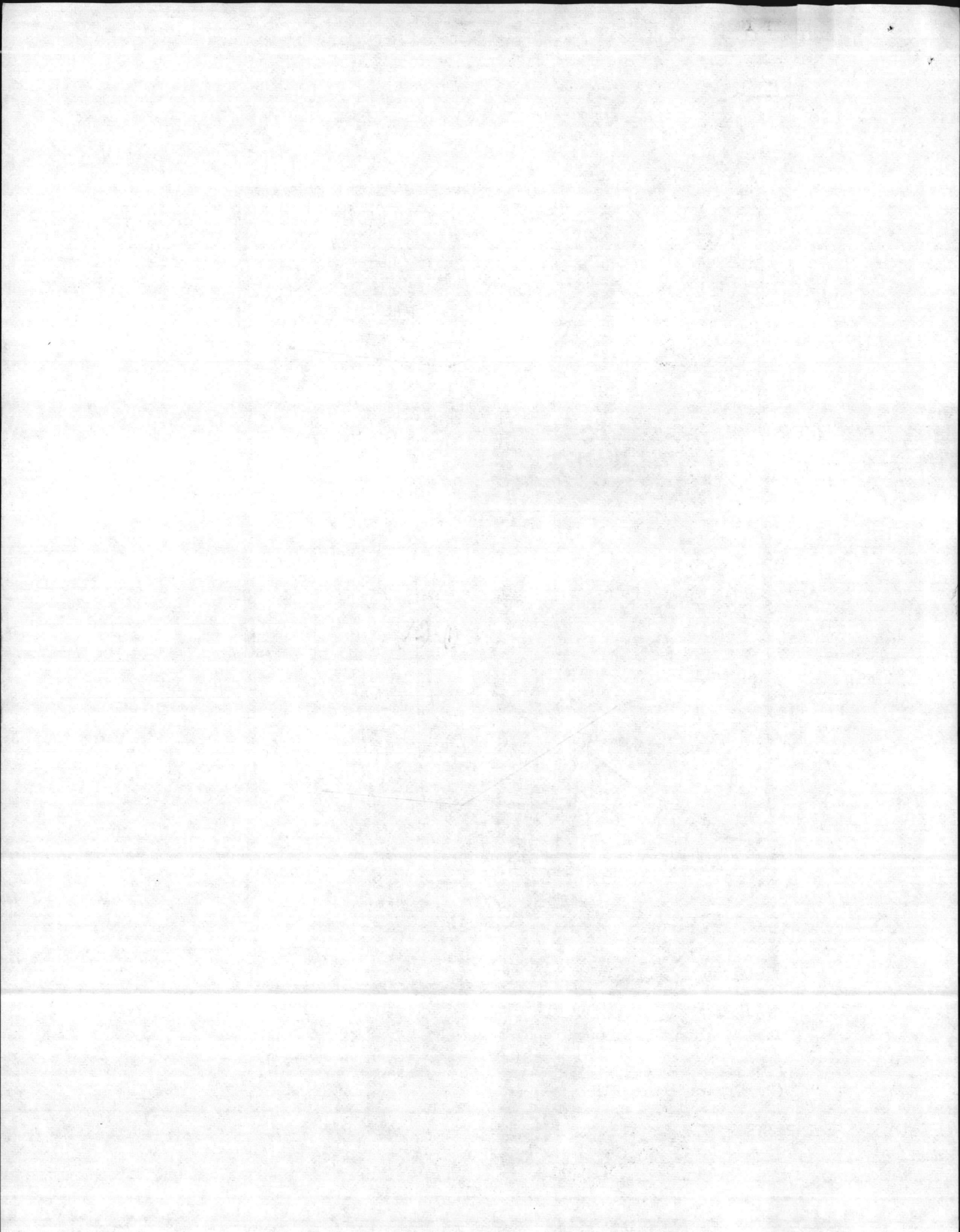






Green - Boundaries  
Yellow - Route followed

- (1) Water treatment plant
- (2) Onslow Beach STP



STATION NOS.	3/27/84	4/9/84	5/16/84	5/21/84	6/5/84	6/14/84	7/9/84	1/28/85	2/20/85	3/12/85	4/2/85	4/17/85	Med.
1	4.5	2.0	4.5		2.0	2.0	<1.8	<1.8	6.8	<1.8	4.0	<1.8	2.0
2	4.5	4.9	2.0		130	<1.8	7.8	<1.8	23	2.0	13	7.8	7.8
3	2.0	2.2	3.3		4.9	2.0	7.8	2.0	17	4.5	4.1		12.4
4	2.0	<1.8	2.0		4.5	<1.8	<1.8	<1.8	13	<1.8	<1.8	<1.8	<1.8
5	6.8	4.0	<1.8		6.8	2.0	3.7	2.0	4.5	<1.8	2.0	2.0	2.0
5A	2.0	<1.8	1.8		<1.8	2.0	<1.8	<1.8	2.0	<1.8	6.8		1.8
6	2.0	2.0	7.8		3.3	<1.8	<1.8	2.0	<1.8	<1.8	7.8	<1.8	2.0
7	<1.8	2.0		2.0	2.2	2.0	<1.8	<1.8	2.3	<1.8	1.3	2.0	2.0
8	2.0	1.3		7.8	1.3	<1.8	1.3	2.0		4.5	2.3	4.5	6.2
9	7.8	3.4		7.8	1.7	1.8	2.0	<1.8		2.0	7.8	2.0	4.9
10	4.0	7.8		1.8	4.0	1.7	2.0	2.0		4.5	<1.8	2.0	2.9
11	1.3	2.3		6.8	4.9	4.5	<1.8	<1.8		2.0	<1.8	2.0	3.3
12	7.8	4.0		3.3	1.3	2.0	1.7	2.0		4.5	4.5	<1.8	4.5
13	130	7.8		<1.8	3.3	2.0	2.0	2.0		2.0	2.0	<1.8	2.0
14	4.9	1.7	4.5		350	2.0	<1.8	2.0	2.0	<1.8	7.9	130	4.5





State of North Carolina  
Department of Natural Resources and Community Development

Division of Marine Fisheries  
P.O. Box 769 • Morehead City, North Carolina 28557

James G. Martin, Governor  
S. Thomas Rhodes, Secretary

Robert K. Mahood, Director  
(919) 726-7021

PROCLAMATION

RE: SHELLFISH POLLUTED AREA

By virtue of the authority vested in me as Secretary of the North Carolina Department of Natural Resources and Community Development, and upon the recommendation of Robert K. Mahood, Director, Division of Marine Fisheries, and Dr. Ronald H. Levine, Director, Division of Health Services, North Carolina Department of Human Resources, it is hereby announced that the following changes in shellfish harvesting areas will take effect immediately:

No person shall take or attempt to take any oysters or clams, or possess, sell or offer for sale any oysters or clams taken from the following polluted area:

ONSLow COUNTY

Hurst Beach Area - Beginning at a point on the north shore of the Intracoastal Waterway at 34° 34' 44" N - 77° 15' 54" W; thence 120 yards, to a point on the south shore at 34° 34' 43" N - 77° 15' 52" W; thence in a southerly direction along the south shore to a point at 34° 33' 01" N - 77° 18' 39" W; thence through Channel Marker #65A to the north shore at 34° 33' 04" N - 77° 18' 41" W; thence along the north shore back to the point of beginning to include Salliers Bay, the Intracoastal Waterway and all tributaries.

- NOTES: [a] This proclamation is issued under the authority of G. S. 113-182 and N. C. Marine Fisheries Regulation 15 NCAC 3B .1101 and 15 NCAC 3B .0901 (b).
- [b] This action replaces N. C. Marine Fisheries Regulation 15 NCAC 3B .1111 (23) (h) and closes approximately 75 additional acres in this area.
- [c] Shaded areas on the attached map indicate areas closed to shellfishing.

BY AUTHORITY OF THE SECRETARY OF THE DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT.

BY:

*Robert K. Mahood*

Robert K. Mahood, Director  
Division of Marine Fisheries

October 22, 1985  
4:00 P.M.  
PA-30-85/86  
/sh

HURST BEACH

PROHIBITED AREA

PROCLAMATION PA-30-85/86

ONSTLOW CO.

(Prohibited areas are shaded)

SHADED AREAS CLOSED

Prohibited Area

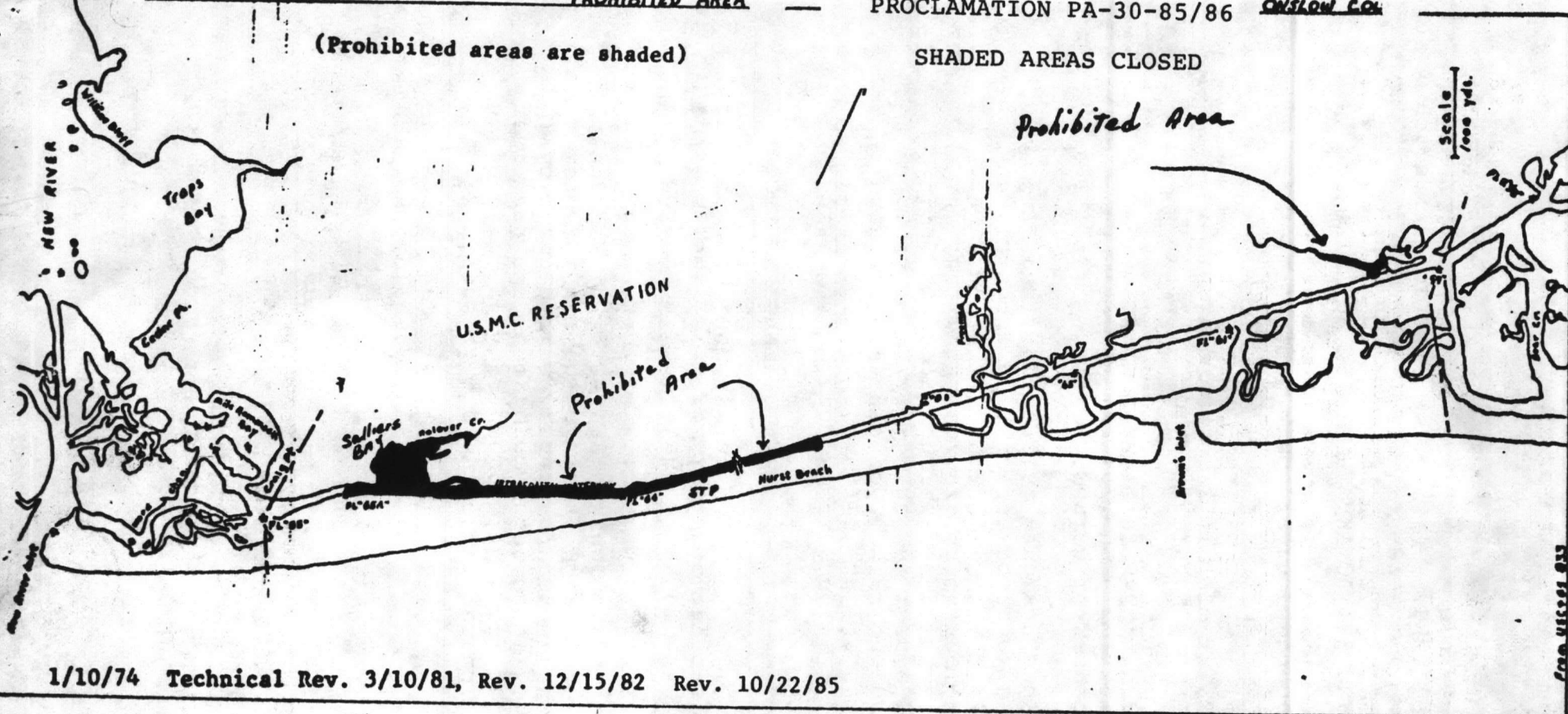
Scale  
1000 yds.

Area C-4

Area C-4

U.S.M.C. RESERVATION

Prohibited Area



1/10/74 Technical Rev. 3/10/81, Rev. 12/15/82 Rev. 10/22/85

No person shall take or attempt to take any oysters or clams or possess, sell, or offer for sale any oysters or clams taken from the following areas, at any time:

Hurst Beach Area:

Beginning at a point on the north shore of the Intracoastal Waterway at 34° 34' 44" N - 77° 15' 54" W; thence 120 yards, to a point on the south shore at 34° 34' 43" N - 77° 15' 52" W; thence in a southerly direction along the south shore to a point at 34° 33' 01" N - 77° 18' 39" W; thence through Channel Marker #65A to the north shore at 34° 33' 04" N - 77° 18' 41" W; thence along the north shore back to the point of beginning, to include Salliers Bay, the Intracoastal Waterway and all tributaries.

Browns Creek

All those waters upstream from a line beginning at a point on the west shore of the Creek at 34° 37' 06" N - 77° 13' 03" W; thence to a point on island at 34° 37' 10" N - 77° 12' 58" W; thence to a point on the north shore at 34° 37' 13" N - 77° 13' 03" W.



DEPARTMENT OF THE NAVY  
**Memorandum**

6284(2)  
NREAD (4)

DATE: 20 NOV 86

FROM: Environmental Control Specialist

TO: Supervisory Chemist

SUBJ: N.C. Shellfish Sanitation Shoreline Survey of 19 NOV 86

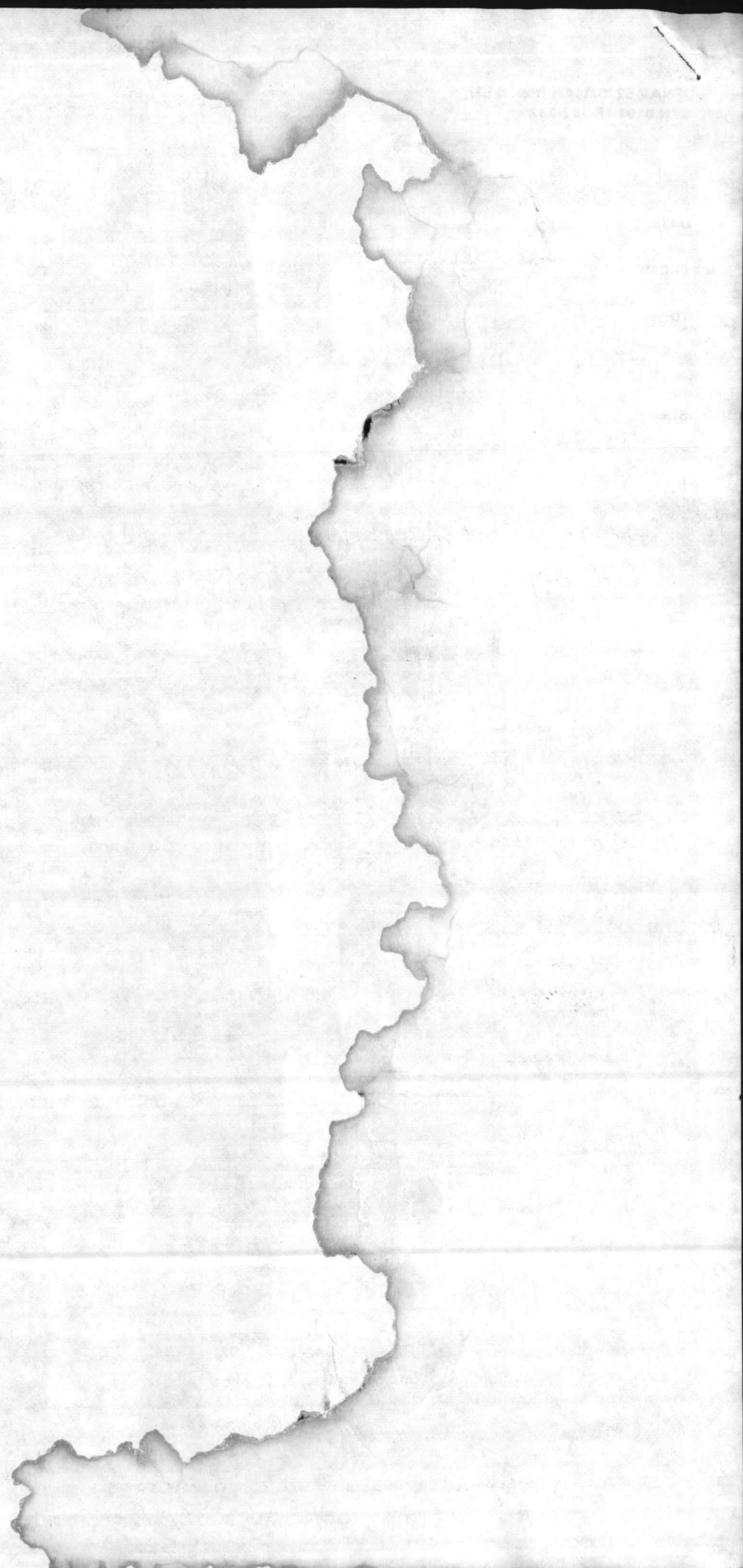
1. As prearranged by Ms. Elizabeth Betz, Supervisory Chemist, I met Ms. Ann Schmitzer, N.C. Shellfish Sanitation, Wilmington office, at 0930 at the Snead's Ferry Gate. After she parked her car, we proceeded to drive in NREAD's vehicle to and physically inspect the following areas: Ellis Cove, Courthouse Bay Boat Basin, the shoreline from CHB Marina to building BB-14, CHB WWTP, Mile Hammock Bay, and Campsite Number 2 near Onslow Beach Water Treatment Plant.
2. Because of a problem with the starter in our truck we were delayed about one hour. This occurred on NC 172 at the foot of the Ellis Cove Road. A road mechanic from BMT fixed the problem and we completed the survey with no <sup>more</sup> ~~further~~ problems. I returned Ms. Schmitzer to her car about 1330. She thanked NREAD for both the information and assistance provided.

Thomas H. Barbee

DEPARTMENT OF THE NAVY  
NAVY DEPARTMENT

1884

NAVY DEPARTMENT  
WASHINGTON



# Memorandum

6284/2  
NREAD(L)

DATE: 1 DEC 86

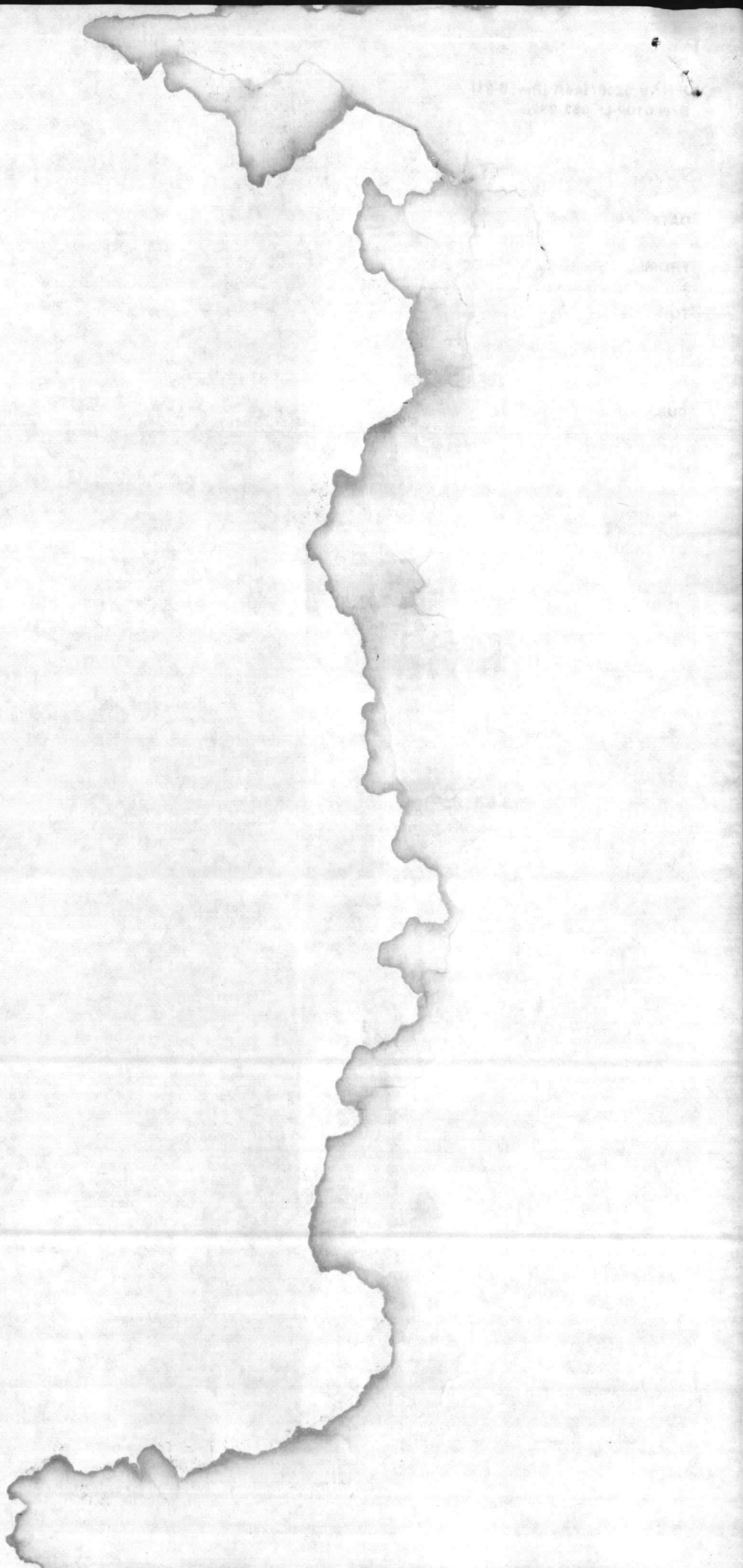
FROM: Environmental Control Specialist

TO: The Record

SUBJ: Field Visit with NC Shellfish Sanitation Personnel to Sallee's Bay and Wetshed on 26 NOV 86

1. Ms Ann Schmitzer, Wilmington Office and Mr. James Lewis, Morehead City Office, and Mr. Thomas Barber, Environmental Control Specialist tried to physically locate, by walking and diving, the point source(s) or contributing factors ~~involved~~ <sup>source</sup> of the fecal coliform contamination that caused Sallee's Bay to be closed to shellfishing. The shellfish office has ~~seen~~ <sup>reported</sup> elevated fecal coliform levels in Sallee's Bay for the last two years.
2. We investigated troop areas at TLZ Albatross and TLZ Bluebird, but found no point source for fecal contamination. Rental Toilets were ~~in use~~ at TLZ Bluebird, in place for use by personnel at TLZ Bluebird. We noted neither troops nor toilets at TLZ Albatross. We ~~also~~ <sup>Holover Creek drainage area</sup> explored <sup>at the north</sup> side of NC 172. We found only a cleared forest area of        acres.
3. In an outbriefing with Mrs. Wooten and Sharp, Ms Schmitzer and Mr. Lewis stated that freshwater runoff from the cleared area could be a minor contributing factor. A fecal coliform water sample from Holover Creek at NC 172 was taken for fecal coliform analysis.
4. Fecal coliform results are enclosed. Called Ms. Ann Schmitzer this morning to inform of sample results. Thomas H Barber

1851  
1852



**QUALITY CONTROL LABORATORY REPORT**  
**MISCELLANEOUS BACTERIOLOGICAL ANALYSIS OF WATER**  
 MCBCL 11330/8 (REV. 11-85)

762-1543

FILE:

WATER TYPE SURFACE (CREEK)	SAMPLE COLLECTED BY THB	DATE COLLECTED 28 NOV 86
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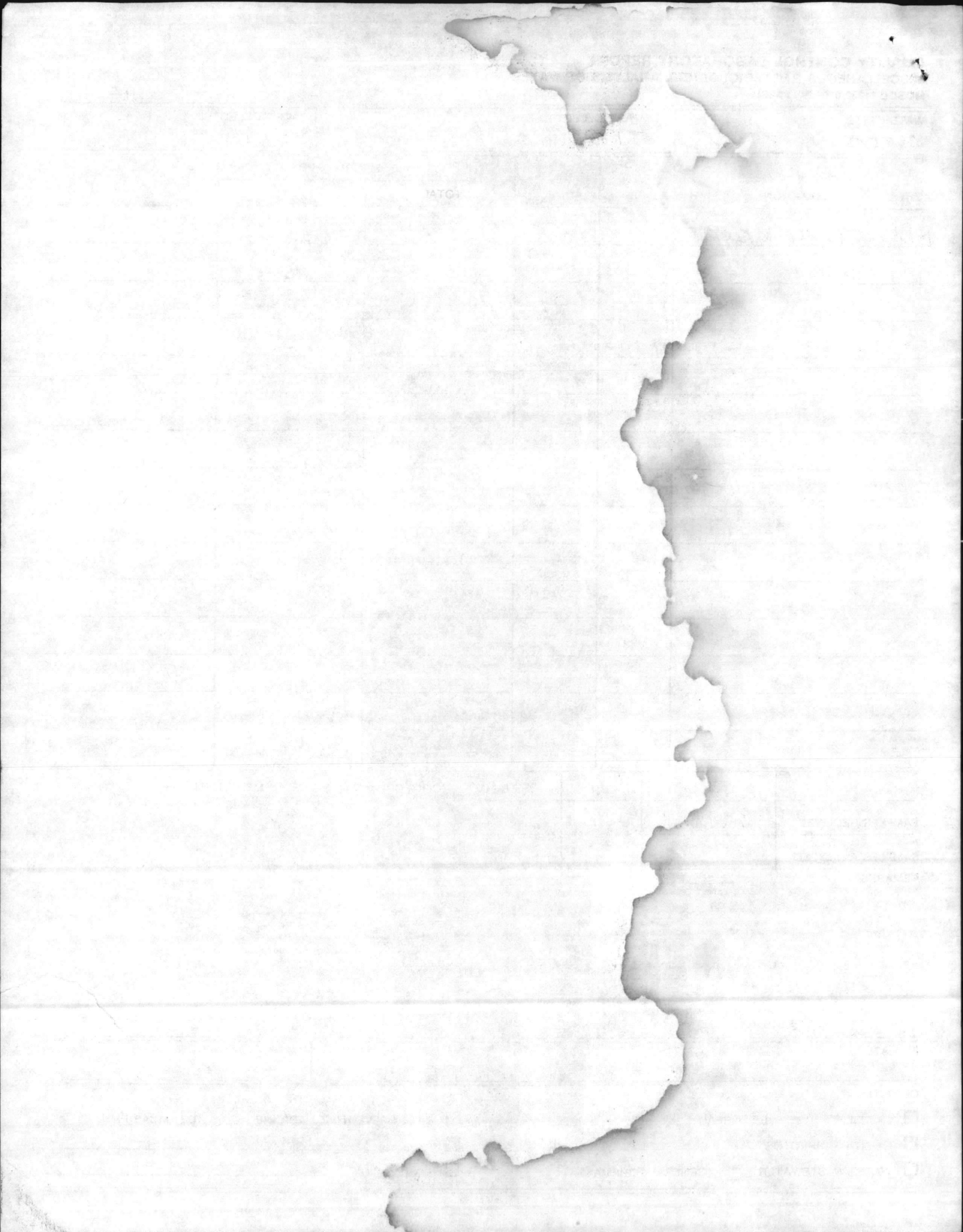
LOCATION	CL <sub>2</sub>	TIME	COLIFORM	
			TOTAL	FECAL
HOLLOVER CREEK WEST		1000	/	44
HOLLOVER CREEK EAST		1005	/	400

	DATE	TIME	INITIALS	COLIFORM ANALYSIS BY: MF	MPN
SAMPLES RECEIVED	28 NOV 86	1102	THB	DILUTIONS	1, 25
SAMPLES ANALYZED					
REMARKS					

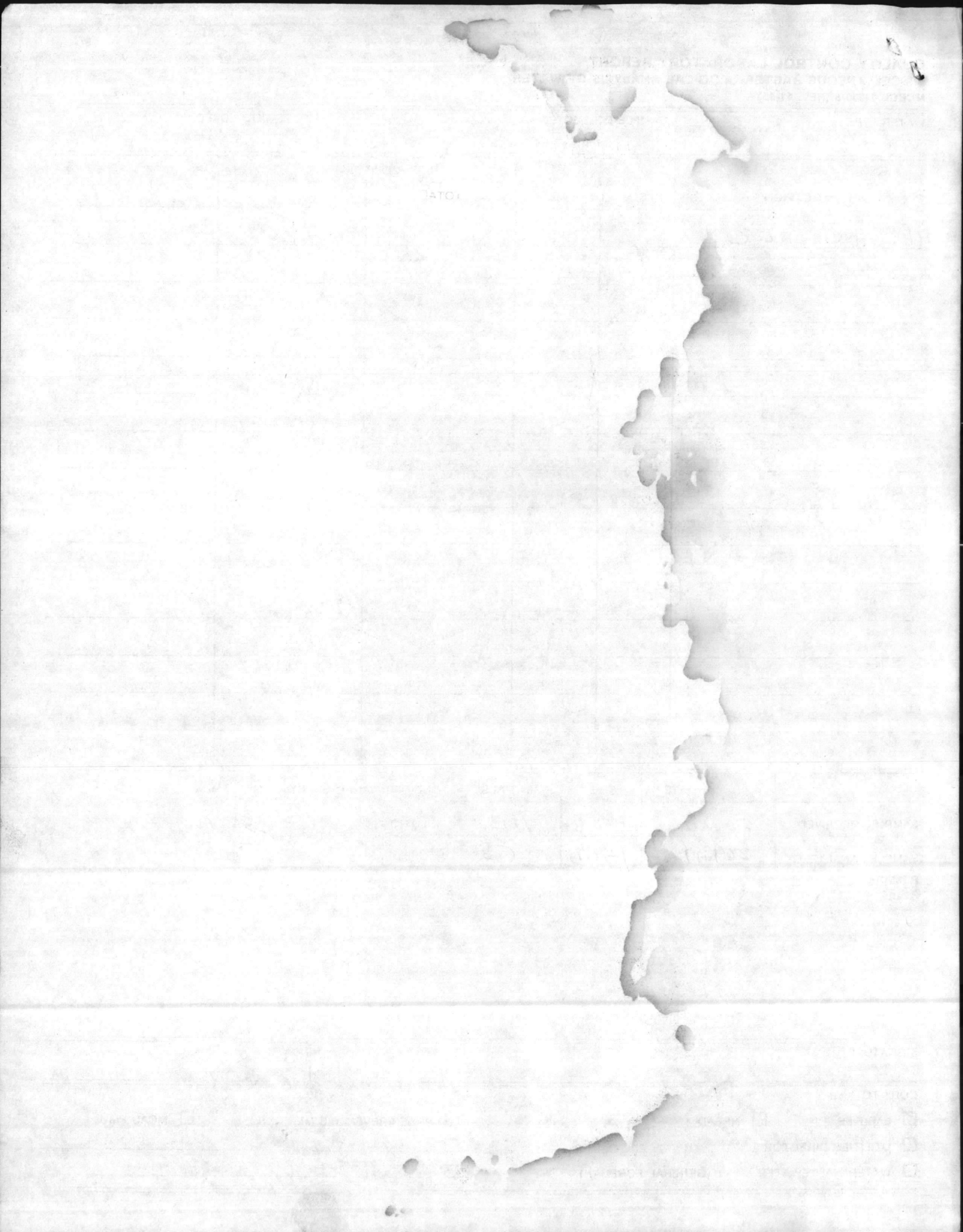
SIGNATURE 	DATE 29 NOV 86
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COPY TO

<input type="checkbox"/> LAB/FILE	<input type="checkbox"/> NREAD	<input type="checkbox"/> BASE PREVENTIVE MEDICINE	<input type="checkbox"/> MCAS PMU
<input type="checkbox"/> UTILITIES DIRECTOR		<input type="checkbox"/>	
<input type="checkbox"/> WATER/WASTEWATER (GENERAL FOREMAN)		<input type="checkbox"/>	









Copy for ~~Danny~~ DDS  
Betsy

T-6284/2

6280/4  
FAC

28 FEB 1986

Mr. Charles Wakild,  
Regional Supervisor  
N.C. Division of Environmental Management  
7225 Wrightsville Avenue  
Wilmington, N. C. 28403-3636

Re: Authorization to Conduct Stream  
Monitoring of Wallace Creek, Camp  
Lejeune, N. C. 28542-5001

Dear Mr. Wakild:

Approval is granted to conduct water quality monitoring as  
requested in your letter of February 8, 1986.

As you know, we are examining our ongoing monitoring efforts on  
New River in conjunction with the N.P.D.E.S. permit renewal and  
are preparing an updated monitoring proposal for your review.  
Mr. Bob Alexander, Marine Corps Base Environmental Engineer, will  
provide any additional assistance which you may need.

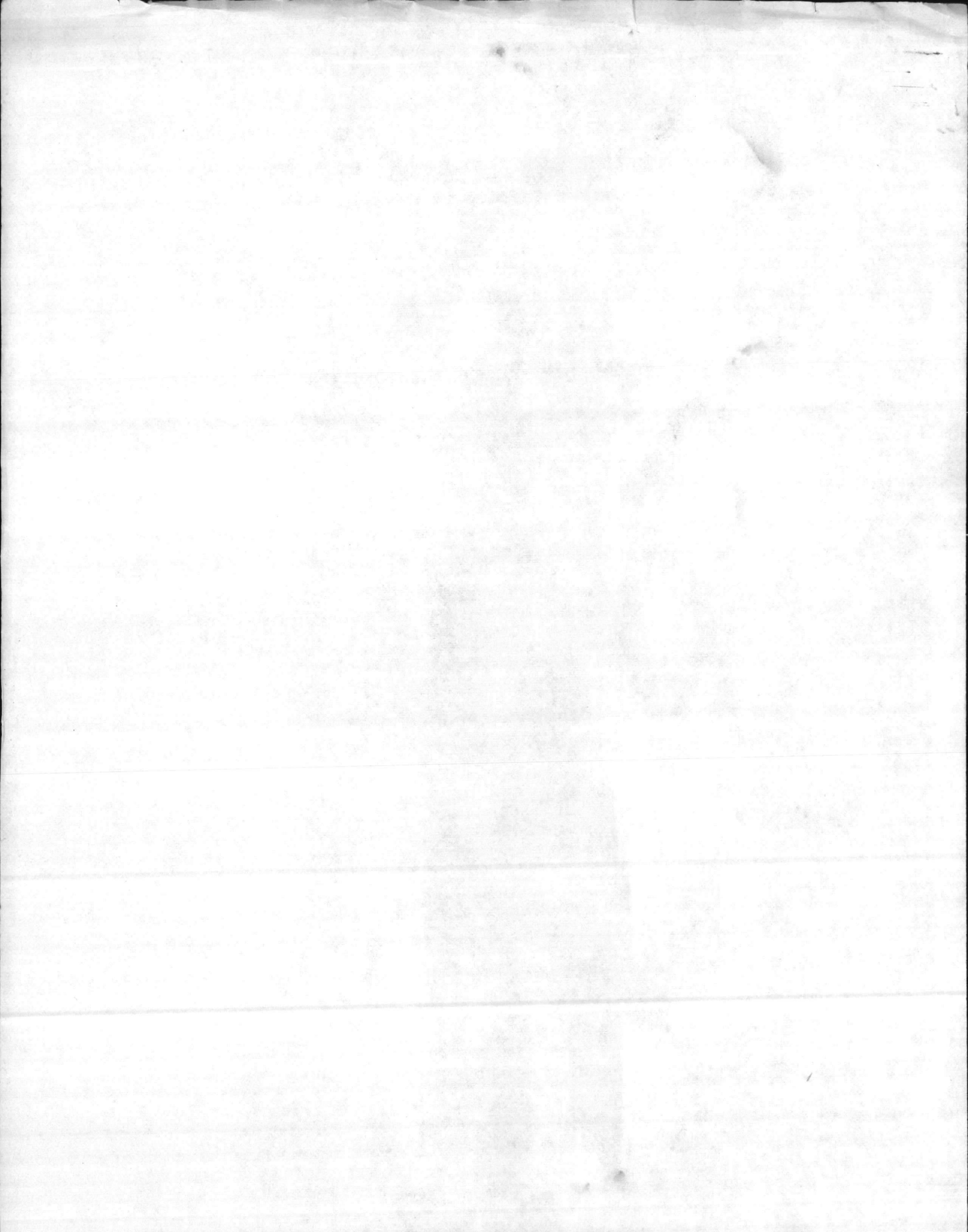
Sincerely,

R. A. TIEBOUT  
Colonel, U.S. Marine Corps  
Assistant Chief of Staff, Facilities  
By direction of the Commanding General

Blind copy to:

→ NREAD (w/NCDEM ltr of 8 Feb 86)

EnvEngr (w/NCDEM ltr of 8 Feb 86)



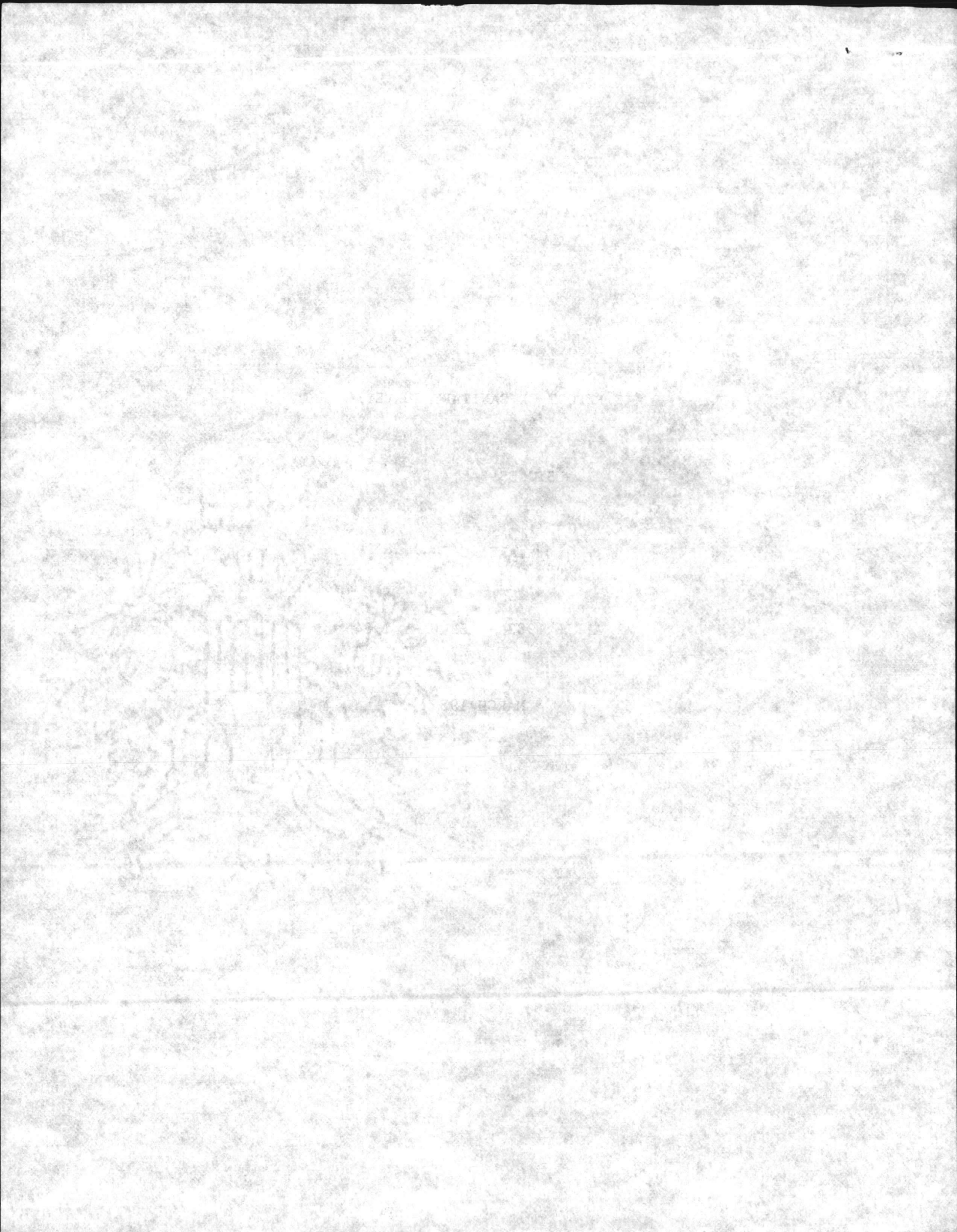
REPORT OF SANITARY SURVEY

STONES BAY AREA

AREA C-3

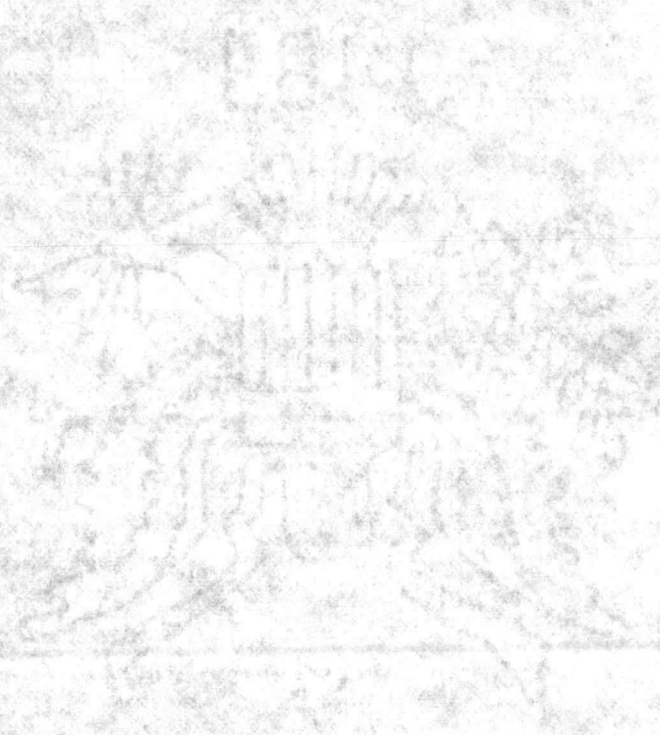
APRIL 1982 - FEBRUARY 1984

MARCH 1984



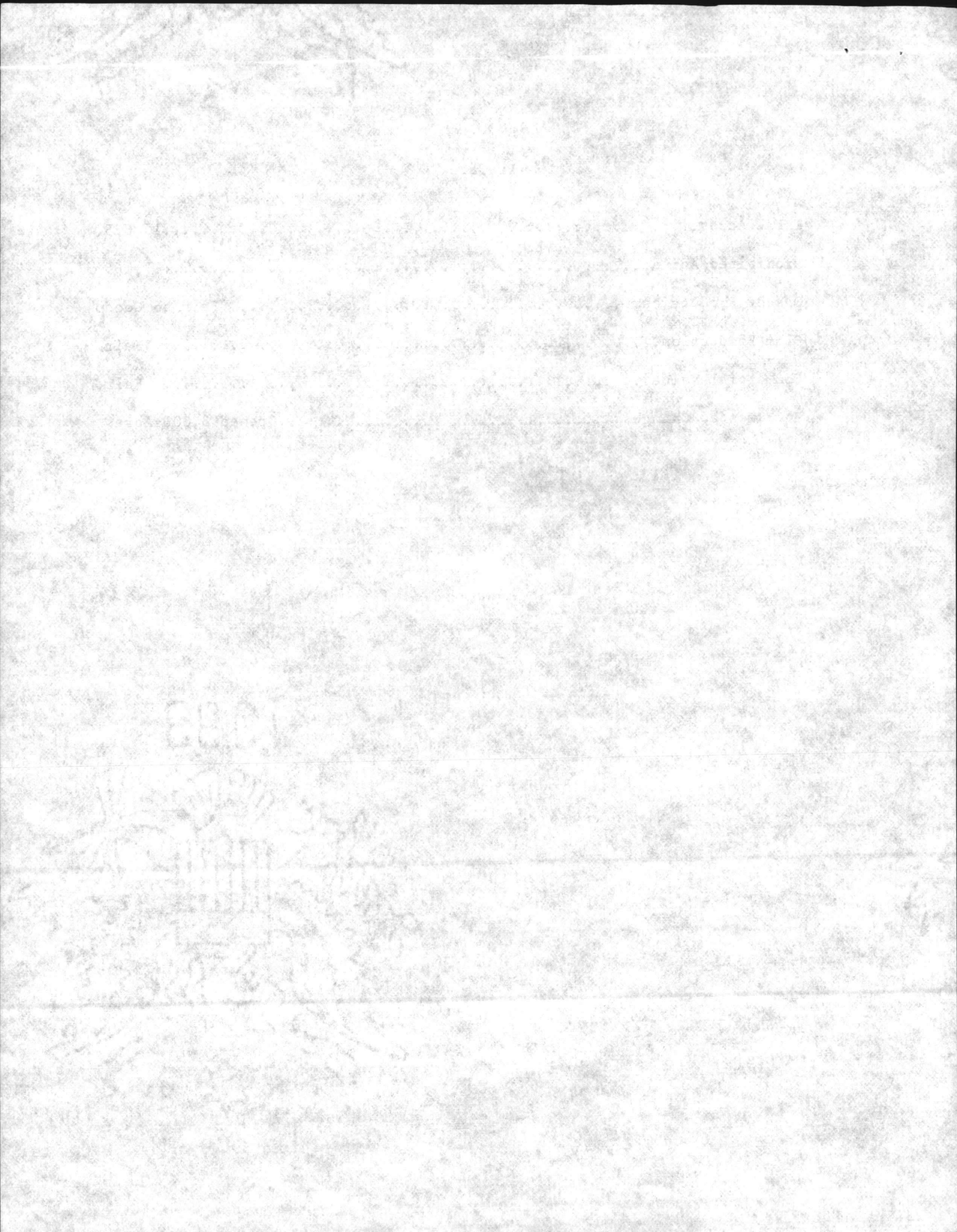
AREA C-3

- EXHIBIT I AREA MAP AND STATION LOCATIONS
- EXHIBIT II STP'S, LIFT STATIONS, MARINAS, AND DOCKS
- EXHIBIT III LETTER TO CAMP LEJEUNE COMMANDING GENERAL
- EXHIBIT IV BACTERIOLOGICAL RESULTS AND MPN MEDIANS
- EXHIBIT V PROCLAMATION AND CLOSED AREA MAP



Preface

Total Acres.....	15,025.
Prohibited Acres.....	7,165
Oyster Production.....	Fair to Good.
Clam Production.....	Fair.
Commercial Value.....	Fair.
Recommended Changes.....	Opened 3,000 Acres.





# REPORT OF SANITARY SURVEY

## STONES BAY AREA

### AREA C-3

By

#### SHELLFISH SANITATION PROGRAM NORTH CAROLINA DIVISION OF HEALTH SERVICES

#### I. INTRODUCTION

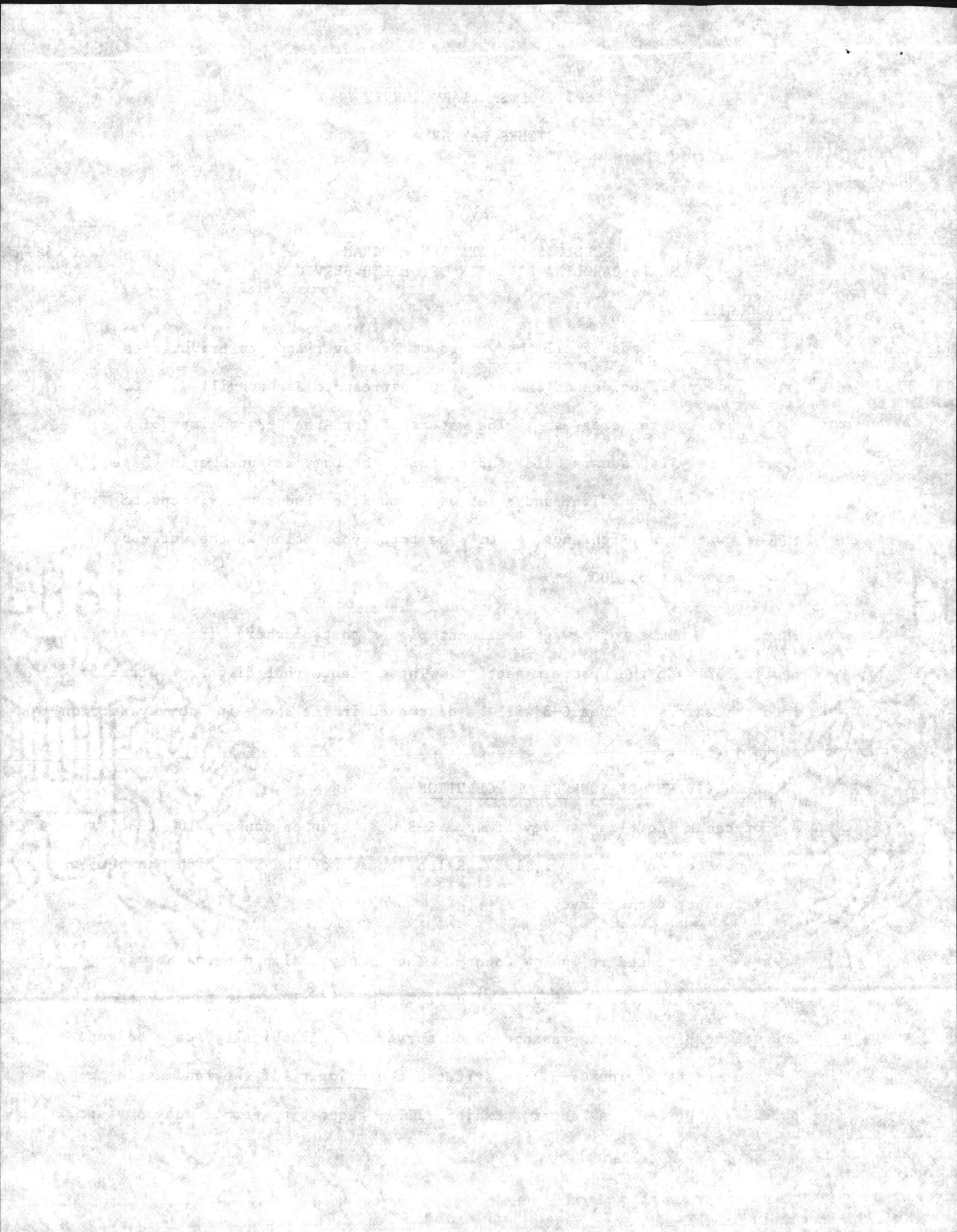
Area C-3 is composed of all the waters of New River and its tributaries from Highway 172 Bridge at Sneads Ferry upstream to Jacksonville, N. C. (See Exhibit I for area map.) The watershed for Area C-3 consists of approximately 240 square miles and contains the Camp Lejeune Marine Base, the city of Jacksonville, and numerous communities and sub-divisions to the headwaters at Richlands, N. C. The total population in the watershed is estimated at 85,000.

There are a number of sewage treatment plants that discharge into New River, particularly in the upstream section. These plants that discharge directly into the waters of Area C-3 will be discussed in the shoreline survey section of this report.

#### II. SHORELINE SURVEY OF SOURCES OF POLLUTION

A spot-check shoreline survey of Area C-3 was begun on January 10, 1984, and completed on February 1, 1984. Ralph Johnson of the Shellfish Sanitation staff conducted the survey.

Area C-3 is located in Onslow County. The county health department was not notified in advance about the survey. Individual septic tank systems are not inspected during a spot-check survey. Geographically, Camp Lejeune (United States Marine Corps) constitutes the majority of the landmass designated as Area C-3. A letter, (Exhibit III), requesting permission to visit



the base and conduct the survey was sent to the Commanding General's office at Camp Lejeune. Verbal permission was received from Mr. Danny Sharpe, Supervisor, Ecology, Natural Resources, Camp Lejeune. Miss Elizabeth Betz, Supervisor Chemist, Natural Resources, Camp Lejeune, accompanied and assisted in the survey on the base. It should be noted that all roads, streets, or paths located in close proximity to estuarine waters on the base were not visually inspected for this spot-check survey. However, information compiled for this report on the Camp Lejeune section of Area C-3 is more comprehensive than in previous reports. A conference (meeting) with Colonel Milton Lilly, USMC and Mr. Bob Alexander, Supervisor, Natural Resources, Camp Lejeune, was very informative for the survey. The landmass located outside the boundaries of Camp Lejeune in Area C-3 was visually inspected and information obtained for this report.

The following is an informational list of sewage treatment plants (STP), lift stations, marinas, marina-type docks, and hazardous waste sites located in Area C-3.

(1) Hadnot Point STP

Location - east side of New River, north of Frenchs Creek, Camp Lejeune

Treatment - secondary treatment with pre and post-chlorination

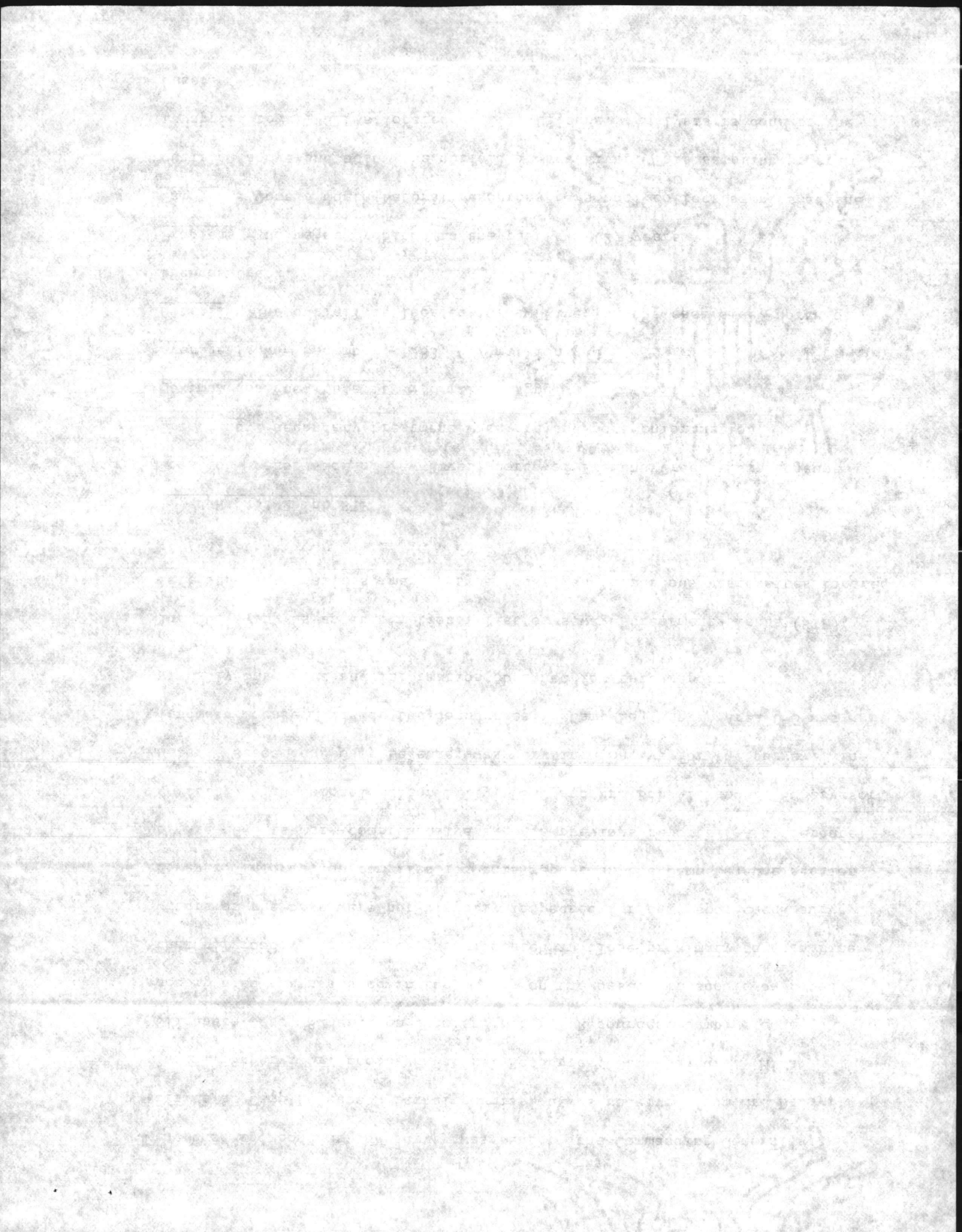
Maximum designed capacity - 8 million gpd

Average flow - December, 1983, 6.7 million gpd

Outfall - The outfall is located in New River on the east side, north of Frenchs Creek.

Problems - no major problems in the past two (2) years

Samples - Once a month Natural Resources personnel collect samples at the outfall, above and below the outfall in New River. This sampling program is applied to all STP's located at Camp Lejeune. Analysis is done at the base.



Bypass - The old section of this plant has a bypass connected to the outfall. When used, sewage routed through the bypass receives primary treatment with chlorination.

Changes or upgrading - Camp Lejeune has an on-going program of upgrading their STP for quality control

(2) G. J. Gottschalk Marina (Not in Last Report)

Location - south side of Wallace Creek adjacent to New River, Camp Lejeune

Wet slips - 72

Permanent boats - 72

Boats with marine heads - 34

Pump-out service - none- The marina has a closed head policy.

Service - boat ramp

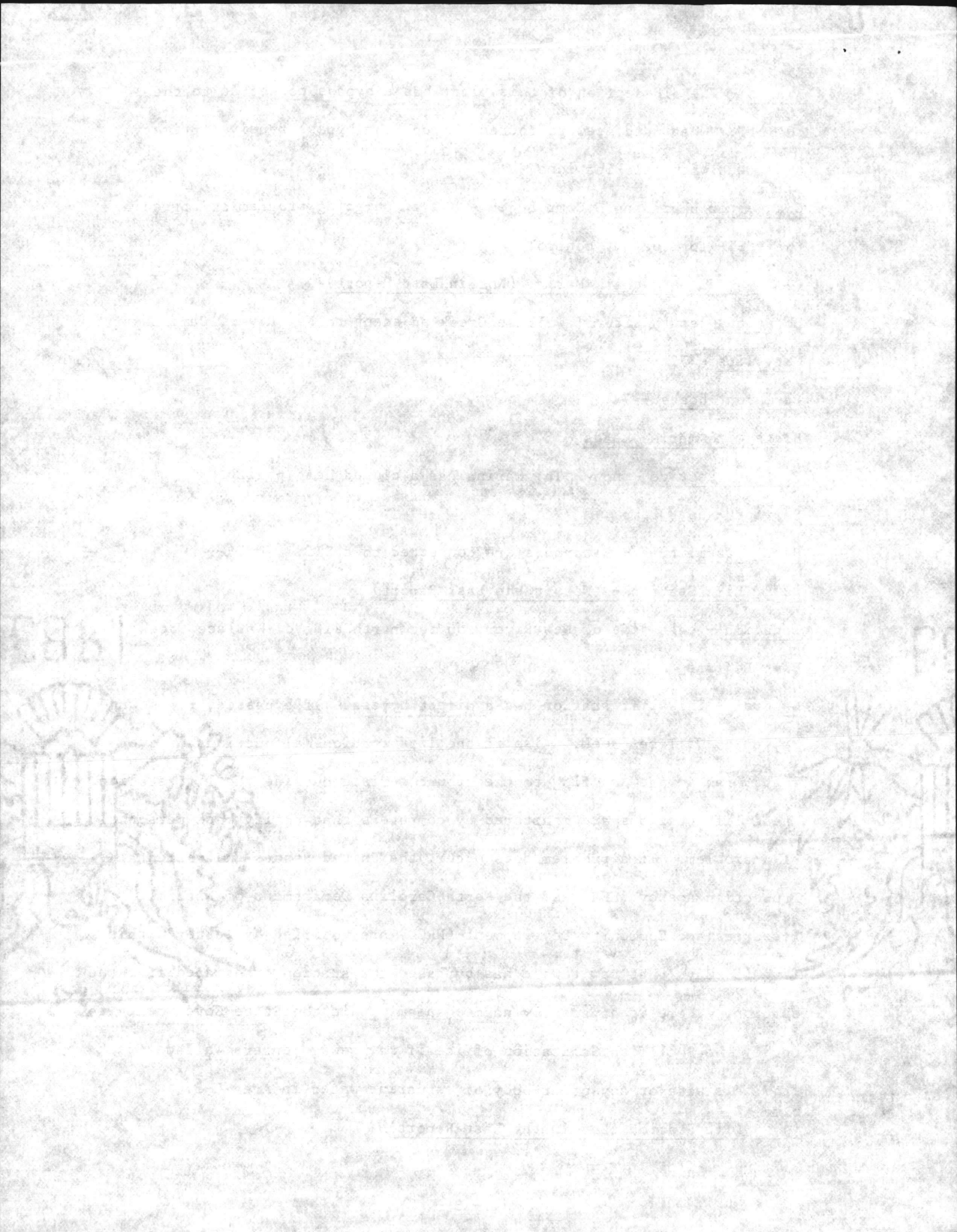
Sewage facilities - Bathrooms are connected to a STP.

(3) Lift Station - (Not in the Last Report)

Location - east side of New River, on the north side of Wallace Creek, Camp Lejeune

General - This lift station has a direct bypass. If bypassed, raw sewage can enter Wallace Creek. Also if the lift station malfunctions or overloads, raw sewage can flow to the ground surface outside the lift station. These lift stations are monitored by computers that notify base personnel of a problem. If a problem does occur, the United States Environmental Protection Agency (EPA) and the North Carolina Department of Natural Resources and Community Development (NRCD) are notified by letter within five (5) days that raw sewage has bypassed the station or escaped from the station. There is apparently no mechanism within the State Government to notify the Shellfish Sanitation office if raw sewage enters Wallace Creek from this site or any other body of estuarine water in Area C-3.

(4) Lift Station (Not in the Last Report)



Location - east side of New River, on the north side of Northeast Creek,  
Camp LeJeune

General - same as the preceding lift station

(5) Tarawa Terrace STP (Not in the Last Report)

Location - east side of New River, on the north side of Northeast Creek,  
Camp LeJeune

Treatment - secondary treatment with post-chlorination

Maximum designed capacity - 1.25 million gpd

Average flow - December, 1983, .9 million gpd

Outfall - The outfall is located in Northeast Creek.

Problems - In the first week of January, 1984, sewage was routed through the plant's bypass to Northeast Creek. EPA and NRCO were notified. This re-routing was caused by new plant construction.

Samples - same as other STP located at Camp Lejeune

Bypass - The plant does have a bypass.

Changes or upgrading - same as other STP located at Camp Lejeune

(6) Lift Station (Not in the Last Report)

Location - north of Northeast Creek on small creek or drainage to Northeast Creek, Camp Lejeune

General - same as preceding list stations

(7) Camp Johnson STP (Not in the Last Report)

Location - east side of New River, on the north side of Northeast Creek,  
Camp Lejeune

Treatment - secondary treatment with post-chlorination

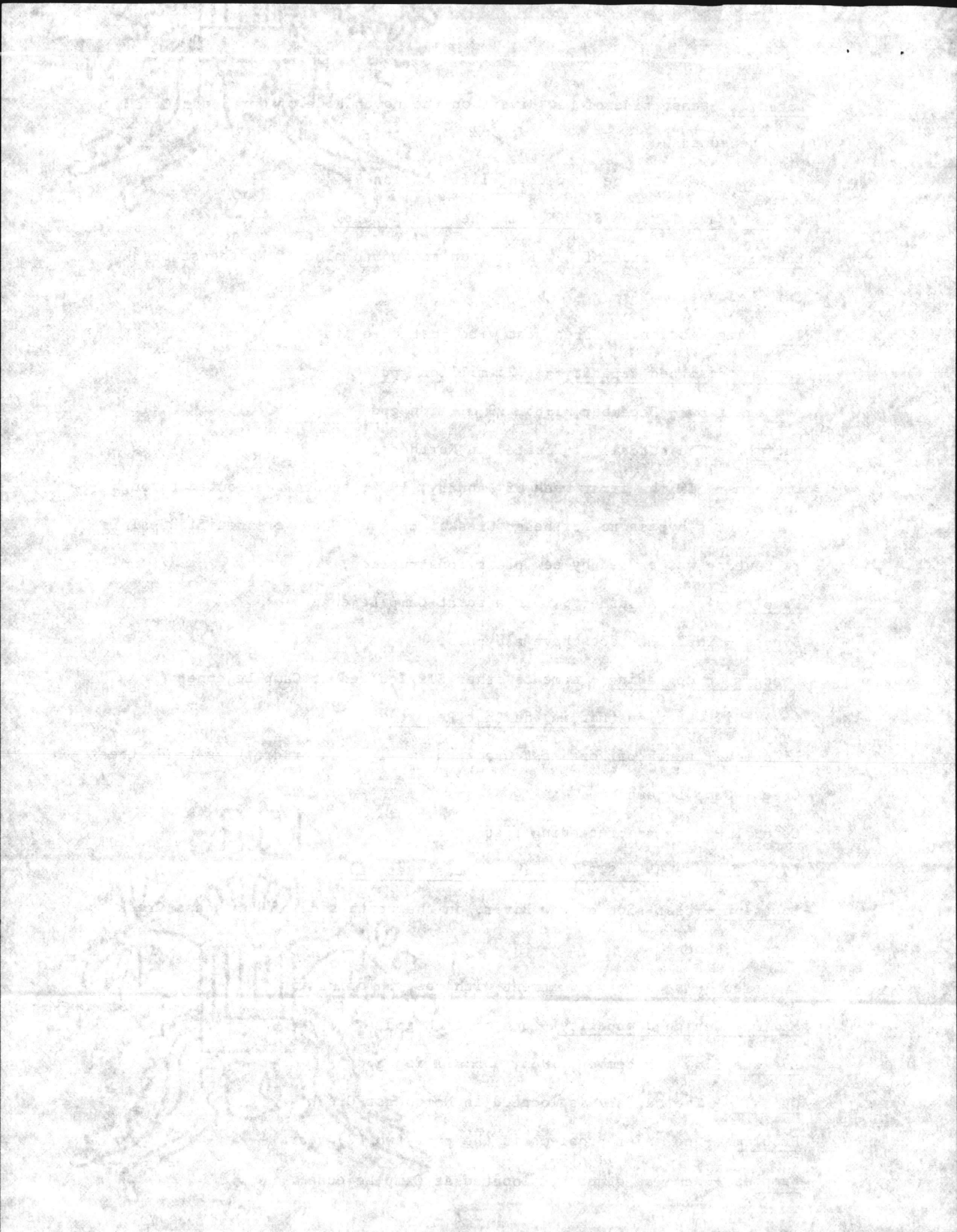
Maximum designed capacity - one million gpd

Average flow - December, 1983, .35 million gpd

Outfall - The outfall is located in Northeast Creek.

Problems - no major problems in the past two (2) years

Samples - same as other STP located at Camp Lejeune





Bypass - none

Changes or upgrading - same as other STP located at Camp Lejeune

(8) Jacksonville STP (Not in the Last Report)

Location - east end of Cocent Street and Shoreline Drive on Wilson Bay, New River, in Jacksonville

Treatment - secondary treatment with post-chlorination

Maximum designed capacity - 4.46 million gpd

Average flow - 2.5 million gpd

Outfall - east side of New River, Wilson Bay area

Problems - In the past this plant has had problems meeting Biological Oxygen Demand (BOD) limits set by NRCD. However, in the past year these limits were met. The plant has had and is having problems meeting the solids limits set by NRCD. Apparently this has occurred since the plant began operating in 1981.

Samples - The plant operators pull and analyze their own samples. NRCD also monitors this plant 3 or 4 times a year.

Bypass - none

Changes or upgrading - NRCD has issued compliance orders to Jacksonville to meet the solids limits set for the plant.

(9) Camp Geiger STP ( Not in the Last Report)

Location - west side of New River on Camp Lejeune

Treatment - secondary treatment with post-chlorination

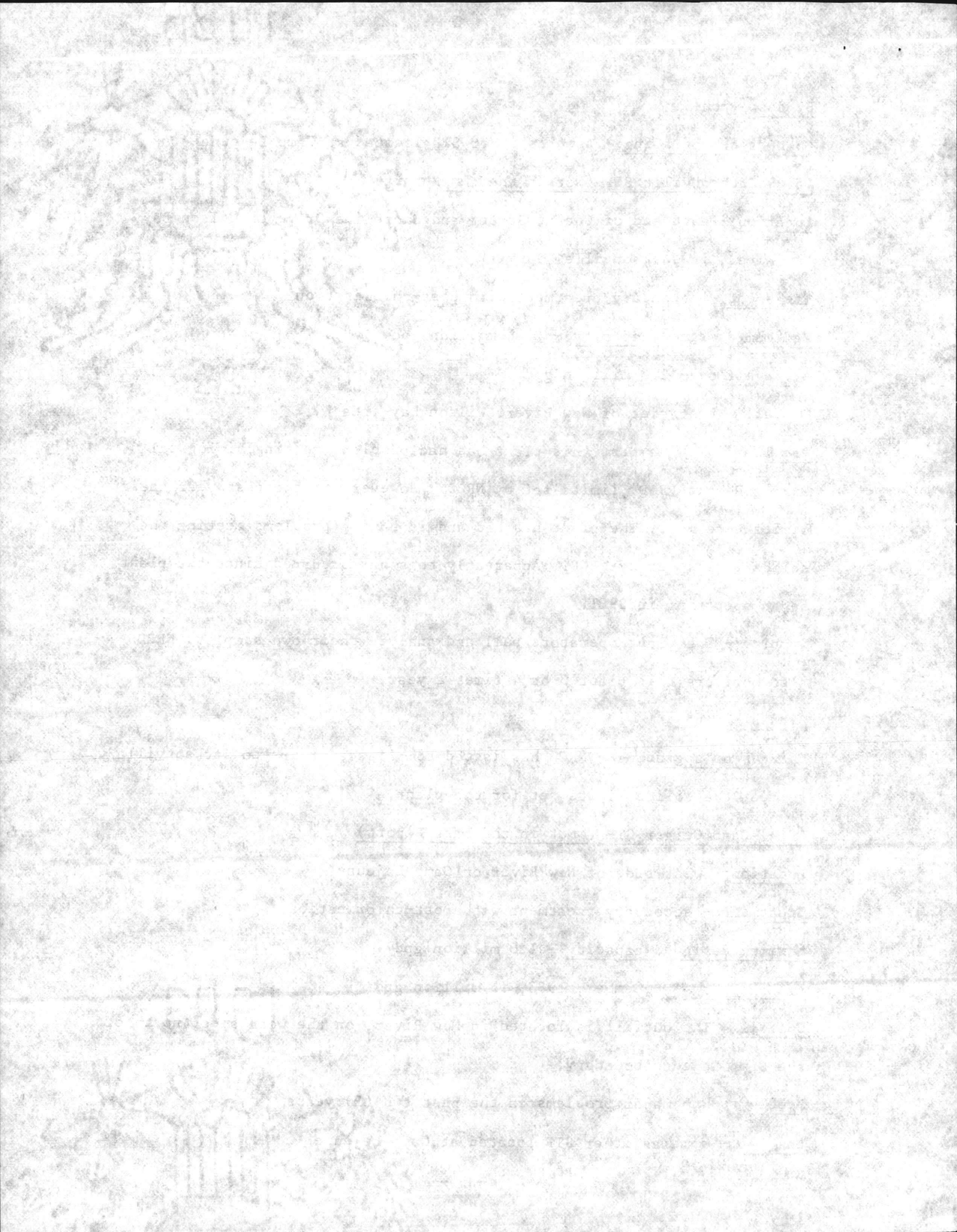
Maximum designed capacity - 1.6 million gpd

Average flow - December, 1983, .8 million gpd

Outfall - The outfall is located in New River, on the west side, north of the Camp Lejeune boundary.

Problems - no major problems in the past two (2) years

Samples - same as other STP located at Camp Lejeune



Bypass - none

Changes or upgrading - same as other STP located at Camp Lejeune

(10) Rifle Range STP

Location - west side of New River, Camp Lejeune

Treatment - secondary treatment with post-chlorination

Maximum designed capacity - 525,000 gpd

Average flow - 250,000 gpd

Outfall - The outfall is located in New River on the west side.

Problems - no major problems in the past two (2) years

Samples - same as other STP located at Camp Lejeune

Bypass - The plant does have a bypass pipe. However, the pipe has been blocked with cement.

Changes or upgrading - same as other STP located at Camp Lejeune

(11) Old Ferry Fish Company

Location - Hiway #172 on New River, on the north side of the Sneads Ferry Bridge

Changes - observed none

(12) Dixon School STP

Location - intersection of Hwy #17 and NC #210

Treatment - tertiary treatment with post-chlorination

Maximum designed capacity - 25,000 gpd .

Average flow - 10,000 gpd

Outfall - The outfall is located in Stones Creek which flows into New River.

Problems - no major problems in the past two (2) years

General - Dixon Elementary School has 1,033 students. Dixon High School has 415 students.

(13) H & J Mobile Home Park STP

Location - intersection of Hwy #17 and County Road (SR) #1107



*[The text in this section is extremely faint and illegible. It appears to be a series of paragraphs or a list of items, but the characters are too light to transcribe accurately.]*

Treatment - secondary treatment with post-chlorination

Maximum designed capacity - 30,000 gpd

Average flow - 15,000 gpd - This flow is approximate. The flow is calculated by using the meter reading of the county water system.

Outfall - The outfall is located in Hicks Run Canal.

Problems - none reported - NRCO reports that the system is now being operated at a higher efficiency level than in previous years.

Samples - Management send samples to Beechan Lab in Jacksonville weekly and quarterly for analysis.

Bypass - none

Changes or upgrading - The ownership of this business has changed hands. An additional treatment facility has been purchased and is in the process of being added to the present system. Completion date is set for July or August of 1984. Approximately 57 units have been added to the existing 43 units reported in the last survey. The park now has 100 units, a store, and camp laundry connected to the sewage plant.

(14) Lauradale Subdivision STP (Not in the Last Report)

Location - north of Jacksonville, N. C.

System - tertiary treatment with post-chlorination

Maximum designed capacity - 400,000 gpd

Average flow - 150,000 gpd

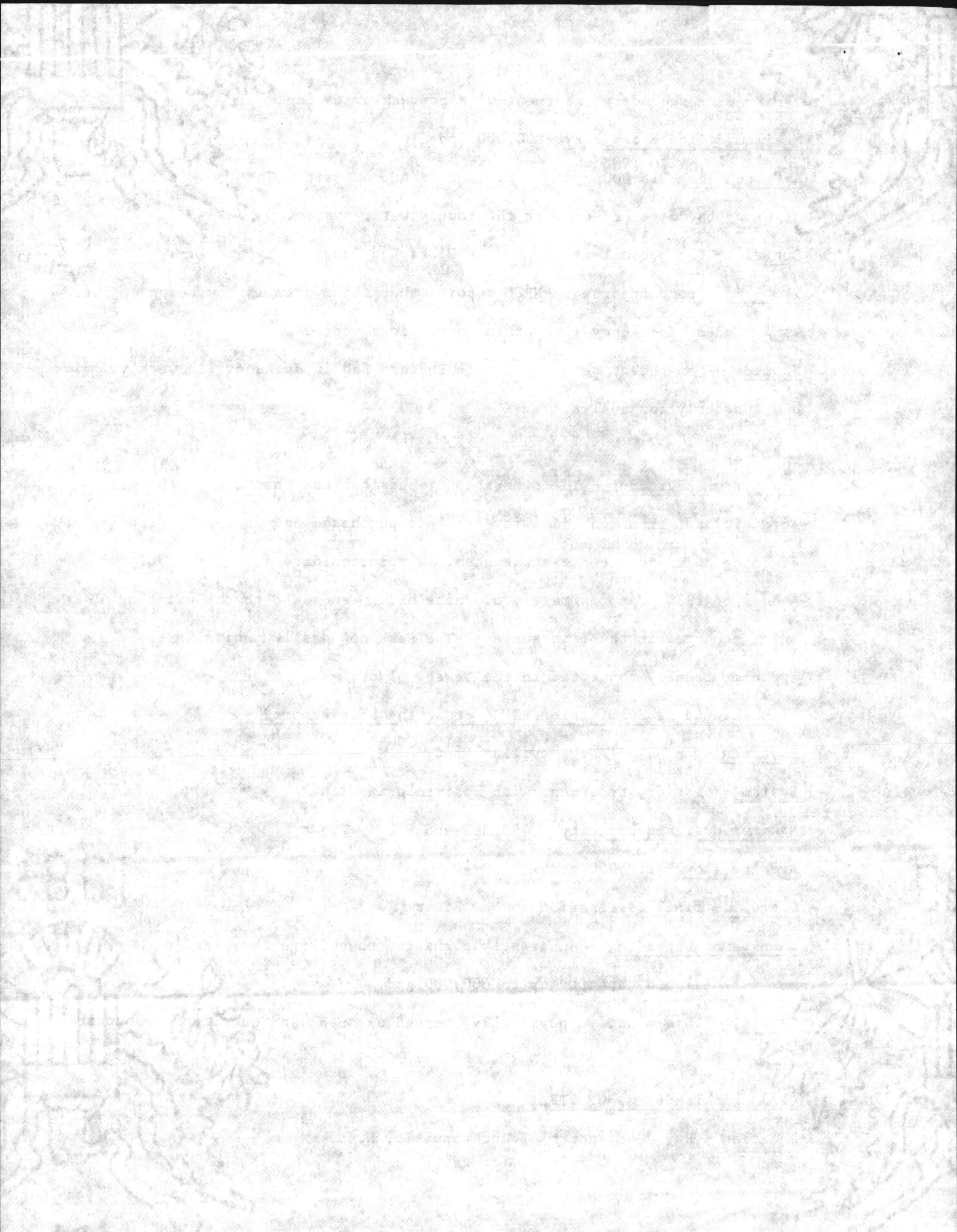
Outfall - final destination is New River

Changes or upgrading - Apparently plans are to enlarge the plant's maximum designed capacity up to 600,000 gpd.

General - This plant is physically located upstream and outside the boundaries of Area C-3.

(15) Richlands, N. C. STP

Location - Hwy #258, north of Jacksonville, N. C.



System - secondary treatment with post-chlorination

Maximum designed capacity - 210,000 gpd

Average flow - 100,000 gpd

Outfall - The outfall empties into Mill Creek and Mill Creek flows into New River

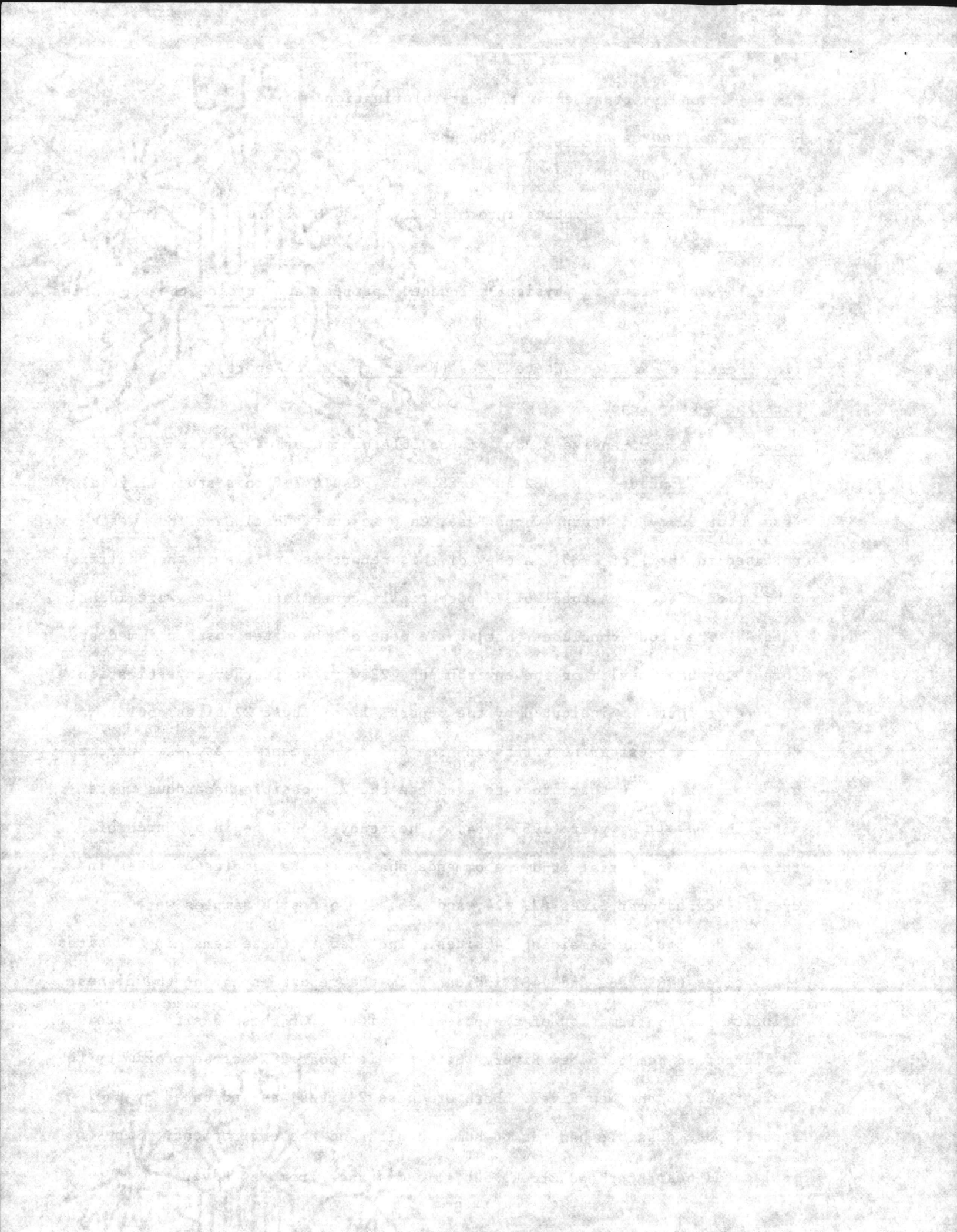
General - This plant is physically located upstream and outside the boundaries of Area C-3.

(16) Possible Hazardous Waste Sites (Not in the Last Report)

Location - Camp Lejeune

*Bob Alexander provided this info*

General - A comprehensive study of possible hazardous waste sites at Camp LeJeune was conducted in 1982 and 1983. The results of this study (Initial Assessment Study of Marine Corps Base, Camp Lejeune, North Carolina) was released in April of 1983. A copy of this report is on file in the Shellfish Sanitation office. A total of 76 potentially contaminated sites were identified. " The study concludes that, while none of the sites pose an immediate threat to human health or the environment, 22 warrant further investigation." It appears that, as indicated by the report, 17 of these 22 sites could possibly affect estuarine waters in Area C-3 or adjacent areas. A contract has been let for further study to evaluate the 22 possible hazardous waste sites this fiscal year (1983-1984). The study should begin by March of this year. The initial study recommends that off site samples be taken in creeks located near Sites #2, #24, and #28. No off site samples were recommended for the remaining 14 sites. Included in these remaining 14 sites are 3 sites (#69, #6, and #48) indicated by the report as having the highest priority for confirmation of the potential sites. Of these 3 sites, Site #48 is located adjacent to New River. Site #69 is located in close proximity to Everett Creek and New River. Both of these 2 sites, as indicated by the report, pose possible hazards to human health and the environment. Site #6 is located near Bearhead Creek, but some distance from New River.





Results from the study to be done this fiscal year on the 22 sites previously mentioned will be forwarded to the Shellfish Sanitation office and other agencies by officials at Camp Lejeune. The results from this pending study should give an indication if any other off site sampling should be considered by the State. (See the attached map marked for specific locations of 1 through 13, Exhibit II.) Copy of the 22 locations of hazardous waste sites can be found in the Camp Lejeune Report.

The State Government lacks the necessary procedures or mechanism to notify the Shellfish Sanitation office of problems occurring at STP and/or lift stations that could affect shellfish waters. This problem was discussed with officials at Camp Lejeune. In turn, these officials graciously volunteered to notify the Shellfish Sanitation office (Morehead City) in the future if problems occur on the base that could affect shellfish waters.

*I Assume that  
Bob Alexander / Col. Kelly  
made this commitment  
we had not been  
addressed of  
any change*

III. EVALUATION OF HYDROGRAPHIC FACTORS RESPONSIBLE FOR THE SPREAD OF POLLUTION

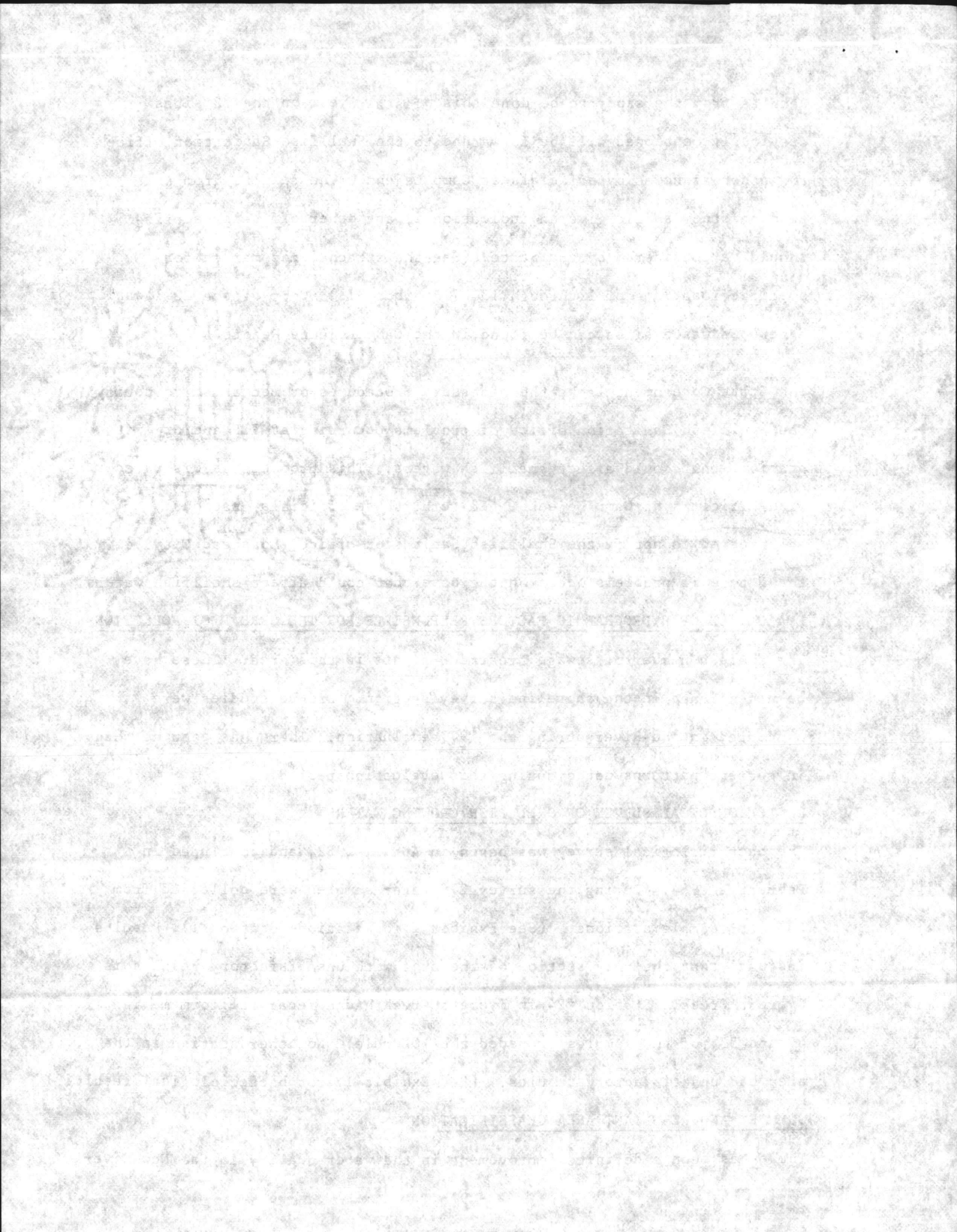
There are a number of sewage treatment plants in this area. These have been mentioned in the shoreline survey section. Drogue studies were conducted in the River during the 1977 evaluation. There has been no change in current patterns noted during this evaluation period.

IV. BACTERIOLOGICAL SURVEY OF SHELLFISH GROWING WATERS

The bacteriological survey was begun in April, 1982, and concluded in February, 1984. During the survey 276 water samples were collected from 20 water sample stations. (See Exhibit I for station locations.) Results indicate that the only section of the area with unsatisfactory results is Everett Creek. Station #24 in Everett Creek had a fecal coliform median of 47 and 33% of the samples exceeded the 10% rule. No other station in the area had unsatisfactory results. (See Exhibit IV for bacteriological results.)

V. SUMMARY AND RESULTANT AREA CLASSIFICATION

There has been a definite improvement in the water quality in the New River



area in recent years. Results from the bacteriological survey indicate only one section of the area with unsatisfactory results and that section is the prohibited waters of Everett Creek.

There are two reasons that could account for the noted improvement. The sewage treatment plants located throughout the Camp Lejeune Marine Base appear to be doing an excellent job. These plants are routinely inspected and monitored by base personnel.

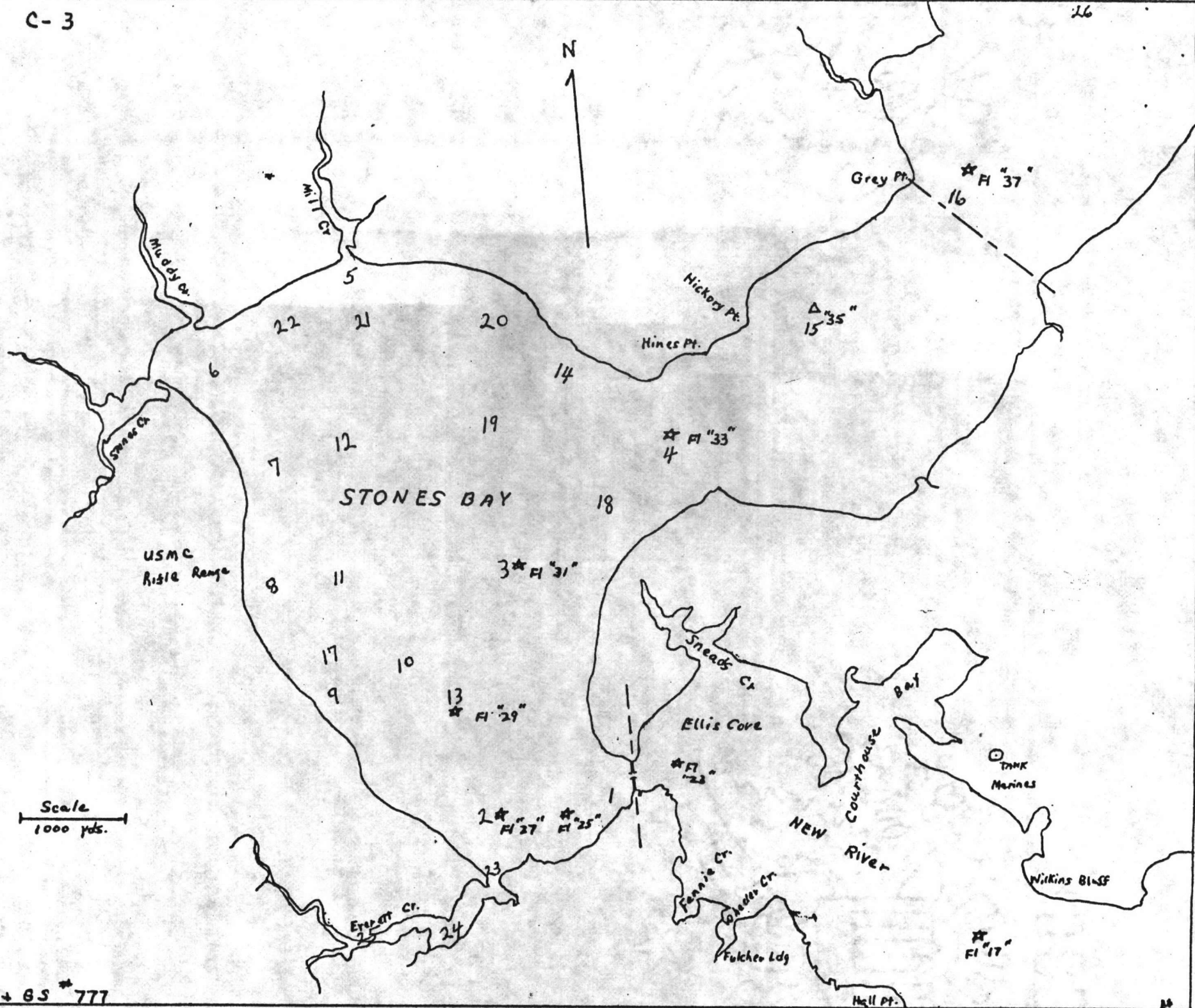
It is also evident, based on data from previous surveys, that much of the area has shown improvement by using the fecal coliform standard as opposed to the total coliform standard.

Because of the favorable shoreline survey and satisfactory water sampling results, 3,000 acres of previously prohibited waters have been opened in this area. (See Exhibit V for proclamation and closed area map.)

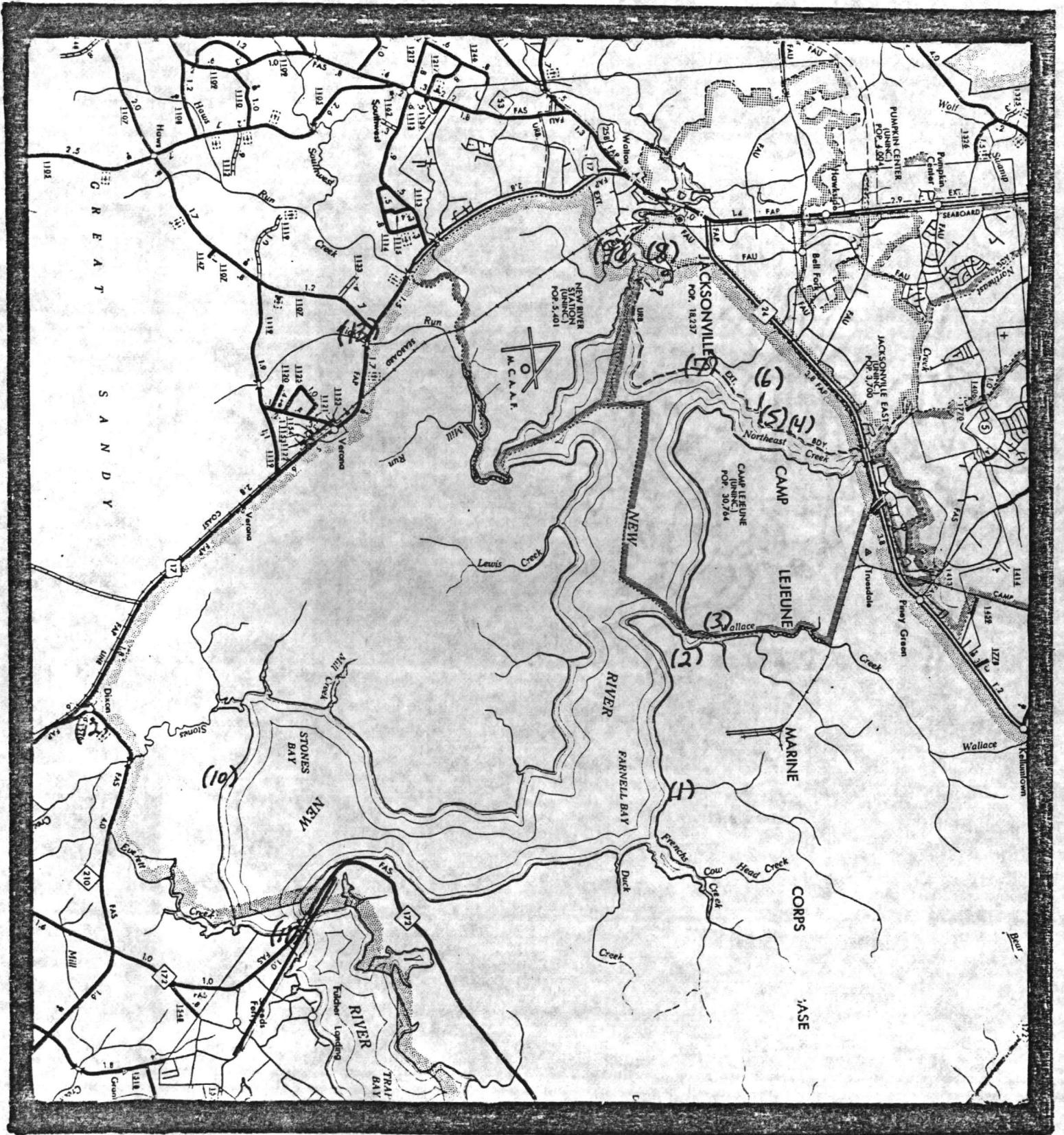
THE UNIVERSITY OF CHICAGO

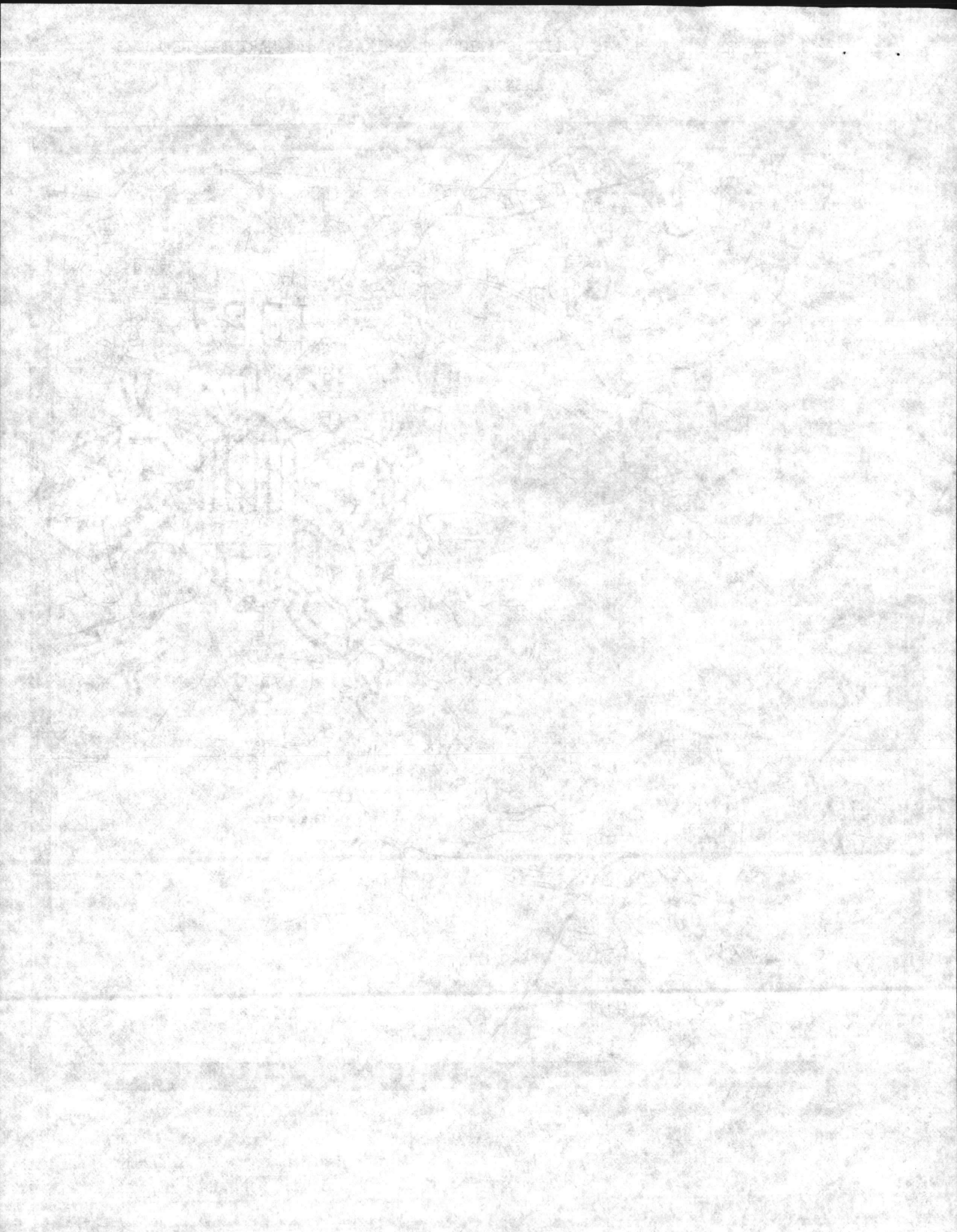
PHYSICS DEPARTMENT















Ronald H. Levine, M.D., M.P.H.  
STATE HEALTH DIRECTOR

DIVISION OF HEALTH SERVICES  
SHELLFISH SANITATION OFFICE  
P.O. Box 769  
Morehead City, N.C. 28557  
(919) 726-6827

December 19, 1983

Commanding General  
United States Marine Corps  
Camp Lejeune, N. C. 28542

Dear Sir:

The Shellfish Sanitation Office conducts shoreline inspectional surveys of drainage areas adjacent to estuarine (shellfish producing) waters.

North Carolina shellfish growing area standards are based on fecal coliform counts. Testing procedures used for water classifications do not identify the source or sources of fecal coliform found in estuarine waters. We also look for heavy metal pollutants. To carry out our objectives, the Shellfish Sanitation Office has divided the coast into small geographic areas.

The area to be surveyed at this time encompasses the mid to upper reaches of New River from the Sneads Ferry Bridge (Pollocks Point) north to the river's headwaters. Our designation for this area is C-3.

I am requesting permission to visit the area at this time. If permissible, I would like to drive through the area, making a visual inspection of the land adjacent to estuarine waters. I would also like to obtain general information on the sewage treatment plants and possible hazardous waste sites located in the area.

During previous surveys Mr. Julian Wooten or Mr. Danny Sharpe, Natural Resources Environmental Affairs, Camp Lejeune, have been my contact persons.

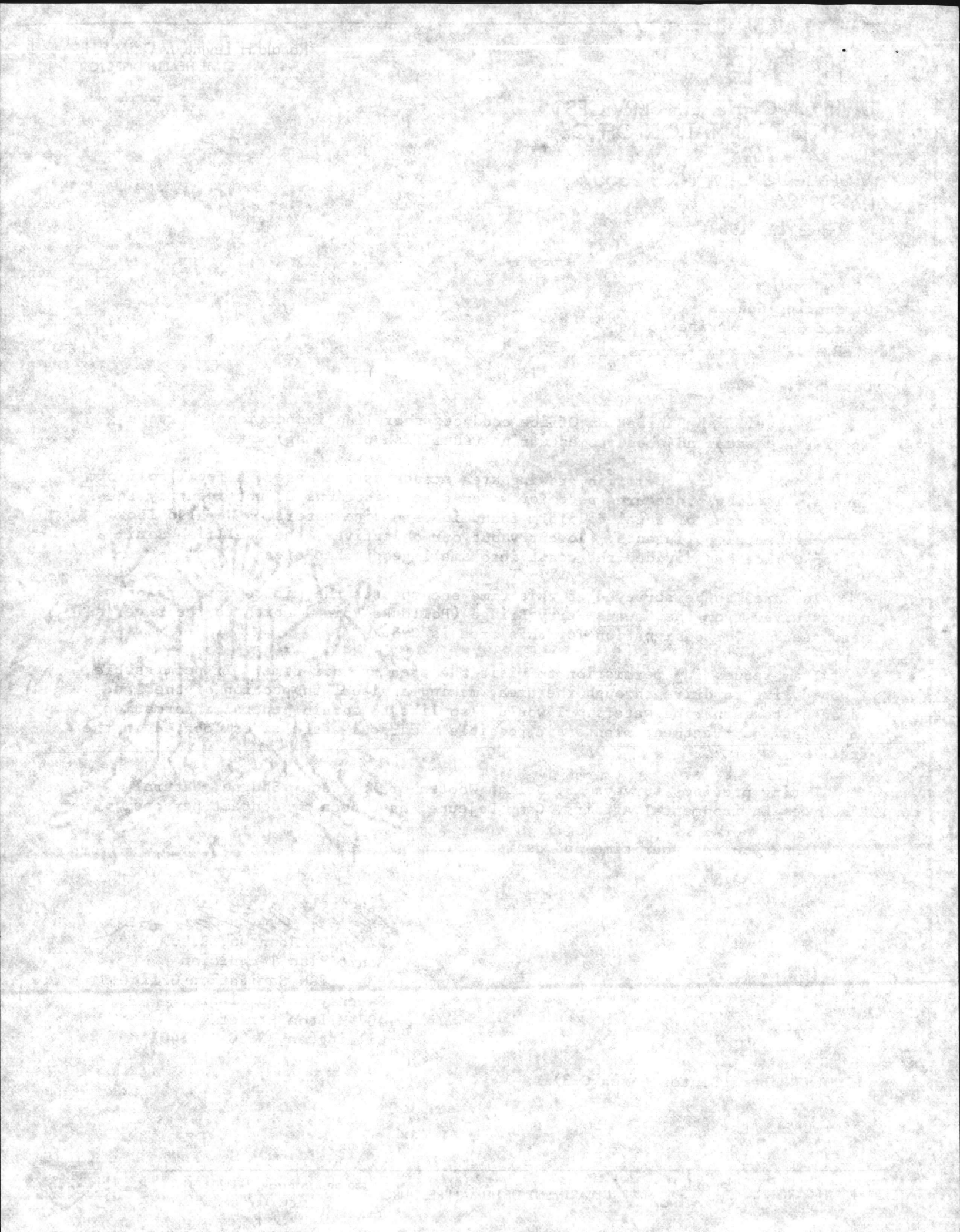
Thank you for your time and assistance.

Sincerely,

Ralph L. Johnson, R.S.  
Sanitarian Technician  
Shellfish Sanitation Office  
Sweeney Water Plant  
407 Hilton Street  
Wilmington, N. C. 28401

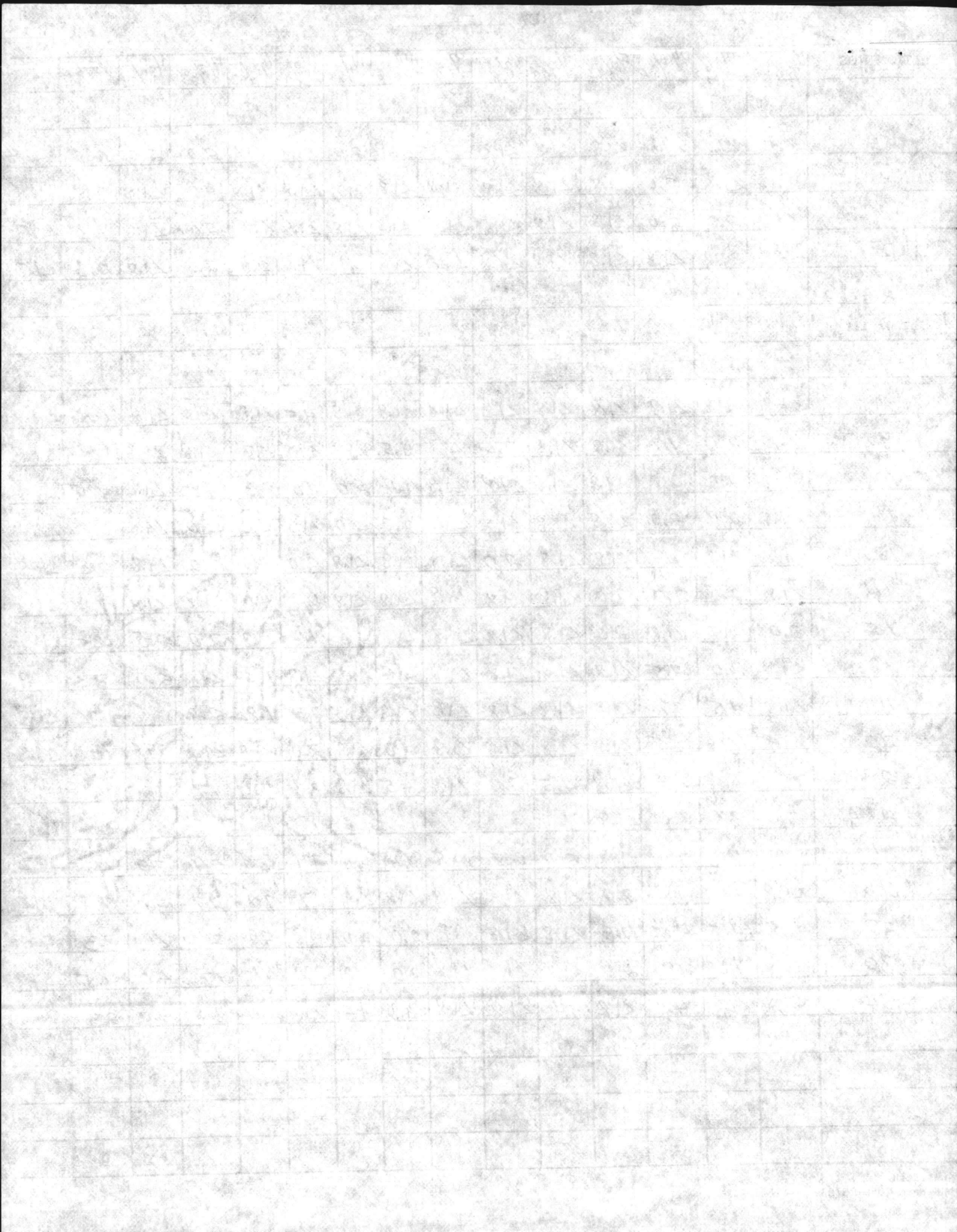
cc: Mr. Robert Benton (Area C-3)





AREA C-3

STATION NOS.	4/23/82	11/2/82	11/16/82	5/2/83	8/2/83	9/7/83	9/27/83	10/19/83	11/1/83	11/8/83	11/30/83	12/8/83	1/30/84	2/21/84	Mod.
1															
2	4.5	<1.8	<1.8	<1.8	<1.8	<1.8	2.0	<1.8	2.0	<1.8	<1.8	2.0	2.0	6.8	<1.8
3	<1.8	<1.8	2.0	<1.8	<1.8	<1.8	<1.8	<1.8	2.0	<1.8	<1.8	4.0	<1.8	7.8	<1.8
4	<1.8	2.0	2.0	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	2.0	<1.8	7.8	<1.8
5	6.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	11	<1.8	2.0	2.0	<1.8	7.8	<1.8
5A															
6															
7															
8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	4.5	<1.8	<1.8	<1.8	6.8	<1.8
9	<1.8	2.0	1.8	<1.8	<1.8	2.0	<1.8	4.5	<1.8	<1.8	33	<1.8	<1.8	11	<1.8
10	2.0	2.0	6.8	<1.8	<1.8	<1.8	<1.8	1.8	2.0	2.0	33	4.5	<1.8	4.5	2.0
11	<1.8	2.0	2.0	<1.8	<1.8	<1.8	<1.8	2.0	2.0	<1.8	<1.8	2.0	<1.8	6.8	<1.8
12	<1.8	<1.8	11	<1.8	<1.8	2.0	<1.8	<1.8	<1.8	2.0	4.0	2.0	<1.8	2.0	<1.8
14	<1.8	2.0	2.0	2.0	<1.8	<1.8	<1.8	<1.8	<1.8	6.8	4.0	<1.8	<1.8	7.8	<1.8
15	2.0	4.5	<1.8	2.0	<1.8	<1.8	<1.8	<1.8	2.0	1.8	<1.8	2.0	2.0	4.5	1.9
16	<1.8	2.0	4.5	<1.8	<1.8	<1.8	<1.8	<1.8	2.0	<1.8	4.5	<1.8	2.0	33	<1.8
17	<1.8	4.5	17	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	23	1.8	2.0		13	<1.8
20	<1.8	<1.8	4.5	<1.8	<1.8	<1.8	<1.8	2.0	<1.8	2.0	<1.8	<1.8	<1.8	17	<1.8
23			23	<1.8	4.5	7.8	<1.8	4.5	<1.8	33	130	17	11		9.4
23A	2.0	33		<1.8											2.0
24		70	79		2.0	6.8	<1.8	23	2.0	79	350	540	79	4.5	47
26	<1.8	13	11	2.0	<1.8	<1.8	<1.8	<1.8	<1.8	17	7.8	17	2.0	7.8	2.0
27	1.8	4.5	4.5	7.8	<1.8	<1.8	11	2.0	2.0		79	23	<1.8	33	4.5
30	6.8	7.8	17	2.0	<1.8	<1.8	<1.8	2.0	2.0	2.0	11	17	4.0	4.5	3.0
34	<1.8	<1.8	4.5	<1.8	14	<1.8	<1.8	<1.8	4.5	<1.8	2.0	7.8	4.0	23	2.0





# North Carolina Department of Natural Resources & Community Development

James B. Hunt, Jr., Governor

James A. Summers, Secretary

DIVISION OF  
MARINE FISHERIES

Robert K. Mahood  
Director

Telephone 919 726-7021

## PROCLAMATION

RE: SHELLFISH POLLUTED AREA

By virtue of the authority vested in me as Secretary of the North Carolina Department of Natural Resources and Community Development, and upon the recommendation of Robert K. Mahood, Director, Division of Marine Fisheries, and Dr. Ronald H. Levine, Director, Division of Health Services, North Carolina Department of Human Resources, it is hereby announced that the following changes in shellfish harvesting areas will take effect at sunrise, March 3, 1984:

No person shall take or attempt to take any oysters or clams, or possess, sell or offer for sale any oysters or clams taken from the following polluted area:

### ONSLow COUNTY

C-3

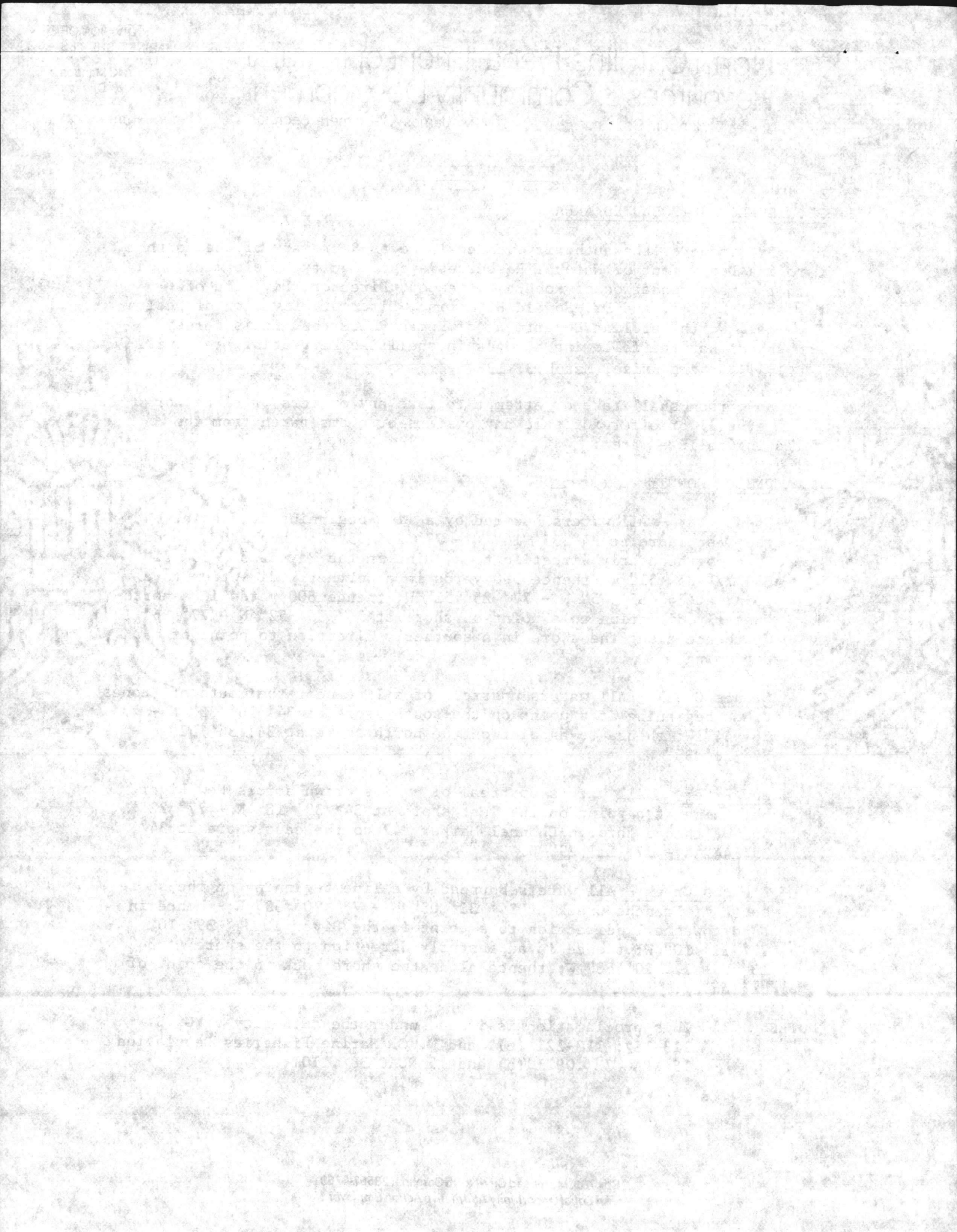
Stones Bay - All waters bounded by a line beginning at a point on the west shore at 34° 35' 16" N - 77° 26' 05" W; thence 675 yards in a northeasterly direction to a point in the Bay at 34° 35' 31" N - 77° 25' 51" W; thence 500 yards in a northerly direction to a point at 34° 35' 45" N - 77° 25' 51" W; thence 800 yards in a northwesterly direction to a point on shore at 34° 35' 52" N - 77° 26' 17" W; thence along the shore in a southerly direction to point of beginning.

Stones Creek - All waters upstream of a line near the mouth of Stones Creek beginning at a point on the south shore at 34° 36' 33" N - 77° 26' 44" W; thence to a point on the north shore at 34° 36' 52" N - 77° 26' 36" W.

New River - All waters upstream of a line drawn across New River beginning at a point on the west shore at 34° 39' 18" N - 77° 22' 55" W; thence through Channel Marker #42 to the east shore at 34° 39' 44" N - 77° 21' 29" W.

Frenchs Creek - All waters bounded by a line beginning on the shore south of Frenchs Creek at 34° 38' 05" N - 77° 20' 33" W; thence in a northwesterly direction to a point in the River at 34° 39' 10" N - 77° 21' 10" W; thence in an easterly direction to the shore at 34° 39' 13" N - 77° 20' 58" W; thence along the shore back to the point of beginning.

NOTES: [1] This proclamation is issued under the authority of G. S. 113-182; 113-221 (e), and N. C. Marine Fisheries Regulation 15 NCAC 3B .0901 (b) and 15 NCAC 3B .1101.



March 2, 1984

Page 2

- [2] This action replaces N. C. Marine Fisheries Regulation 15 NCAC 3B .1111 (23) (d) and becomes (23) (d) (i) (ii), replaces (23) (e), and adds (23) (k), and opens approximately 3,000 acres of shellfishing waters in the New River area.
- [3] Shaded areas on map indicates areas closed to shellfishing.

BY AUTHORITY OF THE SECRETARY OF THE DEPARTMENT OF NATURAL RESOURCES & COMMUNITY DEVELOPMENT.

BY:

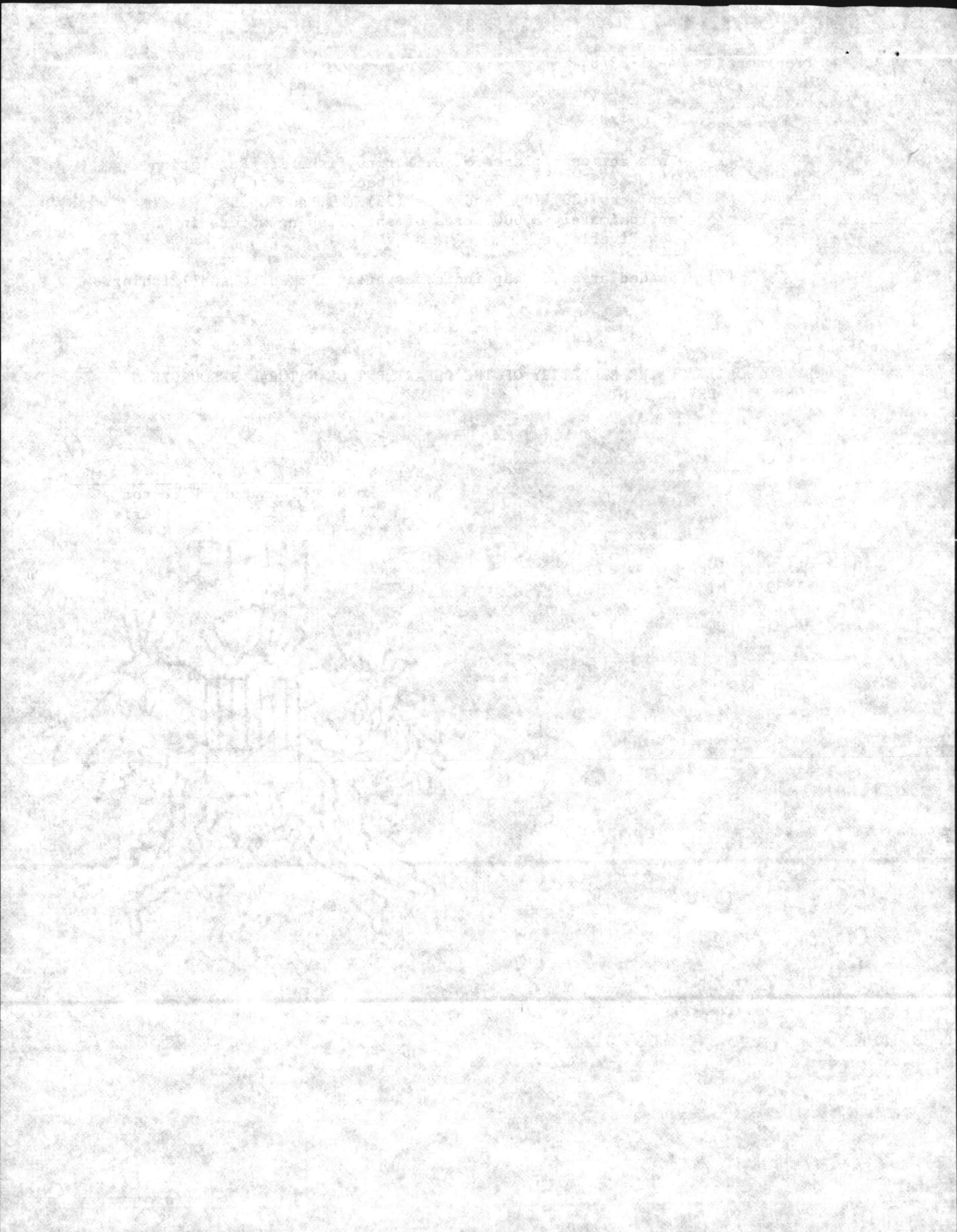
*Robert K. Mahood*

Robert K. Mahood, Director  
Division of Marine Fisheries

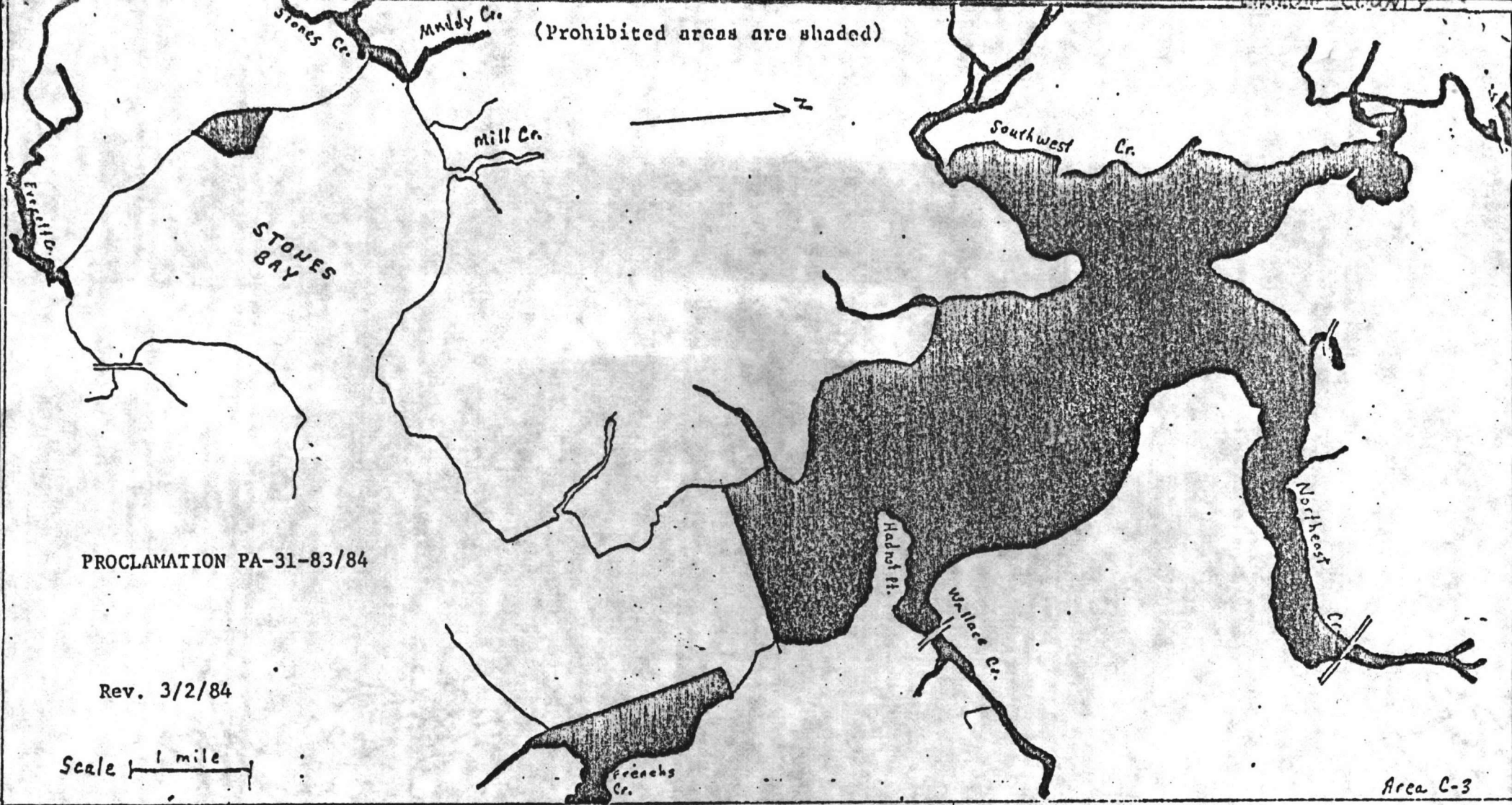
March 2, 1984  
11:00 A. M.

PA-31-83/84

/sh







New River Area:

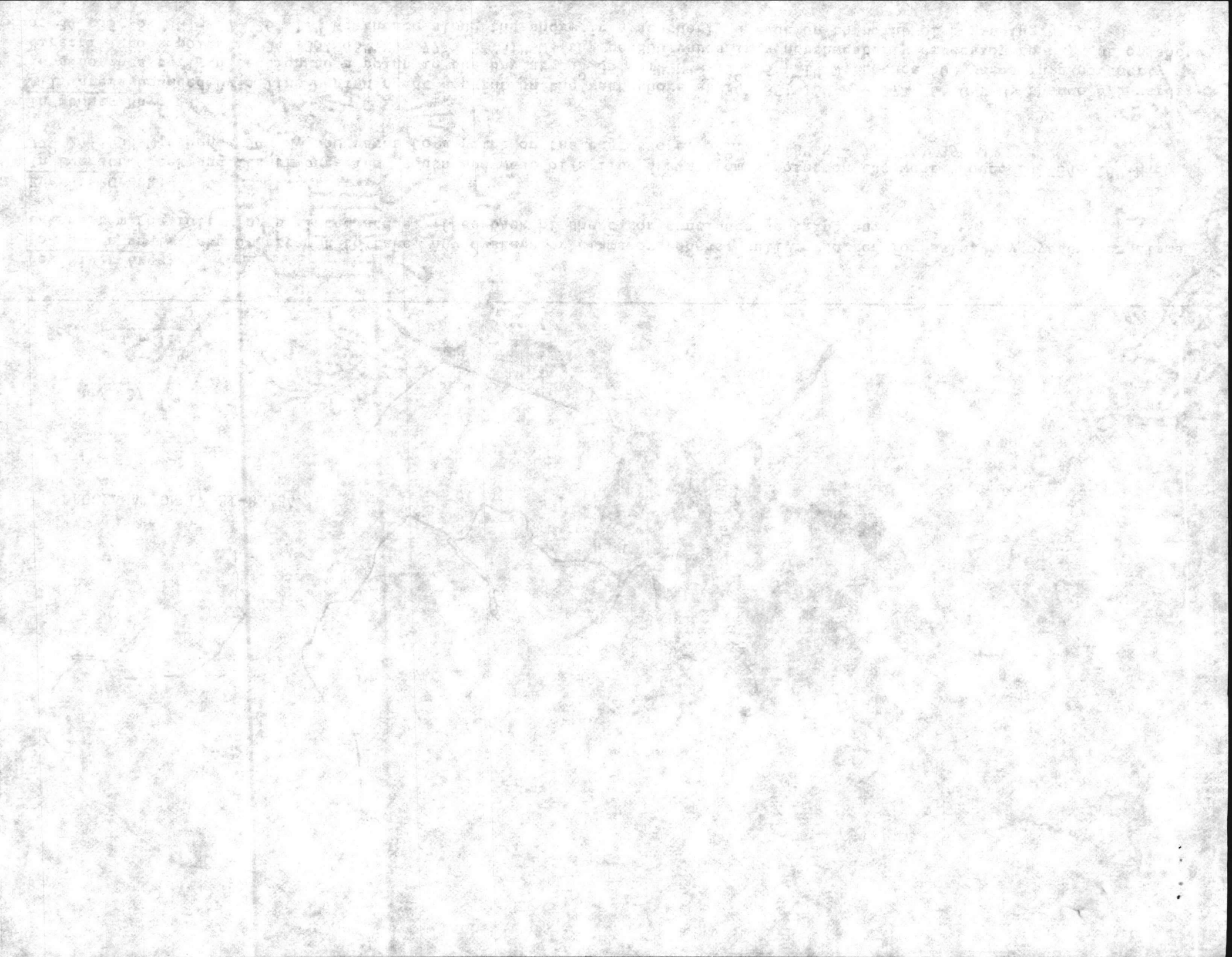
No person shall take or attempt to take, any oysters or clams or possess, sell, or offer for sale, any oysters or clams taken from the following polluted areas: (See back of sheet for continued description.)

Everett Creek:

In Everett Creek and its tributaries, south and west of a line drawn from a point on the west shore,  $34^{\circ} 34' 18''$  N -  $77^{\circ} 24' 55''$  W; thence  $94^{\circ}$  M, 550 yards to a point on the east shore,  $34^{\circ} 34' 18''$  N -  $77^{\circ} 24' 35''$  W.

In Stones Bay:

All waters bounded by a line beginning at a point on the west shore at  $34^{\circ} 35' 16''$  N -  $77^{\circ} 26' 05''$  W; thence 675 yards in a northeasterly direction to a point in the Bay at  $34^{\circ} 35' 31''$  N -  $77^{\circ} 25' 51''$  W; thence 500 yards in a northerly direction to a point at  $34^{\circ} 35' 45''$  N -  $77^{\circ} 25' 51''$  W; thence 800 yards in a northwesterly direction to a point on shore at  $34^{\circ} 35' 52''$  N -  $77^{\circ} 26' 17''$  W; thence along the shore in a southerly direction to point of beginning.



Stones Creek:

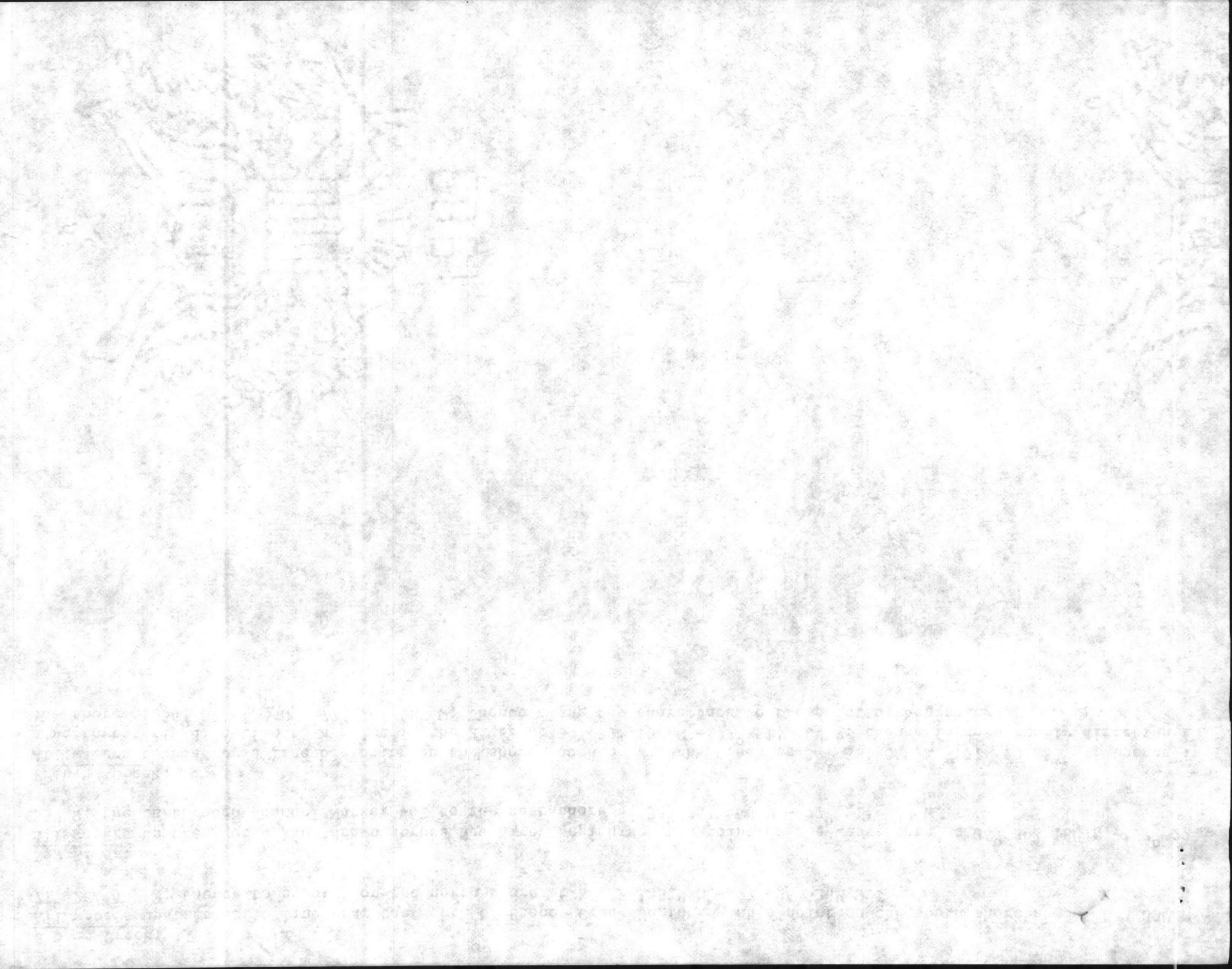
All waters upstream of a line near the mouth of Stones Creek beginning at a point on the south shore at  $34^{\circ} 36' 33''$  N -  $77^{\circ} 26' 44''$  W; thence to a point on the north shore at  $34^{\circ} 36' 52''$  N -  $77^{\circ} 26' 36''$  W.

New River:

All waters upstream of a line drawn across New River beginning at a point on the west shore at  $34^{\circ} 39' 18''$  N -  $77^{\circ} 22' 55''$  W; thence through Channel Marker #42 to the east shore at  $34^{\circ} 39' 44''$  N -  $77^{\circ} 21' 29''$  W.

Frenchs Creek:

All waters bounded by a line beginning on the shore south of Frenchs Creek at  $34^{\circ} 38' 05''$  N -  $77^{\circ} 20' 33''$  W; thence in a northwesterly direction to a point in the River at  $34^{\circ} 39' 10''$  N -  $77^{\circ} 21' 10''$  W; thence in an easterly direction to the shore at  $34^{\circ} 39' 13''$  N -  $77^{\circ} 20' 58''$  W; thence along the shore back to the point of beginning.





Ronald H. Levine, M.D., M.P.H.  
STATE HEALTH DIRECTOR

DIVISION OF HEALTH SERVICES  
SHELLFISH SANITATION OFFICE  
P.O. Box 769  
Morehead City, N.C. 28557  
(919) 726-6827

December 19, 1983

Commanding General  
United States Marine Corps  
Camp Lejeune, N. C. 28542

Dear Sir:

The Shellfish Sanitation Office conducts shoreline inspectional surveys of drainage areas adjacent to estuarine (shellfish producing) waters.

North Carolina shellfish growing area standards are based on fecal coliform counts. Testing procedures used for water classifications do not identify the source or sources of fecal coliform found in estuarine waters. We also look for heavy metal pollutants. To carry out our objectives, the Shellfish Sanitation Office has divided the coast into small geographic areas.

The area to be surveyed at this time encompasses the mid to upper reaches of New River from the Sneads Ferry Bridge (Pollocks Point) north to the river's headwaters. Our designation for this area is C-3.

I am requesting permission to visit the area at this time. If permissible, I would like to drive through the area, making a visual inspection of the land adjacent to estuarine waters. I would also like to obtain general information on the sewage treatment plants and possible hazardous waste sites located in the area.

During previous surveys Mr. Julian Wooten or Mr. Danny Sharpe, Natural Resources Environmental Affairs, Camp Lejeune, have been my contact persons.

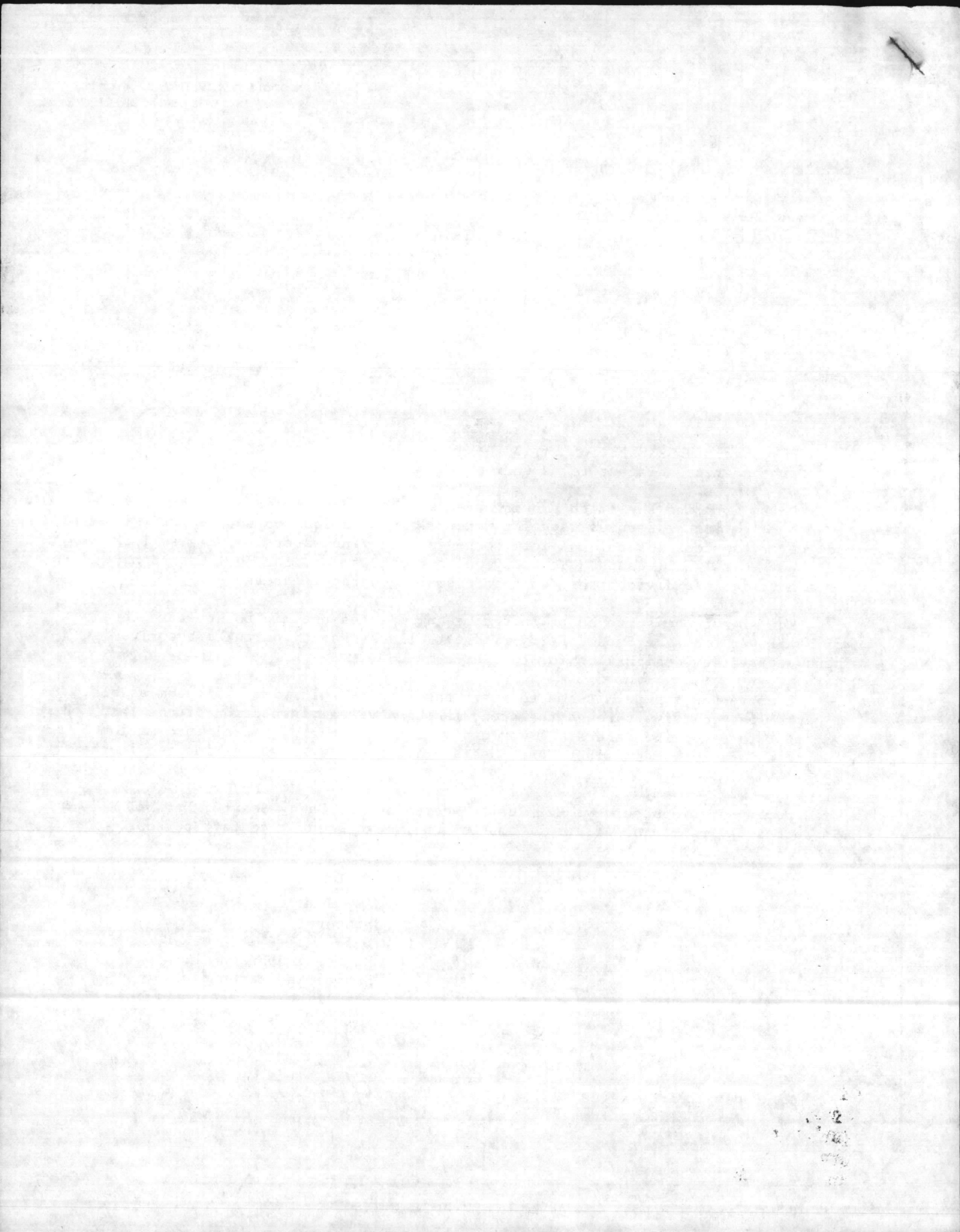
Thank you for your time and assistance.

Sincerely,

*Ralph L. Johnson*  
Ralph L. Johnson, R.S.  
Sanitarian Technician  
Shellfish Sanitation Office  
Sweeney Water Plant  
407 Hilton Street  
Wilmington, N. C. 28401

cc: Mr. Robert Benton (Area C-3)

919-762-1543



To Dams  
AWW

Betsy - Review Camp  
Lejeune  
+ Retain +

DDJ  
26 Aug 83

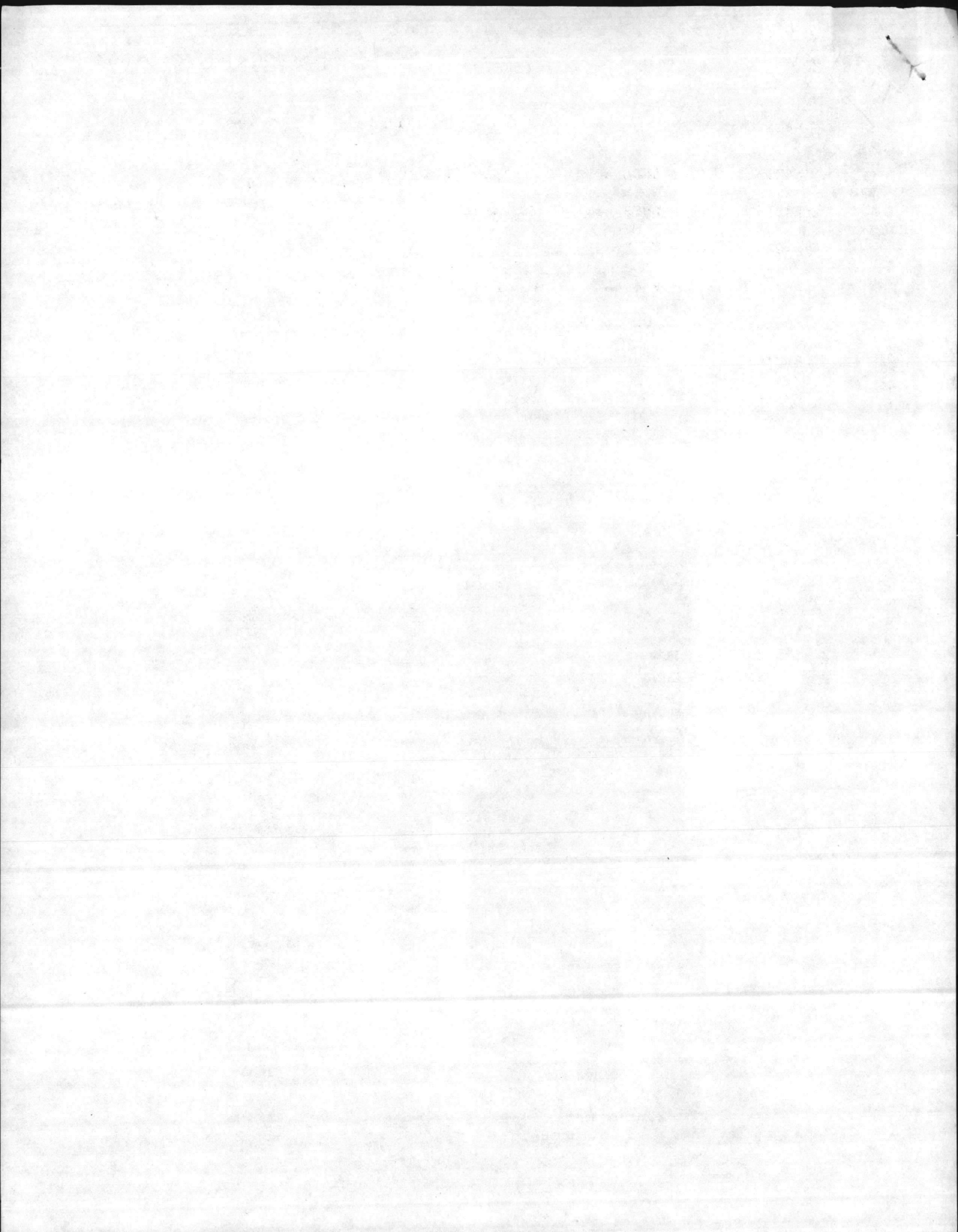
REPORT OF SANITARY SURVEY

CHADWICK BAY AREA

AREA C-1

JANUARY 1982 - MAY 1983

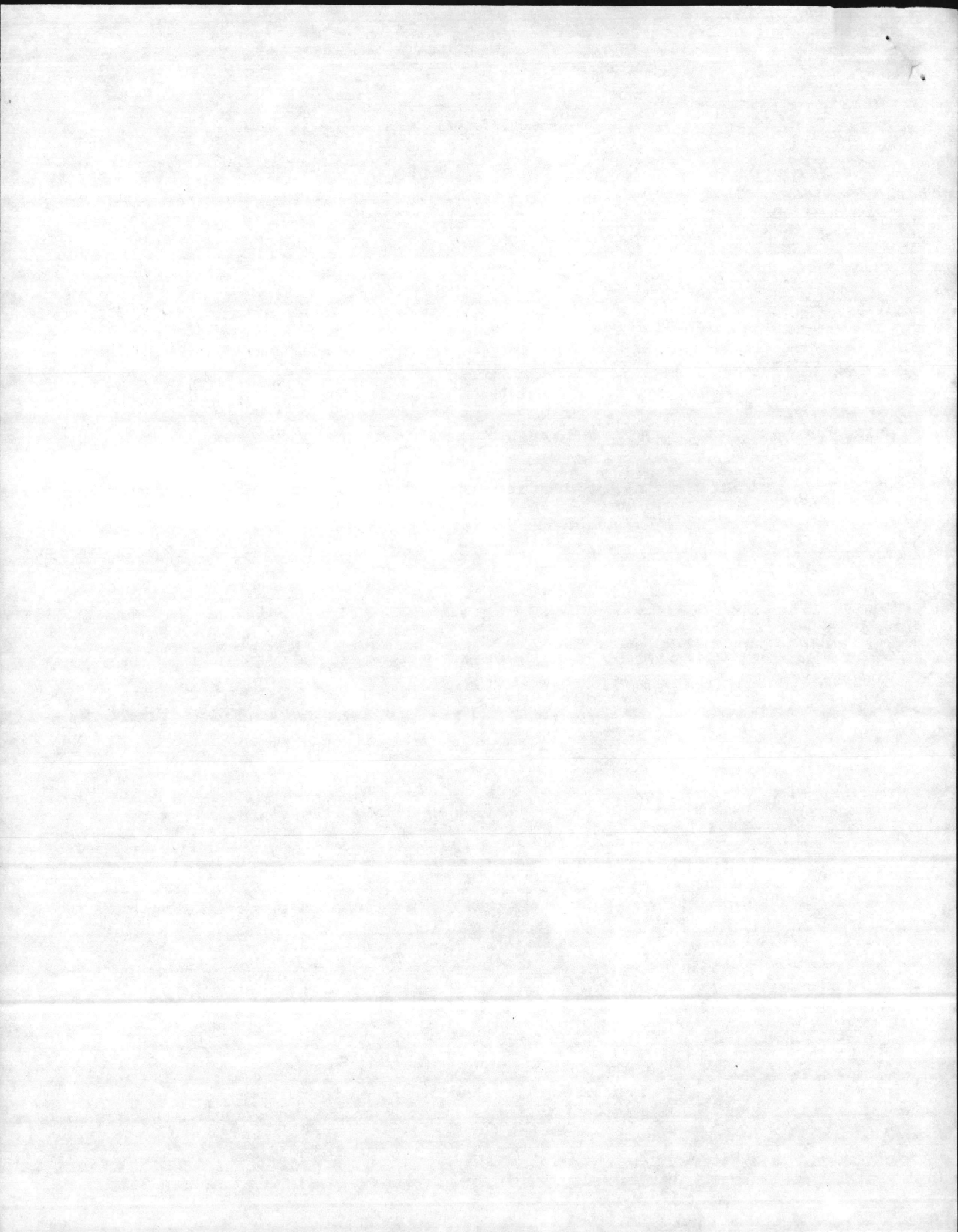
AUGUST 1983





AREA C-1

- EXHIBIT I        AREA MAP AND STATION LOCATIONS
- EXHIBIT II       SHORELINE SURVEY ROUTE
- EXHIBIT III      VIOLATION NOTICES
- EXHIBIT IV       STP AND MARINA LOCATIONS
- EXHIBIT V        COMPLAINT REPORT
- EXHIBIT VI        SEWAGE TREATMENT PLANT PERMIT
- EXHIBIT VII      BACTERIOLOGICAL RESULTS AND MPN MEDIANS
- EXHIBIT VIII     PROCLAMATION AND CLOSED AREA MAP



Preface

Total Acres.....1700.  
Prohibited Acres.....180.  
Oyster Production.....Fair.  
Clam Production .....Fair.  
Commercial Value.....Fair.  
Recommended Changes.....\*...Closed 40 Acres  
in Fullard Creek.



# REPORT OF SANITARY SURVEY

## CHADWICK BAY AREA

### AREA C-1

By

SHELLFISH SANITATION PROGRAM  
NORTH CAROLINA DIVISION OF HEALTH SERVICES

#### I. INTRODUCTION

Area C-1 is composed of the waters between Intracoastal Waterway Marker #4 at Swan Point and Marker #25 in Alligator Bay, including Chadwick Bay, Fullard Creek, Bumps Creek, Biglins Creek, Hell Gate Creek, Charles Creek, Alligator Bay and Mill Creek. This area has a watershed of approximately 13 square miles and contains the communities of Carrel Chapel, Peru, Swan Point, Chadwick's Acres, Grants, West Onslow Beach, and the southern portion of Sneads Ferry. There are no major sources of pollution in this area. (See Exhibit I for map of the area.)

#### II. SHORELINE SURVEY OF SOURCES OF POLLUTION

A comprehensive shoreline survey of Area C-1 was begun on November 22, 1982, and completed on February 10, 1983. Ralph Johnson of the Shellfish Sanitation staff conducted the survey.

Area C-1 is located in Onslow County. The Onslow County Health Department was notified in advance about the pending survey and agreed to do all follow up necessary to correct violations found in the area. A copy of each Notice of Violation was hand delivered to the health department.

During the survey all accessible residences, businesses, and places of public assembly adjacent to or in close proximity to estuarine waters were visited. All places in which people were found were inspected for sewage disposal malfunctions or violations. A total of 279 visits were made with 175 inspections being conducted. Notices of Violations were issued where

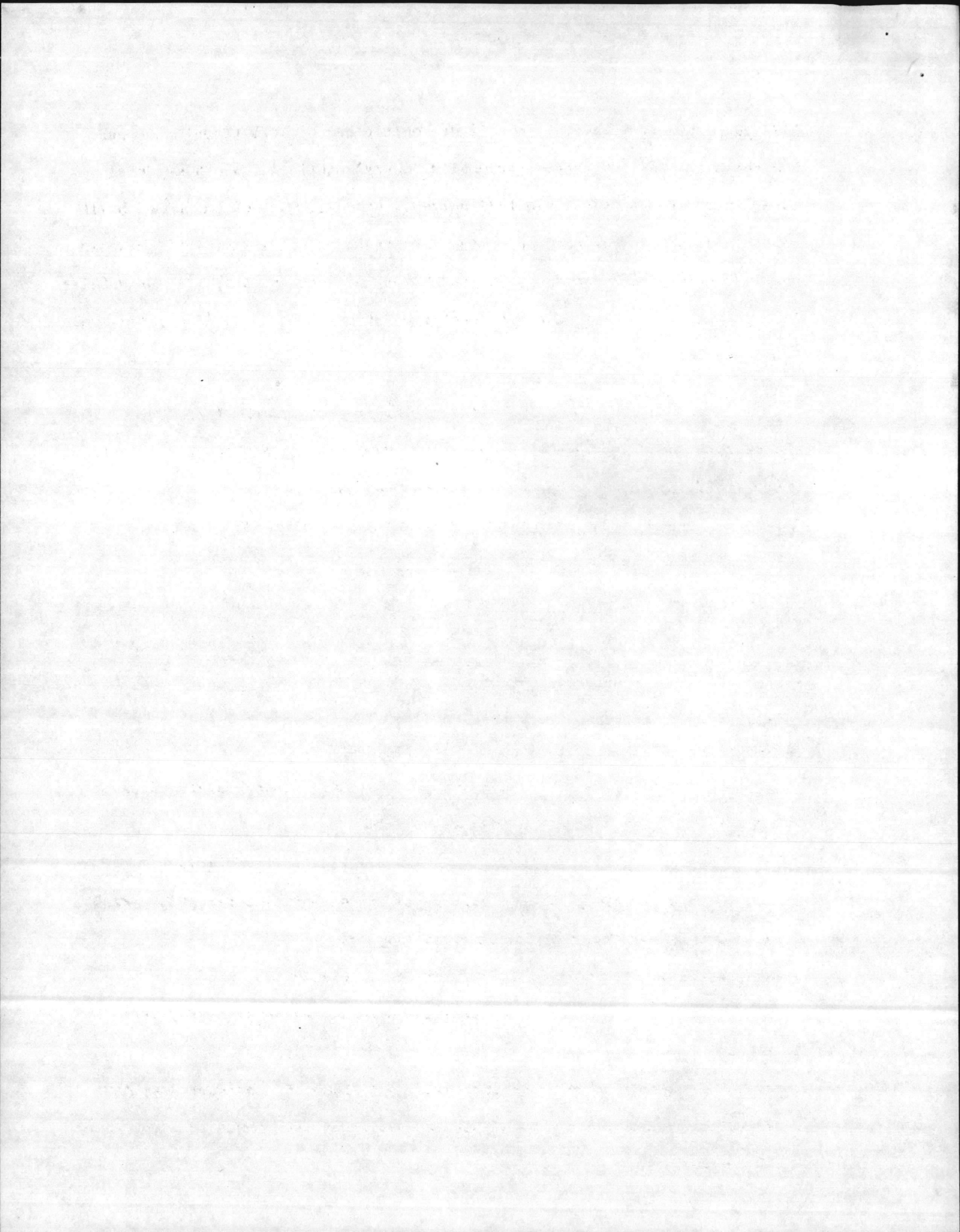


violations were found. Eight (8) Notices of Violations were issued. (See Exhibit III for the violations.)

Area C-1 has a multitude of different soil classifications. According to the Barrier Islands publication of the United States Department of Agriculture, Soils Conservation Service, and previous survey reports, many of these soils have slight to severe limitations for the installation of conventional septic tank systems. They are general soil classifications. Independent lot evaluations by qualified health department sanitarians are essential before allowing the installation or repair of conventional and/or alternate sewage disposal systems.

In general, the route followed in this survey is the same route covered in the 1979 comprehensive survey. However, the area visited for physical inspectional purposes has been reduced. Visits and inspections were conducted only on the land area contiguous to estuarine waters. The survey started at the northeast end of county road (S.R.) #1568 adjacent to New River Inlet. From this starting point the survey proceeded in a southwesterly direction along the southern side of the ICWW and adjacent estuarine waters. All accessible roads, streets, driveways, and dirt paths contiguous to estuarine waters were checked. The survey continued in a southwesterly direction to the intersection of S.R. #1568 and Hwy #210. The survey at this point turned northerly along the north, northeast side of Hwy #210. The survey continued across the ICWW, turned, and proceeded in a northeasterly direction along the northern side of the ICWW including adjacent estuarine waters. The survey continued in an easterly, northeasterly direction to a stopping point at the end of S.R. #1515. (See Exhibit II for survey route.)

Area C-1 is located in Stump Sound Township. The township had a 1980 population of 5,933. Five hundred and ninety six (596) visits were made in the





1979 comprehensive survey. This figure multiplied by 2.75 (population per household in the 1980 census for Onslow County) equals 1,639. Some development has occurred since the 1979 survey. However, many of the homes built recently are summer or weekend homes. A portion of the visits (596) made in the 1979 survey were summer or weekend homes, businesses, or public assemblies. A very rough estimate of the permanent population of the area is approximately 2,000 people.

The following is an informational list of two sewage treatment plants, a marina-type dock, a washerette sewage treatment system, a septage dump site, a houseboat (permanent residence), and two marinas.

(1) North Topsail Water and Sewer Sewage Treatment Plant (STP)

Location - Near the northeast end of S.R. #1568

Treatment -Tertiary extended aeration plant

Maximum gpd - 40,000 gallons

Average - 10 thousand gallons per day

Peak load - 37,000 gpd in summer season

Disposal - Subsurface disposal (non-discharge outfall)

Changes - This plant is to be connected to a planned (under construction) spray irrigation system located on the mainland.

(2) North Topsail Water and Sewer, Inc. (spray irrigation facility)

Location - Approximately .9 of a mile north of the intersection of Hwy #210 S. R. #1518 on Hwy #210 (both sides of the highway)

Note: The headwaters of Mill Creek drain this construction site.

Type system - Three (3) cell stabilization/holding lagoon and spray irrigation STP

Details - See the attached copy (Exhibit VI) of the N. C. Environmental Management Commission, Department of Natural Resources and Community Development (NRCD) permit.



Usage - General information obtained indicates that the present day development on North Topsail Island and future development can or will be connected to the system.

(3) East Coast Seafood (old name- Oyster Hut Restaurant)

Location - End of S. R. #1561 on Charles Creek

Wet slips - General dockage

Maximum boats - 4 to 5

Average number of boats - 3 to 4

Boats with marine heads - None

Pump out service - None

(4) Ennetts Washerette

Location - West side of S. R. #1518 in Sneads Ferry

System - Small holding lagoon: the lagoon is located adjacent to the headwaters of Charles Creek.

Problems - Leakage through dike into Charles Creek

General information - Dike leakage was reported to NRCD on February 7, 1983.

See Exhibit V for complaint results from NRCD.

(5) Septage Dump Site

Location - This site is located at the end of S. R. #1519. Fullards Creek is located approximately 800 to 1000 feet down slope from the site.

Approval - The county health department has conditionally approved this site. The condition is that the septage be cut into the ground in a specified time period.

Usage - General information indicates this location has been used as a septage dump site for many years.

Run-off - Conditions of run-off from this site are an unknown factor.

(6) Private Houseboat (permanent residence)

Location - The houseboat is moored on the northeast shoreline of Charles



Creek at the end of a dirt path off S. R. #1521 (closed section of Charles Creek).

System - The owner stated that the houseboat has water and electrical hook ups, and a small portable holding tank is used for sewage disposal. The boat is also equipped with a straight pipe disposal system. A privy is located on the property. The owner was issued a Notice of Violation (Exhibit III) for washing machine waste. The washing machine is located in a storage building (house) up slope from the boat dock.

(7) New River Marina

Location - End of S. R. #1523 on the ICWW

Systems - Septic tank systems

Wet slips - Approximately 8 with general dockage

Boats - Two (2) permanent boats

Boats with marine heads - One

Dry storage - 28 spaces

Transit boats - The total number of transit boats using this facility is unknown.

Pump out service - None

Camping facilities - 16 full service sites (electrical, water, and sewage), 6 partial sites, 1 bathhouse, 1 bait and tackle shop

(8) Swan Point Marina

Location - Near the end of S. R. #1523 on the ICWW (north side of New River Marina)

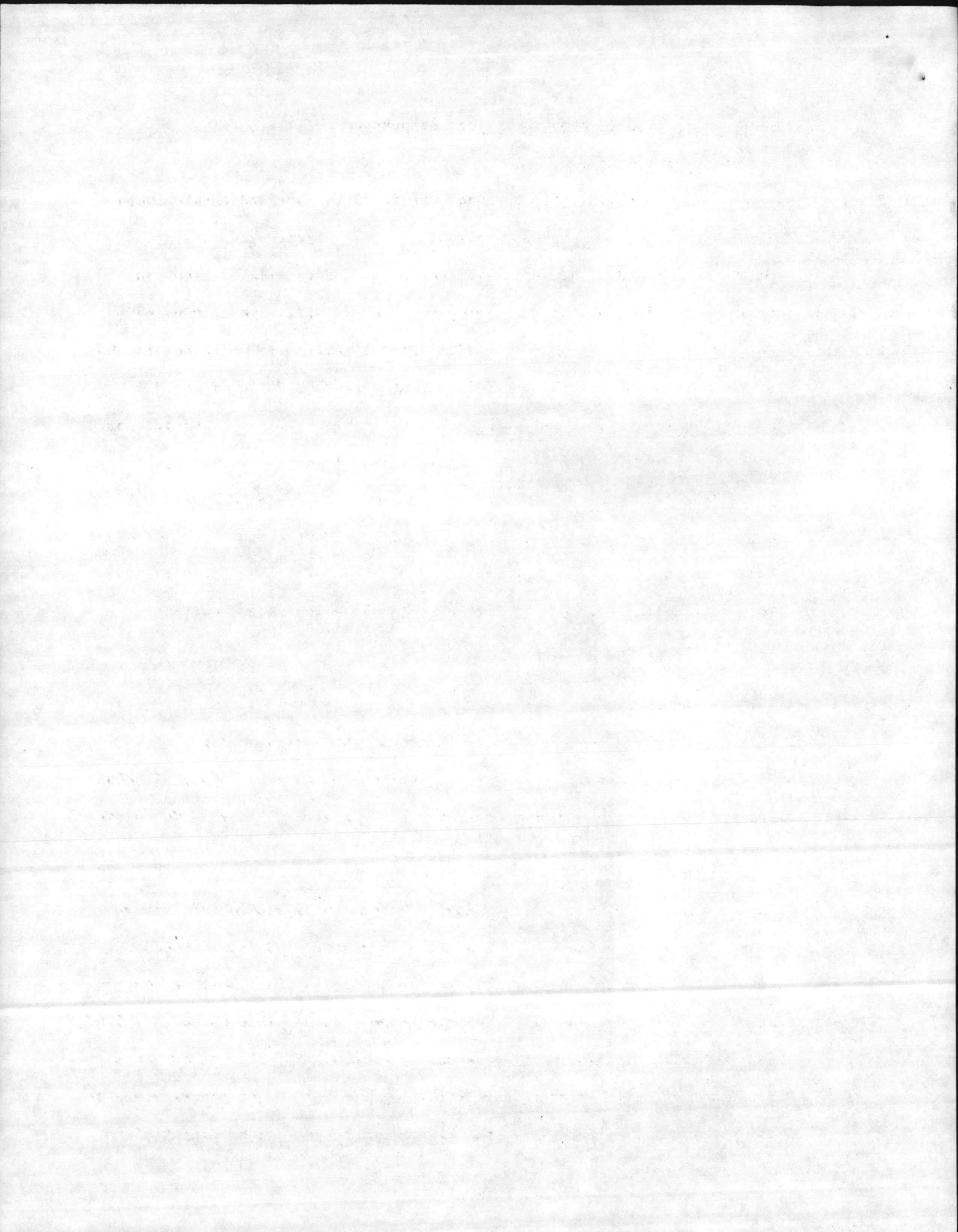
System - Septic tank system

Wet slips - General dockage

Boats - Approximately 30 permanent boats

Boats with marine heads - Approximately 95% (variable)

Dry storage - Variable number of boats on trailers



Transit boats - Total number per year is unknown

Pump out service - None

General - Marina building (bathhouse, repair shop, bait and tackle shop)

See Exhibit IV for the mapped locations.

Development has and is occurring in Area C-1. Geographically, the land area has potential for future development. Several new sites are being developed or planned to be developed. General information obtained in the field indicates the possibility exists that a feeder line from the STP (spray irrigation - lagoons) being built in the area will be extended north-east along the ICWW. If this feeder line is built, land previously considered unsuitable (septic tank systems) can be developed. Onslow County does not have a county zoning ordinance. However, subdivision development is subject to county approval. Run-off generated by uncontrolled development will undoubtedly affect water quality in the surrounding estuarine environment.

Area C-1 does not have any on-site sources for waste from heavy industry. Chemical controls used on agricultural crops, gardens, and lawns in the area do represent possible sources for chemical pollutants. Many of these sites are located near creeks and estuarine waters of the area. No on-site radiological sources were found in the area.

In conclusion, Area C-1 drains basically a semi-rural section of Onslow County. A sparse population is scattered throughout the area. Sneads Ferry has the highest permanent population concentration. Smaller concentrations of mixed (permanent or vacation homes) development border the ICWW, its tributaries, and surrounding estuarine waters. No physical evidence was found that malfunctioning septic tank systems are major contributors of fecal material to waters closed to the harvest of shellfish. Run-off from





agriculture, development, and natural drainage in conjunction with wildlife (direct or indirect contact) appear to be major sources of fecal material found in the waters of Area C-1.

III. EVALUATION OF HYDROGRAPHIC FACTORS RESPONSIBLE FOR THE SPREAD OF POLLUTION

Drogue studies have been conducted in the Fullard Creek and Chadwick Bay sections of the area. Results indicate slow tidal movement resulting in very little flushing action of the estuary. Results of these studies can be seen in the 1981 report.

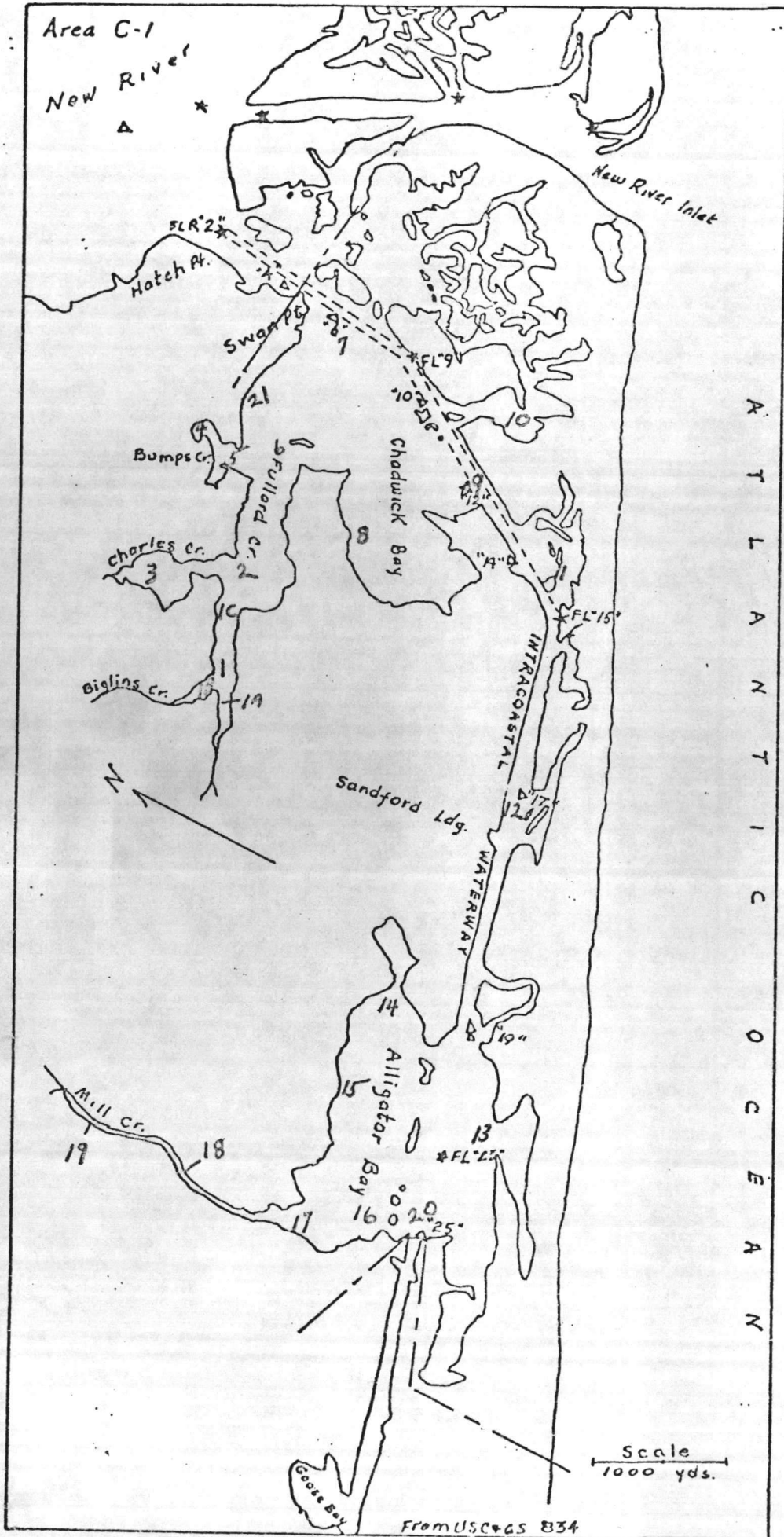
IV. BACTERIOLOGICAL SURVEY OF SHELLFISH GROWING WATERS AS INDICATED

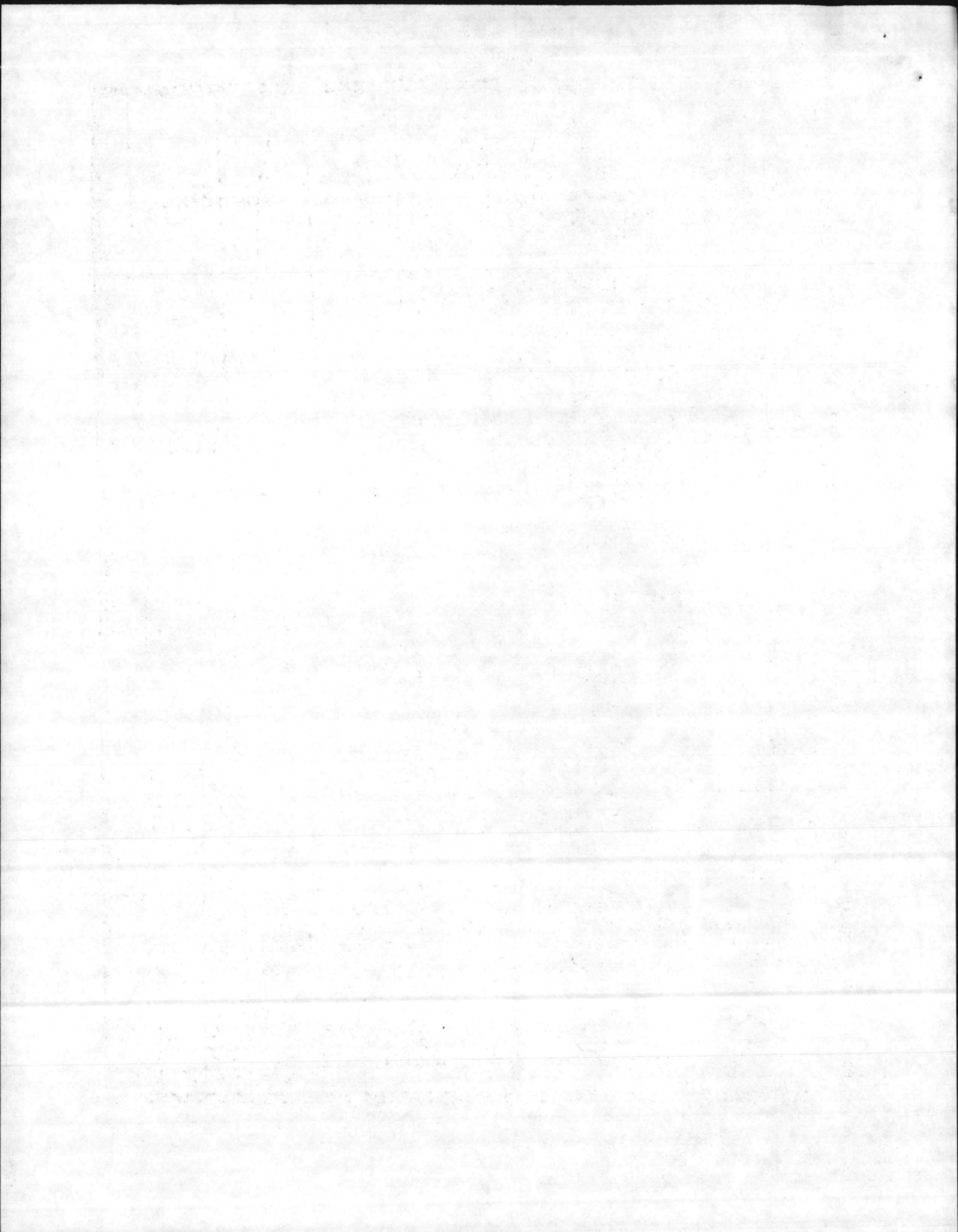
The bacteriological survey was begun in January, 1982, and concluded in May, 1983. During the survey 249 water samples were collected from 21 water sampling stations. (See Exhibit I for station locations.) Results indicate that 7 of 21 stations surveyed had unsatisfactory fecal coliform MPN medians. Six of the 7 stations are within the prohibited area. The only station outside of the prohibited area is Station #2, located in Fullard Creek at the mouth of Charles Creek. All other stations in the area have satisfactory results. (See Exhibit VII for bacteriological results and MPN medians.)

V. SUMMARY AND RESULTANT AREA CLASSIFICATION

The Fullard Creek section continues to have unsatisfactory results. Most of the stations in this section have unsatisfactory fecal coliform medians and are in violation of the 10% rule. As previously mentioned, all stations except Station #2 are presently within the prohibited area. It is, therefore, necessary to extend the prohibited area closure line to include Station #2 in Fullard Creek. This will close approximately 40 additional acres in this area. No other changes are needed at this time. (See Exhibit VIII for proclamation and closed area map.)







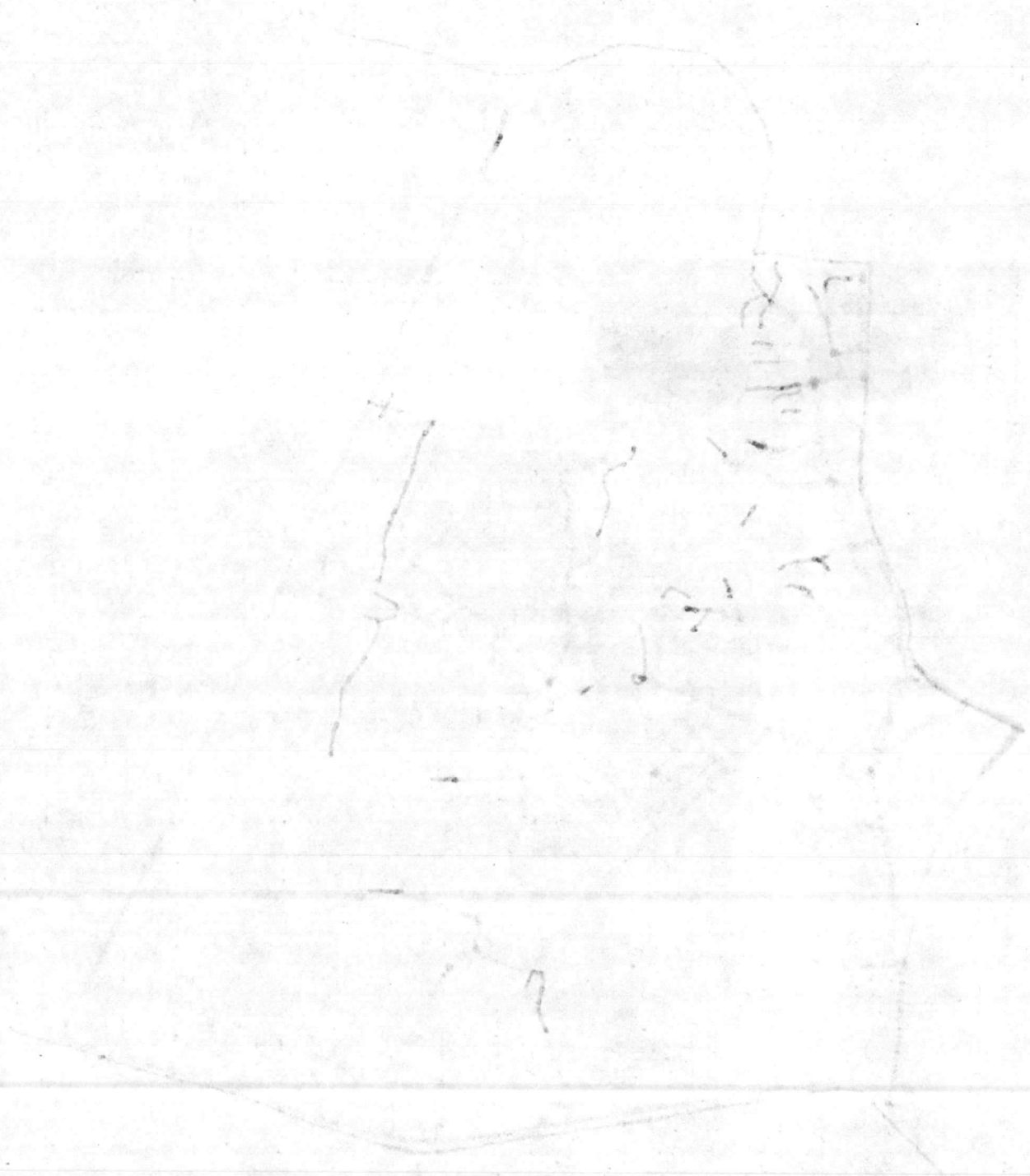
SHORELINE ROUTE

AREA C - 1

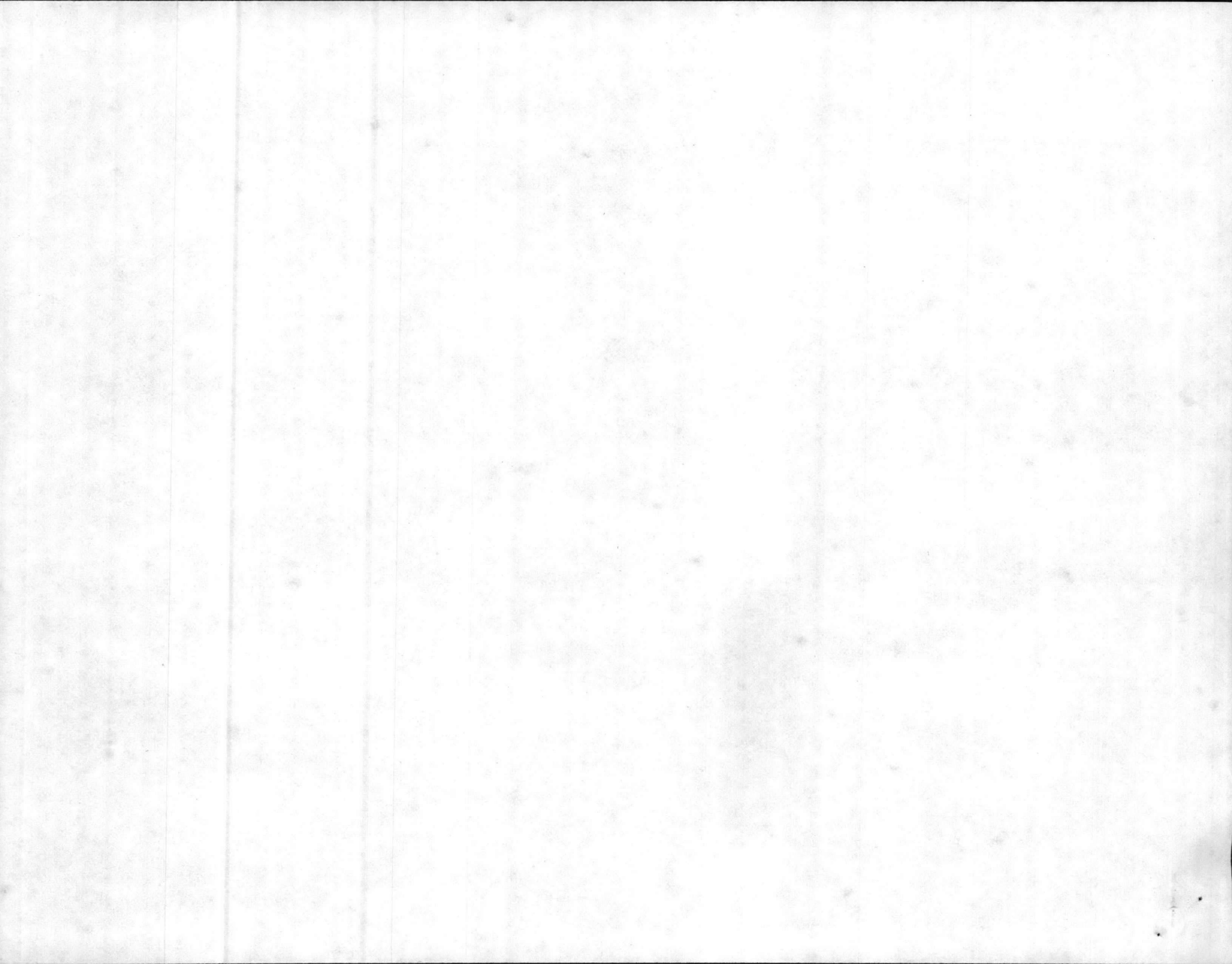
EXHIBIT 11



( Green - Boundaries ) ( Yellow - Visual Inspection )  
( Red - Physical Inspection )











(1)

(2)

(3)

(4)

(5)

(6)

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT  
DIVISION OF ENVIRONMENTAL MANAGEMENT

P.O. Box 27687  
Raleigh, North Carolina 27611

REPORT OF Complaint Investigation COUNTY Onslow  
 Place Visited Ennett's Launderette (Luther Ennett) Date 2/15, 1983  
 Address P. O. Box 328, Sneads Ferry, N.C. River Basin Woak  
 By Whom Michael F. Williams *[Signature]* Time Spent 3 hours  
 Persons Contacted Mrs. Luther Ennett  
327-5881  
 Reason for Visit Complaint by Mr. Ralph Johnson, Shellfish Sanitation, that Landerette  
Lagoon was discharging to Charles Creek.  
 Copies to: Wilmington Regional Office

REPORT: An investigation was made on a complaint by Mr. Ralph Johnson, Shellfish Sanitation. Mr. Johnson stated that Ennett's Launderette located at Sneads Ferry, N.C., was discharging laundry wastes from a non-discharge lagoon. The discharge occurs through seepage into Charles' Creek.

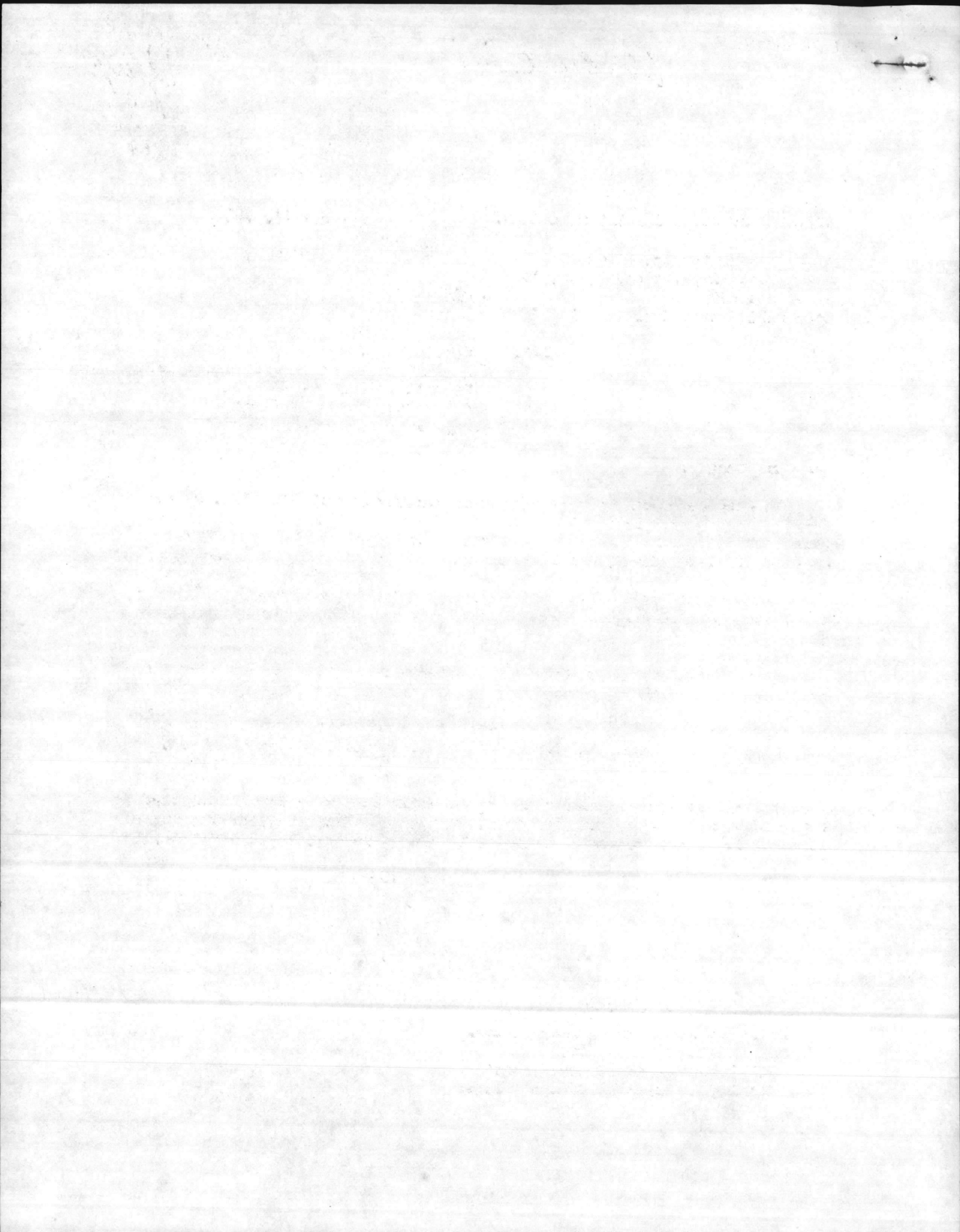
On 15 February 1983, Mr. Steve Long and I investigated the complaint. I spoke with Mrs. Ennett, informed her of the complaint, and requested entry to the lagoon area. The lagoon measured approximately 15' wide by 25' long, no more than 7' deep. The appearance of the water was very clear. Charles' Creek was located approximately 50 to 75 feet from the closet edge of the lagoon. I circled the entire lagoon and found no overland runoff nor any wet areas where runoff had occurred. The creek appeared normal. No indication of laundry waste was noticed. The creek bank did have several very small breakouts in the bank, but extended along the bank in other areas also.

I went back to the launderette, and again spoke with Mrs. Ennett. The lagoon water contains rainfall, surface runoff, and laundry wastes from 8-20 gallon washing machines. Mrs. Ennett stated that 8 to 10 loads per day is averaged. It is estimated that 600 gallons per day maximum is discharged to the lagoon.

Due to previous investigation results, the appearance of the lagoon, the fact that no surface runoff was occurring, and the minor amounts of seepage from the creek bank, it is recommended that no further actions are necessary at this time.

MFW/sf

*APP*  
*2-21-83*



File C-1

STAFF RETURN  
WLF  
FSL  
EB



DIVISION OF ENVIRONMENTAL MANAGEMENT

MAY 12 1982 May 11, 1982.

Mr. Marlo P. Bostic, Director  
North Topsail Water and Sewer, Inc.  
P. O. Box 460  
Rose Hill, North Carolina 28458

WILMINGTON REGIONAL OFFICE  
DEM

SUBJECT: Permit No. 7346  
North Topsail Water and Sewer, Inc.  
Topsail Island Development  
Spray Irrigation Facilities  
Onslow County

Dear Mr. Bostic:

In accordance with your application received March 24, 1982, we are forwarding herewith Permit No. 7346, dated May 11, 1982, to North Topsail Water and Sewer, Inc. for the construction and operation of the subject wastewater collection system and non-discharge type waste treatment facilities.

This permit shall be effective from the date of issuance until May 1, 1987, and shall be subject to the conditions and limitations as specified therein.

If any parts, requirements, or limitations contained in this permit are unacceptable to you, you have the right to an adjudicatory hearing before a hearing officer upon written demand to the Director within thirty (30) days following receipt of this permit, identifying the specific issues to be contended. Unless such demand is made, this permit shall be final and binding.

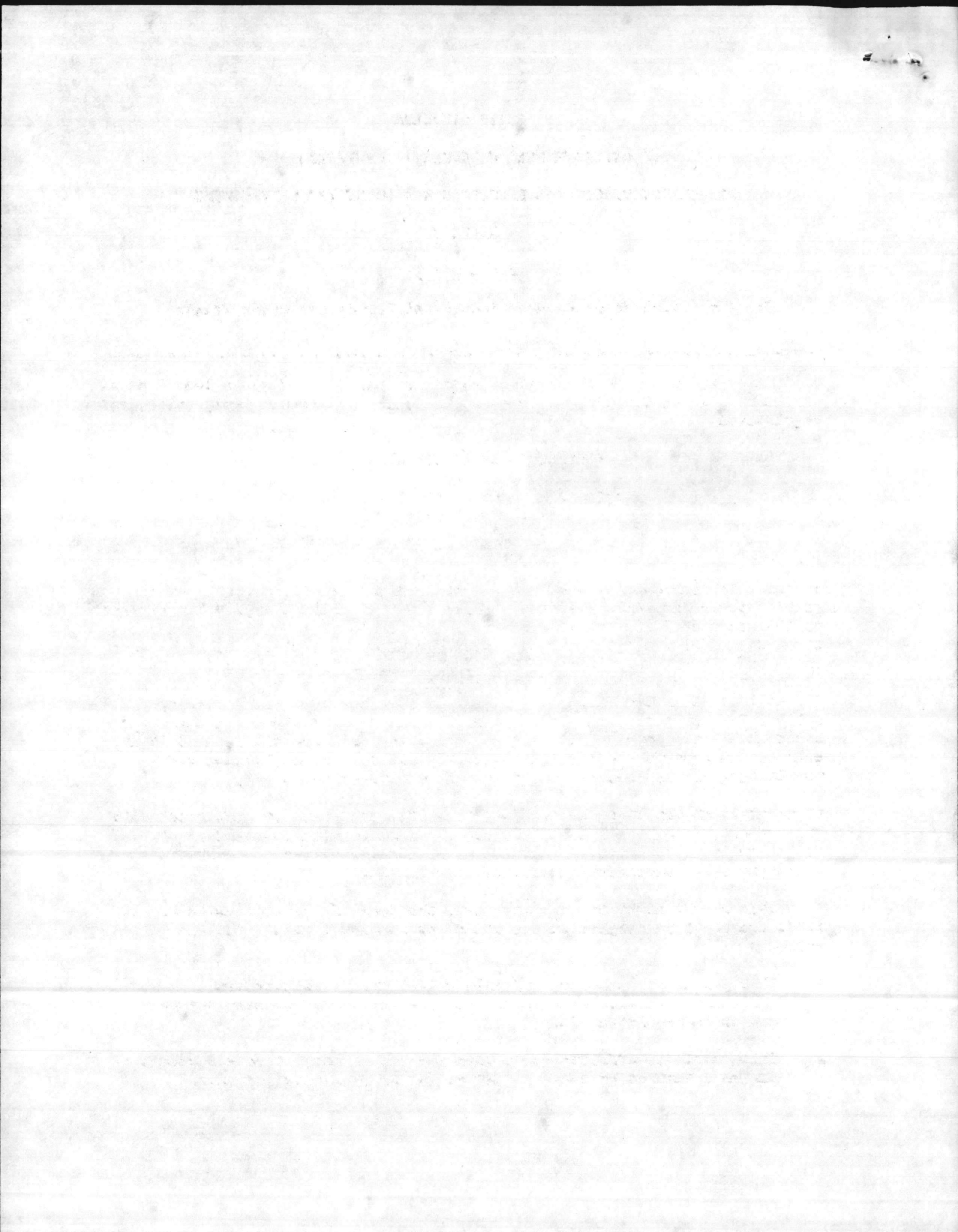
One (1) set of approved plans and specifications is being forwarded to you. If you have any questions or need additional information concerning this matter, please contact Mr. Roger L. Coats, telephone No. 919/733-7120.

Sincerely yours,

Original Signed By  
W. LEE FLEMING, JR.

Robert F. Hains  
Director

cc: Onslow County Health Department  
Fridgen Consultants, Incorporated  
Mr. W. Lee Fleming, Jr.  
Wilmington Regional Supervisor  
Wilmington Regional Office Manager



NORTH CAROLINA

ENVIRONMENTAL MANAGEMENT COMMISSION

DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT

RALEIGH

P E R M I T

For the Discharge of Sewage, Industrial Wastes, or Other Wastes

---

In accordance with the provisions of Article 21 of Chapter 143, General Statutes of North Carolina as amended, and other applicable Laws, Rules, and Regulations

PERMISSION IS HEREBY GRANTED TO

North Topsail Water and Sewer, Inc.  
Onslow County

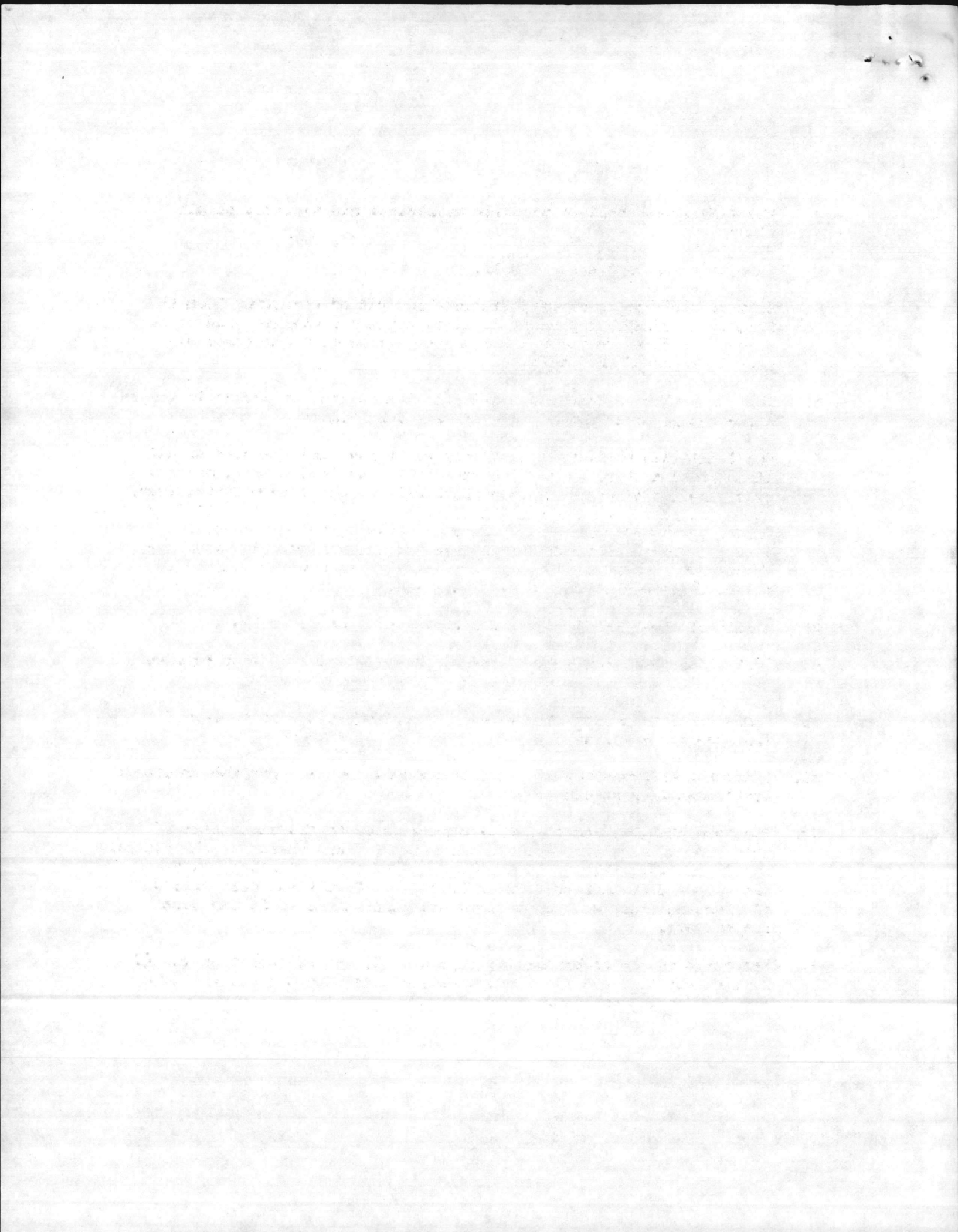
FOR THE

construction and operation of approximately 3,200 lineal feet of 12-inch gravity sewer, approximately 4,000 lineal feet of 6-inch, 26,730 lineal feet of 10-inch and 19,100 lineal feet of 12-inch force main, a 260 GPM pump station and (2) two 1,050 GPM pump stations all with dual pumps, high water alarm and standby power and the construction and operation of a 1.0 MGD spray irrigation type wastewater treatment facility consisting of a three (3) cell stabilization/holding lagoon with 33.4 acres of surface area, a 1,050 GPM irrigation pump station with dual pumps with automatic shut-off controls, approximately 268 acres of irrigation area and all related piping, valves, and appurtenances to serve the Topsail Island Development with no discharge of wastewater to the surface waters of the State,

pursuant to the application received March 24, 1982, and in conformity with the project plans, specifications, and other supporting data, subsequently filed and approved by the Department of Natural Resources and Community Development and considered a part of this Permit.

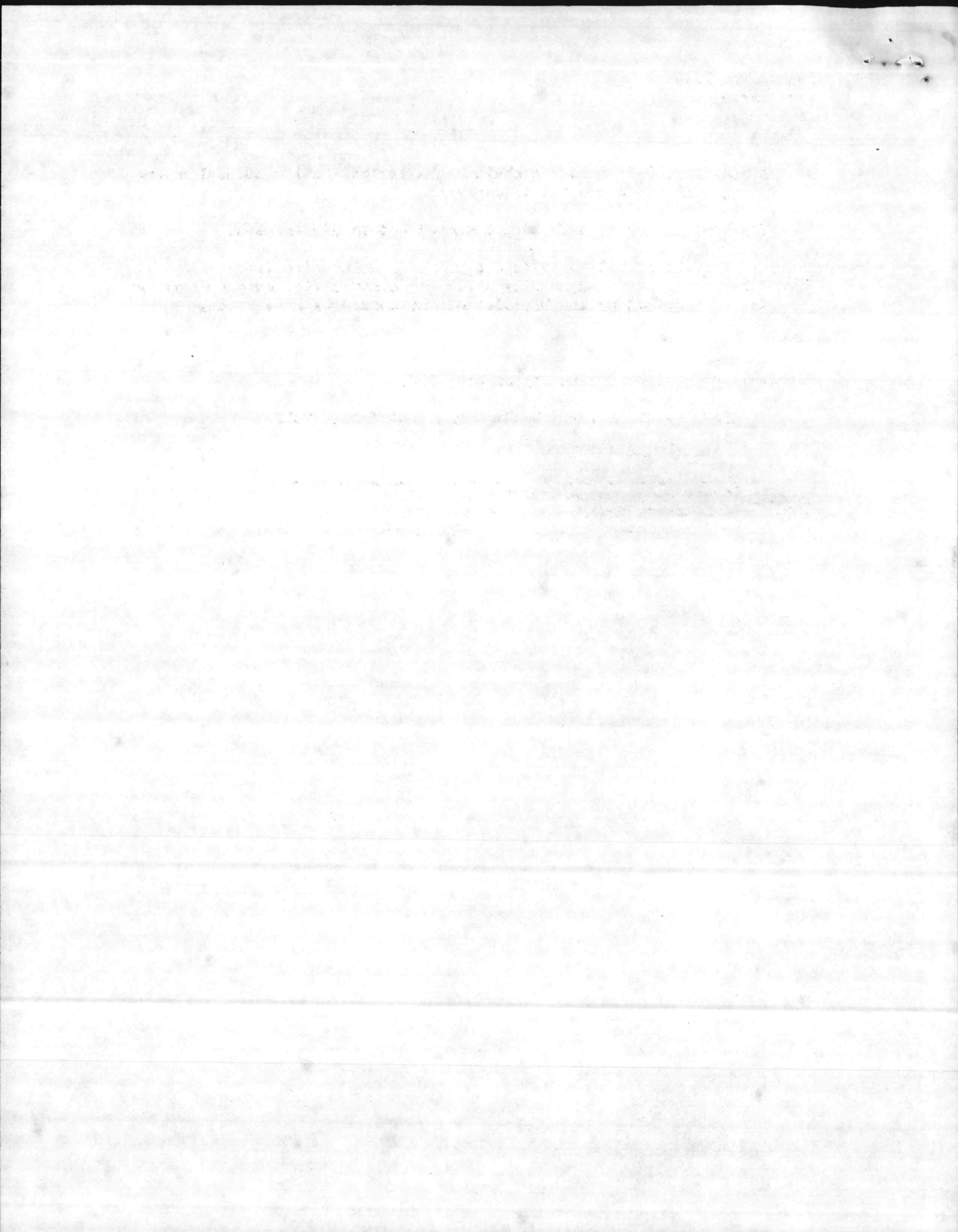
This Permit shall be effective from the date of issuance until May 1, 1987, and shall be subject to the following specified conditions and limitations:

1. This permit shall become voidable unless the facilities are constructed in accordance with the approved plans, specifications and other supporting data.
2. This permit is effective only with respect to the nature and volume of wastes described in the application and other supporting data.





3. The facilities shall be properly maintained and operated at all times.
4. This permit is not transferable.
5. Solids, sludges, or other pollutants removed or resulting from the wastewater treatment process shall be contained and disposed of in such a manner as to prevent any contamination of the surface or ground waters of the State.
6. This is a Class I Wastewater Treatment Plant and the person in responsible charge must hold a valid Grade I Certificate.
7. The facilities shall be effectively maintained and operated at all times so that there is no discharge to the surface waters, nor any contamination of ground waters which will render them unsatisfactory for normal use. In event the facilities fail to perform satisfactorily, including the creation of nuisance conditions, or failure of the irrigation area to adequately absorb the wastewater, the Permittee, shall take such immediate corrective action as may be required by the Division of Environmental Management.
8. A suitable year round vegetative cover shall be maintained.
9. Irrigation shall not be performed during inclement weather or when the ground is in a condition that will cause runoff.
10. Dikes shall be constructed so as to prevent surface water runoff from the spray field.
11. Diversion or bypassing of the untreated wastewater from the treatment facilities is prohibited.
12. The Permittee, at least six (6) months prior to the expiration of this Permit, shall request its extension. Upon receipt of the request, the Commission will review the adequacy of the facilities described therein, and if indicated, will extend the Permit for such period of time and under such conditions and limitations as it may deem appropriate.
13. Freeboard in the stabilization lagoon shall not be less than two (2) feet at any time and the permeability of the lagoon liner shall be  $1 \times 10^{-6}$  cm/sec or less.




14. A minimum 200-foot buffer shall be maintained in its natural state along Mill Creek and its tributaries.
15. The application rate shall not exceed one inch/acre/week.
16. The Permittee shall provide and maintain monitoring facilities for ground water and surface water and a monitoring program such as may be required by the Division of Environmental Management.

Permit issued this the 11th day of May, 1982.

**NORTH CAROLINA ENVIRONMENTAL MANAGEMENT COMMISSION**

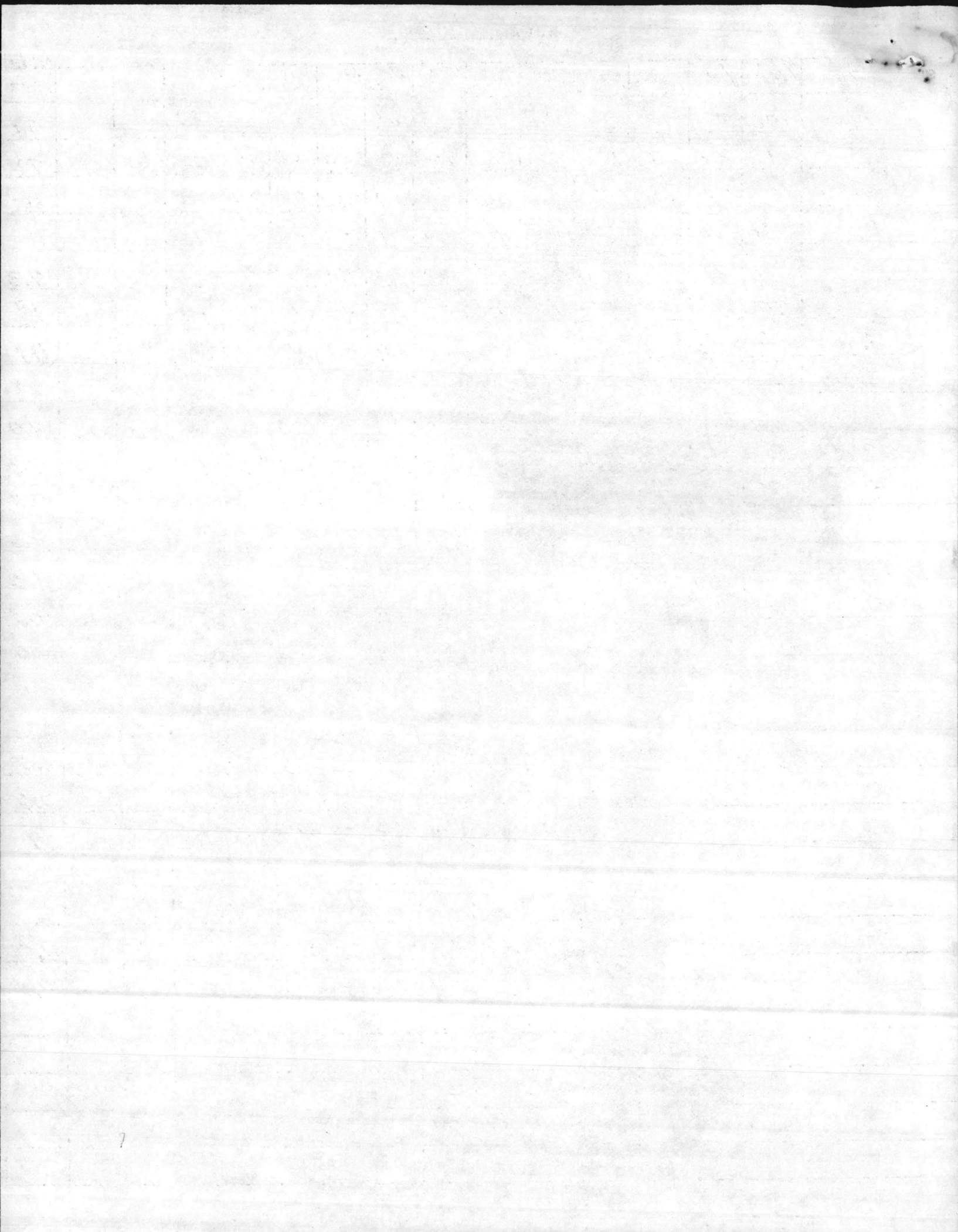
Original Signed By

W. LEE FLEMING, JR.

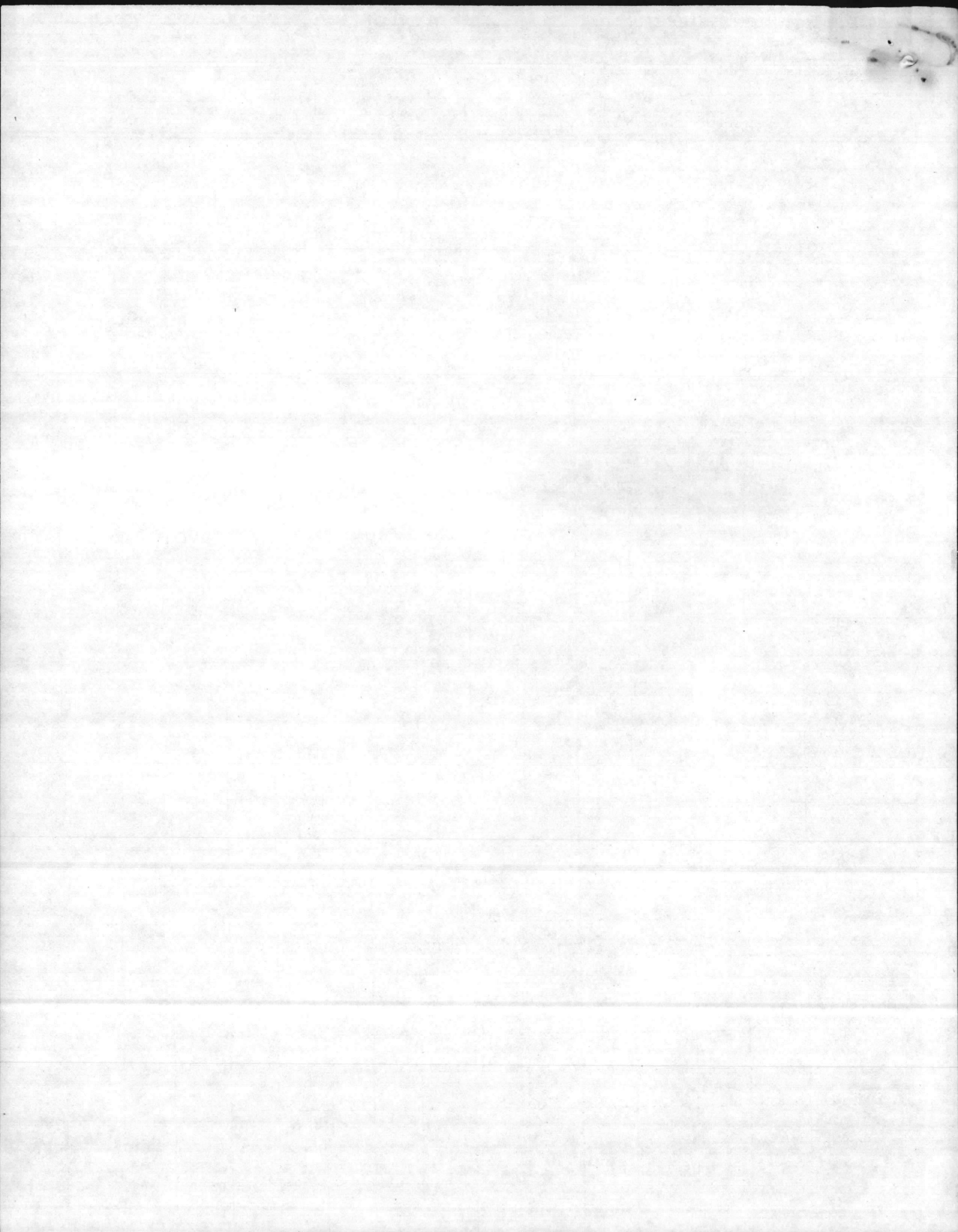
 Robert V. Helms, Director

Division of Environmental Management

By Authority of the Environmental Management Commission



STATION NOS.	1/5/82	4/19/82	5/6/82	7/13/82	9/10/82	8/26/82	11/3/82	11/8/82	12/1/82	1/24/83	2/8/83	7/2/83			Actual 7/9/83
1	170	350	79	130	14	4.5	49	46	240	2.0	14	49			49
11	79	110	240	180	13	13	170	49	79	6.8	220	27			79
16	130	240	170	70	49	130	79	17	350	2.0	13	31			75
10	130	49	350	79	4.5	4.5	49	11	23	1.8	7.8	13			18
2	170	23	2.0	7.8	1.8	6.8	49	4.5	79	2.0	17	4.5			7.3
3	79	49	13	46	13	11	350	23	49	<1.8	7.8	4.0			18
4	79	110	110	33	2.0	79	23	170	49	23	13	49			49
5	130	110	130	2.0	<1.8	33	2.0	<1.8	23	17	49	33			28
6	540	<1.8	7.8	<1.8	<1.8	<1.8	2.0	2.0	12	4.5	<1.8	4.5			2.0
7	240	4.5	4.0	<1.8	2.0	2.0	2.0	17	22	4.5	4.5	2.0			4.3
8	79	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	4.0	<1.8	17	<1.8			<1.8
9	130	2.0	4.5	7.8	2.0	2.0	4.5	6.8	7.8	4.5	7.8	2.0			4.5
10	240	2.0	2.0	<1.8	2.0	<1.8	<1.8	4.5	7.8	4.5	7.8	4.5			3.3
11	540	2.0	<1.8	4.5	1.8	7.8	4.0	7.8	7.8	<1.8	13	2.0			4.3
12	240	<1.8	2.0	2.0	<1.8	1.8	2.0	2.0	6.8	4.5	23	<1.8			2.0
13	170	2.0	7.8	2.0	2.0	2.0	2.0	4.5	7.8	2.0	27	<1.8			2.0
14															
15		<1.8	2.0	<1.8	<1.8	4.5	2.0	7.8		2.0	240				2.0
16	240	2.0	2.0	2.0	<1.8	<1.8	4.0	2.0	11	1.8	17	<1.8			2.0
17	170	7.8	49	2.0	11	7.8	11	4.5	79	<1.8	49	33			11
18															
19															
20	240	4.0	2.0	4.0	2.0	2.0	4.5	4.0	23	4.5	33	2.0			4.5
21	130	31	4.5	4.5	<1.8	2.0	2.0	2.0	14	7.8	4.5	4.5			4.5





# North Carolina Department of Natural Resources & Community Development

James B. Hunt, Jr., Governor

Joseph W. Grimsley, Secretary

DIVISION OF  
MARINE FISHERIESRobert K. Mahood  
Director

Telephone 919 726-7021

## PROCLAMATION

### RE: SHELLFISH POLLUTED AREA

By virtue of the authority vested in me as Secretary of the North Carolina Department of Natural Resources and Community Development, and upon the recommendation of Robert K. Mahood, Director, Division of Marine Fisheries, and Dr. Ronald H. Levine, Director, Division of Health Services, North Carolina Department of Human Resources, it is hereby announced that the following changes in shellfish harvesting areas will take effect immediately:

No person shall take or attempt to take, any oysters or clams or possess, sell or offer for sale any oysters or clams taken from the following polluted area:

### ONSLow COUNTY - Fullard Creek and Charles Creek

All waters upstream of a straight line drawn from a point on the east shore of Fullard Creek at 34° 32' 02" N - 77° 22' 44" W; thence to a point on the west shore at 34° 32' 13" N - 77° 22' 51" W, to include all of Charles Creek.

- NOTES: [1] This proclamation is issued under the authority of G. S. 113-182 and N. C. Marine Fisheries Regulation 15 NCAC 3B .1101.
- [2] This action amends N. C. Fisheries Regulation 15 NCAC 3B .1111 (23) (h) and deletes N. C. Fisheries Regulation 15 NCAC 3B .1111 (23) (g), closing approximately 40 additional acres in the Fullard Creek Section.
- [3] Shaded areas on map indicate areas closed to shellfishing.

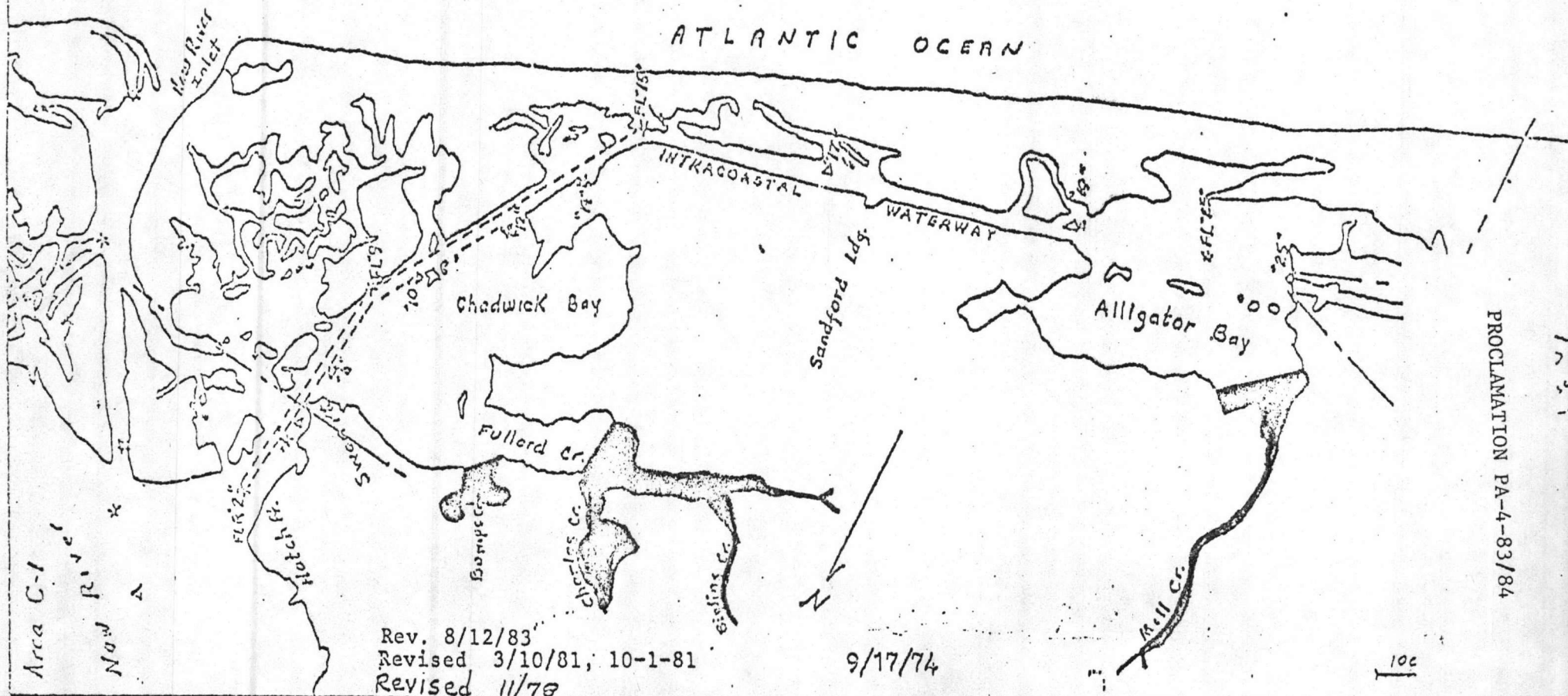
BY AUTHORITY OF THE SECRETARY OF THE DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT.

August 12, 1983  
2:30 P.M.

BY: Robert K. Mahood  
Robert K. Mahood, Director  
Division of Marine Fisheries

PA-4-83/83  
/sh

(Prohibited areas are shaded)



No person shall take, or attempt to take, any oysters or clams or possess, sell, or offer for sale any oysters or clams taken from the following areas, at any time:

Mill Creek:

Beginning at a point on the shore in Alligator Bay,  $34^{\circ} 30' 42''$  N -  $77^{\circ} 25' 05''$  W; thence  $225^{\circ}$  M, 780 yards to a point on the shore  $34^{\circ} 30' 24''$  N -  $77^{\circ} 25' 23''$  W, to include all of the waters upstream from this line.

Bumps Creek:

All waters of Bumps Creek upstream of a line drawn  $221^{\circ}$  M, from a point on the east side of the mouth of Bumps Creek  $34^{\circ} 32' 25''$  N -  $77^{\circ} 22' 25''$  W; thence running 280 yards to a point on the west side of the mouth of Bumps Creek  $34^{\circ} 32' 19''$  N -  $77^{\circ} 22' 30''$  W.

Fullard Creek and Charles Creek:

All waters upstream of a straight line drawn from a point on the east shore of Fullard Creek at  $34^{\circ} 32' 02''$  N -  $77^{\circ} 22' 44''$  W thence to a point on the west shore at  $34^{\circ} 32' 13''$  N -  $77^{\circ} 22' 51''$  W, to include all of Charles Creek.



NATURAL RESOURCES AND ENVIRONMENTAL AFFAIRS DIVISION  
BASE MAINTENANCE DEPARTMENT  
MARINE CORPS BASE  
CAMP LEJEUNE, NORTH CAROLINA 28542

3 Sept 81

From: Director, NREA Division

To:

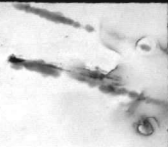
*Danny*

Subj:

1. I remember when we talked with the state rep in T. Hatcher's office several months ago.

See Ol Mounts brief request.

*Jehan*



ROUTING SLIP

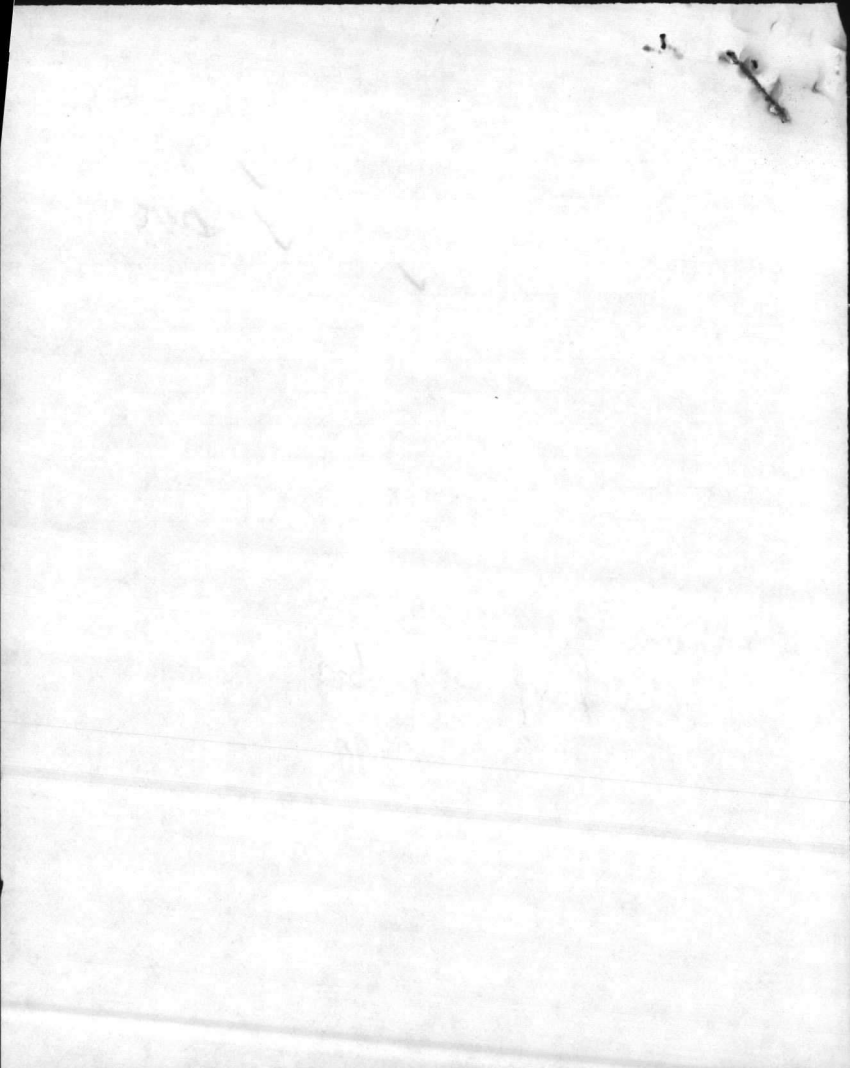
SEP 0 1 1981

ACTION	INFO	INITIAL
BMO		✓ M
ABMO		✓ <del>DMC</del>
ADMIN		✓
ENVIRON AFF	✓	
F&A BRANCH		
MAINT NCO		
M&R		
OPNS		
PROP		
TELE		
UMACS		
UTIL		
SECRETARY		

COMMENTS:

Julian,  
Pls brief me on this.

M



*Base Maintenance  
Officer - Camp  
Lejune*

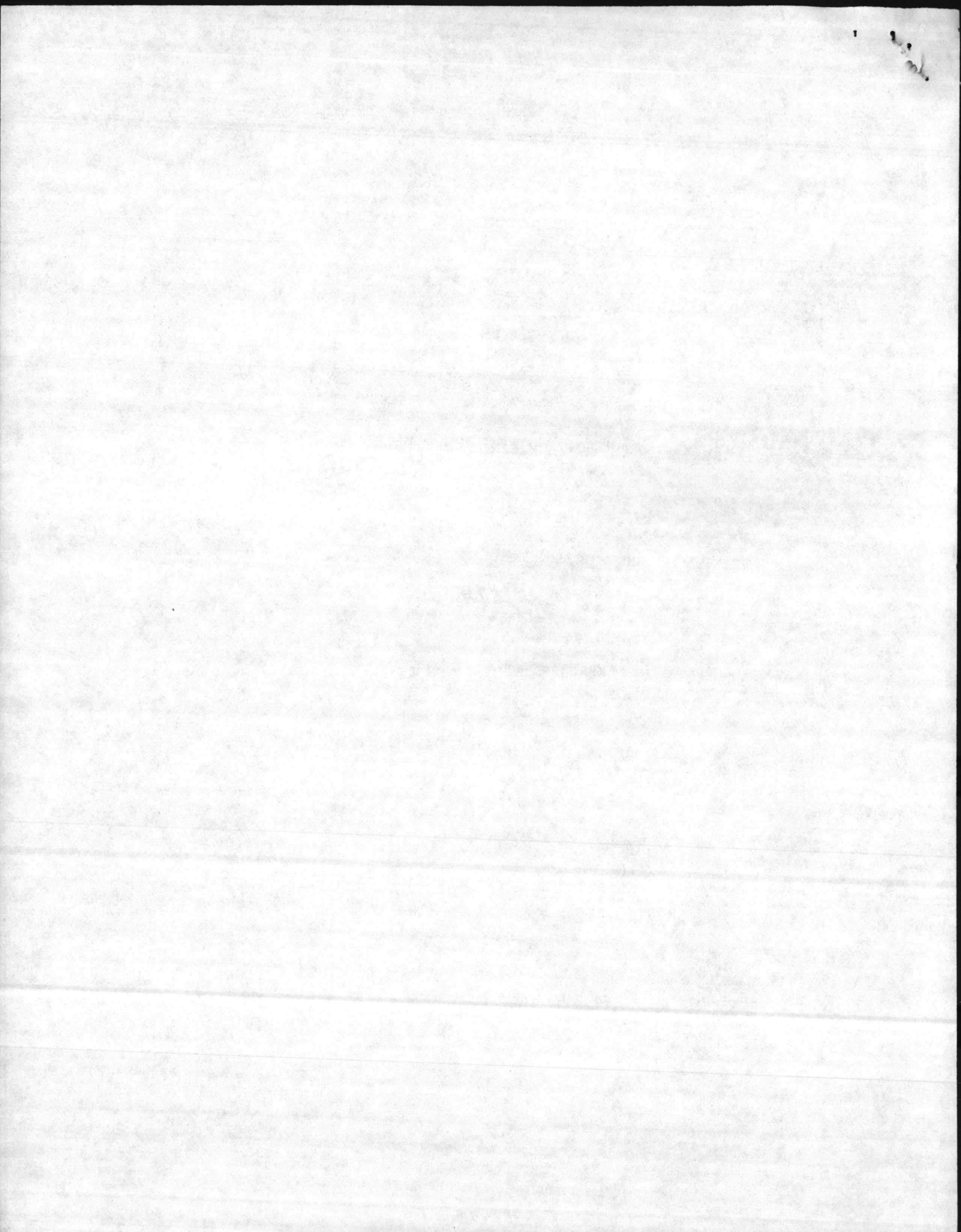
REPORT OF SANITARY SURVEY

STONES BAY AREA

AREA C-3

FEBRUARY 1980 - JUNE 1981

AUGUST 1981



AREA C-3

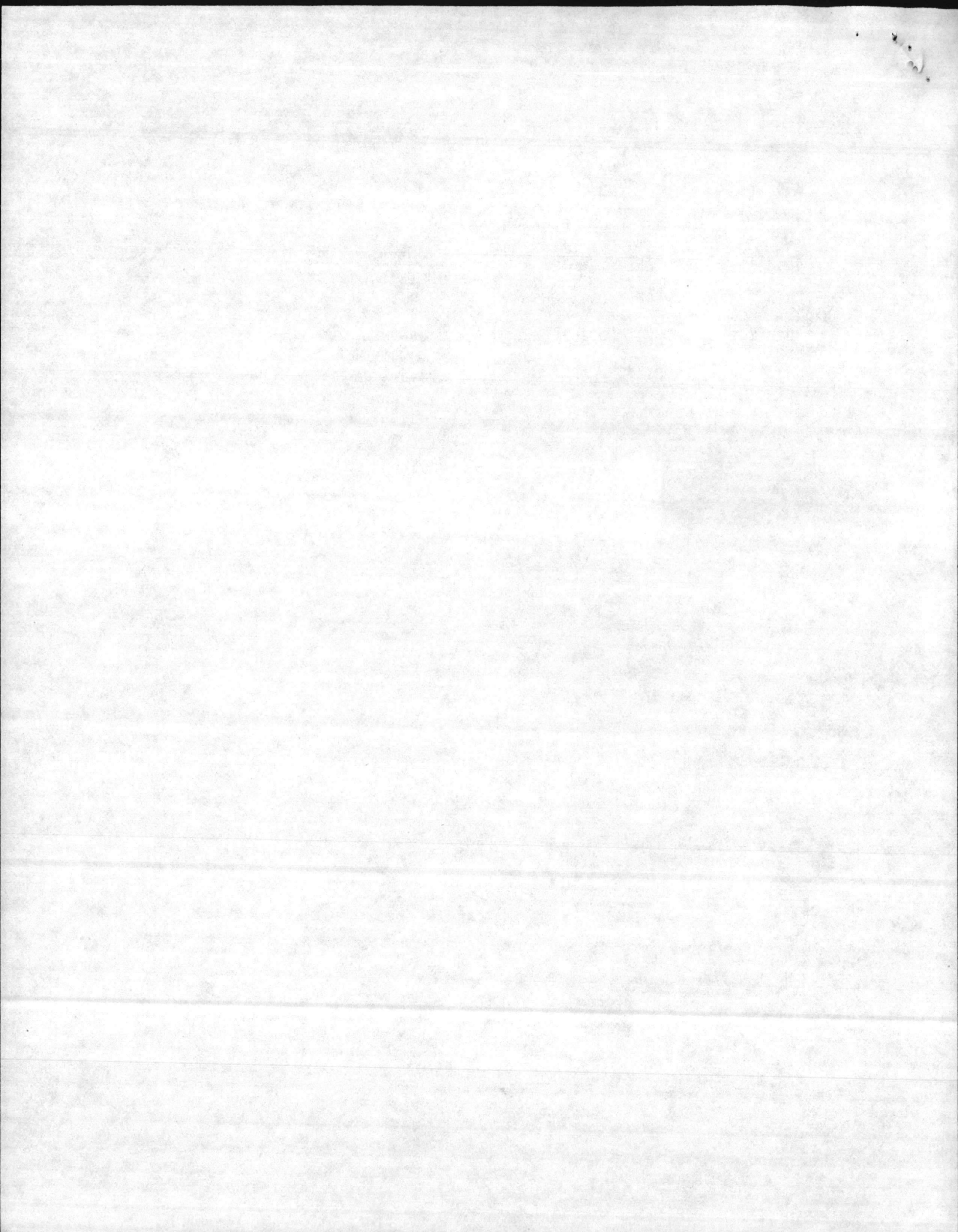
EXHIBIT I AREA MAP AND STATION LOCATIONS

EXHIBIT II SHORELINE SURVEY ROUTE

EXHIBIT III SEWAGE VIOLATIONS

EXHIBIT IV BACTERIOLOGICAL RESULTS AND MPN MEDIANS

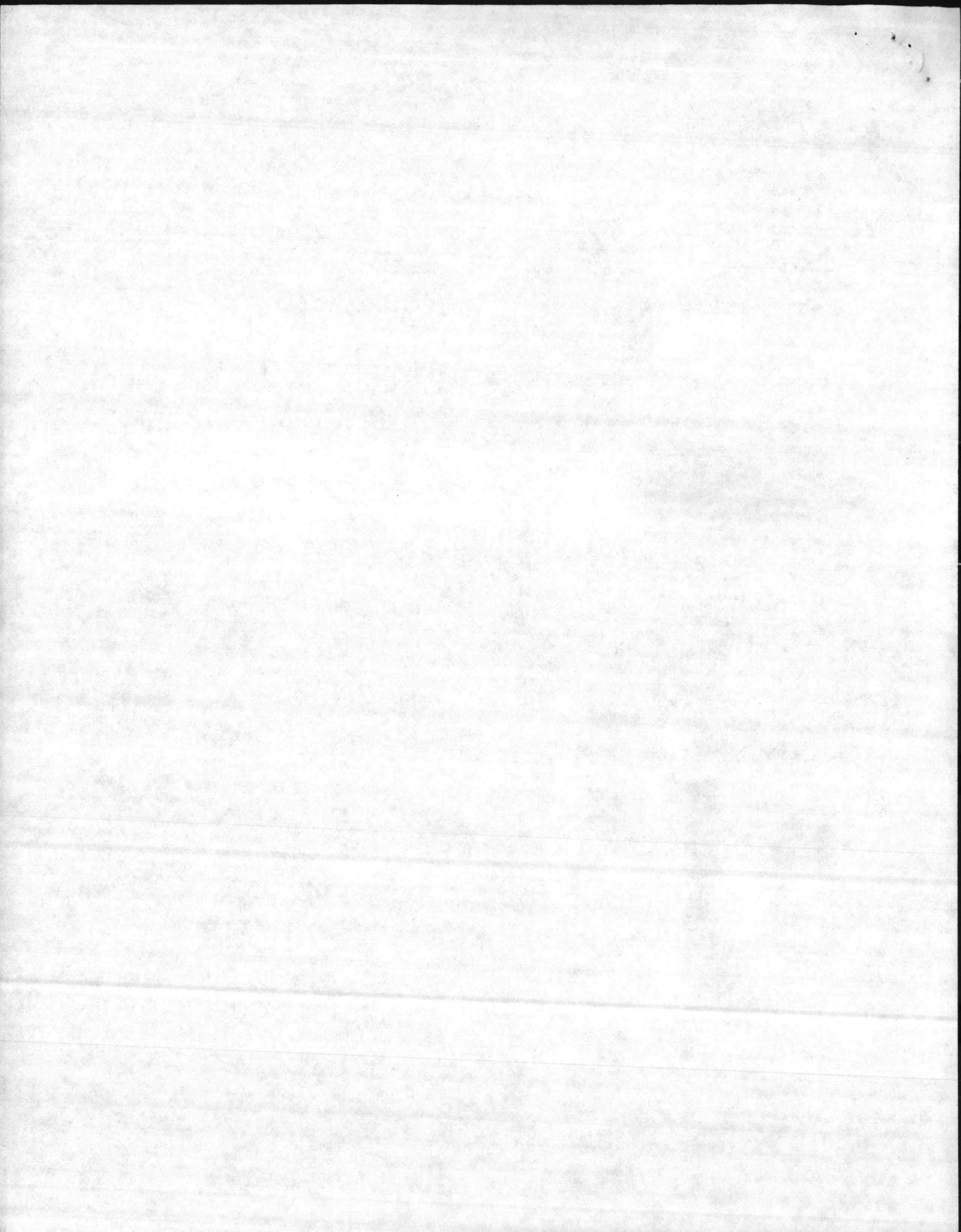
EXHIBIT V PROHIBITED AREA MAP





Preface

Total Acres.....	15,025.
Prohibited Acres.....	10,165.
Oyster Production.....	Fair To Good.
Clam Production.....	Fair.
Commercial Value.....	Fair.
Recommended Changes .....	None.



# REPORT OF SANITARY SURVEY

## STONES BAY AREA

### AREA C-3

By  
SHELLFISH SANITATION PROGRAM  
NORTH CAROLINA DIVISION OF HEALTH SERVICES

#### I. INTRODUCTION

Area C-3 is composed of all the waters of New River and its tributaries from Highway 172 Bridge at Sneads Ferry upstream to Jacksonville, N. C. (See Exhibit I for area map.) The watershed for Area C-3 consists of approximately 240 square miles and contains the Camp Lejeune Marine Base, the city of Jacksonville, and numerous communities and sub-divisions to the headwaters at Richlands, N. C. The total population in the watershed is estimated at 85,000.

There are a number of sewage treatment plants that discharge into New River, particularly in the upstream section. These plants that discharge directly into the waters of Area C-3 will be discussed in the shoreline survey section of this report.

#### II. SHORELINE SURVEY OF SOURCES OF POLLUTION

A comprehensive shoreline survey was begun in Area C-3 on February 25, 1981, and was completed on April 6, 1981. Conducting the survey was Mr. Ralph Johnson of the Shellfish Sanitation staff:

Prior to beginning the survey, Mr. Johnson visited the Onslow County Health Department. He explained his plans for the survey, specifically the area and the time in which he would be working. The sanitarians of Onslow County agreed to assist in the follow-up of corrections and in advising recipients of notices on corrective action.



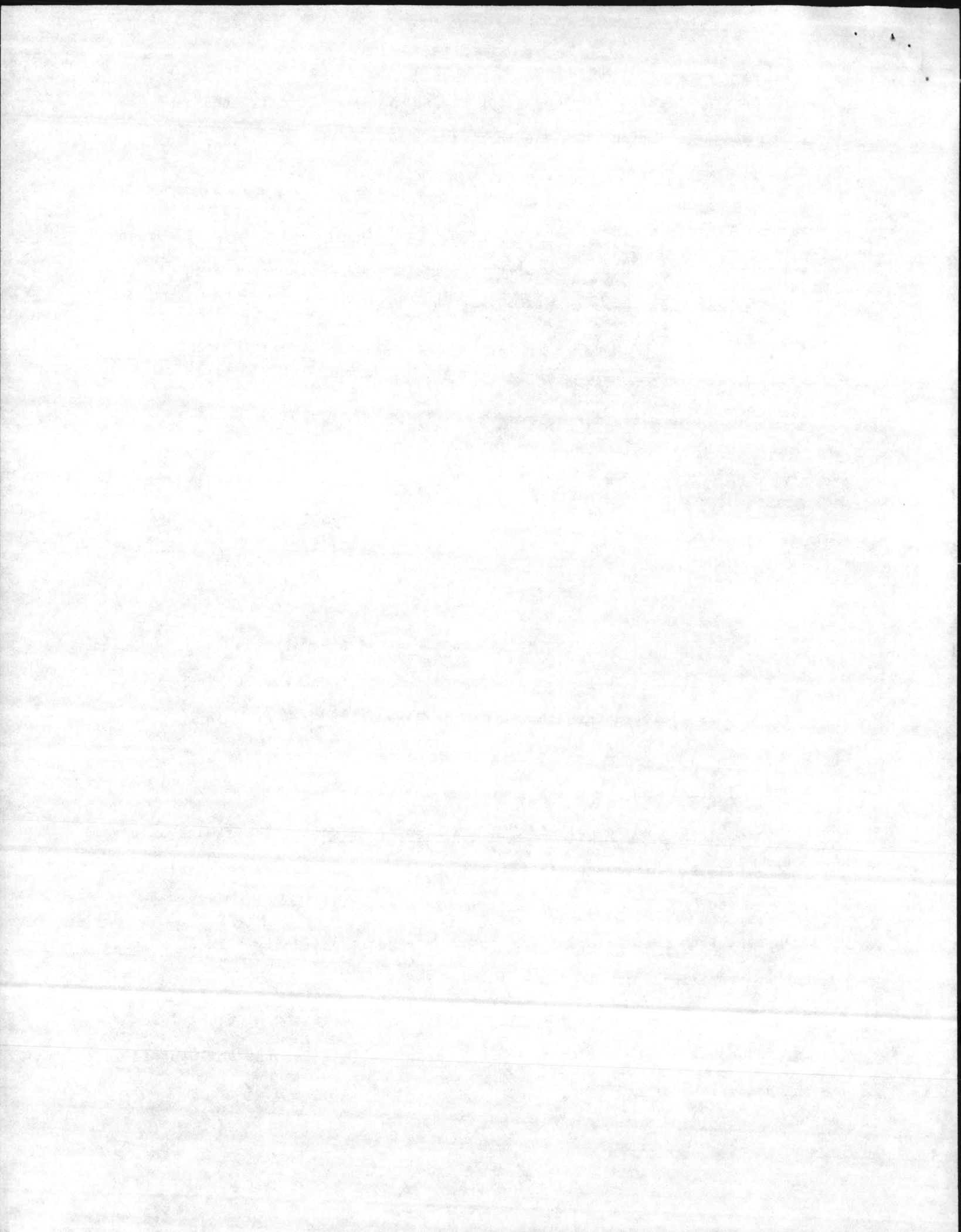
The route followed while conducting the survey was basically the same one which was used during the last shoreline survey. The specific route can be seen in Exhibit II.

All residences, businesses, and places of public assembly along this route were visited. An inspection of the sewage disposal system at each place, at which someone was found to be present, was made. Notices of Violation were issued in cases where a malfunction was found to exist. A copy of each notice was given to the Onslow County Health Department. Exhibit III shows the nature of these violations.

Of the 287 residences, businesses, and places of public assembly found in the area, 224 inspections of sewage disposal systems were made. Of the 224 inspections that were made, 24 were found to be malfunctioning. At the time of this report, 15 corrections have been made.

Area C-3 is comprised of a significant amount of area that is owned and used by the U. S. Marine Corps (Camp Lejeune). Most of the sewage disposal in this area is achieved through the use of 2 sewage treatment plants. There are also 2 other STP's in the area. Exhibit II shows their location. The 4 STP's found in the area are as follow.

- 1) Dixon High School and Dixon Elementary School - The sewage disposal system serving this school facility has been upgraded since the last shoreline survey (1977). It is an aerobic package plant which offers tertiary treatment with post chlorination. Its average actual daily flow is unknown, but it is designed for 18,000 gpd. The school operates the STP and is under a self-monitoring system. It is, however, checked by the N. C. Division of Environmental Management once a year. Final outfall for the effluent is in the headwaters of Stones Creek.



2) H & J Mobile Home Park - This package treatment plant serves 43 mobile homes, a store, a laundry, and a filling station. It still offers secondary aeration with post chlorination prior to final discharge into Hicks Run Creek. According to the maintenance engineer for the mobile home park, no major changes have been made since the last shoreline survey.

3) Hadnot Point STP (U.S.M.C.) - This trickling filter system is located on Camp Lejeune. According to the Base Maintenance Officer, no major changes have occurred since 1977. According to their records, the STP has treated an average of 4,712,891 gpd during the time period of January - April, 1981. The U.S.M.C. monitors this STP daily. Discharge is made into New River north of Frenchs Creek.

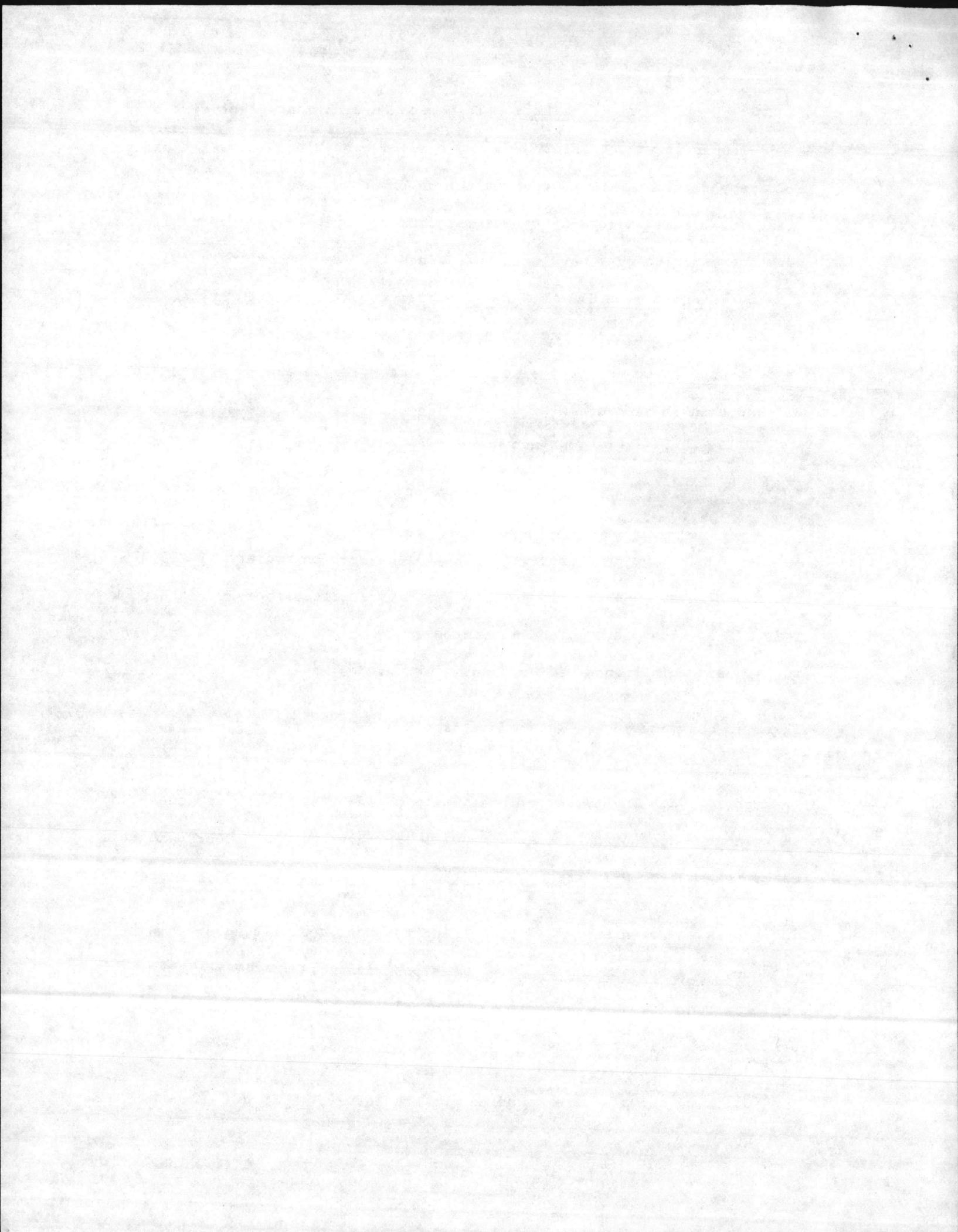
4) Rifle Range STP (U.S.M.C.) - This trickling filter STP is also located on Camp Lejeune property. They discharged an average of 235,975 gpd from January - April, 1981, into New River northeast of Everett Creek. This STP is also operated and monitored daily by the U.S.M.C. According to the Base Maintenance Officer, no major changes have been made since 1977.

There is only one marina located in Area C-3. This is Old Ferry Fish Company, which is located beside the south end of the Sneads Ferry Bridge on Highway 172. The number of boats with marine heads which use these docks is unknown. Most of them are commercial trawlers and the number using the docks ranges from 0-20 at any given time. No pump-out facility is provided.

The population of Area C-3, disregarding the personnel living on Camp Lejeune, is approximately 10,500. This population is mostly permanent, but transient in nature. Most of the people living here are military personnel who live off base.

The following animals were found during the survey.

Dogs	150	Goats	5
------	-----	-------	---





Hogs 10  
Horses 2

Fowl 40

There was no significant amount of open dumping of trash and garbage observed. Solid waste is collected and disposed of by Onslow County and the U.S.M.C. No sanitary landfills were found in the area.

The vegetation in Area C-3 is basically that of mixed pine and hardwood forests. No source of chemical, nuclear, or radiological pollution was found.

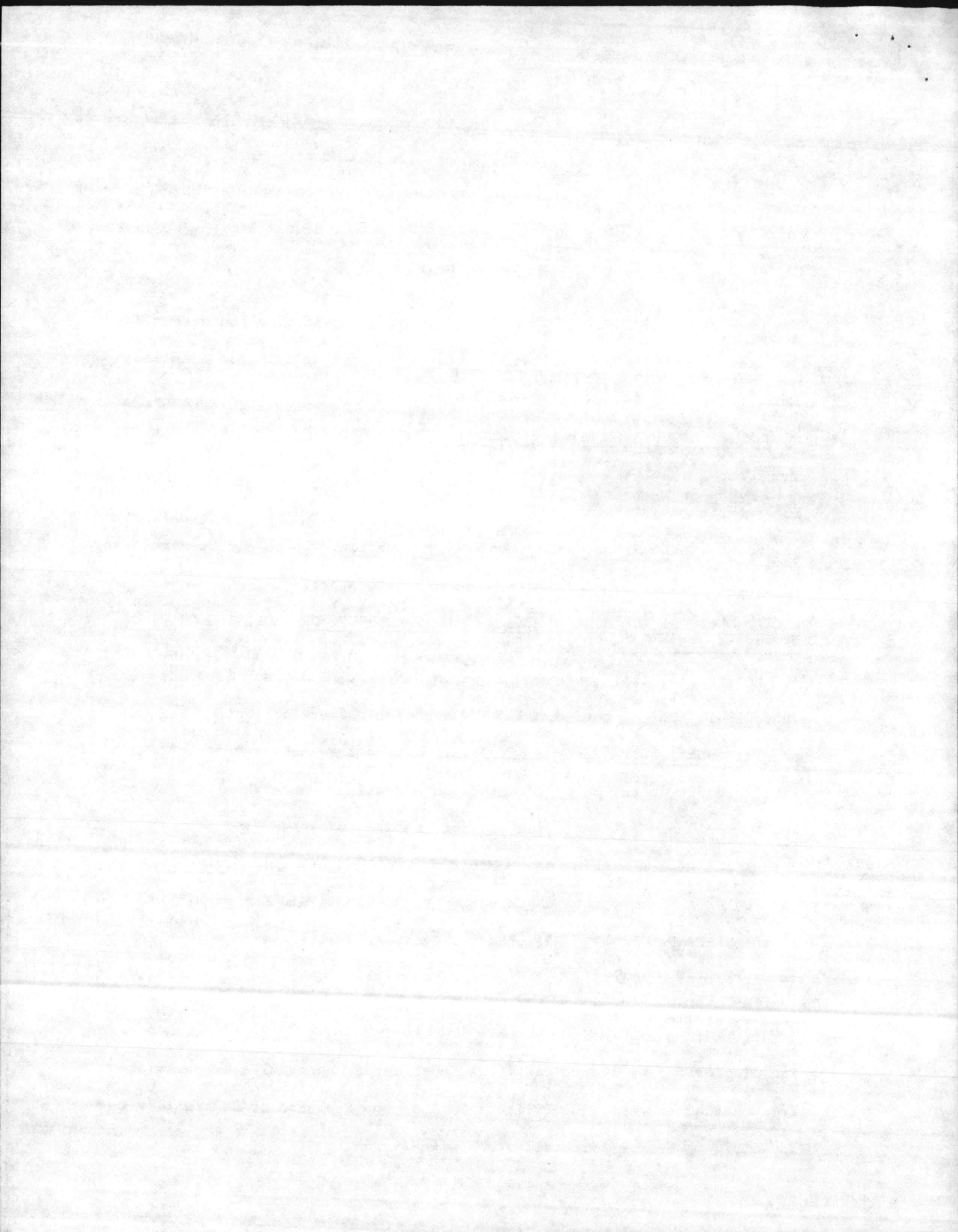
### III. EVALUATIONS OF HYDROGRAPHIC FACTORS RESPONSIBLE FOR THE SPREAD OF POLLUTION

There are a number of sewage treatment plants in this area. These have been mentioned in the shoreline survey section. Drogue studies were conducted in the River during the 1977 evaluation. There has been no change in current patterns noted during this evaluation period.

### IV. BACTERIOLOGICAL, CHEMICAL, AND RADIOLOGICAL SURVEY OF SHELLFISH GROWING WATERS AS INDICATED

The bacteriological survey was begun in February, 1980, and concluded in June, 1981. During the survey 243 water samples were collected from 21 sampling stations. (See Exhibit I for station locations.) Results indicate little change in the bacteriological water quality since the last survey. Stations #23 and #24 had unsatisfactory medians of 75 and 150 respectively. Both stations are within the prohibited area boundary in Everett Creek. Station #27 exceeded the 10% rule and it is also within the prohibited area of the upper New River. All other stations are satisfactory. (See Exhibit IV for bacteriological results and MPN medians.) There were 8 shellfish samples examined during this period and all had satisfactory results.

Radiological surveillance continues in the area and results are available from the Radiological Surveillance Unit of the Division of Health Services in Raleigh. Samples are collected twice a year.



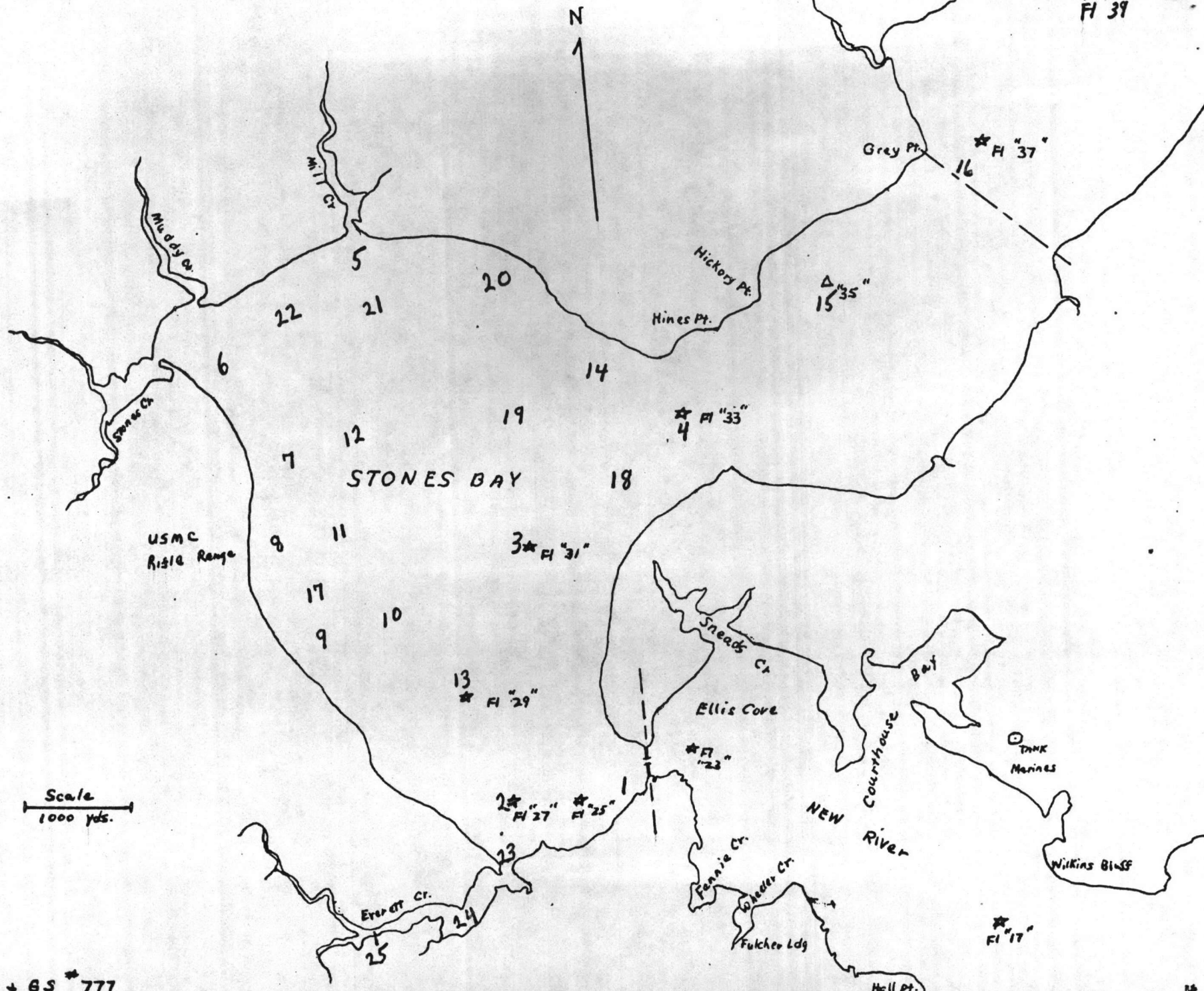
V. SUMMARY AND RESULTANT AREA CLASSIFICATION

The majority of pollution sources are located in the upper portion of New River and outside of productive shellfish bottoms. There is enough dilution in the lower section of the river to eliminate any problem from upstream sources. Sewage treatment plants associated with the Camp Lejeune Marine Base appear to be operating efficiently and all have buffer zones around the outfalls.

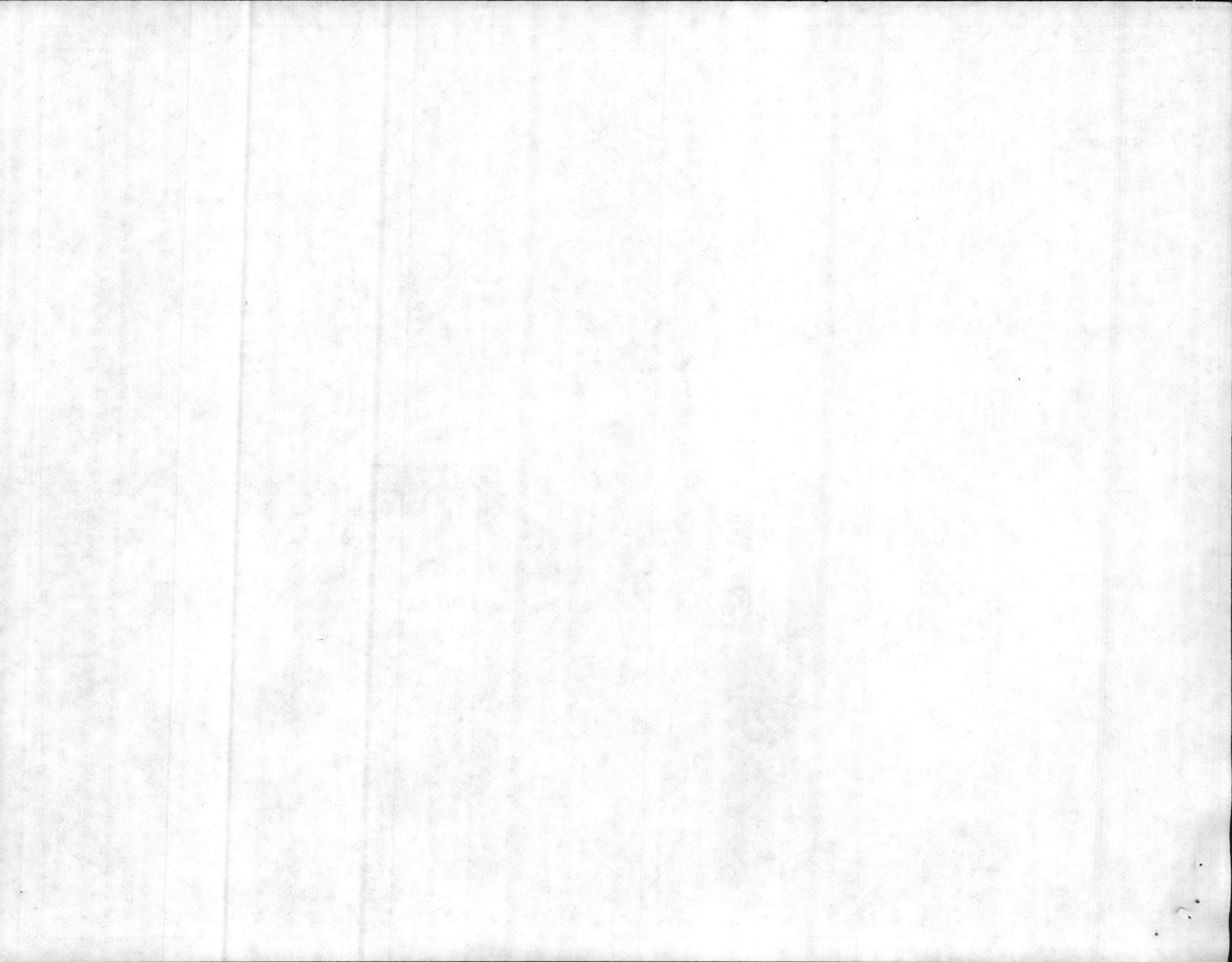
There were 3 stations with unsatisfactory results during this survey, Stations #23, #24, and #27. Stations #23 and #24 are in the closed area at Everett Creek. Station #27 is located at Channel Marker #42 in New River. The MPN median at this station was 33, but 2 high coliform counts made it in violation of the 10% rule. There are no shellfish in this area of the river and the area is prohibited.

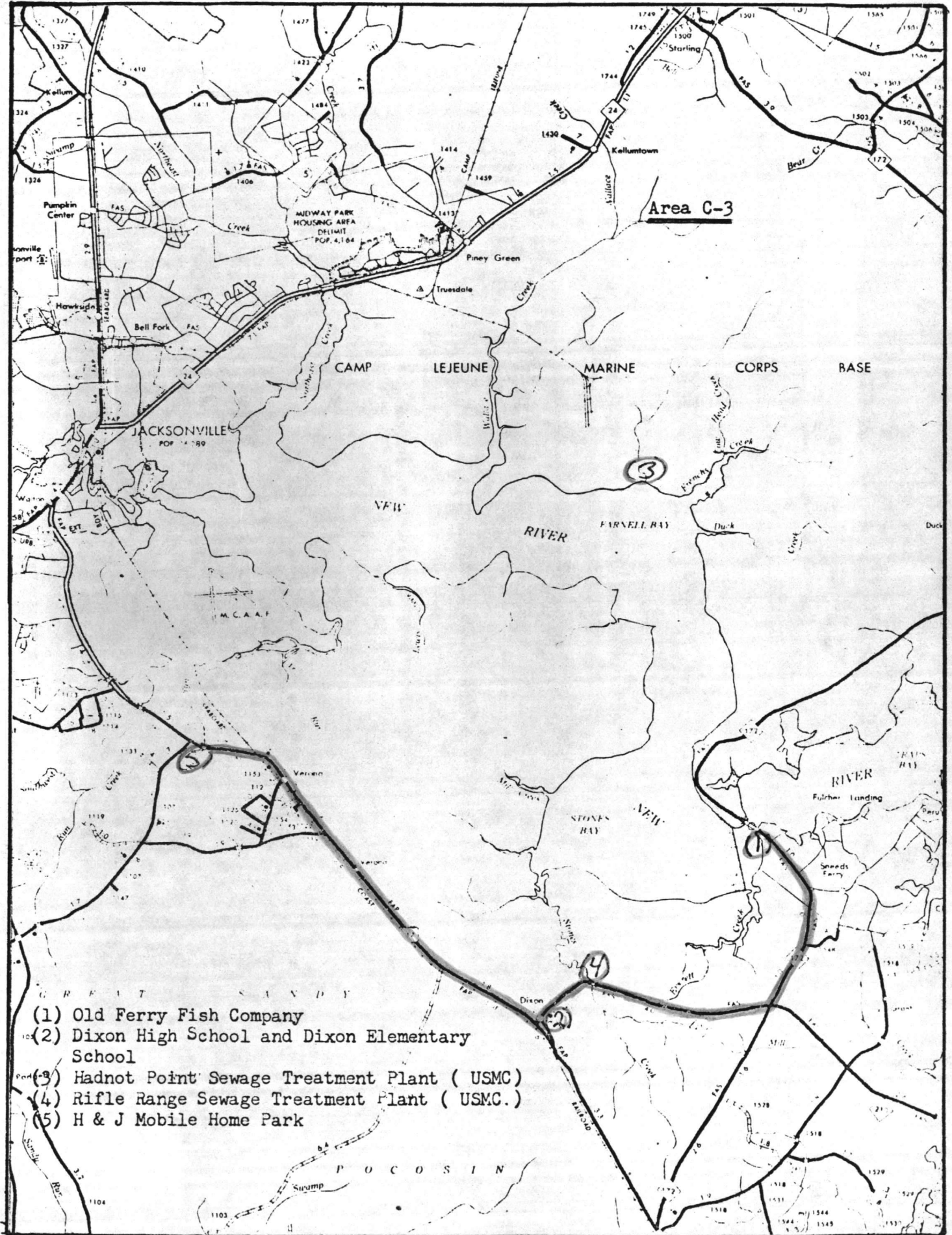
It is, therefore, felt that the waters of New River are properly classified and no changes are to be recommended. (See Exhibit V for prohibited area map.)



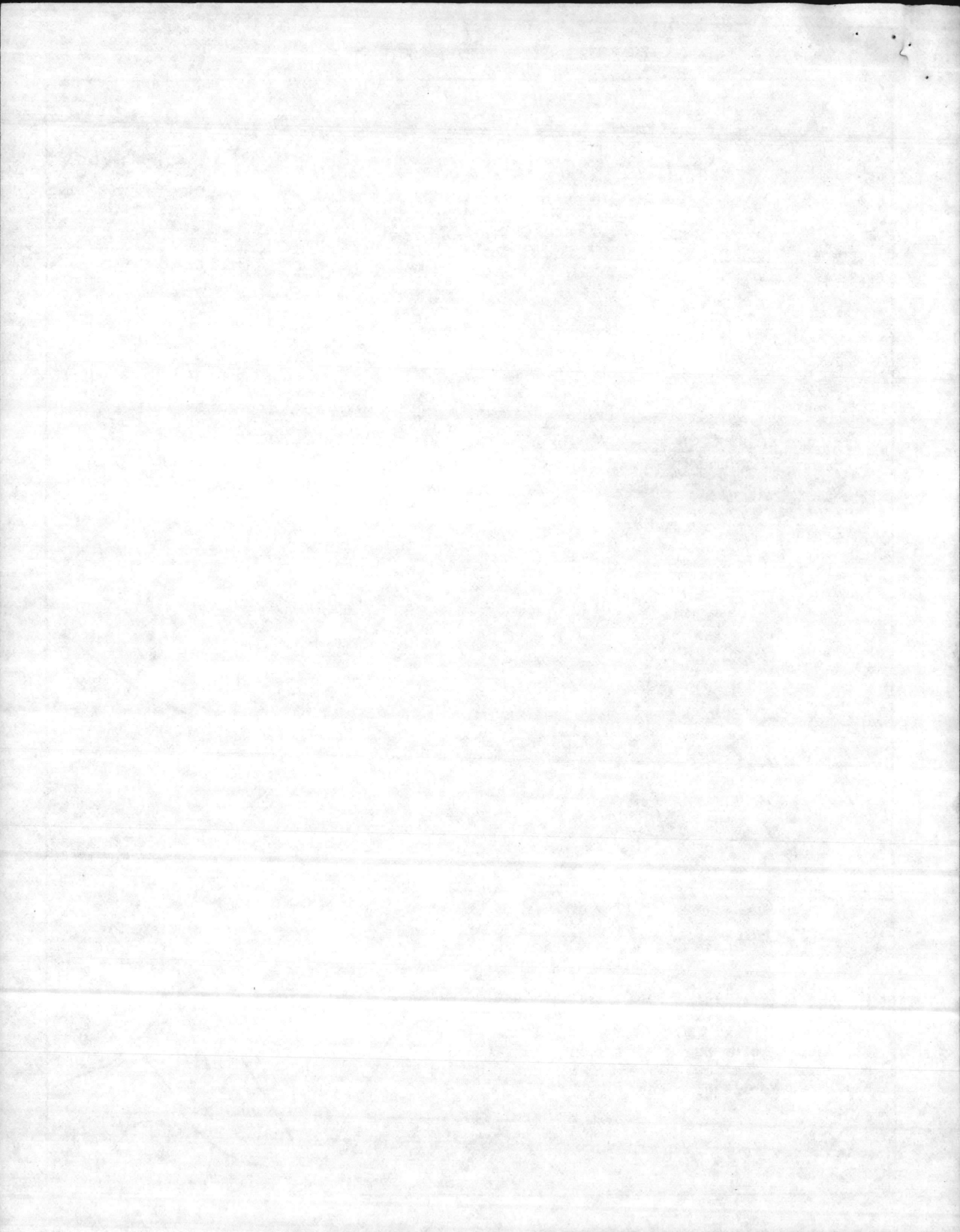


Scale  
1000 yds.





- (1) Old Ferry Fish Company
- (2) Dixon High School and Dixon Elementary School
- (3) Hadnot Point Sewage Treatment Plant ( USMC )
- (4) Rifle Range Sewage Treatment Plant ( USMC. )
- (5) H & J Mobile Home Park





## SHORELINE SURVEY DATA

XXXXX Area C - 3

COUNTY Onslow

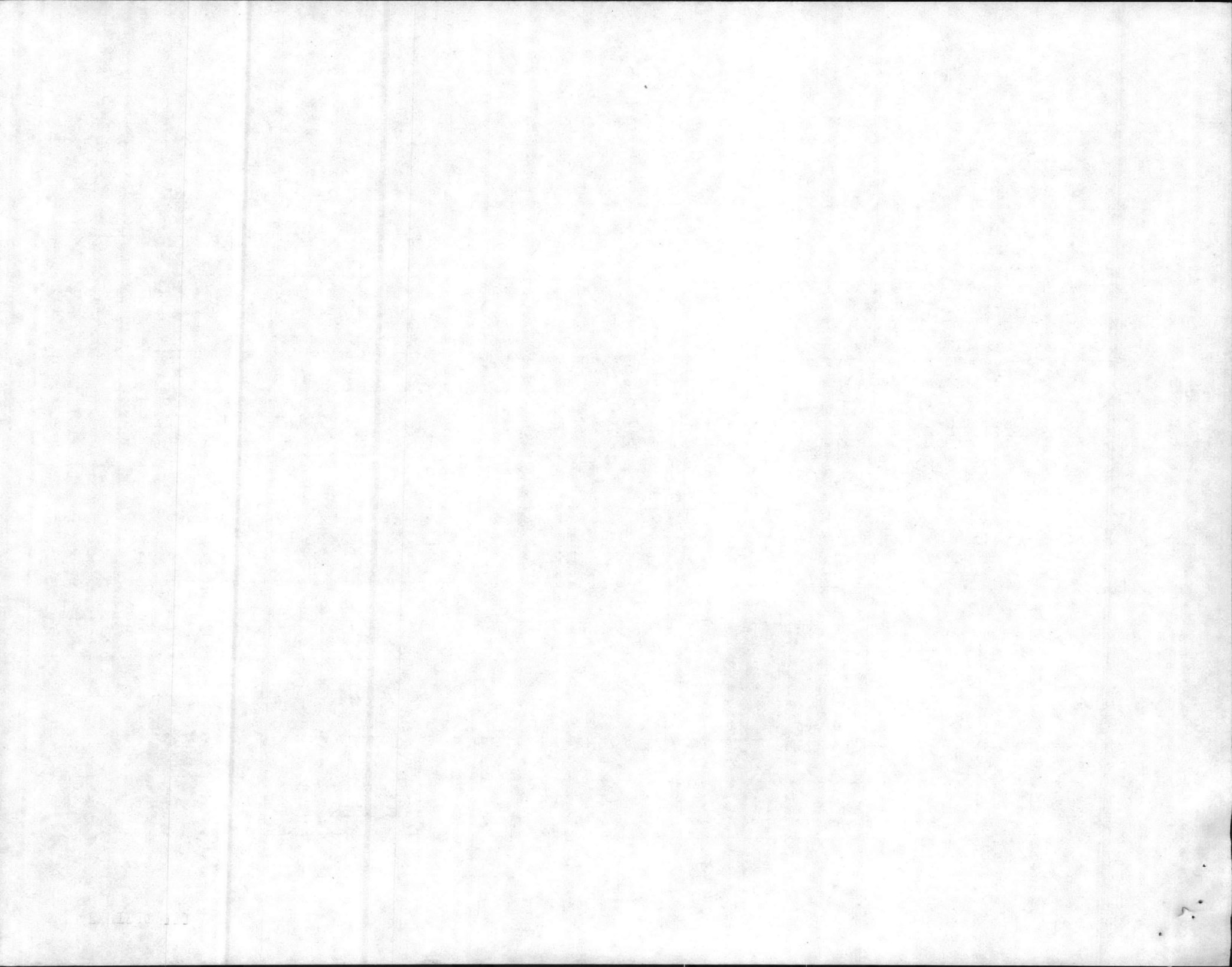
DATE 4-13-81

No.	XXXX Date	Owner	Tenant	Location	Violation	Date Corrected
# 1	2-25-81	Mr. Garland Rhodes		Rt.# 1 Sneads Ferry, N.C.	Washing Machine Waste to be included in system	4-23-81
# 2	2-25-81	Mr. Levi Simmons		Rt.# 1 Sneads Ferry	Repair septic tank and drainfield	4-23-81
# 3	2-25-81	Mr. L.W. <del>Jarvis</del> Jarvis	Mr. James Mathieson	Rt.# 1 Sneads Ferry, N.C.	Repair septic tank and drainfield	
# 4	2-25-81	Mr. Mark Hufnagle		Rt.# 2 Holly Ridge, N.C.	Washing Machine Waste to be included in system	4-23-81
# 5	2-25-81	Mr. William H. Simmons		Rt.# 2 Holly Ridge, N.C.	Repair septic tank, kitchen and washing waste	
# 6	2-26-81	Mr. Bill Rochell		Rt.# 2 Holly Ridge, N.C.	Washing Machine Waste to be included in system	4-23-81
# 7	2-26-81	Mrs. Shirley Ottaway	Mr. James Hamric	Rt.# 2 Holly Ridge, N.C.	Washing Machine Waste to be included in system	
# 8	2-26-81	Mr. Walter C. Leo		Rt.# 2 Holly Ridge, N.C.	Washing Machine Waste to be included in system	
# 9	2-26-81	Mr. Donald Edwards	Onslow County Ranger	N.C. Forestry Bldg. Rt.#2 Holly Ridge, N.C.	Kitchen Waste to be included in system	
# 10	3-3-81	Mr. Leroy E. Foreman		Hwy # 17 Verona, N.C.	Washing and kitchen to be included in system	4-23-81
# 11	3-3-81	Mr. Nathan Bryant		Hwy # 17 Verona, N.C.	Repair septic tank and drainfield	
# 12	3-3-81	Mr. Joseph Beasley	Mr. William Harding	Hwy " 17 Verona, N.C.	Repair septic tank and kitchen waste	4-23-81
# 13	3-3-81	Mr. Vergil Hill		Hwy # 17 Verona, N.C.	Washing Machine Waste to be included in system	
# 14	3-3-81	Mr. George Donaldson		Hwy # 17 Verona, N.C.	Washing and Kitchen waste to system	4-23-81
# 15	3-3-81	Mr. Gerald Brown	Mr. Gary Burkhalter	Hwy # 17 Verona, N.C.	Repair septic tank and drainfield	4-23-81

Total Violations \_\_\_\_\_

  
 Surveyors

Cumulative Total Corrections \_\_\_\_\_



SHORELINE SURVEY DATA

~~XXXX~~ Area C - 3

COUNTY Onslow

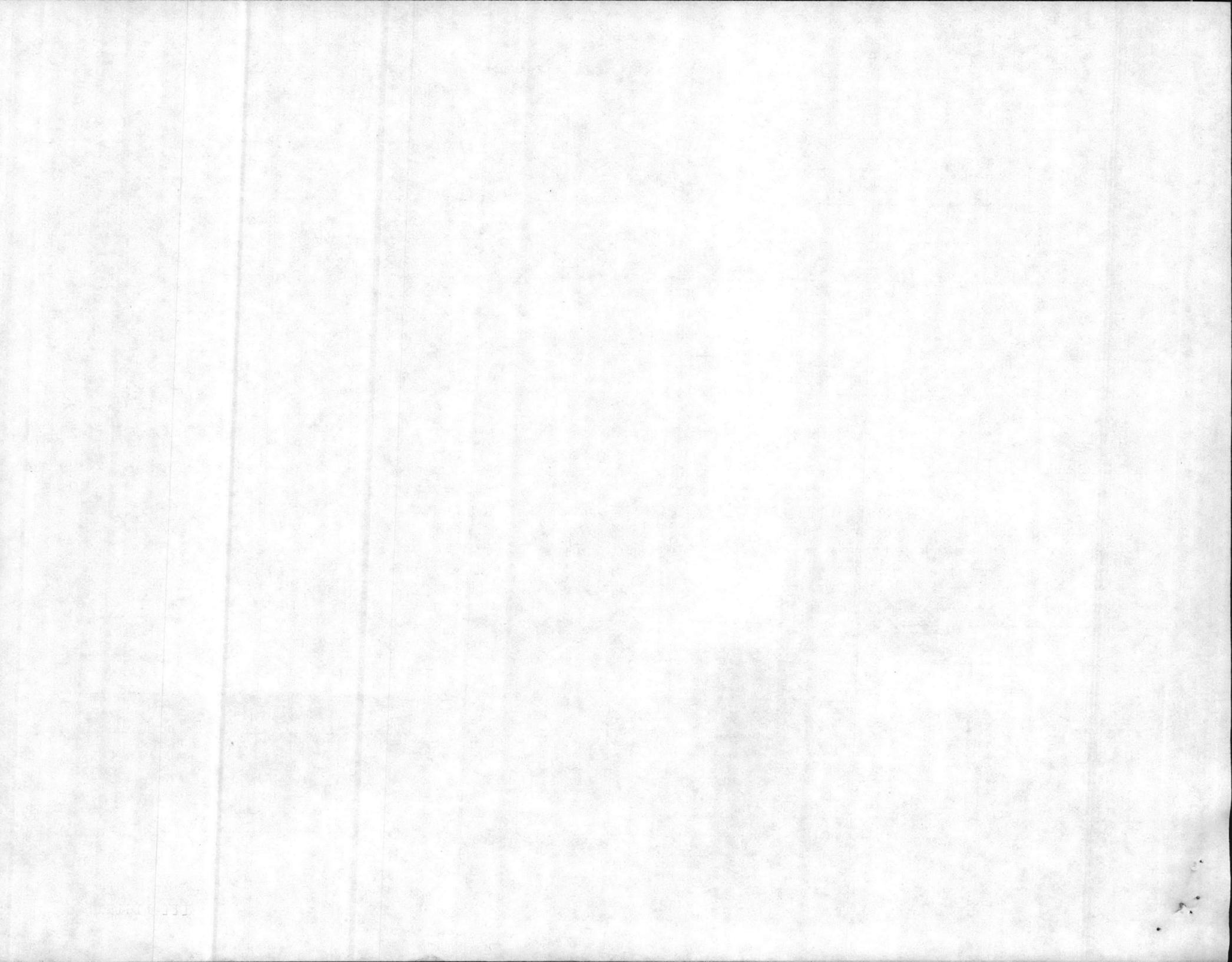
DATE 4-13-81

No.	<del>XXXX</del> Date	Owner	Tenant	Location	Violation	Date Corrected
# 16	3-3-81	Mr. Gerald Brown	Mr. Rodney Anderson	Hwy # 17 Verona, N.C.	Grease trap needs to be repaired	4-23-81
# 17	3-3-81	Mr. Gerald Brown	Mr. Thomas Campbell	Hwy # 17 Verona, N.C.	Repair septic tank and drainfield	4-23-81
# 18	3-4-81	Mr. Edward <del>Wigg</del> Suggs		Hwy # 17 Verona, N.C.	Repair septic tank and drainfield	4-23-81
# 19	3-4-81	Mrs. Bessie Sewell	Mr. Herbert Hinton	Hwy # 17 Verona, N.C.	Repair septic tank and drainfield	4-23-81
# 20	4-6-81	Daugherty Mobile Home Park	Mr. Lawrence Hingula	Rt. # 3 Jacksonville, N.C.	Repair solid pipe to system	4-23-81
# 21	4-6-81	H & J Mobile Home Park	Mr. Robert Smith Lot # 7	Rt. # 3 Jacksonville, N.C.	Repair connection under mobile home	4-23-81
# 22	4-6-81	H & J Mobile Home Park	Mr. Johnson lot # 37	Rt. # 3 Jacksonville, N.C.	Repair connection under mobile home	4-23-81
# 23	4-23-81	Mrs. RoseMary Higgins	Miss JoAnn Simmons	Rt. # 3 Box 119 Jacksonville, N.C. 28540	Repair drainfield to system	
# 24	4-23-81	Mr. R.E. Davis		Rt. # 3 Box 126 Jacksonville, N.C. 28540	Repair drainfield to system	
Note: The last two violations ( 23 & 24 ) were written during the first follow up inspection.						

*Ralph J. Simon*  
Surveyors

Total Violations 24

Cumulative Total Corrections \_\_\_\_\_



STATION NOS.	2/2/80	10/4/80	10/20/80	11/3/80	12/2/80	1/20/81	7/4/81	2/9/81	2/14/81	2/24/81	3/9/81	6/8/81				
1																
2	<3 3.6	<3 <3	<3 3.6	<3 3.6	3.6 3.6	<3 15	43 93	3.6 43	<3 3.6	<3 3.6	<3 3.6	<3 3.6				3.6
3	<3 23	<3 <3	<3 <3	7.3 3.6	3.6 3.6	23 93	93 240	<3 240	<3 3.6	3.6 3.6	<3 3.6	<3 3.6				3.6
4	<3 15	<3 <3	<3 7.3	<3 23	11 93	<3 93	23 240	<3 240	<3 93	<3 9.1	<3 9.1	<3 3.6				12
5	<3 3.6	<3 <3	<3 3.6	15 43	<3 3.6	<3 3.6	43 21	<3 7.3	<3 3.6	3.6 3.6	<3 9.1	240 460				3.6
5A																
6																
7																
8	<3 <3	<3 <3	3.6 3.6	3.6 9.1	<3 3.6	<3 3.6	3.6 23	3.6 150	<3 43	<3 15	3.6 3.6	150 >1100				6.4
9	<3 23	<3 <3	3.6 9.1	<3 3.6	7.1 3.6	<3 3.6	15 43	23 43	<3 3.6	3.6 9.1	<3 3.6	>1100 >1100				9.1
10	3.6 9.1	<3 <3	<3 <3	<3 3.6	<3 3.6	<3 3.6	43 15	43 29	<3 3.6	<3 3.6	<3 3.6	>1100 23				3.6
11	<3 <3	<3 <3	3.6 3.6	3.6 3.6	3.6 3.6	3.6 3.6	15 43	7.1 29	<3 3.6	<3 3.6	<3 3.6	3.6 23				3.6
12	7.1 93	<3 <3	<3 <3	<3 9.1	7.1 21	<3 21	9.1 43	43 3.6	<3 43	23 3.6	<3 3.6	<3 3.6				6.4
13																
14	3.6 9.1	<3 <3	<3 3.6	15 15	3.6 3.6	93 93	93 43	<3 93	<3 93	3.6 3.6	<3 3.6	<3 3.6				6.4
15	<3 23	<3 <3	3 9.1	7.1 9.1	7.1 43	<3 43	7.1 43	3.6 93	<3 460	3.6 9.1	<3 9.1	<3 7.3				9.1
16	7.3 15	<3 <3	<3 <3	3.6 23	<3 93	<3 43	3 43	7.1 240	3.6 1100	3.6 9.1	<3 3.6	<3 11				13.0
17	<3 9.1	<3 <3	3.6 3.6	<3 3.6	<3 3.6	<3 3.6	43 15	<3 9.1	3.6 9.1	3.6 15	<3 15	460 1100				9.1
18																
19																
20	3.6 9.1	<3 <3	<3 <3	<3 3.6	<3 3.6	<3 3.6	43 43	<3 93	<3 3.6	<3 7.3	<3 3.6	<3 9.1				3.6
21																
22																
23	<3 7.3	3.6 3.6	43 240	23 75	3.6 3.6	3.6 23	13 240	<3 93	<3 93	<3 240	<3 9.1	<3 9.1				75
24	93 >1100	23 23	460 460					3 460	<3 43	25 93	39 150					150
25																
26	<3 7.3	<3 3.6	<3 <3	<3 9.1	9.1 9.1	<3 43	15 93	3.6 43	3 460	9.1 15	9.1 23	<3 9.1				12
27	3.6 23	<3 <3	43 240	<3 15	7.1 15	<3 93	3.6 43	3.6 460	<3 1100	9.1 23	<3 93	<3 23				33
28																
29																
30	<3 15	<3 <3	9.1 43	7.3 7.3	14 39	<3 240	3 43	9.1 460	3.6 43	3.6 43	<3 9.1	3 240				43
31																
32																
33																
34	<3 7.2	<3 <3	9.1 9.1	<3 3.6	<3 15	<3 9.1	3.6 93	9.1 240	<3 9.1	23 23	<3 3.6	7.1 75				9.1
35																
23A	<3 43	<3 <3	43 43	3.6 3.6	39 39		43 93					3.6 3.6				41

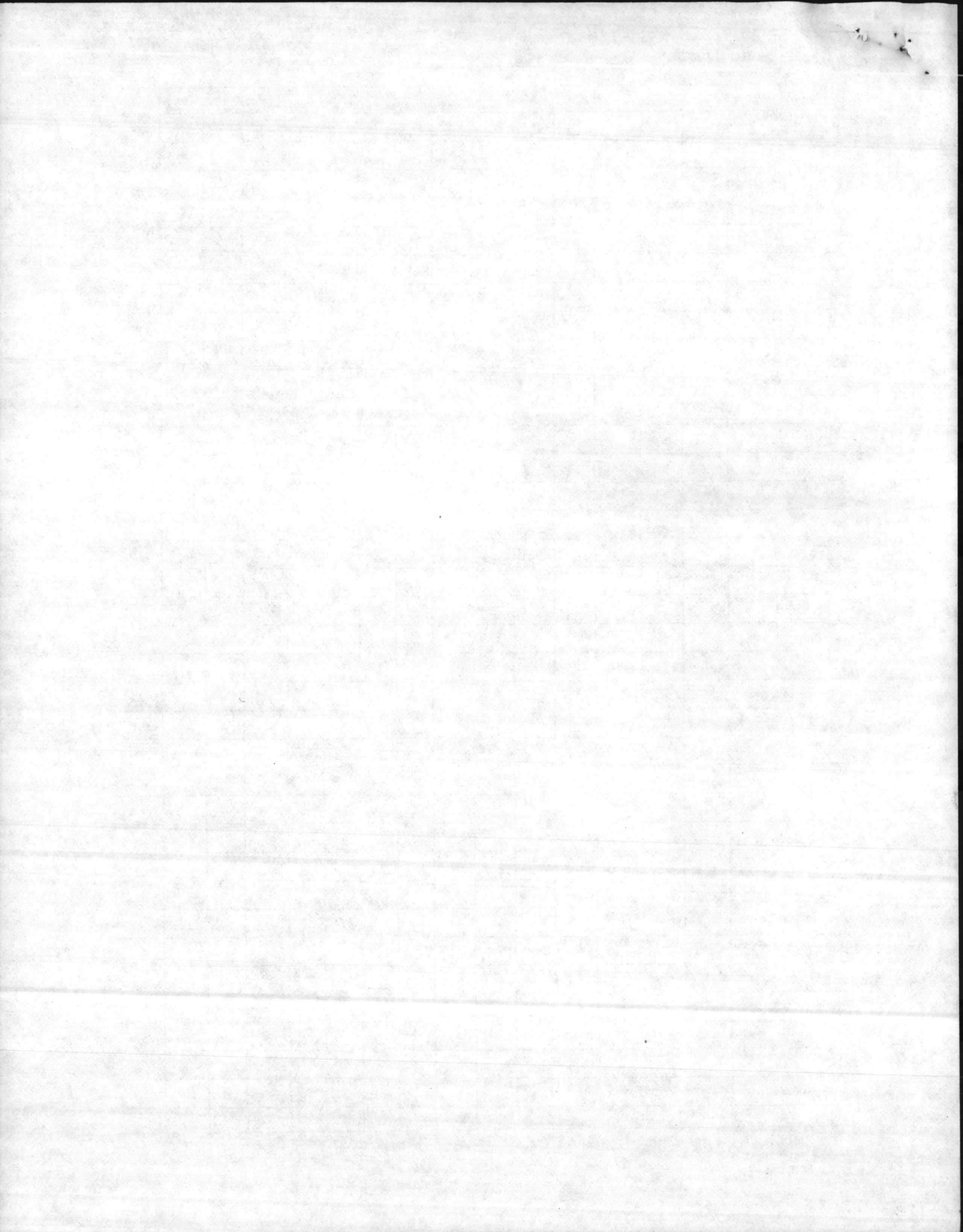
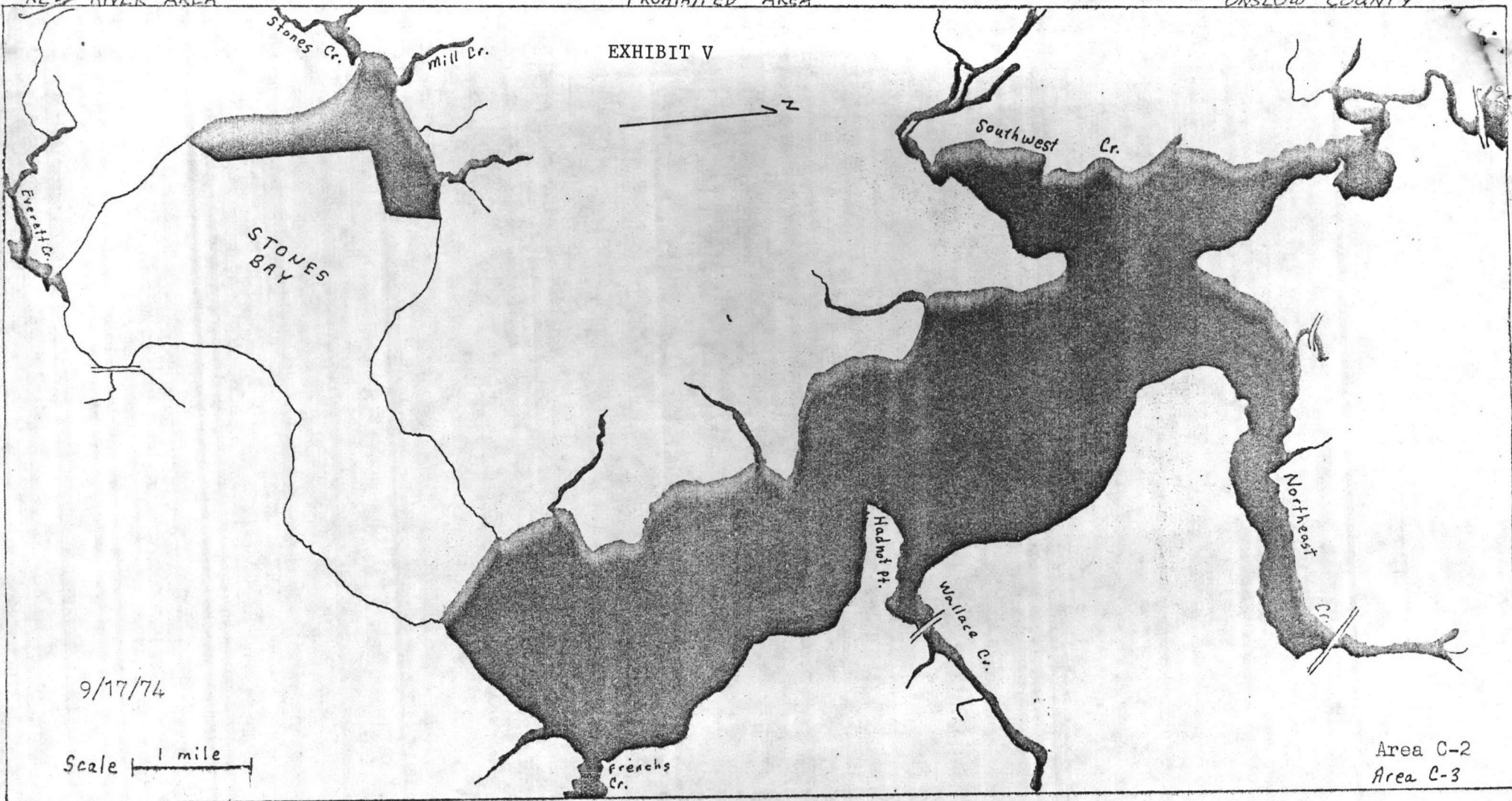


EXHIBIT V

**In New River Area:**

No person shall take or attempt to take, any oysters or clams or possess, sell, or offer for sale, any oysters or clams taken from the following polluted areas:

**In Stones Bay:**

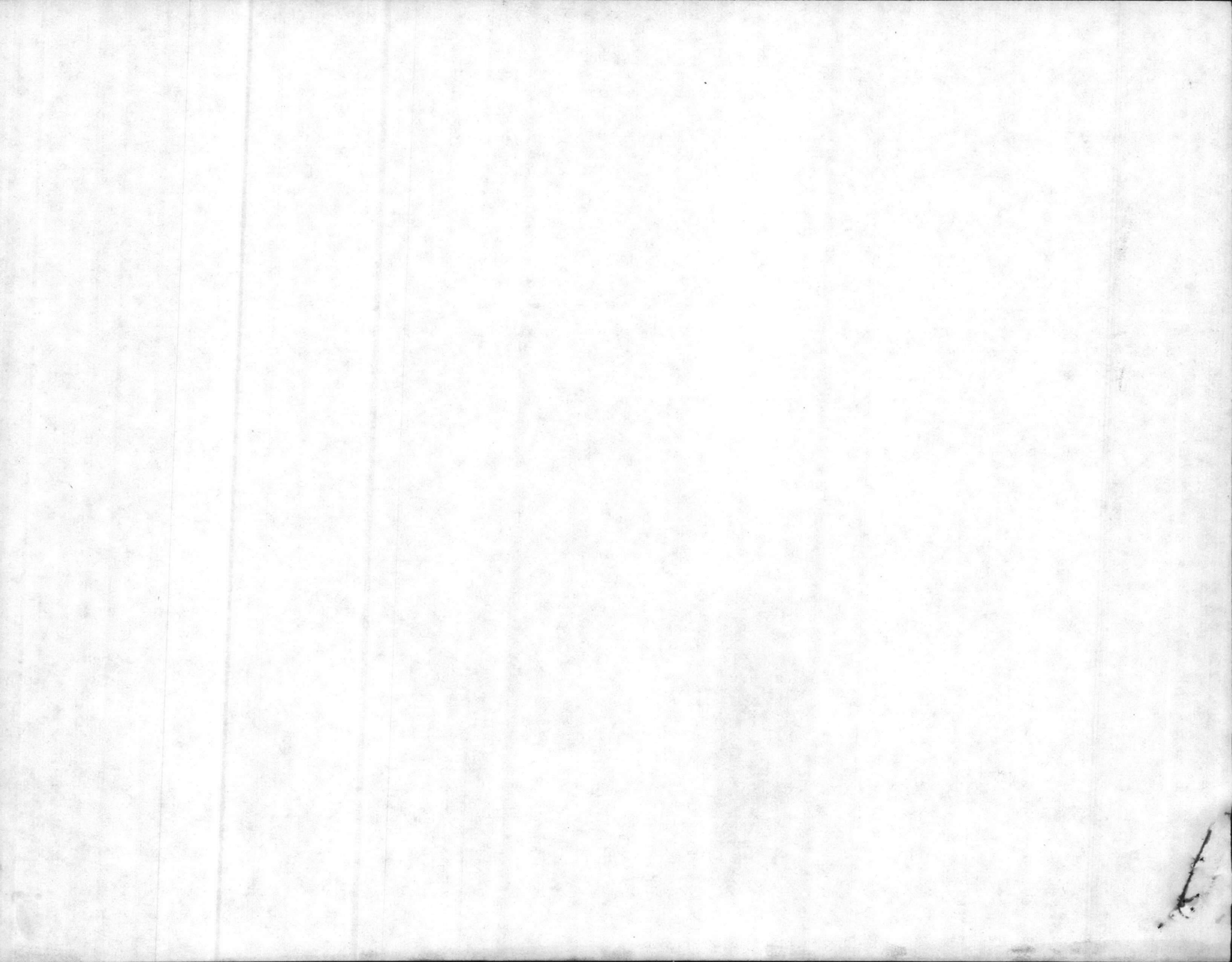
Beginning at a point  $34^{\circ} 35' 16''$  N,  $77^{\circ} 26' 07''$  W; thence  $45^{\circ}$  M, 700 yards in Stones Bay, to a point  $34^{\circ} 35' 32''$  N,  $77^{\circ} 25' 52''$  W; thence  $1^{\circ}$  M, 2340 yards to a point  $34^{\circ} 36' 42''$  N,  $77^{\circ} 25' 58''$  W, in Stones Bay; thence  $80^{\circ}$  M, 1030 yards,  $34^{\circ} 36' 49''$  N,  $77^{\circ} 25' 23''$  W, in Stones Bay; thence  $11^{\circ}$  M, 800 yards to a point  $34^{\circ} 37' 12''$  N,  $77^{\circ} 25' 20''$  W, on the shore.

**In New River:**

In all of the waters of New River and its tributaries, upstream from a line drawn  $133^{\circ}$  M, from a point on the west shore of New River,  $34^{\circ} 37' 36''$  N,  $77^{\circ} 22' 21''$  W, to a point on the east shore, New River,  $34^{\circ} 37' 09''$  N,  $77^{\circ} 21' 38''$  W.

**In Everett Creek:**

In Everett Creek and its tributaries, south and west of a line drawn from a point on the west shore,  $34^{\circ} 34' 18''$  N,  $77^{\circ} 24' 55''$  W; thence  $94^{\circ}$  M, 550 yards to a point on the east shore,  $34^{\circ} 34' 18''$  N,  $77^{\circ} 24' 35''$  W.





DDS

RDW  
2-21-86

Betz

Techs. ~~7/30~~  
\_\_\_\_\_  
\_\_\_\_\_

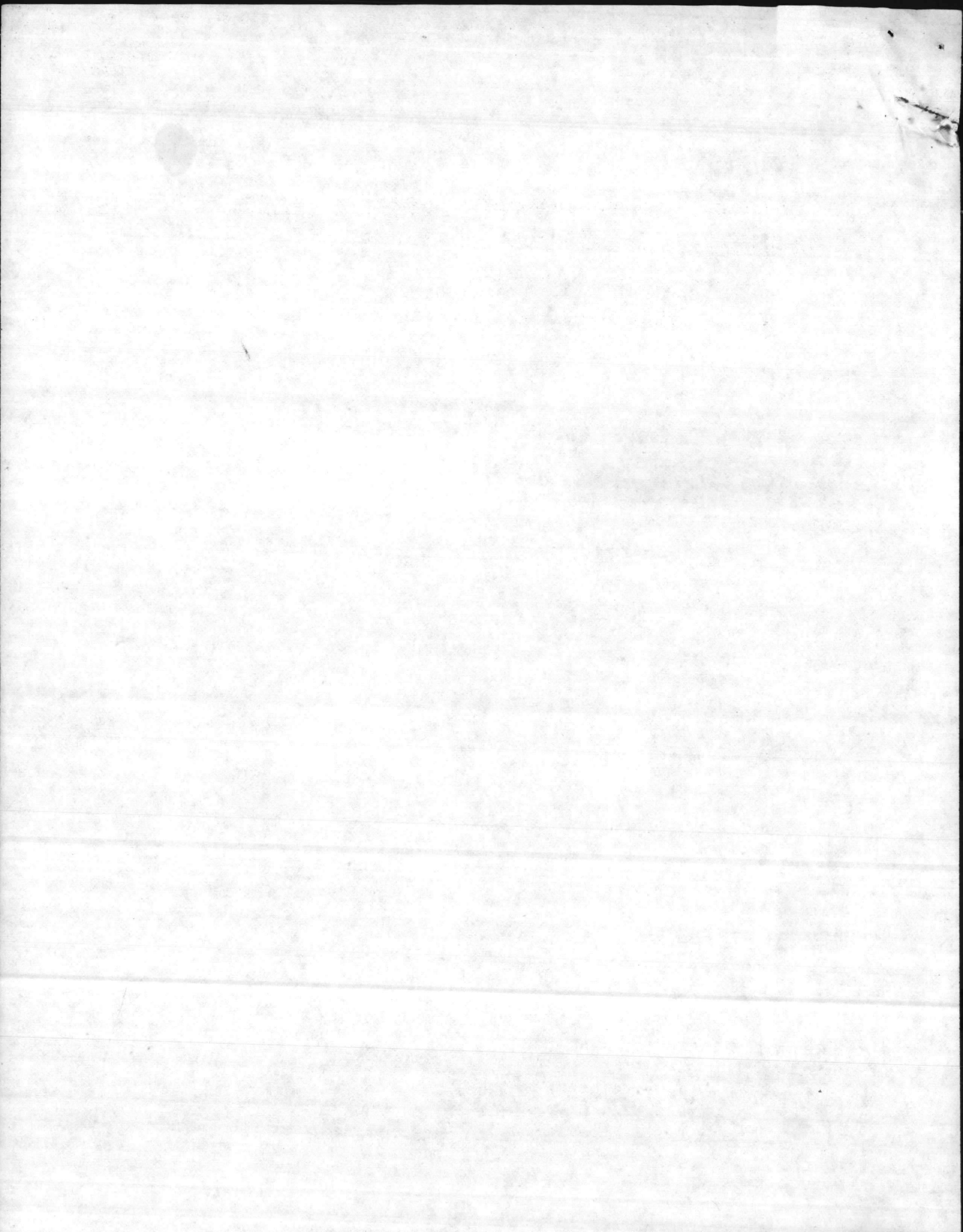
REPORT OF SANITARY SURVEY

CHADWICK BAY AREA

AREA C-1

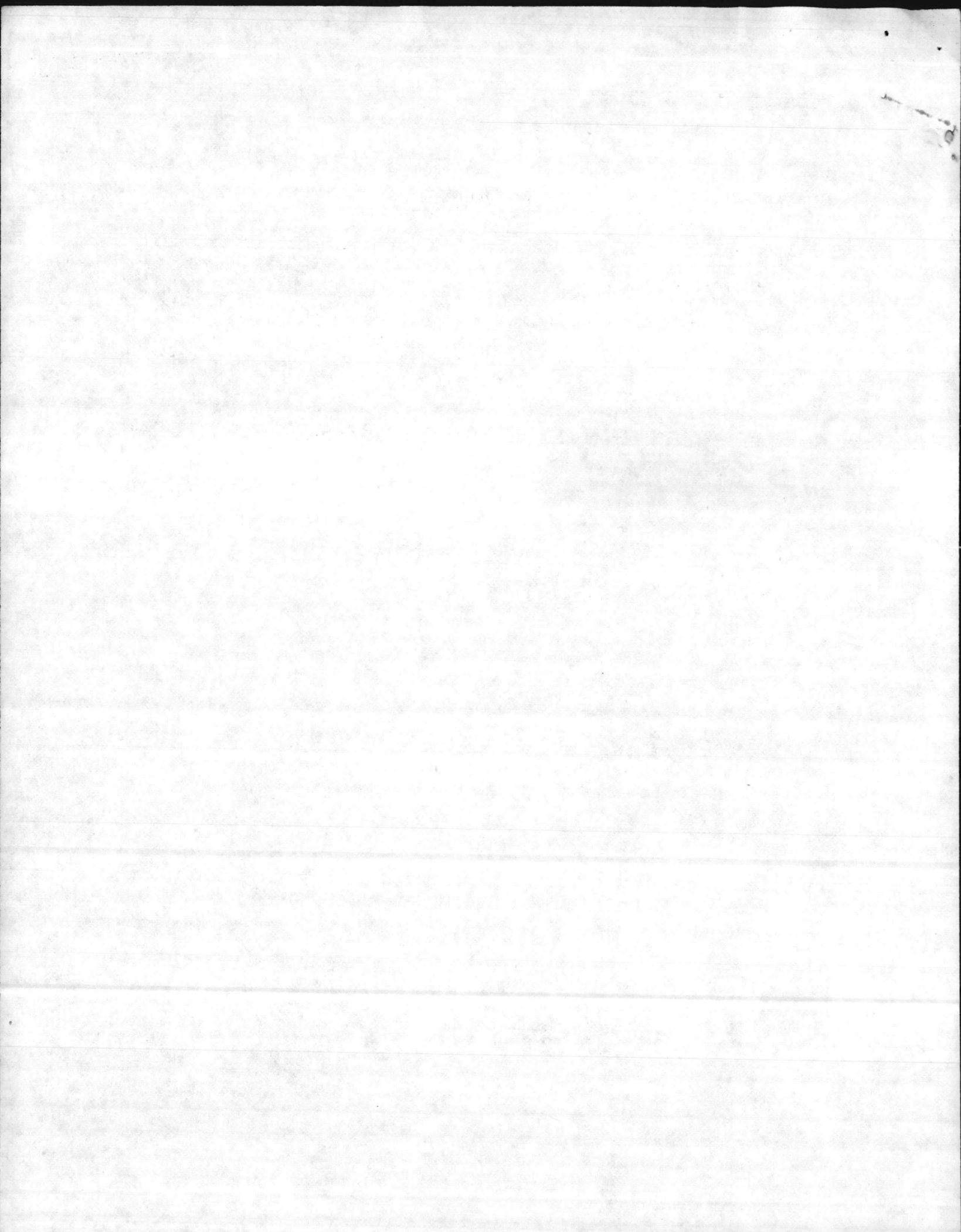
AUGUST 1983 - JANUARY 1985

FEBRUARY 1985



AREA C-1

- EXHIBIT I      AREA MAP AND STATION LOCATIONS
- EXHIBIT II     BACTERIOLOGICAL RESULTS AND MPN MEDIANS
- EXHIBIT III    PROHIBITED AREA MAP
- EXHIBIT IV     LIFT STATION LOCATIONS



Preface

Total Acres.....	1700.
Prohibited Acres.....	180.
Oyster Production .....	Fair.
Clam Production .....	Fair.
Commercial Value.....	Fair.
Recommended Changes.....	None.



REPORT OF SANITARY SURVEY

CHADWICK BAY AREA

AREA C-1

By

SHELLFISH SANITATION PROGRAM  
NORTH CAROLINA DIVISION OF HEALTH SERVICES

I. INTRODUCTION

Area C-1 is composed of the waters between Intracoastal Waterway Marker #4 at Swan Point and Marker #25 in Alligator Bay, including Chadwick Bay, Fullard Creek, Bumps Creek, Biglins Creek, Hell Gate Creek, Charles Creek, Alligator Bay and Mill Creek. This area has a watershed of approximately 13 square miles and contains the communities of Carrel Chapel, Peru, Swan Point, Chadwick's Acres, Grants, West Onslow Beach, and the southern portion of Sneads Ferry. There are no major sources of pollution in this area. (See Exhibit I for map of the area.)

II. SHORELINE SURVEY OF SOURCES OF POLLUTION

A spot-check shoreline survey of Area C-1 was made on September 6-7, 1984, by Ralph Johnson of the Shellfish Sanitation staff.

Area C-1 is located in Onslow County. Mr. Richard Koonce, Sanitarian Supervisor, Environmental Health Section, of the Onslow County Health Department, was notified prior to the survey that a spot-check survey was to be conducted.

Pertinent information was obtained for an update on changes in the area since the last comprehensive shoreline survey in 1982-1983.

The following is a listing of information obtained during the survey.

(1) North Carolina Wildlife Boat Ramp (Not in the Last Report)

Location - east side of the high-rise bridge on Hwy #210, over the





Intracoastal Waterway (ICWW) and on the south side of the ICWW

General - This new wildlife ramp is under construction at this time.

(2) North Topsail Water and Sewer System Treatment Plant

Location - near the northeast end of County Road (SR) #1568 on the sound side

General - This plant has now been connected to the new lagoon system located on the mainland.

(3) North Topsail Water and Sewage Treatment System

Location - approximately .9 mile north of the intersection of Hwy #210 and SR#1518 on Hwy #210 (north side of the highway) Note: The headwaters of Mill Creek drain this site.

Type of treatment - lagoon and spray irrigation with chlorination

Maximum designed capacity - one million gpd.

General - This system has three (3) lagoons (33.4 acres) for treatment. Chlorination takes place between the lagoons and the spray irrigation system. Two hundred sixty eight (268) acres have been permitted for spray irrigation. Sewage volume has yet to reach the point needed for the spray irrigation system to be used. Natural Resources and Community Development (NRCD) has recently issued three (3) violations to the owners of this system.

Sewage lift stations - associated with new and continued development on the northeast end of Topsail Island (West Onslow Beach) adjacent to New River and the Intracoastal Waterway - This sewage collection system is connected to the North Topsail Water and Sewage Treatment Facility located on the mainland, adjacent to Hwy #210. The lift stations were physically visited on October 22, 1984. The following is an informational listing on these lift stations. (See Exhibit IV for lift station locations.)

1. Lift station



Location - northwest side (sound side) of new street (un-named) located at the northeast end of SR#1568

Alarms - appears to have an external alarm, possible internal alarm located at the North Topsail Water and Sewer office

General - This site is located next to what appears to be extended marsh associated with Stump Sound, construction above ground level.

## 2. Lift Station (Old STP Site)

Location - sound side of SR#1568 near the end of Coastal Drive, adjacent to the North Topsail Water and Sewer, Inc., office

Alarms - appears to have an external alarm, possible internal alarm at the North Topsail Water and Sewer, Inc., office

General - The old sewage treatment plant is being used as a lift station, construction above ground level

## 3. Lift station

Location - new un-named street on the sound side off SR#1568

Alarms - appears to have an external alarm, possible internal alarm located at the North Topsail Water and Sewer, Inc., office

General - Construction is below ground level.

## 4. Lift station

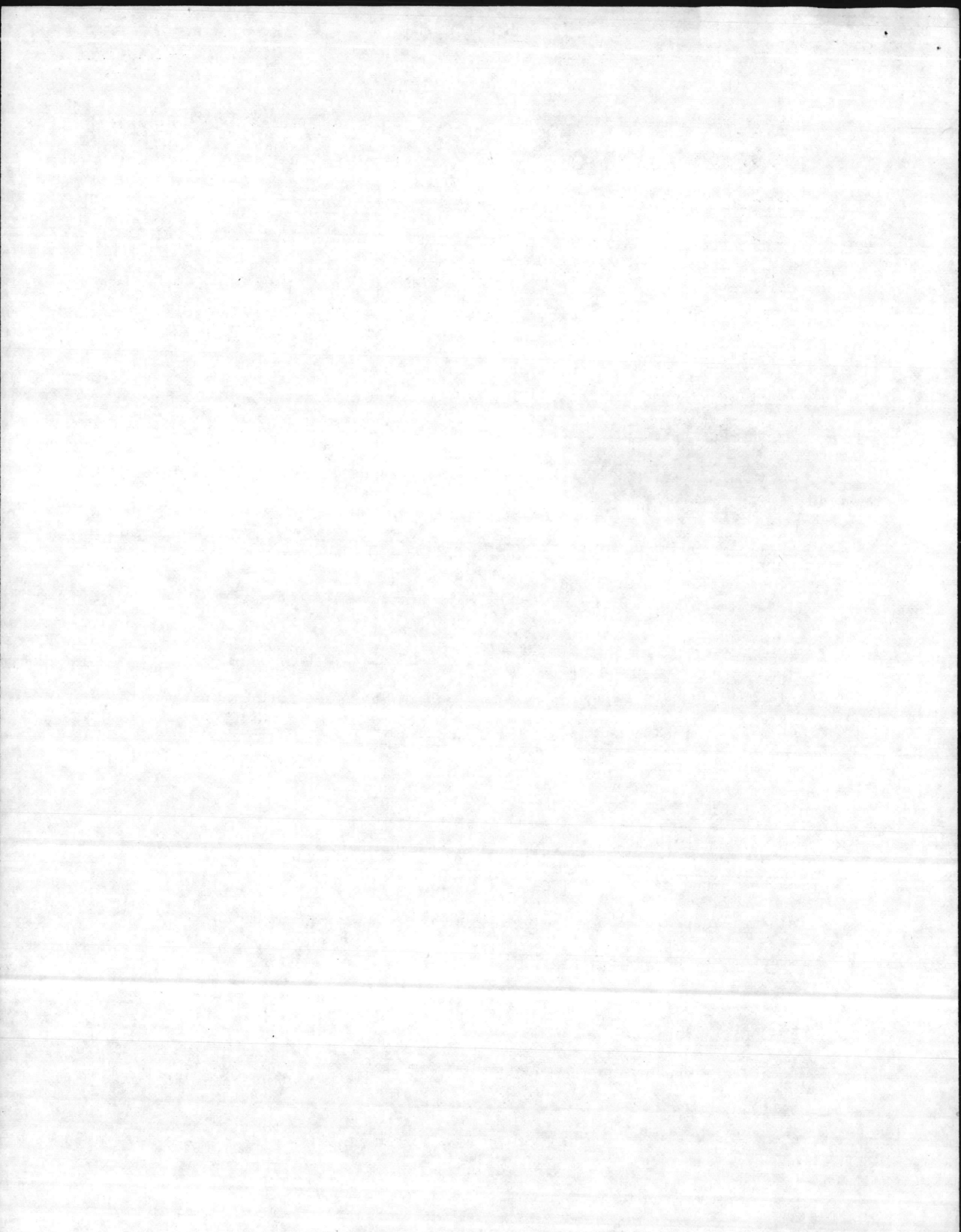
Location - behind and to the south of the Ocean Bay Condo Development on the sound side of SR#1568

Alarms - appears to have an external alarm, possible internal alarm located at the North Topsail Water and Sewer, Inc., office

General - Construction is above ground level and adjacent to a marsh.

## 5. Lift station

Location - ocean side (southeast side) of SR#1568 in front of Shipwatch Villas



Alarms - appears to have external alarm, possible internal alarm located at North Topsail Water and Sewer, Inc., office

General - Construction is below ground level.

Apparently Lift Station #1 was put in (constructed) without a permit from the Department of Natural Resources and Community Development.

(4) Grant's Oyster House (Not Included in the last report)

Location - SR#1518 on Mill Creek

Wet slips - general dockage

Permanent boats - 10

Boats with marine heads - one possible

Pump-out service - none

Boats used as permanent residence - none

Sewage system - septic tank system, no problems reported

(5) Septage Dump Site

Location - This site is located at the end of SR#1519. Fullard Creek is approximately 800 to 1000 feet down slope from the site.

Approval - The County health department has conditionally approved this site. The condition is that septage be cut into the ground in a specified time period.

Usage - General information indicates this location has been used as a septage dump site for many years.

Run-off- Conditions of run-off from this site are an unknown factor.

(6) Ennett's Washerette

Location - west side of SR#1518 in Sneads Ferry on the headwaters of Charles Creek

System - small holding lagoon (pond) The pond is located adjacent to the headwaters of Charles Creek.

Problems - There appears to have been recent spillage over the dam into



Charles Creek, very probably occurring when it rains. This type of problem was reported to NRCD during the last comprehensive shoreline survey, not reported this survey.

(7) East Coast Seafood (Formerly Called the Oyster Hut)

Location - end of SR#1561 on Charles Creek

Wet slips - general dockage

Permanent boats - 3

Boats with marine heads - none

Pump-out service - none

Boats used as a permanent residence - none

Sewage system - septic tank system, no problems reported

(8) Bayshore Racket Club Marina

Location - on Fullard Creek off SR#1522

Type of development - Thirty two townhouses (waterfront lots) are connected to a STP and 20 single-family units (not waterfront) are connected to septic tank disposal systems. Thirty two wet slips are provided for the waterfront units. There is also a boat ramp and boat basin. Plans are to install pump-out service for the boats, 2 tennis courts, one racket ball court, and a swimming pool. The development is under construction at the time of the survey.

General - A houseboat formerly used as the manager's residence is to be converted into a club house for the development. Plans are to connect the houseboat's sewage system to a septic tank system located within the development.

(9) New River Marina

Location - end of SR#1523 on the ICWW

Wet slips - 28 and general dockage

Permanent boats - 4





Boats with marine heads - 2

Pump-out service - none

Boats used as permanent residences - none

Boat ramp - yes

Dry storage spaces - 44

Transit boats per year - 150 to 160

Camp sites - full service - 10 (water, electrical, and sewage service)

regular sites - 16 (water and electrical service)

Service - store with bait and tackle

Sewage system - septic tank systems, no problems reported

(10) Swan Point Marina

Location - near the end of SR#1523 on the ICWW (north side of New River Marina)

Wet slips - 40 and general dockage

Permanent boats - 20

Boats with marine heads - 20

Pump-out service - none

Boats used as permanent residences - none

Boat ramp - yes

Dry storage spaces - less than 20

Transit boats per year - 500

Service - store with bait and tackle, repair shop for boats

Sewage system - septic tank systems, no problems were reported

(11) Development

A. Individual homes (not in last report)

Location - end of SR#1568 adjacent to and along New River

Total number is unknown.

B. Topsail Reef Condominiums

Location - northeast end of SR#1568 (New River Inlet Road)



Total number - 822 units (last report)

C. Individual homes (not in last report)

Location - near end of SR#1568 on sound side

Total number of units unknown

D. Sandpiper Villas (Not in Last Report)

Location - near end of SR#1568 on sound side

Total units - unknown

E. American Lincoln Homes (Not in Last Report)

Location - SR#1568

Total units - unknown

F. Shipwatch Villas Condominiums (Not in Last Report)

Location - SR#1568

Total units - unknown

G. Shipwatch Villas (Not in Last Report)

Location - SR#1568

Total units - unknown

H. Ocean Bay Village

Location - SR#1568 southwest of New River Inlet Ocean Pier

Total number of units - 168 townhouses (last report)

I. Individual homes (not in last report)

Location - SR#1568 southwest of New River Inlet Ocean Pier

Total units - unknown

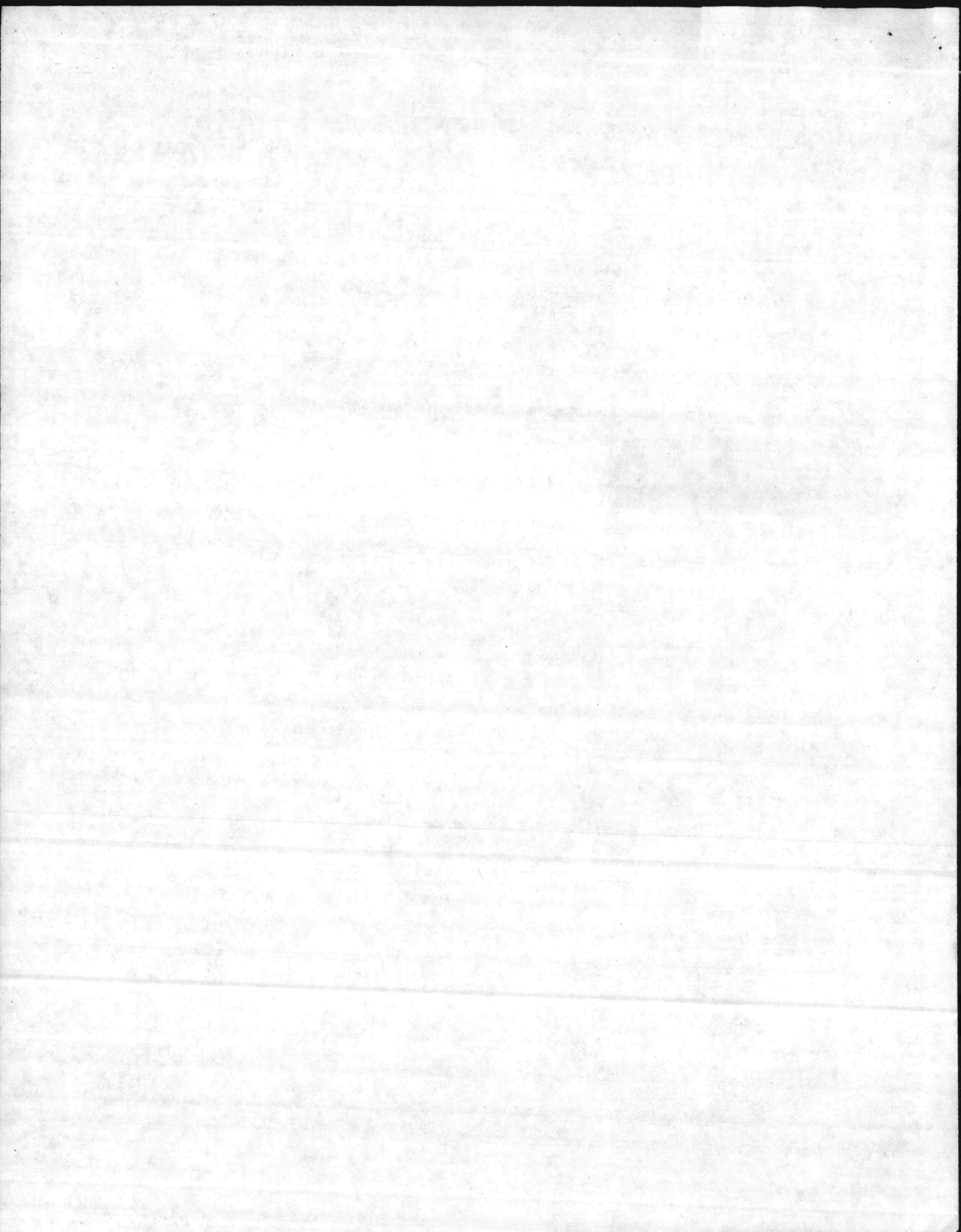
J. Waterway Haven and Chadwick Acres

Location - end of SR#1553 (ICWW)

Total units - 70 acres (last report)

K. Chadwick Shores

Location - off SR#1553 adjacent to Chadwick Bay and Fullard Creek



Total units - 520 single-family units (last report)

L. Twisted Oaks

Location - off SR#1521 on Bumps Creek

Total units - 32 lots (last report) This development now has a boat ramp and canal dockage.

Animal concentrations were not checked during this survey.

III. EVALUATION OF HYDROGRAPHIC FACTORS RESPONSIBLE FOR THE SPREAD OF POLLUTION

Drogue studies were conducted in the Fullard Creek and Chadwick Bay sections of the area during the 1981 survey. It is felt that the results of this study are still valid.

These results showed a slow tidal movement in the estuary with poor flushing action. This has been a problem with the increased bacteria counts in the area.

IV. BACTERIOLOGICAL SURVEY OF SHELLFISH GROWING WATERS

The bacteriological survey was begun in August, 1983, and concluded in January, 1985. Most of the data was collected in 1984. Results indicate some improvement in the area since the last survey. Stations having unsatisfactory results were #1, #1A, #1B, #2, #3, #5, and #6. All these stations, with the exception of Station #6, are within the prohibited area boundaries. Although, results from these stations are unsatisfactory for an approved area, they are better than they were during the previous survey. Station #17, located in the prohibited area at Mill Creek has improved and results would be satisfactory for an approved area. (See Exhibit II for fecal coliform results from all stations and Exhibit I for station locations.)

V. SUMMARY AND RESULTANT AREA CLASSIFICATION



The prohibited areas in Fullard and Charles Creeks have shown improvement during this sampling period. Results were not good enough to be considered for an approved area, but it is felt that part of the area can be opened on a "conditional" basis when hydrographic factors are favorable.

Station #6 exceeded the 10% rule with consecutive high fecal coliform counts in February and March, 1984. The March result can be explained by heavy rainfall and high counts throughout the prohibited area. The February result is unexplained. Results on that day were generally satisfactory throughout the area and there had been no inclement weather immediately prior to sampling. It is not felt necessary to make any recommendations regarding additional closure at this time.

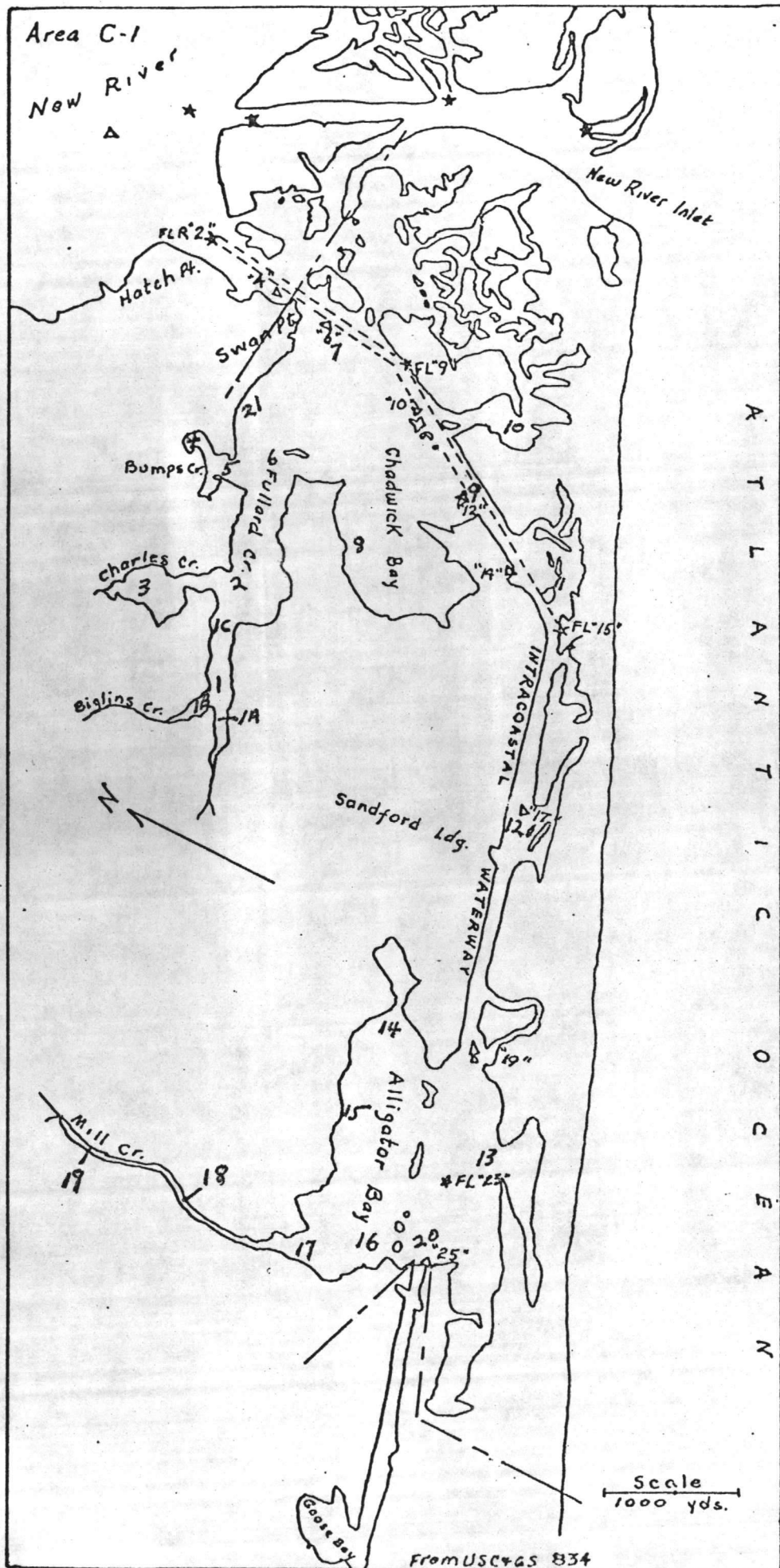
Station #17, located in the prohibited area at Mill Creek, has had satisfactory results during this survey, but it will not be recommended to open any additional waters at this time. The shoreline survey revealed potential sources in Mill Creek and additional samples need to be collected before waters could be opened.

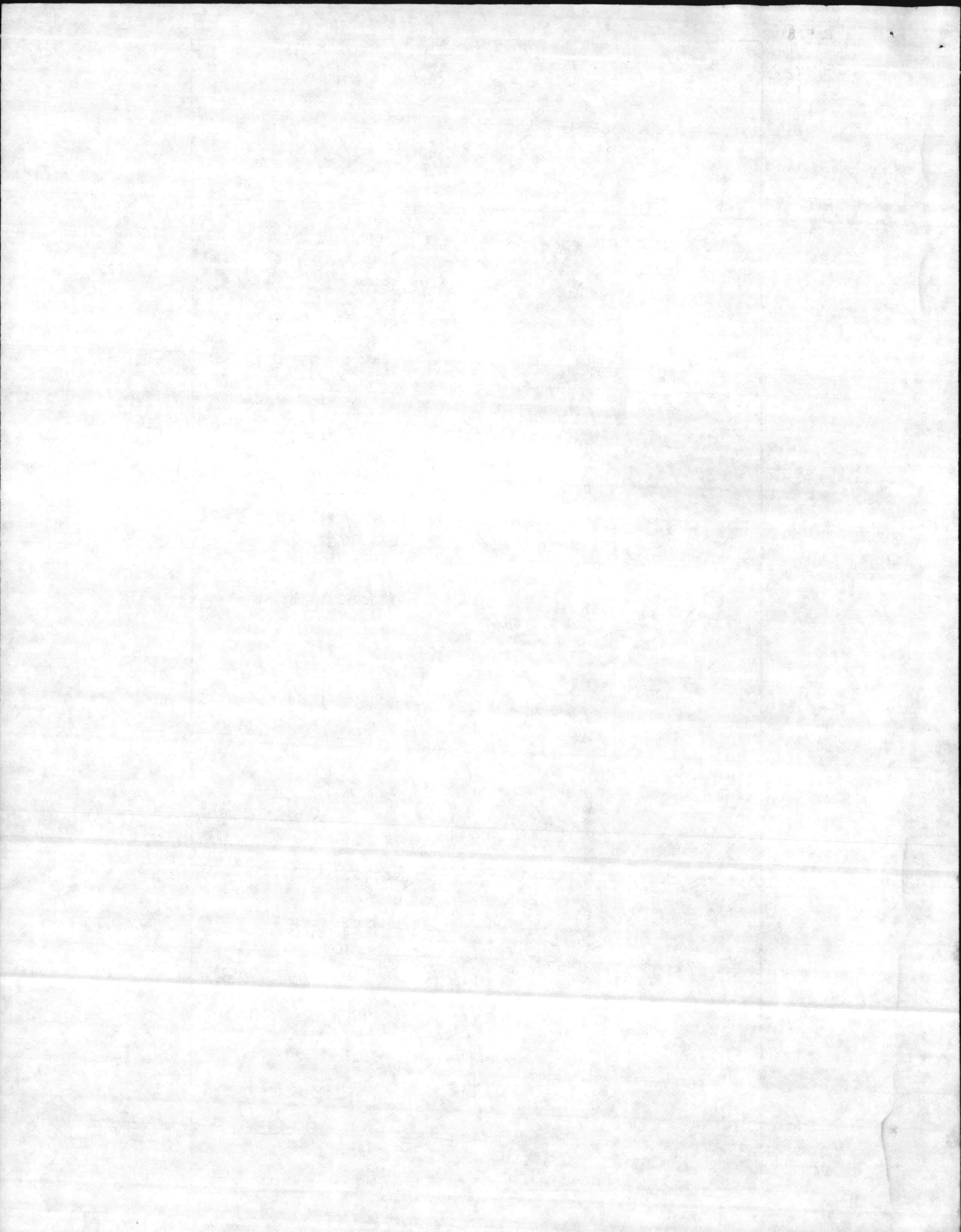
In conclusion, no changes are recommended in classification of the waters of Area C-1 at this time. Special samples will be collected when weather conditions are favorable for conditional openings.

(See Exhibit III for prohibited area map.)

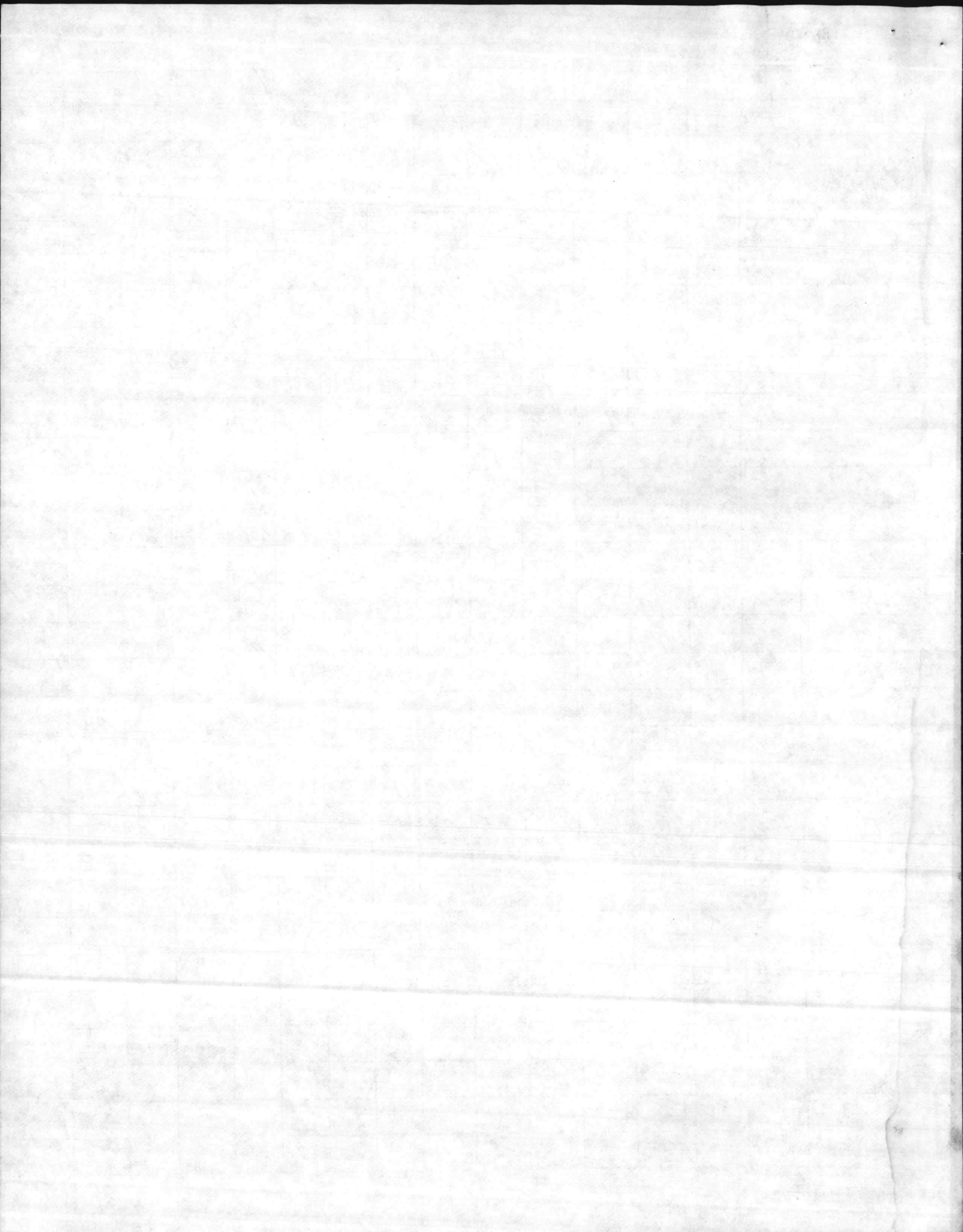








STATION NOS.	8/5/83	1/31/84	2/22/84	3/26/84	4/9/84	5/16/84	6/5/84	6/14/84	7/3/84	10/10/84	1/4/85		med.	
1	17	2.0	11	46	7.8	4.5	47	<1.8	1.8	49	2.0		7.8	
1A	540	4.5	22	130	79	49	110	33	22	110	34		49	
1B	350	7.8	7.8	33	49	17	31	46	4.5	49	2.0		31	
1C	<1.8	<1.8	13	49	17	2.0	39	<1.8	<1.8	33	11		11	
2	2.0	2.0	4.5	49	7.8	4.5	13	2.0	2.0	49	2.0		4.5	
3	13	23	34	79	4.0	<1.8	<1.8	<1.8	4.5	46	6.8		6.8	
4	6.8	17	4.5	11	350	33	31	34	2.0	33	11		17	
5	13	49	<1.8	33	1.8	2.0	240	23	<1.8	31	<1.8		13	
6	2.0	2.0	110	79	<1.8	2.0	2.0	<1.8	<1.8	33	4.5		2.0	
7	<1.8	1.8	2.0	17	4.5	<1.8	1.8	<1.8	<1.8	4.5	<1.8		1.8	
8	<1.8	<1.8	4.0	2.0	<1.8	<1.8	<1.8	<1.8	<1.8	6.8	<1.8		<1.8	
9	<1.8	2.0	4.0	7.8	2.0	6.8	4.5	2.0	<1.8	4.5	4.5		4.0	
10	4.5	<1.8	<1.8	33	9.3	<1.8	2.0	2.0	<1.8	11	<1.8		2.0	
11	2.0	<1.8	2.0	7.8	4.5	<1.8	<1.8	<1.8	2.0	17	4.5		2.0	
12	2.0	<1.8	4.5	11	6.8	<1.8	4.5	2.0	<1.8		4.5		3.3	
13	4.5	2.0	7.8	4.5	2.0	1.8	<1.8	<1.8	2.0	46	<1.8		2.0	
14														
15	<1.8	<1.8		33	<1.8	4.5	<1.8	<1.8	<1.8		2.0		<1.8	
16	<1.8	6.8	<1.8	33	7.8	4.5	<1.8	<1.8	<1.8		4.5		3.2	
17	7.8	6.8	2.0	79	6.8	17	23	4.5	<1.8	13	4.5		6.8	
18														
19														
20	4.5	2.0	<1.8	13	4.5	2.0	<1.8	<1.8	<1.8	33	4.5		2.0	
21	4.5	<1.8	2.0	33	2.0	<1.8	2.0	2.0	<1.8	11	<1.8		2.0	



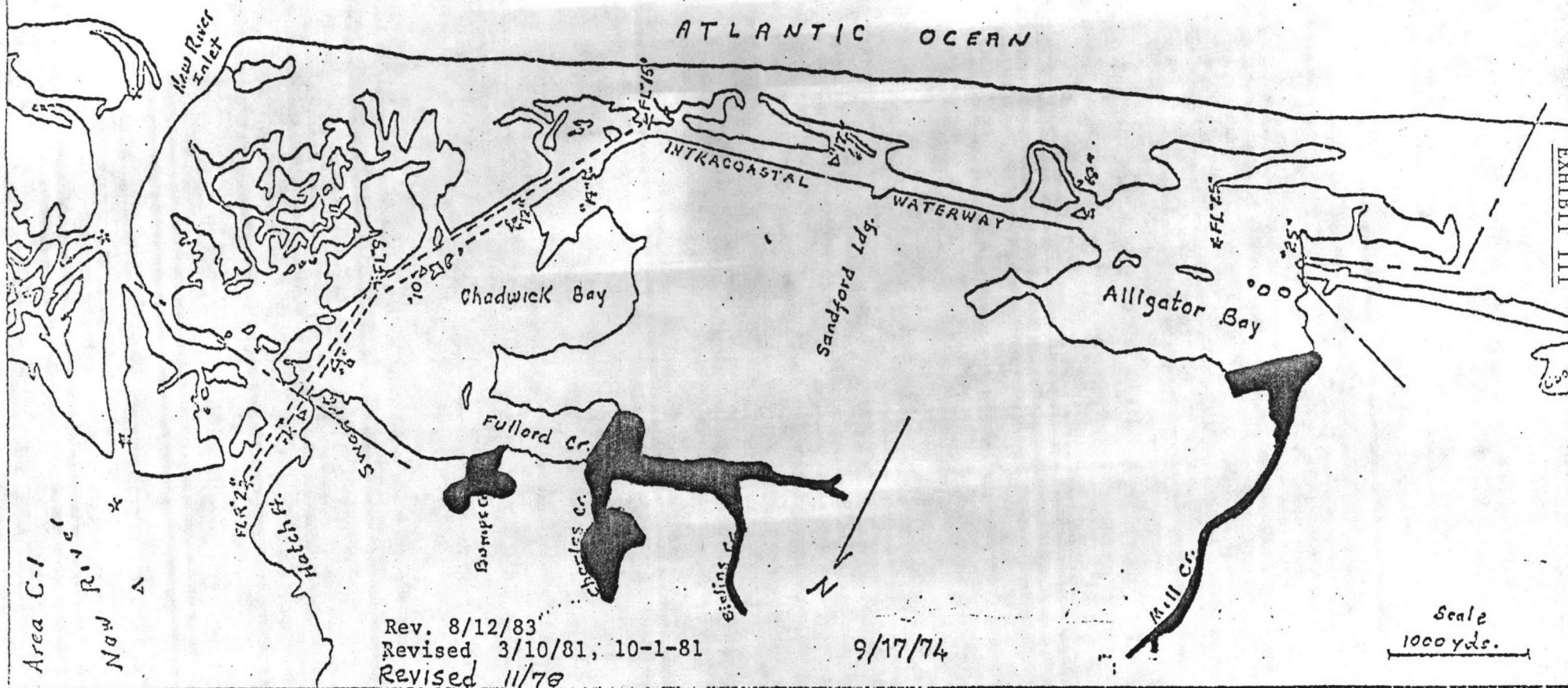
## MILL CREEK AREA

AREA C-1

(Prohibited areas are shaded)

PROHIBITED AREA

ONSLOW COUNTY



No person shall take, or attempt to take, any oysters or clams or possess, sell, or offer for sale any oysters or clams taken from the following areas, at any time:

Mill Creek:

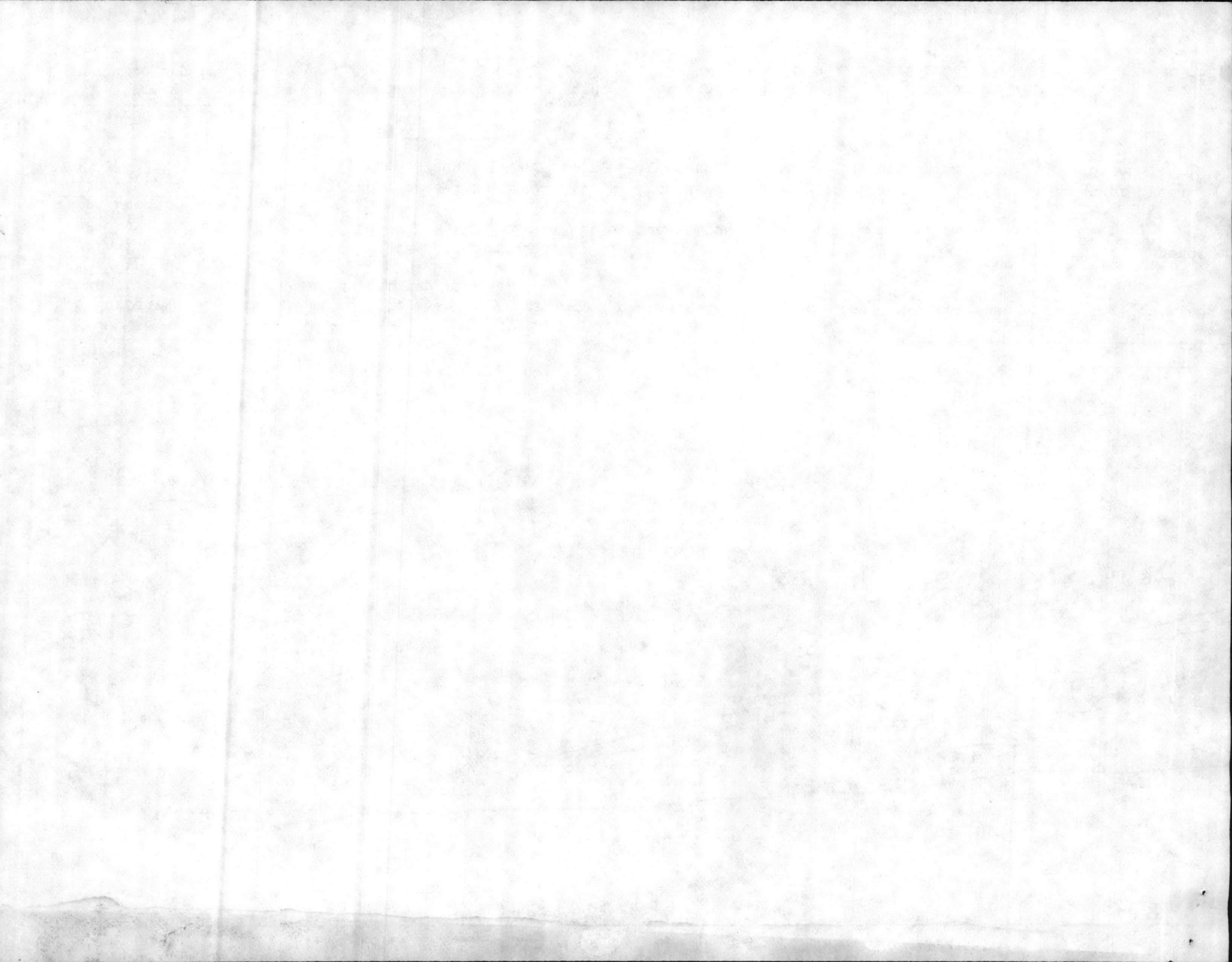
Beginning at a point on the shore in Alligator Bay,  $34^{\circ} 30' 42''$  N -  $77^{\circ} 25' 05''$  W; thence  $225^{\circ}$  M, 780 yards to a point on the shore  $34^{\circ} 30' 24''$  N -  $77^{\circ} 25' 23''$  W, to include all of the waters upstream from this line.

Bumps Creek:

All waters of Bumps Creek upstream of a line drawn  $221^{\circ}$  M, from a point on the east side of the mouth of Bumps Creek  $34^{\circ} 32' 25''$  N -  $77^{\circ} 22' 25''$  W; thence running 280 yards to a point on the west side of the mouth of Bumps Creek  $34^{\circ} 32' 1''$  N -  $77^{\circ} 22' 30''$  W.

Fullard Creek and Charles Creek:

All waters upstream of a straight line drawn from a point on the east shore of Fullard Creek at  $34^{\circ} 32' 02''$  N -  $77^{\circ} 22' 44''$  W; thence to a point on the west shore at  $34^{\circ} 32' 13''$  N -  $77^{\circ} 22' 51''$  W, to include all of Charles Creek.





LIFT STATIONS - WEST ONSLOW BEACH

AREA

UNIT STATION - USE ONLY BEACH