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T-6280



State of North Carolina
Department of Natural Resources and Community Development
Wilmington Regional Office

James G. Martin, Governor

S. Thomas Rhodes, Secretary

DIVISION OF ENVIRONMENTAL MANAGEMENT

December 22, 1987

Commanding General
United States Marine Corps
Camp Lejeune Marine Corps Base
Jacksonville, North Carolina 28542

Attn: Mr. Clifford Powell
Assistant Base Maintenance Officer

Subject: NPDES Compliance Bioassay
Inspection Reports
Hadnot Point WWTP - NC0063029
Camp Geiger WWTP - NC0062995
Tarawa Terrace WWTP
NC0063002
Camp Johnson WWTP - NC0063011
Onslow County

Dear Sir:

Please find attached copies of the completed form entitled "NPDES Compliance Inspection Report". The attached reports summarize the findings of bioassay inspections conducted at Hadnot Point, Camp Geiger, Tarawa Terrace, and Camp Johnson wastewater treatment facilities on December 8, 1987.

On the date of inspection grab samples of the effluent at all four plants were collected at the effluent weir location and testing was performed by the Aquatic Toxicology Laboratory on 12/9/87. The results of the toxicity tests indicate that the effluent from each of the four plants caused 100% mortality to the test organisms (fathead minnows) used in the 24-hour test. By these test results it can be predicted that the effluent causes acutely toxic impacts within the zone of initial dilution



Page Two
Clifford Powell
December 22, 1987

(close proximity of each outfall pipe). Residual chlorine was measured from each effluent sample as follows:

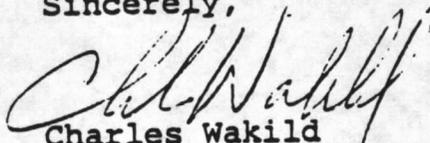
Tarawa Terrace	2.71 mg/l
Camp Johnson	4.64 mg/l
Hadnot Point	1.17 mg/l
Camp Geiger	1.85 mg/l

Excessive dosages of chlorine is a known toxicant to aquatic organisms. Information on file suggests that solutions containing 82-130 ppb of total residual chlorine is an acute LC50 value for fathead minnows. It is anticipated that the amount of residual chlorine in each of the samples contributed greatly to the toxicity if not the primary source of toxicity.

It is required that the Base prepare a written toxicity reduction plan to be submitted to this office no later than March 1, 1988. It is also required that the Base immediately reduce the amount of residual chlorine discharged from all wastewater treatment facilities. Chlorine dosage should be decreased substantially in order to attain positive toxicity results. Chlorine residuals in the range of .2 mg/l should be achieved.

If you have questions concerning this matter or require assistance, please contact Mr. Mike Williams, Mr. Preston Howard or me at (919) 256-4161.

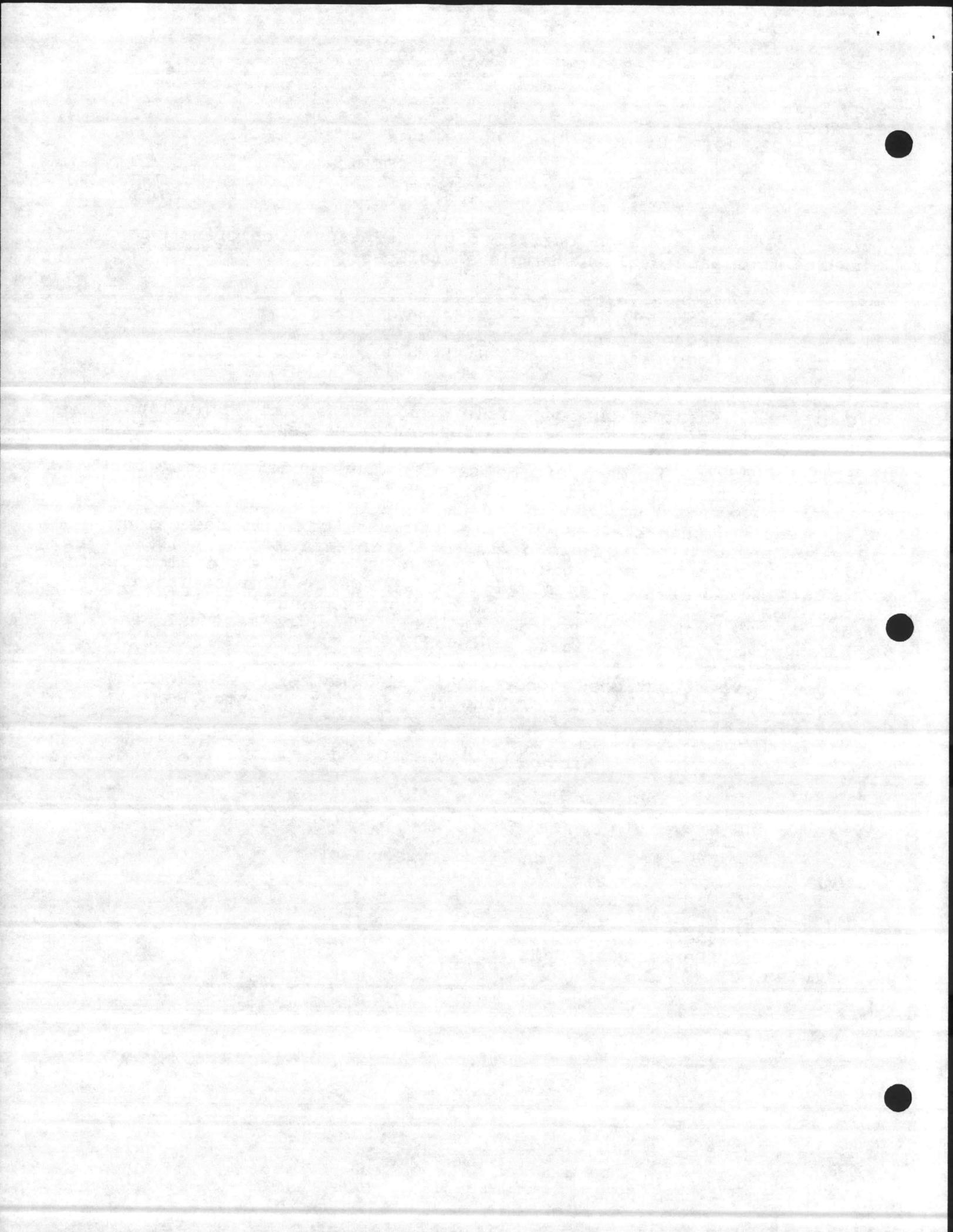
Sincerely,



Charles Wakild
Regional Supervisor

CW:MFW:kc

cc: Dan Ahern, EPA
Steve Tedder
Facility Performance Unit
WiRO, CF



Division of Environmental Management

December 11, 1987

To: Preston Howard
Through: Ken Eagleson, *KWB*
From: Larry Ausley, *LA*
Subject: Results of Toxicity Tests of Tarawa Terrace (NC0063002), Camp Johnson (NC0063011), Camp Geiger (NC0062995), and Hadnot Point (NC0063029), Onslow County.

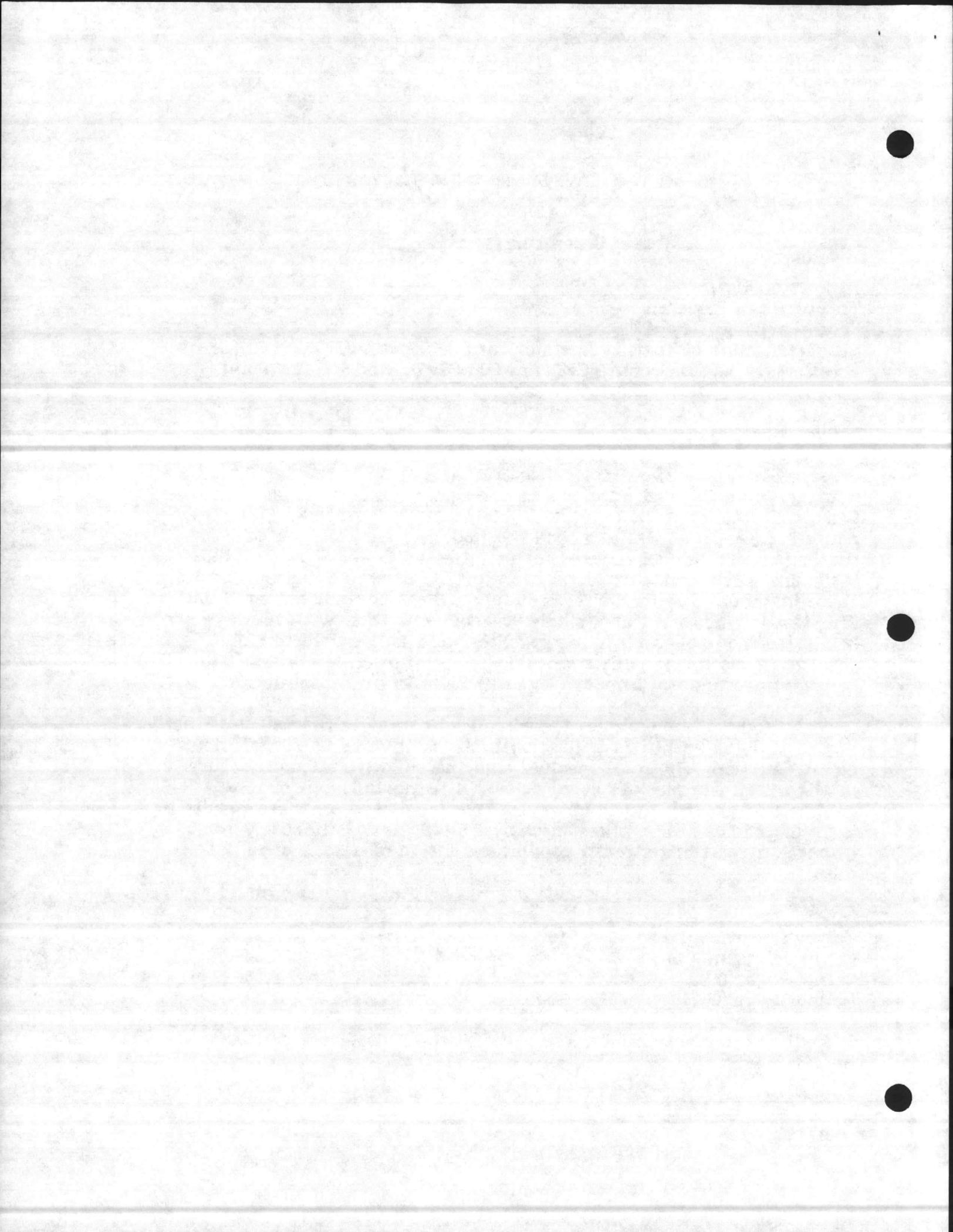
Acute PASS/FAIL 24 hr. aquatic toxicity tests were performed on samples of the above referenced discharges on December 9, 1987 using juvenile fathead minnows as the test organism.. These samples were collected as grabs by Mike Williams on December 8, 1987. The acute Pass/Fail test (See attached method) is a newly adopted methodology that will be used for facilities with very low calculated instream waste concentrations (i.e. <0.1%), as was assumed in all of these instances due to their receiving streams being listed as "Tidal". This test is performed at a single 90% concentration with four replicates, controlled by four replicates, and is designed to test whether a discharge with eventually large dilution is predicted to cause environmental impact (e.g. fish kills) in an initial dilution zone.

All four of the samples tested caused complete mortality of the test organisms within 24 hours, with stress obvious within an hour of introduction. The total residual chlorine concentrations measured in the initial samples, as listed below with mortality, probably contributed greatly to the observed toxicity. Based on these results, it is predicted that all of these dischargers will have an acutely toxic impact on receiving stream populations inside of a zone of initial dilution.

	<u>Mortality(%)</u>	<u>Total Residual Chlorine(mg/l)</u>
Tarawa Terrace(001)	100	2.71
Camp Johnson(001)	100	4.64
Camp Geiger(001)	100	1.85
Hadnot Point(001)	100	1.17

If further information on these tests is required, please contact me at 733-2136.

~~CONFIDENTIAL~~



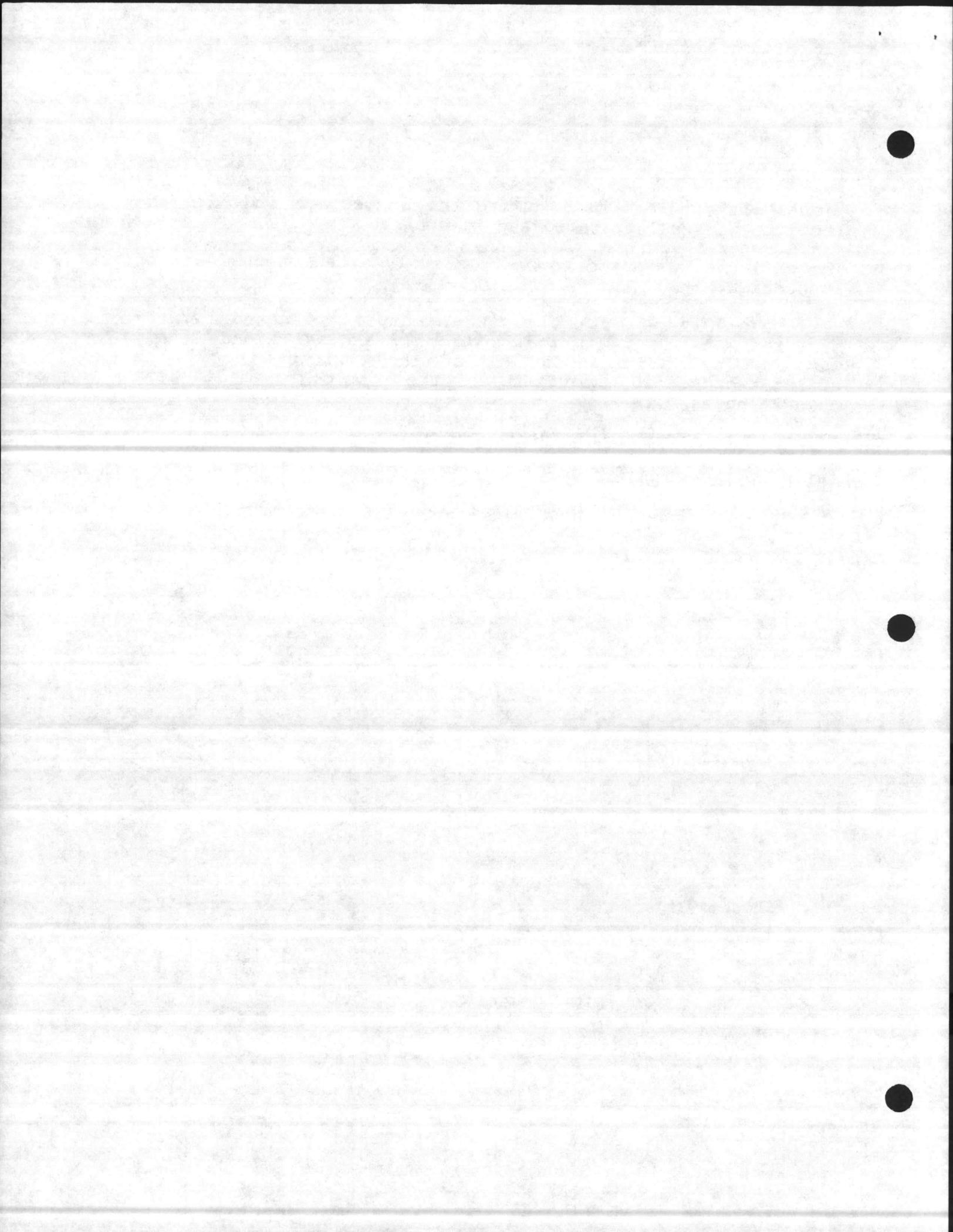
2. Visual observations made during the inspection indicate the facility was well operated and maintained.
3. The effluent was noted to be relatively clear on the date of inspection.
- 4.* Residual chlorine of the effluent sample collected 12/8/87 measured 4.64 mg/l which is extremely excessive and likely was the cause of the failure of the toxicity test. The effluent caused 100% mortality of the test organisms in less than 24 hours.

Name(s) and Signature(s) of Inspector(s):

Michael F. Williams *MFW*

Agency/Office/Telephone: NRCD/Wilmington/256-4161

Date: 12/8/87



NPDES Compliance Inspection Report

Section A: National Data System Coding

Transaction Code: N NPDES NC0063011
Date: 87/12/08 Inspection Type: B Inspector: S
Facility Type: 2 Facility Evaluation Rating: 4
BI: D QA: N

Section B: Facility Data

Name and Location of Facility Inspected:

Montford Point - Camp Johnson

Entry Time: 10:00 am Exit Time/Date: 10:30-12/8/87

Permit Effective Date: 2/1/87 Permit Expiration Date: 1/31/92

Name(s), Title(s) of On-Site Representative(s):

Mack Davis, ORC

Phone Number: 451-5988

Name, Title and Address of Responsible Official:

Carl Baker, Utilities Director

Phone Number: 451-5024 Contacted: Yes

Section C: Areas Evaluated During Inspection

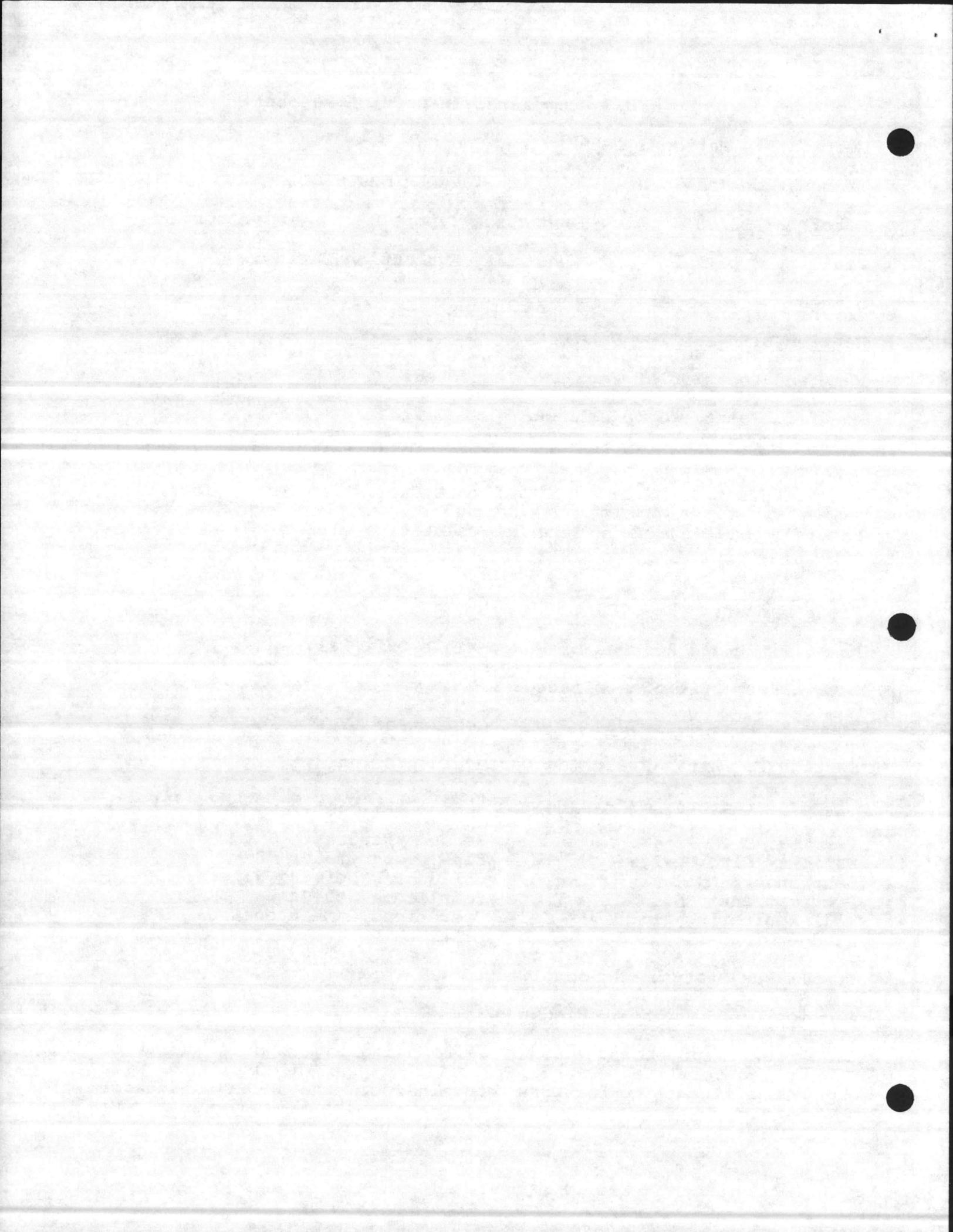
(S=Satisfactory, M=Marginal, U=Unsatisfactory, N=Not Evaluated)

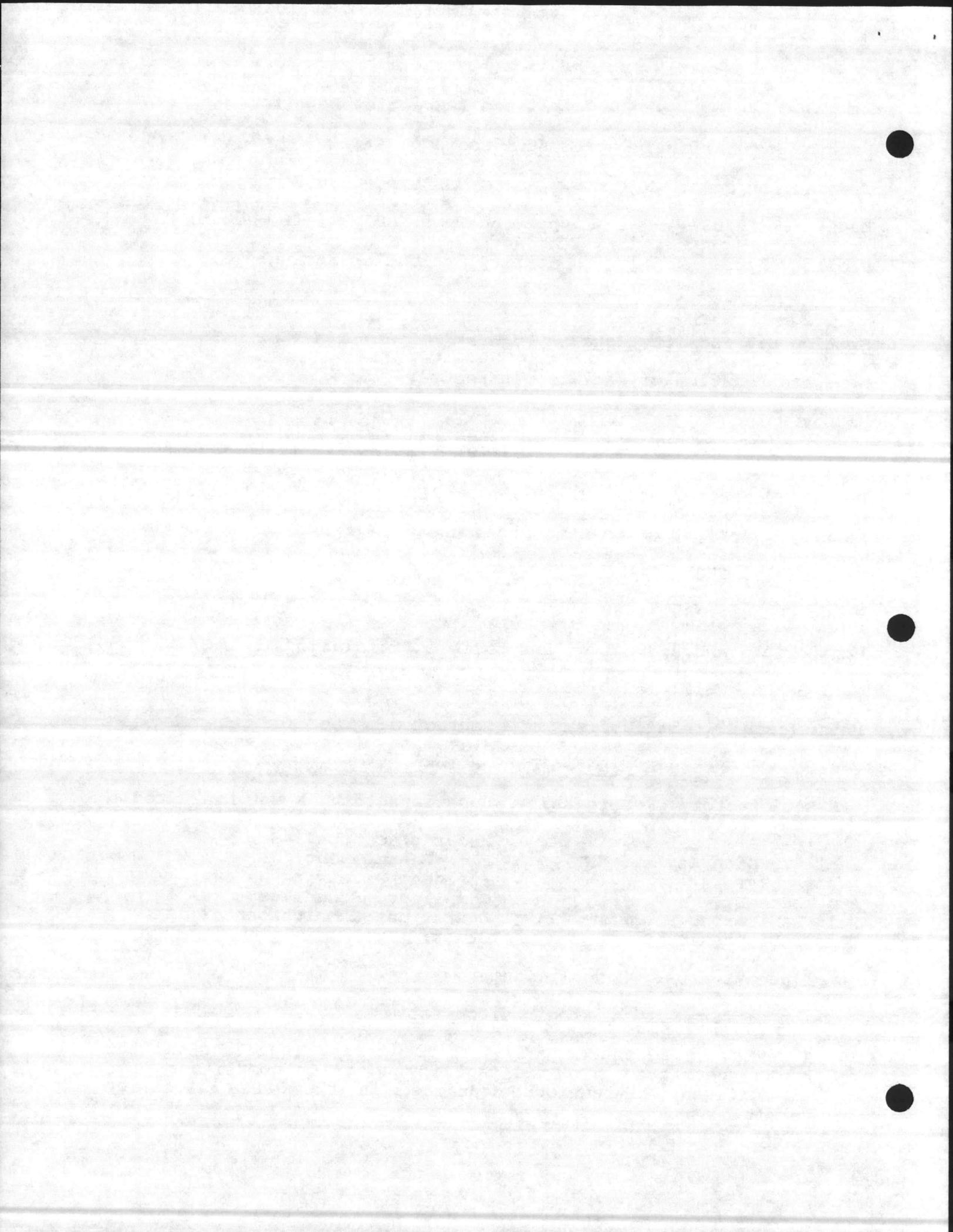
Permit: S	Records/Reports: S
Facility Site Review: N	Flow Measurement: S
Laboratory: N	Effluent/Receiving Waters: M*
Pretreatment: N	Compliance Schedules: N
Self-Monitoring Program: S	Operations & Maintenance: S
Sludge Disposal: S	Other:

Compliance Status: Noncompliance

Section D: Summary of Findings/Comments

1. A review of recent monthly self monitoring reports submitted by the permittee show the facility to be in compliance with the effluent limitations contained in the NPDES discharge permit.





2. Visual observations made during the inspection indicate the facility was well operated and maintained.
3. The effluent was noted to be relatively clear on the date of inspection.
- 4.* The effluent residual chlorine was measured at 1.17 mg/l from the sample collected 12/8/87 and considered to be excessive.
- 5.* Bioassay tests conducted on the effluent sample collected 12/8/87 indicates that the effluent caused 100% mortality of the test organisms and resulted in failure of the toxicity test.

Name(s) and Signature(s) of Inspector(s):

Michael F. Williams *MFW*

Agency/Office/Telephone: NRCD/Wilmington/256-4161

Date: 12/8/87



NPDES Compliance Inspection Report

Section A: National Data System Coding

Transaction Code: N NPDES NC0063002
Date: 87/12/08 Inspection Type: B Inspector: S
Facility Type: 2 Facility Evaluation Rating: 4
BI: D QA: N

Section B: Facility Data

Name and Location of Facility Inspected:

Tarawa Terrace

Entry Time: 9:20 am Exit Time/Date: 9:55-12/8/87

Permit Effective Date: 2/1/87 Permit Expiration Date: 1/31/92

Name(s), Title(s) of On-Site Representative(s):

Mack Davis, ORC

Phone Number: 451-5988

Name, Title and Address of Responsible Official:

Carl Baker, Utilities Director

Phone Number: 451-5024 Contacted: Yes

Section C: Areas Evaluated During Inspection

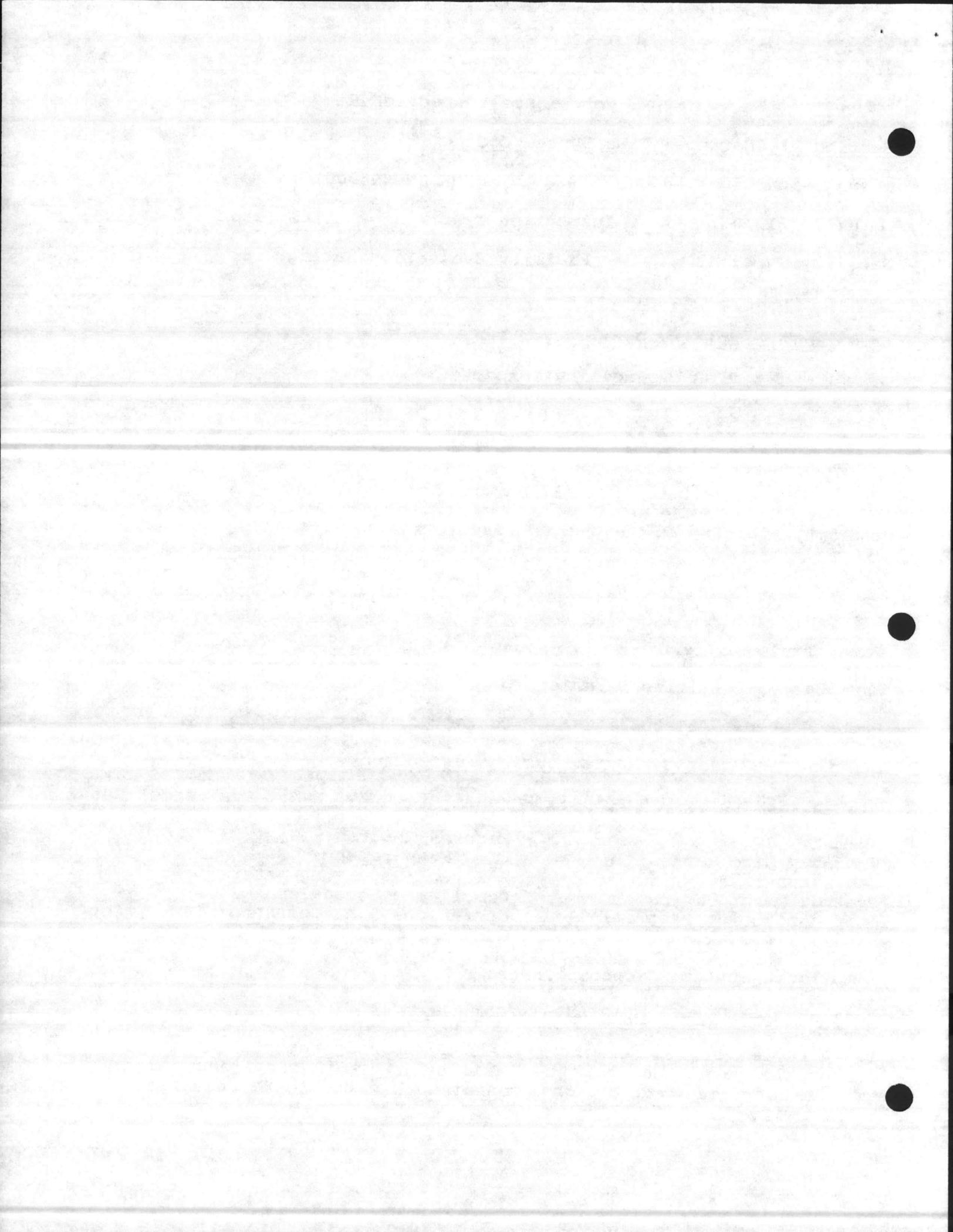
(S=Satisfactory, M=Marginal, U=Unsatisfactory, N=Not Evaluated)

Permit: S	Records/Reports: S
Facility Site Review: N	Flow Measurement: S
Laboratory: N	Effluent/Receiving Waters: M*
Pretreatment: N	Compliance Schedules: N
Self-Monitoring Program: S	Operations & Maintenance: S
Sludge Disposal: S	Other:

Compliance Status: Noncompliance

Section D: Summary of Findings/Comments

1. A review of recent monthly self monitoring reports submitted by the permittee show the facility to be in compliance with the effluent limitations contained in the NPDES discharge permit.



Page Two
Tarawa Terrace

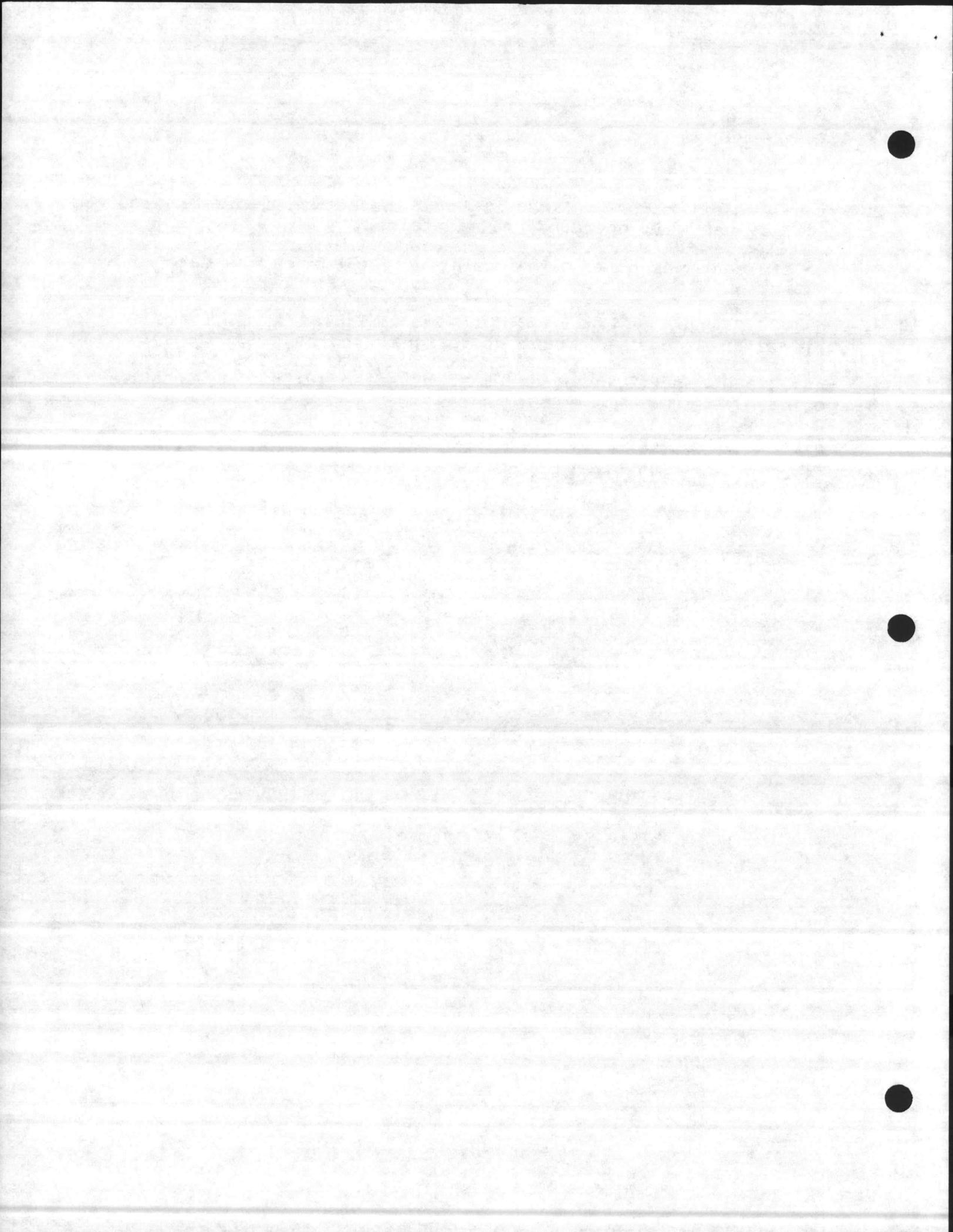
2. Visual observations made during the inspection indicate the facility was well operated and maintained.
3. The effluent was noted to be relatively clear on the date of inspection.
- 4.* On 12/8/87 the residual chlorine was measured at 2.71 mg/l. This is an excessive amount of residual and is most probably the cause of the failure of the toxicity tests. The effluent caused 100% mortality of the test organisms within a 24-hour period.

Name(s) and Signature(s) of Inspector(s):

Michael F. Williams *MFW*

Agency/Office/Telephone: NRCD/Wilmington/256-4161

Date: 12/8/87



NPDES Compliance Inspection Report

Section A: National Data System Coding

Transaction Code: N NPDES NC0062995
Date: 87/12/08 Inspection Type: B Inspector: S
Facility Type: 2 Facility Evaluation Rating: 4
BI: D QA: N

Section B: Facility Data

Name and Location of Facility Inspected:

Camp Geiger

Entry Time: 10:30 am Exit Time/Date: 11:15-12/8/87
Permit Effective Date: 2/1/87 Permit Expiration Date: 1/31/92

Name(s), Title(s) of On-Site Representative(s):

Mack Davis, ORC

Phone Number: 451-5988

Name, Title and Address of Responsible Official:

Carl Baker, Utilities Director

Phone Number: 451-5024 Contacted: Yes

Section C: Areas Evaluated During Inspection

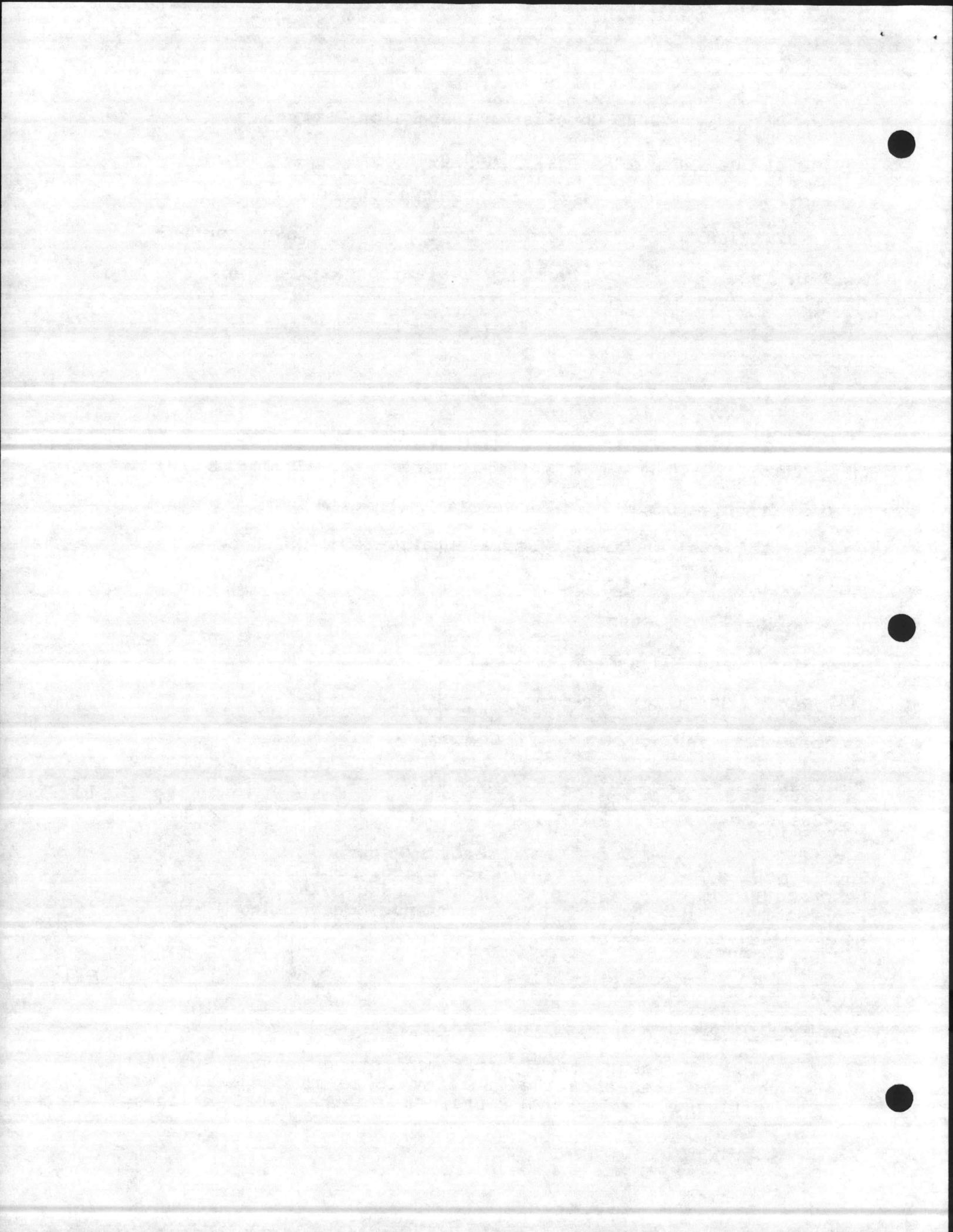
(S=Satisfactory, M=Marginal, U=Unsatisfactory, N=Not Evaluated)

Permit: S	Records/Reports: S
Facility Site Review: N	Flow Measurement: S
Laboratory: N	Effluent/Receiving Waters: M*
Pretreatment: N	Compliance Schedules: N
Self-Monitoring Program: S	Operations & Maintenance: S
Sludge Disposal: S	Other:

Compliance Status: Noncompliance

Section D: Summary of Findings/Comments

1. A review of recent monthly self monitoring reports submitted by the permittee show the facility to be in compliance with the effluent limitations contained in the NPDES discharge permit.



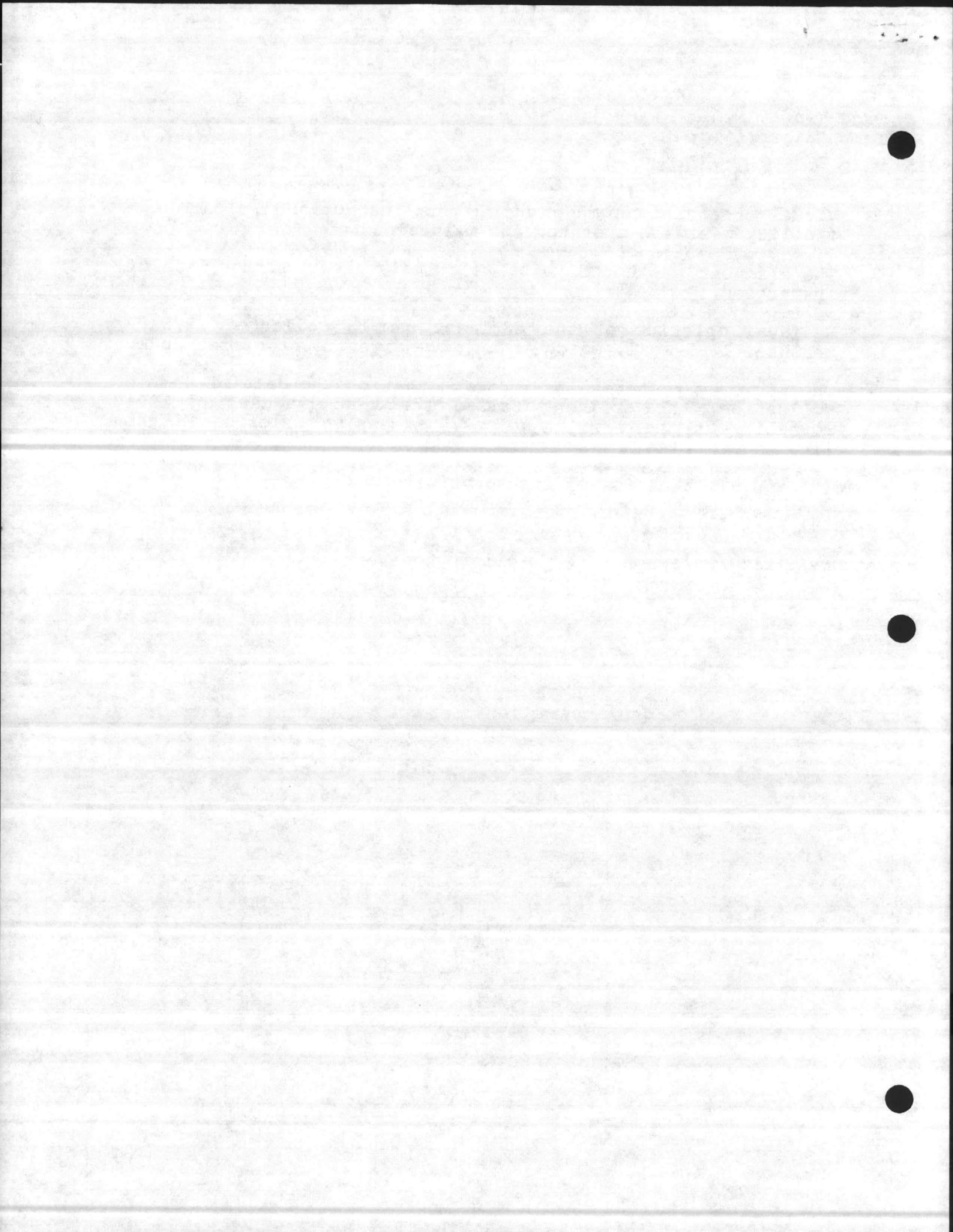
2. Visual observations made during the inspection indicate the facility was well operated and maintained.
3. The effluent was noted to be relatively clear on the date of inspection.
- 4.* Residual chlorine of the effluent sample collected 12/8/87 measured 1.85 mg/l, which is an excessive amount of residual.
- 5.* The toxicity test results indicate that on the date of sample collection, the effluent failed the test by causing 100% mortality of the test organisms. Excessive chlorine is the likely cause.

Name(s) and Signature(s) of Inspector(s):

Michael F. Williams *MFW*

Agency/Office/Telephone: NRCD/Wilmington/256-4161

Date: 12/8/87



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State of North Carolina
Department of Natural Resources and Community Development
Division of Environmental Management
512 North Salisbury Street • Raleigh, North Carolina 27611

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

R. Paul Wilms
Director

August 8, 1986

Mr. Bob Alexander
Marine Corps Base Environmental Engineer
United States Marine Corps
Marine Corps Base
Camp Lejeune, NC 28542

SUBJECT: Discharge to SA Waters
NPDES Permit No. NC0063053
Onslow Beach STP
Onslow County

Dear Mr. Alexander:

As you are aware, the discharge from the wastewater treatment facility serving Camp Lejeune - Onslow Beach enters waters which are classified SA. The quality of this class of waters must be maintained at a level suitable for the taking of shellfish for market purposes. Title 15 of the North Carolina Administrative Code, Section 2H .0404 (a) states that no domestic sewage, regardless of treatment, shall be discharged into waters classified SA. Section 2H .0406 (a) states that existing publicly owned waste collection, treatment and disposal systems shall comply with the requirements of these Regulations unless such compliance is determined by the Environmental Management Commission to be "not in the public interest". Such a finding would result when the requirements of these Regulations could not be met even after "best available control technology economically achievable" has been provided.

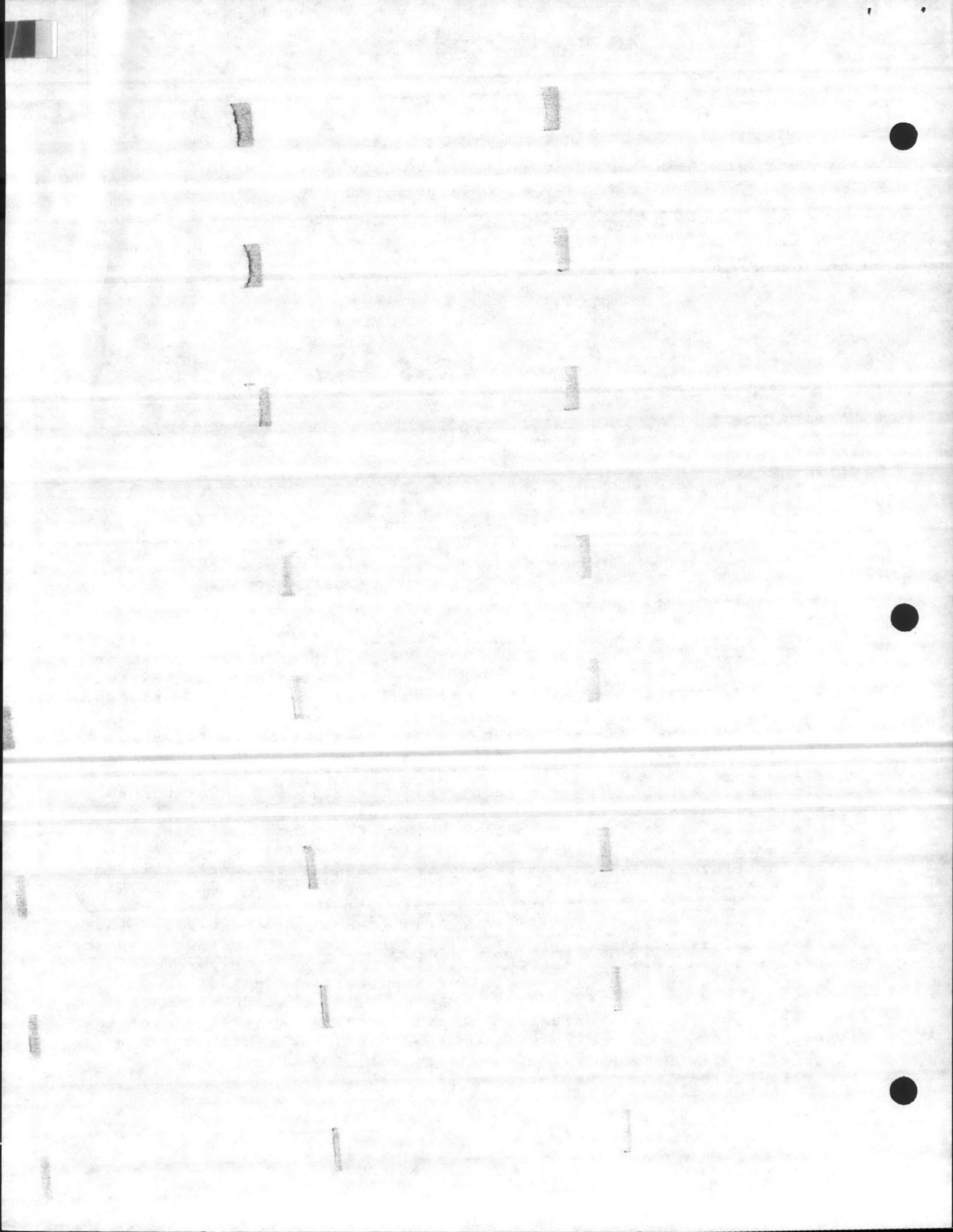
This permit cannot be issued unless it can be demonstrated that there is no wastewater treatment alternative available other than the discharge to SA waters. Alternatives that must be considered at a minimum are subsurface disposal, land application, and discharge to waters which are classified other than SA. In order to allow for adequate time for the evaluation of your proposal as well as for the processing of any needed permits, please provide our Wilmington Regional Office with a preliminary proposal of your possible alternatives no later than October 31, 1986.

Pollution Prevention Pays

P.O. Box 27687, Raleigh, North Carolina 27611-7687 Telephone 919-733-7015

An Equal Opportunity Affirmative Action Employer

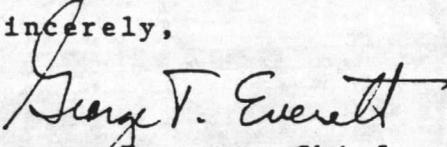
Enclosure (1)



Mr. Bob Alexander
Page Two
August 8, 1986

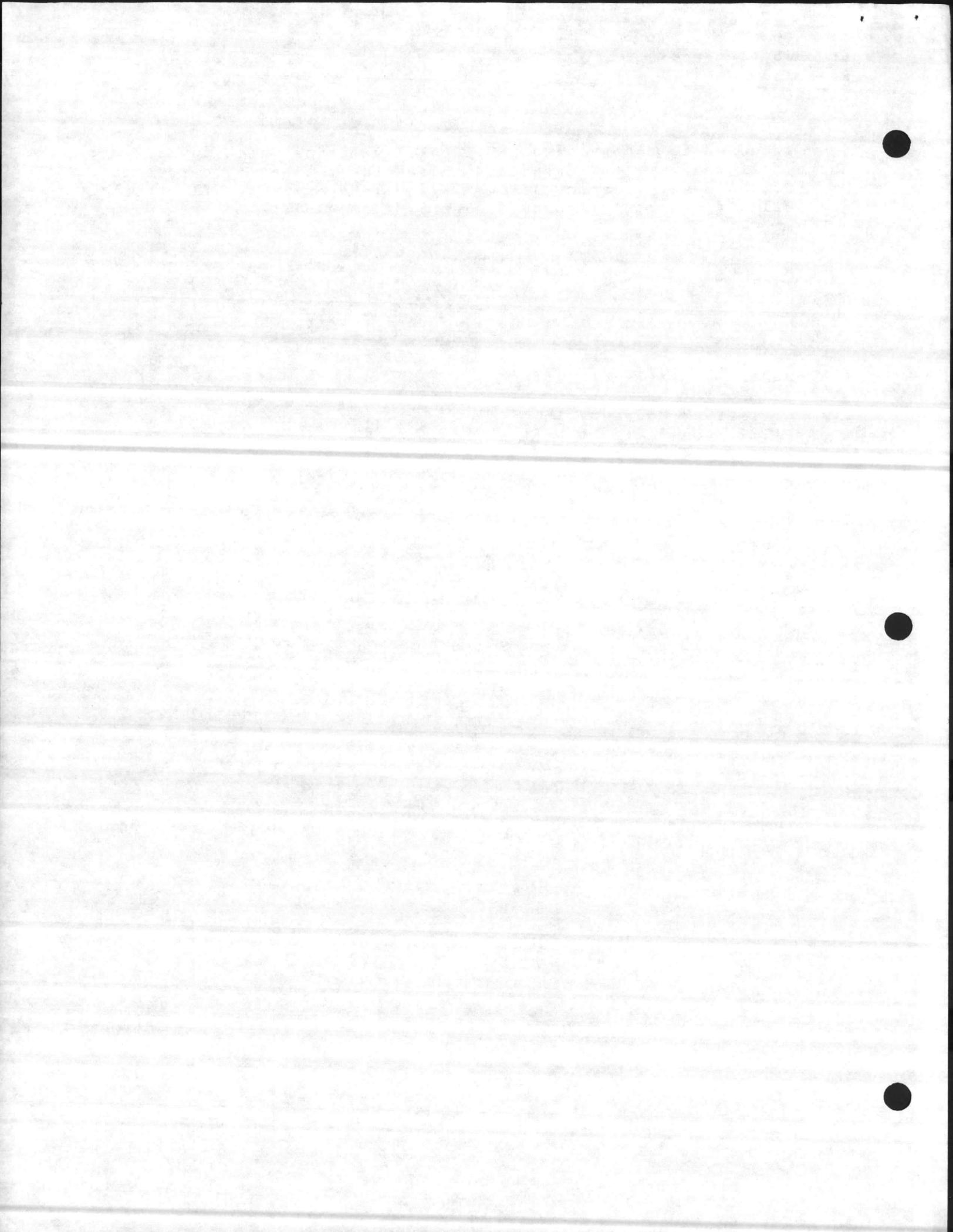
Enclosed is a copy of our Coastal Regulation which was cited above. If you have any questions, please do not hesitate to contact Mr. Preston Howard, Water Quality Regional Supervisor, Wilmington Regional Office, at telephone number 919/256-4161.

Sincerely,


George Everett, Chief
Water Quality Section

Enclosure: Coastal Regulation

cc: Mr. Arthur Mouberry
Wilmington Regional Office

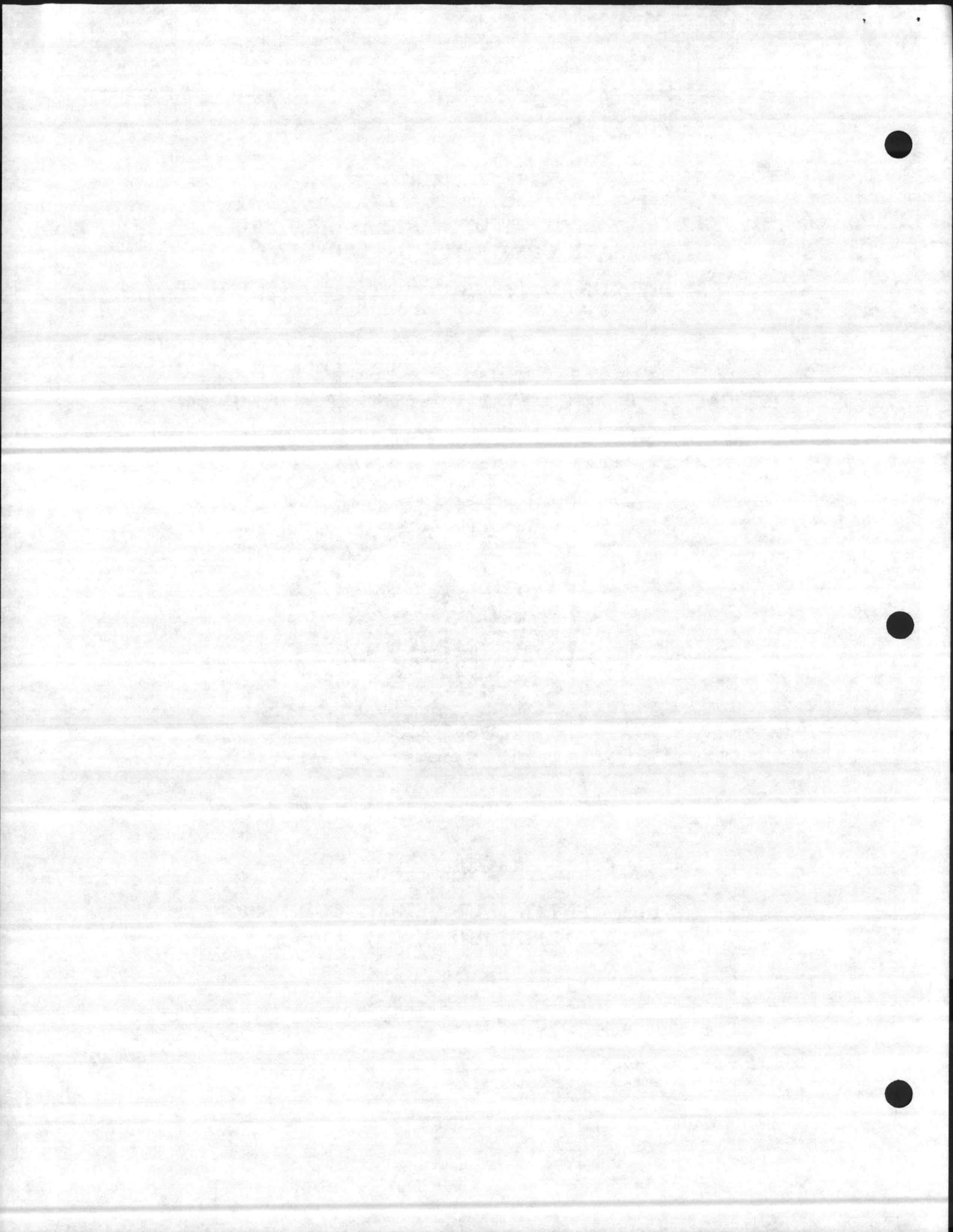


STATE OF NORTH CAROLINA
DEPARTMENT OF NATURAL RESOURCES
AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT

ADMINISTRATIVE CODE SECTION:
15 NCAC 2H .0400 - COASTAL WASTE TREATMENT DISPOSAL



CURRENT THROUGH JULY, 1 1985
ENVIRONMENTAL MANAGEMENT COMMISSION
RALEIGH, NORTH CAROLINA



SECTION .0400 - COASTAL WASTE TREATMENT DISPOSAL

.0401 STATEMENT OF POLICY

It is hereby declared to be the policy of the Environmental Management Commission that all wastewater generated in the State of North Carolina shall be treated to such an extent as to insure the compliance with water quality standards promulgated by the commission. It is further the policy of the commission that regional and area-wide wastewater collection and treatment facilities shall be promoted to the fullest practicable extent. The commission recognizes, however, that development of area-wide and regional sewerage systems is not always in keeping with the demands for growth within the areas and that interim regulations are necessary to insure that water quality standards are not violated. In keeping with this policy, the commission adopts these Regulations of this Section.

History Note: Statutory Authority G.S. 143-215.3(a) (1);
143-211; 143-215.1(a); 143-215.1(b) (1);
Eff. February 1, 1976.

.0402 APPLICABILITY

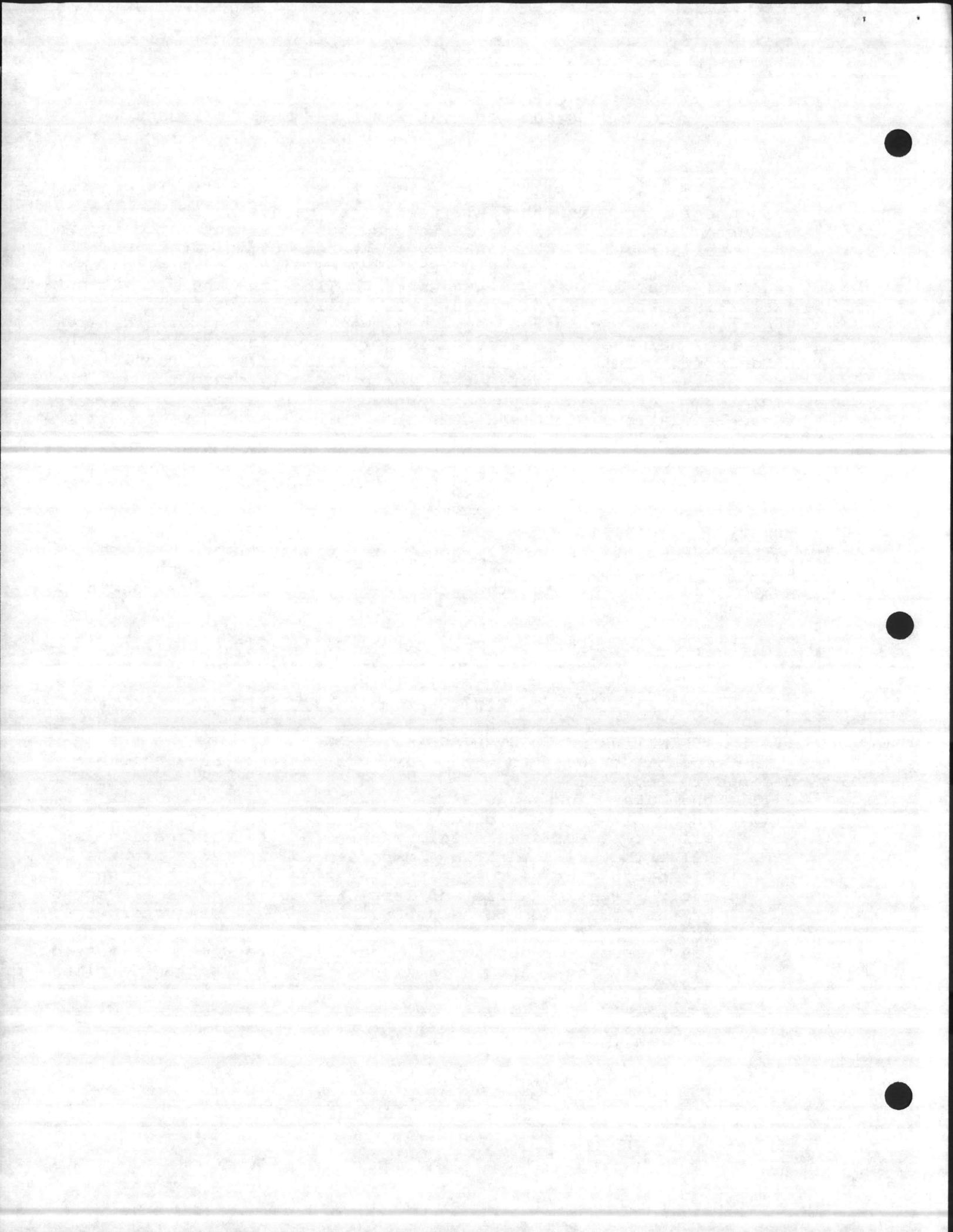
These Regulations shall apply to treatment and disposal of waste from all installations located within the coastal areas which are subject to the regulations of the Environmental Management Commission.

History Note: Statutory Authority G.S. 143-215.3(a) (1);
143-211; 143-215.1(a); 143-215.1(b) (1);
Eff. February 1, 1976;
Amended Eff. September 13, 1981.

.0403 DEFINITION OF COASTAL AREAS

The coastal areas for the purposes of these Regulations are defined to include:

- (1) the Outer Banks;
- (2) those land areas bordering the coastal waters, including all waters assigned a salt water "S" classification and all tributaries that have experienced excessive growths of microscopic or macroscopic vegetation or that, because of their relative size and lack of water exchange are found by the commission to be subject to such excessive growths; and
- (3) land areas bordering all natural impoundments situated east of the line established by the North Carolina



Environmental Management Commission to designate coastal waters, said land being described as follows:

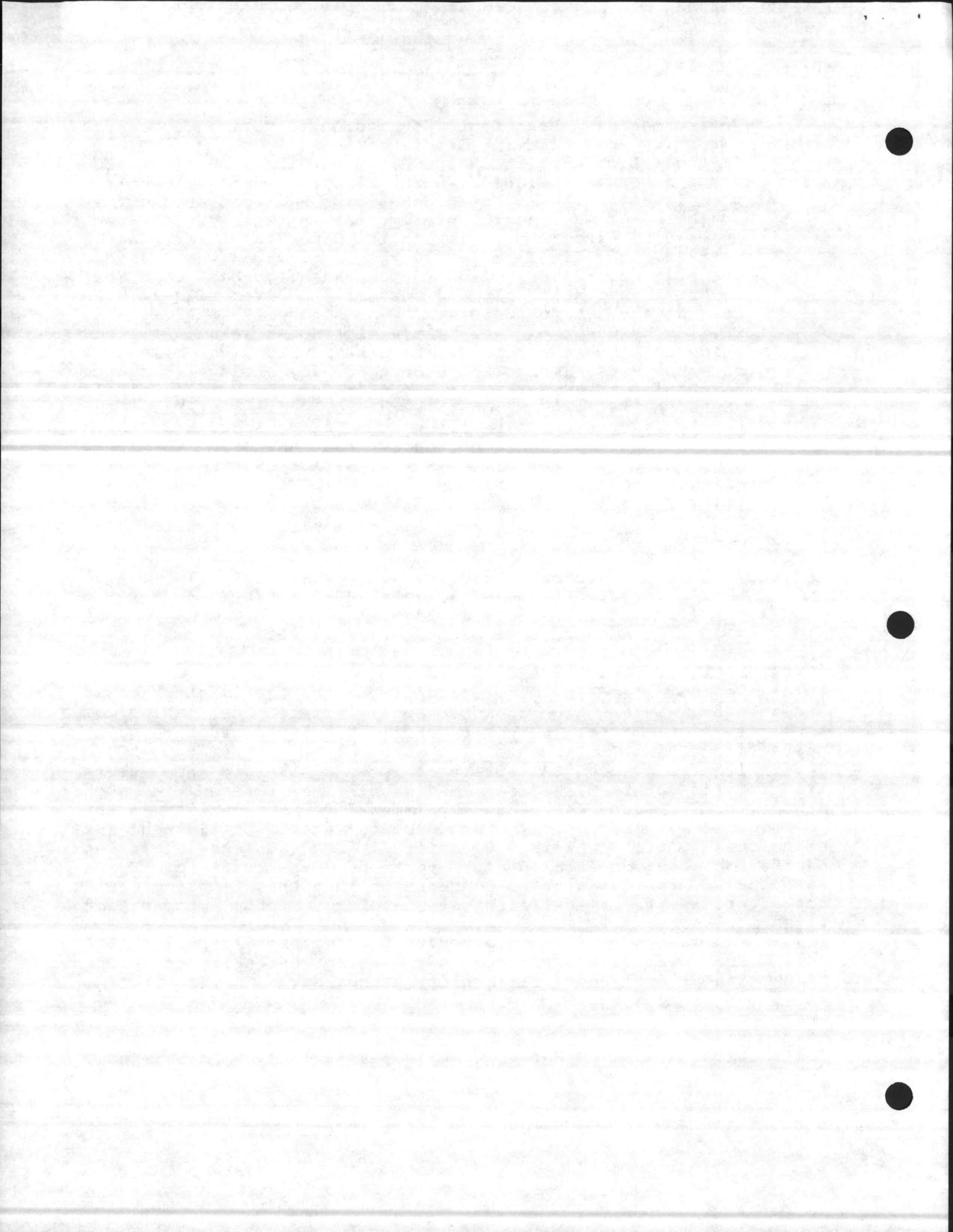
"Extends from a point on the North Carolina/South Carolina state line near Calabash, North Carolina, generally along the lines of the Atlantic Coast Line Railroad and Norfolk Southern Railway, northeasterly and northerly to River Mile 66.0 (Lock No. 1) on the Cape Fear River; thence northerly to River Mile 30.0 on Black River; thence easterly to River Mile 48 on the North East Cape Fear River; thence northerly and easterly to River Mile 22.5 in New River; thence easterly and northerly to River Mile 25.0 on White Oak River (Atlantic Coast Line Railroad Bridge); thence northerly and easterly to River Mile 38.9 on Neuse River (Norfolk Southern Railway Bridge); thence northerly to River Mile 44.6 on Pamlico River (Norfolk Southern Railway Bridge); thence northeasterly and northerly crossing Albemarle Sound along Norfolk Southern Railway Bridge; thence northerly and easterly to River Mile 13.5 on Perquimans River (Norfolk Southern Railway Bridge); thence easterly to River Mile 20.0 on Pasquotank River (Norfolk Southern Railway Bridge); and thence northerly to the North Carolina/Virginia state line near Moyock, North Carolina."

History Note: Statutory Authority G.S. 143-215.3(a)(1);
143-211; 143-215.1(a); 143-215.1(b)(1);
Eff. February 1, 1976;
Amended Eff. September 13, 1981.

.0404 FACILITY LOCATION AND DESIGN

(a) No domestic sewage regardless of the treatment proposed and no other wastes which could adversely affect the taking of shellfish for market purposes shall be discharged into water classified "SA" or to waters in such close proximity as to adversely affect such "SA" waters. Wastes discharged into waters tributary to waters classified "SA" shall be treated in such manner as to assure that no impairment of water quality in the "SA" segments shall occur. No permits shall be issued for discharges into waters classified "SA" unless Shellfish Sanitation, Environmental Health Section, Department of Human Resources, provides written concurrence that the discharge would not adversely affect shellfish water quality or the propagation of shellfish.

(b) No wastes shall be discharged to waters classified "SB" unless these wastes are treated to the extent necessary to assure protection of assigned water quality standards.



(c) The director may prohibit or limit any discharge of waste into surface waters if, in the opinion of the director, the surface waters experience or the discharge would result in:

- (1) growths of microscopic vegetation such that chlorophyll a values are greater than 40 ug/l; or
- (2) growths of microscopic or macroscopic vegetation which substantially impair the intended best usage of the waters.

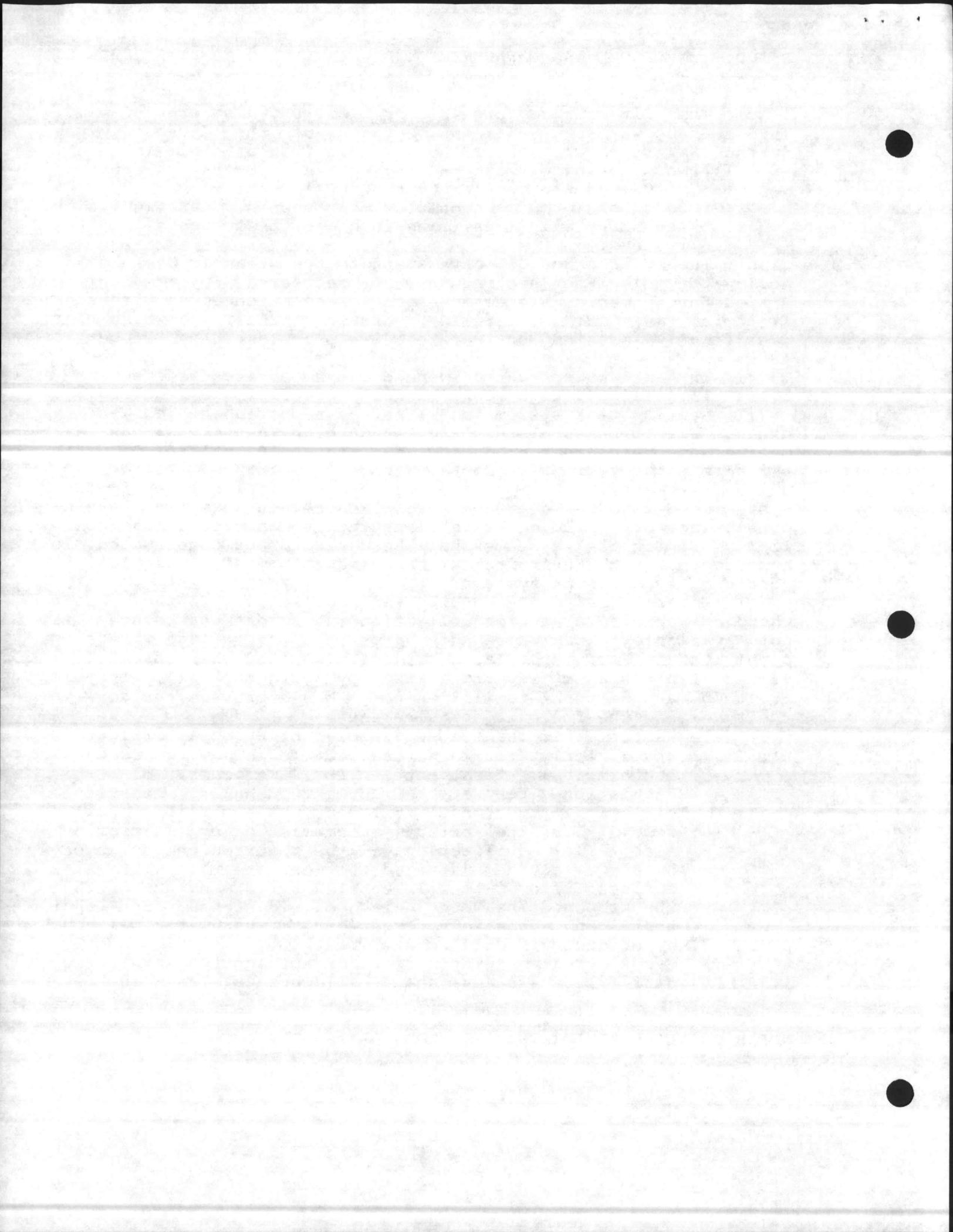
(d) The discharge of wastewaters to the Atlantic Ocean shall follow the guidelines and requirements set forth in the United States Environmental Protection Agency regulation Ocean Discharge Criteria, 40 C.F.R. 125.120 through 125.124, which is specifically adopted by reference as promulgated on October 3, 1980.

(e) In all cases where connection to an area-wide sewerage system is feasible, such connection thereto shall be required.

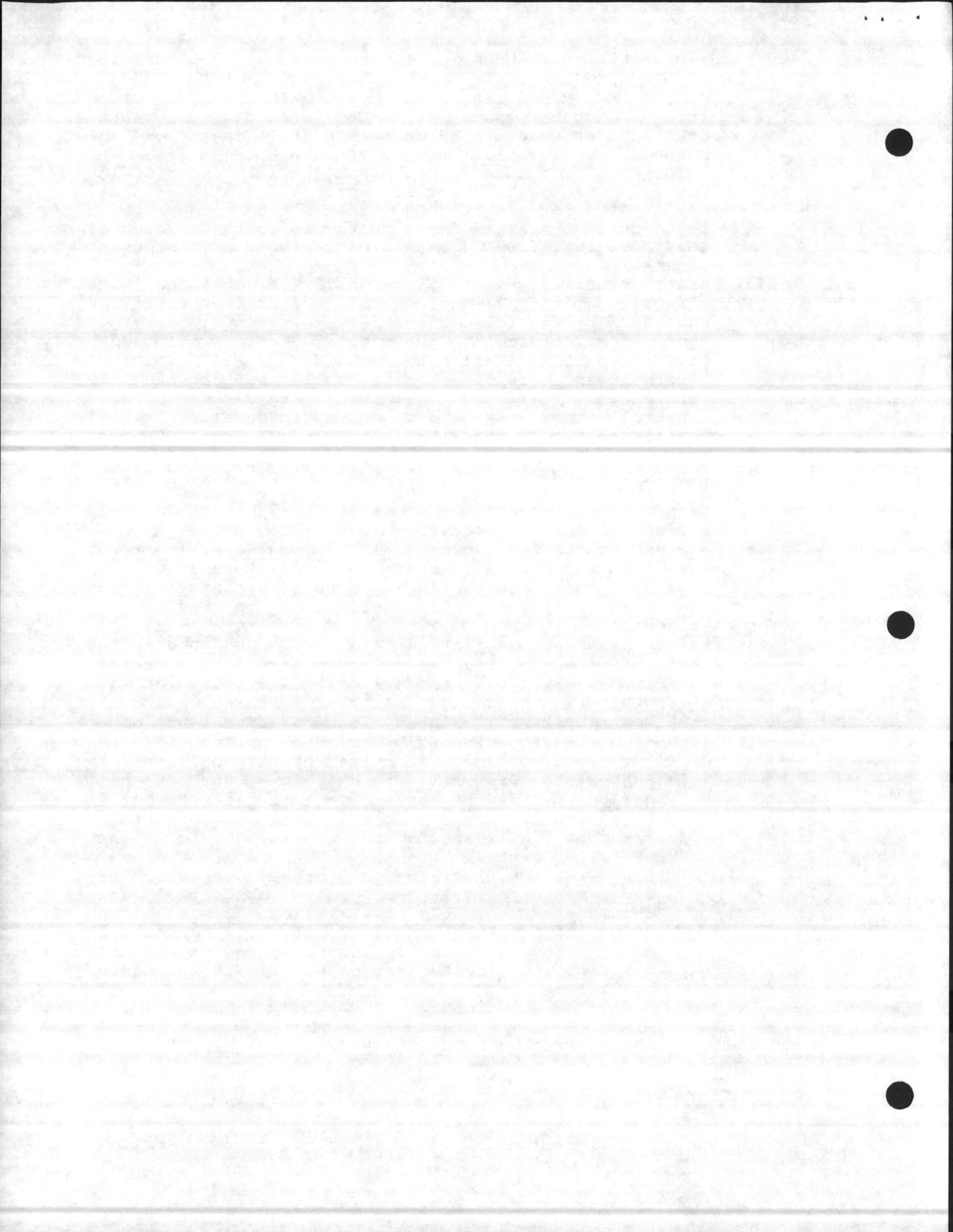
(f) Septic tank systems shall not be approved in high density areas. For purposes of this Regulation high density areas are defined as those areas producing more than 1,200 gallons of waste per acre per day or which contain more than three residential units per acre. For purposes of this Regulation a septic tank system is defined as a ground absorption sewage disposal system consisting of a holding or settling tank and a ground absorption field. Septic tank systems shall be designed and constructed in accordance with Environmental Management Commission regulations governing septic tank systems.

(g) Interim Treatment and Disposal Facilities. In those cases where an approved area-wide collection and treatment system is not available, and where discharge to the surface waters is prohibited in Paragraphs (a), (b), (c), (d), and where use of a septic tank system is prohibited by paragraph (f), interim treatment and disposal facilities may be approved subject to their meeting the following requirements.

- (1) Wastes other than those disposed of by spray irrigation shall receive tertiary treatment followed by adequate bactericidal treatment. For purposes of this Regulation tertiary treatment shall constitute biological treatment followed by acceptable solids removal to the extent accomplished by filtration. Also, flow equilization will be required unless it can be adequately demonstrated that either the wastewater influent flow rate will be of a uniform nature or that the proposed treatment units are designed such that they can adequately treat this wastewater without experiencing hydraulic overload.
- (2) Waste treatment facilities (except septic tank-surface sand filter systems) shall be located at least 10 feet



- from adjacent property under separate ownership, developed or undeveloped and at least 10 feet from on-property residential units if these units are to be sold, e.g., condominiums, residential subdivision houses. Septic tank-surface sand filter systems shall be located at least 200 feet from on-property residential units if these units are to be sold and at least 200 feet from adjacent property under separate ownership.
- (3) Waste treatment facilities shall be equipped with effective noise and odor control devices and are to be enclosed by a solid or semi-solid structure or other approved structure. An automatically activated standby power source shall be provided. All essential treatment and disposal units shall be provided in duplicate.
 - (4) Treated wastes may be disposed of in on-site disposal facilities, which shall be located at least 500 feet from any impounded public surface water supply or public shallow (less than 50 feet deep) ground water supply, and at least 100 feet from a private ground water supply except when a study of the soil would indicate a lesser separation acceptable.
 - (5) Waste disposal facilities shall be located at least 100 feet from any waters classified SA and at least 50 feet from any other waters. In the case of drainage ditches that are normally dry this distance may be reduced to 25 feet.
 - (6) Waste disposal facilities are to be designed on the basis of site conditions and soil percolation rates. In Parts (a), (b), and (c) of this Subparagraph are given the maximum loading rates for three different treatment systems. Higher loading rates or other methods of waste disposal may be approved by the director based upon data submitted by the applicant.
 - (A) Subsurface Disposal Trench. One and one-half gallons per day per square foot of trench bottom based on maximum trench width of three feet. Trenches shall be separated at least eight feet center to center.
 - (B) Low Pressure Distribution System. One gallon per day per square foot of effective absorption area encompassed by the distribution system. The calculation of the amount of effective absorption area required shall be based on a maximum distribution line separation of five feet center to center.

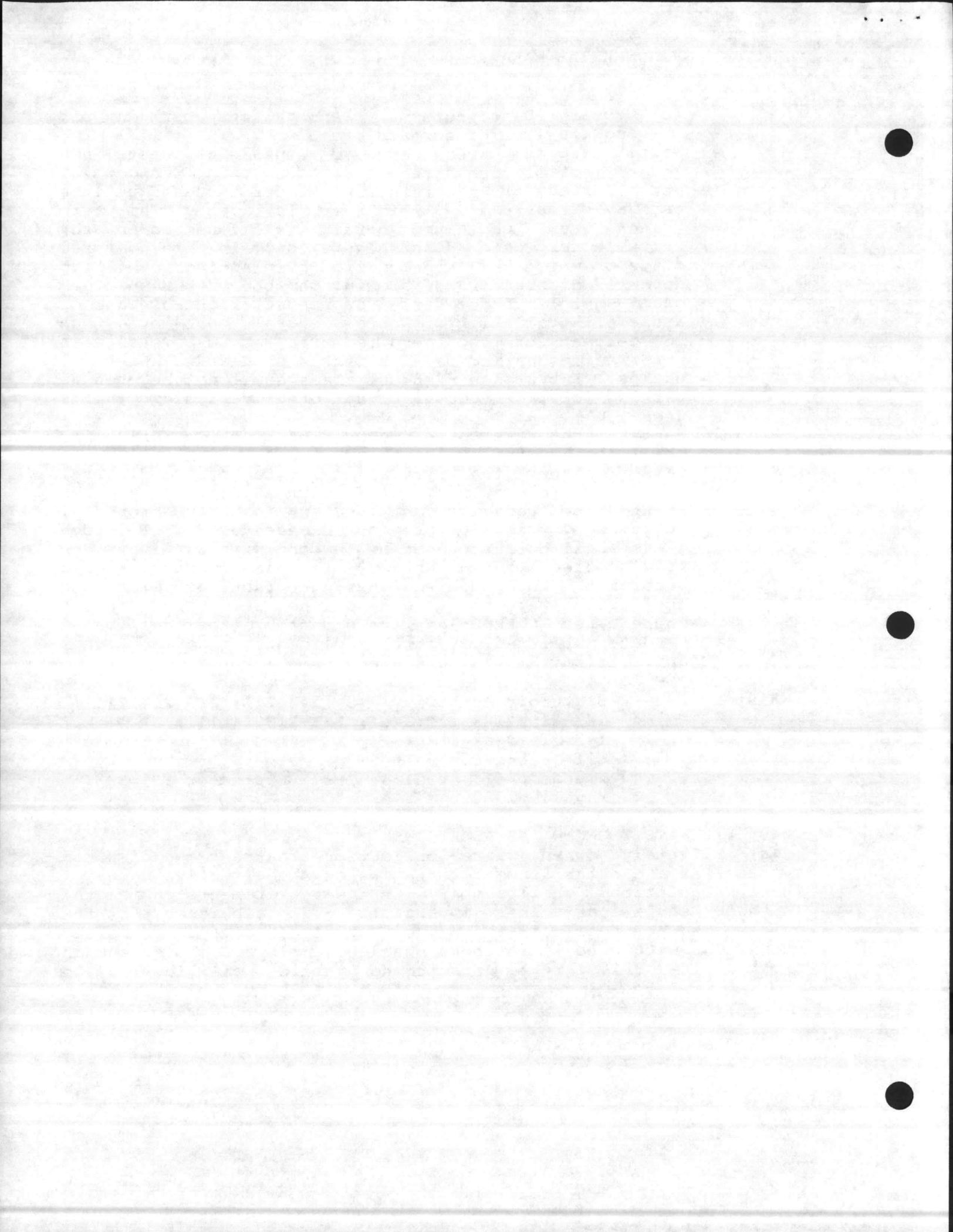


- (C) Rotary Distributors. Ten gallons per day per square foot of surface area.
- (7) Waste disposal areas are to contain at least 1,000 square feet of open "green area" for each residential unit served, or 2,500 square feet per thousand gallons per day of waste flow, whichever is less. The term "green area" contained herein is defined as an area suitable for waste disposal, either in its natural state or which has been modified by planting vegetative cover of grasses or low growing shrubbery. Green areas shall not include street or roadway right-of-ways or areas not available for waste disposal. Not more than 25 percent of the required area may be covered with non-traffic bearing paved surfaces such as walkways or patios. Subsurface disposal areas shall not be used as parking lots, driveways, or for other vehicular traffic uses.
- (8) Wastes that are to be disposed of by spray irrigation shall receive a level of treatment which will not render either the irrigation system or the disposal area unworkable. Spray irrigation systems shall be located at least 200 feet from any adjoining property, buffered by trees to prevent excessive drift. Such areas shall be surrounded by fencing with warning signs to discourage human use or trespass, and designed according to good engineering practices with the application rate not to exceed one and three fourth inches per week-unless the director determines, based on data submitted by the applicant, that a higher application rate is justified.

History Note: Statutory Authority G.S. 143-211; 143-214.2(c);
143-215; 143-215.1(a); 143-215.1(b) (1);
143-215.3(a) (1);
Eff. February 1, 1976;
Amended Eff. April 1, 1983; September 13, 1981;
May 11, 1980.

.0405 PRIVATELY OWNED INSTALLATIONS

(a) Privately owned waste collection treatment and disposal systems serving establishments existing on the effective date of these Regulations shall comply with the requirements enumerated in these Regulations unless impossible. If adherence to the guides is not possible, the highest level of control technology consistent with site limitations shall be employed. No expansion of the load tributary to existing non-public facilities will be



allowed until compliance with the guides established in these Regulations is obtained.

(b) Privately owned wastewater collection, treatment and disposal systems serving establishments not in existence on the effective date of these Regulations shall comply with the provisions of these Regulations.

History Note: Statutory Authority G.S. 143-215.3(a)(1);
143-211; 143-215.1(a); 143-215.1(b)(1);
Eff. February 1, 1976;
Amended Eff. September 13, 1981.

.0406 PUBLICLY OWNED SEWERAGE FACILITIES

(a) Existing publicly owned waste collection, treatment, and disposal facilities shall comply with the requirements of these Regulations unless such compliance is determined by the commission to be "not in the public interest." Such a finding would result when requirements of these Regulations could not be met even after "best available control technology economically achievable" has been provided.

(b) New publicly owned waste collection, treatment, and disposal facilities shall comply with the provisions of these Regulations, and any other applicable regulations of the commission.

History Note: Statutory Authority G.S. 143-215.3(a)(1);
143-211; 143-215.1(a); 143-215.1(b)(1);
Eff. February 1, 1976;
Amended Eff. September 13, 1981.

.0407 EXCEPTIONS FROM REQUIREMENTS

No exception from the requirements of these Regulations shall be made until such exception is approved by the commission.

History Note: Statutory Authority G.S. 143-215.3(a)(1);
143-211; 143-215.1(a); 143-215.1(b)(1);
Eff. February 1, 1976.

