

11330/1
NREAD
18 Oct 84

From: Director, Natural Resources and Environmental Affairs
Division, Marine Corps Base, Camp Lejeune
To: Base Maintenance Division, Marine Corps Base, Camp
Lejeune

Subj: DRINKING WATER ANALYSIS; CERTIFICATION FOR

Ref: (a) Drinking Water Act; state implementing regulations

Encl: (1) State Laboratory Public Health Division of Health
Services ltr of 10 Oct 1984

1. The Quality Control Laboratory has been recertified per the reference. The enclosure is forwarded for your information. It is requested that procedures for use of an insulated chest and coolant to store samples be developed for Utilities Branch, Base Maintenance Division, as requested by the enclosure.

J. I. WOOTEN

Copy to:
Supvy Chemist





2 - .





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

DIVISION OF HEALTH SERVICES
STATE LABORATORY OF PUBLIC HEALTH
306 N. Wilmington St.
P.O. Box 28047
Raleigh, N.C. 27611-8047

October 10, 1984

Commanding General
Marine Corps Base
Camp LeJeune, NC 28542

ATTN: Facilities - NREAD
Elizabeth Betz

Dear Ms. Betz:

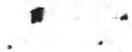
The findings of the on-site evaluation on Sept. 27, 1984 indicate that your laboratory has met the minimum requirements for certification as specified in North Carolina Drinking Water Regulations (10NCAC 9D .0301 - .0330). We, therefore, grant Certification to your laboratory for total coliform analysis on public water supplies.

If you have any questions or if we may be of further assistance in this matter, please let us know.

Sincerely,

E. D. Beesley
Laboratory Certification Evaluator

EDB/hw
Enclosure

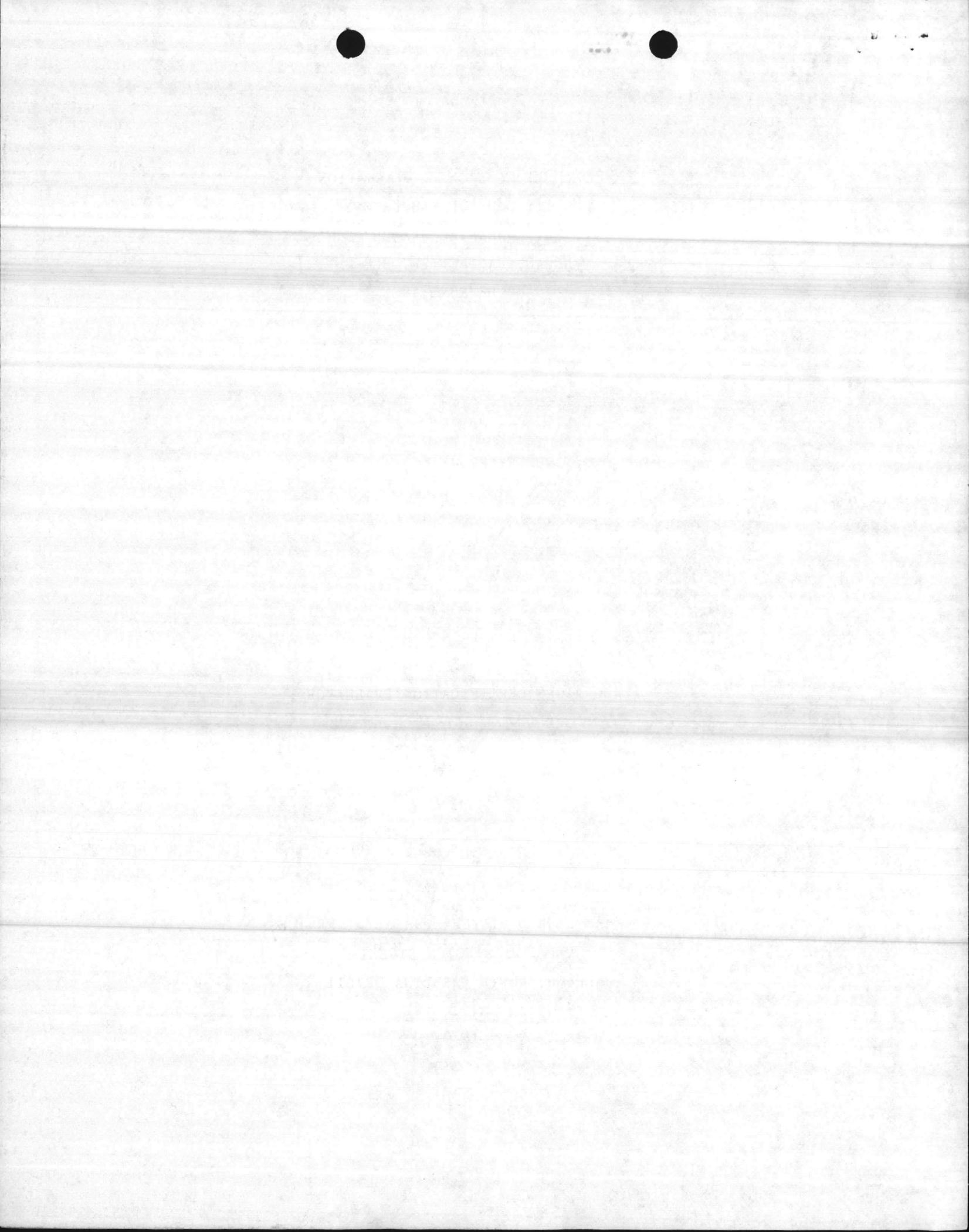


REPORT OF AN ON-SITE EVALUATION
QUALITY CONTROL LABORATORY
ENVIRONMENTAL BRANCH
NREAD, FACILITIES, MCB
CAMP LEJEUNE, NC

SEPTEMBER 27, 1984

BY:
E. D. BEESLEY
LABORATORY CERTIFICATION EVALUATOR
ENVIRONMENTAL SCIENCES BRANCH

LABORATORY SECTION
NORTH CAROLINA DIVISION OF HEALTH SERVICES
NORTH WILMINGTON STREET
RALEIGH, NORTH CAROLINA 27611



QUALITY CONTROL LABORATORY
CAMP LEJEUNE, NORTH CAROLINA
September 27, 1984

I. INTRODUCTION

The equipment and procedures employed in the bacteriological analyses of water by this laboratory conformed with the provisions of the North Carolina Safe Drinking Water Regulations, except for the items indicated.

II. DEVIATIONS AND RECOMMENDATIONS

No Deviations.

Recommendation: Samples must be protected from excessive heat, especially during hot summer months. An insulated chest containing a coolant such as frozen Blue Ice should be used.

III. LIST OF PERSONNEL

<u>NAME</u>	<u>POSITION</u>	<u>TEST NORMALLY PERFORMED</u>
Elizabeth A. Betz	Supervisor	MF & MPN
Hoy Burns <i>Corrected by D.D.S. 15 Oct 84</i>	Techn./Analyst	MF & MPN
Bob Lachapelle	Techn./Analyst	MF & MPN
Gaines Honeycutt	Techn./Analyst	MF & MPN
Thomas Barbee	Techn./Analyst	MF & MPN

V. CONCLUSION:

The procedures and equipment in use at the time of this survey were in general compliance with the provisions of the North Carolina Drinking Water Regulations (10NCAC 9D .0301 - .0330). We recommend that the analytical data be accepted for MF and MPN Coliform Analysis of Drinking Water under the North Carolina Safe Drinking Water Act.



11-11-77

North Carolina
Department of Human Resources
Division of Health Services



*Certification for the
analysis of drinking water
has been granted to*

CAMP LEJEUNE QUALITY CONTROL LABORATORY

for the following parameters

Coliform Bacteria - by Membrane Filter Procedure
Coliform Bacteria - by Most Probable Number Procedure

September 1986

Expiration Date

Donald McGuire
State Health Director

37807

Laboratory Number

Mildred Kerbaugh
Chief, State Laboratory
of Public Health

E. D. Beasley
Certification Officer



100

100

100

100

100



Ronald H. Levine, M.D., M.P.H.
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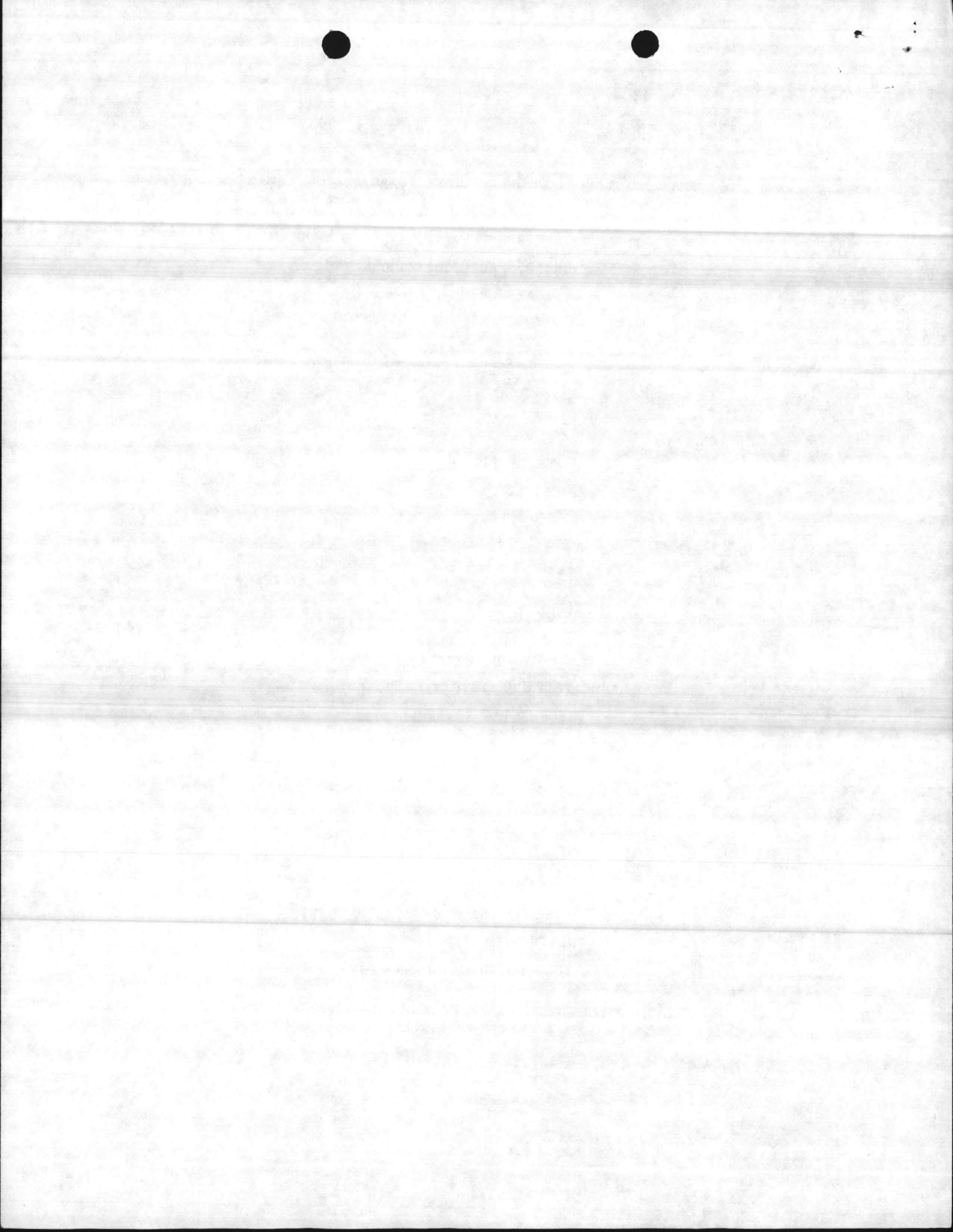
Edmund

REPORT OF AN ON-SITE EVALUATION
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BY:
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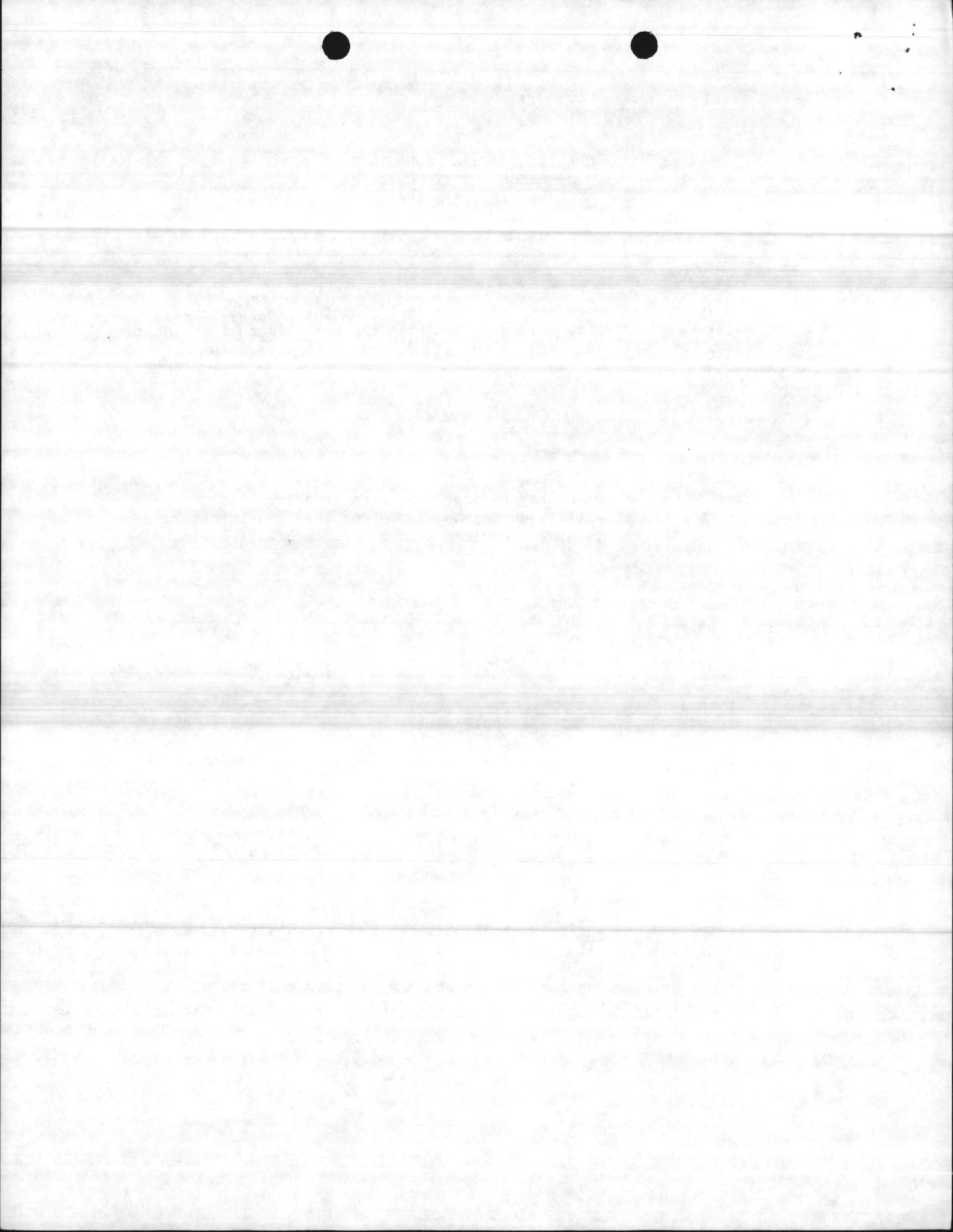
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STATE LABORATORY OF PUBLIC HEALTH

DIVISION OF HEALTH SERVICES

NORTH CAROLINA DEPARTMENT OF HUMAN RESOURCES

P. O. BOX 28047, 306 NORTH WILMINGTON STREET,

RALEIGH, NORTH CAROLINA 27611

FORMS FOR ON-SITE EVALUATION OF LABORATORIES INVOLVED IN
ANALYSIS OF PUBLIC WATER SUPPLIES

MICROBIOLOGY

LAB I.D. NUMBER: 37807

LABORATORY: Camp LeJeune Quality Control Laboratory - Environmental Branch

STREET: NREAD, Facilities, MCB

CITY: Camp LeJeune STATE: NC 28542

TELEPHONE NUMBER: 919-451-5977

SURVEY BY: E. D. Beesley

AFFILIATION: North Carolina Division of Health Services

DATE: September 27, 1984

Codes for Marking On-Site Evaluation Forms:

- S - Satisfactory
- X - Unsatisfactory
- NA - Not Applicable



PERSONNEL

POSITION/ TITLE	NAME	ACADEMIC TRAINING				TESTING METHOD(S)	EXPERIENCE (YEARS/AREA)
		HS	BA/BS	MA/MS	PH.D		
Laboratory Director							
Supervisor	Elizabeth A. Betz*	X	BS Chem.			MF & MPN	5 years
Technician/ Analyst	Hoy Burns*	X				MF & MPN	8 years
	Bob Lachapelle*	X				MF & MPN	3 years
	Gaines Honeycutt*	X				MF & MPN	3 years
	Thomas Barbee	X	BS				

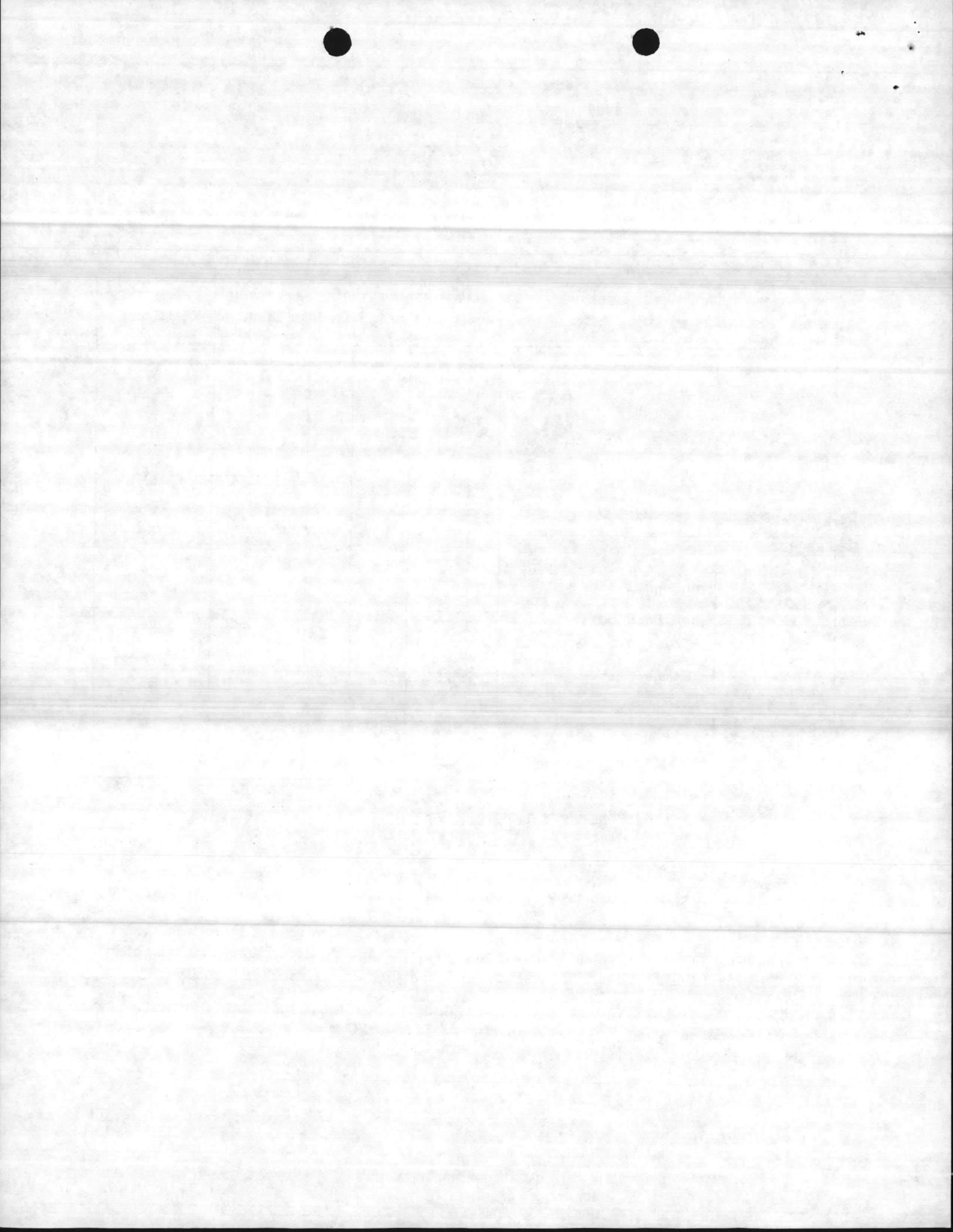
* Attended NCDHS Watermicro Workshop

LABORATORY FACILITIES

Space in laboratory and preparation room is adequate for needs during peak work periods (200 ft and 6 linear ft. of usable bench space per analyst).

Facilities are clean, with adequate lighting (100 ft-candles) and air-conditioning.

Satisfactory



LABORATORY EQUIPMENT, SUPPLIES, AND MATERIALS

1. pH Meter

Manufacturer Orion Orion Model 701 611

Clean, calibrated to 0.1 pH units each use period; record maintained.. S
 Aliquot of standard pH 7.0 buffer used only once..... S
 Commercially prepared buffer dated when opened..... S

2. Balance-Top Loader or Pan

Manufacturer Ohaus Model Harvard Trip

Clean. Detects a 50-mg weight accurately (for a general media
 preparation of 2-g quantities)..... S
 Calibrated annually..... S
 Good quality weights in clean condition..... S

3. Thermometers

Certified Thermometer:

Manufacturer Fisher (Kessler) Certificate # 836-212

Maximum Registering:

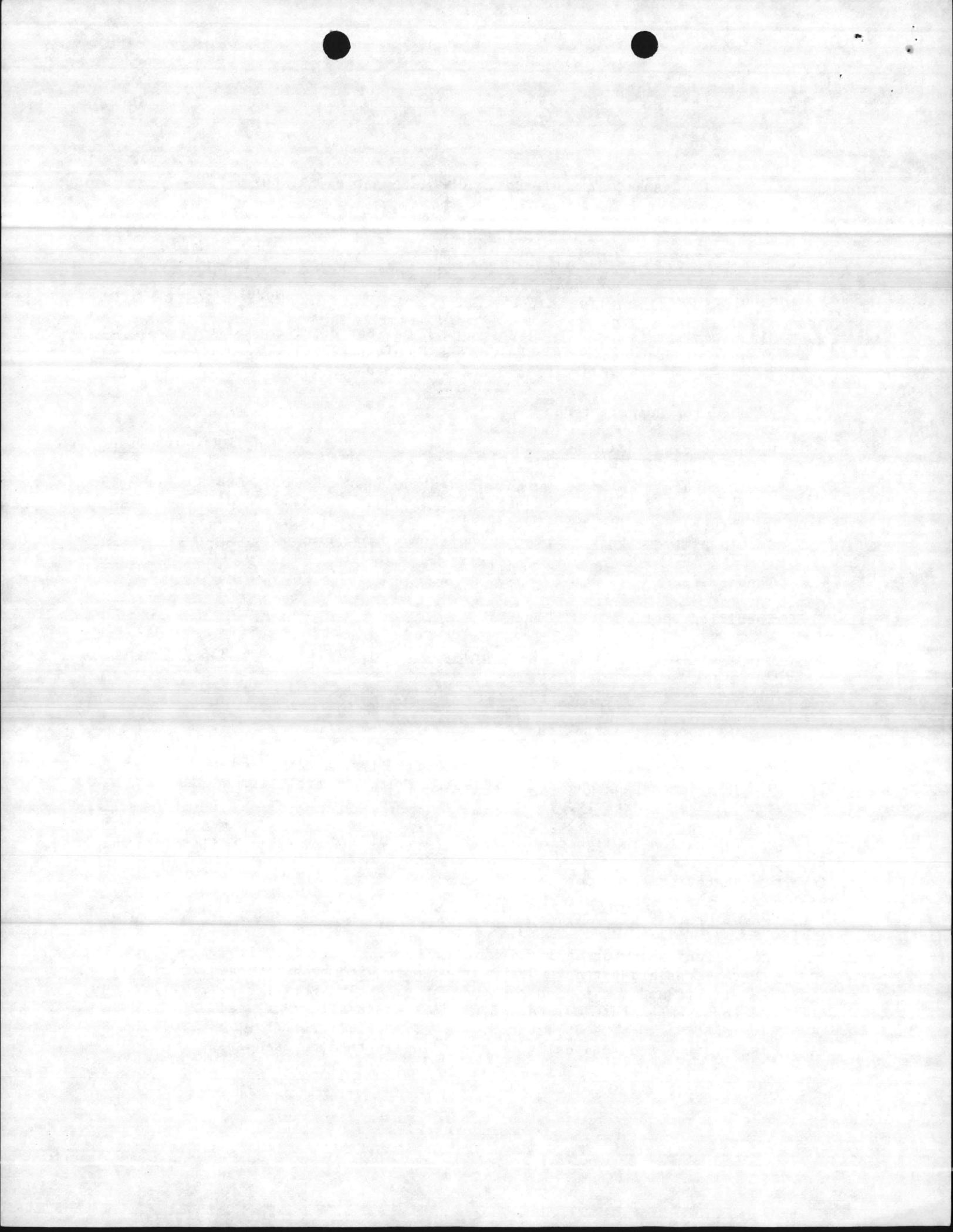
Manufacturer Brooklyn

Glass thermometers calibrated annually against a certified
 thermometer or one of equivalent accuracy; metal thermometers
 checked quarterly..... S
 Legible graduations..... S
 No separation in liquid column..... S

4. Incubator or Incubator Room

Manufacturer Precision Model MZ

Sufficient size for daily work load..... S
 Thermometer graduated in 0.5°C increments with bulb immersed in
 liquid and located on top and bottom shelves..... S
 Uniform temperature maintained on shelves in all areas used
 (35.0° + 0.5°C)..... S
 Temperature recorded daily or recording thermometer sensitive
 to ± 0.5°C..... S



LABORATORY EQUIPMENT, SUPPLIES, AND MATERIALS (Continued)

5. Autoclave

Manufacturer Market Forge Model Sterlimatic

- Reaches sterilization temperature (121°C), maintains 121°C during sterilization cycle, and requires no more than 45 min. for a complete cycle..... S
- Temperature checked at least weekly with a maximum registering thermometer calibrated in 1°C increments and results recorded..... S
- Pressure and temperature gauges on exhaust side and an operating safety valve..... S
- No air bubbles produced in fermentation vials during depressurization. S
- Record maintained on time and temperature for each sterilization cycle..... S

6. Hot-Air Oven

Manufacturer NA Model _____

- Operates at a minimum of 170°C..... _____
- Thermometer inserted or oven equipped with temperature-recording thermometer device..... _____
- Time and temperature record maintained for each sterilization cycle... _____
- Thermometer bulb in sand (optional) _____

7. Refrigerator

Temperature maintained at 1° to 5.0°C..... S

8. Inoculation Equipment

- Sterilized loops of at least 3-mm, diameter, 22 to 24 gauge Nichrome, Chromel, or platinum-iridium wire..... S
- Disposable, dry heat-sterilized, hardwood applicator sticks or presterilized loops..... NA

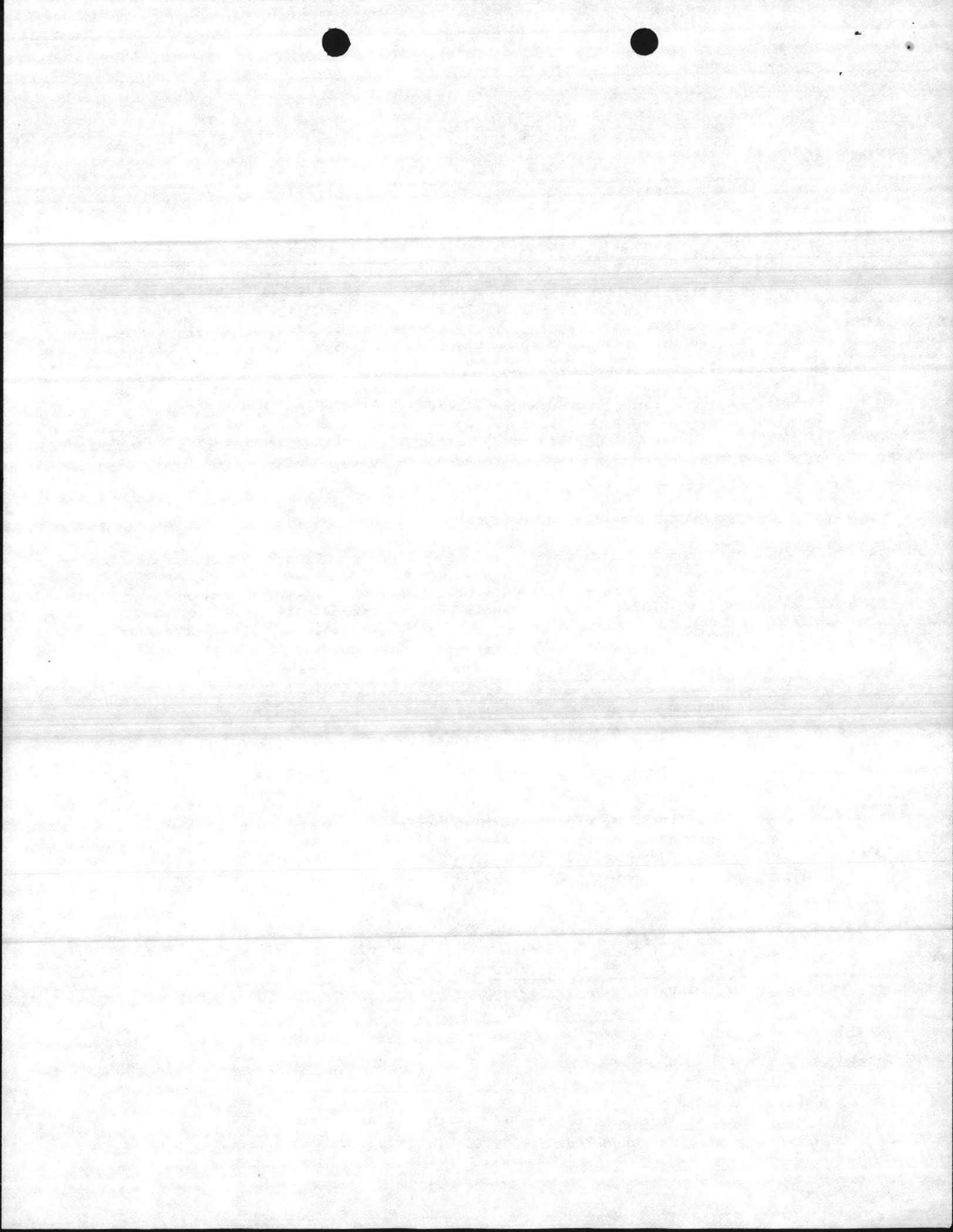
9. Optical Equipment

- Low power magnification device (preferably binocular microscope with 10 to 15X) with fluorescent light source for counting MF colonies..... S
- Colonies counted with a mechanical hand tally (optional) _____

10. Membrane Filtration Equipment

Manufacturer Millipore Model _____

- Made of stainless steel, glass, or autoclavable plastic..... _____
- Nonleaking and uncorroded..... _____



LABORATORY EQUIPMENT, SUPPLIES, AND MATERIALS (Continued)

11. Membrane Filters and Pads

Manufacturer Millipore Type HAWG

Filters recommended by manufacturer for water analyses..... S
 Filters and pads presterilized or autoclavable..... S
 Lot numbers and dates of receipt of membrane filters recorded
 (optional)

12. Glass, Plastic, and Metal Utensils for Media Preparation

Washing process provides glassware free of toxic residue as
 demonstrated by the inhibitory residue test and results
 recorded..... S

Detergent: Disperse (American Scientific)

Glass items of borosilicate, free of chips and cracks..... S
 Utensils clean and free from foreign residues or dried medium..... S
 Plastic items clear with visible graduations..... S

13. Sample Bottles

Wide-mouth hard glass bottles; stoppered or plastic screw-capped;
 capacity at least 120 ml..... S
 Glass-stoppered bottles with tops covered with aluminum foil or
 kraft paper..... NA
 Whirl-Pak Bags..... NA
 Screw-caps have leakproof nontoxic liners that can withstand
 repeated sterilization (30 min at 121°C)..... S
 Sterility of each batch of sample containers checked using non-
 selective broth and results recorded..... S

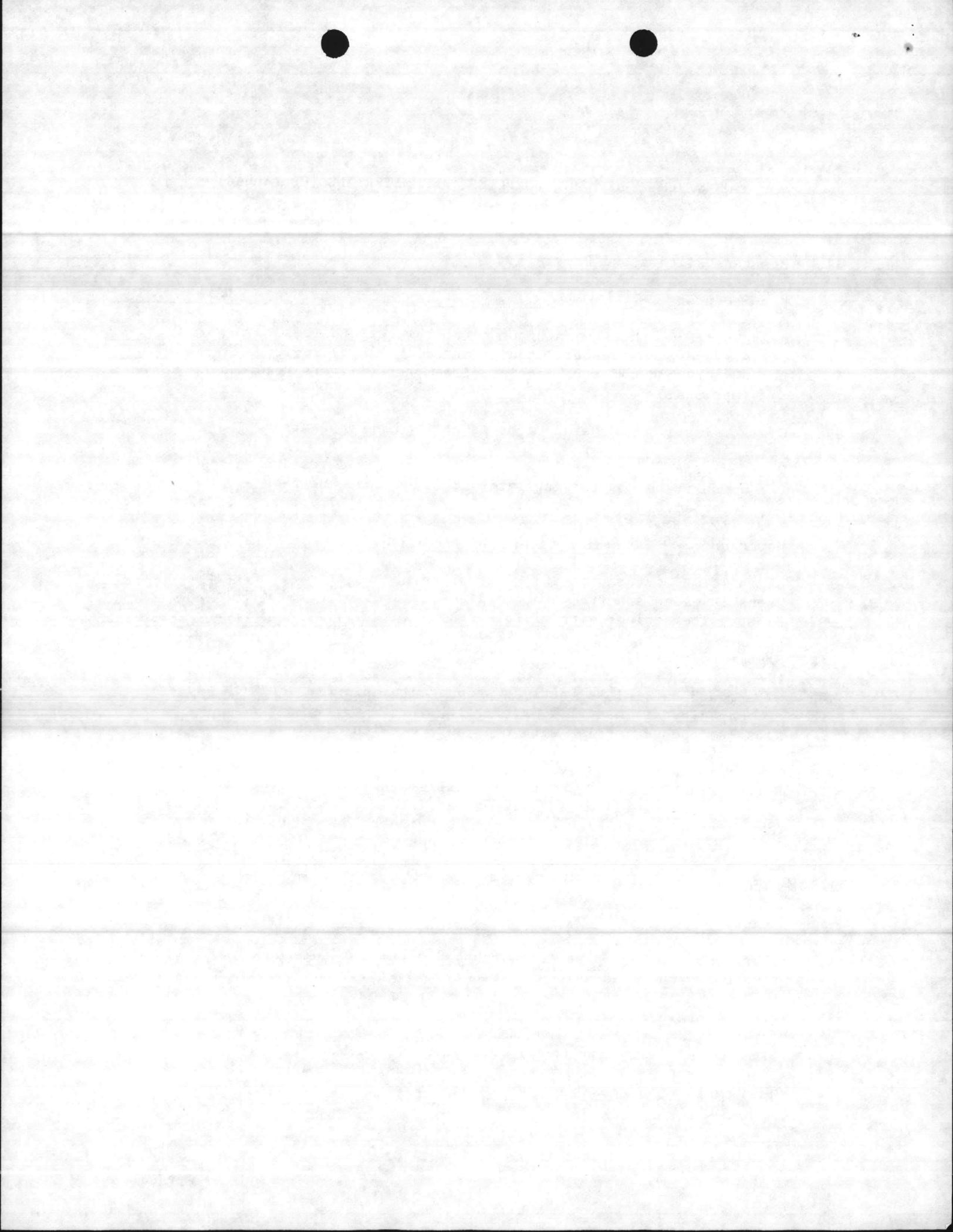
14. Pipets

Brand Falcon Type _____

Sterile; glass or plastic; with a 2.5 percent tolerance..... S
 Tips unbroken; graduations distinctly marked..... S

15. Pipet Containers

Aluminum or stainless steel..... NA
 Pipets wrapped in quality kraft paper (char-resistant)..... NA
 Open packs of disposable sterile pipets resealed between uses..... S



LABORATORY EQUIPMENT, SUPPLIES, AND MATERIALS (Continued)

16. Culture Dishes

Brand Millipore - Pyrex Type 49 X 9
100 X 15

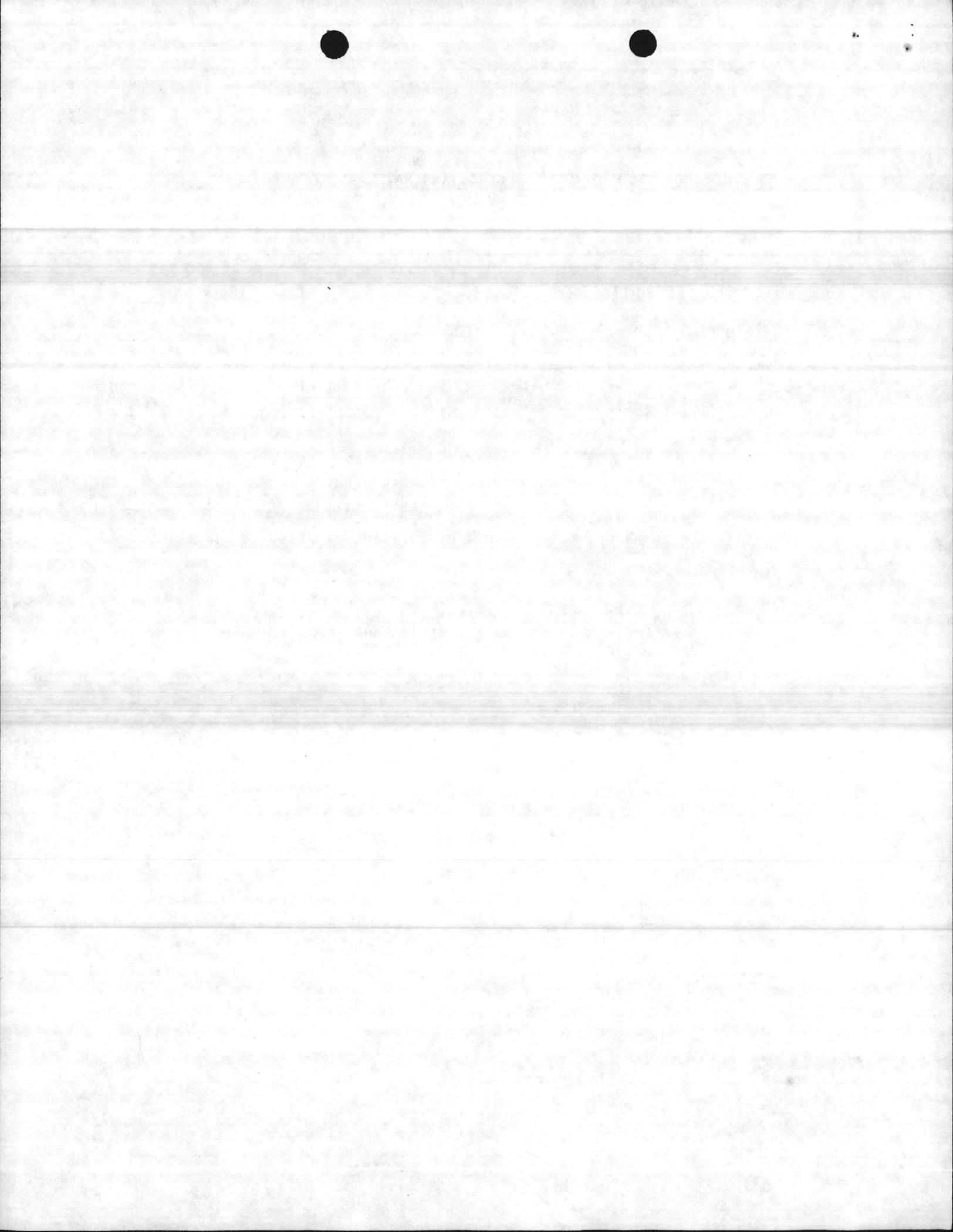
Sterile plastic or glass.....S
Open packs of disposable sterile plastic dishes resealed between uses.S
Dishes are in containers of aluminum or stainless-steel with
covers or are wrapped with heavy aluminum foil or
char-resistant paper.....S

17. Culture Tubes and Closures

Sufficient size to contain medium and sample without danger of
spillage.....S
Metal or plastic caps.....S
Borosilicate glass or other corrosion-resistant glass.....S

18. Maintenance

Service contracts or approved internal protocol maintained on
balance, autoclave, water still, etc.; service records entered
in a log book.....S



GENERAL LABORATORY PRACTICES

1. Sterilization Procedures

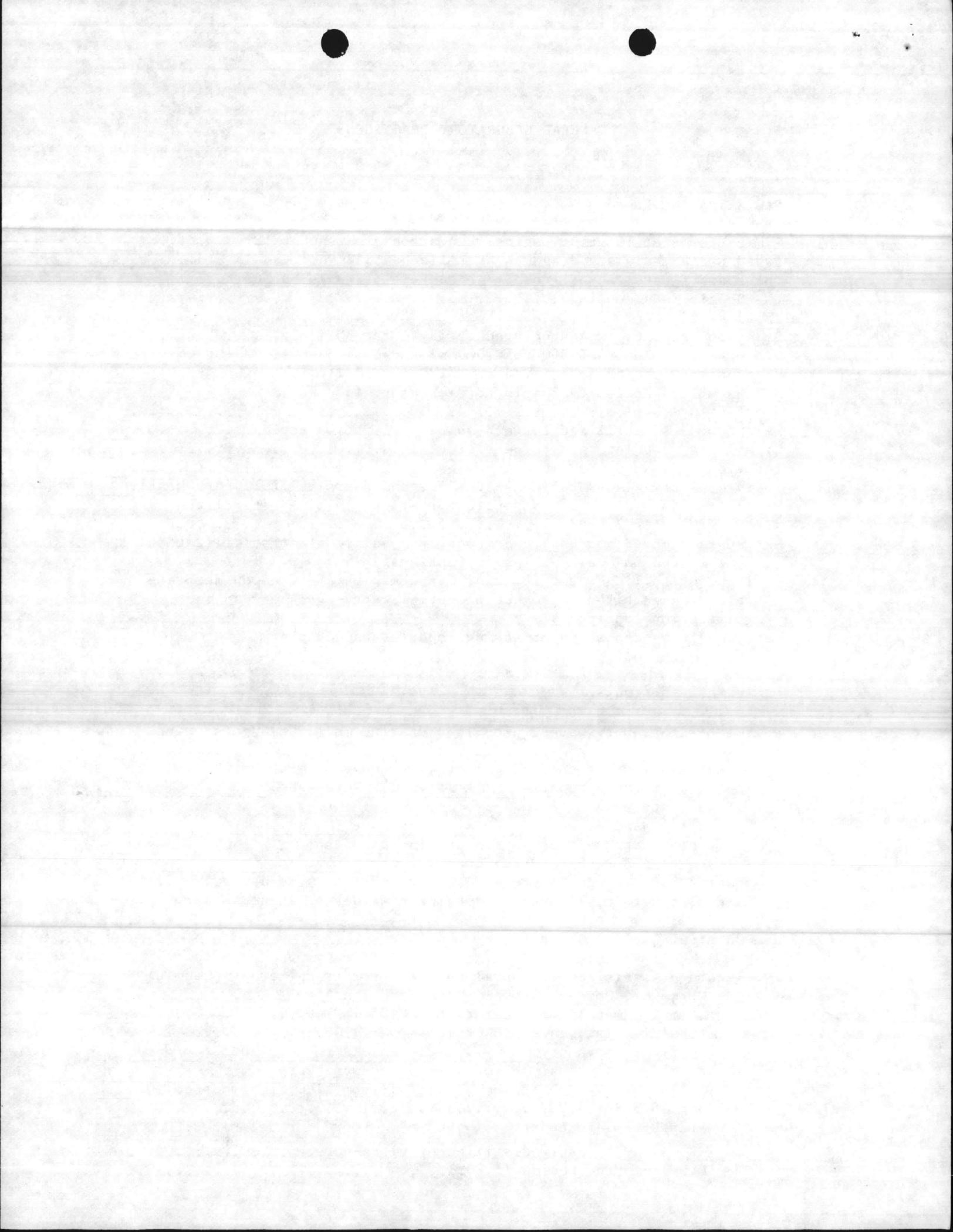
Timing for sterilization begins when autoclave reaches 121°C.....	<u>S</u>
Tubed broth media and reagents sterilized at 121°C 12 to 15 min.....	<u>S</u>
Tubes and flasks packed loosely in baskets or racks for uniform heating and cooling.....	<u>S</u>
Total exposure of MPN media to heat not over 45 min.....	<u>S</u>
Dilution water blanks autoclaved at 121°C for 30 min.....	<u>S</u>
Rinse water volumes of 500 to 1,000 ml sterilized at 121°C for 45 min.....	<u>S</u>
MF presterilized or autoclaved at 121°C for 10 min fast exhaust.....	<u>S</u>
MF assemblies and empty sample bottles sterilized at 121°C for 30 min.....	<u>S</u>
MF assemblies sterilized between sample filtration series.....	<u>S</u>
Wire loops, needles, and forceps sterilized.....	<u>S</u>
Individual glassware items autoclaved at 121°C for 30 min.....	<u>S</u>
Individual dry glassware items sterilized 2 hours at 170°C (dry heat).....	<u>S</u>
Pipets, culture dishes, and applicator sticks in boxes sterilized at 170°C for 2 hours.....	<u>S</u>
MPN media removed and cooled as soon as possible after sterilization and stored in cool dark place (optional)	
UV light or boiling water for at least 2 min may be used on membrane filter assemblies to reduce bacterial carry-over between each filtration (optional)	
Heat-sensitive tapes and/or strips/ampoules used during sterilization (optional)	

2. Laboratory Pure Water

Only laboratory pure water, used in preparing media, reagents, rinse water, and dilution water.....	<u>S</u>
Laboratory pure water not in contact with heavy metals.....	<u>S</u>
Source: Laboratory-prepared _____ Purchased _____	
If Laboratory-prepared:	
Still Manufacturer _____ Corning Megapure 6L and 3L	
Deionizer Manufacturer _____ Corning High Cap	
Record of recharge frequency _____	
Production rate and quality adequate for laboratory needs.....	<u>S</u>
Inspected, repaired, cleaned by service contract or in-house service..	<u>S</u>

a. Chemical Quality Control

Record of satisfactory annual analyses for trace metals (Cadmium, Chromium, Copper, Nickel, Lead, and Zinc)	
A single metal not greater than 0.05 mg/l.....	<u>S</u>
Total metals: equal to or less than 1.0 mg/l.....	<u>S</u>
Testing laboratory _____ GLI _____ Date 8-9-84	
Record of monthly analyses of laboratory pure water	
Conductance: >0.5 megohm resistivity or <2.0 micromhos/cm.....	<u>S</u>
pH: 5.5 - 7.5.....	<u>S</u>
Standard plate count: ≤10,000/ml. Stored or deionized;	
≤1000, freshly distilled or ultra-pure.....	<u>S</u>
Free chlorine residual: <0.1.....	<u>S</u>



GENERAL LABORATORY PRACTICES (Continued)

b. Microbiological Quality Control

Test for bactericidal properties of distilled water -
(0.8 - 3.0) performed at least annually.....
Testing laboratory _____ Date _____ Ratio _____

3. Rinse and Dilution Water

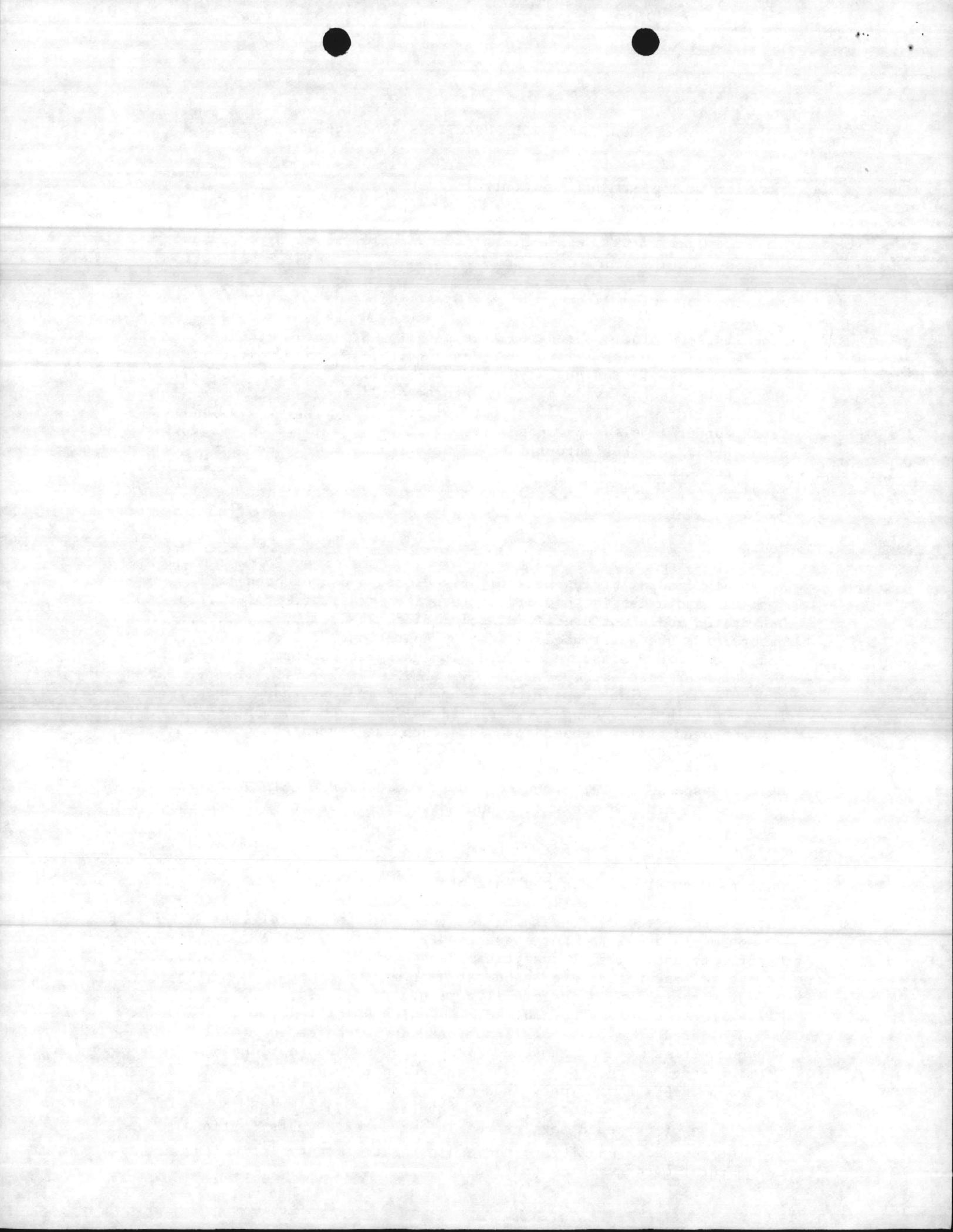
Stock buffer solution prepared according to "Standard Methods",
14th edition, or EPA Methods Manual..... S
Stock buffer solution adjusted to pH 7.2..... S
Stock buffer autoclaved at 121°C, stored at 1° to 5.0°C
or filter sterilized..... S
Stock buffer labeled and dated..... S
Stock potassium phosphate buffer solution (1.25 ml) added per
liter distilled water for rinse and dilution water..... S
Final pH 7.2 ± 0.1..... S
MgSO₄ _____ MgCl₂ _____ 5 ml stock solution per liter _____

4. Media

Dehydrated media bottles kept tightly closed and protected from
dust and excessive humidity in storage areas..... S
Dehydrated media not used if discolored or caked..... S
Laboratory pure water used in media preparation..... S
Media completely dissolved before dispensing to culture
tubes or bottles..... S
MPN tube media with loose-fitting caps used in less than 1 week..... S
Tube media in screw-capped tubes held no longer than 3 months..... S
Media stored at low temperatures are incubated overnight prior
to use and tubes with air bubbles discarded..... S
Media protected from sunlight..... S
MF media stored in refrigerator; broth media used within 96 hours,
agar within two weeks if prepared in tight-fitting dishes..... S
Ampouled media stored at 1° to 5.0°C and time limited to
manufacturer's expiration date..... S

5. Quality Control of Media and Reagents

Satisfactory records containing complete quality control checks
on media available for inspection..... S
Laboratory chemicals of Analytical Reagent Grade..... S
pH checked and recorded on each batch of medium after
preparation and after sterilization..... S
Causes for deviations beyond + 0.2 pH units specified..... S
Media ordered on a basis of 12-month need; purchases in 1/4 lb.
quantities, except those used in large amounts (optional)
Bottles dated on receipt and when opened (optional)
Opened bottles of routinely used media discarded within 6 months (if
stored in desiccator storage may be extended) (optional)
Shelf life of unopened bottles not in excess of 2 years (optional)
New lots of media quality tested against satisfactory lot using
natural water samples (optional)



GENERAL LABORATORY PRACTICES (Continued)

6. Lauryl Tryptose Broth

Manufacturer Difco Lot No. 715430 2/89

Single Strength composition, 35.6g per liter pure water..... S
 Single strength pH 6.8 ± 0.2 ; double strength pH 6.7 ± 0.2 S
 Not less than 10 ml per tube..... S
 Media made to result in single strength after addition of
 sample portions..... S

7. Brilliant Green Lactose Bile Broth

Manufacturer Difco Lot No. 722173 2/89

Medium composition 40g per liter pure water..... S
 Final pH 7.2 ± 0.2 S

8. M-Endo Media

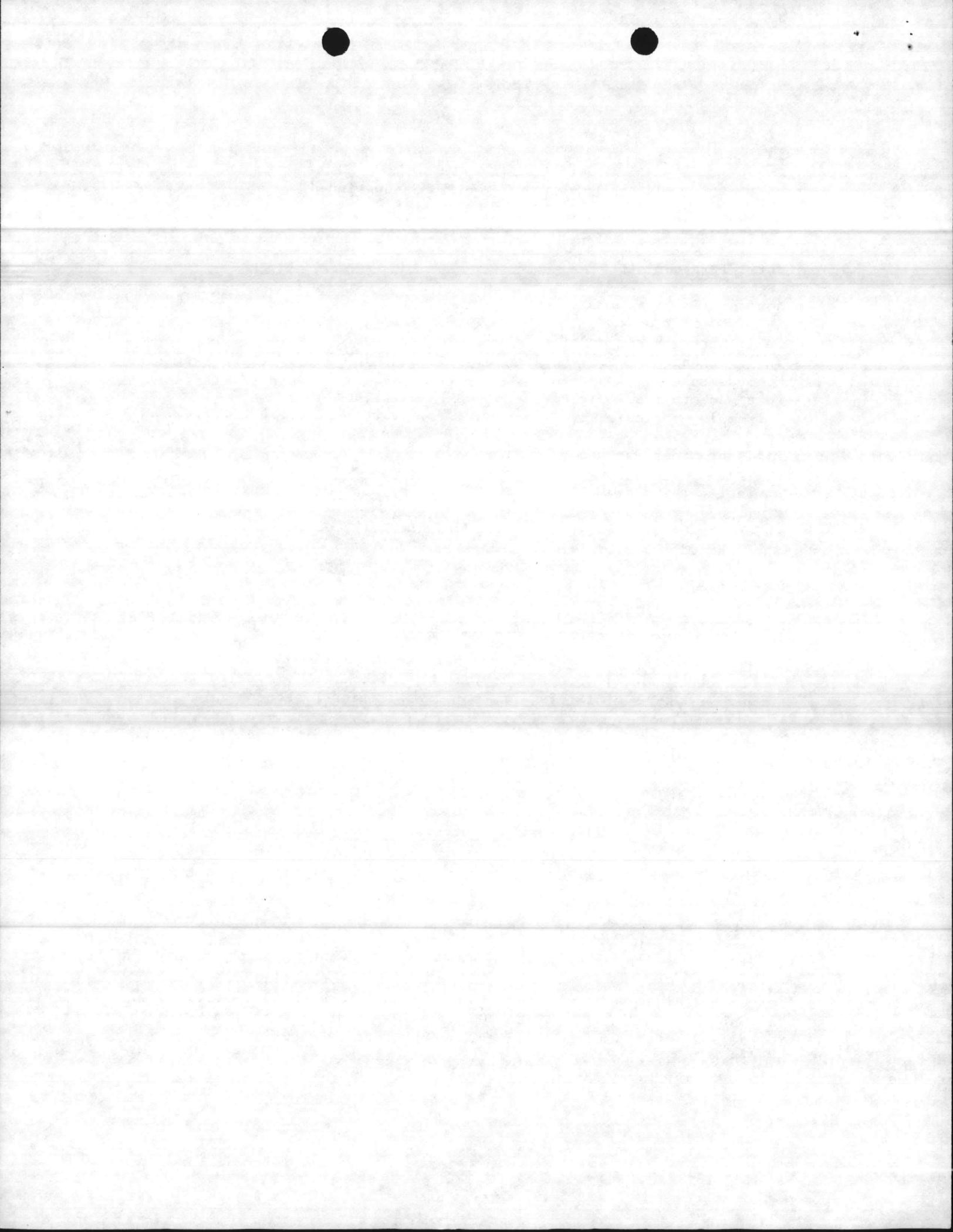
Manufacturer BBL Lot No. H6DNQK 8/87

Medium composition 48.0g per liter pure water; optionally
 15g agar added/l..... S
 Reconstituted in laboratory pure water containing 2 percent
 ethanol (not denatured)..... S
 Final pH 7.2 ± 0.2 S
 Medium held in boiling water bath until completely dissolved..... S

9. Standard Plate Count Agar

Manufacturer Difco (new lot ordered) Lot No. 788117

Correct composition, sterile and pH 7.0 ± 0.2 S
 Sterile medium not remelted a second time after sterilization..... S
 Culture dishes incubated 48 hours at $35^{\circ} \pm 0.5^{\circ}\text{C}$ S
 No more than 1.0 ml or less than 0.1 ml sample plated (sample
 or dilution)..... S
 Liquified agar, 10 ml or more; medium temperature between
 44° to 46°C S
 Melted medium stored no longer than 3 hours before use..... S
 Only plates with between 30 to 300 colonies counted; when 1 ml
 of undiluted sample is plated, colony density may be less
 than 30..... S
 Only two significant figures recorded and calculated as
 standard plate count/ml..... S



GENERAL LABORATORY PRACTICES (Continued)

10. Levine's Eosin Methylene Blue Agar (EMB)

Manufacturer Difco Lot No. 701060 8/85

Medium composition 37.5g per liter.....S

Final pH 7.1 ± 0.2S

11. Sterility Test Broth.....S

Manufacturer Difco (Tryptic Soy Broth) Lot No 709765 8/87



METHODOLOGY

Methodology specified in "Standard Methods" 14th edition, or EPA manual..... S
 M-Endo broth, M-Endo agar, or Les Endo agar used in a single
 step procedure..... S
 In two-step Les M-Endo procedure, MF incubated on lauryl tryptose broth
 saturated absorbent pad for 1.5 to 2 hours at 35 + 0.5 C; then on
 M-Endo broth at Les Endo agar for 20 to 22 hours at 35 + 0.5 C..... NA

1. Total Coliform Membrane Filter Procedure

Samples containing excessive bacterial populations (greater
 than 200), confluency, or turbidity retested by the MPN
 procedure..... S
 Filtration assembly sterile at start of each series..... S
 Absorbent pads saturated with medium, excess discarded; or 4.0 ml
 of agar medium can be used per culture dish instead of a pad..... S
 Sample shaken vigorously immediately before test..... S
 Test sample portions measured and not less than 100 ml analyzed..... S
 Funnel rinsed at least twice with 20- to 30-ml portions of
 sterile buffered water..... S
 MF removed with sterile forceps, grasping outside effective
 filtering area..... S
 MF rolled onto medium pad or agar so air bubbles are not trapped..... S
 A start and finish MF control test (rinse water, medium and
 supplies) run with each filtration series and results recorded.... S
 When controls indicate contamination occurred, all data on
 affected samples rejected and resampling requested..... S

a. Incubation of Membrane Filter Cultures

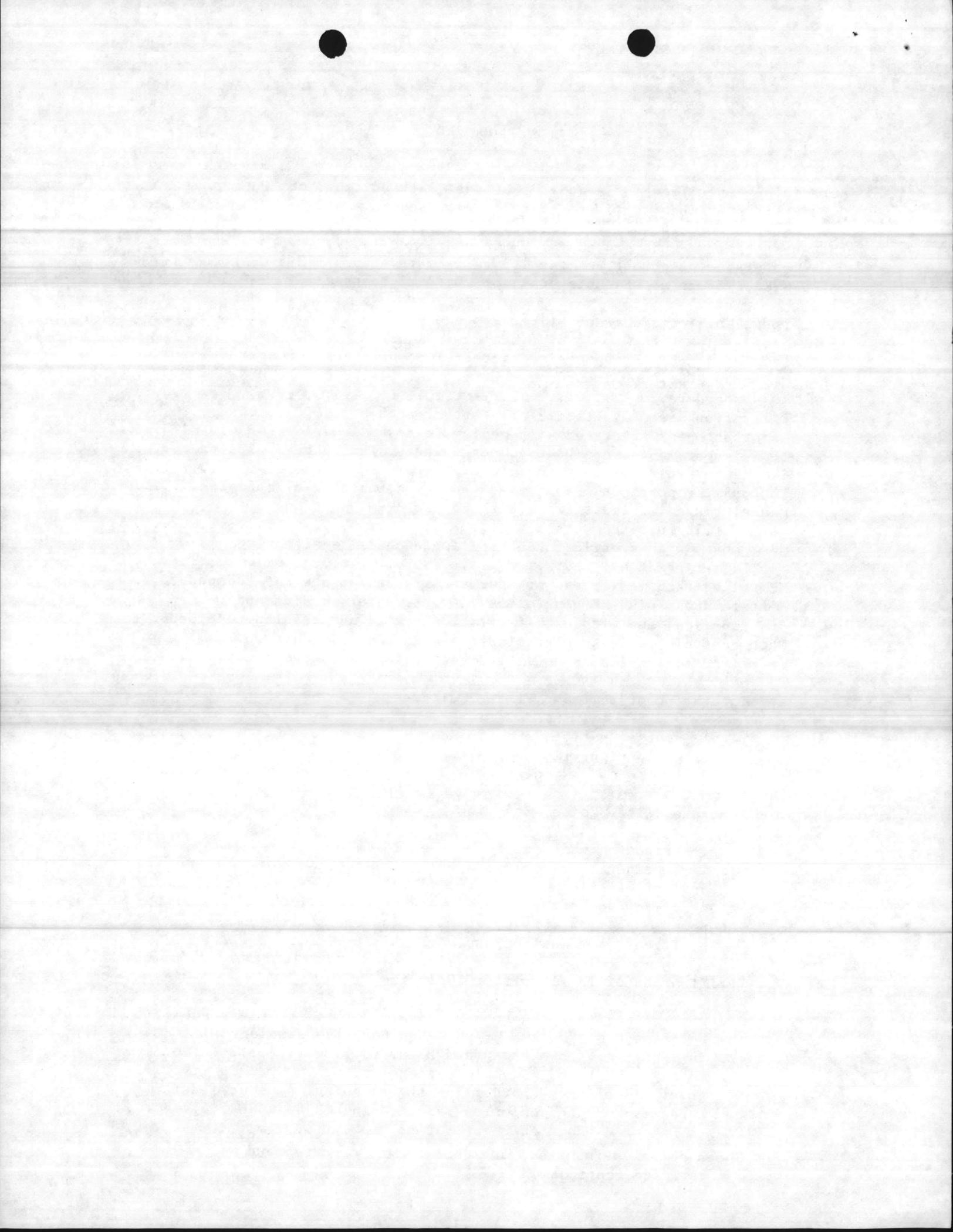
Total incubation time 22 to 24 hours at 35 + 0.5 C..... S
 Incubated in tight-fitting culture dishes or loose-fitting
 dishes incubated in high relative humidity chambers..... S

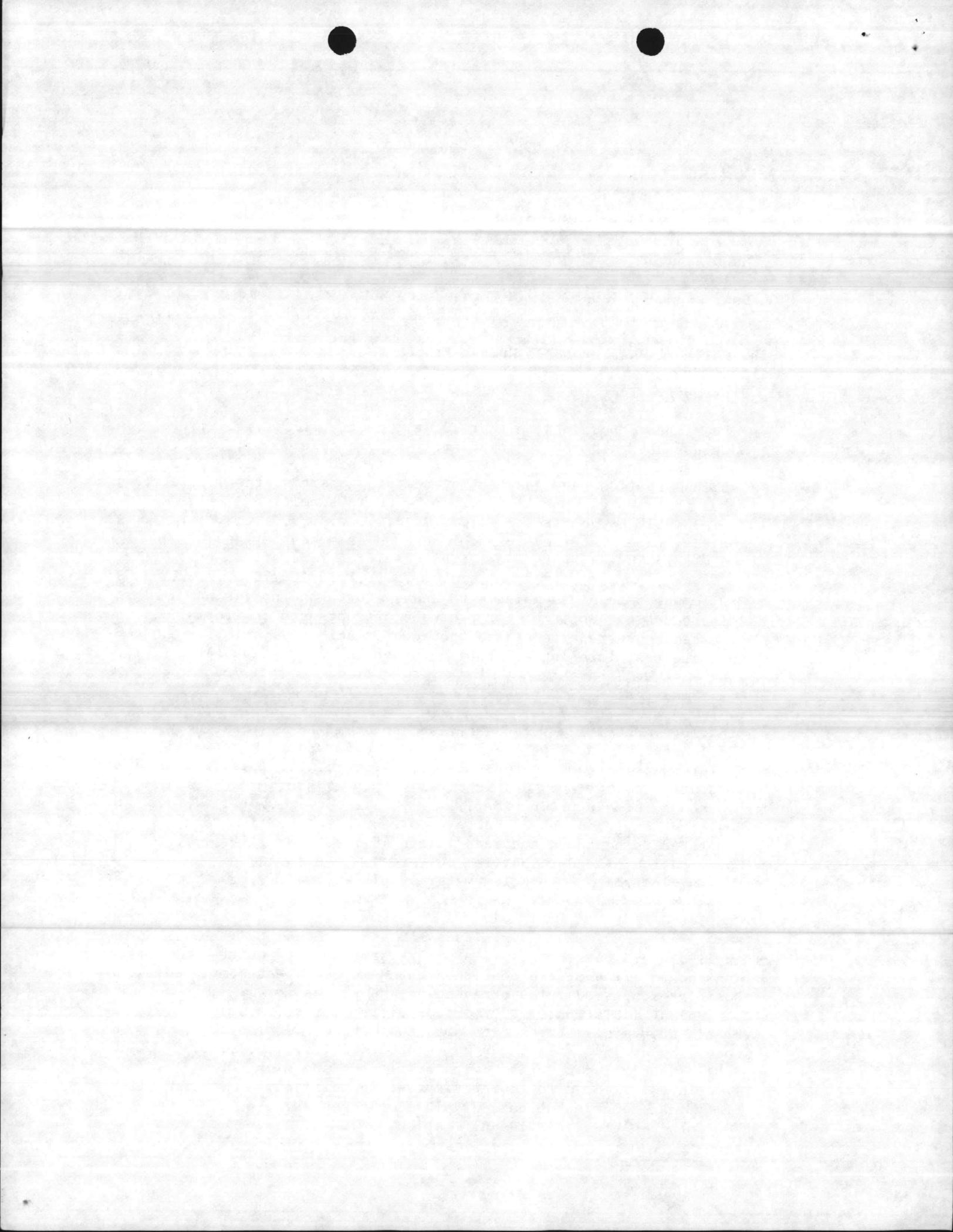
b. Membrane Filter Colony Counting

Samples repeated when coliforms are "TNTC" or colony growth
 is confluent, possibly obscuring coliform development
 and/or detection..... S
 Total coliform count calculated in density per 100 ml..... S
 Low power magnification device with fluorescent light
 positioned for maximum sheen visibility..... S

c. Verification of Total Coliform Colonies

All typical coliform (sheen) colonies or at least five randomly
 selected sheen colonies from each positive sample verified
 in lauryl tryptose broth and BGLB..... S
 Counts adjusted based on verification..... S
 All atypical coliform (borderline sheen) colonies or at least
 randomly-selected colonies verified in LTB and BGLB..... S
 Counts adjusted based on verification..... S
 Sheen colonies in mixed confluent growth reported and
 verified (optional)





METHODOLOGY (Continued)

c. Completed Test (Continued)

- If no colonies or only colorless colonies appear, confirmed test for that particular tube considered negative..... S
- An isolated typical colony or two atypical colonies transferred to lauryl tryptose broth..... S
- Incubated at $35^{\circ} + 0.5^{\circ}\text{C}$; checked for gas within $48 + 3$ hours..... S
- Cultures producing gas in lauryl tryptose broth within $48 + 3$ hours are considered coliforms..... S

3. Analytical Quality Control

- a. A record of analytical quality control tests available for review..... S

Duplicate analyses

Duplicate analyses run on positive polluted samples not to exceed 10 percent but a minimum of one per month (optional)

Positive Control Samples

One positive control sample (polluted water) run each month (optional)

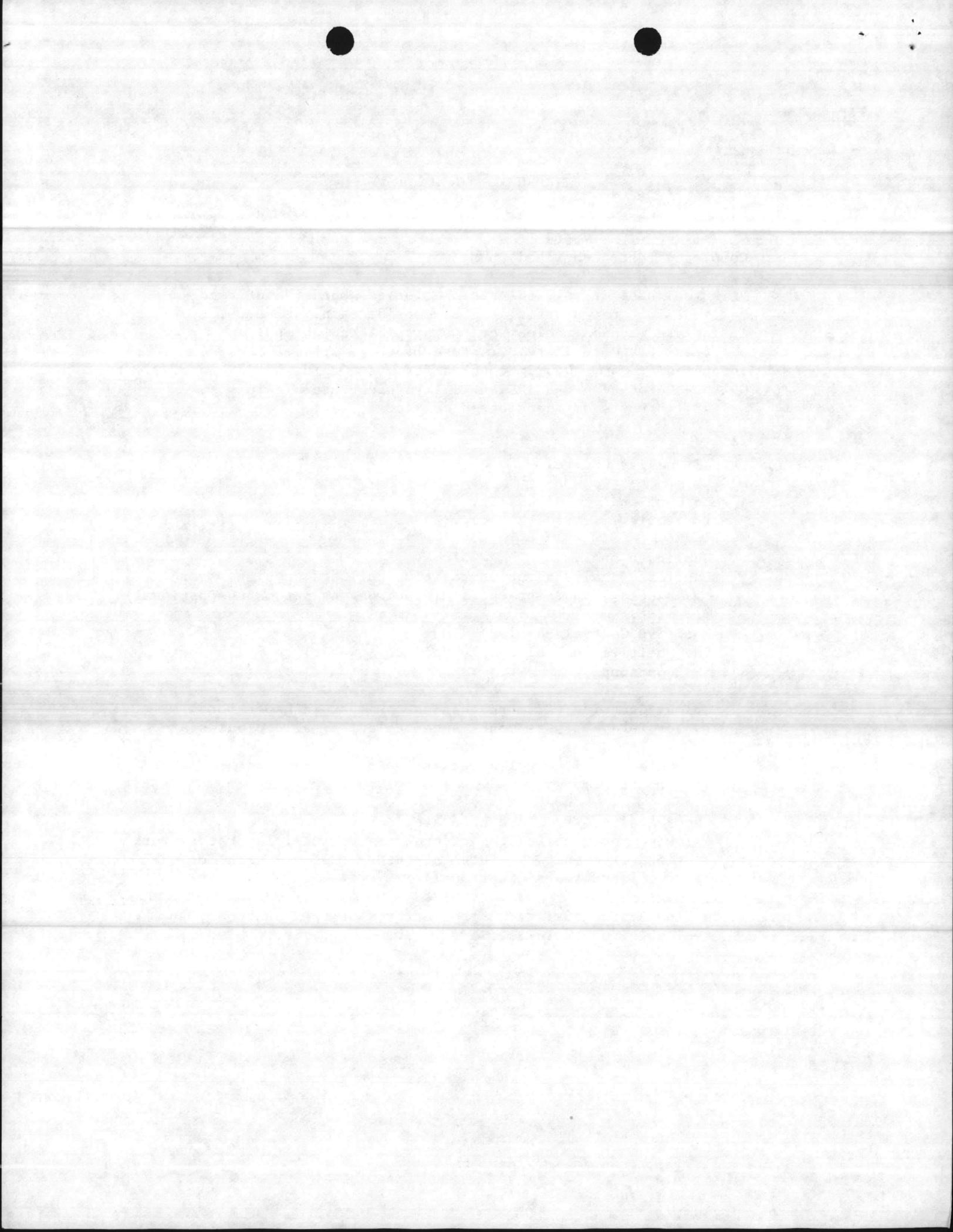
Colony Counting (If more than one Analyst in Laboratory)

Two or more analysts count sheen colonies; all colonies are verified analysts' counts compared to verified counts; procedure is carried out at least once per month. (optional)

Check Analyses by State Laboratories

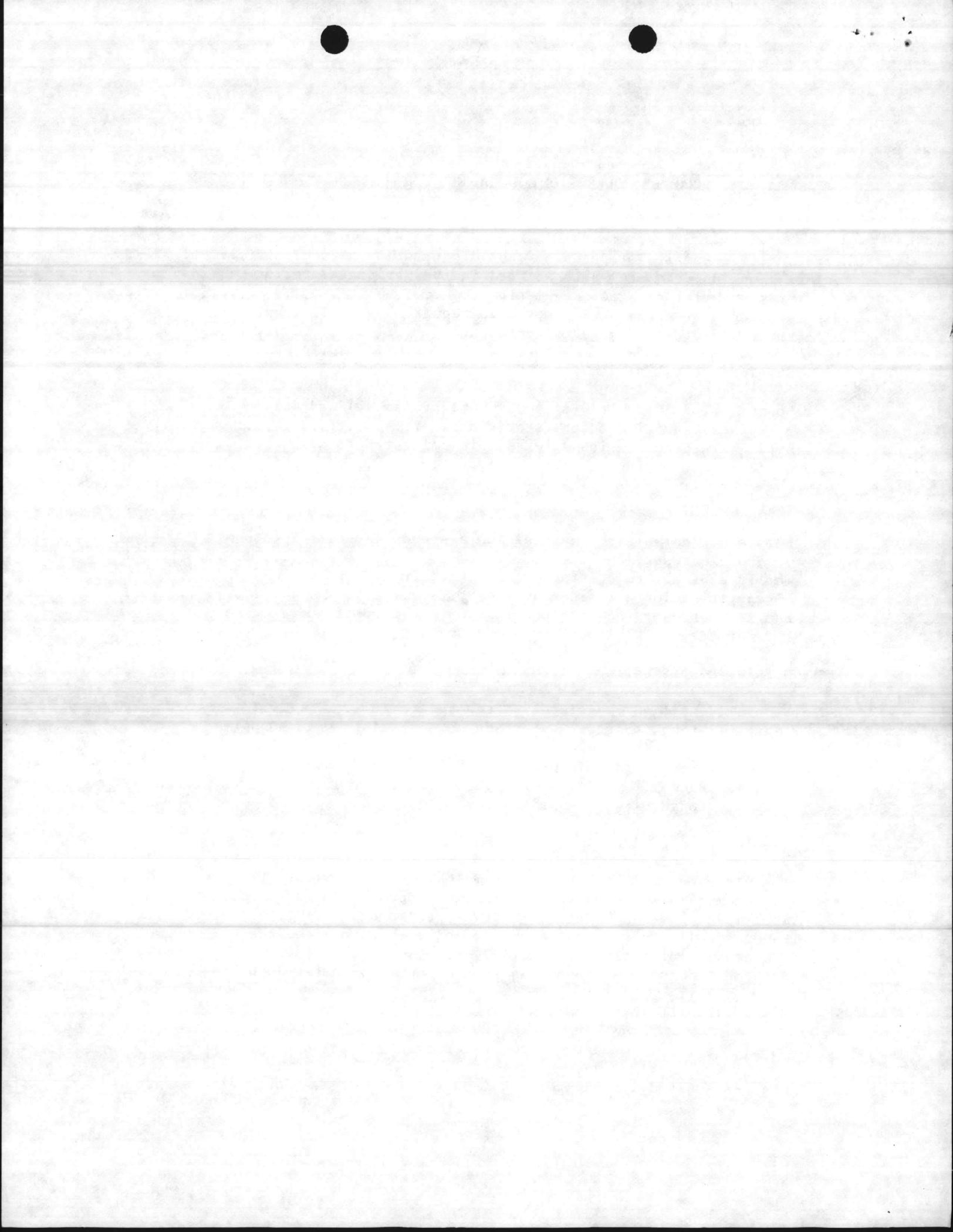
A minimum of samples proportional to the local laboratory work load processed by State Laboratory (see criteria for recommendations) (optional)

- b. An outline of the quality control efforts of the laboratory available for review..... S



SAMPLE COLLECTION, HANDLING, AND PRESERVATION

Representative samples of potable water distribution system.....	<u>S</u>
Minimal sampling frequency as specified in the National Interim Primary Drinking Water Regulations.....	<u>S</u>
Sample collector trained and approved as required by State regulatory authority or its delegated representative.....	<u>S</u>
1. Sample Bottles	
Sodium thiosulfate, (10 mg per 100 ml of sample) added to sample bottles before sterilization.....	<u>S</u>
Ample air space remains after sample collected to allow for adequate mixing.....	<u>S</u>
2. Sampling	
Sample collected after maintaining a steady flow for 2 to 3 min to clear service line.....	<u>S</u>
Tap free of aerator, strainer, hose attachment, water purification, or other devices.....	<u>S</u>
Samples refrigerated when possible during transit and storage periods in the laboratory (optional)	
3. Sample Identification	
Sample identified immediately after collection.....	<u>S</u>
Identification includes, water source, location, water supply identification number, time and date of collection, and collector's name; insufficiently identified samples discarded.....	<u>S</u>
Chlorine residual where applicable.....	<u>S</u>
4. Sample Transit Time	
Transit time for potable water samples sent by mail or commercial transportation, not in excess of 30 hours.....	<u>S</u>
No sample processed after 48-hour transit/storage.....	<u>S</u>
Samples delivered to laboratory by collectors examined the day of collection.....	<u>S</u>
Data marked as questionable on samples analyzed after 30 hours.....	<u>S</u>
5. Sample Receipt in Laboratory	
Sample logged in when received in laboratory, including date and time of arrival and analysis.....	<u>S</u>
Chain-of-custody procedures required by State regulations followed....	<u>S</u>



DATA REPORTING

Sample information and laboratory data fully recorded..... S
Direct MF counts and/or confirmed MPN results reported promptly..... S
After MF verification and/or MPN completion, adjusted counts reported..... S
One copy of report form retained in laboratory or by State program
for 3 years..... S
Test results assembled and available for inspection (optional)

ACTION RESPONSE TO LABORATORY RESULTS

Unsatisfactory test results given action response and resampled as defined
in National Interim Primary Drinking Water Regulations..... S
State and responsible local authority notified within 48 hours after
check samples confirm coliform occurrence..... S
All data reported to State and local authorities within 40 days..... S





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

DIVISION OF HEALTH SERVICES
STATE LABORATORY OF PUBLIC HEALTH
306 N. Wilmington St.
P.O. Box 28047
Raleigh, N.C. 27611-8047

March 20, 1984

Commanding General
Marine Corps Base
Camp LeJeune, NC 28542

Attn: Facilities - NREAD
Elizabeth Betz

Dear Ms. Betz:

It has been several months since I visited your laboratory to conduct a certification evaluation. We have not yet received a letter advising us of steps being taken to correct the deviations.

I hope this is just an oversight and that you are not encountering problems. Please let me hear from you soon so that we can send your certificate.

Thank you very much.

Sincerely,

E. D. Beesley
Laboratory Certification Evaluator

EDB/hw



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

DIVISION OF HEALTH SERVICES
STATE LABORATORY OF PUBLIC HEALTH
308 N. WASHINGTON ST.
BALTIMORE, MD 21201
PHONE: 410-326-7000



Ronald H. Levine, M.D., M.P.H.
SECRETARY

DEPARTMENT OF HUMAN RESOURCES

STATE OF MARYLAND



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

DIVISION OF HEALTH SERVICES
STATE LABORATORY OF PUBLIC HEALTH
306 N. Wilmington St.
P.O. Box 28047
Raleigh, N.C. 27611-8047

September 26, 1983

Commanding General
Marine Corps Base
Camp LeJeune, NC 28542

ATTN: Facilities - NREAD
Elizabeth Betz

Dear Ms. Betz:

Enclosed is a copy of the narrative report based on the survey of your laboratory for certification to analyze drinking water samples for EPA compliance. Please send a letter explaining what has been done to correct each of the deviations. The list of corrections should be sent to the above address. This laboratory is accredited for 60 days pending receipt of the above mentioned letter.

Upon receipt of acceptable corrections, we will continue your interim certification to the date shown on your certificate.

If you have any questions regarding certification or if we can be of assistance in any other way, please contact us.

Sincerely,

E. D. Beesley
tw

E. D. Beesley
Laboratory Certification Evaluator

EDB/sy

Enclosure

David H. Lawrence, M.D.
1940-1941

DIVISION OF HEALTH SERVICES
STATE BUREAU OF PUBLIC HEALTH
1914 W. Washington St.
Chicago, Ill.

E. D. Bevelin
1941

RECEIVED
STATE BUREAU OF PUBLIC HEALTH
CHICAGO, ILL.

REPORT OF AN ON-SITE EVALUATION
QUALITY CONTROL LABORATORY
BACTERIOLOGY LABORATORY
ENVIRONMENTAL BRANCH, NATURAL RESOURCES AND ENVIRONMENTAL AFFAIRS DIVISION
BASE MAINTENANCE DIVISION, MCB CAMP LEJEUNE
CAMP LEJEUNE, NORTH CAROLINA

SEPTEMBER 8, 1983

BY:
E. D. BEESLEY
LABORATORY CERTIFICATION EVALUATOR
ENVIRONMENTAL SCIENCES BRANCH

LABORATORY SECTION
NORTH CAROLINA DIVISION OF HEALTH SERVICES
NORTH WILMINGTON STREET
RALEIGH, NORTH CAROLINA 27611



QUALITY CONTROL LABORATORY
CAMP LEJEUNE, N. C.
SEPTEMBER 8, 1983

I. INTRODUCTION

The equipment and procedures employed in the bacteriological analyses of water by this laboratory conformed with the provisions of the North Carolina Safe Drinking Water Regulations, except for the items indicated.

II. DEVIATIONS AND RECOMMENDATIONS

A. Methodology

1. Analytical Quality Control

In order to maintain certification for MPN a known positive sample must be tested and carried through to completion at least once per quarter (a good practice is to use the same sample for both the MPN and MF quality control.)

Results must be recorded in the quality control log.

III. LIST OF PERSONNEL

<u>NAME</u>	<u>POSITION</u>	<u>TEST NORMALLY PERFORMED</u>
Elizabeth A. Betz	Supervisor	MF & MPN
Hoy Burns	Technician/Analyst	MF & MPN
Bob Lachapelle	Technician/Analyst	MF
Gaines Honeycutt	Technician/Analyst	MF
Gerald Monahan	Technician/Analyst	MF

IV. CONCLUSION

The procedures and equipment in use at the time of this survey were in general compliance with the provisions of the North Carolina Drinking Water Regulations (10NCAC 9D .0301 - .0330). This laboratory is accredited for 60 days pending correction of the deviations and receipt of a letter by the evaluation officer detailing the corrections made. Upon receipt of such a letter, full accreditation will be given.



STATE LABORATORY OF PUBLIC HEALTH

DIVISION OF HEALTH SERVICES

NORTH CAROLINA DEPARTMENT OF HUMAN RESOURCES

P. O. BOX 28047, 306 NORTH WILMINGTON STREET,

RALEIGH, NORTH CAROLINA 27611

FORMS FOR ON-SITE EVALUATION OF LABORATORIES INVOLVED IN
ANALYSIS OF PUBLIC WATER SUPPLIES

MICROBIOLOGY

LAB I.D. NUMBER: 37807

LABORATORY: Camp LeJeune Quality Control Laboratory - Environmental Branch,

Natural Resources and Environmental Affairs Division

STREET: Commanding General
Marine Corps Base Attn: Facilities - NREAD

CITY: Camp LeJeune STATE: North Carolina 28542

TELEPHONE NUMBER: 919-451-5977

SURVEY BY: E. D. Beesley

AFFILIATION: North Carolina Division of Health Services

DATE: September 8, 1983

Codes for Marking On-Site Evaluation Forms:

- S - Satisfactory
- X - Unsatisfactory
- NA - Not Applicable



PERSONNEL

POSITION/ TITLE	NAME	ACADEMIC TRAINING				TESTING METHOD(S)	EXPERIENCE (YEARS/AREA)
		HS	BA/BS	MA/MS	PH.D		
Laboratory Director							
Supervisor	Elizabeth A. Betz*	X	BS Chem.			MF-MPN	4 yrs.
Technician/ Analyst	Hoy Burns	X	1year**			MF-MPN	7 yrs.
	Bob Lachapelle	X	1year***			MF	2 yrs.
	Gaines Honeycutt	X	AAS****			MF	2 yrs.
	Gerald Monahan	X	BS Env. Science			MF	1 yr.

* Attended NCDHS Water Microbiology Workshop

** 14 Mo. Navy Clinical Lab School, Reg. Med. Tech.

*** 14 Mo. " " " " , Lab Supervisor 4 years

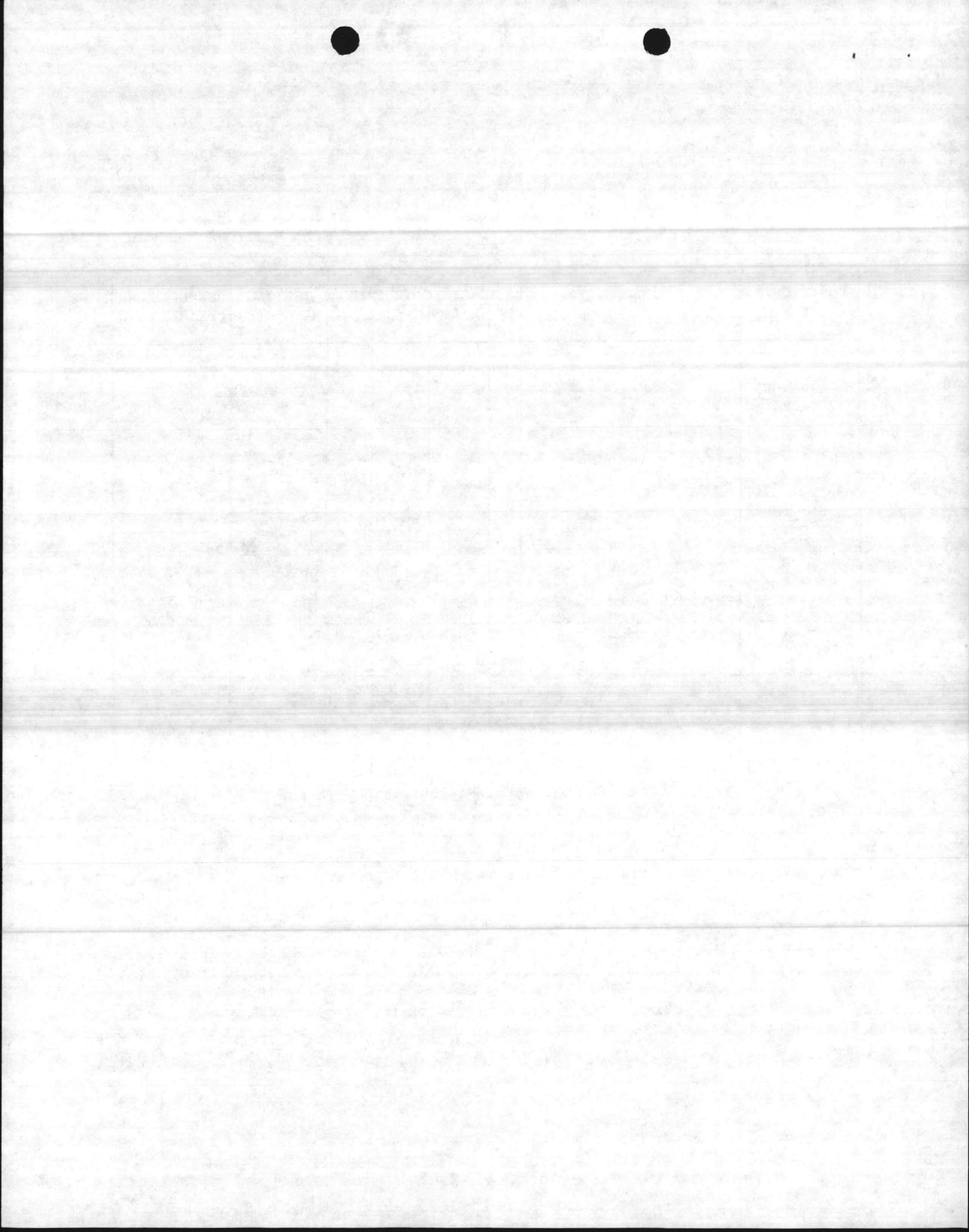
**** 6 Yrs. N. C. Dept. of Natural Resources

LABORATORY FACILITIES

Space in laboratory and preparation room is adequate for needs during peak work periods (200 ft and 6 linear ft. of usable bench space per analyst).

Facilities are clean, with adequate lighting (100 ft-candles) and air-conditioning.

Satisfactory



LABORATORY EQUIPMENT, SUPPLIES, AND MATERIALS

1. pH Meter

Manufacturer Fisher Orion Model 750 701

Clean, calibrated to 0.1 pH units each use period; record maintained.. S
Aliquot of standard pH 7.0 buffer used only once..... S
Commercially prepared buffer dated when opened..... S

2. Balance-Top Loader or Pan

Manufacturer Ohaus Model Harvard Trip

Clean. Detects a 50-mg weight accurately (for a general media preparation of 2-g quantities)..... S
Calibrated annually..... S
Good quality weights in clean condition..... S

3. Thermometers

Certified Thermometer:

Manufacturer Fisher (Kessler) Certificate # 836-212

Maximum Registering:

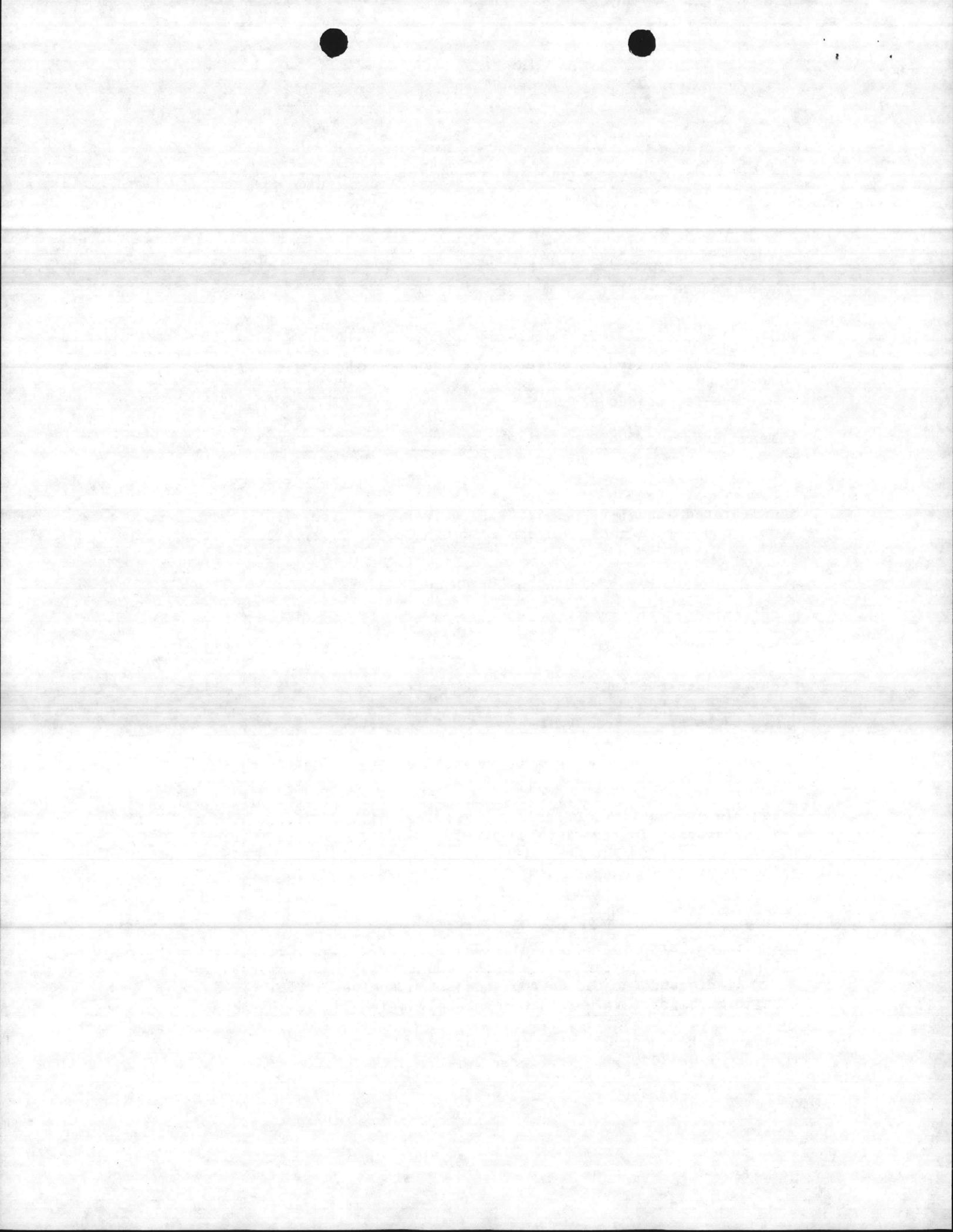
Manufacturer Brooklyn

Glass thermometers calibrated annually against a certified thermometer or one of equivalent accuracy; metal thermometers checked quarterly..... S
Legible graduations..... S
No separation in liquid column..... S

4. Incubator or Incubator Room

Manufacturer Precision Model MZ

Sufficient size for daily work load..... S
Thermometer graduated in 0.5°C increments with bulb immersed in liquid and located on top and bottom shelves..... S
Uniform temperature maintained on shelves in all areas used (35.0° + 0.5°C)..... S
Temperature recorded daily or recording thermometer sensitive to + 0.5°C..... S



LABORATORY EQUIPMENT, SUPPLIES, AND MATERIALS (Continued)

5. Autoclave

Manufacturer Market Forge Model Sterilmatic

Reaches sterilization temperature (121°C), maintains 121°C during sterilization cycle, and requires no more than 45 min. for a complete cycle..... S

Temperature checked at least weekly with a maximum registering thermometer calibrated in 1°C increments and results recorded..... S

Pressure and temperature gauges on exhaust side and an operating safety valve..... S

No air bubbles produced in fermentation vials during depressurization. S

Record maintained on time and temperature for each sterilization cycle..... S

6. Hot-Air Oven

Manufacturer NA Model _____

Operates at a minimum of 170°C..... _____

Thermometer inserted or oven equipped with temperature-recording thermometer device..... _____

Time and temperature record maintained for each sterilization cycle... _____

Thermometer bulb in sand (optional) _____

7. Refrigerator

Temperature maintained at 1° to 5.0°C..... S

8. Inoculation Equipment

Sterilized loops of at least 3-mm, diameter, 22 to 24 gauge Nichrome, Chromel, or platinum-iridium wire..... S

Disposable, dry heat-sterilized, hardwood applicator sticks or presterilized loops..... NA

9. Optical Equipment

Low power magnification device (preferably binocular microscope with 10 to 15X) with fluorescent light source for counting MF colonies..... S

Colonies counted with a mechanical hand tally (optional)

10. Membrane Filtration Equipment

Manufacturer Millipore Model -

Made of stainless steel, glass, or autoclavable plastic..... _____

Nonleaking and uncorroded..... _____



LABORATORY EQUIPMENT, SUPPLIES, AND MATERIALS (Continued)

11. Membrane Filters and Pads

Manufacturer Millipore Type HAWG

Filters recommended by manufacturer for water analyses.....
Filters and pads presterilized or autoclavable.....
Lot numbers and dates of receipt of membrane filters recorded
(optional)

12. Glass, Plastic, and Metal Utensils for Media Preparation

Washing process provides glassware free of toxic residue as
demonstrated by the inhibitory residue test and results
recorded.....S

Detergent: DISPERSE (American Scientific)

Glass items of borosilicate, free of chips and cracks.....S
Utensils clean and free from foreign residues or dried medium.....S
Plastic items clear with visible graduations.....S

13. Sample Bottles

Wide-mouth hard glass bottles; stoppered or plastic screw-capped;
capacity at least 120 ml.....S
Glass-stoppered bottles with tops covered with aluminum foil or
kraft paper.....NA
Whirl-Pak Bags.....NA
Screw-caps have leakproof nontoxic liners that can withstand
repeated sterilization (30 min at 121°C).....S
Sterility of each batch of sample containers checked using non-
selective broth and results recorded.....S

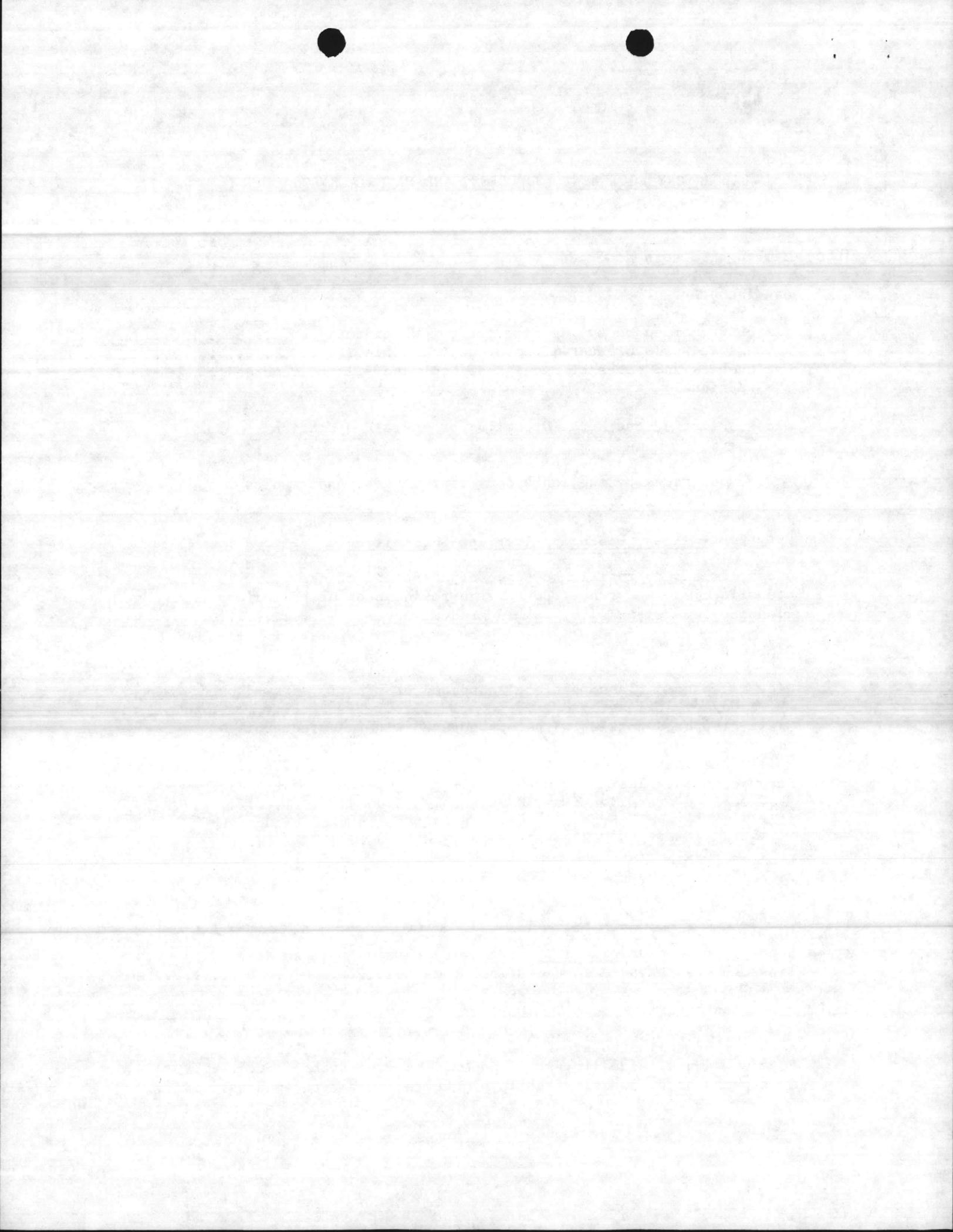
14. Pipets

Brand Falcon Type

Sterile; glass or plastic; with a 2.5 percent tolerance.....S
Tips unbroken; graduations distinctly marked.....S

15. Pipet Containers

Aluminum or stainless steel.....NA
Pipets wrapped in quality kraft paper (char-resistant).....NA
Open packs of disposable sterile pipets resealed between uses.....S



LABORATORY EQUIPMENT, SUPPLIES, AND MATERIALS (Continued)

16. Culture Dishes

Brand Millipore Type 49 X 9
Pyrex 100 X 15

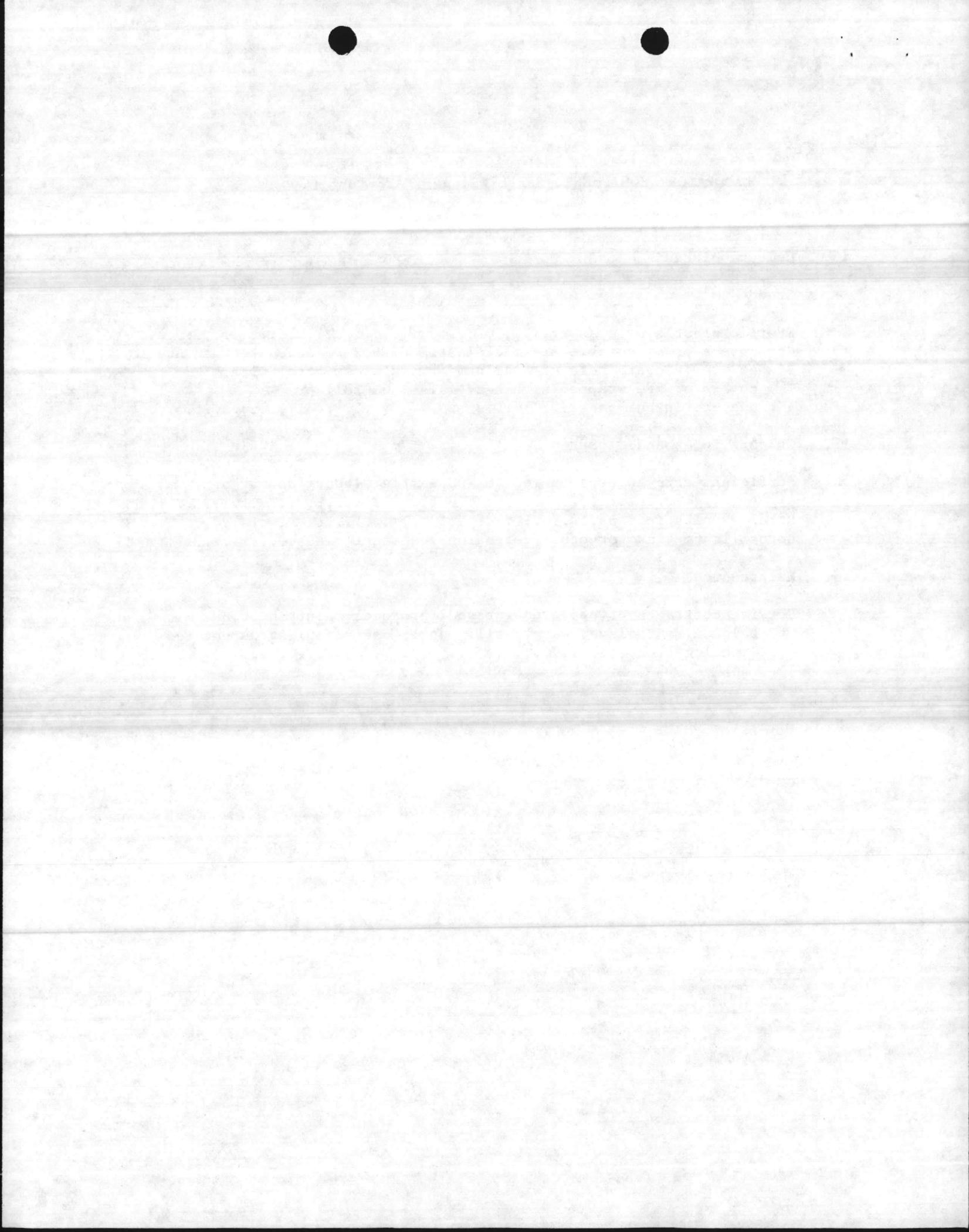
Sterile plastic or glass.....S
Open packs of disposable sterile plastic dishes resealed between uses.S
Dishes are in containers of aluminum or stainless-steel with
covers or are wrapped with heavy aluminum foil or
char-resistant paper.....S

17. Culture Tubes and Closures

Sufficient size to contain medium and sample without danger of
spillage.....S
Metal or plastic caps.....S
Borosilicate glass or other corrosion-resistant glass.....S

18. Maintenance

Service contracts or approved internal protocol maintained on
balance, autoclave, water still, etc.; service records entered
in a log book.....S



GENERAL LABORATORY PRACTICES

1. Sterilization Procedures

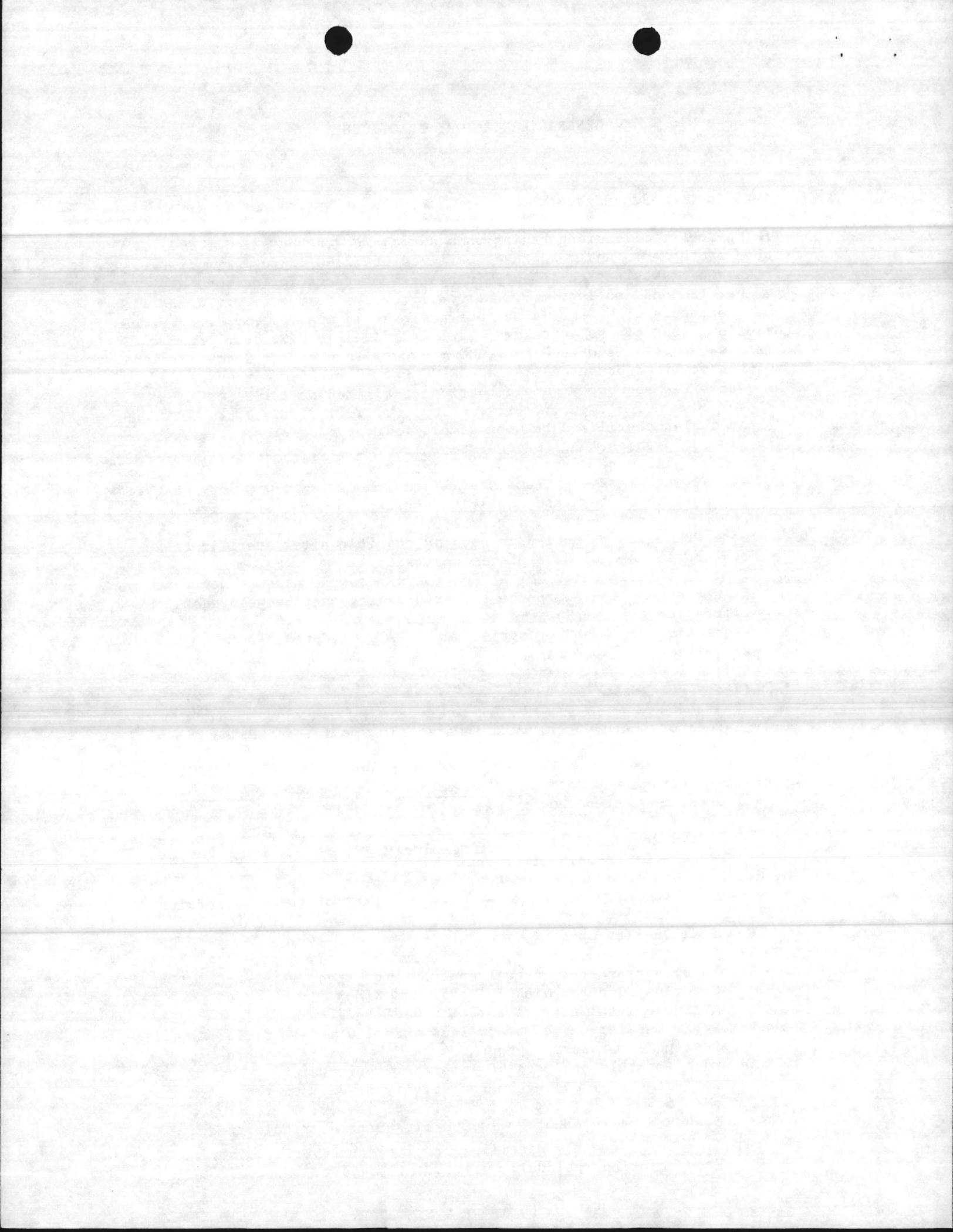
- Timing for sterilization begins when autoclave reaches 121°C.....S
- Tubed broth media and reagents sterilized at 121°C 12 to 15 min.....S
- Tubes and flasks packed loosely in baskets or racks for uniform heating and cooling.....S
- Total exposure of MPN media to heat not over 45 min.....S
- Dilution water blanks autoclaved at 121°C for 30 min.....S
- Rinse water volumes of 500 to 1,000 ml sterilized at 121°C for 45 min.S
- MF presterilized or autoclaved at 121°C for 10 min fast exhaust.....S
- MF assemblies and empty sample bottles sterilized at 121°C for 30 min.....S
- MF assemblies sterilized between sample filtration series.....S
- Wire loops, needles, and forceps sterilized.....S
- Individual glassware items autoclaved at 121°C for 30 min.....S
- Individual dry glassware items sterilized 2 hours at 170°C (dry heat).S
- Pipets, culture dishes, and applicator sticks in boxes sterilized at 170°C for 2 hours.....S
- MPN media removed and cooled as soon as possible after sterilization and stored in cool dark place (optional)
- UV light or boiling water for at least 2 min may be used on membrane filter assemblies to reduce bacterial carry-over between each filtration (optional)
- Heat-sensitive tapes and/or strips/ampoules used during sterilization (optional)

2. Laboratory Pure Water

- Only laboratory pure water, used in preparing media, reagents, rinse water, and dilution water.....S
- Laboratory pure water not in contact with heavy metals.....S
- Source: Laboratory-prepared Purchased _____
- If Laboratory-prepared:
- Still Manufacturer Corning Megapure 6L and 3L
- Deionizer Manufacturer Corning High Cap
- Record of recharge frequency _____
- Production rate and quality adequate for laboratory needs.....S
- Inspected, repaired, cleaned by service contract or in-house service..S

a. Chemical Quality Control

- Record of satisfactory annual analyses for trace metals (Cadmium, Chromium, Copper, Nickel, Lead, and Zinc)
- A single metal not greater than 0.05 mg/l.....S
- Total metals: equal to or less than 1.0 mg/l.....S
- Testing laboratory NCDHS Date 4-83
- Record of monthly analyses of laboratory pure water
- Conductance: >0.5 megohm resistivity or <2.0 micromhos/cm.....S
- pH: 5.5 - 7.5.....S
- Standard plate count: $\leq 10,000$ /ml. Stored or deionized; ≤ 1000 , freshly distilled or ultra-pure.....S
- Free chlorine residual: <0.1.....S



GENERAL LABORATORY PRACTICES (Continued)

b. Microbiological Quality Control

Test for bactericidal properties of distilled water
 (0.8 - 3.0) performed at least annually..... -
 Testing laboratory _____ Date _____ Ratio _____

3. Rinse and Dilution Water

Stock buffer solution prepared according to "Standard Methods",
 14th edition, or EPA Methods Manual..... S
 Stock buffer solution adjusted to pH 7.2..... S
 Stock buffer autoclaved at 121°C, stored at 1° to 5.0°C
 or filter sterilized..... S
 Stock buffer labeled and dated..... S
 Stock potassium phosphate buffer solution (1.25 ml) added per
 liter distilled water for rinse and dilution water..... S
 Final pH 7.2 + 0.1..... S
 MgSO₄ MgCl₂ _____ 5 ml stock solution per liter

4. Media

Dehydrated media bottles kept tightly closed and protected from
 dust and excessive humidity in storage areas..... S
 Dehydrated media not used if discolored or caked..... S
 Laboratory pure water used in media preparation..... S
 Media completely dissolved before dispensing to culture
 tubes or bottles..... S
 MPN tube media with loose-fitting caps used in less than 1 week..... S
 Tube media in screw-capped tubes held no longer than 3 months..... S
 Media stored at low temperatures are incubated overnight prior
 to use and tubes with air bubbles discarded..... S
 Media protected from sunlight..... S
 MF media stored in refrigerator; broth media used within 96 hours,
 agar within two weeks if prepared in tight-fitting dishes..... S
 Ampouled media stored at 1° to 5.0°C and time limited to
 manufacturer's expiration date..... S

5. Quality Control of Media and Reagents

Satisfactory records containing complete quality control checks
 on media available for inspection..... S
 Laboratory chemicals of Analytical Reagent Grade..... S
 pH checked and recorded on each batch of medium after
 preparation and after sterilization..... S
 Causes for deviations beyond + 0.2 pH units specified..... S
 Media ordered on a basis of 12-month need; purchases in 1/4 lb.
 quantities, except those used in large amounts (optional)
 Bottles dated on receipt and when opened (optional)
 Opened bottles of routinely used media discarded within 6 months (if
 stored in desiccator storage may be extended) (optional)
 Shelf life of unopened bottles not in excess of 2 years (optional)
 New lots of media quality tested against satisfactory lot using
 natural water samples (optional)



GENERAL LABORATORY PRACTICES (Continued)

6. Lauryl Tryptose Broth

Manufacturer Difco Lot No. 707667 8/87

Single Strength composition, 35.6g per liter pure water..... S
 Single strength pH 6.8 ± 0.2 ; double strength pH 6.7 ± 0.2 S
 Not less than 10 ml per tube..... S
 Media made to result in single strength after addition of
 sample portions..... S

7. Brilliant Green Lactose Bile Broth

Manufacturer Difco Lot No. 708037 5/87

Medium composition 40g per liter pure water..... S
 Final pH 7.2 ± 0.2 S

8. M-Endo Media

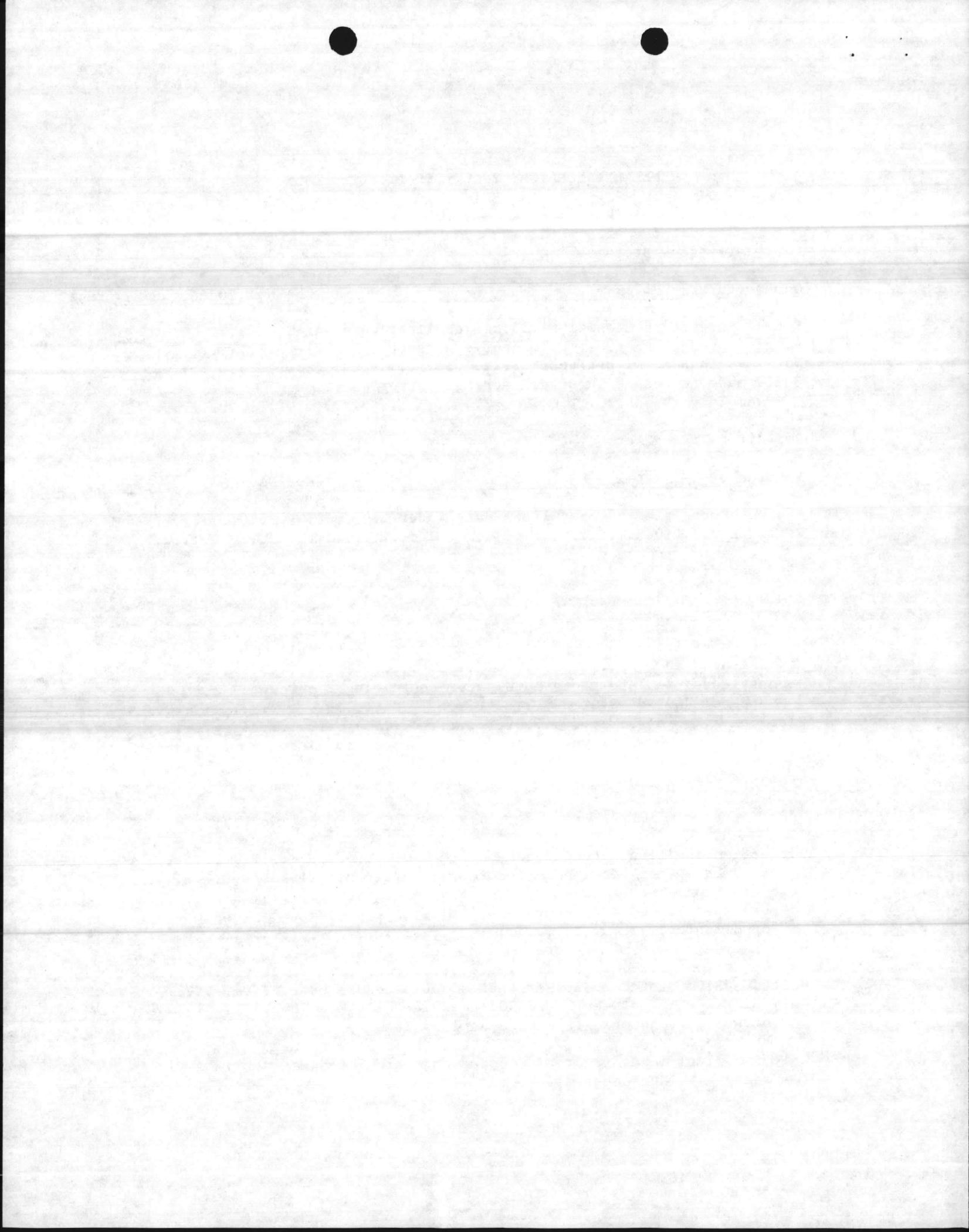
Manufacturer BBL Lot No. 15DMSX 9/86

Medium composition 48.0g per liter pure water; optionally
 15g agar added/l..... S
 Reconstituted in laboratory pure water containing 2 percent
 ethanol (not denatured)..... S
 Final pH 7.2 ± 0.2 S
 Medium held in boiling water bath until completely dissolved..... S

9. Standard Plate Count Agar

Manufacturer Difco Lot No. 677117

Correct composition, sterile and pH 7.0 ± 0.2 S
 Sterile medium not remelted a second time after sterilization..... S
 Culture dishes incubated 48 hours at $35^\circ \pm 0.5^\circ\text{C}$ S
 No more than 1.0 ml or less than 0.1 ml sample plated (sample
 or dilution)..... S
 Liquified agar, 10 ml or more; medium temperature between
 44° to 46°C S
 Melted medium stored no longer than 3 hours before use..... S
 Only plates with between 30 to 300 colonies counted; when 1 ml
 of undiluted sample is plated, colony density may be less
 than 30..... S
 Only two significant figures recorded and calculated as
 standard plate count/ml..... S



GENERAL LABORATORY PRACTICES (Continued)

10. Levine's Eosin Methylent Blue Agar (EMB)

Manufacturer Difco Lot No. 701060 8/85

Medium composition 37.5g per liter..... S

Final pH 7.1 + 0.2..... S

11. Sterility Test Broth..... S

Manufacturer Difco LTB Lot No. _____

Will order T S B



METHODOLOGY

- Methodology specified in "Standard Methods" 14th edition, or EPA manual..... S
- M-Endo broth, M-Endo agar, or Les Endo agar used in a single step procedure..... S
- In two-step Les M-Endo procedure, MF incubated on lauryl tryptose broth saturated absorbent pad for 1.5 to 2 hours at 35 ± 0.5 C; then on M-Endo broth at Les Endo agar for 20 to 22 hours at 35 ± 0.5 C..... NA

1. Total Coliform Membrane Filter Procedure

- Samples containing excessive bacterial populations (greater than 200), confluency, or turbidity retested by the MPN procedure..... S
- Filtration assembly sterile at start of each series..... S
- Absorbent pads saturated with medium, excess discarded; or 4.0 ml of agar medium can be used per culture dish instead of a pad..... S
- Sample shaken vigorously immediately before test..... S
- Test sample portions measured and not less than 100 ml analyzed..... S
- Funnel rinsed at least twice with 20- to 30-ml portions of sterile buffered water..... S
- MF removed with sterile forceps, grasping outside effective filtering area..... S
- MF rolled onto medium pad or agar so air bubbles are not trapped..... S
- A start and finish MF control test (rinse water, medium and supplies) run with each filtration series and results recorded.... S
- When controls indicate contamination occurred, all data on affected samples rejected and resampling requested..... S

a. Incubation of Membrane Filter Cultures

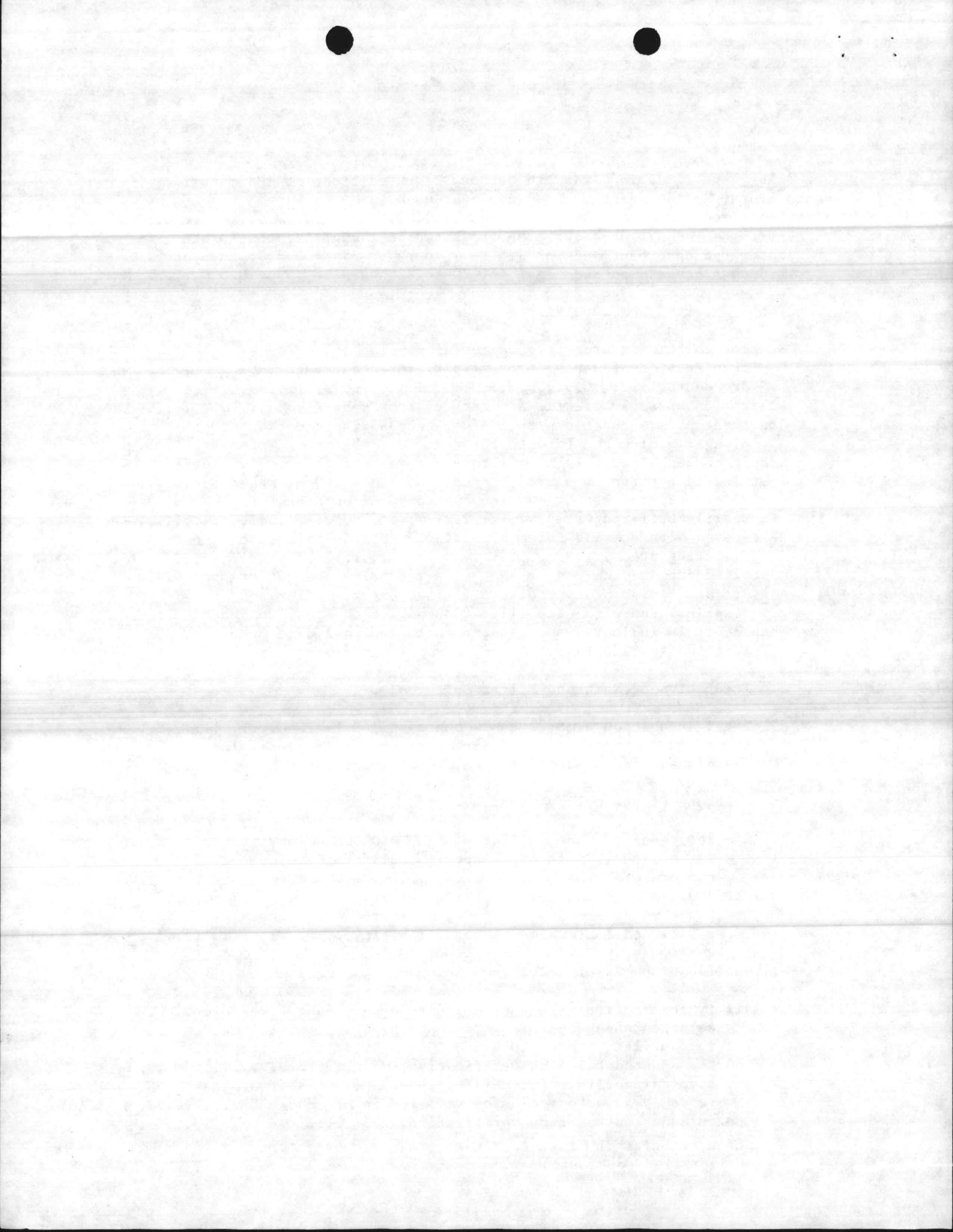
- Total incubation time 22 to 24 hours at 35 ± 0.5 C..... S
- Incubated in tight-fitting culture dishes or loose-fitting dishes incubated in high relative humidity chambers..... S

b. Membrane Filter Colony Counting

- Samples repeated when coliforms are "TNTC" or colony growth is confluent, possibly obscuring coliform development and/or detection..... S
- Total coliform count calculated in density per 100 ml..... S
- Low power magnification device with fluorescent light positioned for maximum sheen visibility..... S

c. Verification of Total Coliform Colonies

- All typical coliform (sheen) colonies or at least five randomly selected sheen colonies from each positive sample verified in lauryl tryptose broth and BGLB..... S
- Counts adjusted based on verification..... S
- All atypical coliform (borderline sheen) colonies or at least randomly-selected colonies verified in LTB and BGLB..... S
- Counts adjusted based on verification..... S
- Sheen colonies in mixed confluent growth reported and verified (optional)





METHODOLOGY (Continued)

c. Completed Test (Continued)

- If no colonies or only colorless colonies appear, confirmed test for that particular tube considered negative..... S
- An isolated typical colony or two atypical colonies transferred to lauryl tryptose broth..... S
- Incubated at $35^{\circ} \pm 0.5^{\circ}\text{C}$; checked for gas within 48 ± 3 hours..... S
- Cultures producing gas in lauryl tryptose broth within 48 ± 3 hours are considered coliforms..... S

3. Analytical Quality Control

- a. A record of analytical quality control tests available for review..... X

Duplicate analyses

Duplicate analyses run on positive polluted samples not to exceed 10 percent but a minimum of one per month (optional)

Positive Control Samples

One positive control sample (polluted water) run each month (optional)

Colony Counting (If more than one Analyst in Laboratory)

Two or more analysts count sheen colonies; all colonies are verified analysts' counts compared to verified counts; procedure is carried out at least once per month. (optional)

Check Analyses by State Laboratories

A minimum of samples proportional to the local laboratory work load processed by State Laboratory (see criteria for recommendations) (optional)

- b. An outline of the quality control efforts of the laboratory available for review..... S



SAMPLE COLLECTION, HANDLING, AND PRESERVATION

Representative samples of potable water distribution system.....S
Minimal sampling frequency as specified in the National Interim
Primary Drinking Water Regulations.....S
Sample collector trained and approved as required by State regulatory
authority or its delegated representative.....S

1. Sample Bottles

Sodium thiosulfate, (10 mg per 100 ml of sample) added to
sample bottles before sterilization.....S
Ample air space remains after sample collected to allow for
adequate mixing.....S

2. Sampling

Sample collected after maintaining a steady flow for 2 to 3 min
to clear service line.....S
Tap free of aerator, strainer, hose attachment, water
purification, or other devices.....S
Samples refrigerated when possible during transit and storage
periods in the laboratory (optional)

3. Sample Identification

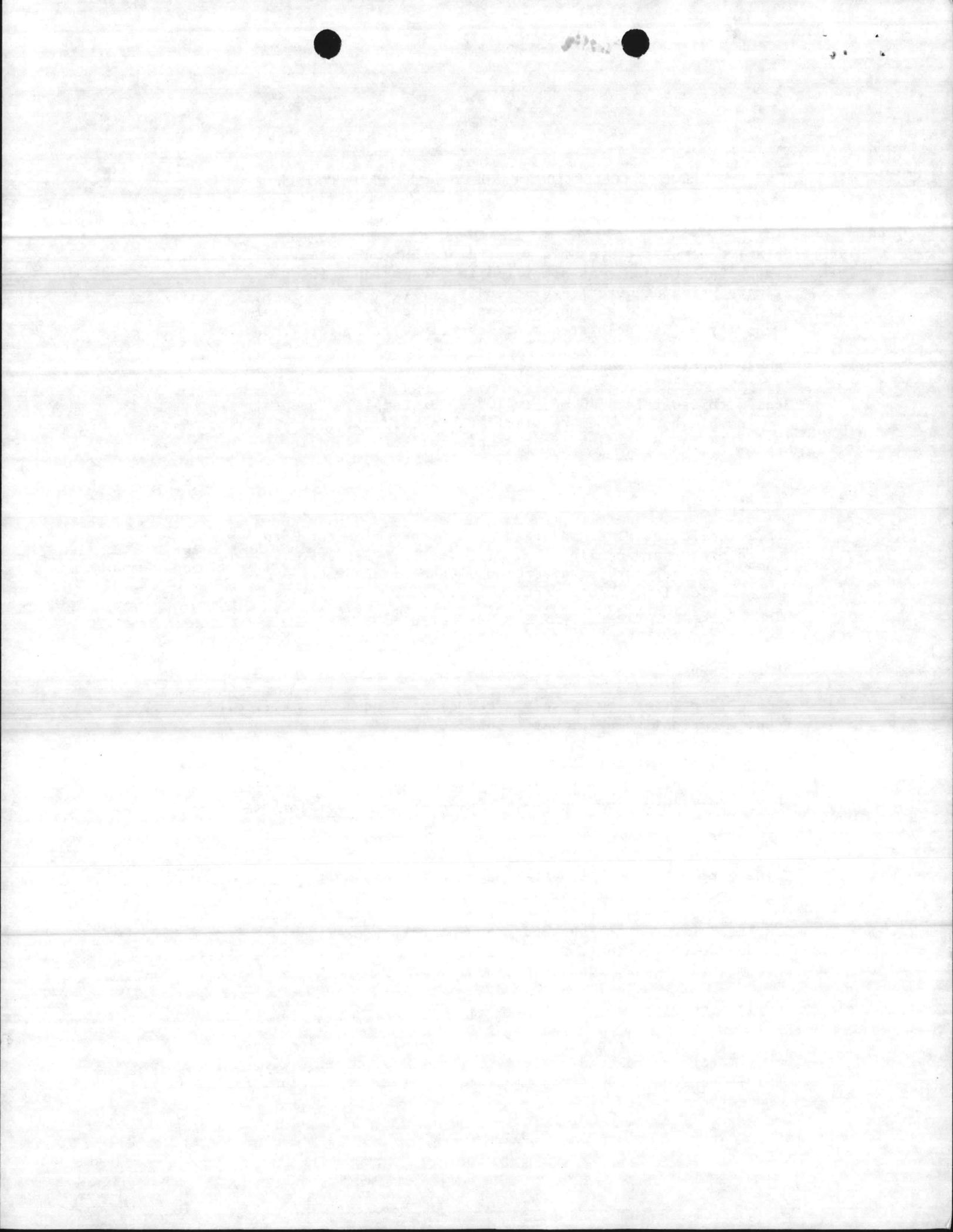
Sample identified immediately after collection.....S
Identification includes, water source, location, water supply
identification number, time and date of collection, and
collector's name; insufficiently identified samples
discarded.....S
Chlorine residual where applicable.....S

4. Sample Transit Time

Transit time for potable water samples sent by mail or
commercial transportation, not in excess of 30 hours.....NA
No sample processed after 48-hour transit/storage.....S
Samples delivered to laboratory by collectors examined the
day of collection.....S
Data marked as questionable on samples analyzed after 30 hours.....S

5. Sample Receipt in Laboratory

Sample logged in when received in laboratory, including date and
time of arrival and analysis.....S
Chain-of-custody procedures required by State regulations followed....S

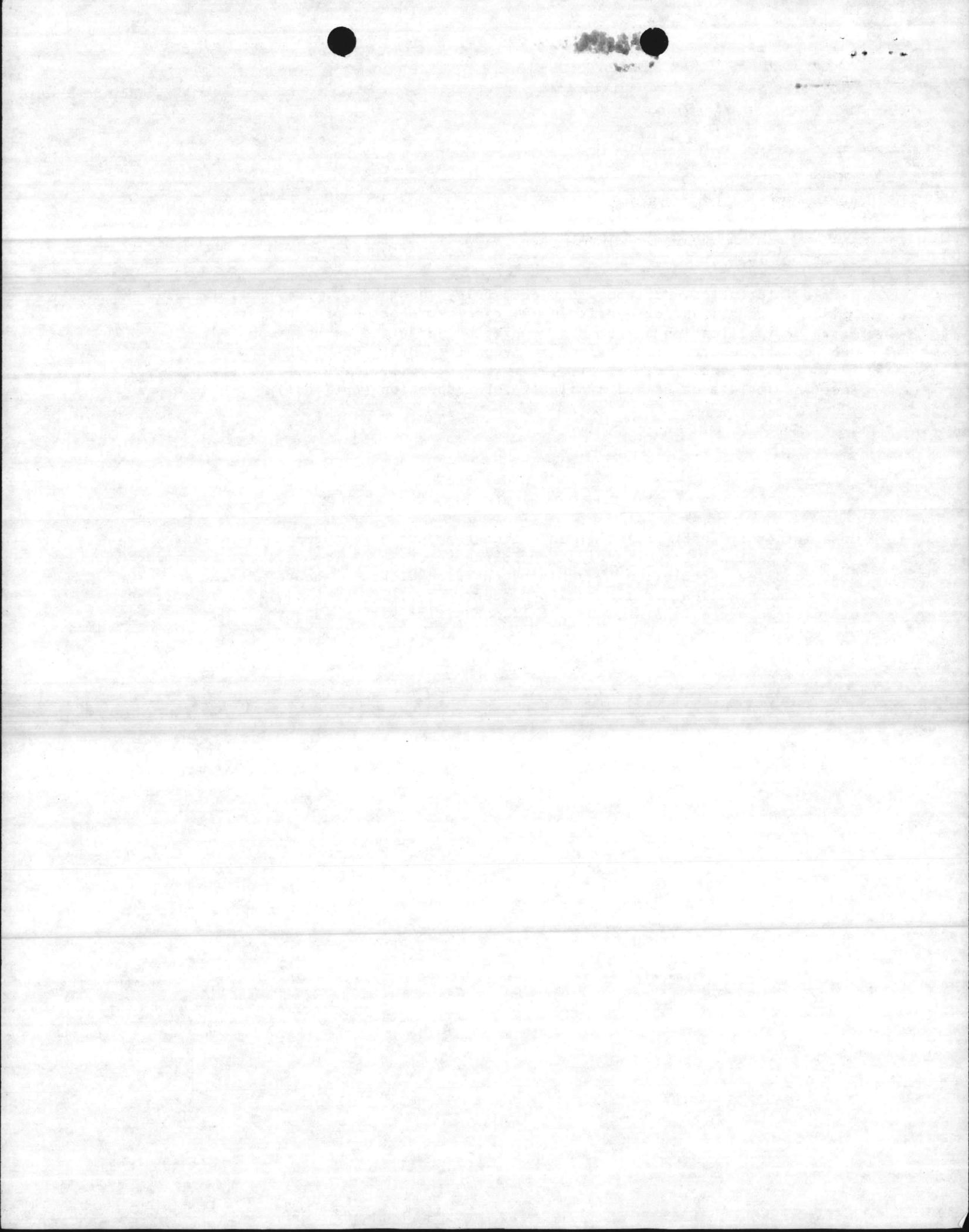


DATA REPORTING

Sample information and laboratory data fully recorded..... S
Direct MF counts and/or confirmed MPN results reported promptly..... S
After MF verification and/or MPN completion, adjusted counts reported..... S
One copy of report form retained in laboratory or by State program
for 3 years..... S
Test results assembled and available for inspection (optional)

ACTION RESPONSE TO LABORATORY RESULTS

Unsatisfactory test results given action response and resampled as defined
in National Interim Primary Drinking Water Regulations..... S
State and responsible local authority notified within 48 hours after
check samples confirm coliform occurrence..... S
All data reported to State and local authorities within 40 days..... S



Memorandum

DATE: 29 August 1983

FROM: ~~EI~~Supervisory Chemist, Quality Control Lab, Environmental Branch

TO: Supervisory Ecologist, Environmental Branch

SUBJ: State Inspection of Microbiology Laboratory

1. Don Beesley, Certification Inspector from the State, called today. He said that he was coming for an inspection on 8 September 1983. He said he will arrive around 1300. I told him to report in at Bldg 1103 and to ask for you.

Elizabeth A. Betz
Supervisory Chemist



AMERICAN COMPANY

1