11330.2 CHEMICAL ANALYSIS

OPEN

CLOSED

JAN 1985 - DESTROY
SECNAVINST 5215.5B, Part II
Chap 11, par. 11300(2) 2 years

GRAINGER LABORATORIES

INCORPORATED

ANALYTICAL AND CONSULTING CHEMISTS

709 West Johnson Street • Raleigh, North Carolina 27603

(919) 828-3360

ANALYTICAL LABORATORY

Environment Analysis
Construction Materials
Identification of Unknowns
Agriculture
Fuels
Textiles
Chemicals
Hazardous Waste

CONSULTATION

Metallurgical Services
Pollution Abatement
Process Development
Quality Control
Methods Development
Special Investigation
Pesticides
RCRA

October 13, 1982
82-5049

Commanding General
Marine Corps Base
Camp Lejeune, N.C. 28542

Attention: AC/S Facilities

Subject: Analyses of samples received 10/1/82

Sample Identification: Purchase Order# M67001-82-M-9318

1. A, Hadnot Point, 9/29/82, 0908 hr
2. B, Holcomb Blvd., 9/29/82, 0927
3. C, Tarawa Terrace, 9/29/82, 0940
4. D, Camp Johnson, 9/29/82, 1000
5. E, New River, 9/29/82, 1017
6. F, Rifle Range, 9/29/82, 1045
7. G, Courthouse Bay, 9/29/82, 1105
8. H, Onslow Beach, 9/29/82, 1120

For results see attached page.

William R. Cottrell
Laboratory Supervisor

WRC/ab
Customer #92400
cc: Elizabeth Betz

AMERICAN COUNCIL OF INDEPENDENT LABORATORIES, INC.

RESULTS

	1	2	3	4	5	6	7	8
pH	8.9	8.8	8.7	7.3	8.0	8.3	8.1	7.4
Arsenic, total as As, mg/l	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cadmium, total as Cd, mg/l	0.0011	<0.0005	<0.0005	<0.0005	<0.0005	0.0007	0.0011	<0.0005
Chromium, total as Cr, mg/l	<0.003	<0.003	<0.003	0.017	<0.003	0.004	<0.003	<0.003
Lead, total as Pb, mg/l	<0.01	<0.01	<0.01	0.01	0.02	<0.01	<0.01	<0.01
Manganese, total as Mn, mg/l	<0.002	<0.002	0.006	0.015	0.004	0.030	0.011	0.025
Mercury, total as Hg, mg/l	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Iron, total as Fe, mg/l	0.045	0.037	0.020	0.673	0.338	0.544	0.536	0.556
Selenium, total as Se, mg/l	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.007
Silver, total as Ag, mg/l	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001
Fluoride, total as F, mg/l	0.994	0.856	1.00	0.139	0.924	0.126	0.109	0.146
Nitrate-Nitrite Nitrogen, mg/l	0.17	<0.05	0.11	<0.05	<0.05	<0.05	0.11	<0.05

GRAINGER LABORATORIES

INCORPORATED

ANALYTICAL AND CONSULTING CHEMISTS

709 West Johnson Street • Raleigh, North Carolina 27603

(919) 828-3360

ANALYTICAL LABORATORY

Environment Analysis
Construction Materials
Identification of Unknowns
Agriculture
Fuels
Textiles
Chemicals
Hazardous Waste

CONSULTATION

Metallurgical Services
Pollution Abatement
Process Development
Quality Control
Methods Development
Special Investigation
Pesticides
RCRA

September 23, 1982
82-4805

Commanding General
Marine Corp. Base
Camp Lejeune, NC 28542

Attention: AC/S Facilities

Subject: Analyses of samples received 9/7/82

Sample Identification: Purchase Order M93182-2242-0001

1. HB, 0930, 8.2, 19
2. TT, 0945, 8.2, 20
3. MP, 1005, 7.1, 20
4. NR, 1035, 7.6, 20
5. RR, 1100, 8.0, 23
6. CHB, 1125, 7.9, 21
7. OB, 1145, 7.1, 21
8. HP, 1210, 8.8, 20

For results see attached page.

Call Betz

William R. Cottrell
Laboratory Supervisor

WRC/ab
cc: Elizabeth Betz

RESULTS

	1	2	3	4	5	6	7	8
pH	8.20	8.20	7.10	7.6	8.00	7.90	7.1	8.80
Temperature, °C	19.0	20.0	20.0	20.0	23.0	21.0	21.0	20.0
Total Alkalinity, as $CaCO_3$, mg/l	82.3	76.4	166	136	151	164	155	51.9
Total Filterable Residue, mg/l	10	152	126	320	230	246	140	106
Calcium, as $CaCO_3$, mg/l	56.1	101	41.9	48.0	44.3	50.0	111	40.9
Stability Index (Langelier)	0.03	0.19	-0.95	-0.59	0.06	-0.12	-0.54	0.25
Sodium, as Na, mg/l	24.4	19.8	81.9	79.8	88.7	81.5	66.4	20.7

Relevant Document

Copy to 83 gc

UNITED STATES MARINE CORPS
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA 28542

NREAD/JIW/jc
11330
JAN 17 1983

From: Commanding General
To: Commanding Officer, Naval Regional Dental Center

Subj: Fluoride Testing of Base Water Supply

Ref: (a) OPNAVINST 11330.1 of 1 Aug 1973

Encl: (1) Semi-Annual Fluoride Well Water Analyses

1. In accordance with the reference, the enclosure is forwarded. These samples were collected and analyzed for fluoride concentration.

J. T. MARSHALL
By direction

Blind copy to:
UtilDiv, BMain
SupvChem

Relevant
Document

Copy to 85 gc

UNITED STATES MARINE CORPS
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA 28542

NREAD/JIW/jc
11330
JAN 17 1983

From: Commanding General
To: Commanding Officer, Naval Regional Dental Center

Subj: Fluoride Testing of Base Water Supply

Ref: (a) OPNAVINST 11330.1 of 1 Aug 1973

Encl: (1) Semi-Annual Fluoride Well Water Analyses

1. In accordance with the reference, the enclosure is forwarded. These samples were collected and analyzed for fluoride concentration.

J. T. MARSHALL
By direction

Blind copy to:
UtilDiv, BMain
SupvChem

SEMIANNUAL WELL FLUORIDE RECORD

Well #:	mg/l	Well #:	mg/l	Well #:	mg/l	Well #:	mg/l
MP 602	0.52	HB 643	0.27	RR 45	0.13	MCAS 106	0.97
603	0.18	644	0.44	47	0.18	131	0.31
606	0.22	645	0.60	97	0.13	203	1.03
608	0.13	646	0.18	CHB 43	0.13	~~3506~~	Closed
609	0.08	647	0.18	44	0.13	4140	0.36
610	0 CLOSED	648	0.18	220	0.18	4150	0.36
613	0.22	649	0.13	221	0.18	5001	0.36
615	OUT OF SERVICE	650	0.18	BB 97	0.13	5009	0.31
616	0.22	CG 100	0.22	A-5	0.22	1256(N)	1.15
620	0.18	~~104~~	CLOSED	MP 142	0.22	1255(O)	0.48
632	0.13	201	0.22	168	0.18	1254(P)	0.18
633	0.18	325 502	0.18 2.12	197	0.13	1253(Q)	1.15
634	0.13	504	0.22	267 628	0.18 CLOSED	1251(R)	1.82
635	0.40	600	0.36	629	0.18	190(S)	0.22
636	0.08	604	0.08	630	0.18	191(T)	0.78
637	0.13	700	0.48	25 TT 26	0.22 OUT OF SERVICE		
638	0.18	901	CLOSED	30	0.31		
639	0.13	1000	0.52	31	0.27		
640	0.22	1001	0.18	52	0.27		
641	0.13	VL 108	CLOSED	53	0.18		
642	0.18	VL 110	CLOSED	54	0.22		
651	0.18	VL 154	CLOSED	67	0.18		
652	0.31	OB 164	0.22				
653	0.18	BA 190	0.18				
654	0.18						
655	0.22						
LCM4006	CLOSED						
LCM4007	0.27						

ENCLOSURE (1)

Relevant Document

Copy to 83

NREAD/JIW/dr
11330
22 AUG 1983

From: Commanding General
To: Commanding Officer, Naval Hospital

Subj: Fluoride Testing of Base Water Supply

Ref: (a) OPNAVINST 11330.1 of 1 Aug 1973

Encl: Semi-Annual Fluoride Well Water Analyses

1. In accordance with the reference, the enclosure is forwarded. These samples were collected and analyzed for fluoride concentration.

M. G. LILLEY
By direction

Blind copy to:
UtilDiv, BMain
SupvChem

Relevant
Document

Relevant
Document

Relevant
Document

Copy to 83
JW

NREAD/JIW/dr
11330
22 AUG 1983

From: Commanding General
To: Commanding Officer, Naval Hospital

Subj: Fluoride Testing of Base Water Supply

Ref: (a) CINAVINST 11330.1 of 1 Aug 1973

Encl: Semi-Annual Fluoride Well Water Analyses

1. In accordance with the reference, the enclosure is forwarded. These samples were collected and analyzed for fluoride concentration.

M. G. LILLEY
By direction

Blind copy to:
UtilDiv, BMain
SupvChem

SEMIANNUAL WELL FLUORIDE RECORD

Well #:	mg/l	Well #:	mg/l	Well #:	mg/l	Well #:	mg/l
HP 602	0.24	HP 652	0.25	CG 1000	0.32	CHB 43	0.08
603	0.16	653	0.17	1001	0.17	44	0.09
606	0.22	654	0.25	MCAS 106	1.72	220	0.11
608	0.11	655	0.14	131	0.30	221	0.13
609	0.08	LCH 4006	0.20	203	0.67	BB 97	0.07
610	Out of Service	LCH 4007	0.21	4140	0.38	A-5	0.10
613	0.18	HB 643	0.28	4150	0.26	MP 142	0.21
615	0.18	644	0.24	5001	0.25	168	Out of Service
616	Out of Service	645	0.25	5009	0.27	197	0.15
620	0.17	646	0.19	1256(N)	0.28	267	0.14
632	0.11	647	0.15	1255(O)	0.40	628	Out of Service
633	0.17	648	0.16	1254(P)	1.23	629	0.13
634	0.11	649	0.14	1253(Q)	0.35	630	0.12
635	0.27	650	0.15	1251(R)	1.62	TT 25	0.23
636	0.13	CG 100	0.19	190(S)	0.59	26	0.22
637	0.19	201	0.35	191(T)	0.65	30	0.32
638	0.17	325	0.17	OB 164	0.22	31	0.17
639	0.12	502	2.45	BA 190	0.18	52	0.20
640	0.16	504	0.19	RR 45	0.11	53	0.18
641	0.14	600	0.25	47	0.13	54	0.19
642	0.12	604	0.15	97	0.11	67	0.15
651	Out of Service	700	0.24				

ENCLOSURE (1)

BASE MAINTENANCE DEPARTMENT
Marine Corps Base
Camp Lejeune, North Carolina 28542

MO 11330.1
MAIN/RES/gbg
19 Oct 1978

MAINTENANCE ORDER 11330.1 w/chg I

From: Base Maintenance Officer
To: Distribution List

Subj: Standing Operating Procedures - Potable Water Sampling

Encl: (1) Fluoride Sampling Procedures
(2) Chemical Analysis Procedures
(3) Bacteriological Sampling Procedures
(4) Semi-Annual Well Fluoride Sampling Procedures

1. Purpose. To publish a standard procedure for potable water sampling technique and schedule for the Marine Corps Base in accordance with state and naval regulations, and the Safe Drinking Water Act.

2. Responsibilities.

a. The General Foreman, Water Treatment Branch, is responsible for the proper collection of potable water samples from the distribution system and water treatment plants. The General Foreman is also responsible for the delivery of water samples to the Quality Control Laboratory, Building 65.

b. The Chief, Quality Control Laboratory is responsible for

(1) Instructing water samplers (designated by the General Foreman, Water Treatment Branch) in the proper sampling techniques.

(2) Providing adequate containers for sampling.

3. Frequency of Sampling.

a. Fluoride samples of treated and untreated water will be collected daily (seven days per week) from the Hadnot Point, Tarawa Terrace, and Holcomb Blvd Water Treatment Plants. (See Enclosure (1) for procedures.)

b. Chemical analysis samples of treated water will be collected weekly from all Water Treatment Plants. (See Enclosure (2) for procedures.)

c. Bacteriological analysis samples of all potable water distribution systems will be collected weekly. (See Enclosure (3) for procedures.)

d. Fluoride analysis samples of well water will be collected semi-annually. (See Enclosure (4) for procedures.)

e. Repeat or check samples will be collected as required.

J. KOVACH

DISTRIBUTION:
Dir, NREA Div
Dir, Utilities Div
Dir, Admin Div
Dir, Opns Div

BASE MAINTENANCE DIVISION
Marine Corps Base
Camp Lejeune, North Carolina 28542

MO 11330.1 Ch 1
MAIN/BB/bb
7 October 1981

MAINTENANCE ORDER 11330.1 Ch 1

From: Base Maintenance Officer
To: Distribution List

Subj: Standing Operating Procedures - Potable Water Sampling

1. Purpose. To direct pen change to the basic Order.

2. Action. Renumber Maintenance Order 11330 to Maintenance Order 11330.1.

F. H. Mount

F. H. MOUNT

Distribution:
BMO (3)
AdminBr (5)
M&RBr (45)
NREABr (7)
OprsBr (7)
UtilBr (16)

Fluoride Sampling Procedures

1. General.

a. Daily samples will be collected from the raw and treated water from each Water Treatment Plant that adds fluoride to the water.

b. Sample locations will be designated by the General Foreman, Water Treatment Plant.

c. Fluoride samples will be collected each morning and delivered to the laboratory by 1000 hours.

2. Apparatus.

a. Plastic bottles, 500 mls. Each bottle to be labeled (i.e., raw, treated).

b. Sample carrier or container.

3. Sampling Procedure.

a. Turn on the spigot and run water (to waste) approximately one minute or longer to clear the line.

b. Rinse the sample bottle with the sample two times. (Note: This step is important to assure a good sample).

c. Fill the sample bottle.

d. Deliver the samples to the laboratory.

e. Pick up bottles for the next day's samples.

Chemical Analysis Sampling Procedures

1. General.

a. Samples will be collected each Tuesday from all the Water Treatment Plants' treated water. These samples are used to determine that proper treatment and chemical additions have been performed.

b. Sample bottles will be provided by the laboratory.

2. Apparatus.

a. Sample bottle, 1000 mls, plastic prelabeled.

b. Chlorine residual label sticker on bottle.

c. Sample container or carrier.

3. Sampling Procedure.

a. Turn on the spigot and run the water (to waste) approximately one minute or longer to clear the line.

b. Rinse the sample bottle with the sample two times (i.e., fill up the bottle and discard the contents).

c. Fill the sample bottle with the sample.

d. Test for the chlorine residual and record it on the sample bottle.

e. Deliver the samples to the laboratory.

Bacteriological Sampling Procedure

1. General.

a. Bacteriological sampling will be conducted each Tuesday. The purpose of the sampling is to insure disinfection and that bacteria do not exceed the limits established by the Safe Drinking Water Act of four per 100 militers (mls), or more than an average of 1 per 100 mls for the distribution system.

b. It is extremely important that proper precautions and techniques are used to preclude water samples from becoming contaminated with bacteria from hands, clothing, etc.

c. DO NOT take samples from outside spigots or from leaking spigots.

d. When taking samples from spigots that have aerators, remove the aerator before running the water (to waste) and collecting the sample. After the sample is collected replace the aerator.

2. Apparatus.

a. Sterile sample bottle, approximately 100 mls.

b. Foreceps

c. Jar containing alcohol - saturated cotton balls

d. Bacteriological Sample Form (MCBCL 11330/4)

e. Lighter or matches

f. Chlorine Test Kit

g. Sample bottle rack or holder

3. Sampling Procedure.

a. Select the proper building (as indicated on the Sample Collection Form).

b. Select the proper number bottle that corresponds to the sample site.

c. Remove faucet aerator, if necessary, and run the water (to waste) for five minutes.

d. Perform a chlorine check on the water, and record the results on the form. (Note: Chlorine residual should be 0.2 mg/l, or higher).

e. Shut off the water and flame the spigot for about one minute to sterilize.

f. Turn on the water and run (to waste) a few seconds.

g. Remove the top of the sample bottle, taking care not to handle the neck of the bottle or the inside of the cap, and collect about 100 mls of sample. (Note: DO NOT rinse the bottle. DO fill only to the shoulder of the bottle, leaving about one inch of air space).

h. Recap the bottle and return it to the sample carrier.

4. Bacteriological Form MCBCL 1130/4.

a. Record the chlorine residuals in the appropriate place.

b. In "roving" area sample, write the building number sampled.

c. The person collecting the samples must sign and date the form in the place indicated.

d. Return the samples and form to the laboratory by 1400 hours.

5. Repeat Samples.

a. From time to time the bacteria count will exceed the permissible limit of four per 100 mls and resampling must be conducted. The Quality Control Laboratory will notify the General Foreman by telephone of this need.

b. Resampling will consist of at least two additional samples taken from the location in question. Resampling procedures will be performed as outlined in the Sampling Procedures.

Semi-annual Well Fluoride Sampling Procedures

1. General.

a. Fluoride samples are collected twice a year from the well sites.

b. Sampling periods are from January to June and from July to December.

c. Sample collection times will be agreed upon by the General Foreman and Chief, Quality Control Laboratory. Ideally, these samples should be collected during a one-week period, time and schedule permitting.

2. Apparatus.

a. Plastic or glass sample bottles.

b. List of wells.

c. Sample carrier or container.

3. Sampling Procedure.

a. Turn on the well sample spigot and run the water (to waste) to clear the line.

b. Rinse the sample bottle twice by filling and discarding the sample in the bottle.

c. Fill the sample bottle with the sample.

d. Record the well building number on the tape on the bottle.

e. Deliver the samples to the laboratory.

ASSISTANT CHIEF OF STAFF, FACILITIES
HEADQUARTERS, MARINE CORPS BASE

DATE 2-1-82

TO:

[BASE MAINT O]

PUBLIC WORKS O

COMM-ELECT O

~~MOTOR TRANSPORT~~ O

DIR, FAMILY HOUSING

DIR, UNACCOMPANIED PERS HSG

BASE FIRE CHIEF

ATTN: _____

1. Attached is forwarded for (info/action.)

2. Please initial, or comment, and return all papers to this office.

3. Your file copy

J. G. Fitzgerald
By direction

"LET'S THINK OF A FEW REASONS
WHY IT CAN BE DONE"

MCBCL 5216/21 (REV. 2-81)

I R 6

DEPARTMENT OF THE NAVY
ATLANTIC DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
NORFOLK, VIRGINIA 23511

TELEPHONE NO.
444-9558
AUTOVON 690-9558

IN REPLY REFER TO:
114:WLC
11330

2 8 JAN 1982

From: Commander, Atlantic Division, Naval Facilities Engineering Command
To: Distribution

Subj: Corrosivity Monitoring of Drinking Water

Ref: (a) Title 40, Code of Federal Regulations, Part 141, "National Interim Primary Drinking Water Regulations"

Encl: (1) Naval Energy and Environmental Support Activity (NAVENENVSA) Bulletin 078 of Jan 1982

1. Reference (a) requires suppliers of "community public water systems" to monitor the corrosivity characteristics of their water. Corrosivity monitoring includes measurements of parameters such as pH, alkalinity, total dissolved solids, hardness and calculation of the Langelier Index (i.e., whether the source is scale forming, corrosive or in chemical balance).

2. The subject monitoring requirements become effective 27 February 1982 and must be completed within 12 months of this date. Therefore, enclosure (1), which summarizes these requirements, is being forwarded for your information and use.

3. Should there be questions regarding this matter, please contact Mr. Wallace Carter, LANTNAVFACENGCOM, Code 114, telephone number (804) 444-9558 or AUTOVON 690-9558.

J. R. Bailey
J. R. BAILEY
By direction

Distribution:
CNTT DET BAINBRIDGE
MCB CAMP LEJEUNE
MCAS CHERRY POINT
NAVRADSTA R SUGAR GROVE
NAVSTA ROOSEVELT ROADS

FAC ROUTING
1 FEB 1982

	ACTION	INFO	INT
FACO			
4A			
4B			
4C			
4D			
4E			
FAO			

INFORMATION BULLETIN

Naval Energy and Environmental Support Activity Port Hueneme, California 93043
IB-078 January 1982

CORROSIVITY MONITORING

UNDER THE

SAFE DRINKING WATER ACT

The National Interim Primary Drinking Water Regulations (40 CFR 141) of August 27, 1980 requires "community public water systems" to monitor the corrosivity characteristics of the water. The requirements for corrosivity monitoring become effective February 27, 1982. All requirements must be completed within 12 months of this date.

INTRODUCTION

The corrosiveness of drinking water may have serious health and ecomomic consequences. Not only does corrosiveness of water affect the look and taste of water, but also can produce by-products in a distribution system that may be hazardous to human health. Corrosive water can dissolve cadmium, lead, zinc, iron, and copper piping materials. For this reason EPA promulgated special monitoring regulations for corrosivity.

Navy shore activities in the United States that own or operate a "community public water system" must comply with the requirements of the regulation. A "community public water system" by definition is a system for providing the public piped water for human consumption. Further, the system has at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents. The system includes: (1) all collection, treatment, storage, and distribution facilities under control of the operator of such a system and used primarily in connection with the system; and (2) any collection or pretreatment storage facilities not under such control that are used primarily in connection with the system.

A naval activity that purchases all of its water, but does not operate collection or treatment facilities and does not sell water to any person outside Navy owned property is not subject to these requirements. Booster chlorination is not considered a treatment facility but rather a process for insuring adequate chlorination. A Navy activity that purchases all of its water and sells it to any person outside Navy owned property may be subject to these requirements. In this case, booster chlorination may qualify as a treatment facility for drinking water.

COMPLIANCE REQUIREMENTS

The regulation requires the monitoring of those parameters that affect corrosivity. Specifically, the parameters are pH, alkalinity, total dissolved solids (total filterable residue), hardness, and the Langelier Index. Laboratories performing these analyses must use analytical methods approved by EPA. Also, the laboratories must be EPA approved or state certified.

Sampling is required at a representative entry point to the water distribution system for the following conditions:

- Surface Water Sources: Two samples per treatment plant are required for analysis where surface water is the source wholly or in part. One sample is to be taken during mid-winter and one sample in mid-summer.

- Groundwater Sources: One sample per treatment plant is required for analysis where groundwater is the source. Multiple wells drawing from the same aquifier may (with state approval) be considered one facility for determining the number of samples.

NOTE: The term "treatment plant" is not clearly defined at 40 CFR 141. The activity should contact the state, if it has primary enforcement responsibility, or the EPA regional office for definition of the term "treatment plant" as used in this regulation.

Results of analysis must be reported within the first 10 days of the month following the month in which the results are received. The results are submitted to EPA regional offices or the state offices where the state has primacy for drinking water.

"Community public water systems" also are required to report the type of construction materials used in the distribution system. This information should be forwarded with the results of the corrosivity monitoring.

States which have primacy may impose additional sampling and reporting requirements.

RESPONSIBILITY

Details on complying with the requirements of the National Interim Primary Drinking Water Regulations are given in NAVFACINST 11330.14A of 12 February 1980. Where required, shore activities are responsible for operating and maintaining facilities to provide drinking water. These responsibilities include: sampling, conducting analyses, and submitting reports required by the National Interim Primary Drinking Water Regulations.

For more information or assistance contact the cognizant Naval Facilities Engineering Command (NAVFAC) Engineering Field Division.

NORTHDIV	Code 114	A/V 443-4972
SOUTHDIV	Code 114C	A/V 794-5510
CHESDIV	Code 114.2	A/V 288-3761
LANTDIV	Code 1142	A/V 690-7313
WESTDIV/San Bruno	Code 1142	A/V 859-7494
WESTDIV/San Diego	Code 1141	A/V 958-8853
WESTDIV/Seattle	Code 1143	A/V 439-8666
PACDIV	Code 11419	A/V 471-3948

This information bulletin was prepared by Gary Gasperino, NEESA 112W/GG

9/30/82

Sodium		STABILITY/CORROSIVITY	
HB	24 PPM	HB	.03
TT	19.8 PPM	TT	.19
M	81.9	MP	-.95
AS	79.8	AS	-.59
RR	88.7	RR	.06
BB	81.5	BB	-.12
BS	66.4	BA	-.54
HP	20.7	HP	-.25

COPY TO PRICE

LSJ
WS
WRD

11330
NREAD

JUL 18 1985

From: Commanding General, Marine Corps Base, Camp Lejeune
To: Commanding Officer, Dental Clinic, Marine Corps Base, Camp Lejeune

Subj: FLUORIDE TESTING OF BASE WATER SUPPLY

Ref: (a) OPNAVINST 11330.1 of 1 Aug 1973

Encl: (1) Semi-Annual Fluoride Well Water Analysis for July 1985

1. In accordance with the reference, the enclosure is forwarded. These samples were collected and analyzed for fluoride concentration.

J. I. WOOTEN
By direction

Blind copy to:
SupvyChem
→ BMO (UtilDir)

Writer: E. Betz, NREAD, 5977
Typist: A. Blackstock, 17 July 1985

Relevant Document

Collected: 9-17 July 1985

SEMIANNUAL WELL FLUORIDE RECORD

Well #	mg/l	Well #	mg/l	Well #	mg/l	Well #	mg/l
HP 602	See Note 1	HP 652	See Note 1	CG 1000	0.42	CHB Old 43	Torn Down
603	0.15	653	See Note 1	1001	0.20	New 44	0.07
606	0.18	654	Out of Service	MCAS 106	1.84	220	0.08
608	See Note 1	655	0.12	131	0.65	221	0.10
609	Out of Service	LCH 4006	0.17	203	1.93	BB 97	0.11
610	0.13	LCH 4007	0.17	4140	0.29	A-5	See Note 2
613	0.17	HB *643	0.23	4150	See Note 1	MP 142	Out of Service
615	Caved	*644	0.20	5001	0.28	168	0.12
616	0.20	*645	0.45	5009	0.26	197	0.22
620	0.14	646	0.18	1256(N)	1.17	267	0.09
632	0.09	647	0.14	1255(O)	1.27	628	0.10
633	0.15	648	0.15	1254(P)	0.56	629	0.10
634	See Note 1	649	0.19	1253(Q)	1.42	630	0.11
635	0.23	650	0.14	1251(R)	0.66	TT 25	0.12
636	0.12	CG 100	0.21	190(S)	0.94	26	0.18
637	See Note 1	201	0.24	191(T)	0.65	30	See Note 1
638	0.15	325	0.18	OB 164	0.18	31	Out of Service
639 (Old)	0.10	502	2.26	BA 190	0.15	52	0.11
640	0.13	504	0.20	RR 45	0.09	53	1.02
641	0.11	600	1.46	47	0.11	54	Caved
642	0.11	604	0.14	97	0.09	67	0.13
651	See Note 1	700	0.18	RR 227	See Note 1	TT New Well	0.11
601	See Note 1						See Note 1
611	0.19						
614	0.21						
621	0.11						
627	0.09						
639 (New)	0.14						

NOTES:

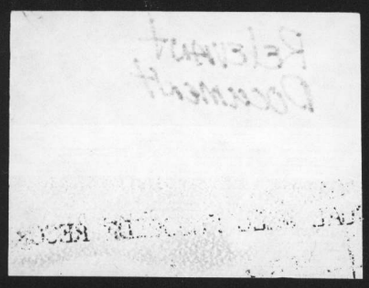
1. These wells have been secured because of solvent contamination.

2. BB-97 does not pump to a plant. It is solely for the demo range.

*These wells now pump to Tarawa Terrace plant.

Enclosure (1)

Relevant
Document



Collected: 9-17 July 1985

SEMIANNUAL WELL FLUORIDE RECORD

Well #	mg/l	Well #	mg/l	Well #	mg/l	Well #	mg/l
HP 602	See Note 1	HP 652	See Note 1	CG 1000	0.42	CHB Old 43	Torn Down
603	0.15	653	See Note 1	1001	0.20	New 44	0.07
606	0.18	654	Out of Service	MCAS 106	1.84	220	0.08
608	See Note 1	655	0.12	131	0.65	221	0.10
609	Out of Service	LCH 4006	0.17	203	1.93	BB 97	0.11
610	0.13	LCH 4007	0.17	4140	0.29	A-5	See Note 2
613	0.17	HB *643	0.23	4150	See Note 1	MP 142	Out of Service
615	Caved	*644	0.20	5001	0.28	168	0.12
616	0.20	*645	0.45	5009	0.26	197	0.22
620	0.14	646	0.18	1256(N)	1.17	267	0.09
632	0.09	647	0.14	1255(O)	1.27	628	0.10
633	0.15	648	0.15	1254(P)	0.56	629	0.10
634	See Note 1	649	0.19	1253(Q)	1.42	630	0.11
635	0.23	650	0.14	1251(R)	0.66	TT 25	0.12
636	0.12	CG 100	0.21	190(S)	0.94	26	0.18
637	See Note 1	201	0.24	191(T)	0.65	30	See Note 1
638	0.15	325	0.18	OB 164	0.18	31	Out of Service
639 (Old)	0.10	502	2.26	BA 190	0.15	52	0.11
640	0.13	504	0.20	RR 45	0.09	53	1.02
641	0.11	600	1.46	47	0.11	54	Caved
642	0.11	604	0.14	97	0.09	67	0.13
651	See Note 1	700	0.18	RR 227	See Note 1	TT New Well	0.11
601	See Note 1						See Note 1
611	0.19						
614	0.21						
621	0.11						
627	0.09						
639 (New)	0.14						

NOTES:

1. These wells have been secured because of solvent contamination.

2. BB-97 does not pump to a plant. It is solely for the demo range.

*These wells now pump to Tarawa Terrace plant.

Enclosure (1)

Relevant Document

Copy 83 DA

NREAD/EAB/jc
11330
22 Feb 1984

From: Commanding General
To: Commanding Officer, Dental Clinic

Subj: Fluoride Testing of Base Water Supply

Ref: (a) OPNAVINST 11330.1 of 1 Aug 1973

Encl: (1) Semi-Annual Fluoride Well Water Analyses for July 1983
(2) Semi-Annual Fluoride Well Water Analyses for Feb 1984

1. In accordance with the reference, the enclosures are forwarded. These samples were collected and analyzed for fluoride concentration.

J. I. WOOTEN
By direction

Blind copy to:
Util Dir, BMainD

Relevant
Document

Copy 83 Ok

NREAD/EAB/jc
11330
22 Feb 1984

From: Commanding General
To: Commanding Officer, Dental Clinic

Subj: Fluoride Testing of Base Water Supply

Ref: (a) OPNAVINST 11330.1 of 1 Aug 1973

Encl: (1) Semi-Annual Fluoride Well Water Analyses for July 1983
(2) Semi-Annual Fluoride Well Water Analyses for Feb 1984

1. In accordance with the reference, the enclosures are forwarded. These samples were collected and analyzed for fluoride concentration.

J. I. WOOTEN
By direction

Blind copy to:
Util Dir, BMainD

SEMIANNUAL WELL FLUORIDE RECORD

Well #:	mg/l	Well #:	mg/l	Well #:	mg/l	Well #:	mg/l
HP 602	0.24	HP 652	0.25	CG 1000	0.32	CHB 43	0.08
603	0.16	653	0.17	1001	0.17	44	0.09
606	0.22	654	0.25	MCAS 106	1.72	220	0.11
608	0.11	655	0.14	131	0.30	221	0.13
609	0.08	LCH 4006	0.20	203	0.67	BB 97	0.07
610	Out of Service	LCH 4007	0.21	4140	0.38	A-5	0.10
613	0.18	HB 643	0.28	4150	0.26	MP 142	0.21
615	0.18	644	0.24	5001	0.25	168	Out of Service
616	Out of Service	645	0.25	5009	0.27	197	0.15
620	0.17	646	0.19	1256(N)	0.28	267	0.14
632	0.11	647	0.15	1255(O)	0.40	628	Out of Service
633	0.17	648	0.16	1254(P)	1.23	629	0.13
634	0.11	649	0.14	1253(Q)	0.35	630	0.12
635	0.27	650	0.15	1251(R)	1.62	TT 25	0.23
636	0.13	CG 100	0.19	190(S)	0.59	26	0.22
637	0.19	201	0.35	191(T)	0.65	30	0.32
638	0.17	325	0.17	OB 164	0.22	31	0.17
639	0.12	502	2.45	BA 190	0.18	52	0.20
640	0.16	504	0.19	RR 45	0.11	53	0.18
641	0.14	600	0.25	47	0.13	54	0.19
642	0.12	604	0.15	97	0.11	67	0.15
651	Out of Service	700	0.24				

ENCLOSURE (1)

SEMIANNUAL WELL FLUORIDE RECORD

Well #:	mg/l	Well #:	mg/l	Well #:	mg/l	Well #:	mg/l
HP 602	0.23	HP 652	0.24	CG 1000	Out of Service	CHB 43	0.11
603	0.14	653	0.17	1001	0.12	44	0.10
606	0.21	654	0.25	MCAS 106	1.20	220	0.11
608	Out of Service	655	0.14	131	0.46	221	0.12
609	0.09	LCH 4006	Out of Service	203	1.39	BB 97	0.07
610	Out of Service	LCH 4007	0.20	4140	0.29	A-5	0.10
613	0.18	HB 643	0.26	4150	0.27	MP 142	0.20
615	Out of Service	644	0.49	5001	0.27	168	Out of Service
616	0.18	645	0.54	5009	0.27	197	0.15
620	0.17	646	0.21	1256(N)	0.19	267	0.15
632	0.11	647	0.22	1255(O)	1.28	628	Out of Service
633	0.15	648	0.15	1254(P)	1.30	629	0.16
634	0.12	649	0.21	1253(Q)	1.56	630	0.14
635	0.24	650	0.15	1251(R)	1.87	TT 25	0.24
636	0.11	CG 100	0.18	190(S)	0.61	26	0.23
637	0.12	201	0.32	191(T)	0.71	30	0.28
638	0.16	325	0.19	OB 164	0.24	31	0.17
639	0.11	502	2.31	BA 190	0.21	52	0.23
640	0.15	504	0.20	RR 45	0.11	53	Out of Service
641	0.12	600	0.52	47	0.14	54	0.20
642	0.12	604	0.20	97	0.13	67	0.16
651	0.16	700	0.25				

Enclosure (2)

RELEVANT DOCUMENT

T-11330

11330
NREAD
12 Jul 1984

From: Commanding General, Marine Corps Base, Camp Lejeune
To: Commanding Officer, Dental Clinic, Camp Lejeune, NC 28542

Subj: FLUORIDE TESTING OF BASE WATER SUPPLY

Ref: (a) OPNAVINST 11330.1 of 1 Aug 1973

Encl: (1) Semi-Annual Fluoride Well Water Analyses for July 1984

1. In accordance with the reference, the enclosure is forwarded. These samples were collected and analyzed for fluoride concentration.

J. I. WOOTEN
By direction

Blind copy to:
SupvChem
BMO (Utilities Dir)

Writer: E. Betz, NREAD Ext 5977
Typist: J. Latham, 12 Jul 84

RELEVANT
DOCUMENT

T-11330 (65) 08

11330
NREAD
12 Jul 1984

From: Commanding General, Marine Corps Base, Camp Lejeune
To: Commanding Officer, Dental Clinic, Camp Lejeune, NC 28542

Subj: FLUORIDE TESTING OF BASE WATER SUPPLY

Ref: (a) OPNAVINST 11330.1 of 1 Aug 1973

Encl: (1) Semi-Annual Fluoride Well Water Analyses for July 1984

1. In accordance with the reference, the enclosure is forwarded. These samples were collected and analyzed for fluoride concentration.

J. I. WOOTEN
By direction

Blind copy to:
SupvChem
BMO (Utilities Dir)

Writer: E. Betz, NREAD Ext 5977
Typist: J. Latham, 12 Jul 84

SEMIANNUAL WELL FLUORIDE RECORD

Well #:	mg/1	Well #:	mg/1	Well #:	mg/1	Well #:	mg/1
HP 602	0.20	HP 652	0.21	CG 1000	0.29	CHB 43	0.06
603	0.14	653	0.14	1001	0.14	44	0.07
606	0.18	654	0.10	MCAS 106	1.71	220	0.10
608	0.15	655	0.11	131	0.92	221	0.10
609	0.11	LCH 4006	Out of Service	203	0.52	BB 97	0.09
610	Out of Service	LCH 4007	0.16	4140	0.30	A-5	0.09
613	0.17	HB 643	0.25	4150	0.22	MP 142	0.18
615	Out of Service	644	0.23	5001	0.22	168	Out of Service
616	0.18	645	0.23	5009	0.23	197	0.12
620	0.18	646	0.17	1256(N)	0.23	267	0.12
632	0.08	647	0.13	1255(O)	0.23	628	Out of Service
633	0.14	648	0.15	1254(P)	0.36	629	0.13
634	0.12	649	0.19	1253(Q)	0.44	630	0.10
635	0.12	650	0.14	1251(R)	0.39	TT 25	0.20
636	0.12	CG 100	0.19	190(S)	0.83	26	0.17
637	0.11	201	0.26	191(T)	0.60	30	0.26
638	0.13	325	0.16	OB 164	0.18	31	0.16
639	0.09	502	0.13	BA 190	0.14	52	0.18
640	0.12	504	0.15	RR 45	0.09	53	Caved In
641	0.09	600	0.14	47	0.11	54	0.17
642	0.10	604	0.10	97	0.06	67	0.17
651	0.12	700	0.16				

ENCLOSURE 1

Mr. Price

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

DATE COLLECTED: 25 JAN 83

PARAMETER	HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER
PH	8.6	7.2	8.3	6.9	8.0	8.2	8.5	8.5
PENOLTHALEIN ALKALINITY	12	0	10	0	0	0	16	16
METHYL ORANGE ALKALINITY	60	176	66	150	196	176	66	160
CARBONATES AS $CaCO_3$	24	0	20	0	0	0	32	32
BICARBONATES AS $CaCO_3$	36	176	46	150	196	176	34	128
CHLORIDES AS C1	10	16	16	20	20	30	12	100
HARDNESS AS $CaCO_3$	60	64	88	66	62	60	70	62
IRON AS Fe	<0.04	0.41	0.10	0.12	0.07	0.43	0.06	0.09
FLUORIDE AM/PM	0.97 / 1.06	0.48	1.00 / 1.24	0.52	0.40	0.40	0.94 / 1.00	1.06
CHLORINE RESIDUAL	1.0	1.3	1.0	1.0	1.2	1.0	0.9	1.5
TURBIDITY AM/PM	0.20	0.20	1.9 / 0.54	0.16	0.14	1.0	0.24 / 0.32	0.30
TOTAL PHOSPHATE		2.52			0.38			
ORTHO PHOSPHATE		1.13			0.16			
META PHOSPHATE		1.39			0.22			
STABILITY	0.0		+0.2		+0.2	-0.3	0.0	+0.2

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY: Margaret Monahan Lachapelle

DATE OF ANALYSIS: 25 JAN 83

Mr. Price

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

DATE COLLECTED: 29 MARCH 83

PARAMETER	HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER
PH	8.7	7.4	8.5	7.4	8.7	8.4	8.8	8.9
PENOLTHALEIN ALKALINITY	12	0	6	0	8	8	14	28
METHYL ORANGE ALKALINITY	74	194	72	146	176	166	70	140
CARBONATES AS $CaCO_3$	24	0	12	0	16	16	28	48
BICARBONATES AS $CaCO_3$	50	194	60	146	160	150	42	92
CHLORIDES AS C1	12	50	12	14	14	26	18	70
HARDNESS AS $CaCO_3$	68	68	80	72	70	50	60	72
IRON AS Fe	0.04	0.48	0.15	0.06	0.04	0.15	0.07	0.08
FLUORIDE AM/PM	0.81/1.04	0.55	0.94/1.13	0.26	0.26	0.12	1.01/1.27	0.91
CHLORINE RESIDUAL	1.0	1.3	1.0	1.1	1.3	1.0	0.9	1.2
TURBIDITY AM/PM	0.20	0.29	0.42/1.10	0.17	0.14	0.39	0.19/0.26	0.24
TOTAL PHOSPHATE		1.78			0.83			
ORTHO PHOSPHATE		0.76			0.24			
META PHOSPHATE		1.02			0.59			
STABILITY	+0.4		+0.2		+0.6	+0.3	+0.3	+0.2

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY: Hennegutt, Burns, Tabonelle

DATE OF ANALYSIS: 29 MARCH 83

MR PRICE

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

DATE COLLECTED 3-15-83

PARAMETER	HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER
PH	9.3	7.3	9.0	7.5	8.5	8.3	9.0	8.7
PENOLTHALEIN ALKALINITY	2	0	4	0	2	0	4	4
METHYL ORANGE ALKALINITY	36	170	56	150	140	150	60	130
CARBONATES AS $CaCO_3$	4	0	8	0	4	0	8	8
BICARBONATES AS $CaCO_3$	32	170	48	150	136	150	52	122
CHLORIDES AS C1	10	50	10	16	10	20	10	104
HARDNESS AS $CaCO_3$	48	70	88	60	60	50	64	60
IRON AS Fe	0.04	0.50	0.10	0.22	0.04	0.04	0.06	0.08
FLUORIDE A.M./P.M.	0.97/0.88	0.26	0.94/0.88	0.21	0.26	0.12	1.04/0.91	0.74
CHLORINE RESIDUAL	1.0	1.4	1.0	1.2	1.3	1.0	1.0	1.5
TURBIDITY	0.20	0.26	0.76/0.26	0.18	0.18	0.16	0.46/0.34	0.30
TOTAL PHOSPHATE		252			1.13			
ORTHO PHOSPHATE		0.77			0.16			
META PHOSPHATE		1.75			0.97			
STABILITY	+0.3	—	+0.3	—	+0.1	0.0	+0.1	0.0

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY: BURNS, MONAHAN & HUNYCUTT

DATE OF ANALYSIS: 3-15-83

✓Ride - 562680 - Snapper - MCAS
✓ " 91072579 - " - T.T.

Push - ✓689 - Grand Prix - MCAS
✓697 - " - B.20
✓693 - " - B-20 Storage

Push. ~~1690511~~ - Simplicity - T.T.
✓003320
"
~~1690511~~ - — Survey (
✓003319

Push. VA200 - ✓422652 - R.R.
" " - ✓513793 - C.H.B.

Push SN 110023 670
VA200

✓3 wheel 368609

PAN 206944

MR PRICE

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

DATE COLLECTED: 3-22-83

PARAMETER	HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER	
PH	8.7	7.3	9.0	7.5	8.7	8.5	9.3	8.7	
PENOLTHALEIN ALKALINITY	2	0	3	0	2	2	5	4	
METHYL ORANGE ALKALINITY	64	164	44	150	140	142	56	174	
CARBONATES AS $CaCO_3$	4	0	6	0	4	4	10	8	
BICARBONATES AS $CaCO_3$	60	164	38	150	136	138	46	166	
CHLORIDES AS C1	10	44	12	18	14	24	20	48	
HARDNESS AS $CaCO_3$	80	64	68	60	60	58	68	40	
IRON AS Fe	0.05	0.43	0.09	0.15	0.04	0.04	0.24	0.07	
FLUORIDE A.M./P.M.	0.81/0.84	0.35	1.01/0.97	0.30	0.30	0.16	1.10/1.04	0.91	
CHLORINE RESIDUAL	1.0	1.4	1.0	1.3	1.3	1.2	1.0	1.3	
TURBIDITY A.M./P.M.	0.26	0.20	1.00/0.60	0.20	0.12	0.20	0.80/0.66	0.35	
TOTAL PHOSPHATE		2.08			1.40				
ORTHO PHOSPHATE		0.92			0.45				
META PHOSPHATE		1.16			0.95				
STABILITY	+0.3	—	+0.2	—	+0.3	+0.1	+0.6	+0.1	

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY: Burns, Monahan + Lachapelle

DATE OF ANALYSIS: 3-22-83

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

MR PRICE

DATE COLLECTED: 1 MARCH 83

PARAMETER	HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER
PH	8.3	6.8	7.0	6.9	8.1	7.8	8.2	7.7
PENOLTHALEIN ALKALINITY	2	0	0	0	2	0	2	0
METHYL ORANGE ALKALINITY	60	170	130	150	140	160	64	184
CARBONATES AS $CaCO_3$	4	0	0	0	4	0	4	0
BICARBONATES AS $CaCO_3$	56	170	130	150	136	160	60	184
CHLORIDES AS C1	10	50	10	16	10	20	10	90
HARDNESS AS $CaCO_3$	74	80	156	60	56	50	74	70
IRON AS Fe	0.06	0.62	0.15	0.14	0.04	0.05	0.11	0.15
FLUORIDE A.M. / P.M.	1.10 / 1.04	0.35	0.81 / 1.00	0.26	0.31	0.17	1.04 / 0.95	0.78
CHLORINE RESIDUAL	1.0	1.4	1.0	1.2	1.0	1.3	1.0	1.4
TURBIDITY A.M. / P.M.	0.42	0.28	0.76 / 0.40	0.16	0.20	0.18	0.25 / 0.34	0.54
TOTAL PHOSPHATE		2.60			1.21			
ORTHO PHOSPHATE		1.38			0.52			
META PHOSPHATE		1.22			0.69			
STABILITY	+0.4	—	+0.5	—	+0.3	0.0	+0.4	-0.2

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY: BVENS, HUNDYCUTT & MONAHAN

DATE OF ANALYSIS: 1 MARCH 83

Mr. Price

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

DATE COLLECTED 3-8-83

PARAMETER	HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER
PH	7.7	7.3	8.3	7.5	8.4	8.3	8.9	8.5
PENOLTHALEIN ALKALINITY	0	0	2	0	8	6	8	12
METHYL ORANGE ALKALINITY	128	194	86	166	162	162	60	212
CARBONATES AS $CaCO_3$	0	0	4	0	16	12	16	24
BICARBONATES AS $CaCO_3$	128	194	82	166	146	150	44	188
CHLORIDES AS C1	16	60	12	20	16	16	18	178
HARDNESS AS $CaCO_3$	136	100	96	62	66	48	56	58
IRON AS Fe	0.04	0.75	0.05	0.14	0.05	0.08	0.09	0.15
FLUORIDE AM / PM	1.00 / 1.04	0.26	0.78 / 0.63	0.22	0.26	0.22	1.00 / 1.04	1.48
CHLORINE RESIDUAL	1.0	1.3	1.0	1.2	1.2	1.0	1.0	1.4
TURBIDITY AM / PM	0.18	0.32	0.18 / 0.22	0.20	0.18	0.22	0.24 / 0.36	0.44
TOTAL PHOSPHATE		1.30			1.21			
ORTHO PHOSPHATE		0.73			0.38			
META PHOSPHATE		0.57			0.83			
STABILITY	-0.2	—	+0.3	—	+0.2	+0.1	+0.6	+0.2

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY: Lachapelle & Hennycutt

DATE OF ANALYSIS 3-8-83

MR. PRICE

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

DATE COLLECTED 22 FEB 83

PARAMETER	HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER
PH	7.0	6.9	8.2	7.0	8.0	7.9	8.4	8.0
PENOLTHALEIN ALKALINITY	0	0	2	0	0	0	4	0
METHYL ORANGE ALKALINITY	66	164	64	158	154	158	60	174
CARBONATES AS $CaCO_3$	0	0	4	0	0	0	8	0
BICARBONATES AS $CaCO_3$	66	164	60	158	154	158	52	174
CHLORIDES AS C1	12	22	12	18	14	20	10	110
HARDNESS AS $CaCO_3$	144	104	100	66	84	52	56	74
IRON AS Fe	.04	.26	.11	.05	.04	.04	.06	.07
FLUORIDE AM/PM	0.95/0.91	0.39	1.13/1.19	0.31	0.17	0.17	1.27/1.16	0.81
CHLORINE RESIDUAL	1.0	1.3	1.0	1.3	1.5	0.7	0.9	1.4
TURBIDITY AM/PM	0.18	0.26	2.20/1.80	0.19	0.17	0.17	0.46/0.44	0.36
TOTAL PHOSPHATE		1.62			0.38			
ORTHO PHOSPHATE		0.84			0.25			
META PHOSPHATE		0.78			0.13			
STABILITY	+0.3		+0.4		+0.3	±0	+0.4	-0.1

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY [illegible] Monahan

DATE OF ANALYSIS 22 Feb 83

MR PRICE

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

DATE COLLECTED: 2-15-83

PARAMETER	HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER
PH	8.6	6.8	8.3	6.9	7.9	7.9	8.4	8.8
PENOLTHALEIN ALKALINITY	4	0	2	0	2	4	2	16
METHYL ORANGE ALKALINITY	40	164	60	102	164	164	56	126
CARBONATES AS $CaCO_3$	8	0	4	0	4	8	4	32
BICARBONATES AS $CaCO_3$	32	164	56	102	160	156	52	94
CHLORIDES AS C1	10	60	10	20	16	26	8	90
HARDNESS AS $CaCO_3$	54	118	86	76	58	60	68	62
IRON AS Fe	0.04	0.82	0.12	0.06	0.04	0.04	0.04	0.16
FLUORIDE A.M / P.M	0.88 / 0.91	0.31	0.98 / 0.91	0.44	0.39	0.31	0.91 / 1.00	0.63
CHLORINE RESIDUAL	1.0	1.3	1.0	1.3	1.2	1.0	0.9	1.3
TURBIDITY A.M / P.M.	0.12	0.28	0.46 / 0.88	0.18	0.16	0.14	0.40 / 0.30	0.62
TOTAL PHOSPHATE		1.04			1.04			
ORTHO PHOSPHATE		0.77			0.25			
META PHOSPHATE		0.27			0.79			
STABILITY	+0.9	—	+0.4	—	+0.1	0.0	+0.6	+0.4

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY: Burns Lafayette & Hunyacott

DATE OF ANALYSIS: 2-15-83

MR. PRICE

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

DATE COLLECTED: 8 Feb 83

PARAMETER	HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER
PH	8.4	6.9	8.3	6.9	7.8	8.0	8.3	8.7
PENOLTHALEIN ALKALINITY	4	0	2	0	0	0	2	12
METHYL ORANGE ALKALINITY	52	160	60	156	150	150	60	184
CARBONATES AS $CaCO_3$	8	0	4	0	0	0	4	24
BICARBONATES AS $CaCO_3$	44	160	56	156	150	150	56	160
CHLORIDES AS C1	14	14	20	20	16	28	18	100
HARDNESS AS $CaCO_3$	70	48	82	64	52	60	64	68
IRON AS Fe	0.04	0.32	0.06	0.15	0.04	0.04	0.07	0.15
FLUORIDE AM/PM	1.10/1.16	0.31	0.91/0.81	0.26	0.12	0.22	0.98/0.98	1.04
CHLORINE RESIDUAL	1.0	1.3	1.0	1.5	1.1	1.0	0.9	1.4
TURBIDITY AM/PM	0.14	0.23	0.40/0.55	0.28	0.24	0.26	0.26/0.36	0.72
TOTAL PHOSPHATE		2.08			0.22			
ORTHO PHOSPHATE		0.73			0.10			
META PHOSPHATE		1.35			0.12			
STABILITY	+0.4	—	+0.3	—	-0.1	±0.0	+0.2	+0.3

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY: Monahan Ladrelle & Burns

DATE OF ANALYSIS: 8 Feb 83

NR PRICE

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

DATE COLLECTED: 1 FEB 83

PARAMETER	HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER
PH	8.5	6.9	8.2	7.00	8.00	7.9	8.5	8.5
PENOLTHALEIN ALKALINITY	4	0	2	0	2	2	2	5
METHYL ORANGE ALKALINITY	56	156	66	128	150	156	60	150
CARBONATES AS $CaCO_3$	8	0	4	0	4	4	4	10
BICARBONATES AS $CaCO_3$	48	156	62	128	146	152	54	140
CHLORIDES AS C1	10	10	10	10	10	20	12	84
HARDNESS AS $CaCO_3$	56	72	84	54	42	50	60	54
IRON AS Fe	0.04	0.35	0.04	0.10	0.15	0.09	0.04	0.20
FLUORIDE	A.M. 1.00 P.M. 1.09	0.31	A.M. 0.88 P.M. 1.00	0.27	0.31	0.18	A.M. 0.91 P.M. 1.00	0.88
CHLORINE RESIDUAL	0.9	1.3	1.0	1.2	1.2	1.0	1.0	1.4
TURBIDITY	0.22	0.30	A.M. 0.30 P.M. 0.42	0.18	0.46	0.32	A.M. 0.20 P.M 0.22	0.60
TOTAL PHOSPHATE		2.05			1.60			
ORTHO PHOSPHATE		0.92			0.48			
META PHOSPHATE		1.13			1.12			
STABILITY	+0.4	—	+0.3	—	0.00	-0.1	+0.5	+0.1

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY: BURNS &

DATE OF ANALYSIS: 1 FEB 83

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

MR. Price

DATE COLLECTED 18 JAN 83

PARAMETER	HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER
PH	8.5	7.0	8.4	6.9	7.9	7.9	7.9	8.2
PENOLTHALEIN ALKALINITY	20	0	8	0	4	10	0	10
METHYL ORANGE ALKALINITY	62	180	64	150	150	172	118	186
CARBONATES AS $CaCO_3$	40	0	16	0	8	20	0	20
BICARBONATES AS $CaCO_3$	22	180	48	150	142	152	118	166
CHLORIDES AS C1	12	10	12	18	16	16	10	122
HARDNESS AS $CaCO_3$	62	54	84	66	80	56	116	70
IRON AS Fe	<0.04	0.45	0.12	0.09	0.05	0.30	0.06	0.17
FLUORIDE AM/PM	1.09/1.34	0.44	0.94/1.21	0.36	0.40	0.31	1.00/1.12	1.00
CHLORINE RESIDUAL	0.9	1.0	1.3	1.3	1.2	1.0	0.9	1.4
TURBIDITY AM/PM	0.12	0.20	0.84/0.44	0.12	0.12	0.78	0.22/0.12	0.44
TOTAL PHOSPHATE		1.17			1.35			
ORTHO PHOSPHATE		0.77			0.38			
META PHOSPHATE		0.40			0.97			
STABILITY	+0.3		+0.4		0.0	0.0	+0.3	+0.2

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY Hennigan & Burns Mondou

DATE OF ANALYSIS 18 JAN 83

Mr. Price

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

DATE COLLECTED 17 JAN 83

PARAMETER	HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	WASH RACK ~~RIFLE RANGE~~	~~HOLCOMB BLVD~~ 1340	~~NEW RIVER~~ 1400
PH								
PENOLTHALEIN ALKALINITY					12	20	10	10
METHYL ORANGE ALKALINITY					196	198	206	196
CARBONATES AS $CaCO_3$					24	40	20	20
BICARBONATES AS $CaCO_3$					172	158	186	176
CHLORIDES AS C1					20	18	16	16
HARDNESS AS $CaCO_3$					76	82	96	96
IRON AS Fe					0.09	0.09	2.70	0.41
FLUORIDE					0.84	0.31	0.56	0.48
CHLORINE RESIDUAL						0.0	0.3	0.85
TURBIDITY					0.18	0.24	30.0	15.0
TOTAL PHOSPHATE					1.24	1.10	2.34	1.54
ORTHO PHOSPHATE					0.32	0.80	1.30	0.69
META PHOSPHATE					0.92	0.30	1.04	0.85
~~STABILITY~~ Free CO_2					0.5	0.0	1.0	0.5
~~REMARKS~~ Dissolved Oxygen					9.4	7.0	9.3	9.9

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY Henry Burns Monahan

DATE OF ANALYSIS 18 JAN 83

Mr. Price

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

DATE COLLECTED: 13 Jan. 83

PARAMETER	HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER	AMTRAC AREA WASH PAD
PH					7.74				8.55
PENOLTHALEIN ALKALINITY					0				20
METHYL ORANGE ALKALINITY					160				176
CARBONATES AS $CaCO_3$					0				40
BICARBONATES AS $CaCO_3$					160				136
CHLORIDES AS C1					18				20
HARDNESS AS $CaCO_3$					82				80
IRON AS Fe									
FLUORIDE					0.36				0.31
CHLORINE RESIDUAL					0.9				0.0
TURBIDITY					0.20				0.32
TOTAL PHOSPHATE									
ORTHO PHOSPHATE									
META PHOSPHATE									
STABILITY									

REMARKS

Dissolved Oxygen 9.5 (9.6 Treated) 4.3

PH (field) 7.6 8.45

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY: James Hennegan

DATE OF ANALYSIS: 13 Jan 83

Mr. Price

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

DATE COLLECTED: 11 JAN 1983

PARAMETER		HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER
PH		8.5	6.8	8.0	6.9	7.9	8.0	8.2	8.7
PENOLTHALEIN ALKALINITY		6	0	4	0	6	8	6	20
METHYL ORANGE ALKALINITY		54	168	72	162	180	160	74	182
CARBONATES AS $CaCO_3$		12	0	8	0	12	16	12	40
BICARBONATES AS $CaCO_3$		42	168	64	162	168	144	62	142
CHLORIDES AS C1		10	10	10	16	16	24	13	90
HARDNESS AS $CaCO_3$		60	56	88	62	64	50	74	40
IRON AS Fe		0.06	0.32	0.26	0.09	0.04	0.29	0.04	0.19
FLUORIDE	AM	0.97		0.91				0.97	
	PM	1.03	0.36	0.94	0.27	0.40	0.18	1.00	0.91
CHLORINE RESIDUAL		1.1	1.3	1.0	1.0	1.2	0.9	0.9	1.4
TURBIDITY	AM			2.30				0.20	
	PM	0.20	0.20	1.40	0.19	0.26	0.84	0.22	0.86
TOTAL PHOSPHATE			2.70			2.00			
ORTHO PHOSPHATE			0.92			0.52			
META PHOSPHATE			1.78			1.48			
STABILITY		+0.7	---	+0.4	—	+0.2	+0.2	+0.4	+0.3

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY: Lafayette Monahan Henneyquist

DATE OF ANALYSIS: 11 JAN 1983

MR. PRICE

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS
MCBCL 11330/3 (REV. 3-82)

DATE COLLECTED 4 JANUARY 1983

PARAMETER	HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER
PH	8.60	6.81	8.03	6.86	7.87	7.90	8.26	8.08
PENOLTHALEIN ALKALINITY	8	0	4	0	8	8	6	8
METHYL ORANGE ALKALINITY	52	168	86	160	176	170	74	146
CARBONATES AS $CaCO_3$	16	0	8	0	16	16	12	16
BICARBONATES AS $CaCO_3$	36	168	78	160	160	154	62	130
CHLORIDES AS C1	12	12	8	20	18	24	12	94
HARDNESS AS $CaCO_3$	54	60	106	66	66	58	82	72
IRON AS Fe	0.04	0.28	0.29	0.06	0.09	0.25	0.04	0.21
FLUORIDE AM/PM	1.02/1.05	0.45	1.05/1.02	0.32	0.45	0.18	1.02/0.96	0.79
CHLORINE RESIDUAL	1.0	1.4	1.0	1.2	1.3	1.0	0.9	1.5
TURBIDITY AM/PM	0.18	0.28	0.76/2.30	0.18	0.22	0.62	0.26/0.16	0.98
TOTAL PHOSPHATE		3.30			2.70			
ORTHO PHOSPHATE		1.04			0.70			
META PHOSPHATE		2.26			2.00			
STABILITY	+0.78	—	+0.45	—	+0.07	+0.12	+0.42	+0.13

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY Monahan Lachapelle

DATE OF ANALYSIS 4 JANUARY 1983

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS
MCBCL 11330/3 (REV. 3-82)

MR PRICE

DATE COLLECTED 28 DECEMBER 82

PARAMETER	HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER
PH	8.9	6.8	8.6	7.0	7.8	8.1	8.5	8.5
PENOLTHALEIN ALKALINITY	6	0	2	0	0	2	4	2
METHYL ORANGE ALKALINITY	42	156	56	146	170	148	56	150
CARBONATES AS $CaCO_3$	12	0	4	0	0	4	8	4
BICARBONATES AS $CaCO_3$	30	156	52	146	170	144	48	146
[illegible]ORIDES AS C1	10	10	12	14	20	10	12	86
HARDNESS AS $CaCO_3$	54	52	86	64	60	62	60	50
IRON AS Fe	0.04	0.24	0.18	0.07	0.06	0.26	0.08	0.21
FLUORIDE	A.M. 0.89 P.M. 0.96	0.41	A.M. 0.96 P.M. 0.96	0.32	0.23	0.13	A.M. 0.96 P.M. 0.93	0.79
CHLORINE RESIDUAL	1.3	1.4	0.9	1.4	1.3	1.2	0.9	1.3
TURBIDITY	0.18	0.30	A.M. 0.38 P.M. 1.20	0.20	0.30	0.66	A.M. 0.28 P.M. 0.46	1.00
TOTAL PHOSPHATE		2.95			1.09			
ORTHO PHOSPHATE		.96			.35			
[illegible] PHOSPHATE		1.99			0.74			
STABILITY	+0.6	—	+0.8	—	+0.1	+0.2	+0.3	+0.3

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY Burns + Monahan + Lachapelle

DATE OF ANALYSIS 28 DECEMBER 82

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS
MCBCL 11330/3 (REV. 3-82)

MR PRICE

DATE COLLECTED 12-21-82

PARAMETER	HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER
PH	8.6	7.1	8.4	7.0	7.7	8.1	8.5	8.4
PENOLTHALEIN ALKALINITY	4	0	2	0	0	2	4	6
METHYL ORANGE ALKALINITY	54	160	70	70	164	150	60	144
CARBONATES AS $CaCO_3$	8	0	4	0	0	4	8	12
BICARBONATES AS $CaCO_3$	46	160	66	70	164	146	52	132
CHLORIDES AS C1	12	30	12	24	22	30	12	90
HARDNESS AS $CaCO_3$	60	100	90	64	60	56	62	62
IRON AS Fe	0.04	0.35	0.15	0.06	0.05	0.18	0.07	0.15
FLUORIDE	A.M. 0.61 P.M. 0.61	0.32	A.M. 0.72 P.M. 0.99	0.32	0.32	0.32	A.M. 0.99 P.M 0.89	0.83
CHLORINE RESIDUAL	1.0	1.4	1.0	1.4	1.3	1.0	0.9	1.3
TURBIDITY	0.12	0.26	A.M 1.90 PM 1.00	0.20	0.30	0.28	A.M. 0.22 P.M. 0.32	0.54
TOTAL PHOSPHATE		1.84			1.00			
ORTHO PHOSPHATE		0.73			0.28			
META PHOSPHATE		1.11			0.72			
STABILITY	0.6	—	0.7	—	-0.1	0.0	0.4	0.1

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY H. J. Burns

DATE OF ANALYSIS 12-21-82

Mr. Price

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

DATE COLLECTED: 14 DEC 1982

PARAMETER		HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER	TT 719	TT 2726
PH		8.8	7.0	8.3	7.1	8.1	8.2	8.4	8.2	8.4	8.5
PENOLTHALEIN ALKALINITY		8	0	6	0	6	6	8	6	4	4
METHYL ORANGE ALKALINITY		42	184	56	160	160	156	68	152	58	58
CARBONATES AS $CaCO_3$		16	0	12	0	12	12	16	12	8	8
BICARBONATES AS $CaCO_3$		26	184	44	160	148	144	52	140	50	50
CHLORIDES AS C1		12	50	10	18	16	24	12	82	10	10
HARDNESS AS $CaCO_3$		58	96	76	68	60	54	76	70	76	90
IRON AS Fe		0.07	0.42	0.09	0.09	0.28	0.14	0.07	0.16	0.11	0.11
FLUORIDE	AM	0.93		0.86				0.83			
	PM	0.96	0.41	0.99	0.13	0.27	0.27	0.89	0.79	0.96	0.99
CHLORINE RESIDUAL		1.0	1.3	1.0	1.5	1.2	1.0	1.0	1.5	0.9	0.9
TURBIDITY	AM			0.34				0.28			
	PM	0.14	0.26	0.32	0.12	0.82	0.26	0.24	0.68	0.34	0.42
TOTAL PHOSPHATE			1.46			0.96					
ORTHO PHOSPHATE			0.633			0.28					
META PHOSPHATE			0.83			0.68					
STABILITY		+0.6	---	+0.1	---	+0.0	+0.1	+0.2	-0.1		

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY: Lachapelle + Burns [illegible]

DATE OF ANALYSIS: 14 DEC 1982

Mr. Price

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

DATE COLLECTED: 7 DEC 1982

PARAMETER		HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER
PH		8.5	6.7	8.2	6.9	7.9	7.9	8.3	8.2
PENOLTHALEIN ALKALINITY		4	0	4	0	0	2	4	6
METHYL ORANGE ALKALINITY		42	180	62	156	176	150	64	194
CARBONATES AS $CaCO_3$		8	0	8	0	0	4	8	12
BICARBONATES $CaCO_3$		34	180	54	156	176	146	56	182
CHLORIDES AS C1		16	110	14	18	18	28	16	94
HARDNESS AS $CaCO_3$		44	182	74	60	78	44	72	60
IRON AS Fe		0.04	0.81	0.12	0.08	0.46	0.15	0.08	0.24
FLUORIDE	AM	0.89		1.11				0.96	
	PM	0.99	0.36	1.11	0.36	0.36	0.23	1.14	1.02
CHLORINE RESIDUAL		1.0	1.3	1.0	1.4	1.0	1.1	1.0	1.5
TURBIDITY	AM			0.78				0.24	
	PM	0.12	0.48	0.82	0.17	1.10	0.30	0.23	0.84
TOTAL PHOSPHATE			2.18			1.68			
ORTHO PHOSPHATE			0.81			0.52			
META PHOSPHATE			1.37			1.16			
STABILITY		+0.4	---	+0.4	---	+0.3	0.0	+0.3	+0.3

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY: Rachelle Monahan

DATE OF ANALYSIS: 7 DEC 1982

File

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

DATE COLLECTED: 30 Nov 82

PARAMETER	HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER	
PH	8.64	7.02	8.35	6.86	7.75	7.97	8.42	8.02	
PENOLTHALEIN ALKALINITY	16	0	12	0	0	6	10	10	
METHYL ORANGE ALKALINITY	50	180	70	136	190	156	62	196	
CARBONATES AS $CaCO_3$	32	0	24	0	0	12	20	20	
BICARBONATES AS $CaCO_3$	18	180	46	136	190	144	42	176	
CHLORIDES AS C1	16	14	14	20	22	30	20	90	
HARDNESS AS $CaCO_3$	58	66	86	48	72	56	74	80	
IRON AS Fe	0.06	0.23	0.18	0.18	0.29	0.14	0.04	0.15	
FLUORIDE AM/PM	0.81 / 1.00	0.49	1.08 / 1.14	0.36	0.36	0.27	1.02 / 1.14	1.08	
CHLORINE RESIDUAL	1.0	1.4	1.0	1.4	1.2	1.0	1.0	1.4	
TURBIDITY AM/PM	0.37	0.46	2.0 / 2.9	0.50	0.86	0.36	0.25 / 0.20	0.61	
TOTAL PHOSPHATE		2.60			0.82				
ORTHO PHOSPHATE		1.54			0.44				
META PHOSPHATE		1.06			0.38				
STABILITY	+0.45		-0.25		-0.20	+0.01	+0.28	0.00	

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY: Newgent Moorehead Lachanille

DATE OF ANALYSIS: 30 Nov 82

Mr Price

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

DATE COLLECTED 23 NOV 1982

PARAMETER		HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER
PH		8.53	6.96	8.23	6.88	7.82	8.01	8.22	7.98
PENOLTHALEIN ALKALINITY		2	0	4	0	4	8	8	8
METHYL ORANGE ALKALINITY		42	170	76	170	188	160	70	170
CARBONATES AS $CaCO_3$		4	0	8	0	8	16	16	16
BICARBONATES AS $CaCO_3$		38	170	68	170	180	144	54	154
CHLORIDES AS C1		12	12	14	20	12	48	12	86
HARDNESS AS $CaCO_3$		60	64	82	68	70	54	74	58
IRON AS Fe		0.04	0.55	0.07	0.07	0.50	0.21	0.05	0.09
FLUORIDE	AM	0.94		1.00				0.83	
	PM	1.13	0.41	1.04	0.32	0.41	0.27	0.87	0.87
CHLORINE RESIDUAL		1.0	1.3	1.0	1.4	1.3	1.00	1.0	1.4
TURBIDITY	AM			0.60				0.18	
	PM	0.25	0.58	0.60	0.13	1.10	0.48	0.16	0.34
TOTAL PHOSPHATE			2.80			1.17			
ORTHO PHOSPHATE			0.92			0.38			
META PHOSPHATE			1.88			0.79			
STABILITY		+0.82	+---	+0.51	---	+0.13	+0.19	+0.40	+0.08

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY Lechapelle Henesquit Monahan

DATE OF ANALYSIS 23 NOV 1982

Mr. Price

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS
MCBCL 11130/3 (REV. 3-82)

DATE COLLECTED
16 NOV 1982

PARAMETER		HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER	RR-45
PH		8.40	6.96	7.99	6.85	7.63	7.94	8.29	8.26	7.08
PENOLTHALEIN ALKALINITY		8	0	4	0	4	6	6	14	0
METHYL ORANGE ALKALINITY		54	166	66	140	168	160	66	200	180
CARBONATES AS $CaCO_3$		16	0	8	0	8	12	12	28	0
BICARBONATES AS $CaCO_3$		38	166	58	140	160	148	54	172	180
CHLORIDES AS C1		10	10	10	18	16	32	16	110	10
HARDNESS AS $CaCO_3$		60	68	78	76	62	60	70	50	172
IRON AS Fe		0.09	0.36	0.14	0.21	0.38	0.25	0.10	0.26	1.60
FLUORIDE	AM	0.87		0.80				0.90		
	PM	0.90	0.27	0.65	0.27	0.32	0.23	0.94	1.10	0.23
CHLORINE RESIDUAL		1.0	1.4	1.0	1.0	1.2	1.0	1.0	1.3	---
TURBIDITY	AM			0.38				0.21		
	PM	0.21	0.31	0.43	0.16	0.99	0.46	0.26	0.74	3.80
TOTAL PHOSPHATE			1.40			0.88				
ORTHO PHOSPHATE			0.81			0.35				
META PHOSPHATE			0.59			0.53				
STABILITY		+0.64	---	+0.20	---	-0.09	+0.06	+0.35	+0.17	---

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY
Lachapelle Monahan & Bevins

DATE OF ANALYSIS
16 NOV 1982

Mr Price

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

DATE COLLECTED: 16 NOV 1982

PARAMETER	RR-47	RR-97	Before Filter #4	After Filter #5	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER	
PH	6.92	7.03							
PENOLTHALEIN ALKALINITY	0	0							
METHYL ORANGE ALKALINITY	196	180							
CARBONATES AS $CaCO_3$	0	0							
BICARBONATES AS $CaCO_3$	196	180							
CHLORIDES AS C1	66	8							
HARDNESS AS $CaCO_3$	232	170							
IRON AS Fe	4.00	2.05	1.04	0.31					
FLUORIDE	0.23	0.18							
CHLORINE RESIDUAL									
TURBIDITY	13.0	4.3							
TOTAL PHOSPHATE									
ORTHO PHOSPHATE									
META PHOSPHATE									
STABILITY									

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY: Lachelle Monahan + Burns

DATE OF ANALYSIS: 16 NOV 1982

Mr. Price

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

DATE COLLECTED: 2 NOV 1982

PARAMETER		HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER
PH		8.62	6.95	8.20	6.93	7.94	7.97	8.33	8.08
PENOLTHALEIN ALKALINITY		10	0	4	0	6	6	6	8
METHYL ORANGE ALKALINITY		60	172	76	172	180	172	76	164
CARBONATES AS $CaCO_3$		20	0	8	0	12	12	12	16
BICARBONATES AS $CaCO_3$		40	172	68	172	168	160	64	148
CHLORIDES AS C1		12	14	12	18	20	44	16	80
HARDNESS AS $CaCO_3$		60	74	90	56	50	76	72	60
IRON AS Fe		0.04	0.61	0.04	0.10	0.19	0.39	0.04	0.19
FLUORIDE	AM	0.69		1.10				1.16	
	PM	0.65	0.32	1.13	0.27	0.36	0.23	0.83	0.80
CHLORINE RESIDUAL		0.8	1.2	1.0	1.2	1.2	1.0	1.0	1.5
TURBIDITY	AM			0.26				0.23	
	PM	0.18	0.29	0.36	0.16	0.52	0.94	0.18	0.89
TOTAL PHOSPHATE			1.04			1.54			
ORTHO PHOSPHATE			0.77			0.48			
META PHOSPHATE			0.27			1.06			
STABILITY		+0.29	—	+0.18	---	-0.08	+0.04	+0.26	-0.05
REMARKS	Temp.		20	21	20	17	19		20

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY: Lachapelle Monahan & Burns

DATE OF ANALYSIS: 2NOV 1982

Mr Price

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

DATE COLLECTED: 9 NOV 1982

PARAMETER		HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER
PH		8.25	6.94	8.27	6.90	7.73	7.97	8.36	8.14
PENOLTHALEIN ALKALINITY		6	0	6	0	4	8	8	8
METHYL ORANGE ALKALINITY		62	170	66	154	180	176	72	168
CARBONATES AS $CaCO_3$		12	0	12	0	8	16	16	16
BICARBONATES AS $CaCO_3$		50	170	54	154	172	160	56	152
CHLORIDES AS C1		12	20	10	18	18	42	14	100
HARDNESS AS $CaCO_3$		64	68	86	56	70	64	82	64
IRON AS Fe		0.04	0.30	0.10	0.15	0.42	0.44	0.04	0.23
FLUORIDE	AM	0.65		0.97				0.80	
	PM	0.73	0.23	1.00	0.36	0.49	0.32	0.76	0.90
CHLORINE RESIDUAL		0.9	1.4	1.0	1.2	1.2	1.1	0.9	1.5
TURBIDITY	AM			0.26				0.32	
	PM	0.20	0.30	0.96	0.16	1.00	1.00	0.24	1.00
TOTAL PHOSPHATE			0.66			2.52			
ORTHO PHOSPHATE			0.55			0.96			
META PHOSPHATE			0.11			1.56			
STABILITY		+0.72	---	+0.577	----	+0.05	+0.29	+0.53	+0.18

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY: Lachapelle & Hunegatt

DATE OF ANALYSIS: 9 Nov 1982

Mr. Price

DATE COLLECTED 26 OCT 82

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

PARAMETER	HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER
PH	8.1	6.8	8.4	7.0	7.7	7.9	8.1	8.1
PENOLTHALEIN ALKALINITY	2	0	6	0	0	4	4	8
METHYL ORANGE ALKALINITY	60	160	52	162	166	166	62	170
CARBONATES AS $CaCO_3$	4	0	12	0	0	8	8	16
BICARBONATES AS $CaCO_3$	56	160	40	162	166	158	54	154
CHLORIDES AS C1	6	10	6	12	8	36	4	60
HARDNESS AS $CaCO_3$	48	58	78	60	68	58	62	66
IRON AS Fe	0.04	0.30	0.04	0.10	0.04	0.53	0.04	0.14
FLUORIDE AM / PM	0.94 / 0.83	0.36	0.94 / 0.94	0.32	0.27	0.23	2.14 / 2.08	0.94
CHLORINE RESIDUAL	1.0	1.4	1.0	1.3	1.3	1.2	0.9	1.4
TURBIDITY	0.40	0.36	0.38 / 0.52	0.28	0.42	2.8	0.26 / 0.36	0.92
TOTAL PHOSPHATE		1.68			0.69			
ORTHO PHOSPHATE		0.84			0.22			
META PHOSPHATE		0.84			0.47			
STABILITY	+0.2		+0.3		-0.2	-0.1	+0.1	-0.1

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY Vincent Pratt & Burna Monahan

DATE OF ANALYSIS 26 OCT 82

Mr Price

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

DATE COLLECTED 19 OCT 1982

PARAMETER		HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER
PH		8.22	6.88	8.18	6.88	7.67	8.05	8.34	7.67
PENOLTHALEIN ALKALINITY		2	0	6	0	4	8	6	0
METHYL ORANGE ALKALINITY		58	176	76	160	174	160	64	192
CARBONATES AS $CaCO_3$		4	0	12	0	8	16	12	0
BICARBONATES $CaCO_3$		54	176	64	160	166	144	52	192
CHLORIDES AS C1		10	14	14	20	16	34	12	124
HARDNESS AS $CaCO_3$		80	66	90	58	88	50	70	68
IRON AS Fe		0.04	0.33	0.09	0.04	0.08	0.48	0.04	0.10
FLUORIDE	AM	1.10		0.87				1.13	
	PM	1.16	0.29	1.13	0.29	0.38	0.20	1.00	1.00
CHLORINE RESIDUAL		1.0	1.4	1.0	1.2	1.2	1.0	1.1	1.4
TURBIDITY	AM			2.50				0.21	
	PM	0.22	0.21	1.30	0.20	0.30	6.00	0.19	0.44
TOTAL PHOSPHATE			0.64			1.38			
ORTHO PHOSPHATE			0.59			0.52			
META PHOSPHATE			0.05			0.86			
STABILITY		+0.52		+0.51		+0.12	+0.24	+0.49	-0.16

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY Lachonelle Monahan Fuzeycott

DATE OF ANALYSIS 19 OCT 1982

MR. PRICE

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

DATE COLLECTED 12 OCT 82

PARAMETER	HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER	TT-38 PUMP	TT-38 SINK
PH	8.76	7.25	8.34	7.24	7.82	8.28	8.74	8.64		
PENOLTHALEIN ALKALINITY	10	0	10	0	0	8	14	26		
METHYL ORANGE ALKALINITY	64	176	96	160	180	156	70	150		
CARBONATES AS $CaCO_3$	20	0	20	0	0	16	28	52		
BICARBONATES AS $CaCO_3$	44	176	76	160	180	140	42	98		
CHLORIDES AS C1	12	12	16	22	22	24	20	80		
HARDNESS AS $CaCO_3$	84	68	108	70	70	60	90	98		
IRON AS Fe	0.04	0.34	1.13	0.05	0.25	0.35	0.04	0.08		
FLUORIDE AM / PM	0.66 / 0.94	0.38	0.94 / 0.97	0.38	0.62	0.34	0.97 / 1.10	0.62		
CHLORINE RESIDUAL	1.0	1.4	1.0	1.5	1.0	1.1	1.0	1.4		
TURBIDITY	0.28	0.27	0.62 / 43.0	0.24	0.88	1.2	0.24 / 0.28	0.48	0.90	1.2
TOTAL PHOSPHATE		* 1.13			* 4.60					
ORTHO PHOSPHATE		0.84			1.84					
META PHOSPHATE		0.29			2.76					
STABILITY	+ 0.34		+ 0.26		− 0.21	+ 0.12	+ 0.38	+ 0.29		

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY Henry Cutt

DATE OF ANALYSIS 12 OCT 82 / 13 OCT 82 *

Mr. Price

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

DATE COLLECTED: 5 Oct 1982

PARAMETER		HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER
PH		8.33	7.16	8.24	7.23	7.88	8.17	8.43	8.33
PENOLTHALEIN ALKALINITY		4	0	6	0	6	4	10	10
METHYL ORANGE ALKALINITY		46	170	72	166	200	162	72	134
CARBONATES AS $CaCO_3$		8	0	12	0	12	8	20	20
BICARBONATES AS $CaCO_3$		38	170	60	166	188	154	52	114
CHLORIDES AS C1		12	12	12	18	22	32	14	64
HARDNESS AS $CaCO_3$		60	50	90	66	68	68	76	52
IRON AS Fe		0.04	0.30	0.07	0.09	0.58	0.51	0.06	0.18
FLUORIDE	AM	0.84		0.97				1.04	
	PM	0.97	0.38	1.10	0.34	0.38	0.25	1.30	0.70
CHLORINE RESIDUAL		0.9	1.2	1.0	1.5	1.3	1.2	1.0	1.4
TURBIDITY	AM			0.31				0.26	
	PM	0.18	0.24	0.40	0.24	1.20	1.65	0.30	0.74
TOTAL PHOSPHATE			2.34			0.73			
ORTHO PHOSPHATE			1.00			0.45			
META PHOSPHATE			1.34			0.28			
STABILITY		+0.18	----	+0.29	----	+0.05	+0.19	+0.35	+0.11

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY: Lachapelle Hunnycutt

DATE OF ANALYSIS: 5 Oct 1982

Relavent Document

10 March 1985

Water Plant Operator Foreman

Director, Utilities Branch

TRICHLORETHELENE TESTING,TARAWA TERRACE NEW WELL; INFORMATION CONCERNING

1. THE new well at Tarawa Terrace was started and put on line at 1045, 11 March 1985. Samples were collected by NREAD personnel at the well head and Tarawa Terrace Water Plant prior to starting the well.

2. After 24 hours operation, NRED personnel sampled the well head and Tarawa Terrace Water Plant on 12 March 1985; well was secured at 1045 on 12 March 1985 and appropriate "DO NOT RUN" signs posted.

B. M. FRAZELLE, II

RELAVENT
DOCUMENT

10 March 1985

Water Plant Operator Foreman

Director, Utilities Branch

TRICHLORETHELENE TESTING,TARAWA TERRACE NEW WELL; INFORMATION CONCERNING

1. THE new well at Tarawa Terrace was started and put on line at 1045, 11 March 1985. Samples were collected by NREAD personnel at the well head and Tarawa Terrace Water Plant prior to starting the well.

2. After 24 hours operation, NRED personnel sampled the well head and Tarawa Terrace Water Plant on 12 March 1985; well was secured at 1045 on 12 March 1985 and appropriate "DO NOT RUN" signs posted.

B. M. FRAZELLE, II

Relevant Document

WRP

11330
MAIN
5 Mar 85

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

Subj: 24-HOUR TRIAL RUN OF TARAWA TERRACE NEW WELL

1. It is recommended that the following samples be taken during the subject trial:

a. Prior to turning on the new well, a treated water sample at the treatment plant, and a raw water sample at the well head should be taken.

b. After 24 hours, another treated water sample at the treatment plant and a raw water sample at the well head should be taken.

2. The treated water samples should be taken from the header between the spiractor and filters. This would be a more representative sample for a 24-hour test.

G. S. JOHNSON, JR.
By direction

Relevant Document

Relavant
Document

WRP

11330
MAIN
5 Mar 85

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

Subj: 24-HOUR TRIAL RUN OF TARAWA TERRACE NEW WELL

1. It is recommended that the following samples be taken during the subject trial:

a. Prior to turning on the new well, a treated water sample at the treatment plant, and a raw water sample at the well head should be taken.

b. After 24 hours, another treated water sample at the treatment plant and a raw water sample at the well head should be taken.

2. The treated water samples should be taken from the header between the spiractor and filters. This would be a more representative sample for a 24-hour test.

G. S. JOHNSON, JR.
By direction

B-2c

0467040 C-N-10 0282
CAMP LEJEUNE
COMMANDING GENERAL
MARINE CORPS BASE
CAMP LEJEUNE NC 28542

CORROSIVITY ANALYSIS

Please check off the construction materials present in your distribution system. If you have more than one distribution system, fill out a separate form for each one. This form must be completed by every community public water supply including purchase supplies. Complete and return this form to the address at the bottom of the page by February 1983.

✓ Lead from piping, solder, caulking, interior lining of distribution mains, alloys and home plumbing

✓ Copper from piping and alloys, service lines and home plumbing

✓ Galvanized piping, service lines and home plumbing

✓ Ferrous piping materials such as cast iron and steel

✓ Asbestoes cement pipe

X Vinyl lined asbestoes cement pipe

X Coal tar lined pipes and tanks

✓ Other (describe) P.V.C.

Return this form to:

Charles E. Rundgren, Head
Water Supply Branch
Division of Health Services
P. O. Box 2091
Raleigh, North Carolina 27602-2091

DHS Form T003 2/82
Environmental Health

B-670

0467040 C-N-10 0282
CAMP LEJEUNE
COMMANDING GENERAL
MARINE CORPS BASE
CAMP LEJEUNE NC 28542

CORROSIVITY ANALYSIS

Please check off the construction materials present in your distribution system. If you have more than one distribution system, fill out a separate form for each one. This form must be completed by every community public water supply including purchase supplies. Complete and return this form to the address at the bottom of the page by February 1983.

✓ Lead from piping, solder, caulking, interior lining of distribution mains, alloys and home plumbing

✓ Copper from piping and alloys, service lines and home plumbing

✓ Galvanized piping, service lines and home plumbing

✓ Ferrous piping materials such as cast iron and steel

✓ Asbestoes cement pipe

X Vinyl lined asbestoes cement pipe

X Coal tar lined pipes and tanks

✓ Other (describe) P.V.C.

Return this form to:

Charles E. Rundgren, Head
Water Supply Branch
Division of Health Services
P. O. Box 2091
Raleigh, North Carolina 27602-2091

DHS Form T003 2/82
Environmental Health

TT-38

0467040 C-N-10 0282
CAMP LEJEUNE
COMMANDING GENERAL
MARINE CORPS BASE
CAMP LEJEUNE NC 28542

CORROSIVITY ANALYSIS

Please check off the construction materials present in your distribution system. If you have more than one distribution system, fill out a separate form for each one. This form must be completed by every community public water supply including purchase supplies. Complete and return this form to the address at the bottom of the page by February 1983.

✓ Lead from piping, solder, caulking, interior lining of distribution mains, alloys and home plumbing

✓ Copper from piping and alloys, service lines and home plumbing

✓ Galvanized piping, service lines and home plumbing

✓ Ferrous piping materials such as cast iron and steel

X Asbestoes cement pipe

X Vinyl lined asbestoes cement pipe

X Coal tar lined pipes and tanks

✓ Other (describe) P.V.C.

Return this form to:

Charles E. Rundgren, Head
Water Supply Branch
Division of Health Services
P. O. Box 2091
Raleigh, North Carolina 27602-2091

DHS Form T003 2/82
Environmental Health

M-178

0407040 C-N-10 0282
CAMP LEJEUNE
COMMANDING GENERAL
MARINE CORPS BASE
CAMP LEJEUNE NC 28542

CORROSIVITY ANALYSIS

Please check off the construction materials present in your distribution system. If you have more than one distribution system, fill out a separate form for each one. This form must be completed by every community public water supply including purchase supplies. Complete and return this form to the address at the bottom of the page by February 1983.

✓ Lead from piping, solder, caulking, interior lining of distribution mains, alloys and home plumbing

✓ Copper from piping and alloys, service lines and home plumbing

✓ Galvanized piping, service lines and home plumbing

✓ Ferrous piping materials such as cast iron and steel

✓ Asbestoes cement pipe

✗ Vinyl lined asbestoes cement pipe

✗ Coal tar lined pipes and tanks

✓ Other (describe) PVC.

Return this form to:

Charles E. Rundgren, Head
Water Supply Branch
Division of Health Services
P. O. Box 2091
Raleigh, North Carolina 27602-2091

DHS Form T003 2/82
Environmental Health

AS-110

0467040 C-N-10 0282
CAMP LEJEUNE
COMMANDING GENERAL
MARINE CORPS BASE
CAMP LEJEUNE NC 28542

CORROSIVITY ANALYSIS

Please check off the construction materials present in your distribution system. If you have more than one distribution system, fill out a separate form for each one. This form must be completed by every community public water supply including purchase supplies. Complete and return this form to the address at the bottom of the page by February 1983.

✓ Lead from piping, solder, caulking, interior lining of distribution mains, alloys and home plumbing

✓ Copper from piping and alloys, service lines and home plumbing

✓ Galvanized piping, service lines and home plumbing

✓ Ferrous piping materials such as cast iron and steel

✓ Asbestoes cement pipe

X Vinyl lined asbestoes cement pipe

X Coal tar lined pipes and tanks

✓ Other (describe) P.V.C.

Return this form to:

Charles E. Rundgren, Head
Water Supply Branch
Division of Health Services
P. O. Box 2091
Raleigh, North Carolina 27602-2091

DHS Form T003 2/82
Environmental Health

RR-85

0467040 C-N-10 0282
CAMP LEJEUNE
COMMANDING GENERAL
MARINE CORPS BASE
CAMP LEJEUNE NC 28542

CORROSIVITY ANALYSIS

Please check off the construction materials present in your distribution system. If you have more than one distribution system, fill out a separate form for each one. This form must be completed by every community public water supply including purchase supplies. Complete and return this form to the address at the bottom of the page by February 1983.

✓ Lead from piping, solder, caulking, interior lining of distribution mains, alloys and home plumbing

✓ Copper from piping and alloys, service lines and home plumbing

✓ Galvanized piping, service lines and home plumbing

✓ Ferrous piping materials such as cast iron and steel

X Asbestoes cement pipe

X Vinyl lined asbestoes cement pipe

X Coal tar lined pipes and tanks

X Other (describe)

Return this form to:

Charles E. Rundgren, Head
Water Supply Branch
Division of Health Services
P. O. Box 2091
Raleigh, North Carolina 27602-2091

DHS Form T003 2/82
Environmental Health

BB-190

0467040 C-N-10 0282
CAMP LEJEUNE
COMMANDING GENERAL
MARINE CORPS BASE
CAMP LEJEUNE NC 28542

CORROSIVITY ANALYSIS

Please check off the construction materials present in your distribution system. If you have more than one distribution system, fill out a separate form for each one. This form must be completed by every community public water supply including purchase supplies. Complete and return this form to the address at the bottom of the page by February 1983.

✓ Lead from piping, solder, caulking, interior lining of distribution mains, alloys and home plumbing

✓ Copper from piping and alloys, service lines and home plumbing

✓ Galvanized piping, service lines and home plumbing

✓ Ferrous piping materials such as cast iron and steel

✓ Asbestoes cement pipe

X Vinyl lined asbestoes cement pipe

X Coal tar lined pipes and tanks

✓ Other (describe) P.V.C.

Return this form to:

Charles E. Rundgren, Head
Water Supply Branch
Division of Health Services
P. O. Box 2091
Raleigh, North Carolina 27602-2091

DHS Form T003 2/82
Environmental Health

BA-138

3467040 C-N-10 0282
CAMP LEJEUNE
COMMANDING GENERAL
MARINE CORPS BASE
CAMP LEJEUNE NC 28542

CORROSIVITY ANALYSIS

Please check off the construction materials present in your distribution system. If you have more than one distribution system, fill out a separate form for each one. This form must be completed by every community public water supply including purchase supplies. Complete and return this form to the address at the bottom of the page by February 1983.

✓ Lead from piping, solder, caulking, interior lining of distribution mains, alloys and home plumbing

✓ Copper from piping and alloys, service lines and home plumbing

✓ Galvanized piping, service lines and home plumbing

✓ Ferrous piping materials such as cast iron and steel

X Asbestoes cement pipe

X Vinyl lined asbestoes cement pipe

X Coal tar lined pipes and tanks

✓ Other (describe) PVC

Return this form to:

Charles E. Rundgren, Head
Water Supply Branch
Division of Health Services
P. O. Box 2091
Raleigh, North Carolina 27602-2091

DHS Form T003 2/82
Environmental Health

MR PRICE

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

DATE COLLECTED: 25 October 83

PARAMETER	HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER	
PH	8.9	7.3	8.6	7.3	8.4	8.3	8.9	8.5	
PENOLTHALEIN ALKALINITY	6	0	8	0	6	6	6	10	
METHYL ORANGE ALKALINITY	50	192	68	160	170	158	62	154	
CARBONATES AS $CaCO_3$	12	0	16	0	12	12	12	20	
BICARBONATES AS $CaCO_3$	38	192	52	160	158	146	50	134	
CHLORIDES AS C1	6	40	8	16	14	22	8	74	
HARDNESS AS $CaCO_3$	56	78	86	64	58	52	62	66	
IRON AS Fe	<0.04	0.50	<0.04	0.10	<0.04	<0.04	<0.04	0.08	
FLUORIDE	1.02 / 1.06	0.19	0.72 / 0.56	0.19	0.11	0.11	1.04 / 0.99	0.56	
CHLORINE RESIDUAL	1.0	1.6	1.3	1.4	1.3	1.0	1.1	1.3	
TURBIDITY	0.18	0.44	0.23 / 0.44	0.20	0.18	0.17	0.18 / 0.18	0.24	
TOTAL PHOSPHATE		4.60			2.00				
ORTHO PHOSPHATE		2.26			.69				
META PHOSPHATE		2.34			1.31				
STABILITY	+0.3	−0.4	+0.3	−0.7	+0.1	+0.1	+0.3	+0.2	

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY: LACHAPELLE, BURNS & MONAHAN

DATE OF ANALYSIS: 25 OCT 83

MR. PRICE

DATE COLLECTED 5 APRIL 83

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

PARAMETER	HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER
PH	7.7	7.3	8.8	7.4	8.5	8.2	9.0	8.7
PENOLTHALEIN ALKALINITY	0	0	6	0	4	2	8	18
METHYL ORANGE ALKALINITY	94	180	56	154	138	170	50	250
CARBONATES AS $CaCO_3$	0	0	12	0	8	4	16	36
BICARBONATES AS $CaCO_3$	94	180	44	154	130	166	34	214
CHLORIDES AS C1	14	108	10	18	14	28	16	200
HARDNESS AS $CaCO_3$	118	98	74	70	64	56	66	84
IRON AS Fe *	0.04	0.45	0.07	0.09	0.05	0.06	0.12	0.06
FLUORIDE AM/PM	0.77/0.88	0.21	1.07/1.04	0.21	0.30	0.21	1.01/1.04	1.35
CHLORINE RESIDUAL	1.0	1.2	1.0	1.2	1.3	1.0	1.0	1.3
TURBIDITY AM/PM	0.16	0.26	0.24/0.70	0.20	0.26	0.20	0.26/0.56	0.30
TOTAL PHOSPHATE *		0.96			1.21			
ORTHO PHOSPHATE *		0.66			0.38			
META PHOSPHATE *		0.30			0.83			
STABILITY	−0.2	—	+0.4	—	+0.2	−0.1	+0.3	+0.2

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY * Monahan Tuchorelle

DATE OF ANALYSIS 5 April 83

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS
MCBCL 11330/3 (REV. 3-82)

HR PRICE

DATE COLLECTED 9-28-83

PARAMETER	~~HADNOT POINT~~ Bldg. 43 Rm. 10	~~MONTFORD POINT~~ Bldg. 43 Rm. E5	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER	
PH	8.8	8.8							
PENOLTHALEIN ALKALINITY	4	4							
METHYL ORANGE ALKALINITY	50	52							
CARBONATES AS $CaCO_3$	8	8							
BICARBONATES AS $CaCO_3$	42	44							
CHLORIDES AS C1	12	14							
HARDNESS AS $CaCO_3$	72	72							
IRON AS Fe	0.06	0.06							
FLUORIDE	0.62	0.62							
CHLORINE RESIDUAL	1.0	1.0							
TURBIDITY	0.98	1.00							
TOTAL PHOSPHATE									
ORTHO PHOSPHATE									
META PHOSPHATE									
STABILITY	+0.3	+0.3							

REMARKS

TT #2 School (complaint)

COLI-FORM - NEGATIVE

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY [illegible]

DATE OF ANALYSIS 9-28-83

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS
MCBCL 11330/3 (REV. 3-82)

NR PRICE

DATE COLLECTED 9/27/83

PARAMETER	HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER
PH	8.7	7.3	8.7	7.4	8.4	8.1	8.4	8.5
PENOLTHALEIN ALKALINITY	2	0	6	0	8	2	4	10
METHYL ORANGE ALKALINITY	66	188	62	158	172	148	96	198
CARBONATES AS $CaCO_3$	4	0	12	0	16	4	8	20
BICARBONATES AS $CaCO_3$	62	188	50	158	156	144	88	178
CHLORIDES AS C1	6	34	10	16	18	24	8	100
HARDNESS AS $CaCO_3$	74	56	84	74	68	48	100	62
IRON AS Fe	<0.04	0.44	<0.04	<0.04	<0.04	<0.04	<0.04	0.05
FLUORIDE	0.96/1.02	0.16	1.15/1.09	0.18	0.10	0.10	0.89/0.95	0.74
CHLORINE RESIDUAL	1.0	1.4	1.1	1.4	1.2	1.0	1.2	1.3
TURBIDITY	0.16	0.39	0.36/0.34	0.18	0.16	0.18	0.24/0.26	0.40
TOTAL PHOSPHATE		2.18			1.68			
ORTHO PHOSPHATE		1.10			0.22			
META PHOSPHATE		1.08			1.46			
STABILITY	+0.3	−0.8	+0.4	−0.7	+0.1	−0.3	+0.3	+0.1

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY LACHAPELLE & MONAHAN

DATE OF ANALYSIS 9/27/83

MR PRICE

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

DATE COLLECTED: 20 Sep 1983

PARAMETER	HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER	
PH	8.8	7.2	8.9	7.4	8.0	8.2	9.0	8.5	
PENOLTHALEIN ALKALINITY	6	0	4	0	2	6	6	10	
METHYL ORANGE ALKALINITY	60	190	46	172	180	158	56	192	
CARBONATES AS $CaCO_3$	12	0	8	0	4	12	12	20	
BICARBONATES AS $CaCO_3$	48	190	36	172	176	146	44	172	
CHLORIDES AS C1	14	46	12	22	20	24	10	144	
HARDNESS AS $CaCO_3$	64	64	68	68	68	46	60	62	
IRON AS Fe	<0.04	0.50	0.06	0.06	<0.04	<0.04	<0.04	0.08	
FLUORIDE AM / PM	0.95 / 0.95	0.18	0.84 / 0.60	0.20	0.11	0.10	0.81 / 0.81	0.84	
CHLORINE RESIDUAL	1.0	1.1	1.0	1.2	1.0	1.0	1.0	1.3	
TURBIDITY AM / PM	0.18	0.50	0.26 / 0.32	0.18	0.16	0.18	0.26 / 0.18	0.34	
TOTAL PHOSPHATE		2.52			2.08				
ORTHO PHOSPHATE		1.17			0.25				
META PHOSPHATE		1.35			1.83				
STABILITY	+0.4	−0.8	+0.2	−0.7	−0.1	−0.1	+0.2	+0.1	

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY: Lachapelle + Burns

DATE OF ANALYSIS: 20 Sep 1983

Price

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

DATE COLLECTED: 6 Sep 1983

PARAMETER		HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER	
PH		8.7	7.3	8.4	7.3	7.8	8.3	8.9	8.4	
PENOLTHALEIN ALKALINITY		4	0	6	0	2	6	6	6	
METHYL ORANGE ALKALINITY		64	194	76	160	176	154	66	160	
CARBONATES AS $CaCO_3$		8	0	12	0	4	12	12	12	
BICARBONATES AS $CaCO_3$		56	194	64	160	172	142	54	148	
CHLORIDES AS C1		14	38	16	22	26	28	16	88	
HARDNESS AS $CaCO_3$		92	86	124	80	56	92	136	90	
IRON AS Fe		<0.04	0.49	<0.04	<0.04	<0.04	<0.04	<0.04	0.07	
FLUORIDE	AM	1.13	0.16	0.75	0.19	0.11	0.10	1.22	0.58	
	PM	1.10		0.58				0.89		
CHLORINE RESIDUAL		1.0	1.4	1.1	1.2	1.1	1.0	1.3	1.5	
TURBIDITY	AM	0.14	0.52	0.20	0.16	0.15	0.17	0.18	0.30	
	PM			0.18				0.16		
TOTAL PHOSPHATE			2.60			1.09				
ORTHO PHOSPHATE			1.35			0.32				
META PHOSPHATE			1.25			0.77				
STABILITY		+0.2	−0.8	+0.1	−1.0	−0.5	−0.1	+0.4	0.0	

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY: R Parkinell + Evans

DATE OF ANALYSIS: 6 Sep 1983

MR PRICE

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

DATE COLLECTED 8/30/83

PARAMETER	HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER	
PH	8.99	7.2	8.7	7.4	7.9	8.3	8.8	8.5	
PENOLTHALEIN ALKALINITY	2	0	2	0	0	2	2	6	
METHYL ORANGE ALKALINITY	40	172	50	142	160	142	60	160	
CARBONATES AS $CaCO_3$	4	0	4	0	0	4	4	12	
BICARBONATES AS $CaCO_3$	36	172	46	142	160	138	56	148	
CHLORIDES AS C1	10	30	10	20	18	20	10	90	
HARDNESS AS $CaCO_3$	40	70	80	62	80	52	60	50	
IRON AS Fe	<0.04	0.50	0.07	0.10	<0.04	<0.04	<0.04	0.11	
FLUORIDE	0.94 / 1.00	0.16	0.62 / 0.86	0.16	0.11	0.09	0.84 / 0.91	0.76	
CHLORINE RESIDUAL	1.0	1.4	1.1	1.5	1.2	1.0	0.9	1.3	
TURBIDITY	0.18	0.40	0.40 / 0.52	0.18	0.18	0.18	0.14 / 0.18	0.52	
TOTAL PHOSPHATE		2.24			2.08				
ORTHO PHOSPHATE		1.00			0.41				
META PHOSPHATE		1.24			1.67				
STABILITY	+0.5	−0.9	+0.3	−0.7	−0.3	0.0	+0.4	0.0	

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY H. J. Burns

DATE OF ANALYSIS 8/30/83

Pools

Mr Price

CHEMICAL ANALYSIS — ~~WATER TREATMENT PLANTS~~

MCBCL 11330/3 (REV. 3-82)

DATE COLLECTED: 26 August 1983

PARAMETER	~~MADNOT POINT~~	~~MONTFORD POINT~~	~~TARAWA TERRACE~~	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER	
	Area #2	Area #5	TT Pool						
PH	6.91	7.77	7.88						
PENOLTHALEIN ALKALINITY	0	0	0						
METHYL ORANGE ALKALINITY	12	36	10						
CARBONATES AS $CaCO_3$	0	0	0						
BICARBONATES AS $CaCO_3$	12	36	10						
CHLORIDES AS C1	76	22	292						
HARDNESS AS $CaCO_3$	68	70	124						
IRON AS Fe									
FLUORIDE									
CHLORINE RESIDUAL (FREE)			2.1						
TURBIDITY									
TOTAL PHOSPHATE									
ORTHO PHOSPHATE									
META PHOSPHATE									
STABILITY			-0.41						

REMARKS

Copy to Water Treatment + PMV

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY: Elizabeth A. Betz

DATE OF ANALYSIS: 26 August 1983

Mr. Price

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

DATE COLLECTED: 16 Aug 83

PARAMETER	HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER	TT Pool
PH	9.0	7.3	8.8	7.4	7.7	8.2	8.7	8.8	7.8
PENOLTHALEIN ALKALINITY	6	0	6	0	2	8	6	16	0
METHYL ORANGE ALKALINITY	50	196	62	168	172	172	76	180	54
CARBONATES AS $CaCO_3$	12	0	12	0	4	16	12	32	0
BICARBONATES AS $CaCO_3$	38	196	50	168	168	156	64	148	54
CHLORIDES AS C1	10	36	10	14	18	22	12	102	186
HARDNESS AS $CaCO_3$	58	66	76	58	60	58	74	46	106
IRON AS Fe	<0.04	0.65	<0.04	0.14	<0.04	<0.04	<0.04	0.18	<0.04
FLUORIDE AM/PM	0.15/0.14	0.18	1.22/1.16	0.17	0.11	0.10	1.00/1.04	0.86	
CHLORINE RESIDUAL	0.9	1.3	1.0	1.2	1.1	1.0	0.9	1.3	1.0
TURBIDITY AM/PM	0.24	0.31	0.22/0.26	0.17	0.18	0.8	0.16/0.19	0.40	
TOTAL PHOSPHATE		2.60			2.00				
ORTHO PHOSPHATE		1.46			0.38				
META PHOSPHATE		1.14			1.62				
STABILITY	+0.4	-0.8	+0.4	-0.9	-0.6	-0.2	+0.3	+0.1	-0.5

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY: Lachapelle Monahan

DATE OF ANALYSIS: 16 Aug 83

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS
MCBCL 11330/3 (REV. 3-82)

MR PRICE

DATE COLLECTED: 9 AUGUST 83

PARAMETER	HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER
PH	8.8	7.4	8.4	7.5	8.0	8.1	8.7	8.5
PENOLTHALEIN ALKALINITY	4	0	4	0	0	2	8	4
METHYL ORANGE ALKALINITY	50	174	56	144	150	150	60	130
CARBONATES AS $CaCO_3$	8	0	8	0	0	4	16	8
BICARBONATES AS $CaCO_3$	42	174	48	144	150	146	44	122
CHLORIDES AS C1	14	36	8	20	14	24	14	94
HARDNESS AS $CaCO_3$	64	48	82	56	70	50	60	56
IRON AS Fe	0.11	0.90	0.10	0.20	0.17	0.09	0.10	0.26
FLUORIDE	0.15 / 0.17	0.20	1.05 / 1.42	0.18	0.11	0.12	0.98 / 0.91	0.66
CHLORINE RESIDUAL	1.0	1.3	1.0	1.3	1.3	0.8	0.8	1.4
TURBIDITY	0.26	0.56	0.36 / 0.36	0.12	0.24	0.18	0.16 / 0.20	0.26
TOTAL PHOSPHATE		4.80			1.09			
ORTHO PHOSPHATE		1.82			0.25			
META PHOSPHATE		2.98			0.84			
STABILITY	+0.7	−0.7	0.0	−0.7	+0.1	+0.2	+0.2	+0.1

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY: BUENS, BETZ + MONOHAN

DATE OF ANALYSIS: 10 AUGUST 83

MR PRICE

WRP

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

DATE COLLECTED: 2 AUGUST 83

PARAMETER	HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER	TT POOL
PH	8.6	7.3	8.5	7.5	8.2	8.2	8.7	8.7	7.3 / 8.0
PENOLTHALEIN ALKALINITY	4	0	2	0	4	2	6	14	0
METHYL ORANGE ALKALINITY	60	174	62	150	156	150	60	184	70
CARBONATES AS $CaCO_3$	8	0	4	0	8	4	12	28	0
BICARBONATES AS $CaCO_3$	52	174	58	150	148	146	48	156	70
CHLORIDES AS C1	8	70	10	10	14	20	10	74	30
HARDNESS AS $CaCO_3$	60	142	78	58	64	50	64	48	90
IRON AS Fe	0.04	0.96	0.07	0.10	0.08	0.04	<0.04	0.14	0.07
FLUORIDE A.M / P.M	0.18 / 0.18	0.18	1.23 / 0.96	0.18	0.08	0.08	0.99 / 0.96	1.06	0.99
CHLORINE RESIDUAL	1.0	1.3	1.0	0.8	1.0	1.2	1.2	1.4	0.3
TURBIDITY	0.26	0.42	0.46 / 0.48	0.20	0.26	0.18	0.14 / 0.18	0.22	0.16
TOTAL PHOSPHATE		1.24			0				
ORTHO PHOSPHATE		1.00			0				
META PHOSPHATE		0.24			0				
STABILITY	+0.1	−0.4	+0.2	−0.6	+0.1	+0.2	+0.2	+0.2	

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY: BURNS

DATE OF ANALYSIS: 3 AUGUST 83

MR. PRICE

DATE COLLECTED 5 JULY 83

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

PARAMETER	HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER
PH	8.71	7.26	8.58	7.38	8.28	8.09	8.92	8.56
PENOLTHALEIN ALKALINITY	2	0	2	0	6	0	4	10
METHYL ORANGE ALKALINITY	56	180	60	158	172	156	52	146
CARBONATES AS $CaCO_3$	4	0	4	0	12	0	8	20
BICARBONATES AS $CaCO_3$	52	180	56	158	160	156	44	126
CHLORIDES AS C1	16	34	10	20	16	26	12	46
HARDNESS AS $CaCO_3$	60	48	76	82	56	48	70	82
IRON AS Fe	0.40	0.83	0.05	0.19	0.04	0.05	0.04	0.23
FLUORIDE AM/PM	1.05/1.02	0.33	1.26/1.23	0.24	0.14	0.19	0.98/0.92	0.66
CHLORINE RESIDUAL	1.0	1.1	1.1	1.2	1.2	1.0	1.0	1.2
TURBIDITY AM/PM	3.4	0.42	0.49/0.42	0.24	0.20	0.26	1.05/0.24	0.46
TOTAL PHOSPHATE		2.08			0.35			
ORTHO PHOSPHATE		1.24			0.07			
META PHOSPHATE		0.84			0.28			
STABILITY	+0.29	—	+0.24	—	−0.01	−0.24	+0.27	+0.17

REMARKS

Re-Sample - H.P. 7-6-83 - IRON <.04

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY Burns + Monahan

DATE OF ANALYSIS 5/6 July '83

MR. PRICE

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

DATE COLLECTED: 5 July 83

PARAMETER	HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER
PH	8.71	7.26	8.58	7.38	8.28	8.09	8.92	8.56
PENOLTHALEIN ALKALINITY	2	0	2	0	6	0	4	10
METHYL ORANGE ALKALINITY	56	180	60	158	172	156	52	146
CARBONATES AS $CaCO_3$	4	0	4	0	12	0	8	20
BICARBONATES AS $CaCO_3$	52	180	56	158	160	156	44	126
CHLORIDES AS C1	16	34	10	20	16	26	12	46
HARDNESS AS $CaCO_3$	60	48	76	82	56	48	70	82
IRON AS Fe	0.40	0.83	0.05	0.19	0.04	0.05	0.04	0.23
FLUORIDE AM/PM	1.05/1.02	0.33	1.26/1.23	0.24	0.14	0.19	0.98/0.92	0.66
CHLORINE RESIDUAL	1.0	1.1	1.1	1.2	1.2	1.0	1.0	1.2
TURBIDITY AM/PM	3.4	0.42	0.49/0.42	0.24	0.20	0.26	1.05/0.24	0.46
TOTAL PHOSPHATE		2.08			0.35			
ORTHO PHOSPHATE		1.24			0.07			
META PHOSPHATE		0.84			0.28			
STABILITY	+0.29	—	+0.24	—	−0.01	−0.24	+0.27	+0.17

REMARKS

Re-Sample - H.P. 7-6-83 - iron <.04

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY: Burns + Monahan

DATE OF ANALYSIS: 5/6 July '83

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS RESAMPLE H.P. FINISHED H_2O

MCBCL 11330/3 (REV. 3-82)

DATE COLLECTED 7/6/83

PARAMETER	HADNOT POINT	~~MONTFORD POINT~~	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER	
PH		RES.	H.L.						
PENOLTHALEIN ALKALINITY									
METHYL ORANGE ALKALINITY									
CARBONATES AS $CaCO_3$									
BICARBONATES AS $CaCO_3$									
CHLORIDES AS C1									
HARDNESS AS $CaCO_3$									
IRON AS Fe		0.60	<0.04						
FLUORIDE									
CHLORINE RESIDUAL									
TURBIDITY		1.2	.28						
TOTAL PHOSPHATE									
ORTHO PHOSPHATE									
META PHOSPHATE									
STABILITY									

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY [illegible]

DATE OF ANALYSIS 7/6/83

MR. Price

DATE COLLECTED 12 July 83

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

PARAMETER	HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER
PH	8.80	7.36	8.50	7.62	8.38	8.41	8.93	8.95
PENOLTHALEIN ALKALINITY	4	0	2	0	2	4	4	12
METHYL ORANGE ALKALINITY	60	182	68	158	170	156	62	156
CARBONATES AS $CaCO_3$	8	0	4	0	4	8	8	24
BICARBONATES AS $CaCO_3$	52	182	64	158	166	148	54	132
CHLORIDES AS C1	14	40	10	16	16	22	8	116
HARDNESS AS $CaCO_3$	66	60	92	60	86	66	74	76
IRON AS Fe	0.04	1.07	0.09	0.17	0.04	0.05	0.04	0.08
FLUORIDE AM / PM	1.09 / 0.93	0.57	0.86 / 0.93	0.27	0.27	0.13	1.06 / 1.06	0.79
CHLORINE RESIDUAL	1.0	1.3	1.0	1.4	1.0	1.0	0.9	1.2
TURBIDITY AM / PM	0.20	1.4	0.74 / 0.50	0.24	0.22	0.24	0.20 / 0.24	0.40
TOTAL PHOSPHATE		4.60			1.21			
ORTHO PHOSPHATE		0.77			0.35			
META PHOSPHATE		3.83			0.86			
STABILITY	+0.24		+0.13		+0.16	+0.06	+0.34	+0.22

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY Henequett Monahan

DATE OF ANALYSIS 12 July 83

MR. PRICE WRP

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

DATE COLLECTED 7-26-83

PARAMETER	HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER
PH	8.9	7.3	8.7	7.3	8.3	8.2	8.9	8.8
PENOLTHALEIN ALKALINITY	8	0	6	0	8	4	8	16
METHYL ORANGE ALKALINITY	64	186	64	160	170	164	66	196
CARBONATES AS $CaCO_3$	16	0	12	0	16	8	16	32
BICARBONATES AS $CaCO_3$	48	186	52	160	154	156	50	164
CHLORIDES AS C1	8	46	8	12	16	24	12	134
HARDNESS AS $CaCO_3$	66	60	82	80	60	48	70	50
IRON AS Fe	0.04	0.67	0.08	0.04	0.04	0.05	0.04	0.07
FLUORIDE AM/PM	0.13/0.18	0.32	0.99/1.09	0.27	0.23	0.23	0.83/0.99	1.06
CHLORINE RESIDUAL	0.8	1.4	1.0	1.0	1.3	1.0	1.0	1.2
TURBIDITY AM/PM	0.16	0.30	0.40/0.52	0.14	0.16	0.17	0.16/0.14	0.24
TOTAL PHOSPHATE *		2.52			0.28			
ORTHO PHOSPHATE *		1.38			0.10			
META PHOSPHATE *		1.14			0.18			
STABILITY	+0.4	—	+0.3	—	0.0	−0.1	+0.4	+0.1

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY Lachapelle Monahan

DATE OF ANALYSIS 7/26/83 * 7/27/83

MR. PRICE

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

DATE COLLECTED 7-26-83

PARAMETER	HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER
PH	8.9	7.3	8.7	7.3	8.3	8.2	8.9	8.8
PENOLTHALEIN ALKALINITY	8	0	6	0	8	4	8	16
METHYL ORANGE ALKALINITY	64	186	64	160	170	164	66	196
CARBONATES AS $CaCO_3$	16	0	12	0	16	8	16	32
BICARBONATES AS $CaCO_3$	48	186	52	160	154	156	50	164
CHLORIDES AS C1	8	46	8	12	16	24	12	134
HARDNESS AS $CaCO_3$	66	60	82	80	60	48	70	50
IRON AS Fe	0.04	0.67	0.08	0.04	0.04	0.05	0.04	0.07
FLUORIDE AM/PM	0.13 / 0.18	0.32	0.99 / 1.09	0.27	0.23	0.23	0.83 / 0.99	1.06
CHLORINE RESIDUAL	0.8	1.4	1.0	1.0	1.3	1.0	1.0	1.2
TURBIDITY AM/PM	0.16	0.30	0.40 / 0.52	0.14	0.16	0.17	0.16 / 0.14	0.24
TOTAL PHOSPHATE *		2.52			0.28			
ORTHO PHOSPHATE *		1.38			0.10			
META PHOSPHATE *		1.14			0.18			
STABILITY	+0.4	—	+0.3	—	0.0	−0.1	+0.4	+0.1

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY Lachapelle — Monahan

DATE OF ANALYSIS 7/26/83 * 7/27/83

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS
MCBCL 11330/3 (REV. 3-82)

Bld. 1604 Complaint

DATE COLLECTED: 30 July 83

PARAMETER	~~HADNOT POINT~~	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER	
PH	8.88								
PENOLTHALEIN ALKALINITY	4								
METHYL ORANGE ALKALINITY	34								
CARBONATES AS $CaCO_3$	8								
BICARBONATES AS $CaCO_3$	26								
CHLORIDES AS C1	20								
HARDNESS AS $CaCO_3$	60								
IRON AS Fe									
FLUORIDE	1.15								
CHLORINE RESIDUAL	0.6								
TURBIDITY	1.2								
TOTAL PHOSPHATE									
ORTHO PHOSPHATE									
META PHOSPHATE									
STABILITY									

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY: Henerquit

DATE OF ANALYSIS: 1 Aug 83

MR. PRICE

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

DATE COLLECTED: 21 June 83

PARAMETER	HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER
PH	9.0	7.3	8.6	7.4	8.4	8.3	8.8	8.4
PENOLTHALEIN ALKALINITY	2	0	4	0	8	4	6	6
METHYL ORANGE ALKALINITY	62	194	68	174	180	176	74	150
CARBONATES AS $CaCO_3$	4	0	8	0	16	8	12	12
BICARBONATES AS $CaCO_3$	58	194	60	174	164	168	62	138
CHLORIDES AS C1	14	48	14	16	18	24	16	86
HARDNESS AS $CaCO_3$	70	64	86	70	64	52	76	76
IRON AS Fe	0.04	0.44	0.06	0.20	0.04	0.04	0.04	0.08
FLUORIDE AM/PM	1.08/1.05	0.42	1.08/0.63	0.24	0.33	0.24	1.02/0.95	0.66
CHLORINE RESIDUAL	1.0	1.4	1.1	1.4	1.3	1.0	0.9	1.5
TURBIDITY AM/PM	0.24	0.34	0.62/0.47	0.19	0.18	0.20	0.20/0.20	0.30
TOTAL PHOSPHATE		2.60			1.68			
ORTHO PHOSPHATE		0.84			0.32			
META PHOSPHATE		1.76			1.36			
STABILITY	+ 0.5		+ 0.3		+ 0.2	0.0	+ 0.4	+ 0.1

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY: Lachapelle, Evans & Monahan

DATE OF ANALYSIS: 21 June 83

MR. PRICE

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

DATE COLLECTED: 21 June 83

PARAMETER	HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER	
PH	9.0	7.3	8.6	7.4	8.4	8.3	8.8	8.4	
PENOLTHALEIN ALKALINITY	2	0	4	0	8	4	6	6	
METHYL ORANGE ALKALINITY	62	194	68	174	180	176	74	150	
CARBONATES AS $CaCO_3$	4	0	8	0	16	8	12	12	
BICARBONATES AS $CaCO_3$	58	194	60	174	164	168	62	138	
CHLORIDES AS C1	14	48	14	16	18	24	16	86	
HARDNESS AS $CaCO_3$	70	64	86	70	64	52	76	76	
IRON AS Fe	0.04	0.44	0.06	0.20	0.04	0.04	0.04	0.08	
FLUORIDE AM/PM	1.08/1.05	0.42	1.08/0.63	0.24	0.33	0.24	1.02/0.95	0.66	
CHLORINE RESIDUAL	1.0	1.4	1.1	1.4	1.3	1.0	0.9	1.5	
TURBIDITY AM/PM	0.24	0.34	0.62/0.47	0.19	0.18	0.20	0.20/0.20	0.30	
TOTAL PHOSPHATE		2.60			1.68				
ORTHO PHOSPHATE		0.84			0.32				
META PHOSPHATE		1.76			1.36				
STABILITY	+ 0.5		+ 0.3		+ 0.2	0.0	+ 0.4	+ 0.1	

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY: Lachapelle, Bvans Monahan

DATE OF ANALYSIS: 21 June 83

Mr. Price

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

DATE COLLECTED 6-14-83

PARAMETER	HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER	
PH	8.9	7.3	7.6	7.5	8.4	8.4	8.9	8.6	
PENOLTHALEIN ALKALINITY	8	0	0	0	10	6	6	10	
METHYL ORANGE ALKALINITY	66	196	144	150	190	148	70	156	
CARBONATES AS $CaCO_3$	16	0	0	0	20	12	12	20	
BICARBONATES AS $CaCO_3$	50	196	144	150	170	136	58	136	
CHLORIDES AS C1	14	40	14	20	16	28	18	114	
HARDNESS AS $CaCO_3$	76	22	98	66	72	46	74	64	
IRON AS Fe	0.05	0.30	0.06	0.16	0.04	0.07	0.04	0.06	
FLUORIDE AM / PM	1.05 / 1.08	0.33	1.05 / 0.78	0.28	0.42	0.19	0.98 / 1.14	0.81	
CHLORINE RESIDUAL	1.0	1.4	1.0	1.2	1.2	1.0	0.9	1.3	
TURBIDITY AM / PM	0.26	0.20	32.0 / 0.26	0.16	0.16	0.18	0.20 / 0.18	0.22	
TOTAL PHOSPHATE		2.34			1.92				
ORTHO PHOSPHATE		1.13			0.28				
META PHOSPHATE		1.21			1.64				
STABILITY	+0.4	—	−0.3	—	+0.1	0.0	+0.5	+0.2	

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY Lachapelle & Hunnycutt

DATE OF ANALYSIS 6-14-83

MR PRICE

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

DATE COLLECTED: 7 JUNE 1983

PARAMETER	HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER	
PH	8.8	7.3	8.8	7.5	8.4	8.3	8.9	8.5	
PENOLTHALEIN ALKALINITY	2	0	2	0	2	1	2	4	
METHYL ORANGE ALKALINITY	60	170	54	150	154	156	58	146	
CARBONATES AS $CaCO_3$	4	0	4	0	4	2	4	8	
BICARBONATES AS $CaCO_3$	56	170	50	150	150	154	54	138	
CHLORIDES AS C1	6	38	6	12	14	20	10	50	
HARDNESS AS $CaCO_3$	76	24	80	70	68	50	66	60	
IRON AS Fe	0.04	0.36	0.07	0.18	0.04	0.04	0.04	0.09	
FLUORIDE A.M/P.M	1.02/1.02	0.33	1.11/0.98	0.33	0.42	0.19	0.88/0.92	0.74	
CHLORINE RESIDUAL	1.0	1.3	1.0	1.2	1.2	1.0	1.0	1.3	
TURBIDITY AM/PM	0.18	0.54	0.44/0.36	0.18	0.20	0.18	0.20/0.18	0.40	
TOTAL PHOSPHATE		2.18			2.08				
ORTHO PHOSPHATE		0.92			0.22				
META PHOSPHATE		1.26			1.86				
STABILITY	+0.3	—	+0.3	—	0.0	+0.1	+0.4	+0.1	

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY: Burns & Monahan

DATE OF ANALYSIS: 7 JUNE 1983

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS
MCBCL 11330/3 (REV. 3-82)

DATE COLLECTED 6/8/83

PARAMETER	HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER	
PH								8.2	
PENOLTHALEIN ALKALINITY								1	
METHYL ORANGE ALKALINITY								150	
CARBONATES AS $CaCO_3$								2	
BICARBONATES AS $CaCO_3$								148	
CHLORIDES AS C1								64	
HARDNESS AS $CaCO_3$								70	
IRON AS Fe								0.10	
FLUORIDE									
CHLORINE RESIDUAL									
TURBIDITY								0.38	
TOTAL PHOSPHATE									
ORTHO PHOSPHATE									
META PHOSPHATE									
STABILITY									

REMARKS

COMPLAINT CAMP GEIGER MESSHALL COLI-FORM = Ø

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY H J Burns

DATE OF ANALYSIS 6/8/83

MR. PRICE

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

DATE COLLECTED: 31 May 1983

PARAMETER	HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER
PH	8.8	7.5	8.9	7.4	8.4	8.3	8.9	8.7
PENOLTHALEIN ALKALINITY	2	0	4	0	6	2	4	10
METHYL ORANGE ALKALINITY	8	196	60	160	172	162	50	180
CARBONATES AS $CaCO_3$	4	0	8	0	12	4	8	20
BICARBONATES AS $CaCO_3$	4	196	54	160	160	158	42	160
CHLORIDES AS C1	20	66	18	24	26	32	16	132
HARDNESS AS $CaCO_3$	66	82	80	72	66	58	90	76
IRON AS Fe	0.04	0.55	0.13	0.32	0.04	0.04	0.04	0.07
FLUORIDE AM/PM	0.85	0.29	0.89/0.99	0.19	0.29	0.09	0.78/0.96	0.89
CHLORINE RESIDUAL	1.0	1.3	1.0	0.5	1.2	1.0	1.0	1.3
TURBIDITY AM/PM	0.29	0.32	0.54/1.80	0.22	0.18	0.22	0.26/0.18	0.28
TOTAL PHOSPHATE		0.90			1.84			
ORTHO PHOSPHATE		0.82			0.22			
META PHOSPHATE		0.08			1.62			
STABILITY	+0.2	—	+0.3	—	+0.1	−0.1	+0.2	±0.0

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY: Monofuss + Burns

DATE OF ANALYSIS: 31 May 83

Mr. Price

DATE COLLECTED 24 MAY 83

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

PARAMETER	HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH #1	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER	ONSLOW BEACH #2
PH	8.7	7.4	8.5	7.5	8.3	8.3	8.7	8.4	7.5
PENOLTHALEIN ALKALINITY	1	0	1	0	1	1	2	1	0
METHYL ORANGE ALKALINITY	40	160	64	156	162	160	60	140	160
CARBONATES AS $CaCO_3$	2	0	2	0	2	2	4	2	0
BICARBONATES AS $CaCO_3$	38	160	62	156	160	158	56	138	160
CHLORIDES AS C1	10	10	8	18	18	26	10	84	26
HARDNESS AS $CaCO_3$	60	60	80	76	76	52	70	68	50
IRON AS Fe	<0.04	0.56	<0.04	5.04	<0.04	<0.04	<0.04	0.14	0.41
FLUORIDE AM / PM	1.05 / 0.75	0.19	1.05 / 0.89	0.9	0.24	0.09	1.05 / 0.75	0.47	
CHLORINE RESIDUAL	0.9	1.3	1.0	1.0	1.1	1.0	1.3	1.4	
TURBIDITY	0.28	0.38	0.26 / 0.34	1.4	0.20	0.22	0.30 / 0.28	0.32	0.24
TOTAL PHOSPHATE		3.00			1.46				
ORTHO PHOSPHATE		1.68			0.25				
META PHOSPHATE		1.32			1.21				
STABILITY	+0.3		+0.2		+0.3	0.0	+0.2	0.0	

REMARKS

THE DIFFERENCES BETWEEN OB #1 + #2 WAS BECAUSE #1 WAS TAKEN AT SINK, BY OPERATOR, AND #2 WAS TAKEN AT PUMP, BY FOREMAN. THE CORRECT LOCATIONS OF RAW + TREATED SAMPLE POINTS SHOULD BE MARKED IN ALL PLANTS TO AVOID FUTURE SAMPLING ERRORS.

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY Henegcutt & Burns

DATE OF ANALYSIS 24 MAY 83

Mr. Price

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

DATE COLLECTED: 17 MAY 83

PARAMETER	HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER
PH	8.8	7.3	8.7	7.4	8.2	8.4	8.9	8.5
PENOLTHALEIN ALKALINITY	4	0	6	0	4	5	6	10
METHYL ORANGE ALKALINITY	50	182	66	162	184	178	66	198
CARBONATES AS $CaCO_3$	8	0	12	0	8	10	12	20
BICARBONATES AS $CaCO_3$	42	182	54	162	176	168	54	178
CHLORIDES AS C1	14	14	16	22	16	30	14	118
HARDNESS AS $CaCO_3$	54	84	84	80	88	54	64	60
IRON AS Fe	<0.04	0.79	0.07	0.08	<0.04	0.18	0.07	0.05
FLUORIDE AM/PM	0.94/1.07	0.26	0.81/1.10	0.26	0.26	0.30	0.94/1.01	1.01
CHLORINE RESIDUAL	0.9	1.2	1.1	1.2	1.2	0.7	1.0	1.3
TURBIDITY AM/PM	0.26	0.42	0.34/0.40	0.22	0.18	0.44	0.38/0.38	0.24
TOTAL PHOSPHATE		2.54			1.13			
ORTHO PHOSPHATE		1.17			0.13			
META PHOSPHATE		1.37			1.00			
STABILITY	+0.2		+0.3		0.0	+0.1	+0.4	+0.1

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY: Lachrylle Moreham

DATE OF ANALYSIS: 17 MAY 83

Mr. Price

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

DATE COLLECTED: 10 MAY 83

PARAMETER	HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER
PH	8.7	7.4	8.8	7.5	8.3	8.4	8.8	8.4
PENOLTHALEIN ALKALINITY	4	0	6	0	10	6	6	4
METHYL ORANGE ALKALINITY	56	176	60	158	184	158	62	132
CARBONATES AS $CaCO_3$	8	0	12	0	20	12	12	8
BICARBONATES AS $CaCO_3$	48	176	48	158	164	146	50	124
CHLORIDES AS C1	14	24	12	18	18	24	14	84
HARDNESS AS $CaCO_3$	62	104	84	80	70	52	70	72
IRON AS Fe	<0.04	0.66	0.09	<0.04	<0.04	0.15	<0.04	0.07
FLUORIDE AM/PM	0.98/1.01	0.30	1.01/1.16	0.26	0.21	0.17	1.01/1.01	0.67
CHLORINE RESIDUAL	1.0	1.3	1.0	1.2	1.2	1.0	0.9	1.5
TURBIDITY AM/PM	0.30	0.46	0.46/0.64	0.58	0.24	0.46	0.30/0.46	0.35
TOTAL PHOSPHATE		2.00			0.22			
ORTHO PHOSPHATE		1.30			0.10			
META PHOSPHATE		0.70			0.12			
STABILITY	+0.2		+0.4		+0.1	+0.1	+0.3	+0.1

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY: Sherrycitt Lachrelle Monahan

DATE OF ANALYSIS: 10 MAY 83

MR PRICE

WDP

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

DATE COLLECTED: 3 MAY 1983

PARAMETER	HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER
PH	8.5	7.3	8.5	7.3	8.3	8.3	8.8	8.5
PENOLTHALEIN ALKALINITY	2	0	0	0	0	0	3	10
METHYL ORANGE ALKALINITY	56	160	60	142	150	140	54	160
CARBONATES AS $CaCO_3$	4	0	0	0	0	0	6	20
BICARBONATES AS $CaCO_3$	52	160	60	142	150	140	48	140
CHLORIDES AS C1	8	10	10	12	10	18	14	70
HARDNESS AS $CaCO_3$	62	36	82	56	66	72	56	40
IRON AS Fe	0.04	0.27	0.10	0.07	0.06	0.10	0.04	0.14
FLUORIDE A.M/P.M	0.91/0.98	0.17	0.98/0.91	0.17	0.21	0.07	0.98/1.04	0.67
CHLORINE RESIDUAL	1.2	1.4	1.0	2.5	1.5	1.0	1.0	1.4
TURBIDITY A.M/P.M	0.36/0.20	0.28	0.20/0.50	0.22	0.22	0.28	0.22	0.42
TOTAL PHOSPHATE		1.60			1.10			
ORTHO PHOSPHATE		.96			.92			
META PHOSPHATE		0.72			0.18			
STABILITY	+0.4	—	+0.3	—	+0.2	+0.2	0.0	+0.1

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY: Buens, Hunnicutt, Lockwelle

DATE OF ANALYSIS: 3 MAY 83

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS
MCBCL 11330/3 (REV. 3-82)

MR PRICE

DATE COLLECTED 4-26-83

PARAMETER	HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER	M.P. TREATED
PH	8.7	7.3	8.6	7.3	8.4	8.4	8.7	7.8	7.3
PENOLTHALEIN ALKALINITY	12	0	10	0	8	6	10	0	0
METHYL ORANGE ALKALINITY	70	216	76	104	190	162	76	162	210
CARBONATES AS $CaCO_3$	24	0	20	0	16	12	20	0	0
BICARBONATES AS $CaCO_3$	46	216	56	104	174	150	56	162	210
CHLORIDES AS C1	14	54	10	20	20	24	20	94	50
HARDNESS AS $CaCO_3$	98	62	106	68	80	62	92	104	32
IRON AS Fe	<0.04	0.27	<0.04	0.05	<0.04	0.23	0.08	0.09	0.14
FLUORIDE AM/PM	1.13/1.24	0.47	1.16/1.19	0.30	0.30	0.21	1.04/1.19	0.81	0.47
CHLORINE RESIDUAL	1.0	1.4	1.1	1.4	1.2	1.2	1.0	1.4	1.4
TURBIDITY A.M./PM	0.18	0.19	0.36/0.28	0.18	0.21	0.52	0.31/0.34	0.20	0.16
TOTAL PHOSPHATE		2.70			0.84				2.18
ORTHO PHOSPHATE		1.40			0.22				1.26
META PHOSPHATE		1.30			0.62				0.92
STABILITY	+0.4	—	+0.5	—	+0.4	+0.2	+0.4	-0.3	

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY [illegible] + MONAHAN BUENS

DATE OF ANALYSIS 4-26-83

MR PRICE

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

DATE COLLECTED: 3 MAY 1983

PARAMETER	HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER	
PH	8.5	7.3	8.5	7.3	8.3	8.3	8.8	8.5	
PENOLTHALEIN ALKALINITY	2	0	0	0	0	0	3	10	
METHYL ORANGE ALKALINITY	56	160	60	142	150	140	54	160	
CARBONATES AS $CaCO_3$	4	0	0	0	0	0	6	20	
BICARBONATES AS $CaCO_3$	52	160	60	142	150	140	48	140	
CHLORIDES AS C1	8	10	10	12	10	18	14	70	
HARDNESS AS $CaCO_3$	62	36	82	56	66	72	56	40	
IRON AS Fe	0.04	0.27	0.10	0.07	0.06	0.10	0.04	0.14	
FLUORIDE A.M/P.M	0.91/0.98	0.17	0.98/0.91	0.17	0.21	0.07	0.98/1.04	0.67	
CHLORINE RESIDUAL	1.2	1.4	1.0	2.5	1.5	1.0	1.0	1.4	
TURBIDITY A.M/P.M	0.36/0.20	0.28	0.20/0.50	0.22	0.22	0.28	0.22	0.42	
TOTAL PHOSPHATE		1.60			1.10				
ORTHO PHOSPHATE		.96			.92				
META PHOSPHATE		0.72			0.18				
STABILITY	+0.4	—	+0.3	—	+0.2	+0.2	0.0	+0.1	

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY: Buens, Hussgatt, Lochinvelle

DATE OF ANALYSIS: 3 MAY 83

MR PRICE WRP

DATE COLLECTED 12 APRIL 83

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

MCBCL 11330/3 (REV. 3-82)

PARAMETER	HADNOT POINT	MONTFORD POINT	TARAWA TERRACE	ONSLOW BEACH	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER
PH	8.8	7.3	8.7	7.3	8.2	8.3	8.7	8.9
PENOLTHALEIN ALKALINITY	2	0	2	0	0	2	2	4
METHYL ORANGE ALKALINITY	50	140	50	142	160	120	50	52
CARBONATES AS $CaCO_3$	4	0	4	0	0	4	4	8
BICARBONATES AS $CaCO_3$	46	140	46	142	160	116	46	44
CHLORIDES AS C1	10	14	10	20	14	20	10	70
HARDNESS AS $CaCO_3$	60	92	84	62	64	44	68	60
IRON AS Fe	0.04	0.47	0.06	0.11	0.26	0.05	0.04	0.21
FLUORIDE AM/PM	0.77/0.59	0.07	0.70/0.74	0.16	0.16	0.12	0.91/0.63	0.39
CHLORINE RESIDUAL	1.0	1.4	1.0	1.2	1.3	1.0	1.0	1.3
TURBIDITY AM/PM	0.20	0.30	0.47/0.36	0.18	1.0	0.24	0.21/0.24	0.52
TOTAL PHOSPHATE *		1.26			1.00			
ORTHO PHOSPHATE *		0.96			0.38			
META PHOSPHATE *		0.30			0.62			
STABILITY	+0.5	–	+0.4	–	+0.2	+0.1	+0.4	+0.3

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY: Burns Lockwell * Monahan

DATE OF ANALYSIS: 12 April 83

CHEMICAL ANALYSIS — WATER TREATMENT PLANTS

TEST WELLS

MCBCL 11330/3 (REV. 3-82)

DATE COLLECTED 7/10/84

PARAMETER	~~HADNOT POINT~~ 2	~~MONTFORD POINT~~ 3	~~TARAWA TERRACE~~ 4	~~ONSLOW BEACH~~ 5	COURTHOUSE BAY	RIFLE RANGE	HOLCOMB BLVD	NEW RIVER	
PH	7.9	7.9	8.3	8.2					
PENOLTHALEIN ALKALINITY	0	0	0	0					
METHYL ORANGE ALKALINITY	140	184	120	90					
CARBONATES AS $CaCO_3$	0	0	[illegible]	0					
BICARBONATES AS $CaCO_3$	140	184	120	90					
CHLORIDES AS C1	10	2	2	2					
HARDNESS AS $CaCO_3$	150	156	54	94					
IRON AS Fe	4.20	5.00	1.64	2.60					
FLUORIDE	0.15	0.34	1.25	0.28					
CHLORINE RESIDUAL									
TURBIDITY	23.0	25.0	29.0	30.0					
TOTAL PHOSPHATE									
ORTHO PHOSPHATE									
META PHOSPHATE									
STABILITY									

REMARKS

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

LABORATORY ANALYSIS BY H. J. Burns

DATE OF ANALYSIS 7/10/84

STATE LABORATORY OF HYGIENE

(NORTH CAROLINA STATE BOARD OF HEALTH)

ANALYSIS OF WATER

LABORATORY NUMBER Q3876

SENT BY N.H. KELLAM, SANITARY ENG.

ADDRESS NAVY DEPT.
NEW RIVER, N.C.

SOURCE PROTECTED MECHANICAL SYSTEM COUNTY ONSLOW

MARKED DIST. RIFLE RANGE, U.S. MARINE CORPS

COLLECTED 9-7-42 RECEIVED 9-8-42 REPORTED 9-10-42

COLLECTED BY

BACTERIOLOGICAL ANALYSIS

COLI-AEROGENES GROUP. 50cc. 10cc. 0

1cc. 0 0.1cc.

TOTAL COUNT after 24 Hrs. at 37.5°C.

colonies per cc. Nutrient agar 2500 Litmus agar 2 Acid 0

PHYSICAL ANALYSIS

Sediment 0 Color very slight Turbidity 0

Odor-cold 0 Odor-hot 0

CHEMICAL ANALYSIS

pH 7.7. Chlorides 8 ppm. Alum ppm. Iron ppm.

Manganese ppm. Alkalinity ppm. Nitrites 0

Total Hardness ppm. ppm.

REMARKS

John H. Hamilton, M. D., Director MLS Analyst.

(For explanation of analysis see other side)

EXPLANATIONS

Alkalinity.—Nearly all the waters of the State are naturally alkaline. An acid water, whether natural or due to improper dosage of aluminum sulphate, will be found injurious to metal pipes and unsuitable for use in boilers.

Alum Dosage.—Where alum is used as a coagulant, the dosage should be controlled by hydrogen-ion concentration (pH) (determinations. Proper dosage will result in good flocculation and a clear effluent with very little residual alum. An improperly working filter may pass a precipitate of aluminum hydrate.

Chlorides.—The normal amount varies greatly. In some localities near the coast it is as high as sixty or seventy parts per million, while in many regions it is below five parts.

A marked increase for the locality points towards pollution.

Nitrogen.—Nitrogenous organic matter may exist in water as albuminoid nitrogen, ammonia, nitrite or nitrates. The first is due to the presence of vegetable or animal tissues. By decomposition this is changed to ammonia, and this in turn to nitrites and nitrates.

The presence of nitrites usually indicates recent pollution by sewage or other organic matter.

An excessive amount of nitrates points to a continued or past pollution.

Hardness is due to mineral matter in solution. The *Temporary Hardness* is removed by boiling. The *Permanent Hardness* may only be removed by the addition of some softening agent, as soda.

The *Incrustants* include all the scale-forming ingredients of the water.

Typhoid Bacteria do not originate in water. They get into water only from contact with human beings or from human excreta. Their isolation from water is a rare occurence, though unfortunately their presence is not so rare. The purity of water must be estimated by other means, chief of which is the presence or absence of the *Colon bacillus.*

Bacteria of the Coli-aerogenes group are inhabitants of the intestines of man and animals. Their presence in so small a quantity as ten cubic centimeters is undesirable, and if found in one cubic centimeter it is still more significant of pollution.

The U. S. Treasury Department standard for the examination of water on Interstate Common Carriers requires that not more than one out five 10 c.c. portions of any sample examined shall show the presence of organisms of the *B. coli group.* The water purification plants in the State should attempt to produce water which shall not exceed this limit of impurity.

The *Acid-producing Bacteria* are in most cases *Colon bacilli* or other bacteria which indicate pollution.

Total Bacteria Count.—All unsterilized waters contain bacteria, most of them harmless. No absolute standard for all waters can be fixed.

Both bacterial and chemical changes are continually taking place in water. Therefore slight differences between results obtained at the laboratory and at the filter plant may be expected.

STATE LABORATORY OF HYGIENE

(NORTH CAROLINA STATE BOARD OF HEALTH)

ANALYSIS OF WATER

LABORATORY NUMBER Q 2819

SENT BY N. H. Kellam, Sanitary Engineer

ADDRESS Navy Department

New River, N. C.

SOURCE Drilled pump well COUNTY Onslow

MARKED Well No. 2 - Rifle Range - U. S. Marine Corps

COLLECTED 7-23-42 RECEIVED 7-25-42 REPORTED 7-27-42

COLLECTED BY

BACTERIOLOGICAL ANALYSIS

COLI-AEROGENES GROUP. 50cc. 10cc. 0

1cc. 0 0.1cc.

TOTAL COUNT after 24 Hrs. at 37.5°C.

colonies per cc. Nutrient agar 4500 Litmus agar 0 Acid 0

PHYSICAL ANALYSIS

Sediment 0 Color 0 Turbidity 0

Odor-cold 0 Odor-hot 0

CHEMICAL ANALYSIS

pH 7.8. Chlorides 8 ppm. Alum ppm. Iron ppm.

Manganese ppm. Alkalinity ppm. Nitrites 0

Total Hardness ppm. ppm.

REMARKS

John H. Hamilton, M. D., Director MLS Analyst.

(For explanation of analysis see other side)

EXPLANATIONS

Alkalinity.—Nearly all the waters of the State are naturally alkaline. An acid water, whether natural or due to improper dosage of aluminum sulphate, will be found injurious to metal pipes and unsuitable for use in boilers.

Alum Dosage.—Where alum is used as a coagulant, the dosage should be controlled by hydrogen-ion concentration (pH) (determinations. Proper dosage will result in good flocculation and a clear effluent with very little residual alum. An improperly working filter may pass a precipitate of aluminum hydrate.

Chlorides.—The normal amount varies greatly. In some localities near the coast it is as high as sixty or seventy parts per million, while in many regions it is below five parts.

A marked increase for the locality points towards pollution.

Nitrogen.—Nitrogenous organic matter may exist in water as albuminoid nitrogen, ammonia, nitrite or nitrates. The first is due to the presence of vegetable or animal tissues. By decomposition this is changed to ammonia, and this in turn to nitrites and nitrates.

The presence of nitrites usually indicates recent pollution by sewage or other organic matter.

An excessive amount of nitrates points to a continued or past pollution.

Hardness is due to mineral matter in solution. The *Temporary Hardness* is removed by boiling. The *Permanent Hardness* may only be removed by the addition of some softening agent, as soda.

The *Incrustants* include all the scale-forming ingredients of the water.

Typhoid Bacteria do not originate in water. They get into water only from contact with human beings or from human excreta. Their isolation from water is a rare occurence, though unfortunately their presence is not so rare. The purity of water must be estimated by other means, chief of which is the presence or absence of the *Colon bacillus.*

Bacteria of the Coli-aerogenes group are inhabitants of the intestines of man and animals. Their presence in so small a quantity as ten cubic centimeters is undesirable, and if found in one cubic centimeter it is still more significant of pollution.

The U. S. Treasury Department standard for the examination of water on Interstate Common Carriers requires that not more than one out five 10 c.c. portions of any sample examined shall show the presence of organisms of the *B. coli group.* The water purification plants in the State should attempt to produce water which shall not exceed this limit of impurity.

The *Acid-producing Bacteria* are in most cases *Colon bacilli* or other bacteria which indicate pollution.

Total Bacteria Count.—All unsterilized waters contain bacteria, most of them harmless. No absolute standard for all waters can be fixed.

Both bacterial and chemical changes are continually taking place in water. Therefore slight differences between results obtained at the laboratory and at the filter plant may be expected.

STATE LABORATORY OF HYGIENE
(NORTH CAROLINA STATE BOARD OF HEALTH)

ANALYSIS OF WATER

LABORATORY NUMBER Q 643

SENT BY N. H. Kellam, Sanitary Engineer

ADDRESS Navy Department

New River, N. C.

SOURCE ~~Cistern~~ Spring COUNTY Onslow

MARKED Rifle Range - U. S. Marine Corps

COLLECTED 4-20-42 RECEIVED 4-22-42 REPORTED 4-27-42

COLLECTED BY

BACTERIOLOGICAL ANALYSIS

COLI-AEROGENES GROUP. 50cc. _____ 10cc. 0

1cc. 0 0.1cc. _____

TOTAL COUNT after 24 Hrs. at 37.5°C.

colonies per cc. Nutrient agar 10 Litmus agar 0 Acid 0

PHYSICAL ANALYSIS

Sediment Very slight Color 0 Turbidity Very slight

Odor-cold 0 Odor-hot 0 _____

CHEMICAL ANALYSIS

pH 6.0. Chlorides 20 ppm. Alum _____ ppm. Iron _____ ppm.

Manganese _____ ppm. Alkalinity _____ ppm. Nitrites 0

Total Hardness _____ ppm. _____ ppm.

REMARKS

John H. Hamilton, M. D., Director MLS Analyst.

(For explanation of analysis see other side)

EXPLANATIONS

Alkalinity.—Nearly all the waters of the State are naturally alkaline. An acid water, whether natural or due to improper dosage of aluminum sulphate, will be found injurious to metal pipes and unsuitable for use in boilers.

Alum Dosage.—Where alum is used as a coagulant, the dosage should be controlled by hydrogen-ion concentration (pH) (determinations. Proper dosage will result in good flocculation and a clear effluent with very little residual alum. An improperly working filter may pass a precipitate of aluminum hydrate.

Chlorides.—The normal amount varies greatly. In some localities near the coast it is as high as sixty or seventy parts per million, while in many regions it is below five parts.

A marked increase for the locality points towards pollution.

Nitrogen.—Nitrogenous organic matter may exist in water as albuminoid nitrogen, ammonia, nitrite or nitrates. The first is due to the presence of vegetable or animal tissues. By decomposition this is changed to ammonia, and this in turn to nitrites and nitrates.

The presence of nitrites usually indicates recent pollution by sewage or other organic matter.

An excessive amount of nitrates points to a continued or past pollution.

Hardness is due to mineral matter in solution. The *Temporary Hardness* is removed by boiling. The *Permanent Hardness* may only be removed by the addition of some softening agent, as soda.

The *Incrustants* include all the scale-forming ingredients of the water.

Typhoid Bacteria do not originate in water. They get into water only from contact with human beings or from human excreta. Their isolation from water is a rare occurence, though unfortunately their presence is not so rare. The purity of water must be estimated by other means, chief of which is the presence or absence of the *Colon bacillus.*

Bacteria of the Coli-aerogenes group are inhabitants of the intestines of man and animals. Their presence in so small a quantity as ten cubic centimeters is undesirable, and if found in one cubic centimeter it is still more significant of pollution.

The U. S. Treasury Department standard for the examination of water on Interstate Common Carriers requires that not more than one out five 10 c.c. portions of any sample examined shall show the presence of organisms of the *B. coli group.* The water purification plants in the State should attempt to produce water which shall not exceed this limit of impurity.

The *Acid-producing Bacteria* are in most cases *Colon bacilli* or other bacteria which indicate pollution.

Total Bacteria Count.—All unsterilized waters contain bacteria, most of them harmless. No absolute standard for all waters can be fixed.

Both bacterial and chemical changes are continually taking place in water. Therefore slight differences between results obtained at the laboratory and at the filter plant may be expected.

THE PERMUTIT COMPANY

MAIN OFFICE ··· NEW YORK, N.Y.

Water Conditioning

WATER CONDITIONING OF EVERY TYPE FOR INDUSTRY, FOR MUNICIPALITIES, FOR RESIDENCES. SWIMMING POOL EQUIPMENT. CHEMICAL FEEDS. POWER PLANT SPECIALTIES, ETC.

AUTOMATIC AND MANUAL EQUIPMENT FOR REMOVAL OF HARDNESS, DIRT, IRON, OIL, TASTE AND ODOR, OTHER TROUBLESOME IMPURITIES FROM WATER. CO_2 METERS. INTERNAL BOILER FEEDWATER TREATMENT.

N. D. DOANE
831 E. MOREHEAD STREET
CHARLOTTE, N. C.
(Zone 3)

September 22, 1944.

Mr. N. H. Kellum,
Chemist in Charge of Main Softening Plant,
Camp LeJeune,
New River, N. Carolina.

Re: Rifle Range Well Samples.

Dear Mr. Kellum:

Attached you will find our laboratory report covering three of the well water samples from the Rifle Range area, which you recently forwarded. Sample from well T was reported by the laboratory as broken in transit. If you have not already done so, please send another sample from well T.

Copy of these analyses is also being sent to Mr. Monroe for his use in connection with the design of the proposed treatment plant for the Rifle Range.

Yours very truly,

THE PERMUTIT COMPANY.

N. D. Doane.

N. D. Doane.

Encls.
cc-New York
NDD:C

THE PERMUTIT COMPANY

MAIN OFFICE ··· NEW YORK, N.Y.

Water Conditioning

WATER CONDITIONING OF EVERY TYPE FOR INDUSTRY, FOR MUNICIPALITIES, FOR RESIDENCES. SWIMMING POOL EQUIPMENT. CHEMICAL FEEDS. POWER PLANT SPECIALTIES, ETC.

AUTOMATIC AND MANUAL EQUIPMENT FOR REMOVAL OF HARDNESS, DIRT, IRON, OIL, TASTE AND ODOR, OTHER TROUBLESOME IMPURITIES FROM WATER. CO_2 METERS. INTERNAL BOILER FEEDWATER TREATMENT.

N. D. DOANE
831 E. MOREHEAD STREET
CHARLOTTE, N. C.
(Zone 3)

October 12, 1944.

Mr. N. H. Kellum,
Chemist-in-Charge,
Water Softening Plant,
Camp Lejeune,
New River, N. C.

Re: Rifle Range Well Samples.

Dear Mr. Kellum:

Attached is our laboratory report on the last two well water samples you forwarded from Wells T and T_1.

Thanking you for your cooperation in forwarding the samples, and looking forward to seeing you soon, I am

Yours very truly,

THE PERMUTIT COMPANY.

N. D. Doane

N. D. Doane.

cc-Mr. B. E. Beavin
Encl.
NDD:C

U.S. Marine Barracks
New River, N. C.
3 October 1941

Shallow Wells-Permanent Water Supply-Tent Camp Area
By Layne Atlantic Company

Status of Pumping Equipment & Output

Layne Numbering		Navy Lettering Scheme
#1 Well	-	"C" Well
#2 Well	-	"E" Well
#3 Well	-	"B" Well
#4 Well	-	"F" Well
#5 Well	-	"G" Well

All wells equipped as follows:

Pump: 100 g.p.m. - Layne Bowler Deep Well Turbine having 50' setting (50' of 4" screw connection black steel pipe to pump bowls).
3' of 8" bowls - 3 stages.
9'-9" of 4" Tail Pipe.
15" Strainer
61' of 1/8" Airline and Altitude gage (except "F" well, which has 53'-6" of airline).
7/8" Oil lubricated shaft inside 1-1/4" tubing.
4" Flange connection on discharge of pump complete with 3" pressure gage.

Motor: 3 H.P. - U.S. Electric Motor, 1750 R.P.M. 220 Volts, 3-phase, 60 cycle. Motor class G, Type 1 (open protected, continuous operation).

Output: Continuous 24-hour pump operation.

Well	Discharge	Pressure	Drawdown From Static Water Level	Remarks
"C"(1)	75 gpm	14#	40'	Discharge line Throttled
"B"(3)	75 gpm	11#	41'	"
"E"(2)	110 gpm	9.5#	33'	
"F"(4)	110 gpm	7#	28'	
"G"(5)	110 gpm	8#	38'	

Total Output: 480 gpm = 691200 gallons per day

Jennings B. Knoebel
Asst. Construction Engineer

WATER ANALYSIS

By N. H. Stellan

Date 5/27/42

Sample from Well No. 2 Rifle Range

Total Solids	184 PPM	Dissolved Solids	149 PPM
Suspended Solids	35 PPM	Volatile Solids	PPM

Phenol. Alk. as $CaCo_3$	0 PPM	Silica as Sio_2	30 PPM
Total Alk. " "	140 "	Ferrous Iron as Fe	0 "
Carbonates " "	0 "	Total Iron as Fe	1.1 "
Bicarbonates " "	140 "	Aluminum as Al.	3.4 "
Chlorides as Cl.	15 "	Calcium as Ca.	46.9 "
Sulphates as SO_4	12.8 "	Magnesium as Mg.	7.8 "
Nitrites as No_2	"	Sodium as Na.	9.9 "
Carbon Dioxide as CO_2	"		

pH 7.7 Soap Hardness as $CaCO_3$ 150 PPM

Odor Very Slight Turbidity 10

REMARKS

WATER ANALYSIS

Sample from _____

Date _____

Total Solids _____ PPM Dissolved Solids _____ PPM

Suspended Solids _____ PPM Volatile Solids _____ PPM

Phenol Alk. as $CaCO_3$ _____ PPM Silica as SiO_2 _____ PPM

Total Alk. " " _____ " Ferrous Iron as Fe _____ "

Carbonate " " _____ " Total Iron as Fe _____ "

Bicarbonate " " _____ " Aluminum as Al. _____ "

Chlorides as Cl. _____ " Calcium as Ca. _____ "

Sulphates as SO_4 _____ " Magnesium as Mg. _____ "

Nitrites as NO_2 _____ " Sodium as Na. _____ "

Carbon Dioxide as CO_2 _____ "

pH _____ Soap Hardness as $CaCO_3$ _____ PPM

Odor _____ Turbidity _____

REMARKS _____

WATER ANALYSIS

By N H Kellan

Date 5/21/42

Sample from Well No 2 Rifle Range

Total Solids _____ PPM Dissolved Solids _____ PPM

Suspended Solids _____ PPM Volatile Solids _____ PPM

Phenol. Alk. as $CaCo_3$ 0 PPM Silica as Sio_2 _____ PPM

Total Alk. " " 130 " Ferrous Iron as Fe _____ "

Carbonates " " 0 " Total Iron as Fe _____ "

Bicarbonates " " 130 " Aluminum as Al. _____ "

Chlorides as Cl. 15 " Calcium as Ca. _____ "

Sulphates as SO_4 _____ " Magnesium as Mg. _____ "

Nitrites as No_2 _____ " Sodium as Na. _____ "

Carbon Dioxide as CO_2 _____ "

pH 7.7 Soap Hardness as $CaCO_3$ 140 PPM

Odor Slight Turbidity _____

REMARKS _____

3.0
0.6

WATER ANALYSIS

By _____

Date 5/16/42

Sample from Well T-2

Pumped at Rate 325 GPM 65' D.D. Surface

Total Solids _____ PPM Dissolved Solids _____ PPM

Suspended Solids _____ PPM Volatile Solids _____ PPM

Phenol. Alk. as $CaCo_3$ 0 PPM Silica as Sio_2 _____ PPM

Total Alk. " " 160 " Ferrous Iron as Fe _____ "

Carbonates " " 0 " Total Iron as Fe 0.6 "

Bicarbonates " " 160 " Aluminum as Al. _____ "

Chlorides as Cl. 8 " Calcium as Ca. _____ "

Sulphates as SO_4 _____ " Magnesium as Mg. _____ "

Nitrites as No_2 _____ " Sodium as Na. _____ "

Carbon Dioxide as CO_2 _____ "

pH _____ Soap Hardness as $CaCO_3$ _____ PPM

Odor slight Turbidity 10

REMARKS _____

WATER ANALYSIS

By N. H. Kellam

Date 5/11/42

Sample from Test Well Rifle Range at Well Site No. 2

Total Solids _____ PPM

Dissolved Solids _____ PPM

Suspended Solids _____ PPM

Volatile Solids _____ PPM

Phenol. Alk. as $CaCo_3$ 0 PPM

Total Alk. " " 200 "

Carbonates " " 0 "

Bicarbonates " " 200 "

Chlorides as Cl. 20 "

Sulphates as SO_4 _____ "

Nitrites as No_2 _____ "

Carbon Dioxide as CO_2 10 "

Silica as Sio_2 _____ PPM

Ferrous Iron as Fe _____ "

Total Iron as Fe _____ "

Aluminum as Al. _____ "

Calcium as Ca. _____ "

Magnesium as Mg. _____ "

Sodium as Na. _____ "

pH 7.4

Soap Hardness as $CaCO_3$ _____ PPM

Odor _____

Turbidity _____

REMARKS _____

WATER ANALYSIS

By N. H. Wellam

Date 5/1/42

Sample from Well No. 1 Rifle Range

Total Solids 364 PPM

Dissolved Solids 332 PPM

Suspended Solids 32 PPM

Volatile Solids _____ PPM

Phenol. Alk. as $CaCo_3$ 0 PPM

Total Alk. " " 284 "

Carbonates " " 0 "

Bicarbonates " " 284 "

Chlorides as Cl. 35 "

Sulphates as SO_4 10 "

Nitrites as No_2 0 "

Carbon Dioxide as CO_2 4 "

Silica as Sio_2 26.5 PPM

Ferrous Iron as Fe 0 "

Total Iron as Fe 0.2 "

Aluminum as Al. 2.1 "

Calcium as Ca. 82.6 "

Magnesium as Mg. 14.7 "

Sodium as Na. 27.6 "

pH 7.6

Soap Hardness as $CaCO_3$ 280 PPM

Odor Faint H_2S

Turbidity 10

REMARKS

WATER ANALYSIS

By N. H. Kellam

Date 4-17-42

Sample from Test Well Rifle Range

60 hrs Pumping

Total Solids	PPM	Dissolved Solids	PPM
Suspended Solids	PPM	Volatile Solids	PPM

Phenol. Alk. as $CaCo_3$	20 PPM	Silica as Sio_2	PPM
Total Alk. " "	292 "	Ferrous Iron as Fe	"
Carbonates " "	40 "	Total Iron as Fe	"
Bicarbonates " "	252 "	Aluminum as Al.	"
Chlorides as Cl.	35 "	Calcium as Ca.	"
Sulphates as SO_4	"	Magnesium as Mg.	"
Nitrites as No_2	"	Sodium as Na.	"
Carbon Dioxide as CO_2	0 "		

pH 8.0 Soap Hardness as $CaCO_3$ 300 PPM

Odor H_2S Turbidity

REMARKS

WATER ANALYSIS

By N. H. Kellam

Date 4/17/42

Sample from test Well Rifle Range

30 hrs Pumping

Total Solids 342 PPM Dissolved Solids 314 PPM

Suspended Solids 30 PPM Volatile Solids ____ PPM

Phenol. Alk. as $CaCo_3$ 16 PPM Silica as Sio_2 28.5 PPM

Total Alk. " " 286 " Ferrous Iron as Fe 0 "

Carbonates " " 32 " Total Iron as Fe 0.1 "

Bicarbonates " " 254 " Aluminum as Al. 4.7 "

Chlorides as Cl. 34 " Calcium as Ca. 69.2 "

Sulphates as SO_4 23 " Magnesium as Mg. 10.4 "

Nitrites as No_2 0 " Sodium as Na. 26.8 "

Carbon Dioxide as CO_2 0 "

pH 8.0 Soap Hardness as $CaCO_3$ 260 PPM

Odor H_2S Turbidity ____

REMARKS

WATER ANALYSIS

By N. H. Kellam

Date 4/16/42

Sample from Test Well Rifle Range

30 hrs Pumping

467' Deep

Total Solids _____ PPM Dissolved Solids _____ PPM

Suspended Solids _____ PPM Volatile Solids _____ PPM

Phenol. Alk. as $CaCo_3$ 16 PPM Silica as Sio_2 _____ PPM

Total Alk. " " 286 " Ferrous Iron as Fe _____ "

Carbonates " " 32 " Total Iron as Fe _____ "

Bicarbonates " " 254 " Aluminum as Al. _____ "

Chlorides as Cl. 34 " Calcium as Ca. _____ "

Sulphates as SO_4 _____ " Magnesium as Mg. _____ "

Nitrites as No_2 _____ " Sodium as Na. _____ "

Carbon Dioxide as CO_2 0 "

pH 8.0 Soap Hardness as $CaCO_3$ 260 PPM

Odor H_2S Distinct Turbidity _____

REMARKS _____

WATER ANALYSIS

By N. H. Kellam

Date 4-15-42

Sample from Test Well Rifle Range
15 hrs Pumping
462' Deep

Total Solids _____ PPM Dissolved Solids _____ PPM

Suspended Solids _____ PPM Volatile Solids _____ PPM

Phenol. Alk. as $CaCo_3$ 20 PPM Silica as Sio_2 _____ PPM

Total Alk. " " 324 " Ferrous Iron as Fe _____ "

Carbonates " " 40 " Total Iron as Fe _____ "

Bicarbonates " " 284 " Aluminum as Al. _____ "

Chlorides as Cl. 33 " Calcium as Ca. _____ "

Sulphates as SO_4 _____ " Magnesium as Mg. _____ "

Nitrites as No_2 _____ " Sodium as Na. _____ "

Carbon Dioxide as CO_2 0 "

pH 8.0 Soap Hardness as $CaCO_3$ 266 PPM

Odor H_2S Distinct Turbidity _____

REMARKS _____

WATER ANALYSIS

By N. H. Kellam

Date April 14-42

Sample from Test Well No. 1 Rifle Range

467' Deep

Total Solids _____ PPM Dissolved Solids _____ PPM

Suspended Solids _____ PPM Volatile Solids _____ PPM

Phenol. Alk. as $CaCo_3$ 0 PPM Silica as Sio_2 _____ PPM

Total Alk. " " 370 " Ferrous Iron as Fe _____ "

Carbonates " " 0 " Total Iron as Fe _____ "

Bicarbonates " " 370 " Aluminum as Al. _____ "

Chlorides as Cl. 35 " Calcium as Ca. _____ "

Sulphates as SO_4 _____ " Magnesium as Mg. _____ "

Nitrites as No_2 _____ " Sodium as Na. _____ "

Carbon Dioxide as CO_2 0 "

pH 8.2 Soap Hardness as $CaCO_3$ 270 PPM

Odor H_2S Very Distinct. Turbidity _____

REMARKS _____

S = RR 45

S_1 = RR 47

T = RR 46 — Not in Use

T_1 = RR 227 or 51 — Stone Bay

11330.2 CHEMICAL (83)
ANALYSIS