



North Carolina Department of Human Resources

Eastern Regional Office • 404 Saint Andrews Drive • Greenville, N. C. 27834

James G. Martin, Governor

Phillip J. Kirk, Jr., Secretary

April 16, 1986

CLW

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Commanding General
 US Marine Corps Base
 Camp Lejeune, NC 28542

ATTN: Utilities Director
 G. S. Johnson, Jr.

Dear Sir:

I visited the potable water treatment facilities aboard USMCB Camp Lejeune on 10 and 11 April 1986. I was accompanied during this visit by Mr. B. M. Frazelle, Jr. (Water Treatment Operator Foreman). The purpose of this visit was to update our files and records concerning the facility operations, treatment capacities, and construction work in progress as well as offer any suggestions for improvements in the process or daily operation and maintenance at the treatment facilities.

The routine plant operation and equipment maintenance are well organized and carried out. I was very pleased with the expansion and upgrading work recently completed or now in progress at several facilities.

We discussed several specific plant situations including: (1) A light film on the water surface at the filters in the Holcomb Boulevard facility may be from oil lubricated well pumps. (2) The maintenance level at the Tarawa Terrace and Camp Johnson facilities has dropped below the others. This is understandable, however, considering these are to be abandoned when the Holcomb Boulevard project is completed (estimated late 1986). (3) The water flow pattern at the Onslow Beach system is different from other facilities utilizing similar treatment. Normally, water is pumped from the wells through filters then through the ion exchange softeners, not divided. Additionally, filter backwash water is usually from the treated water system, not untreated well water.

We also discussed several items which may be applicable to more than one facility. These include: (1) The filters and softeners should be inspected annually for media loss and condition as well as any structural or operational abnormalities. (2) Covers for the brine (NaCl) day tanks will reduce some of the problems with surface corrosion. Installation and operation of dehumidifiers will also help this problem. (3) The existing treatment process consisting of aeration, lime addition, sedimentation, filtration (sand media), ion exchange (softening), chlorination, and phosphate (at three plants) may be altered to reduce chemical costs while maintaining acceptable quality. An in-plant or laboratory trial of the process may prove effective, depending on more detailed water quality analysis

Commanding General
Page 2
April 16, 1986

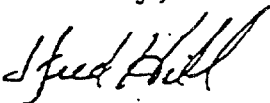
and study. (4) I noticed several open electrical service panels. A standing policy should be established to close or secure these at the end of the work or shift change, especially in the water plant areas. (5) Many water systems utilizing dry feeders for fluoride prefer sodium silicofluoride (due to its cost) instead of sodium fluoride (dissolves only to 4% solution). (6) Records of operations (including total water treated, filter and softener operations, chemical feed and dosage rates, etc.) should be reported monthly for each facility to our office in Raleigh.

I understand that planning is in progress for the development of private operations contracts for the water treatment facilities. Our office, in cooperation with the NC Attorney General's office, would like to review the final contract proposal to determine the operation's responsibilities as well as the system's liabilities.

As always, I appreciate the cooperation and attitude of the Base towards the State's Water Supply Branch and regulations.

If you have any questions or wish to discuss these comments further, please contact me.

Sincerely,



J. Fred Hill
Water Plant Consultant
Water Supply Branch
Environmental Health Section

bgb

Enclosures

cc: C. E. Rundgren
M. P. Bell

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North Carolina Department of Human Resources
 Eastern Regional Office • 404 Saint Andrews Drive • Greenville, N. C. 27834

James G. Martin, Governor

Phillip J. Kirk, Jr., Secretary

April 16, 1986

MEMORANDUM

TO: Charles E. Rundgren, Chairman
 N.C. Water Treatment Facility Operators Board of Certification

FROM: J. Fred Hill
 Water Plant Consultant *JFH*

SUBJECT: Water Treatment Plant Ratings
 USMC Base Camp Lejeune

Attached are the classification rating forms with the modification for lime softening with spiractors that we discussed.

The eight systems surveyed are directed, managed, and operated through a common administration and responsible operator in charge (Byron M. Frazelle, "A" certification).

I recommend the system be classified to an "A" rating based on the management organization and the diversified treatment techniques involved.

If you have any questions, please let me know.

bgb

Attachments

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USMC BASE
CAMP LEJEUNE
MANAGEMENT

Operations

LtCol. W. M. Rice
Base Maintenance Officer

Fred Cone
Asst. BMO

G. S. Johnson, Jr.
Utilities Director

David Southerland
Util. General Foreman

Willard Price
General Foreman

B. M. Frazelle (Mac)
WTP Operator Foreman

Monitoring & Surveillance

Natural Resources and Environmental
Affairs Division

Julian Wooten, Director
Danny Sharpe, Supervisory Ecologist
Elizabeth Metz, Supv. Chemist

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US MARINE CORPS BASE

Camp Lejeune, NC

WTP Operators

CLW

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<u>Name</u>	<u>Title</u>	<u>Certification</u>
Adkins, James M.	Water Treatment Plant Operator	C-Well
Barber, Elbert F.	Water Treatment Plant Operator	C
Brown, Leland R.	Industrial Equipment Repairer	C-Well
Campbell, Emery G.	Water Treatment Plant Operator	C
Cannon, Fred J.	Water Treatment Plant Operator	C
Huneycutt, Gaines B.	Water Plant Operator	C
Collins, Philip R.	Water Treatment Plant Operator	C
Duncan, Freddy	Water Treatment Plant Operator	B
Dunlap, James	Water Plant Operator	O
Ellis, Donald R.	Water Treatment Plant Operator Leader	C
Frazelle, Byron M.	Water Treatment Plant Operator Foreman	A
Hardison, Rufus C.	Water Treatment Plant Operator	C
Hartsoe, Joel R.	Water Treatment Plant Operator Leader	B-Well
Herring, L.	Water Plant Operator	O
Hill, Daniel E., Jr.	Water Treatment Plant Operator Leader	B-Well
Holland, Larry W.	Water Treatment Plant Operator Leader	B-Well
Phillips, Major	Water Treatment Plant Operator Helper	O
James, Nathaniel L.	Water Plant Operator	O
Kelly, Calvin D., Jr.	Water Treatment Plant Operator	C
Kolde, Sally	Clerk Typist	O
Lee, Jerry J.	Water Treatment Plant Operator	C
Marhelko, Michael J.	Water Treatment Plant Operator	C
Miller, Stanley L.	Water Treatment Plant Operator Leader	B
Milton, George D.	Water Treatment Plant Operator	C
Morton, Billie L.	Water Treatment Plant Operator	B
Mundt, Berton L.	Water Treatment Plant Operator	C
Odum, Cobrett G.	Water Treatment Plant Operator	C
Parker, Leon S.	Water Treatment Plant Operator	C-Well
Pehowic, Stanley A.	Water Treatment Plant Operator Leader	B
Petersen, Larry G.	Water Treatment Plant Operator	C-Well
Christensen, Nancy	Water Treatment Plant Operator Helper	O
Price, W. R.	Utilities Systems Plant General Foreman	B
Reiff, Howard F.	Water Treatment Plant Operator	C
Rich, Melvin P.	Industrial Equipment Mechanic	C
Riggs, Alvin T.	Water Treatment Plant Operator	C
Riggs, Joseph E.	Water Treatment Plant Operator	C
Smallwood, Scottie	Water Treatment Plant Operator	C
Stone, Tally	Water Treatment Plant Operator	C
Sumner, David W.	Industrial Equipment Repairer	C-Well
Sypnier, Richard A.	Water Treatment Plant Operator	C
Thomas, Tommie T.	Industrial Equipment Mechanic	C-Well
Vick, Ronnie C.	Instrument Mechanic	B-Well
Ward, William	Water Plant Operator	O
Wooten, Robert	Water Treatment Plant Operator	C-Well

NORTH CAROLINA DEPARTMENT OF HUMAN RESOURCES
 WATER TREATMENT FACILITY OPERATORS BOARD OF CERTIFICATION
 RATING VALUES FOR CLASSIFICATION OF WATER SUPPLY WORKS

NAME OF WATER TREATMENT FACILITY US MC Camp Lejeune - Holcomb Blvd.

CLASSIFICATION ASSIGNED FACILITY AND LEVEL OF CERTIFICATE REQUIRED B-W

GRADE CERTIFICATE HELD BY OPERATOR IN RESPONSIBLE CHARGE A
 Grade

NAME B. M. Frazelle
 (Operator)

OTHER OPERATORS

NAME GRADE CERTIFICATE HELD IF ANY

see list

<u>UNIT</u>	<u>RATING VALUE</u>	<u>ASSIGNED VALUE</u>
Ground	3	3
Surface	5	
Surface with Reservoir	6	
Coliform Bacteria less than 1.0 per 100 ml	2	2
Coliform Bacteria 1.0 - 100 per 100 ml	4	
Coliform Bacteria 100 - 1000 per 100 ml	6	
Coliform Bacteria 1000 - 5000 per 100 ml	8	
Coliform Bacteria 5000 - 20000 per 100 ml	12	
Aeration	2	
Coagulation <u>SPINACTOR - 1.00</u>	10	10
Sedimentation	5	
Filtration	10	10
Disinfection	10	10
Ion Exchange	5	
Adsorption	2	
Chemical Oxidation	2	
Softening	2	2
Stabilization	2	
Fluoridation	10	10
Raw Water Pumping	5	
Receiving Basin	1	
Finished Water Pumping	5	
Storage at Plant	1	
Storage - System	2	
Pumpage - from attached chart	1-50	12
	(1.204 mg)	
TOTAL POINTS		72

CLW

000001461

DATE 4-10-86

NORTH CAROLINA DEPARTMENT OF HUMAN RESOURCES
 WATER TREATMENT FACILITY OPERATORS BOARD OF CERTIFICATION
 RATING VALUES FOR CLASSIFICATION OF WATER SUPPLY WORKS

NAME OF WATER TREATMENT FACILITY USMC-Clemons HANNOT POINT

CLASSIFICATION ASSIGNED FACILITY AND LEVEL OF CERTIFICATE REQUIRED A

GRADE CERTIFICATE HELD BY OPERATOR IN RESPONSIBLE CHARGE A
 Grade

NAME B. M. Frazelle
 (Operator)

OTHER OPERATORS

<u>NAME</u>	<u>GRADE CERTIFICATE HELD IF ANY</u>
	CLW
	0000001462

<u>UNIT</u>	<u>RATING VALUE</u>	<u>ASSIGNED VALUE</u>
Ground	3	3
Surface	5	
Surface with Reservoir	6	
Coliform Bacteria less than 1.0 per 100 ml	2	2
Coliform Bacteria 1.0 - 100 per 100 ml	4	
Coliform Bacteria 100 - 1000 per 100 ml	6	
Coliform Bacteria 1000 - 5000 per 100 ml	8	
Coliform Bacteria 5000 - 20000 per 100 ml	12	
Aeration	2	
Coagulation <i>Spiractor-Gmc</i>	10	10
Sedimentation	5	
Filtration	10	10
Disinfection	10	10
Ion Exchange	5	
Adsorption	2	
Chemical Oxidation	2	
Softening	2	2
Stabilization	2	
Fluoridation	10	10
Raw Water Pumping	5	5
Receiving Basin	1	1
Finished Water Pumping	5	5
Storage at Plant	1	1
Storage - System	2	2
Pumpage - from attached chart	1-50	24
TOTAL POINTS	(3,241 mbs)	85

DATE 4-10-86

NORTH CAROLINA DEPARTMENT OF HUMAN RESOURCES
 WATER TREATMENT FACILITY OPERATORS BOARD OF CERTIFICATION
 RATING VALUES FOR CLASSIFICATION OF WATER SUPPLY WORKS

NAME OF WATER TREATMENT FACILITY USMC Camp Lejeune - Onslow Beach

CLASSIFICATION ASSIGNED FACILITY AND LEVEL OF CERTIFICATE REQUIRED B.W

GRADE CERTIFICATE HELD BY OPERATOR IN RESPONSIBLE CHARGE - A -
 Grade

NAME B. M. Frazelle
 (Operator)

OTHER OPERATORS

NAME GRADE CERTIFICATE HELD IF ANY

SEE LIST

CLW

0000001463

<u>UNIT</u>	<u>RATING VALUE</u>	<u>ASSIGNED VALUE</u>
Ground	3	3
Surface	5	
Surface with Reservoir	6	
Coliform Bacteria less than 1.0 per 100 ml	2	2
Coliform Bacteria 1.0 - 100 per 100 ml	4	
Coliform Bacteria 100 - 1000 per 100 ml	6	
Coliform Bacteria 1000 - 5000 per 100 ml	8	
Coliform Bacteria 5000 - 20000 per 100 ml	12	
Aeration	2	2
Coagulation	10	
Sedimentation	5	
Filtration	10	10
Disinfection	10	10
Ion Exchange	5	5
Adsorption	2	
Chemical Oxidation	2	
Softening	2	2
Stabilization	2	
Fluoridation	10	
Raw Water Pumping	5	5
Receiving Basin	1	
Finished Water Pumping	5	5
Storage at Plant	1	1
Storage - System	2	2
Pumpage - from attached chart	1-50	2
TOTAL POINTS	(.137 mg)	49

DATE 4-10-86

NORTH CAROLINA DEPARTMENT OF HUMAN RESOURCES
 WATER TREATMENT FACILITY OPERATORS BOARD OF CERTIFICATION
 RATING VALUES FOR CLASSIFICATION OF WATER SUPPLY WORKS

NAME OF WATER TREATMENT FACILITY 115 MC CAMP LEONARD - BROTTHOUSE PFD

CLASSIFICATION ASSIGNED FACILITY AND LEVEL OF CERTIFICATE REQUIRED B-2

GRADE CERTIFICATE HELD BY OPERATOR IN RESPONSIBLE CHARGE A
 Grade

NAME B. M. Frazelle
 (Operator)

OTHER OPERATORS

NAME _____ GRADE CERTIFICATE HELD IF ANY CLW

see list

0000001464

<u>UNIT</u>	<u>RATING VALUE</u>	<u>ASSIGNED VALUE</u>
Ground_____	3	<u>3</u>
Surface_____	5	_____
Surface with Reservoir_____	6	_____
Coliform Bacteria less than 1.0 per 100 ml_____	2	<u>2</u>
Coliform Bacteria 1.0 - 100 per 100 ml_____	4	_____
Coliform Bacteria 100 - 1000 per 100 ml_____	6	_____
Coliform Bacteria 1000 - 5000 per 100 ml_____	8	_____
Coliform Bacteria 5000 - 20000 per 100 ml_____	12	_____
Aeration_____	2	<u>2</u>
Coagulation_____	10	_____
Sedimentation_____	5	_____
Filtration_____	10	<u>10</u>
Disinfection_____	10	<u>10</u>
Ion Exchange_____	5	<u>5</u>
Adsorption_____	2	_____
Chemical Oxidation_____	2	_____
Softening_____	2	_____
Stabilization_____	2	<u>2</u>
Fluoridation_____	10	_____
Raw Water Pumping_____	5	<u>5</u>
Receiving Basin_____	1	_____
Finished Water Pumping_____	5	<u>5</u>
Storage at Plant_____	1	<u>1</u>
Storage - System_____	2	<u>2</u>
Pumpage - from attached chart_____	1-50	<u>5</u>
TOTAL POINTS	(452 mb)	<u>52</u>

DATE 4-10-86

NORTH CAROLINA DEPARTMENT OF HUMAN RESOURCES
 WATER TREATMENT FACILITY OPERATORS BOARD OF CERTIFICATION
 RATING VALUES FOR CLASSIFICATION OF WATER SUPPLY WORKS

NAME OF WATER TREATMENT FACILITY USMC - Camp Lejeune - Rifle Range

CLASSIFICATION ASSIGNED FACILITY AND LEVEL OF CERTIFICATE REQUIRED B-U

GRADE CERTIFICATE HELD BY OPERATOR IN RESPONSIBLE CHARGE A
 Grade

NAME B. M. Frazelle
 (Operator)

OTHER OPERATORS

NAME See list. GRADE CERTIFICATE HELD IF ANY CLW

0000001465

<u>UNIT</u>	<u>RATING VALUE</u>	<u>ASSIGNED VALUE</u>
Ground	3	3
Surface	5	
Surface with Reservoir	6	
Coliform Bacteria less than 1.0 per 100 ml	2	2
Coliform Bacteria 1.0 - 100 per 100 ml	4	
Coliform Bacteria 100 - 1000 per 100 ml	6	
Coliform Bacteria 1000 - 5000 per 100 ml	8	
Coliform Bacteria 5000 - 20000 per 100 ml	12	
Aeration	2	2
Coagulation	10	
Sedimentation	5	
Filtration	10	10
Disinfection	10	10
Ion Exchange	5	5
Adsorption	2	
Chemical Oxidation	2	
Softening	2	
Stabilization	2	2
Fluoridation	10	
Raw Water Pumping	5	5
Receiving Basin	1	
Finished Water Pumping	5	5
Storage at Plant	1	1
Storage - System	2	2
Pumpage - from attached chart	1-50	3
	(.262 mb)	
TOTAL POINTS		50

DATE 4-17-86

NORTH CAROLINA DEPARTMENT OF HUMAN RESOURCES
 WATER TREATMENT FACILITY OPERATORS BOARD OF CERTIFICATION
 RATING VALUES FOR CLASSIFICATION OF WATER SUPPLY WORKS

NAME OF WATER TREATMENT FACILITY 115 W. C. - 2nd Street THUNDER TOWER

CLASSIFICATION ASSIGNED FACILITY AND LEVEL OF CERTIFICATE REQUIRED B-6

GRADE CERTIFICATE HELD BY OPERATOR IN RESPONSIBLE CHARGE A
 Grade

NAME B. M. Frazelle
 (Operator)

OTHER OPERATORS

<u>NAME</u>	<u>GRADE CERTIFICATE HELD IF ANY</u>
	GLW
	0000001466

<u>UNIT</u>	<u>RATING VALUE</u>	<u>ASSIGNED VALUE</u>
Ground	3	3
Surface	5	
Surface with Reservoir	6	
Coliform Bacteria less than 1.0 per 100 ml	2	2
Coliform Bacteria 1.0 - 100 per 100 ml	4	
Coliform Bacteria 100 - 1000 per 100 ml	6	
Coliform Bacteria 1000 - 5000 per 100 ml	8	
Coliform Bacteria 5000 - 20000 per 100 ml	12	
Aeration	2	
Coagulation <u>Unit - SPIRATOR</u>	10	10
Sedimentation	5	
Filtration	10	10
Disinfection	10	10
Ion Exchange	5	
Adsorption	2	
Chemical Oxidation	2	
Softening	2	2
Stabilization	2	
Fluoridation	10	10
Raw Water Pumping	5	5
Receiving Basin	1	
Finished Water Pumping	5	5
Storage at Plant	1	1
Storage - System	2	2
Pumpage - from attached chart <u>(B12 m.s.)</u>	1-50	2
TOTAL POINTS		69

DATE 4-10-82

NORTH CAROLINA DEPARTMENT OF HUMAN RESOURCES
 WATER TREATMENT FACILITY OPERATORS BOARD OF CERTIFICATION
 RATING VALUES FOR CLASSIFICATION OF WATER SUPPLY WORKS

NAME OF WATER TREATMENT FACILITY USMC - Camp Johnson

CLASSIFICATION ASSIGNED FACILITY AND LEVEL OF CERTIFICATE REQUIRED B-W

GRADE CERTIFICATE HELD BY OPERATOR IN RESPONSIBLE CHARGE A
 Grade

NAME B. M. TRAZELLE
 (Operator)

OTHER OPERATORS

<u>NAME</u>	<u>GRADE CERTIFICATE HELD IF ANY</u>
	CLW
	0000001467

<u>UNIT</u>	<u>RATING VALUE</u>	<u>ASSIGNED VALUE</u>
Ground	3	
Surface	5	
Surface with Reservoir	6	
Coliform Bacteria less than 1.0 per 100 ml	2	
Coliform Bacteria 1.0 - 100 per 100 ml	4	
Coliform Bacteria 100 - 1000 per 100 ml	6	
Coliform Bacteria 1000 - 5000 per 100 ml	8	
Coliform Bacteria 5000 - 20000 per 100 ml	12	
Aeration	2	
Coagulation	10	
Sedimentation	5	
Filtration	10	
Disinfection	10	10
Ion Exchange	5	5
Adsorption	2	
Chemical Oxidation	2	
Softening	2	2
Stabilization	2	2
Fluoridation	10	
Raw Water Pumping	5	5
Receiving Basin	1	
Finished Water Pumping	5	5
Storage at Plant	1	1
Storage - System	2	2
Pumpage - from attached chart	1-50	2
TOTAL POINTS	340 016	51

DATE 4-10-86

NORTH CAROLINA DEPARTMENT OF HUMAN RESOURCES
 WATER TREATMENT FACILITY OPERATORS BOARD OF CERTIFICATION
 RATING VALUES FOR CLASSIFICATION OF WATER SUPPLY WORKS

NAME OF WATER TREATMENT FACILITY USMC Camp Lejeune - New River Air Station

CLASSIFICATION ASSIGNED FACILITY AND LEVEL OF CERTIFICATE REQUIRED B.W

GRADE CERTIFICATE HELD BY OPERATOR IN RESPONSIBLE CHARGE A
 Grade

NAME B.M. Frazelle
 (Operator)

OTHER OPERATORS

NAME

GRADE CERTIFICATE HELD IF ANY

SEE LIST

CLW

0000001468

<u>UNIT</u>	<u>RATING VALUE</u>	<u>ASSIGNED VALUE</u>
Ground	3	
Surface	5	
Surface with Reservoir	6	
Coliform Bacteria less than 1.0 per 100 ml	2	
Coliform Bacteria 1.0 - 100 per 100 ml	4	
Coliform Bacteria 100 - 1000 per 100 ml	6	
Coliform Bacteria 1000 - 5000 per 100 ml	8	
Coliform Bacteria 5000 - 20000 per 100 ml	12	
Aeration	2	
Coagulation <u>SPIRATOR - LINE</u>	10	10
Sedimentation	5	
Filtration	10	10
Disinfection	10	10
Ion Exchange	5	
Adsorption	2	
Chemical Oxidation	2	
Softening	2	
Stabilization <u>POCCERBINATION</u>	2	2 (-)
Fluoridation	10	
Raw Water Pumping	5	5
Receiving Basin	1	
Finished Water Pumping	5	5
Storage at Plant	1	1
Storage - System	2	2
Pumpage - from attached chart	1-50	5
TOTAL POINTS		57 (6)

DATE 4-15-86

WELL NO. _____

1) WELL SITE: Owned or controlled (100' radius)? OK - all wells

Sources of pollution/distance controlled by USMC

CLW

Adequate slope? _____ Flooding? _____

2) WELL HOUSE: Free of stored materials? yes **0000001469**

Properly drained? _____ Freeze protection? _____

Condition of house OK Locked? yes

3) WELL: Diameter VARIES Type const. GRAVEL Yield (GPM) VARIES Storage at well NO

Properly sealed? _____ TOTAL - 7224 gpm

35 wells Casing depth _____ Well depth _____ Meter Available? @ WTP

Concrete slab adequate? _____ NO @ 13 wells

Size of blow-off _____ Sample tap available _____

4) PUMP: Capacity MAX 450 MIN 105 AVE 350 Type pump VERT TURB (service pumps 1 @ 3000 gpm 3 @ 1500 gpm (2 w/aux pwr))

Height above floor (pump/casing) _____ Is pump leaking? _____

TREATMENT: Is this a central treatment facility? yes (one of eight)

Chlorinator: Type WET GAS Capacity 50/200 gpd In Service? yes

Spare parts or unit? spare unit (200 gpd) Proper ventilation? yes Gas Mas? AIRPK REPAIR KIT CH2 ALERT

Occupation burner Type PROPANE GAS - SUBMERGED Condition NEW - 85

Filter(s): Type GRAVITY No. 5 Media SAND-ANTHRACITE

Size 350 # ea Rate (gpm/ft²) 2.0 Head loss 3/4 @ 5 ft.

Type controls New Condition GOOD

Comments SURFACE WASH ea. filter

Softeners: Type SPINACTORS No. 5 Media SAND-catalyst

Size HYDRANT LINE (OT) Rate (gpm/ft²) 1.0 MGD ea Head loss _____

Type controls 1000 # Lime / MG H₂O Condition _____

Comments _____

Other treatment (Describe): WET N/F - GRAVIMETRIC (New 85)

Process Wastewater treatment (Describe): New - 3/4 to holding basin - sludge to sew sewer @ supernat. to RAW WATER

5) REMARKS AND RECOMMENDATIONS _____

Maintains pH @ 8.8 for stability

DEPARTMENT OF HUMAN RESOURCES
 DIVISION OF HEALTH SERVICES
 WELL INFORMATION

WELL NO. _____

ID NO. _____

1) WELL SITE: Owned or controlled (100' radius)? OK - All wells

Sources of pollution/distance NONE - CONTROLLED CLW, USMC

Adequate slope? _____ Flooding? 0000001470

2) WELL HOUSE: Free of stored materials? yes

Properly drained? yes Freeze protection? yes

Condition of house OK Locked? yes

3) WELL: Diameter varies Type const. GRAVEL Yield (gpm) varies Storage at well N

Properly sealed? _____ Properly vented? Total 1300 gpm

8 wells

Casing depth _____ Well depth _____ Meter available? @ WTP

Concrete slab adequate? _____ Size AW EN: @ 4

Size of blow-off _____ Sample tap available _____

4) PUMP: Capacity Min 133 Max 350 Avg 225 Type pump VERT TURBINE (usual)

Height above floor (pump/casing) _____ High serv. pumps
2 @ 700 gpm 2 @ 1

5) TREATMENT: Is this a central treatment facility? yes (one of eight) (Aux avail on)

Chlorinator: Type WET GAS Capacity 1 @ 50 2 @ 100 35 gpd In Service? yes

Spare parts or unit? 3 units Proper ventilation? yes Gas Mask? yes: Respir alert

Aerator: Type NONE Condition _____

Filter(s): Type GRAVITY No. 2 Media RAPID SAND

Size 18 X 20' Rate (gpm/ft²) 2.0 usual Head loss -

Type controls ROBERTS- Condition good

Comments all controls & meters OK: surface sweeps in each

Softeners: Type SPIRAATOR No. 2 Media CATALYST (SAN)

Size 700 gpm Rate (gpm/ft²) - Head loss -

Type controls HYDRATED LIME - Bulk Condition good

Comments _____

Other treatment (Describe): NOF with GRAVIMETRIC FEEDER - CALIBRATED &

Process wastewater treatment (Describe): SETTLING POND - DISCH. TO TRAN. SURF.

6) REMARKS AND RECOMMENDATIONS Oil film on filters may be from oil lubricator pumps - BE CAREFUL. (2) Be careful with NOF (most use NO2-

WELL NO. _____

ID NO. _____

1) WELL SITE: Owned or controlled (100' radius)? OK - ALL WELLS

Sources of pollution/distance CONTROLLED BY USMC

Adequate slope? _____ Flooding? _____

CLW

2) WELL HOUSE: Free of stored materials? YES

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Properly drained? _____ Freeze protection? _____

Condition of house OK Locked? YES

3) WELL: Diameter VARIED Type const. _____ Yield (GPM) VARIED Storage at well _____

Properly sealed? _____ Properly vented? _____

26
Wells

Casing depth _____ Well depth _____ Meter Available? @ WTP

Concrete slab adequate? _____ See Aux Eng @ 7 wells

Size of blow-off _____ Sample tap available YES

4) PUMP: Max Capacity 400 Min GPM 50 Type VERT TURB (Flow range 2 @ 1000 gpm
1 @ 500 gpm)

Height above floor (pump/casing) _____ Is pump leaking? POOSTERS 2 @ 125 gpm

5) TREATMENT: Is this a central treatment facility? YES (one of eight) 2 @ 750 gpm
3 @ 700 gpm

Chlorinator: Type WET GAS (T-CONT) Capacity 12/200 gpd In Service? YES

Spare parts or unit? SPARE w/200 gpd Proper ventilation? YES See Aux @ 7 wells: REPAIR KIT; ALARMS.

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Observation

Source: Type NATURAL PWS (SURFACED) Condition OK

Filter(s): Type GRAVITY (NO RATE CONTROLS) 3 ea Media SAND & ANTHRACITE

Size 17'x23' Rate (gpm/ft²) _____ Head loss B/O @ 2.5-3.0 OR 48 hrs

Type controls Flow controls only Condition OK @ SURFACE WASH

Comments Filter rate changes based on C.O.H. Filter overflow thru recarb unit

Softeners: Type SPIRATORS No. 2 Media SAND-CATALYST

Size _____ Rate (gpm/ft²) 1200 gpm ea Head loss _____

Type controls USES HYDRATED LIME Condition OK (Bulk Storage)

Comments Lime storage - SPARE UNIT

Other treatment (Describe): _____

Process Wastewater treatment (Describe): TO SANITARY

5) REMARKS AND RECOMMENDATIONS Aux generator @ WTP

DEPARTMENT OF HUMAN RESOURCES

DIVISION OF HEALTH SERVICES

WELL INFORMATION

WELL NO. _____

ID NO. _____

1) WELL SITE: Owned or controlled (100' radius)? OK - ALL wells

Sources of pollution/distance controlled by USMC

Adequate slope? _____ Flooding? CLW

2) WELL HOUSE: Free of stored materials? YES

Properly drained? _____ Freeze protection? _____

Condition of house OK Locked? YES

3) WELL: Diameter VARIED Type const. GRAVEL Yield (GPM) VARIED Storage at well N

Properly sealed? _____ Properly vented? _____

8 wells

Casing depth _____ Well depth _____ Water Available? @ WTP

Concrete slab adequate? _____ NO FOR 2 wells

Size of blow-off _____ Sample taken? YES

4) PUMP: Capacity 40 ^{MIN} 40 ^{MAX} 200 ^{AVG} 115 Type VERT TURBS (2000 RPM) - 1250'

Height above floor (pump/casing) _____ Is pump leaking? _____

5) TREATMENT: Is this a central treatment facility? yes (one of eight)

Chlorinator: Type W&T gas (150#) Capacity 10/30 ppd In Service? yes

Spare parts or unit? spare unit (50 ppd) Proper ventilation? yes AIR PACK: P/P/CL/CL

Aerator: Type NONE Condition _____

Filter(s): Type NONE No. _____ Media _____

Size _____ Rate (gpm/ft²) _____ Head loss _____

Type controls _____ Condition _____

Comments _____

Softeners: Type ION EXCHANGE No. 2 Media NO Zeolite

Size 72" Ø Rate (gpm/ft²) 180 ea Head loss = 10

Type controls _____ Condition Fair (some leaks)

Comments Repair @ 048 Hg - RISK SAT. FEEL. W/ DAY. TOUR INSIDE

Other treatment (Describe): Phosphate - 37F 1200 (2 gal/100 gal H₂O) (1.0n

Process wastewater treatment (Describe): dis. to SAN. SWIM.

6) REMARKS AND RECOMMENDATIONS: 1) valve leaks at 048 Hg 2) to 20' station - F&S

WELL NO. _____

WELL INFORMATION

ID NO. _____

1) WELL SITE: Owned or controlled (100' radius)? OK - All wells

Sources of pollution/distance sites controlled by USMC

Adequate slope? _____ Flooding? CLW

2) WELL HOUSE: Free of stored materials? yes

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Properly drained? _____ Freeze protection? _____

Condition of house OK Locked? yes

3) WELL: Diameter 6.5 in Type const. GRAVEL Yield (GPM) 111 → 236 Storage at well NO

Properly sealed? yes Properly vented? _____

Casing depth _____ Well depth _____ Meter Available? _____

Concrete slab adequate? _____ Size _____

Size of bio-off _____ Sample tap available Aux taps @ 2 wells

4) PUMP: Capacity 111 MAX 236 AVG 141 Type pump VERTICAL

Height above floor (pump/casing) _____ High Service Pumps

TREATMENT: Is this a central treatment facility? yes (100')

Chlorinator: Type WET GAS Capacity 50 gpd In Service? yes

Spare parts or unit? spare unit Proper ventilation? yes Gas mask? AIR pack Repair kit & alert.

Aerator: Type NONE Condition _____

Filter(s): Type PRESSURE No. 6 Media SAND

Size 84" Ø Rate (gpm/ft²) 127 gpm ca Head loss ±5-10 lbs

Type controls _____ Condition _____

Comments BACKWASHED daily - FLOESS of sludge in filter sides

Softeners: Type SPINACTOR No. 1 Media SAND-catalyst

Size 1.0 MAD Rate (gpm/ft²) _____ Head loss _____

Type controls Hydrated lime - BRGS Condition MIXER MOTOR NOISY

Comments _____

Other treatment (Describe): NaF - in line before SATURATOR - METER ON fill line

Process Wastewater treatment (Describe): WET 747 pump discharge to CAN. SOIL

5) REMARKS AND RECOMMENDATIONS Due to ...

DEPARTMENT OF HUMAN RESOURCES
DIVISION OF HEALTH SERVICES
WELL INFORMATION

WELL NO. _____

ID NO. _____

1) WELL SITE: Owned or controlled (100' radius)? OK - All wells
Sources of pollution/distance controlled by USAR
Adequate slope? _____ Flooding? _____

CLW

2) WELL HOUSE: Free of stored materials? yes **0000001474**
Properly drained? _____ Freeze protection? _____
Condition of house OK Locked? yes

3) WELL: Diameter VARIES Type const. GRAVEL Yield (GPM) VARIES Storage at well _____
Properly sealed? _____ Property marked? TOTAL 369 gpm

4 2 wells Casing depth _____ Well depth _____ Meter Available? yes
Concrete slab adequate? _____ See Aw @ 1 well
Size of blow-off _____ Sample tap available yes

4) PUMP: Capacity 210 ^{MIN} 159 ^{MAX} 185 Type pump VERT TURB
Height above floor (pump/casing) _____ service pumps
1 @ 1000 gpm (w/ 2/2)
1 @ 750 "

5) TREATMENT: Is this a central treatment facility? yes (one of eight) 1 @ 300
Chlorinator: Type WT gas (150) Capacity 10/30 ppd In Service? yes
Spare parts or unit? spare 1 @ 50 ppd Proper ventilation? yes Gas Mask? AIR PACK, RKT, i

Aerator: Type Pressurized - in line unit Condition OK - uses AIR COMP

Filter(s): Type Calgon (Pressure units) No. 2 Media Sand
Size 48" @ Rate (gpm/ft²) 37 gpm ea Head loss = 5'

Type controls Manual cycle Condition OK

Coagents Backwashed at 030 hrs - Uses raw water for B/W

Softeners: Type Calgon No. 2 Media Na Zeolite
Size 42" @ Rate (gpm/ft²) 75 gpm ea Head loss = 5'

Type controls manual cycle Condition OK - New Resin in 19

Comments Regenerated @ 080 hrs

Other treatment (Describe): _____

Process wastewater treatment (Describe): Settling pond - pumped to ditch

6) REMARKS AND RECOMMENDATIONS Should use TPTD water (or B/W) - Flow meter changed - now split thru filters & softeners - should all be the filters then softener (to extend resin life & replace man in dist. sys)