

DEPARTMENT OF THE NAVY
Memorandum

DATE: 09 November 1982

FROM: Ms. Betz, Quality Control Lab., Environmental Branch, NREAD

TO: Mr. Sharpe, Supervisory Ecologist, Environmental Branch, NREAD

CLW

SUBJ: Inorganic Analysis of Water Treatment Plants

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REF: (a) Marine Corps Order 6280.3 Safe Drinking Water
(b) Public Law No. 93-523 Safe Drinking Water Act
(c) NC Administrative Code Title 10, Chapter 10, Subchapter 10D, Section .0600-.2500
Rules Governing Public Water Supplies

ENCL: (1) Grainger Laboratories Results
(2) Revised Table of Results

1. According to References (a), (b), and (c), inorganic analysis for ground water systems is required to be done every three years. (Reference (c), Section .1625(a)(2)). Initial analysis of inorganics was arranged by LANTDIV with Jennings Lab, sampling was done by us in 1979. On 29 September 1982, the second sampling was done and analysis was performed by Grainger Labs. Enclosure (1) is Grainger's Table of Results. Enclosure (2) is a revised form of Enclosure (1) including information as the maximum contaminant levels or recommended levels. Below is an explanation of some terms and summary of the parameters.

2. The values with the less than sign (<) in front of them on Enclosures (1) and (2) mean that that parameter was not found to be present within the limits of the procedure. The numerical value is the lowest value that the procedure used can detect. Therefore if the parameter is present it is in a concentration less than the detectable limits of the procedure.

3. There are two types of limits shown on Enclosure (2). One is a maximum contaminant level (MCL) limit. If an MCL is exceeded then the State must be notified ASAP and public notification is required stating that the MCL has been exceeded. The other type is a Treatment limit. If it is exceeded then approved treatment needs to be added to control the level. Public notification is not required.

4. Below is a partial list of the parameters listed on Enclosure (1) and (2). These parameters have a MCL limit.

Arsenic	Chromium	Selenium
Barium	Lead	Silver
Cadmium	Mercury	Nitrate

As Enclosure (2) shows, none of the MCL's have been exceeded. All are well within limits.

5. Fluoride also has a MCL but it is dependent on temperature. At three plants, Hadnot Point, Holcomb Blvd, and Tarawa Terrace, we feed fluoride. At those three plants 1.0ppm is what is tried to maintain. At the rest of the plants, the fluoride level is that of naturally occurring fluoride. The MCAS system has some wells with high levels of fluoride.

6. Iron has a treatment limit. Camp Johnson and Onslow Beach showed high iron levels in 1979 and have continued to show them. Our lab runs weekly irons. Marine Corps Air Station,

Rifle Range and Courthouse Bay did not have high iron levels in 1979, however, they have shown up high occasionally on our weekly reports. For your information, below is a table of our lab results of weekly iron samples taken by water plant operators for September 1982.

Plant	1979	1982	7 Sep	14 Sep	21 Sep	28 Sep
Camp Johnson	1.35	0.673	0.32	0.50	0.30	0.30
Ouslow Beach	0.41	0.556	0.15	0.15	0.13	0.11
Courthouse Bay	0.02	0.536	0.30	0.36	0.40	0.23
Rifle Range	0.02	0.544	1.00	0.37	0.53	0.37
MCAS	0.04	0.338	0.50	0.12	0.30	0.32

The most common violator of the iron limit is actually Camp Johnson even though it did not hold true in September 1982.

7. Manganese has a treatment limit. According to Grainger's results no additional treatment is necessary for manganese.

8. About pH, it was deleted from Enclosure (2) because Grainger's pH is not reportable. pH is a field measure and to be valid, it has to be measured at the time of collection. For compliance, pH was measured and recorded on 3 September 1982, when Sodium and Corrosivity samples were taken.

9. Overall there are no major problems with our inorganic results. The only limits exceeded were Iron. Review of the operations and treatment processes at those plants might help explain the iron levels. I have no explanations, just data that has shown and has been reported to Utilities that they have (the five plants) on occasion or regularly exceeded limits.


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Supervisory Chemist

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TABLE OF INORGANIC ANALYSIS RESULTS

Parameter	Limits	HP	HB	TT	CJ	MCAS	RR	CHB	OB
Arsenic	0.05 ppm	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Barium	1.00 ppm	0.01	0.03	<0.01	0.04	0.04	0.04	<0.01	0.01
Cadmium	0.010 ppm	0.0011	<0.0005	<0.0005	<0.0005	<0.0005	0.0007	0.0011	<0.0005
Chromium	0.05 ppm	<0.003	<0.003	<0.003	0.017	<0.003	0.004	<0.003	<0.003
Lead	0.05 ppm	<0.01	<0.01	<0.01	0.01	0.01	<0.01	<0.01	<0.01
Manganese	0.05 ppm	<0.002	<0.002	0.006	0.015	0.004	0.030	0.011	0.025
Mercury	0.002 ppm	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Iron	0.30 ppm	0.045	0.037	0.020	0.673	0.338	0.544	0.536	0.556
Selenium	0.01 ppm	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.007
Silver	0.05 ppm	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001
Fluoride	1.40 ppm	0.994	0.856	1.00	0.139	0.924	0.126	0.109	0.146
Nitrate	10 ppm	0.17	<0.05	0.11	<0.05	<0.05	<0.05	0.11	<0.05

All results are in ppm(mg/l).

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