Ph25 Chemical Sampling / Arsenic Rule

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Presentation Outline

Contaminant Regulations

- Primary Contaminants
- Secondary Contaminants
- Unregulated Contaminants

Outside Sampling

- Certified Labs

Note – Ground Water System routine monitoring is every three years;
Surface Water System routine monitoring is every year at each entry point;
Currently, LDHH personnel perform sampling functions for Ph25 .

Defining Primary and Secondary Contaminants

Primary Contaminants

- The Maximum Contaminant Levels (MCL) are Enforceable Standards.
- MCLs for Primary Contaminants are set by US EPA to limit exposure to contaminants that adversely affect public health
- Includes Bacteria (*E. Coli*) and Chemicals (Arsenic, Cadmium, Diquat, TTHMs, etc.)

Secondary Contaminants

- The Maximum Contaminant Levels (MCL) are Non-Enforceable Standards.
- Refers to contaminants that may cause **cosmetic** (skin or tooth discoloration) or **aesthetic** effects (such as taste, odor, or color)
- Includes iron, pH, corrosivity, total dissolved solids, manganese, etc.

- Sampling Location
  - Ground Water – Initial sampling is conducted at the well prior to treatment
  - Surface Water – Sampling is conducted at the Entry Point to Distribution (EPTDS)

Roster of Primary Contaminants

Regulated Inorganics

Analyte	MCL[1]	UOM[2]
Antimony	0.006	mg/L
Arsenic	0.010	mg/L
Barium	2	mg/L
Beryllium	0.004	mg/L
Cadmium	0.005	mg/L
Chromium	0.1	mg/L
Copper	1.3	mg/L
Lead	0.015	mg/L
Fluoride	4	mg/L
Mercury	0.002	mg/L
Cyanide	0.2	mg/L
Selenium	0.05	mg/L
Nitrate	10	mg/L
Nitrite	1	mg/L

mg = 1ppm ug= 1ppb

[1] MCL – maximum contaminant level
[2] UOM – unit of measure

Inorganics – Nitrate (NO3) and Nitrite (NO2)

Routine Monitoring

- Sampling is conducted at the wellhead and is submitted to the LDHH Metairie Lab for analysis.
- Samples are analyzed as Total Nitrate+Nitrite
- All PWSs are sampled each year

Analyte	MCL	UOM
Nitrate	10	mg/L
Nitrite	1	mg/L

Flagged Samples

- Trigger Level:
  - Total Nitrate+Nitrite = or > 1 mg/L
- PWSs with a Total Nitrate+Nitrite result exceeding 1 mg/L are reviewed to ensure that the system is disinfecting continuously.

Inorganics – Metals and Cyanide

Routine Monitoring

- C and NTNC systems
- Sampling is conducted every three years at the wellhead and is submitted to the LDHH Metairie Lab for analysis.

Flagged Samples

- Trigger Level:
  - Analyte level = or > ½ MCL
- Follow-up monitoring at the EPTDS conducted to determine if Quarterly monitoring is required.

Analyte	MCL	UOM
Antimony	0.006	mg/L
Arsenic	0.010	mg/L
Barium	2	mg/L
Beryllium	0.004	mg/L
Cadmium	0.005	mg/L
Chromium	0.1	mg/L
Copper	1.3	mg/L
Lead	0.15	mg/L
Mercury	0.002	mg/L
Selenium	0.05	mg/L
Cyanide	0.2	mg/L
Fluoride	4.0	mg/L

Roster of Primary Contaminants (continued)

Regulated Synthetic Organics (including Pesticides and Herbicides)

Analyte	MCL	UOM
2,4-D	0.07	MG/L
2,4,5-TP (Silvex)	0.05	UG/L
Alachlor	2	UG/L
Atrazine	3	UG/L
Benzo(a)pyrene	0.2	UG/L
Carbofuran	0.04	MG/L
Chlordane	2	UG/L
Dalapon	0.2	MG/L
Bis (2-ethylhexyl) Phthalate	6	UG/L
Bis (2- ethylhexyl) Adipate	0.4	MG/L

Analyte	MCL	UOM
Dibromochloropropane	0.2	UG/L
Dinoseb	7	UG/L
Dioxin (2,3,7,8-TCDD)	0.00003	UG/L
Diquat	0.02	MG/L
Endothall	0.1	MG/L
Endrin	2	UG/L
Ethylene Dibromide	0.05	UG/L
Glyphosate	0.7	MG/L
Heptachlor	0.4	UG/L
Heptachlor epoxide	0.2	UG/L

Analyte	MCL	UOM
Hexachlorobenzene	1	UG/L
Hexachlorocyclopentadiene	0.05	MG/L
Lindane	2	UG/L
Methoxychlor	0.04	MG/L
Oxamyl [Vydate]	0.2	MG/L
PCBs [Polychlorinate biphenyls]	0.5	UG/L
Pentachlorophenol	1	UG/L
Picloram	0.5	MG/L
Simazine	4	UG/L
Toxaphene	3	UG/L

Synthetic Organics

Routine Monitoring

- C and NTNC systems
- Sampling is conducted every three years at the wellhead and is submitted to the LDHH Metairie Lab for analysis.

Flagged Samples

- Trigger Level:
  - Analyte = or > ½ MCL
- Follow-up monitoring at the EPTDS conducted to determine if Quarterly monitoring is required.

Analyte	MCL	UOM
2,4-D	0.07	MG/L
2,4,5-TP (Silvex)	0.05	UG/L
Alachlor	2	UG/L
Atrazine	3	UG/L
Benzo(a)pyrene	0.2	UG/L
Carbofuran	0.04	MG/L
Chlordane	2	UG/L
Dalapon	0.2	MG/L
Bis (2-ethylhexyl) Phthalate	6	UG/L
Bis (2- ethylhexyl) Adipate	0.4	MG/L

Analyte	MCL	UOM
Hexachlorobenzene	1	UG/L
Hexachlorocyclopentadiene	0.05	MG/L
Lindane	2	UG/L
Methoxychlor	0.04	MG/L
Oxamyl [Vydate]	0.2	MG/L
PCBs [Polychlorinate biphenyls]	0.5	UG/L
Pentachlorophenol	1	UG/L
Picloram	0.5	MG/L
Simazine	4	UG/L
Toxaphene	3	UG/L

Analyte	MCL	UOM
Dibromochloropropane	0.2	UG/L
Dinoseb	7	UG/L
Dioxin (2,3,7,8-TCDD)	0.00003	UG/L
Diquat	0.02	MG/L
Endothall	0.1	MG/L
Endrin	2	UG/L
Ethylene Dibromide	0.05	UG/L
Glyphosate	0.7	MG/L
Heptachlor	0.4	UG/L
Heptachlor epoxide	0.2	UG/L

Roster of Primary Contaminants (continued)

Regulated Volatile Organics

Analyte	MCL	UOM
Benzene	5	UG/L
Carbon Tetrachloride	5	UG/L
Chlorobenzene	0.1	MG/L
o-Dichlorobenzene	0.6	MG/L
p-Dichlorobenzene	75	UG/L
1,1-Dichloroethylene	7	UG/L
cis-1,2-Dichloroethylene	70	UG/L
Trans-1,2-Dichloroethylene	100	UG/L
Dichloromethane	5	UG/L
1,2-Dichloroethane	5	UG/L
1,2-Dicloropropane	5	UG/L

Analyte	MCL	UOM
Ethylbenzene	0.7	MG/L
Styrene	0.1	MG/L
Tetrachloroethylene	5	UG/L
1,2,4-Trichlorobenzene	0.07	MG/L
1,1,1-Trichlorethane	0.2	MG/L
1,1,2-Trichloroethane	5	UG/L
Trichloroethylene	5	UG/L
Toluene	1	MG/L
Vinyl Chloride	2	UG/L
Xylenes	10	MG/L

Volatile Organics

Routine Monitoring

- C and NTNC systems
- Sampling is conducted every three years at the wellhead and is submitted to the LDHH Metairie Lab for analysis.

Flagged Samples

- Trigger Level:
  - Analyte = or > ½ MCL
- Follow-up monitoring at the EPTDS conducted to determine if Quarterly monitoring is required.

Analyte	MCL	UOM
Ethylbenzene	0.7	MG/L
Styrene	0.1	MG/L
Tetrachloroethylene	5	UG/L
1,2,4-Trichlorobenzene	0.07	MG/L
1,1,1-Trichlorethane	0.2	MG/L
1,1,2-Trichloroethane	5	UG/L
Trichloroethylene	5	UG/L
Toluene	1	MG/L
Vinyl Chloride	2	UG/L
Xylenes	10	MG/L

Analyte	MCL	UOM
Benzene	5	UG/L
Carbon Tetrachloride	5	UG/L
Chlorobenzene	0.1	MG/L
o-Dichlorobenzene	0.6	MG/L
p-Dichlorobenzene	75	UG/L
1,1-Dichloroethylene	7	UG/L
cis-1,2-Dichloroethylene	70	UG/L
Trans-1,2-Dichloroethylene	100	UG/L
Dichloromethane	5	UG/L
1,2-Dichloroethane	5	UG/L
1,2-Dicloropropane	5	UG/L

Radionuclides

Routine Monitoring

- Gross Alpha and Gross Beta sampling is conducted every three years at the wellhead and is submitted to the LDHH Metairie Lab for analysis.

Resampling with Speciation

- Trigger Levels:
  - Gross Alpha >= 3 pCi/L
  - Gross Beta >= 8 pCi/L
- Sampling is conducted at the Entry Point to Distribution (EPTDS) for the source that exceeded the trigger level.
- Samples that exceed the trigger level can be speciated for additional analysis.

Analyte	MCL	UOM
Gross Beta	4	mrem/yr
Gross Alpha	15	pCi/L
Radium 226+228 Combined	5	pCi/L
Uranium	30	µg/L

Secondary Contaminants

Routine Monitoring

- C and NTNC systems
- Sampling is conducted at the wellhead and is submitted to the LDHH Metairie Lab for analysis

Increased Monitoring

- Not Applicable

Analyte	Secondary Standard	UOM
Total Alkalinity	N/A	
Chloride	250	mg/L
Color	15	Color units
Fluoride	2.0	mg/L
Total Hardness	N/A	
Iron	0.3	mg/L
Manganese	0.05	mg/L
pH	6.5-8.5	
Potassium	N/A	
Sodium	N/A	
Total Dissolved Solids	500	mg/L
Sulfate	250	mg/L
Temperature	N/A	
Turbidity	N/A	
Zinc	5.0	mg/l

Unregulated Contaminants - Identification

Contaminant Candidate List (CCL)

- A list of Unregulated Contaminants that are to be considered for MCL adoption
  - EPA is mandated by the 1986 SDWA amendments to produce a CCL list every 5 years
- Sampling is handled under/through the Unregulated Contaminants Monitoring Regulation (UCMR)

Third CCL List

- Draft List released in February 2008
- Of approximately 7,500 EPA evaluated chemicals and microbes
  - 93 Chemical contaminants
  - 11 Microbiological contaminants

Unregulated Contaminants – UCMR3

Sampling Responsibility

- Large PWSs (Population: 10,000+)
  - PWSs must pay for UCMR3 sampling
  - Only EPA Approved Labs can be utilized
- Small PWSs
  - EPA is paying for analysis.
  - Sample kits are shipped out from GLEC (EPA-contractor) a few weeks prior to required sample collection
  - Kits will be sent directly to the PWS to have collection and submission handled by a system Operator

Reporting Responsibility

- Detections must be reported in Consumer Confidence Report (CCR)

Assessment Monitoring only

- Final Rule has been published
- Monitoring planned for January 2013 to December 2015

UCMR 3 – Contaminants

- Perfluorinated Chemicals (EPA Method 537)
  - Perfluorooctane sulfonate (PFOS)
  - Perfluorooctanonic acid (PFOA)
  - Perfluoroheptanoic acid (PFHpA)
  - Perfluorononanoic acid (PFNA)
  - Perfluorobutane sulfonic acid (PFBS)
  - Perfluorohexane sulfonic acid (PFHxS)

- Metals (EPA Method 200.8)
  - Cobalt
  - Molybdenum
  - Strontium
  - Vanadium
  - Chromium

Volatile Organic Compounds (EPA Method 524.3)

1,1-Dichloroethane
1,2,3-Trichloropropane
1,3-Butadiene
Bromochloromethane
Chlorodifluoromethane
Chloromethane
Methyl bromide

- EPA Method 522
  - 1,4-Dioxane

- EPA Method 300.1
  - Chlorate

UCMR 3 – Contaminants

Pharmaceuticals (EPA Method 539)

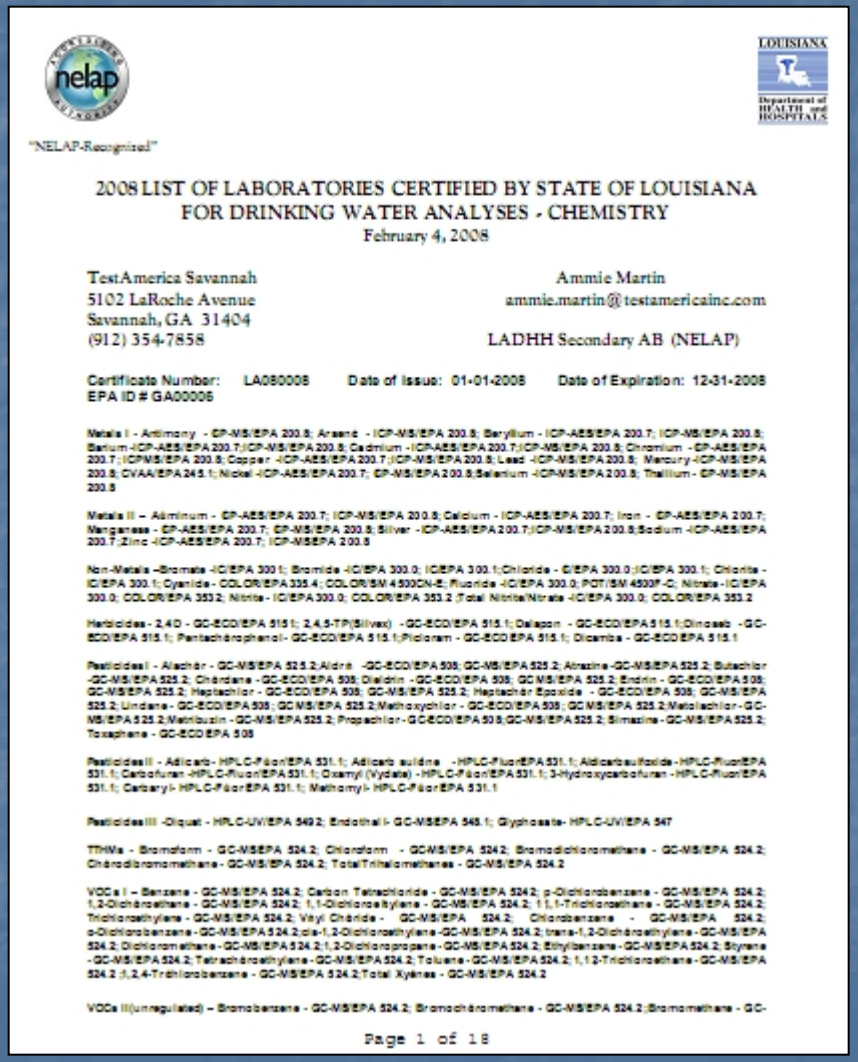
- 17-α-Ethynylestradiol
- 17-β-Estradiol
- Equilin
- Estriol
- Estrone
- Testosterone
- 4-Androstene-3,17-dione

- Microbials
  - 2 viruses
    - Enterovirus (qPCR & cell culture)
    - Norovirus (qPCR)
  - "Indicator organisms"
    - Total coliform
    - *E. coli*
    - Enterococci
    - Coliphage
    - Aerobic spores

Outside Sampling

Submission of Outside Sampling Analysis

- All new sources must be sampled & analyzed for Ph25 Analytes and have results approved by LDHH prior to being placed on line.
- Checklist
  - Lab certified by LDHH to handle analysis
  - Hard copy of entire Lab Report submitted to LDHH
  - Clear indication of PWS, Facility, and Sample Pt included with Results



"NELAP-Recognized"

2008 LIST OF LABORATORIES CERTIFIED BY STATE OF LOUISIANA
FOR DRINKING WATER ANALYSES - CHEMISTRY
February 4, 2008

TestAmerica Savannah
5102 LaRoche Avenue
Savannah, GA 31404
(912) 354-7858

Ammie Martin
ammie.martin@testamericainc.com

LADHH Secondary AB (NELAP)

Certificate Number: LA080008 Date of Issue: 01-01-2008 Date of Expiration: 12-31-2008
EPA ID # GA00006

Metals I - Antimony - ICP-MS/EPA 200.8; Arsenic - ICP-MS/EPA 200.8; Beryllium - ICP-AES/EPA 200.7; ICP-MS/EPA 200.8; Barium -ICP-AES/EPA 200.7;ICP-MS/EPA 200.8; Cadmium -ICP-AES/EPA 200.7;ICP-MS/EPA 200.8; Chromium - ICP-AES/EPA 200.7; ICPMS/EPA 200.8; Copper -ICP-AES/EPA 200.7;ICP-MS/EPA 200.8; Lead -ICP-MS/EPA 200.8; Mercury -ICP-MS/EPA 200.8; CVAA/EPA 245.1; Nickel -ICP-AES/EPA 200.7; ICP-MS/EPA 200.8;Selenium -ICP-MS/EPA 200.8; Thallium - ICP-MS/EPA 200.8

Metals II – Aluminum - ICP-AES/EPA 200.7; ICP-MS/EPA 200.8; Calcium - ICP-AES/EPA 200.7; Iron - ICP-AES/EPA 200.7; Manganese - ICP-AES/EPA 200.7; ICP-MS/EPA 200.8; Silver -ICP-AES/EPA 200.7;ICP-MS/EPA 200.8;Sodium -ICP-AES/EPA 200.7;Zinc -ICP-AES/EPA 200.7; ICP-MS/EPA 200.8

Non-Metals –Bromate -IC/EPA 300.1; Bromide -IC/EPA 300.0; IC/EPA 300.1;Chloride - IC/EPA 300.0;IC/EPA 300.1; Chlorite - IC/EPA 300.1; Cyanide - COLOR/EPA 335.4; COLOR/SW 4500CN-E; Fluoride -IC/EPA 300.0; POT/SW 4500F-C; Nitrate - IC/EPA 300.0; COLOR/EPA 353.2; Nitrite - IC/EPA 300.0; COLOR/EPA 353.2 Total Nitrite/Nitrate -IC/EPA 300.0; COLOR/EPA 353.2

Herbicides - 2,4D - GC-ECD/EPA 515.1; 2,4,5-TP(Silvex) - GC-ECD/EPA 515.1; Dalapon - GC-ECD/EPA 515.1;Dinoseb - GC-ECD/EPA 515.1; Pentachlorophenol - GC-ECD/EPA 515.1;Picloram - GC-ECD/EPA 515.1; Dicamba - GC-ECD/EPA 515.1

Pesticides I - Alachlor - GC-MS/EPA 525.2;Aldrin -GC-ECD/EPA 508; GC-MS/EPA 525.2; Atrazine -GC-MS/EPA 525.2; Butachlor -GC-MS/EPA 525.2; Chlordane - GC-ECD/EPA 508; Dieldrin - GC-ECD/EPA 508; GC MS/EPA 525.2; Endrin - GC-ECD/EPA 508; GC-MS/EPA 525.2; Heptachlor - GC-ECD/EPA 508; GC-MS/EPA 525.2; Heptachlor Epoxide - GC-ECD/EPA 508; GC-MS/EPA 525.2; Lindane - GC-ECD/EPA 508; GC MS/EPA 525.2;Methoxychlor - GC-ECD/EPA 508; GC MS/EPA 525.2;Metolachlor - GC-MS/EPA 525.2;Metribuzin - GC-MS/EPA 525.2; Propachlor - GC-ECD/EPA 508;GC-MS/EPA 525.2; Simazine - GC-MS/EPA 525.2; Toxaphene - GC-ECD/EPA 508

Pesticides II - Aldicarb - HPLC-FluorEPA 531.1; Aldicarb sulfone - HPLC-FluorEPA 531.1; Aldicarbsulfoxide - HPLC-FluorEPA 531.1; Carbofuran -HPLC-FluorEPA 531.1; Oxamyl (Vydate) - HPLC-FluorEPA 531.1; 3-Hydroxycarbofuran - HPLC-FluorEPA 531.1; Carbaryl - HPLC-FluorEPA 531.1; Methomyl - HPLC-FluorEPA 531.1

Pesticides III -Diquat - HPLC-UV/EPA 549.2; Endothal - GC-MS/EPA 548.1; Glyphosate- HPLC-UV/EPA 547

TTHMs - Bromoform - GC-MS/EPA 524.2; Chloroform - GC-MS/EPA 524.2; Bromodichloromethane - GC-MS/EPA 524.2; Chlorodibromomethane - GC-MS/EPA 524.2; TotalTrihalomethanes - GC-MS/EPA 524.2

VOCs I – Benzene - GC-MS/EPA 524.2; Carbon Tetrachloride - GC-MS/EPA 524.2; p-Dichlorobenzene - GC-MS/EPA 524.2; 1,2-Dichloroethane - GC-MS/EPA 524.2; 1,1-Dichloroethylene - GC-MS/EPA 524.2; 1,1,1-Trichloroethane - GC-MS/EPA 524.2; Trichloroethylene - GC-MS/EPA 524.2; Vinyl Chloride - GC-MS/EPA 524.2; Chlorobenzene - GC-MS/EPA 524.2; o-Dichlorobenzene - GC-MS/EPA 524.2;cis-1,2-Dichloroethylene -GC-MS/EPA 524.2; trans-1,2-Dichloroethylene - GC-MS/EPA 524.2; Dichloromethane - GC-MS/EPA 524.2;1,2-Dichloropropane - GC-MS/EPA 524.2; Ethylbenzene - GC-MS/EPA 524.2; Styrene - GC-MS/EPA 524.2; Tetrachloroethylene - GC-MS/EPA 524.2; Toluene - GC-MS/EPA 524.2; 1,1,2-Trichloroethane - GC-MS/EPA 524.2 ;1,2,4-Trichlorobenzene - GC-MS/EPA 524.2;Total Xylenes - GC-MS/EPA 524.2

VOCs II(unregulated) – Bromobenzene - GC-MS/EPA 524.2; Bromochloromethane - GC-MS/EPA 524.2;Bromomethane - GC-

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For a current list of LDHH certified labs, go to:
http://new.dhh.louisiana.gov/index.cfm/page/963

Bobby Jindal
GOVERNOR

Bruce D.
SECRETARY

State of Louisiana

Department of Health and
Center for Environmental Health Services

11/9/2011

To: PWSID:
PWS Name
Address
City LA 70072

Re: Chemical Analysis Conducted at the OPH Metairie Laboratory

This letter is to acknowledge that the Louisiana Office of Public Health (OPH) – Engineering Services has received and reviewed the attached drinking water monitoring results. Water samples were collected from the above supply system by Regional OPH staff and were submitted to the Office of Public Health Chemistry Laboratory for analysis.

Please review and retain the enclosed results for your water system. Results that were less than the Laboratory's Minimum Detection Limit (MDL) are indicated by either the text "less than" or a value of zero. A result less than the Laboratory's MDL equates to a Non-Detection. Under 40 CFR §141.33 records of chemical analysis must be retained for a minimum of 10 years.

Sampling Summary

Date of Sampling : 9/21/2011 **Facility : TP001 TREATMENT PLANT**
AD59579 Nitrate

Bobby Jindal
GOVERNOR

Bruce D.
SECRETARY

State of Louisiana

Department of Health and
Center for Environmental Health Services

11/9/2011

To: PWSID:
PWS Name
Address
City LA 70118

Re: Chemical Analysis Conducted at the OPH Metairie Laboratory

This letter is to acknowledge that the Louisiana Office of Public Health (OPH) – Engineering Services has received and reviewed the attached drinking water monitoring results. Water samples were collected from the above supply system by Regional OPH staff and were submitted to the Office of Public Health Chemistry Laboratory for analysis.

Please review and retain the enclosed results for your water system. Results that were less than the Laboratory's Minimum Detection Limit (MDL) are indicated by either the text "less than" or a value of zero. A result less than the Laboratory's MDL equates to a Non-Detection. Under 40 CFR §141.33 records of chemical analysis must be retained for a minimum of 10 years.

Sampling Summary

Date of Sampling : 8/15/2011 **Facility : TP001 SURFACE WATER TREATMENT PLANT**
ADxxxxx Nitrate

Flagged Sample(s)

Sample ID	Flagged Analyte	Flagged Reason	Follow Up Action (if necessary)
ADxxxxx	Nitrate-Nitrite	Nitrate-Nitrite = 2 mg/l	Confirm Continuous Disinfection

From: LOUISIANA DEPT OF HEALTH & HOSPITALS
PUBLIC HEALTH LABORATORIES
3101 WEST NAPOLEON
METAIRIE, LA 70001
(504) 219-4664

Thursday, September 01, 2011

To: LA TECH UNIVERSITY W S
PWS ID 1061012 PROJECT 838
LOUISIANA TECH UNIV
P O BOX 10288 TECH STA
RUSTON LA 71272

The following analytical results have been obtained for the indicated sample(s) which was submitted to this laboratory:

Sample ID: AD50800 POC ID: 8MCY-SNR Report Reprint

Facility ID: 1061012
Point of Collection: WELL #3, GRAHAM DORM
Sample collector: S RAY
Sample collection date: 02/14/2011 Time: 1:48:00 PM
Lab Submittal date: 02/16/2011 Time: 8:00:00 AM

Component Name	Units	Results	Component MDL
Nitrate-N	mg/liter	0	0.1

Sample Comments:

Sample ID: AD50801 POC ID: 8MCY-SSR Report Reprint

Facility ID: 1061012
Point of Collection: WELL #3, GRAHAM DORM
Sample collector: S RAY
Sample collection date: 02/14/2011 Time: 1:48:00 PM
Lab Submittal date: 02/16/2011 Time: 8:00:00 AM

Component Name	Units	Results	Component MDL
Total Alkalinity	mg/l as CaCO3	141.2	10
Total Hardness	mg/l as CaCO3	7.4	1.4
pH	units	7.95	1.0
pH measurement temperature	deg C	19	1
Chloride	mg/liter	31.5	10
Fluoride	mg/liter	0.1	0.10
Sulfate	mg/l as SO4	9	1
Potassium	mg/liter	2.8	0.1
Iron	mg/liter	3.77	0.01
Manganese	mg/liter	0.04	0.01
Sodium	mg/liter	105.8	0.1

Bobby Jindal
GOVERNOR

Bruce D. Greenstein
SECRETARY

State of Louisiana

Department of Health and Hospitals
Center for Environmental Health Services

5/8/2012

To: PWSID: LA1001001
CHURCH POINT TOWN OF WATER SYSTEM
102 CHURCH ST
CHURCH POINT LA 70525

Re: 2012 Annual Certification of the Use of Acrylamide and Epichlorohydrin in Drinking Water

Choose One of the Following:

☐ The PWS **does** utilize polymer(s) that contain Acrylamide and/or Epichlorohydrin.

☐ The PWS **does not** utilize polymer(s) that contain Acrylamide and/or Epichlorohydrin.

☐ The PWS **purchases 100%** of its water from another public water system.

Wholesaler Info: PWS ID#: _____ NAME: _____

Polymer Inventory:

Note: *To be filled out only by PWSs utilizing polymer(s) containing Acrylamide and/or Epichlorohydrin.*

PRODUCT	PRODUCT MAX USE RATE	% OF EPICHLOROHYDRIN / ACRYLAMIDE IN PRODUCT	MAX EPICHLOROHYDRIN / ACRYLAMIDE DOSAGE
_____	_____ PPM	Acrylamide _____ % Epichlorohydrin _____ %	Acrylamide _____ PPM Epichlorohydrin _____ PPM
☐ YES ☐ NO Is polymer addition being utilized for Corrosion Control?			

I certify under penalty of law that the information contained herein is true and correct based upon my best knowledge.

_____ _____ _____
Full Name Signature Date

This form must be submitted each calendar year or when the chemical usage changes. PWSs utilizing multiple polymers containing Acrylamide and/or Epichlorohydrin must complete a form for each polymer. Please complete this form and mail to the following address by **4/1/2012.**

DHH/OPH – Center for Environmental Health Services
Attn: John Z. French, P.E.
PO Box 4489 Bin# 10 Box #3
Baton Rouge, La 70821-4489

Please contact John Z. French at (225) 342-7392 or by email at john.french@la.gov if you need assistance with meeting your reporting requirement.

Arsenic Rule

Health Effects

- **Cancers Associated with Arsenic in Drinking Water**
  - Skin
  - Bladder
  - Lung
  - Kidney
  - Liver
  - Prostate

- **Other Health Effects**
  - Peripheral neuropathy
  - Anemia
  - Renal and liver dysfunction
  - Skin pigmentation
  - EKG abnormalities
  - Severe GI effects

Sources of Arsenic

- Smelting of metals
- Pharmaceutical industry (medicines)
- Pesticide manufacture (very limited)
- Wood preservative – CCA [in phase out]
- Cattle and sheep dips
- Feed additives
- Dye stuffs
- Petroleum, coal, and wood burning
- Semiconductor manufacture
- Waste incineration

Arsenic Chemistry:
Arsenite [As(III)] and Arsenate [As(V)]

- Soluble, inorganic arsenic exists in either one of two valence states.
- Typically groundwater has anoxic conditions and Arsenic is found in the reduced form: Arsenite [As(III)]
- Typically surface water has aerobic conditions and Arsenic is found in the oxidized form: Arsenate [As(V)]
- Arsenite is more toxic than Arsenate.

- Systems with elevated Arsenic need to have a source sample speciated to determine which form of Arsenic dominates
- Arsenite must be oxidized to the Arsenate form [As(V)] for successful treatment.
  - Aeration
  - Super Chlorination
  - Potassium Permanganate ($KMnO_4$)

Oxidizing Agents:
Chlorine

Benefits:

+ Low relative cost
+ Primary disinfection capability
+ Secondary disinfectant residual
+ Oxidizes Arsenic in less than a minute

Drawbacks:

- Formation of disinfection-by-products
- Handling and storage requirements

Oxidizing Agents:
Potassium Permanganate

Benefits:

+ No formation of Disinfection-By-Products
+ Oxidizes Arsenic in less than a minute

Drawbacks:

- High cost
- No primary disinfection capability
- Pink Water
- Difficult to handle
- Additional oxidant for secondary disinfection may be required.

Oxidizing Agents:
Ozone

Benefits:

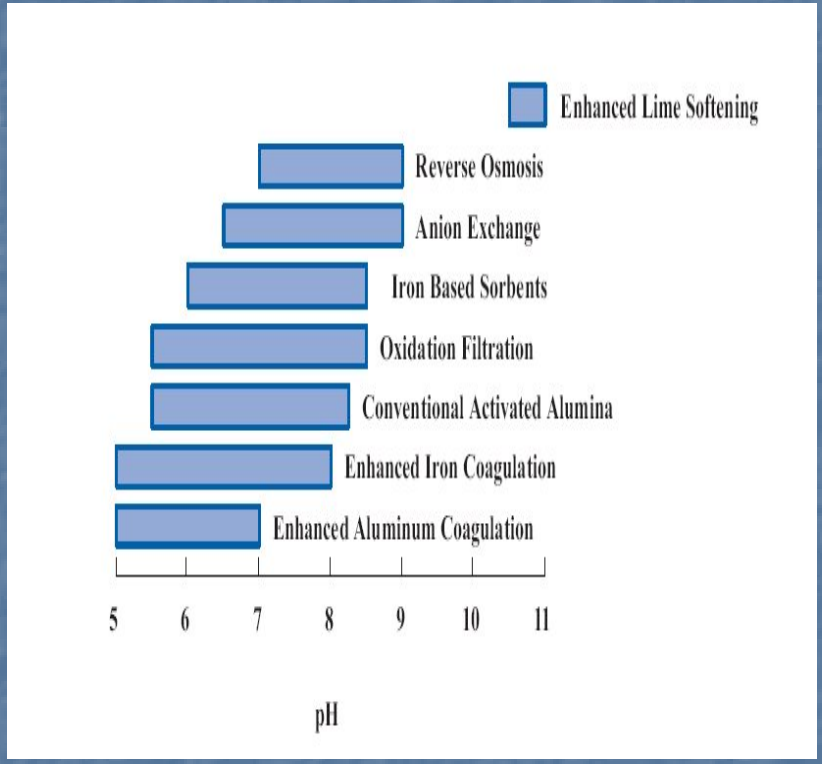
+ No chemical storage/handling required
+ Primary disinfection capability
+ No formation of TTHMs/HAA5s
+ Oxidizes Arsenic in less than a minute

Drawbacks:

- Sulfide and TOC interfere
- Additional oxidant for secondary disinfection may be required.

Optimal pH Range

• In an attempt to comply with one drinking water regulation, it is possible to compromise treatment performance or compliance with other drinking water regulations.



<u>Regulations to consider</u>:

•Lead and Copper Rule (LCR)
•Surface Water Rules
(SWTR, IESWTR, LT1ESWTR)
•Disinfectants/Disinfection By-Products Rule (DBPR)

Key Water Quality Parameters

• Each treatment technology has its own Optimal Water Quality Conditions.

• When considering an Arsenic treatment technology, the following analytes have been deemed to be critical in choosing a treatment strategy.

- Arsenic
- Arsenite [As(III)]
- Arsenate [As(V)]
- Chloride
- Fluoride
- Iron (Fe)
- Manganese (Mn)
- Nitrate (NO_3^-)
- Nitrite (NO_2^-)
- Orthophosphate
- pH
- Silicia
- Sulfate (SO_4^{-2})
- Total Dissolved Solids (TDS)
- Total Organic Carbon (TOC)

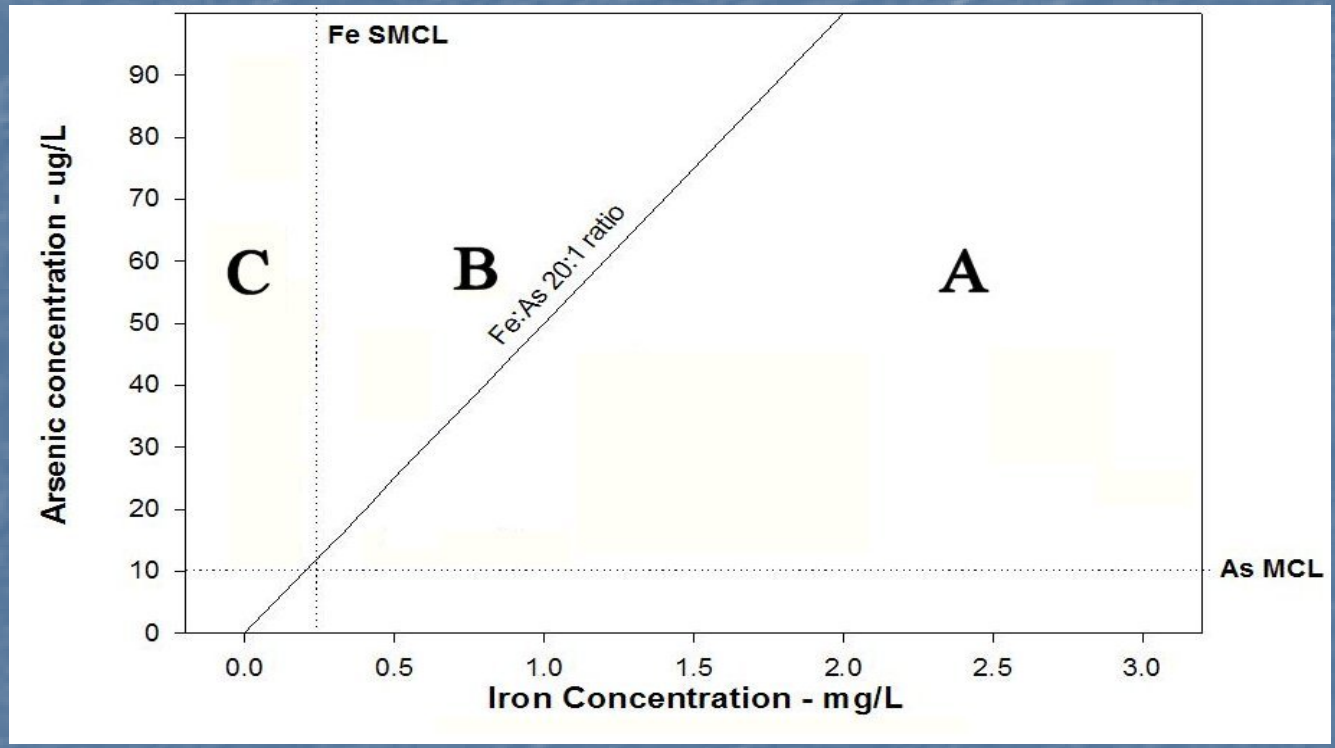
Other Water Quality Parameters

• Each treatment technology has its own Optimal Water Quality Conditions.

• When considering an Arsenic treatment technology, the following analytes <u>should also be monitored.</u>

- Alkalinity
- Aluminum (Al)
- Calcium (Ca^{+2})
- Magnesium (Mg^{+2})
- Turbidity
- Water Hardness

Water Chemistry Based Guide



A: Iron Removal Process (Optimized for Maximum As Removal)
B: Modified Iron Removal Process
C: Media Adsorption Iron Coag/Filt Ion Exchange Iron Removal (M) RO/NF

Process Selection Decision Trees

- Decision trees are useful in narrowing the available treatment technologies to the most economical for a particular system.

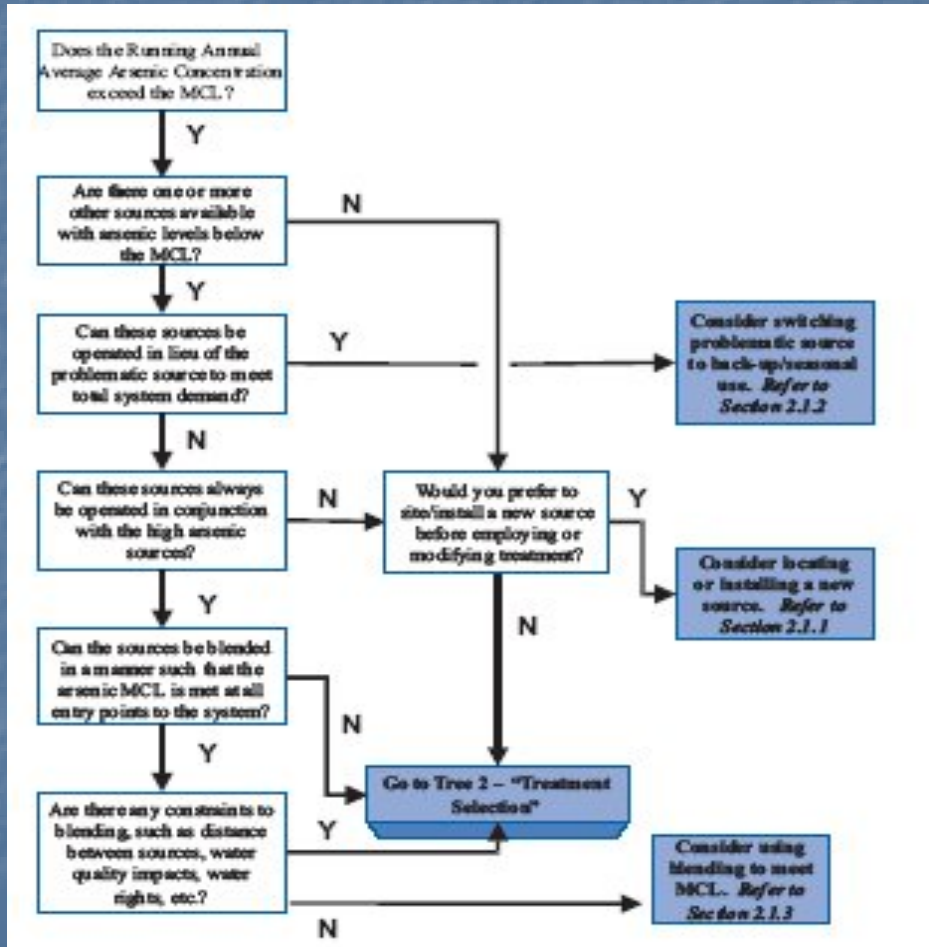


Figure 3-2. Decision Tree 1 – Non-Treatment Alternatives.

Process Evaluation Basis

• There are several variables, design criteria, and assumptions that should be established prior to using the decision trees including:

- Existing Treatment Process
- Target Finish Water As Levels
- Total Dissolved Solids
- Domestic Waste Discharge Method
- Land Availability
- Labor Commitment
- Acceptable % Water Loss
- Maximum Source Flowrate
- Average Source Flowrate

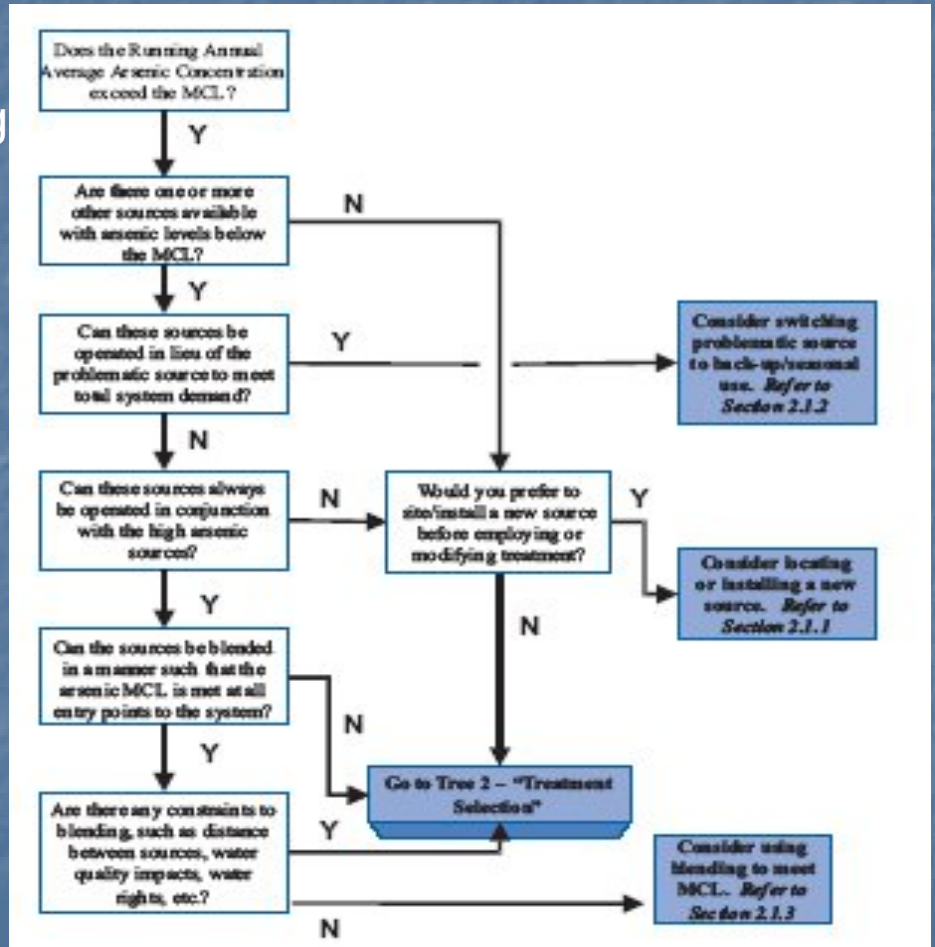


Figure 3-2. Decision Tree 1 – Non-Treatment Alternatives.

Monitoring

Surface Water Systems	Ground Water Systems
Initial Sample < MCL (0.010 mg/L)	Initial Sample < MCL (0.010 mg/L)
System Monitors on a Yearly Basis	System Monitors on a Triennial Basis

Compliance Determination

- The new Maximum Contaminant Level (MCL) of 10 ug/L was effective in January 2006
- Compliance with the Arsenic Rule is based on a Running Annual Average (RAA)
- Monitoring by LDHH is conducted at the source.
- In the event that a source water sample is greater than the new MCL, quarterly monitoring will begin at the Entry Point to Distribution (EPTDS)

Questions?

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How to find more information?

- Google “Louisiana Safe Drinking Water Program”
  - Or - http://new.dhh.louisiana.gov/index.cfm/page/963
- http://new.dhh.louisiana.gov/index.cfm/page/549/n/281
  - Goes to Engineering Services
    - Safe Drinking Water Program
    - Operator Certification Program
    - Community Sewerage Program
    - Plans Review for New Construction and Modifications
    - Service Directory, Region/District contacts and map, News & Resources