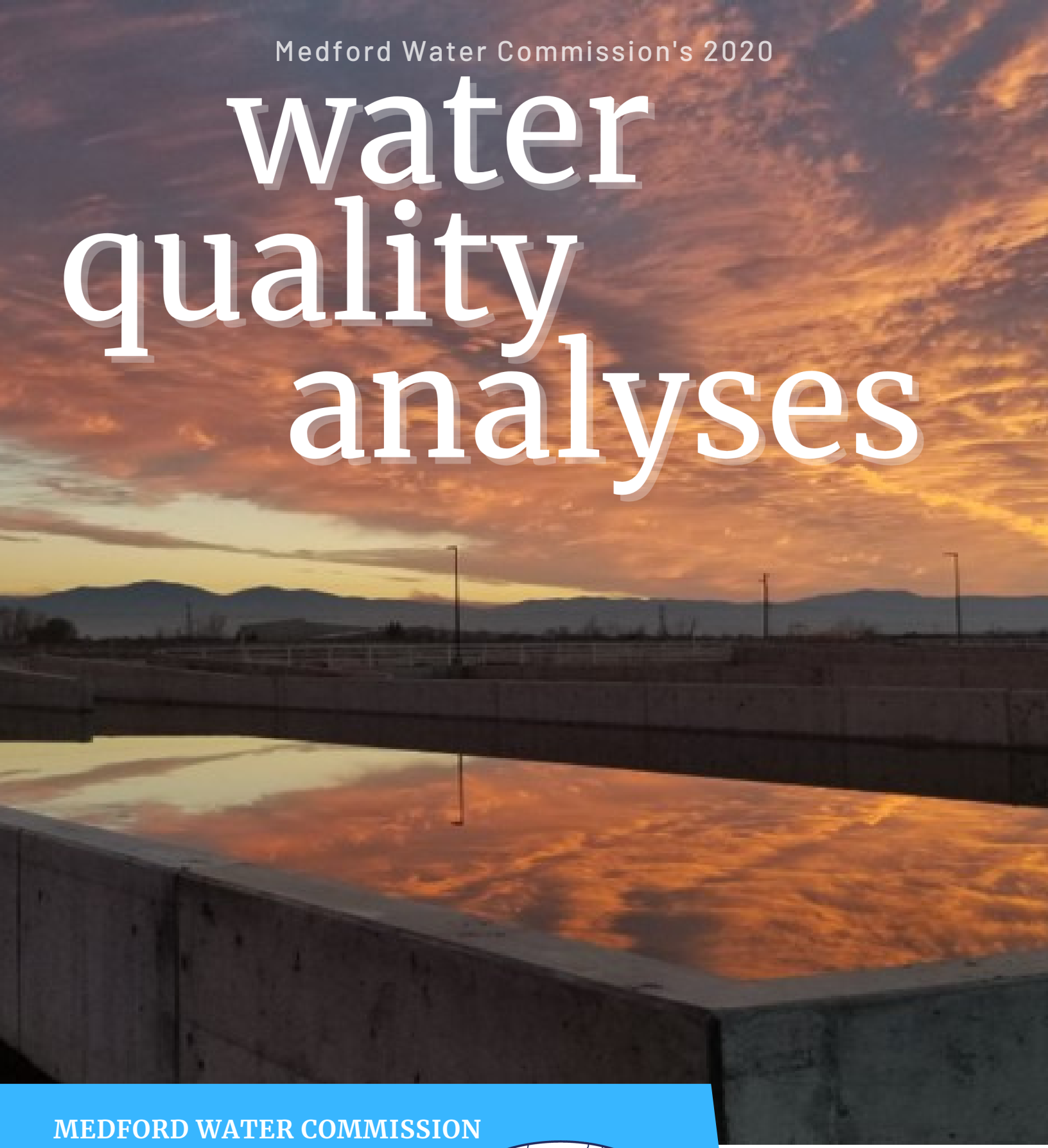
Medford Water Commission's 2020

water quality analyses



MEDFORD WATER COMMISSION

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MEDFORD WATER COMMISSION

2020 annual drinking water test results; published April 2021

Providing safe, high quality drinking water is Medford Water Commission's top priority. To ensure this objective, a comprehensive water quality program has been developed.

This involves water treatment and testing, as well as measures aimed at assuring that our water resources are protected to the greatest extent possible.

The Commission also publishes an annual Consumer Confidence Report. While similar to this document, it does not include data on all parameters tested. Rather, it focuses on and provides additional details about contaminants that have been detected in our drinking water.

We encourage you to read that report for additional health related information.

WATER TREATMENT & QUALITY DIRECTOR
Ben Klayman, PhD, PE

Medford Water Commission obtains its water from two high quality sources: Big Butte Springs (our primary source), located approximately thirty miles northeast of Medford, and the Rogue River (a supplemental source during peak summer demands).

Water from both of these sources is regularly tested for basic physical characteristics and a vast array of potential contaminants. The term "contaminant" refers to any substance that may be found in the water. All water, including bottled water, may contain small amounts of contaminants and their presence does not necessarily indicate a health concern.

The levels of certain contaminants are regulated by the U.S. Environmental Protection Agency (EPA) and administered by the Oregon Health Authority, Drinking Water Services. The drinking water standards are set into two categories; primary standards, called Maximum Contaminant Levels (MCLs), are mandatory and establish limits for various substances that have been found to adversely affect human health. Secondary standards relate to aesthetic qualities of the water but are not necessarily harmful, and are considered recommended guidelines.

Medford Water Commission conducts water quality testing on a large list of parameters, and during 2020 we conducted over 8,000 analyses. We are proud to report that all results for 2020 met or exceeded all state and federal health standards.

This report provides a comprehensive listing of current test results. Where applicable, the tables indicate the MCL allowed in water. Those substances subject only to the secondary standard are identified with an asterisk (*). Definitions and explanations have also been included to provide assistance in understanding the tables.

GENERAL PARAMETERS @ EP

Analyte	EP-Big Butte Springs	EP-Duff WTP, Rogue River	MCL or Standard Level	Unit
Gallons Served	7.3 billion	3.9 billion	N/A	Gallons
Free Chlorine Residual	0.6	0.9	4	ppm
Temperature	8.7	14.5	N/A	Deg C
pH	7.0	7.3	BBS >6.8 Duff >7.0	pH Units
Specific Conductance	108	86	N/A	uS/cm
Alkalinity as $CaCO_3$	52	39	N/A	ppm
Potassium	1.3	1.2	N/A	ppm
Total Hardness as $CaCO_3$	41	31	N/A	ppm
Magnesium	5.1	2.9	N/A	ppm
Calcium	7.8	7.4	N/A	ppm
Silica, SiO_2	37	27	N/A	ppm
Sodium	6.5	5.5	20*	ppm
Total Dissolved Solids	87	57	500*	ppm
Total Organic Carbon	0.1	0.8	N/A	ppm
Turbidity (Year Average)	0.3	0.04	N/A	NTU
*Secondary standards				

MICROBIOLOGICAL ANALYSIS

Analyte	Amount Detected	MCL or Standard Level	Unit
Total Coliform Bacteria[1]	Zero positive samples	TT	
Total Microcystin[2]	ND @ 0.08	N/A	ppb
Cylindrospermopsin[2]	ND @ 0.09	N/A	ppb

[1]Coliform bacteria are the primary measure of the microbial quality of drinking water. They are used as indicators of the possible presence of disease-causing microorganisms. The Water Commission has 55 microbiological sampling points established at representative locations throughout the water distribution system, and collects a minimum of 90 samples each month. Over 1,000 samples were analyzed during 2020 and no coliforms were ever detected.

[2] Microcystin, Anatoxin, and Cylindrospermopsin are toxins produced by naturally occurring algae which tend to grow in warm, stagnant water. No algal toxin was detected in either our source or our finished water during 2020.

LEAD AND COPPER SAMPLING AT RESIDENTIAL WATER TAPS

Analyte	Amount Detected	MCL
Copper (2019 Results)	90th percentile value = **0.8** ppm No samples exceeded action level.	Action Level: 90% of the homes tested must have copper levels less than **1.3** parts per million.
Lead (2019 Results)	90th percentile value = **0.9** ppb No samples exceeded action level.	Action Level: 90% of the homes tested must have lead levels less than **15** parts per billion.

There is virtually no lead or copper in either of the Commission's water supply sources. However, since these metals can enter the drinking water supply through corrosion within the water distribution system or household plumbing, supplemental testing is conducted at the individual taps of customers whose plumbing meets criteria for being at risk for elevated lead and copper levels. Based on testing in representative home plumbing systems, it has been found that our water does not tend to promote the leaching of these minerals in amounts that would normally be considered a health concern.

AL (Action Level): The concentration of a contaminant, which if exceeded, triggers a treatment or other requirement that a water system must follow.

Chlorine Residual: In order to assure that protection from microorganisms occurs until drinking water reaches the customer's taps, chlorine should be present throughout the distribution system. The table indicates the average amount of chlorine present in the water from each source as it enters the distribution system. Chlorine residual is routinely tested for compliance at sampling locations dispersed throughout the water system

EP: Entry Point to the Distribution System

Hardness: A description of the mineral content of the water, typically measured by dissolved calcium carbonate ($CaCO_3$). The harder the water, the less easily soap will lather. Typically ranging between 25 and 40 ppm, our water tends to be **moderately soft.** Hardness is sometimes given in grains per gallon, with our water generally having between 1.4 and 2.4 grains per gallon.

Inorganic Chemicals: A diverse group of substances generally derived from mineral sources.

MCL (Maximum Contaminant Level): The maximum amount of a regulated substance allowed in drinking water.

µmhos/cm: Micromhos per centimeter, a measurement of conductivity (the ability to carry an electrical current). Dissolved minerals and salts will increase conductivity. Pure distilled water has a conductivity of 0 to 3 µmhos/cm, and the conductivity of finished drinking water in the U.S. generally ranges from 50 to 1500 µmhos/cm.

ND: Indicates that the contaminant was not detected in the water. Today's precise laboratory equipment detects substances at very low levels, but it is recognized that a substance could be present at an even lower level. Therefore, the results are given as "ND @" a specific testing level, typically well below the MCL.

pH: The degree of acidity or alkalinity of a solution. Values between 0 and 7 indicate acidity, those between 7 and 14 indicate alkalinity, and a value of 7 is neutral.

INORGANIC CHEMICALS* @ EP

Analyte	EP-Big Butte Springs	EP-Duff WTP, Rogue River	MCL or Standard Level	Unit
Aluminum, Al	0.04	ND @ 0.01	0.05 to 0.2*	ppm
Antimony, Sb	ND @ 0.0005	ND @ 0.0005	0.006	ppm
Arsenic, As	ND @ 0.001	ND @ 0.001	0.01	ppm
Barium, Ba	0.003	0.006	2	ppm
Beryllium, Be	ND @ 0.0005	ND @ 0.0005	0.004	ppm
Boron, B	ND @ 0.05	ND @ 0.05	N/A	ppm
Cadmium, Cd	ND @ 0.0001	< 0.0002	0.005	ppm
Chloride, Cl	2.3	3.8	250*	ppm
Chromium, Cr	< 0.005	ND @ 0.001	0.1	ppm
Copper, Cu	0.03	< 0.003	1.0*	ppm
Cyanide, Cn	ND @ 0.003	ND @ 0.003	0.2	ppm
Fluoride, F	ND @ 0.2	ND @ 0.2	4	ppm
Iron, Fe	< 0.03	ND @ 0.015	0.3*	ppm
Lead, Pb	< 0.0001	ND @ 0.0001	0.015 AL	ppm
Lithium, Li	ND @ 0.1	ND @ 0.1	N/A	ppm
Manganese, Mn	ND @ 0.02	ND @ 0.02	0.05*	ppm
Mercury, Hg	ND @ 0.0002	ND @ 0.0002	0.002	ppm
Molybdenum, Mo	< 0.001	ND @ 0.001	N/A	ppm
Nickel, Ni	< 0.003	< 0.002	0.1	ppm
Nitrate, NO_3	ND @ 0.2	ND @ 0.2	10	ppm
Nitrite, NO_2	ND @ 0.05	ND @ 0.05	1	ppm
Selenium, Se	ND @ 0.001	ND @ 0.001	0.05	ppm
Silver, Ag	ND @ 0.0001	ND @ 0.0001	0.1*	ppm
Sulfate, SO_4	1.4	1.0	250*	ppm
Thallium, Tl	ND @ 0.0005	ND @ 0.0005	0.002	ppm
Vanadium, V	0.01	ND @ 0.005	N/A	ppm
Zinc, Zn	ND @ 0.05	ND @ 0.05	5*	ppm

*Secondary standards, AL = Action Level

DISINFECTION BYPRODUCTS & PRECURSORS

Analyte	Min	Max	Running AVG	MCL	Unit
HAA5	ND @ 3.0	38.0	12.3	60	ppb
HAA6	ND @ 0.2	1.4	0.6	N/A	ppb
HAA9	ND @ 0.2	17	7.2	N/A	ppb
TTHMs	ND @ 0.5	51.1	18.4	80	ppb
Bromate	ND @ 5.0	ND @ 5	ND	10	ppb

RADIOLOGICALS

Analyte	EP-Big Butte Springs	EP-Duff WTP, Rogue River	MCL or Standard Level	Unit
Gross Alpha	ND @ 3	ND @ 3	15	pCi/L
Radium 226	ND @ 1	ND @ 1	N/A	pCi/L
Radium 228	ND @ 1	ND @ 1	N/A	pCi/L
Radon 222	88	N/A	N/A	pCi/L
Uranium	ND @ .01	ND @ .01	30 µgl	µgl

VOLATILE ORGANIC CHEMICALS (VOCs) @ EP

Analyte	EP-Big Butte Springs	EP-Duff WTP, Rogue River	MCL or Standard Level	Unit
Benzene	ND @ 0.0005	ND @ 0.0005	0.005	ppm
1,2,4-Trichlorobenzene	ND @ 0.0005	ND @ 0.0005	0.07	ppm
Ethylbenzene	ND @ 0.0005	ND @ 0.0005	0.7	ppm
Monochlorobenzene	ND @ 0.0005	ND @ 0.0005	0.1	ppm
m-Dichlorobenzene	ND @ 0.0005	ND @ 0.0005	N/A	ppm
o-Dichlorobenzene	ND @ 0.0005	ND @ 0.0005	0.6	ppm
p-Dichlorobenzene	ND @ 0.0005	ND @ 0.0005	0.075	ppm
Bromobenzene	ND @ 0.0005	ND @ 0.0005	N/A	ppm
Carbon Tetrachloride	ND @ 0.0005	ND @ 0.0005	0.005	ppm
Chloroethane	ND @ 0.0005	ND @ 0.0005	N/A	ppm
Chloroform	ND @ 0.0005	0.011	N/A	ppm
1,1-Dichloroethane	ND @ 0.0005	ND @ 0.0005	0.005	ppm
1,2-Dichloroethane	ND @ 0.0005	ND @ 0.0005	N/A	ppm
1,1,1-Trichloroethane	ND @ 0.0005	ND @ 0.0005	0.2	ppm
1,1,2-Trichloroethane	ND @ 0.0005	ND @ 0.0005	0.005	ppm
1,1,1,2-Tetrachloroethane	ND @ 0.0005	ND @ 0.0005	N/A	ppm
1,1,2,2-Tetrachloroethane	ND @ 0.0005	ND @ 0.0005	N/A	ppm
1,1-Dichloroethylene	ND @ 0.0005	ND @ 0.0005	0.007	ppm
cis-1,2-Dichloroethylene	ND @ 0.0005	ND @ 0.0005	0.07	ppm
trans-1,2-Dichloroethylene	ND @ 0.0005	ND @ 0.0005	0.1	ppm
Trichloroethylene	ND @ 0.0005	ND @ 0.0005	0.005	ppm
Tetrachloroethylene	ND @ 0.0005	ND @ 0.0005	0.005	ppm
Bromomethane	ND @ 0.0005	ND @ 0.0005	N/A	ppm
Dibromomethane	ND @ 0.0005	ND @ 0.0005	N/A	ppm
Chloromethane	ND @ 0.0005	ND @ 0.0005	N/A	ppm
Dichloromethane	ND @ 0.0005	ND @ 0.0005	0.005	ppm
Bromodichloromethane	ND @ 0.0005	0.0012	N/A	ppm
Dibromochloromethane	ND @ 0.0002	ND @ 0.0002	N/A	ppm
MTBE	ND @ 0.0005	ND @ 0.0005	N/A	ppm
Dibromochloropropane (DBCP)	ND @ 0.0000202	ND @ 0.0000202	0.0002	ppm
1,2-Dichloropropane	ND @ 0.0005	ND @ 0.0005	0.005	ppm
1,3-Dichloropropane	ND @ 0.0005	ND @ 0.0005	N/A	ppm
2,2-Dichloropropane	ND @ 0.0005	ND @ 0.0005	N/A	ppm
1,2,3-Trichloropropane	ND @ 0.0005	ND @ 0.0005	N/A	ppm
1,1-Dichloropropene	ND @ 0.0005	ND @ 0.0005	N/A	ppm
1,3-Dichloropropene	ND @ 0.0005	ND @ 0.0005	N/A	ppm
Styrene	ND @ 0.0005	ND @ 0.0005	0.1	ppm
Toluene	ND @ 0.0005	ND @ 0.0005	1	ppm
o-Chlorotoluene	ND @ 0.0005	ND @ 0.0005	N/A	ppm
p-Chlorotoluene	ND @ 0.0005	ND @ 0.0005	0.6	ppm
Vinyl Chloride	ND @ 0.0005	ND @ 0.0005	0.002	ppm
Xylenes, Total	ND @ 0.0005	ND @ 0.0005	0.002	ppm

pCi/L: Picocuries per liter, a measure of radioactivity.

ppm, ppb: These refer to the amount of a contaminant found per increment of water. With increasing technology, contaminants can be detected in extremely small quantities. One ppm (part per million) means that one part of a particular substance is present for every million (1,000,000) parts of water. Similarly, ppb (parts per billion) indicates the amount of a contaminant per billion (1,000,000,000) parts of water.

Routine maintenance such as valve turning and hydrant flushing helps ensure water quality from the source to your tap

Radiologicals: An evaluation of radiant energy emitted from certain minerals as they disintegrate. It can be released from the ground and from water that has been exposed to such substances.

Secondary Standards: Denoted in tables with an asterisk (*). The suggested maximum amount of a substance, but not a regulatory requirement.

Synthetic Organic Chemicals: Pesticide/herbicide compounds, most often present in areas of intensive agriculture.

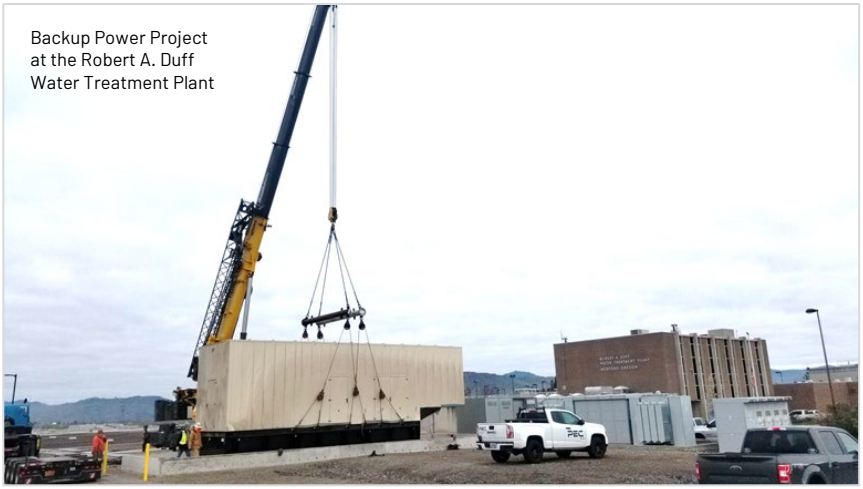
TTHMs (Total Trihalomethanes), HAA5s (Haloacetic Acids) & Bromate: Compounds that can result from chemical reactions between organic material and chlorine or bromide and ozone. These are collectively called Disinfection Byproducts (DBPs). The disinfection processes are carefully monitored to keep DBPs to a minimum while still ensuring that sufficient disinfection is achieved.

TT (Treatment Technique): A required process intended to reduce the level of a contaminant in drinking water.

SYNTHETIC ORGANIC CHEMICALS[1] @ EP

Analyte	EP-Big Butte Springs	EP-Duff WTP, Rogue River	MCL or Standard Level	Unit
2,4,5-TP (Silvex)	ND @ 0.005	ND @ 0.005	0.05	ppm
2,4-D	ND @ 0.001	ND @ 0.001	0.07	ppm
Alachlor	ND @ 0.0002	ND @ 0.0002	0.002	ppm
Aldicarb	ND @ 0.004	ND @ 0.004	N/A	ppm
Aldicarb sulfone	ND @ 0.004	ND @ 0.004	N/A	ppm
Aldicarb sulfoxide	ND @ 0.004	ND @ 0.004	N/A	ppm
Aldrin	ND @ 0.00001	ND @ 0.00001	N/A	ppm
Atrazine	ND @ 0.0003	ND @ 0.0003	0.003	ppm
Baygon	ND @ 0.004	ND @ 0.004	N/A	ppm
Benzo(a) pyrene	ND @ 0.00004	ND @ 0.00004	0.0002	ppm
Butachlor	ND @ 0.0003	ND @ 0.0003	N/A	ppm
Carbaryl	ND @ 0.004	ND @ 0.004	N/A	ppm
Carbofuran	ND @ 0.004	ND @ 0.004	0.04	ppm
3-Hydroxycarbofuran	ND @ 0.004	ND @ 0.004	0.07	ppm
Chlordane	ND @ 0.00025	ND @ 0.00025	0.002	ppm
Dalapon	ND @ 0.005	ND @ 0.005	0.2	ppm
bis(2-Ethylhexyl)adipate	ND @ 0.004	ND @ 0.004	0.4	ppm
bis(2-ethylhexyl)phthalate	ND @ 0.002	ND @ 0.002	0.006	ppm
Dicamba	ND @ 0.005	ND @ 0.005	N/A	ppm
Dieldrin	ND @ 0.00001	ND @ 0.00001	N/A	ppm
Dinoseb	ND @ 0.0005	ND @ 0.0005	0.007	ppm
Diquat	ND @ 0.002	ND @ 0.002	0.02	ppm
Endothall	ND @ 0.01	ND @ 0.01	0.1	ppm
Endrin	ND @ 0.00001	ND @ 0.00001	0.002	ppm
Ethylene dibromide (EDB)	ND @ 0.0005	ND @ 0.0005	0.7	ppm
gamma-BHC (Lindane)	ND @ 0.00001	ND @ 0.00001	0.0002	ppm
Glyphosate	ND @ 0.05	ND @ 0.05	0.7	ppm
Heptachlor epoxide	ND @ 0.00001	ND @ 0.00001	0.0002	ppm
Heptachlor	ND @ 0.00001	ND @ 0.00001	0.0004	ppm
Hexachlorobenzene (HCB)	ND @ 0.0001	ND @ 0.0001	0.001	ppm
Hexachlorocyclopentadiene	ND @ 0.005	ND @ 0.005	0.05	ppm
Methomyl	ND @ 0.004	ND @ 0.004	N/A	ppm
Methoxychlor	ND @ 0.0001	ND @ 0.0001	0.04	ppm
Metolachlor	ND @ 0.0004	ND @ 0.0004	N/A	ppm
Metribuzin	ND @ 0.0004	ND @ 0.0004	N/A	ppm
Oxamyl (Vydate)	ND @ 0.004	ND @ 0.004	0.2	ppm
Pentachlorophenol	ND @ 0.0001	ND @ 0.0001	0.001	ppm
Picloram	ND @ 0.005	ND @ 0.005	0.5	ppm
Polychlorinated biphenyls (PCBs)	ND @ 0.00025	ND @ 0.00025	0.0005	ppm
Propachlor	ND @ 0.0004	ND @ 0.0004	N/A	ppm
Simazine	ND @ 0.0004	ND @ 0.0004	0.004	ppm
Toxaphene	ND @ 0.0003	ND @ 0.0003	0.003	ppm

[1]Synthetic Organic Chemicals with N/A as the MCL are currently unregulated.



Backup Power Project at the Robert A. Duff Water Treatment Plant

ADDITIONAL UNREGULATED CONTAMINANTS @ EP

Analyte	EP-Big Butte Springs	EP-Duff WTP, Rogue River	MCL or Standard Level	Unit
Chromium 6	0.2	0.1	N/A	ppb
Chlorate	< 10	126	N/A	ppb
Strontium	71	53	N/A	ppb
PFOS	ND @ 0.02	ND @ 0.02	N/A	ppb
PFOA	ND @ 0.04	ND @ 0.04	N/A	ppb
germanium	ND @ 0.3	ND @ 0.3	N/A	ppb
alpha-hexachlorocyclohexane	ND @ 0.01	ND @ 0.01	N/A	ppb
chlorpyrifos	ND @ 0.03	ND @ 0.03	N/A	ppb
dimethipin	ND @ 0.2	ND @ 0.2	N/A	ppb
Ethoprop	ND @ 0.03	ND @ 0.03	N/A	ppb
Oxyfluorfen	ND @ 0.05	ND @ 0.05	N/A	ppb
Profenofos	ND @ 0.3	ND @ 0.3	N/A	ppb
Tebuconazole	ND @ 0.2	ND @ 0.2	N/A	ppb
total permethrin (cis- & trans-)	ND @ 0.04	ND @ 0.04	N/A	ppb
tribufos	ND @ 0.07	ND @ 0.07	N/A	ppb
butylated hydroxyanisole	ND @ 0.03	ND @ 0.03	N/A	ppb
o-toluidine	ND @ 0.007	ND @ 0.007	N/A	ppb
quinoline	ND @ 0.02	ND @ 0.02	N/A	ppb
1-butano	ND @ 2.0	ND @ 2.0	N/A	ppb
2-methoxyethanol	ND @ 0.4	ND @ 0.4	N/A	ppb
2-propen-1-ol	ND @ 0.5	ND @ 0.5	N/A	ppb

Turbidity: an expression of optical clarity in water. Turbidity itself has no health effects, but it can interfere with disinfection and provide a medium for microbial growth. It can also be an indicator of microorganisms. While turbidity measurement is not required of groundwater, Big Butte Springs is continuously monitored for turbidity.

Unregulated Contaminants: EPA requires systems to monitor for contaminants that are not yet regulated but may be regulated in the future.

Volatile Organic Chemicals (VOCs): Includes fuels and various solvents that tend to vaporize or be unstable in the environment.

<: Less than
>: Greater than

Additional water quality information may be obtained from the following:

MEDFORD WATER COMMISSION
WATER QUALITY
(541) 774-2430
medfordwater.org

JACKSON COUNTY
ENVIRONMENTAL
PUBLIC HEALTH SERVICES
(541) 774-8206
jacksoncountyor.org

OREGON HEALTH AUTHORITY
DRINKING WATER SERVICES
(971) 673-0405
oregon.gov/oha/ph/healthyenvironments/drinkingwater

U.S. ENVIRONMENTAL PROTECTION AGENCY
SAFE DRINKING WATER HOTLINE
(800) 426-4791
water.epa.gov/drink

MEDFORD WATER COMMISSION

Established in 1922 and governed by the Board of Water Commissioners.

COMMISSIONERS

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Daniel Bunn • John Dailey • Mike Smith

GENERAL MANAGER

Brad Taylor

Serving Medford and Partner Cities: Central Point, Eagle Point, Jacksonville, Phoenix, Talent and Ashland*

Also serving the White City area and the Elk City and Charlotte Ann water districts.

*Emergency intertie only; Ashland received water for approx. 1 month (October) in 2020.