

TECHNICAL MEMORANDUM

To: Nick Green, City Manager
City of John Day
450 East Main St
John Day, OR 97845

From: Robert Long, *RG, LHG, CWRE*
Ian Godwin, *GIT*

Date: October 19, 2021

Subject: **City of John Day – Water Quality and Nitrogen-Isotope Analysis**

INTRODUCTION

CwM-H2O, LLC (CwM) is pleased to present this memorandum outlining the processes and results of Tasks 2.2 and 2.4 from Phase II of the Hydrogeologic Investigation proposed to the City of John Day (City) on March 12th, 2021. CwM field personnel collected water samples from sites around the current City wastewater percolation ponds and the proposed subsurface infiltration gallery (SIG) location to study the transport, distribution, and biogeochemical fate of several major wastewater constituents. Samples were collected from three water source groups: wastewater source, natural surface water, and alluvial aquifer groundwater. Field work was completed on July 7th, 2021, before the start of the aquifer pump test at the CwM-1 well (see CwM Site Visit III Field Memo: Sampling and Aquifer Pump Test). Several general water quality parameters were measured in the field concurrently with sample collection are summarized in the CwM Pump Test memo as well.

SAMPLING LOCATIONS

Wastewater Source

Grab samples were collected from two locations representing the wastewater source. The first sample (Pond 1) was collected from the point where water from the wastewater treatment plant (WWTP) enters the subsurface pipe which flows to the ponds (Figure 1). This sample represents the initial wastewater condition before any natural treatment or biological cycling in the ponds themselves. The second sample (Pond 2) was collected from the northern side of Percolation Pond #2 and is representative of the wastewater that actually infiltrates into the aquifer. Pond #2 was the focus of the sampling because it maintains standing water across its entire area. According to City records, Pond #2 has held water above the adjacent river level continuously since approx. 2007 (Chadwick, 1999; Chadwick, 2019). Ponds #1 and #3 maintain standing water in only a small portion of the ponds' areas.

Surface Water

Grab samples were collected from the John Day River at three points along the study area. Sampling locations were chosen to represent upstream conditions, conditions immediately adjacent to the ponds, and downstream from the ponds (Figure 1). The river samples represent the quality of the water that recharges the alluvial aquifer from losing reaches of the river, as well as in areas of infiltrated wastewater discharge. As a note, the flow rate (estimated 10-20 cfs) and water level in the John Day River at the time of collection were unusually low at the time of sampling due to extensive drought conditions. It is unclear how the low flow conditions may have impacted river water quality.

Alluvial Aquifer Groundwater

Groundwater from the shallow alluvial aquifer of the John Day River Valley was collected from a total of five wells. Based on drilling logs, it is understood that all five wells fully penetrated the two main dredged units of the alluvial aquifer (see CwM City of John Day Field Investigation Technical Memorandum). A low-flow electrical pump was used to purge the wells of at least 10 well volumes and until temperature, pH, and conductivity stabilized (see below), at which point samples were collected from the pump discharge tube. One well (MW-7) was located up-gradient of the percolation ponds. MW-5 and MW-6 are in close proximity to and located cross-gradient and down-gradient of Pond #2. CwM-2 and CwM-3 are located approx. 1,500 ft west (down-gradient) of the ponds and generally correspond with the water elevation at the RIV-3 sample location (Figure 1).

TARGET PARAMETERS AND METHODS

The following field parameters were measured using the designated calibrated field probes at or near the time of sample collection:

- Temperature *Sper Scientific 850081 Water Quality Meter*
- pH *Sper Scientific 850081 Water Quality Meter w/ 840016 Probe*
- Electrical Conductivity *Sper Scientific 850037 Conductivity Pen*
- Dissolved Oxygen *YSI Pro Optical DO Meter 626281*
- Flow Velocity (surface water) *Global Water Instruments FP111*

Because groundwater samples were not collected until these three parameters had stabilized from low-flow pumping, field readings are available from the precise time of sampling. Field parameters at the surface water and wastewater sources were generally measured once all sampling had been completed. Flow velocity measurements were also taken at the three surface water sampling sites, and for comparison, relative groundwater flow velocity was calculated after Phase II field work. A summary of temperature, pH, and conductivity data is included in Site Visit III Field Memo: Sampling and Aquifer Pump Test (CwM, 2021).

Unfiltered and unpreserved Group A samples were collected in prepared sample bottles from Box R Water Lab in Prineville, OR. They were kept in an ice-filled cooler throughout the sampling process and until Box R staff picked the samples up from the John Day shop building on the afternoon of July 7th. Box R prepared and shipped Group A subsamples for specific analyses at Nielson Labs in Medford, OR. Group A samples were tested for the following parameters using the following methods:

- Nitrate-N *Method SM-4500 NO₃-D (Ion Selective Electrode)¹*
- Nitrate-Nitrite as N *Method E353.2 (Automated Spectrophotometer)¹*
- Ammonia as N *Method E350.1 (Automated Spectrophotometer)¹*
- Chloride *Method E300.0 (Ion Chromatography)¹*
- Total Phosphorus *Method A4500-P-E (Spectroscopy (Colorimetry/Photometry))¹*
- Total Dissolved Solids *Method A2540C (Gravimetry)¹*
- Iron (Fe) *Method EPA 200.7 (ICP Spectrometry)¹*

Group B samples were collected at the same time as Group A but were passed through 0.2-micron membrane filters. The samples were filtered into 40 mL pre-acidified amber glass vials (with 0.2 mL of 1:1 hydrochloric acid) for preservation. Acidified samples do not require refrigeration and are stabilized for a long holding period. Group B samples were shipped to Beta Analytics Lab in Miami, FL on July 7th for the following analyses:

- Nitrate-N *Method E353.2 (Automated Spectrophotometer)¹*
- Nitrogen source tracking *$\delta^{18}O$ and $\delta^{15}N$ Continuous Flow Isotope Ratio Mass Spectrometry (IRMS)²*

RESULTS

Dissolved Oxygen (DO)

The concentration of oxygen in the groundwater and John Day Rivered were measured in the field to make a relative comparison between the slower subsurface groundwater and river water conditions. Before sampling of the groundwater sites, the concentration of dissolved oxygen (DO) was measured along a depth profile for each well. A YSI DO probe was lowered into the well to various depths and allowed to stabilize. DO was measured approximately every 3 ft through the water column of each well. Generally, DO was highest in the upper 1 ft of the groundwater column (0.80-1.14 ppm). DO decreased steadily with depth in MW-7 from 0.54 ppm at approximately 4 ft to 0.39 ppm at 8 ft (bottom of well). The other wells exhibited fairly constant DO below the upper 1 ft (0.45-0.58 ppm). The DO levels observed are low for a shallow alluvial aquifer and may suggest

¹ National Environmental Methods Index

² Beta Analytical Laboratories - ISO/IEC 17025: 2017 Accredited

biological oxygen demand in the aquifer. The DO of the river varied greatly by location and time but was generally 3.0-5.0 ppm. This oxygen level is in the low range for typical fast-flowing surface water. The low oxygen concentration measured is likely due to a number of factors including the near shore location of the measurements, low-flow conditions in the river, and the very warm water and air temperatures at the time of measurement. A full river profile of oxygen measurements and velocities would provide a more representative characterization of whole river environment.

Flow Velocity

Spot measurements of flow velocity within the John Day River channel were collected at three to four points at each of the sampling locations (RIV-1, RIV-2, and RIV-3). It was observed that the river channel was fairly even in depth and straight near RIV-1 and RIV-2. Flow velocities at these two sites were measured between 0.1 and 1.5 ft/s (3 – 46 cm/s). The channel near RIV-3 varied greatly in depth and was split in several places by debris piles and gravel bars upstream of the old logging bridge crossing. Flow velocities at RIV-3 ranged from 0.6 and 3.7 ft/s (18 – 113 cm/s). At the time of measurement, the John Day River was at near-record low flows (approx. 10-15 cfs). Average summertime low flows are roughly 40 cfs, and typical flow velocities are therefore expected to be greater than those presented here.

The maximum hydraulic conductivity estimated for the alluvial aquifer is approx. 0.06 ft/s (1.78 cm/s) based on aquifer pump test data (CwM-H2O, 2021). Monitoring well data collected from June-July 2021 suggests a range of groundwater gradients in the alluvial aquifer north of the river of approximately 0.005-0.008 ft/ft. The estimated range of groundwater flow velocities is therefore 0.001-0.0016 ft/s (0.03-0.05 cm/s). The maximum estimated groundwater flow velocity is 60 times less than the minimum flow rate observed in the river during record-low flow conditions. During typical river conditions, average flow velocities are likely 500 – 2,500 times greater than average groundwater flows.

Nitrogen

Nitrogen is a primary wastewater constituent of concern from the current percolation ponds and for the proposed wastewater infiltration system. Sampling was targeted at measuring nitrogen in three forms: Nitrate, nitrite, and ammonia. Nitrate is typically the most prominent form in wastewater and groundwater sources. Nitrite is produced as nitrate is broken down and is typically short-lived, so it tends not to accumulate at high levels. Ammonia can be present in wastewater sources but is also formed as a product of various anaerobic nitrate cycling processes.

Nitrate concentration was measured directly in raw water samples using an electrode method (Box R Labs). It was also measured directly and in combination with nitrite using a spectrographic method (Box R Labs through Neilson, Beta Analytic). With the exception of the Pond 1 and 2

samples, all other samples were returned as non-detects with an interference flag or were measured at low concentrations near the detection limit using the spectrographic method. According to the National Environmental Methods Index (NEMI), spectrographic method E353.2 is sensitive to interference from iron levels that approach or exceed the concentration of nitrate in the sample. The samples were later tested for iron, which does appear to have been the cause of the interference with the nitrate readings for this method (see Follow-Up Analysis section below). For this reason, the results from the electrode method were used and nitrite concentrations (calculated from the nitrate/nitrate-N data) were assumed to be negligible based on the relatively low concentrations detected in the Pond-1 and Pond-2 samples.

Table 1 – Nitrogen as Nitrate, Nitrite, and Ammonia

Sampling Site	Nitrate (ppm)	Nitrite (ppm)	Ammonia (ppm)	Approx. Distance from Center of Ponds	Relative Groundwater Position
Pond-1 (WWTP)	13.4	0.90	0.837	-	-
Pond-2	2.26	0.21	1.120	-	-
RIV-1	0.736*	ND ²	ND ³	950 ft	Up-gradient
RIV-2	0.531*	ND ²	ND ³	580 ft	Cross-gradient
RIV-3	0.456*	ND ²	ND ³	2,100 ft	Down-gradient
MW-7	2.86	ND ²	ND ³	950 ft	Up-gradient
MW-5	0.574*	ND ²	3.57	250 ft	Cross-gradient
MW-6	0.652*	ND ²	ND ³	600 ft	Down-gradient
CwM-3	ND ¹	ND ²	ND ³	1,450 ft	Down-gradient
CwM-2	0.620*	ND ²	ND ³	1,600 ft	Down-gradient

*Samples measured above the detection limit of 0.100 ppm but below the 99.5% reporting limit of 1.0 ppm

1. Below the detection limit of 0.100 ppm
2. Not detected and assumed to be negligible
3. Below the detection limit of 0.136 ppm

Nitrate levels declined significantly between the wastewater plant and the percolation pond (~80% reduction). This reduction is likely the result of a mixture of processes including plant uptake, denitrification, and anammox (loss to atmosphere as nitrogen gas). Nitrate levels in the river were generally lower than the percolation ponds and decreased downstream (Figure 2). The highest river nitrate level (0.74 ppm) was detected upstream of the ponds and concentrations were possibly elevated due to warmer- and drier-than-usual conditions.

Nitrate concentrations in groundwater were similar to concentrations in the river (Figure 2). The exception was up-gradient well MW-7, where nitrate levels were higher than in Pond 2 (2.86 ppm). It is possible that this is a false reading due to unusually high iron levels (see Follow-Up Analysis section). MW-5 was the only groundwater or river site with measurable ammonia, which was

present at significant levels (3.57 ppm). This is higher than in the wastewater plant or the ponds, despite nitrate levels at MW-5 being about equivalent to the river and other wells. Short-term spikes in nitrate (like at MW-7) and ammonia (in MW-5) may represent temporary changes in redox and nitrogen-cycling conditions in the aquifer in response to pond operations and river flows. MW-5 appears to be at a critical location where changes in river level or groundwater mounding below Pond #2 of may significantly shift biochemical conditions.

Phosphorus

The concentration of total phosphorus (Total-P) at the WWTP and Pond 2 suggests a slight increase due to evaporation in the ponds. Only wells MW-6 (downgradient) and MW-5 (cross-gradient) showed significantly elevated phosphorus levels, which were almost identical to levels in the source pond. The up-gradient and far down-gradient wells exhibited much lower concentrations, though still elevated above the river concentrations which ranged from 0.104 to 0.120 ppm. Total-P demonstrates the clear influence of the percolation ponds on nearby groundwater but does not show a measurable impact on water quality in the river (Figure 3). Furthermore, the westward flow path from the ponds to the CwM wells suggests more than 90% dilution, dispersion, or removal of phosphorus in the alluvial aquifer.

Phosphorus binds strongly to clays and iron-oxide minerals and, though these materials are present in only trace amounts in the dredged aquifer, these interactions may play a role in phosphorus removal from groundwater downgradient from the infiltration ponds.

Table 2 – Total Phosphorus

Sampling Site	Total Phosphorus (ppm) ¹	Approx. Distance from Center of Ponds	Relative Groundwater Position
Pond-1 (WWTP)	6.180	-	-
Pond-2	6.520	-	-
RIV-1	0.104	950 ft	Up-gradient
RIV-2	0.120	580 ft	Cross-gradient
RIV-3	0.104	2,100 ft	Down-gradient
MW-7	0.146	950 ft	Up-gradient
MW-5	6.650	250 ft	Cross-gradient
MW-6	6.670	600 ft	Down-gradient
CwM-3	0.234	1,450 ft	Down-gradient
CwM-2	0.542	1,600 ft	Down-gradient

1. Detection limit of 0.0166 ppm and reporting limit of 0.0250 ppm

Chloride and TDS

The conservative tracers chloride and total dissolved solids (TDS) show a very similar pattern to Total-P (Figures 4 and 5). Evaporation in the ponds appears to increase chloride levels slightly, as expected. Chloride and TDS are both about 15% lower in MW-5 and MW-6 than in the source pond. In the river there is no indication of an increase in chloride or TDS downstream of the ponds.

Table 3 – Chloride and Total Dissolved Solids

Sampling Site	Chloride (ppm)	TDS (ppm)	Approx. Distance from Center of Ponds	Relative Groundwater Position
Pond-1 (WWTP)	45.9	471	-	-
Pond-2	49.5	468	-	-
RIV-1	1.95	191	950 ft	Up-gradient
RIV-2	1.95	171	580 ft	Cross-gradient
RIV-3	1.95	178	2,100 ft	Down-gradient
MW-7	2.75	221	950 ft	Up-gradient
MW-5	42.1	440	250 ft	Cross-gradient
MW-6	42.4	405	600 ft	Down-gradient
CwM-3	1.79	181	1,450 ft	Down-gradient
CwM-2	4.85	196	1,600 ft	Down-gradient

The up-gradient and far down-gradient wells tend to be slightly elevated above the river levels. The exception is CwM-3, which had lower chloride and nearly equivalent TDS as the river. Chloride is not expected to interact significantly with the aquifer material. Therefore, the approx. 90% reduction from the ponds to the CwM wells is likely from dilution and dispersion only.

Nitrogen Isotopes

The isotope analysis examined the average atomic weight of the oxygen and nitrogen atoms that comprised the nitrate molecules (NO_3^-) present in the water samples. The amount of the heavier isotopes, Oxygen-18 and Nitrogen-15, relative to international standards can provide insight into the source and chemical history of the nitrate. In Table-4, negative values indicate that the isotope is depleted relative to the international standard values (^{18}O is based on global sea water data, ^{15}N is based on atmospheric nitrogen). Positive values indicate a relative enrichment of the isotope.

There was enough nitrate present in nine of the ten samples to complete the isotope analysis. The results from these nine samples can be divided into two primary groups based on their locations on the isotope plot (Plot 1):

- 1) ¹⁸O-enriched Samples
- 2) ¹⁵N-enriched Samples

Six of the samples are relatively enriched in ¹⁸O but not in ¹⁵N. This group includes all three of the river samples ($5.8 < \delta^{18}\text{O} < 10.9$), MW-5 and MW-7 ($9.4 < \delta^{18}\text{O} < 15.5$), and CwM-3 ($\delta^{18}\text{O} = 10.8$). These samples essentially share the same isotopic signature, suggesting that the nitrate present is from the same source (Plot 1). Low enrichment of ¹⁵N and high enrichment of ¹⁸O is indicative of nitrate fertilizer or soil-derived nitrogen ($5 < \delta^{18}\text{O} < 22$), so the background nitrate concentrations in the river and aquifer may derive from agricultural activity in the John Day River Valley. Nitrate derived purely from precipitation would be expected to have a higher degree of ¹⁸O enrichment ($20 < \delta^{18}\text{O} < 50$).

Table 4 – Nitrate Isotope Composition

Sampling Site	$\delta^{18}\text{O}$ (‰) (to VSMOW ¹)	$\delta^{15}\text{N}$ (‰) (to Air-N ₂)
Pond-1 (WWTP)	-29.7	14.0
Pond-2	-13.8	21.3
RIV-1	5.85	5.44
RIV-2	10.9	4.78
RIV-3	10.5	0.48
MW-7	9.41	7.08
MW-5	15.5	6.98
MW-6	11.3	28.1
CwM-3	10.8	0.84
CwM-2	ND	ND

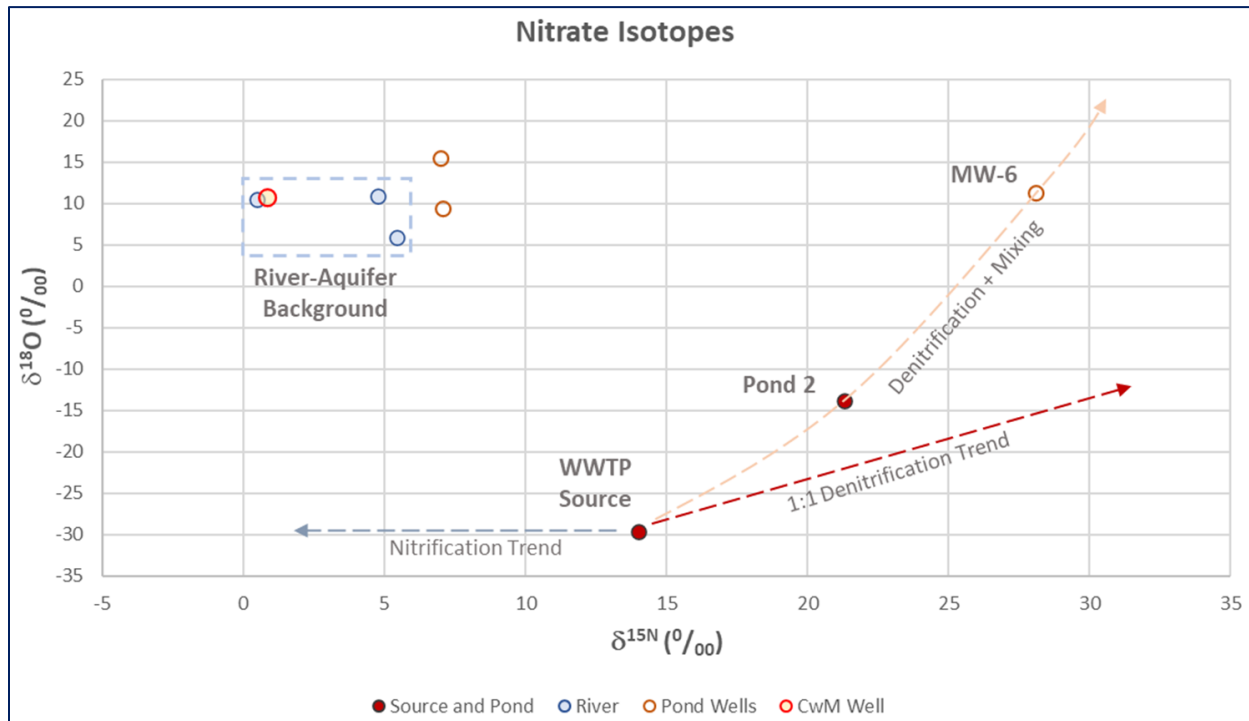
1. Vienna Standard Mean Ocean Water

The other three samples are much more enriched in ¹⁵N. However, the degree of enrichment of both ¹⁵N and ¹⁸O varies in a distinct manner. The water collected from the WWTP represents the isotopic identify of the wastewater, which exhibits a greater level of ¹⁸O depletion than the typical isotopic range for manure and septic waste ($-8 < \delta^{18}\text{O} < 15$).

From the WWTP outflow to the water in Pond 2, there is an enrichment in ¹⁸O (+15.9%) and in ¹⁵N (+7.3%). This change is almost twice the expected slope for denitrification alone (1:1). Evaporation is known to enrich surface waters in ¹⁸O by 7-10% without effecting nitrogen, so the divergence from the expected denitrification trend line may be due to the effects of evaporation in the pond (Kim & Lee, 2011).

The role of plant uptake of nitrogen could also have a role in deflecting the isotope trend away from the ideal denitrification line. It is important to note that none of the sampling points suggest

nitrification (the oxidation (as by bacteria) of ammonium to nitrites and the further oxidation of nitrites to nitrates), or the aerobic formation of nitrate, within the ponds or alluvial aquifer (Plot 1). This is supported by the DO levels measured in the groundwater, which suggest marginally aerobic to fully anaerobic conditions throughout the groundwater column.



Plot 1 – Nitrate Isotope Composition Plot

The isotopic signature of nitrate from MW-6 is highly enriched in both ^{18}O and ^{15}N . The enrichment trend from the WWTP to Pond 1 appears to continue to MW-6, which is located in the center of the down-gradient plume from the percolation ponds (as demonstrated by chloride, TDS, and total-P data). The isotope data suggests that nitrate present at MW-6 may be a combination of the percolation ponds and the river sources.

The significant drop in nitrate concentrations from the ponds to down-gradient groundwater is therefore likely a mix of further denitrification and groundwater mixing (dilution and dispersion within the aquifer). The fact that the up-gradient and far down-gradient wells are isotopically identical to the nitrate in the river suggests that the pond operation has little effect on nitrogen within the aquifer in these locations.

FOLLOW-UP ANALYSIS

Iron

In response to the interference errors and inconsistent spectrographic nitrate analysis results, the same samples were tested for iron concentrations. The samples were processed on August 9, 2021, five days outside of the 28-day holding period for iron analysis. Despite this, the samples were run to give a general idea of the potential for iron interference. It is unlikely that the iron concentrations would change significantly even after 33 days.

All ten samples had measurable levels of iron, ranging from about 0.17 to 5.4 ppm (Figure 6). Eight of the ten samples contained iron above EPA Secondary Drinking Water Standard of 0.3 ppm. Given the range of nitrate concentrations detected in most of the river and groundwater samples using the electrode method (~0.4 to 0.8 ppm), these iron concentrations likely cause significant interference with the spectrographic method. Sample locations MW-7, RIV-1, MW-6, and CwM-2 exhibited iron concentration greater than the iron concentration of the wastewater treatment plant effluent (0.46-0.49 ppm) and appear unrelated to the wastewater plant operations.

Table 5 – Iron in Water

Sampling Site	Iron (ppm) ¹	Approx. Distance from Center of Ponds	Relative Groundwater Position
Pond-1 (WWTP)	0.460	-	-
Pond-2	0.485	-	-
RIV-1	2.97	950 ft	Up-gradient
RIV-2	0.249	580 ft	Cross-gradient
RIV-3	0.166	2,100 ft	Down-gradient
MW-7	5.36	950 ft	Up-gradient
MW-5	0.585	250 ft	Cross-gradient
MW-6	1.15	600 ft	Down-gradient
CwM-3	0.381	1,450 ft	Down-gradient
CwM-2	2.18	1,600 ft	Down-gradient

1. Detection limit of 0.00983 ppm and reporting limit of 0.0150 ppm

Due to the highly disturbed nature and long mining history of the alluvium, the aquifer material itself may be the source of this iron. Variation in concentrations within the aquifer may suggest non-uniform distribution of iron source material buried within the cobble and gravel soils.

FIGURES

Figure 1 Site Map of Sampling Locations

Figure 2 Map of Nitrate Concentrations

Figure 3	Map of Total Phosphorus Concentrations
Figure 4	Map of Chloride Concentrations
Figure 5	Map of Total Dissolved Solids Concentrations
Figure 6	Map of Iron Concentrations

ATTACHMENTS

Attachment 1	Box R Water Lab Analysis Sheets
Attachment 2	Beta Analytic Isotope Analysis Sheets

REFERENCES

- Chadwick, G., 1999. Hydrogeological Characterization for the John Day Wastewater Percolation Ponds; John Day, Oregon. March 1999. George Chadwick Consulting.
- Chadwick, G., 2019. Proposed Sites and Approaches for Groundwater Recharge of Treated Effluent for the City of John Day, Oregon. George Chadwick Consulting.
- CwM, 2021. City of John Day Hydrogeologic Investigation, Site Visit III Field Memo: Sampling and Aquifer Pump Test. August 2021. CwM-H2O.
- CwM, 2021. City of John Day Hydrogeologic Investigation, Field Investigation Technical Memorandum. August 2021. CwM-H2O.
- Kim, K. & Lee, X., 2011. Isotopic Enrichment of Liquid Water During Evaporation from Water Surfaces, Journal of Hydrology. Vol. 399, pp. 364-375.



CWM-H2O

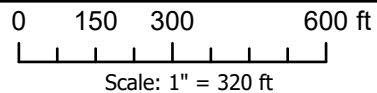
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Figure 1
Map of Water Quality
Sampling Sites

1	DATE	AUTH	DRAFT
No.	Date	By	Revisions



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Oregon



- Groundwater Elev Contours - 2ft
- Groundwater Elev Contours - 0.5 ft
- GW
- ▲ SW
- WW



CwM-H2O

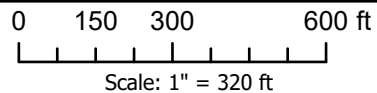
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Figure 2
Map of Nitrate-N
Concentrations

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Nitrate (ppm)

- 0.45 - 0.60
- 0.60 - 1.20
- 1.20 - 3.00
- 3.00 - 13.50



CwM-H2O

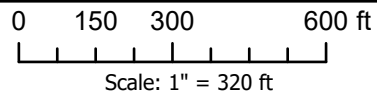
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Figure 3
Map of Total Phosphorus
Concentrations

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 Oregon



Total-P (ppm)

- 0.104 - 0.500
- 0.50 - 1.00
- 1.00 - 2.00
- 6.00 - 6.67



CwM-H2O

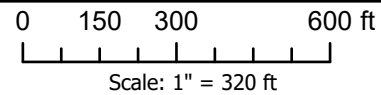
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Figure 4
Map of Chloride
Concentrations

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Chloride (ppm)

- 1.79 - 2.50
- 2.50 - 10.00
- 10.00 - 40.00
- 40.00 - 50.00



CwM-H2O

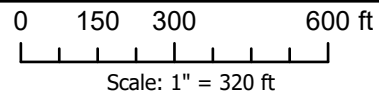
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Figure 5
Map of Total Dissolved Solids
Concentrations

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TDS (ppm)

- 171 - 200
- 200 - 325
- 325 - 450
- 450 - 500



CwM-H2O

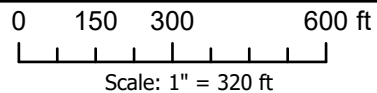
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Figure 6
Map of Iron (Fe)
Concentrations

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Iron (Fe) ppm

- 0.16 - 0.25
- 0.25 - 0.75
- 0.75 - 1.50
- 1.50 - 3.00
- 3.00 - 5.50



Box R Water Analysis Laboratory

567 NW Second Street
Prineville, Oregon 97754
541-447-4911

Mr. Ian Godwin

July 30, 2021

c/o CWM – H2O

1319 SE MLK Blvd., Ste. 204

Portland, OR 97214

Sample Nbrs: X046671/673/675/677/679/681/683/685/687/689

Dear Mr. Godwin,

Attached is a copy of your monitoring water – TDS, Nitrite, Total Phosphorus, Ammonia, Chloride – test results, sampled on July 7, 2021, at City of John Day, John Day, OR. Your analysis was performed by Neilson Research Corp. in Medford, OR. Please do not hesitate to call Box R Water Analysis Laboratory with any questions you may have in regards to your water testing.

Thank you for using Box R Water Analysis Laboratory, we appreciate your business.

Sincerely,

A handwritten signature in black ink, appearing to read 'Sherri K. Miyazaki'.

Sherri K. Miyazaki – Box R Water Analysis Laboratory Director



Neilson Research Corporation
245 S Grape St
Medford, OR 97501
TEL: (541) 770-5678 FAX: (541) 770-2901
Website: www.nrelabs.com

July 22, 2021

Sherri Miyazaki
Box R Waterlab
567 NW Second Street
Prineville, OR 97754
TEL: (541) 447-4911
FAX (541) 447-4917

RE: X046671-89 City of John Day

Order No.: 21070398

Dear Sherri Miyazaki:

Neilson Research Corporation received 10 sample(s) on 7/9/2021 for the analyses presented in the following report.

The results relate only to the parameters tested or to the sample as received by the laboratory. This report shall not be reproduced except in full, without the written approval of Neilson Research Corporation. If you have any questions regarding these test results, please feel free to call.

Sincerely,
Neilson Research Corporation

Tamra Schmedemann
Senior Project Manager
245 S Grape St
Medford, OR 97501



Original



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Website: www.nrclabs.com*

Case Narrative

WO#: 21070398
Date: 7/22/2021

CLIENT: Box R Waterlab
Project: X046671-89 City of John Day

The analyses were performed according to the guidelines in the Neilson Research Corporation Quality Assurance Program. This report contains analytical results for the sample(s) as received by the laboratory.

Neilson Research Corporation certifies that this report is in compliance with the requirements of NELAP. No unusual difficulties were experienced during analysis of this batch except as noted below or qualified with data flags on the reports.

Original



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Analytical Report

WO#: 21070398
 Date Reported: 7/22/2021

CLIENT: Box R Waterlab
Lab ID: 21070398-01
Client Sample ID X046671
Project: X046671-89 City of John Day
Sample Location: River #1

Collection Date: 7/7/2021 5:50:00 AM
Received Date: 7/9/2021 9:57:00 AM
Matrix: AQUEOUS

Analyses	Method	NELAP Status	Result Qual	DF	MDL	RL	Units	MCL	Date Analyzed	Analyst
ANIONS BY EPA 300.0										
Chloride	E300.0	A	1.95	1	0.0704	1.00	mg/L		07/17/21 8:43	KMC
AMMONIA NITROGEN AS N										
Nitrogen, Ammonia (As N)	E350.1	A	ND	1	0.136	0.500	mg/L		07/16/21 15:51	SCM
NITRATE NITROGEN AS N										
Nitrogen, Nitrate-Nitrite	E353.2	A	ND ER	1	0.0157	0.100	mg/L		07/09/21 17:17	KEC
TOTAL PHOSPHORUS AS P										
Phosphorus, Total (As P)	A4500-P-E	A	0.104	1	0.0116	0.0250	mg/L		07/13/21 15:07	ITN
TOTAL DISSOLVED SOLIDS										
Total Dissolved Solids	A2540C		191	1	3.75	10.0	mg/L		07/14/21 16:53	KMC

QUALIFIERS

CI Sample container temperature is out of limit as specified at testcode
 MI Recovery outside control limits due to Matrix Interference
 PL Permit Limit
 H Holding times for preparation or analysis exceeded
 ND Not Detected at the Reporting Limit

Original



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Analytical Report

WO#: 21070398
 Date Reported: 7/22/2021

CLIENT: Box R Waterlab
 Lab ID: 21070398-02
 Client Sample ID: X046673
 Project: X046671-89 City of John Day
 Sample Location: River #2

Collection Date: 7/7/2021 7:40:00 AM
 Received Date: 7/9/2021 9:57:00 AM
 Matrix: AQUEOUS

Analyses	Method	NELAP Status	Result Qual	DF	MDL	RL	Units	MCL	Date Analyzed	Analyst
ANIONS BY EPA 300.0										
Chloride	E300.0	A	1.95	1	0.0704	1.00	mg/L		07/17/21 9:10	KMC
AMMONIA NITROGEN AS N										
Nitrogen, Ammonia (As N)	E350.1	A	ND	1	0.136	0.500	mg/L		07/16/21 16:01	SCM
NITRATE NITROGEN AS N										
Nitrogen, Nitrate-Nitrite	E353.2	A	ND ER	1	0.0157	0.100	mg/L		07/09/21 17:18	KEC
TOTAL PHOSPHORUS AS P										
Phosphorus, Total (As P)	A4500-P-E	A	0.120	1	0.0116	0.0250	mg/L		07/13/21 15:07	ITN
TOTAL DISSOLVED SOLIDS										
Total Dissolved Solids	A2540C		171	1	3.75	10.0	mg/L		07/14/21 17:01	KMC

QUALIFIERS

CI Sample container temperature is out of limit as specified at testcode
 MI Recovery outside control limits due to Matrix Interference
 PL Permit Limit
 H Holding times for preparation or analysis exceeded
 ND Not Detected at the Reporting Limit

Original

NELAP A Accredited in accordance with NELAP ORELAP 100016, OR-028



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Analytical Report

WO#: 21070398
Date Reported: 7/22/2021

CLIENT: Box R Waterlab
Lab ID: 21070398-03
Client Sample ID X046675
Project: X046671-89 City of John Day
Sample Location: River #3

Collection Date: 7/7/2021 10:20:00 AM
Received Date: 7/9/2021 9:57:00 AM
Matrix: AQUEOUS

Analyses	Method	NELAP Status	Result Qual	DF	MDL	RL	Units	MCL	Date Analyzed	Analyst
ANIONS BY EPA 300.0										
Chloride	E300.0	A	1.95	1	0.0704	1.00	mg/L		07/17/21 9:37	KMC
AMMONIA NITROGEN AS N										
Nitrogen, Ammonia (As N)	E350.1	A	ND	1	0.136	0.500	mg/L		07/16/21 16:02	SCM
NITRATE NITROGEN AS N										
Nitrogen, Nitrate-Nitrite	E353.2	A	ND ER	1	0.0157	0.100	mg/L		07/09/21 17:19	KEC
TOTAL PHOSPHORUS AS P										
Phosphorus, Total (As P)	A4500-P-E	A	0.104	1	0.0116	0.0250	mg/L		07/13/21 15:07	ITN
TOTAL DISSOLVED SOLIDS										
Total Dissolved Solids	A2540C		178	1	3.75	10.0	mg/L		07/14/21 17:05	KMC

QUALIFIERS

C1 Sample container temperature is out of limit as specified at testcode
M1 Recovery outside control limits due to Matrix Interference
PL Peral Limit
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit

Original

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Analytical Report

WO#: 21070398
 Date Reported: 7/22/2021

CLIENT: Box R Waterlab
 Lab ID: 21070398-04
 Client Sample ID X046677
 Project: X046671-89 City of John Day
 Sample Location: Pond #1

Collection Date: 7/7/2021 10:30:00 AM
 Received Date: 7/9/2021 9:57:00 AM
 Matrix: AQUEOUS

Analyses	Method	NELAP Status	Result Qual	DF	MDL	RL	Units	MCL	Date Analyzed	Analyst
ANIONS BY EPA 300.0										
Chloride	E300.0	A	45.8	10	0.704	10.0	mg/L		07/14/21 7:14	KMC
AMMONIA NITROGEN AS N										
Nitrogen, Ammonia (As N)	E350.1	A	0.837	1	0.136	0.500	mg/L		07/16/21 16:03	SCM
NITRATE NITROGEN AS N										
Nitrogen, Nitrate-Nitrite	E353.2	A	14.3	10	0.157	1.00	mg/L		07/09/21 17:20	KEC
TOTAL PHOSPHORUS AS P										
Phosphorus, Total (As P)	A4500-P-E	A	6.18	1	0.116	0.250	mg/L		07/12/21 16:32	ITN
TOTAL DISSOLVED SOLIDS										
Total Dissolved Solids	A2540C		471	1	3.75	10.0	mg/L		07/14/21 17:09	KMC

QUALIFIERS

CI Sample container temperature is out of limit as specified at testcode
 MI Recovery outside control limits due to Matrix Interference
 PL Permit Limit
 H Holding times for preparation or analysis exceeded
 ND Not Detected at the Reporting Limit

Original



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Analytical Report

WO#: 21070398
 Date Reported: 7/22/2021

CLIENT: Box R Waterlab
 Lab ID: 21070398-05
 Client Sample ID X046679
 Project: X046671-89 City of John Day
 Sample Location: Pond #2

Collection Date: 7/7/2021 10:40:00 AM
 Received Date: 7/9/2021 9:57:00 AM
 Matrix: AQUEOUS

Analyses	Method	NELAP Status	Result Qual	DF	MDL	RL	Units	MCL	Date Analyzed	Analyst
ANIONS BY EPA 300.0										
Chloride	E300.0	A	49.5	10	0.704	10.0	mg/L		07/14/21 7:44	KMC
AMMONIA NITROGEN AS N										
Nitrogen, Ammonia (As N)	E350.1	A	1.12	1	0.136	0.500	mg/L		07/16/21 16:05	SCM
NITRATE NITROGEN AS N										
Nitrogen, Nitrate-Nitrite	E353.2	A	2.47	2	0.0314	0.200	mg/L		07/09/21 17:21	KEC
TOTAL PHOSPHORUS AS P										
Phosphorus, Total (As P)	A4500-P-E	A	6.52	1	0.290	0.625	mg/L		07/16/21 13:30	RJC
TOTAL DISSOLVED SOLIDS										
Total Dissolved Solids	A2540C		468	1	3.75	10.0	mg/L		07/14/21 17:13	KMC

QUALIFIERS

CI Sample container temperature is out of limit as specified at test code
 MI Recovery outside control limits due to Matrix Interference
 PL Permit Limit
 H Holding times for preparation or analysis exceeded
 ND Not Detected at the Reporting Limit

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Analytical Report

WO#: 21070398
Date Reported: 7/22/2021

CLIENT: Box R Waterlab
Lab ID: 21070398-06
Client Sample ID: X046681
Project: X046671-89 City of John Day
Sample Location: CWM #2

Collection Date: 7/7/2021 9:10:00 AM
Received Date: 7/9/2021 9:57:00 AM
Matrix: AQUEOUS

Analyses	Method	NELAP Status	Result Qual	DF	MDL	RL	Units	MCL	Date Analyzed	Analyst
ANIONS BY EPA 300.0										
Chloride	E300.0	A	4.85	1	0.0704	1.00	mg/L		07/17/21 10:57	KMC
AMMONIA NITROGEN AS N										
Nitrogen, Ammonia (As N)	E350.1	A	ND	1	0.136	0.500	mg/L		07/16/21 16:06	SCM
NITRATE NITROGEN AS N										
Nitrogen, Nitrate-Nitrite	E353.2	A	ND ER	1	0.0157	0.100	mg/L		07/09/21 17:23	KEC
TOTAL PHOSPHORUS AS P										
Phosphorus, Total (As P)	A4500-P-E	A	0.542	1	0.0116	0.0250	mg/L		07/13/21 15:11	ITN
TOTAL DISSOLVED SOLIDS										
Total Dissolved Solids	A2540C		196	1	3.75	10.0	mg/L		07/14/21 17:17	KMC

QUALIFIERS

CI Sample container temperature is out of limit as specified at testcode
 MI Recovery outside control limits due to Matrix Interference
 PL Permit Limit
 H Holding times for preparation or analysis exceeded
 ND Not Detected at the Reporting Limit

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Analytical Report

WO#: 21070398
Date Reported: 7/22/2021

CLIENT: Box R Waterlab
Lab ID: 21070398-07
Client Sample ID X046683
Project: X046671-89 City of John Day
Sample Location: MW #6

Collection Date: 7/7/2021 8:05:00 AM
Received Date: 7/9/2021 9:57:00 AM
Matrix: AQUEOUS

Analyses	Method	NELAP Status	Result Qual	DF	MDL	RL	Units	MCL	Date Analyzed	Analyst
ANIONS BY EPA 300.0										
Chloride	E300.0	A	42.4	10	0.704	10.0	mg/L		07/14/21 8:43	KMC
AMMONIA NITROGEN AS N										
Nitrogen, Ammonia (As N)	E350.1	A	ND	1	0.136	0.500	mg/L		07/16/21 16:07	SCM
NITRATE NITROGEN AS N										
Nitrogen, Nitrate-Nitrite	E353.2	A	ND ER	1	0.0157	0.100	mg/L		07/09/21 17:24	KEC
TOTAL PHOSPHORUS AS P										
Phosphorus, Total (As P)	A4500-P-E	A	6.67	1	0.116	0.250	mg/L		07/15/21 16:12	RJC
TOTAL DISSOLVED SOLIDS										
Total Dissolved Solids	A2540C		405	1	3.75	10.0	mg/L		07/14/21 17:21	KMC

QUALIFIERS

CI Sample container temperature is out of limit as specified at testcode
MI Recovery outside control limits due to Matrix Interference
PL Permit Limit
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit

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Analytical Report

WO#: 21070398
Date Reported: 7/22/2021

CLIENT: Box R Waterlab
Lab ID: 21070398-08
Client Sample ID X046685
Project: X046671-89 City of John Day
Sample Location: MW #5

Collection Date: 7/7/2021 7:00:00 AM
Received Date: 7/9/2021 9:57:00 AM
Matrix: AQUEOUS

Analyses	Method	NELAP Status	Result Qual	DF	MDL	RL	Units	MCL	Date Analyzed	Analyst
ANIONS BY EPA 300.0										
Chloride	E300.0	A	42.1	5	0.352	5.00	mg/L		07/17/21 11:23	KMC
AMMONIA NITROGEN AS N										
Nitrogen, Ammonia (As N)	E350.1	A	3.57	1	0.136	0.500	mg/L		07/20/21 15:09	SCM
NITRATE NITROGEN AS N										
Nitrogen, Nitrate-Nitrite	E353.2	A	ND ER	1	0.0157	0.100	mg/L		07/09/21 17:27	KEC
TOTAL PHOSPHORUS AS P										
Phosphorus, Total (As P)	A4500-P-E	A	6.65	1	0.290	0.625	mg/L		07/16/21 13:30	RJC
TOTAL DISSOLVED SOLIDS										
Total Dissolved Solids	A2540C		440	1	3.75	10.0	mg/L		07/14/21 17:25	KMC

QUALIFIERS

CI Sample container temperature is out of limit as specified at testcode
MI Recovery outside control limits due to Matrix Interference
PL Permit Limit
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit

Original

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Analytical Report

WO#: 21070398
Date Reported: 7/22/2021

CLIENT: Box R Waterlab
Lab ID: 21070398-09
Client Sample ID X046687
Project: X046671-89 City of John Day
Sample Location: MW #2

Collection Date: 7/7/2021 6:10:00 AM
Received Date: 7/9/2021 9:57:00 AM
Matrix: AQUEOUS

Analyses	Method	NELAP Status	Result Qual	DF	MDL	RL	Units	MCL	Date Analyzed	Analyst
ANIONS BY EPA 300.0										
Chloride	E300.0	A	2.75	1	0.0704	1.00	mg/L		07/14/21 11:42	KMC
AMMONIA NITROGEN AS N										
Nitrogen, Ammonia (As N)	E350.1	A	ND	1	0.136	0.500	mg/L		07/20/21 15:13	SCM
NITRATE NITROGEN AS N										
Nitrogen, Nitrate-Nitrite	E353.2	A	ND ER	1	0.0157	0.100	mg/L		07/09/21 17:29	KEC
TOTAL PHOSPHORUS AS P										
Phosphorus, Total (As P)	A4500-P-E	A	0.146	1	0.0116	0.0250	mg/L		07/13/21 15:11	ITN
TOTAL DISSOLVED SOLIDS										
Total Dissolved Solids	A2540C		221	1	3.75	10.0	mg/L		07/14/21 17:29	KMC

QUALIFIERS

C1 Sample container temperature is out of limit as specified at testcode
 M1 Recovery outside control limits due to Matrix Interference
 PL Permit Limit
 H Holding times for preparation or analysis exceeded
 ND Not Detected at the Reporting Limit

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Analytical Report

WO#: 21070398
Date Reported: 7/22/2021

CLIENT: Box R Waterlab
Lab ID: 21070398-10
Client Sample ID: X046689
Project: X046671-89 City of John Day
Sample Location: CWM #3

Collection Date: 7/7/2021 10:00:00 AM
Received Date: 7/9/2021 9:57:00 AM
Matrix: AQUEOUS

Analyses	Method	NELAP Status	Result Qual	DF	MDL	RL	Units	MCL	Date Analyzed	Analyst
ANIONS BY EPA 300.0										
Chloride	E300.0	A	1.79	1	0.0704	1.00	mg/L		07/14/21 12:12	KMC
AMMONIA NITROGEN AS N										
Nitrogen, Ammonia (As N)	E350.1	A	ND	1	0.136	0.500	mg/L		07/20/21 15:14	SCM
NITRATE NITROGEN AS N										
Nitrogen, Nitrate-Nitrite	E353.2	A	ND ER	1	0.0157	0.100	mg/L		07/09/21 17:30	KEC
TOTAL PHOSPHORUS AS P										
Phosphorus, Total (As P)	A4500-P-E	A	0.234	1	0.0116	0.0250	mg/L		07/13/21 15:12	ITN
TOTAL DISSOLVED SOLIDS										
Total Dissolved Solids	A2540C		181	1	3.75	10.0	mg/L		07/14/21 17:33	KMC

QUALIFIERS

C1 Sample container temperature is out of limit as specified at testcode
 MI Recovery outside control limits due to Matrix Interference
 PL Permit Limit
 H Holding times for preparation or analysis exceeded
 ND Not Detected at the Reporting Limit

Original



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QC SUMMARY REPORT

WO#: 21070398
 22-Jul-21

Client: Box R Waterlab
Project: X046671-89 City of John Day
TestCode: AMMONIA_W

Sample ID:	MB-13320	SampType:	MBLK	TestCode:	AMMONIA_W	Units:	mg/L	Prep Date:	7/15/2021	RunNo:	23062		
Client ID:	PBW	Batch ID:	13320	TestNo:	E350.1	E350.1		Analysis Date:	7/16/2021	SeqNo:	369799		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia (As N)		ND		0.500									

Sample ID:	LCS-13320	SampType:	LCS	TestCode:	AMMONIA_W	Units:	mg/L	Prep Date:	7/15/2021	RunNo:	23062		
Client ID:	LCSW	Batch ID:	13320	TestNo:	E350.1	E350.1		Analysis Date:	7/16/2021	SeqNo:	369801		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia (As N)		1.98		0.500	2.000	0	98.8	90	110				

Sample ID:	21070321-04AMS	SampType:	MS	TestCode:	AMMONIA_W	Units:	mg/L	Prep Date:	7/15/2021	RunNo:	23062		
Client ID:	BatchQC	Batch ID:	13320	TestNo:	E350.1	E350.1		Analysis Date:	7/16/2021	SeqNo:	369810		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia (As N)		2.02		0.500	2.000	0	101	80	120				

Sample ID:	21070321-04AMSD	SampType:	MSD	TestCode:	AMMONIA_W	Units:	mg/L	Prep Date:	7/15/2021	RunNo:	23062		
Client ID:	BatchQC	Batch ID:	13320	TestNo:	E350.1	E350.1		Analysis Date:	7/16/2021	SeqNo:	369811		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia (As N)		2.12		0.500	2.000	0	106	80	120	2.022	4.54	20	

Qualifiers: C1 Sample container temperature is out of limit as specified at testcode
 ND Not Detected at the Reporting Limit
 H Holding times for preparation or analysis exceeded
 PL Permit Limit
 MI Recovery outside control limits due to Matrix In
 RL Reporting Detection Limit

Original



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QC SUMMARY REPORT

WO#: 21070398
 22-Jul-21

Client: Box R Waterlab
Project: X046671-89 City of John Day
TestCode: AMMONIA_W

Sample ID: MB-13348	SampType: MBLK	TestCode: AMMONIA_W	Units: mg/L	Prep Date: 7/16/2021	RunNo: 23102						
Client ID: PBW	Batch ID: 13348	TestNo: E350.1	E350.1	Analysis Date: 7/20/2021	SeqNo: 370390						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia (As N)	ND	0.500									

Sample ID: LCS-13348	SampType: LCS	TestCode: AMMONIA_W	Units: mg/L	Prep Date: 7/16/2021	RunNo: 23102						
Client ID: LCSW	Batch ID: 13348	TestNo: E350.1	E350.1	Analysis Date: 7/20/2021	SeqNo: 370392						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia (As N)	1.99	0.500	2.000	0	99.6	90	110				

Sample ID: 21070398-08AMS	SampType: MS	TestCode: AMMONIA_W	Units: mg/L	Prep Date: 7/16/2021	RunNo: 23102						
Client ID: X046685	Batch ID: 13348	TestNo: E350.1	E350.1	Analysis Date: 7/20/2021	SeqNo: 370413						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia (As N)	5.30	1.00	2.000	3.569	86.7	80	120				

Sample ID: 21070398-08AMSD	SampType: MSD	TestCode: AMMONIA_W	Units: mg/L	Prep Date: 7/16/2021	RunNo: 23102						
Client ID: X046685	Batch ID: 13348	TestNo: E350.1	E350.1	Analysis Date: 7/20/2021	SeqNo: 370414						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia (As N)	5.27	1.00	2.000	3.569	85.2	80	120	5.302	0.567	20	

Qualifiers: C1 Sample container temperature is out of limit as specified at testcode
 ND Not Detected at the Reporting Limit
 H Holding time for preparation or analysis exceeded
 PL Permit Limit
 MI Recovery inside control limits due to Matrix In
 RL Reporting Detection Limit

Original



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QC SUMMARY REPORT

WO#: 21070398
 22-Jul-21

Client: Box R Waterlab
Project: X046671-89 City of John Day
TestCode: EPA300_W

Sample ID: MBLK	SampType: MBLK	TestCode: EPA300_W	Units: mg/L	Prep Date:	RunNo: 22940						
Client ID: PBW	Batch ID: R22940	TestNo: E300.0		Analysis Date: 7/14/2021	SeqNo: 367564						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	1.00									

Sample ID: LCS	SampType: LCS	TestCode: EPA300_W	Units: mg/L	Prep Date:	RunNo: 22940						
Client ID: LCSW	Batch ID: R22940	TestNo: E300.0		Analysis Date: 7/14/2021	SeqNo: 367565						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	10.9	1.00	12.00	0	90.9	90	110				

Sample ID: 21070398-07BMS	SampType: MS	TestCode: EPA300_W	Units: mg/L	Prep Date:	RunNo: 22940						
Client ID: X046683	Batch ID: R22940	TestNo: E300.0		Analysis Date: 7/14/2021	SeqNo: 367573						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	98.3	10.0	60.00	42.40	93.2	80	120				

Sample ID: 21070398-07BMSD	SampType: MSD	TestCode: EPA300_W	Units: mg/L	Prep Date:	RunNo: 22940						
Client ID: X046683	Batch ID: R22940	TestNo: E300.0		Analysis Date: 7/14/2021	SeqNo: 367574						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	98.0	10.0	60.00	42.40	92.7	80	120	98.33	0.330		15

Qualifiers: CL Sample container temperature is out of limit as specified at testcode
 ND Not Detected at the Reporting Limit
 PL Permit Limit
 HL Holding time for preparation or analysis exceeded
 MI Recovery outside control limits due to Matrix In
 RL Reporting Description Limit



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 Website: www.nrclabs.com

QC SUMMARY REPORT

WO#: 21070398
 22-Jul-21

Client: Box R Waterlab
Project: X046671-89 City of John Day
TestCode: EPA300_W

Sample ID: MBLK	SampType: MBLK	TestCode: EPA300_W	Units: mg/L	Prep Date:	RunNo: 22940						
Client ID: PBW	Batch ID: R22940	TestNo: E300.0		Analysis Date: 7/17/2021	SeqNo: 369718						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	1.00									

Sample ID: LCS	SampType: LCS	TestCode: EPA300_W	Units: mg/L	Prep Date:	RunNo: 22940						
Client ID: LCSW	Batch ID: R22940	TestNo: E300.0		Analysis Date: 7/17/2021	SeqNo: 369719						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	10.9	1.00	12.00	0	91.0	90	110				

Sample ID: LCS	SampType: LCS	TestCode: EPA300_W	Units: mg/L	Prep Date:	RunNo: 22940						
Client ID: LCSW	Batch ID: R22940	TestNo: E300.0		Analysis Date: 7/13/2021	SeqNo: 369896						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	11.3	1.00	12.00	0	94.1	90	110				

Sample ID: MBLK	SampType: MBLK	TestCode: EPA300_W	Units: mg/L	Prep Date:	RunNo: 22940						
Client ID: PBW	Batch ID: R22940	TestNo: E300.0		Analysis Date: 7/13/2021	SeqNo: 369897						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	1.00									

Qualifiers: C1 Sample container temperature is out of limit as specified at testcode H Holding times for preparation or analysis exceeded MI Recovery outside control limits due to Matrix In
 ND Not Detected at the Reporting Limit PL Permit Limit RL Reporting Detection Limit

Original



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QC SUMMARY REPORT

WO#: 21070398
 22-Jul-21

Client: Box R Waterlab
Project: X046671-89 City of John Day
TestCode: NO2NO3_W

Sample ID: MB	SampType: MBLK	TestCode: NO2NO3_W	Units: mg/L	Prep Date:	RunNo: 22854						
Client ID: PBW	Batch ID: R22854	TestNo: E353.2		Analysis Date: 7/9/2021	SeqNo: 366159						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate-Nitrite	ND	0.100									

Sample ID: LCS	SampType: LCS	TestCode: NO2NO3_W	Units: mg/L	Prep Date:	RunNo: 22854						
Client ID: LCSW	Batch ID: R22854	TestNo: E353.2		Analysis Date: 7/9/2021	SeqNo: 366161						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate-Nitrite	0.915	0.100	1.000	0	91.5	90	110				

Sample ID: 21070321-09AMS	SampType: MS	TestCode: NO2NO3_W	Units: mg/L	Prep Date:	RunNo: 22854						
Client ID: BatchQC	Batch ID: R22854	TestNo: E353.2		Analysis Date: 7/9/2021	SeqNo: 366163						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate-Nitrite	2.25	0.200	2.000	0.1777	104	80	120				

Sample ID: 21070321-09AMSD	SampType: MSD	TestCode: NO2NO3_W	Units: mg/L	Prep Date:	RunNo: 22854						
Client ID: BatchQC	Batch ID: R22854	TestNo: E353.2		Analysis Date: 7/9/2021	SeqNo: 366164						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate-Nitrite	2.24	0.200	2.000	0.1777	103	80	120	2.251	0.499	20	

Qualifiers: C1 Sample container temperature is out of limit as specified at testcode
 ND Not Detected at the Reporting Limit
 H1 Holding times for preparation or analysis exceeded
 PL Permit Limit
 M1 Recovery outside control limits due to Matrix In
 RL Reporting Detection Limit



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QC SUMMARY REPORT

WO#: 21070398
 22-Jul-21

Client: Box R Waterlab
Project: X046671-89 City of John Day

TestCode: PHOS-T_W

Sample ID: LCS-13262	SampType: LCS	TestCode: PHOS-T_W	Units: mg/L	Prep Date: 7/12/2021	RunNo: 22889						
Client ID: LCSW	Batch ID: 13262	TestNo: A4500-P-E	A4500-P-E	Analysis Date: 7/12/2021	SeqNo: 366763						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total (As P)	0.325	0.0250	0.3500	0	92.7	80	120				

Sample ID: MB-13262	SampType: MBLK	TestCode: PHOS-T_W	Units: mg/L	Prep Date: 7/12/2021	RunNo: 22889						
Client ID: PBW	Batch ID: 13262	TestNo: A4500-P-E	A4500-P-E	Analysis Date: 7/12/2021	SeqNo: 366764						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total (As P)	ND	0.0250									

Sample ID: 21070234-01AMS	SampType: MS	TestCode: PHOS-T_W	Units: mg/L	Prep Date: 7/12/2021	RunNo: 22889						
Client ID: BatchQC	Batch ID: 13262	TestNo: A4500-P-E	A4500-P-E	Analysis Date: 7/12/2021	SeqNo: 366766						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total (As P)	6.45	0.250	2.000	4.605	92.0	80	120				

Sample ID: 21070234-01AMSD	SampType: MSD	TestCode: PHOS-T_W	Units: mg/L	Prep Date: 7/12/2021	RunNo: 22889						
Client ID: BatchQC	Batch ID: 13262	TestNo: A4500-P-E	A4500-P-E	Analysis Date: 7/12/2021	SeqNo: 366767						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total (As P)	6.47	0.250	2.000	4.605	93.4	80	120	6.445	0.437	15	

Qualifiers: C1 Sample container temperature is out of limit as specified at testcode H Holding times for preparation or analysis exceeded M1 Recovery outside control limits due to Matrix In
 ND Not Detected at the Reporting Limit PL Permit Limit RL Reporting Detection Limit

Original



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QC SUMMARY REPORT

WO#: 21070398
 22-Jul-21

Client: Box R Waterlab
Project: X046671-89 City of John Day

TestCode: PHOS-T_W

Sample ID: LCS-13277	SampType: LCS	TestCode: PHOS-T_W	Units: mg/L	Prep Date: 7/13/2021	RunNo: 22909						
Client ID: LCSW	Batch ID: 13277	TestNo: A4500-P-E	A4500-P-E	Analysis Date: 7/13/2021	SeqNo: 366994						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total (As P)	0.325	0.0250	0.3500	0	92.9	80	120				

Sample ID: MB-13277	SampType: MBLK	TestCode: PHOS-T_W	Units: mg/L	Prep Date: 7/13/2021	RunNo: 22909						
Client ID: PBW	Batch ID: 13277	TestNo: A4500-P-E	A4500-P-E	Analysis Date: 7/13/2021	SeqNo: 366995						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total (As P)	ND	0.0250									

Sample ID: 21070398-01AMS	SampType: MS	TestCode: PHOS-T_W	Units: mg/L	Prep Date: 7/13/2021	RunNo: 22909						
Client ID: X046671	Batch ID: 13277	TestNo: A4500-P-E	A4500-P-E	Analysis Date: 7/13/2021	SeqNo: 366997						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total (As P)	0.301	0.0250	0.2000	0.1043	96.4	80	120				

Sample ID: 21070398-01AMSD	SampType: MSD	TestCode: PHOS-T_W	Units: mg/L	Prep Date: 7/13/2021	RunNo: 22909						
Client ID: X046671	Batch ID: 13277	TestNo: A4500-P-E	A4500-P-E	Analysis Date: 7/13/2021	SeqNo: 366998						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total (As P)	0.294	0.0250	0.2000	0.1043	94.6	80	120	0.3011	2.54	15	

Qualifiers: CI Sample container temperature is out of limit as specified at testcode
 ND Not Detected at the Reporting Limit
 II Holding time for preparation or analysis exceeded
 PL Permit Limit
 MI Recovery outside control limits due to Matrix In
 RL Reporting Description Limit

Original



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QC SUMMARY REPORT

WO#: 21070398
 22-Jul-21

Client: Box R Waterlab
Project: X046671-89 City of John Day

TestCode: PHOS-T_W

Sample ID: LCS-13317	SampType: LCS	TestCode: PHOS-T_W	Units: mg/L	Prep Date: 7/15/2021	RunNo: 22996						
Client ID: LCSW	Batch ID: 13317	TestNo: A4500-P-E	A4500-P-E	Analysis Date: 7/15/2021	SeqNo: 369098						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total (As P)	0.327	0.0250	0.3500	0	93.4	80	120				

Sample ID: MB-13317	SampType: MBLK	TestCode: PHOS-T_W	Units: mg/L	Prep Date: 7/15/2021	RunNo: 22996						
Client ID: PBW	Batch ID: 13317	TestNo: A4500-P-E	A4500-P-E	Analysis Date: 7/15/2021	SeqNo: 369099						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total (As P)	ND	0.0250									

Sample ID: 21070398-05AMS	SampType: MS	TestCode: PHOS-T_W	Units: mg/L	Prep Date: 7/16/2021	RunNo: 22996						
Client ID: X046679	Batch ID: 13317	TestNo: A4500-P-E	A4500-P-E	Analysis Date: 7/16/2021	SeqNo: 369101						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total (As P)	12.4	0.625	5.000	6.515	117	80	120				

Sample ID: 21070398-05AMSD	SampType: MSD	TestCode: PHOS-T_W	Units: mg/L	Prep Date: 7/16/2021	RunNo: 22996						
Client ID: X046679	Batch ID: 13317	TestNo: A4500-P-E	A4500-P-E	Analysis Date: 7/16/2021	SeqNo: 369102						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total (As P)	11.1	0.625	5.000	6.515	91.5	80	120	12.37	10.9	15	

Qualifiers: C1 Sample container temperature is out of limit as specified at testcode H Holding times for preparation or analysis exceeded MI Recovery outside control limits due to Matrix in ND Not Detected at the Reporting Limit PL Permit Limit RL Reporting Detection Limit

Original



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QC SUMMARY REPORT

WO#: 21070398
 22-Jul-21

Client: Box R Waterlab
Project: X046671-89 City of John Day
TestCode: SOLIDS_TDS_W

Sample ID: MB-13300	SampType: MBLK	TestCode: SOLIDS_TDS	Units: mg/L	Prep Date: 7/14/2021	RunNo: 23126						
Client ID: PBW	Batch ID: 13300	TestNo: A2540C		Analysis Date: 7/14/2021	SeqNo: 370685						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	10.0									

Sample ID: LCS-13300	SampType: LCS	TestCode: SOLIDS_TDS	Units: mg/L	Prep Date: 7/14/2021	RunNo: 23126						
Client ID: LCSW	Batch ID: 13300	TestNo: A2540C		Analysis Date: 7/14/2021	SeqNo: 370686						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids	108	10.0	100.0	0	108	80	120				

Sample ID: 21070398-01CDUP	SampType: DUP	TestCode: SOLIDS_TDS	Units: mg/L	Prep Date: 7/14/2021	RunNo: 23126						
Client ID: X046671	Batch ID: 13300	TestNo: A2540C		Analysis Date: 7/14/2021	SeqNo: 370688						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids	191	10.0				191.2	0	10			

Sample ID: 21070520-01ADUP	SampType: DUP	TestCode: SOLIDS_TDS	Units: mg/L	Prep Date: 7/14/2021	RunNo: 23126						
Client ID: BatchQC	Batch ID: 13300	TestNo: A2540C		Analysis Date: 7/14/2021	SeqNo: 370699						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids	725	10.0				727.5	0.344	10			

Qualifiers: C1 Sample container temperature is out of limit as specified at testcode
 ND Not Detected at the Reporting Limit
 II Holding times for preparation or analysis exceeded
 PL Permit Limit
 M1 Recovery outside control limits due to Matrix In
 RL Reporting Detection Limit

Original

Sample Log-In Check List

Client Name: **BOX_R_Waterlab**

Work Order Number: **21070398**

ReptNo: **1**

Logged by: **Kalea Adams** 7/9/2021 9:57:00 AM
Completed By: **Michelle Harsh** 7/12/2021 8:26:19 AM
Reviewed By: **Dorie Maier** 7/22/2021 11:58:43 AM

Michelle Harsh
Dorie Maier

Chain of Custody

1. Is Chain of Custody complete? Yes No Not Present
2. How was the sample delivered? UPS

Log In

3. Coolers are present? Yes No NA
4. Shipping container/cooler in good condition? Yes No
Custody seals intact on shipping container/cooler? Yes No Not Present
No. Seal Date: Signed By:
5. Was an attempt made to cool the samples? Yes No NA
6. Were all samples received at a temperature of >0° C to 6.0°C? Yes No NA
7. Sample(s) in proper container(s)? Yes No
8. Sufficient sample volume for indicated test(s)? Yes No
9. Are samples (except VOA and ONG) properly preserved? Yes No
10. Was preservative added to bottles? Yes No NA
11. Is the headspace in the VOA vials less than 1/4 inch or 6 mm? Yes No No VOA Vials
12. Were any sample containers received broken? Yes No
13. Does paperwork match bottle labels? Yes No
(Note discrepancies on chain of custody)
14. Are matrices correctly identified on Chain of Custody? Yes No
15. Is it clear what analyses were requested? Yes No
16. Were all holding times able to be met? Yes No
(If no, notify customer for authorization.)

Special Handling (if applicable)

17. Was client notified of all discrepancies with this order? Yes No NA

Person Notified:	_____	Date:	_____
By Whom:	_____	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	_____		
Client Instructions:	_____		

18. Additional remarks:

Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.2	Good				DLN



Environmental Testing Laboratory
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Chain of Custody Record

This Chain of Custody is a LEGAL DOCUMENT and must be filled out accurately.

Section A Required Client Information		Section B Required Project Information		Section C Invoice Information		Section D Rush Status (Subject to Scheduling)	
Company:	Box R Water Analysis Laboratory	Project Name:	ENVIRONMENTAL TESTING LABORATORY	Attention:	SK MIYAZAKI	<input checked="" type="checkbox"/> Standard 10-14 Days	
Address:	567 NW Second St Prineville, OR 97754	Project Number:	X111631-690	Company Name:	Box R Water Analysis Lab	<input type="checkbox"/> 5 Business Days (50% surcharge)	
Email:	don.walker@labtesting.com	Report To:	Box R Water Lab	Address:	567 NW 2nd St	<input type="checkbox"/> 3 Business Days (75% surcharge)	
Phone:	541 447 4911 Fax 541 447 4917	Copy To:	SK MIYAZAKI	P.O.#		<input type="checkbox"/> 24 - 48 hours (100% surcharge)	
Collected By (Print):	Jaw Godwin	Analysis Requested		Authorized <input type="checkbox"/> Yes <input type="checkbox"/> No			
Collected By (Sign):	Jaw Godwin	TDS					
Email Report <input type="checkbox"/> Yes <input type="checkbox"/> No	Mail Report <input type="checkbox"/> Yes <input type="checkbox"/> No	Chloride					
Fax Report <input type="checkbox"/> Yes <input type="checkbox"/> No		Nitrate					
		NH3-N					
		No. of Containers					
		Time Collected					
		Date Collected					
		Matrix*					
		Comp (Grab)					
		Sample ID					
		NRC Workorder #		2107038			
		Remarks/Field Data		NRC Sample # (Lab Use Only)			
		WWT River #1		01			
		River #2		02			
		River #3		03			
		Pond #1		04			
		Pond #2		05			
		CUM#2		06			
		MUM#6		07			
		MUM#5		08			
		MUM#7		09			
		CUM#3		10			

Section E Sample Information		Section F Requisition/Receive	
X46 671	WW	Print	Date
X46 673	W	Sign	Time
X46 675	W	SK MIYAZAKI	07/02/04 / 17:00
X46 677	W		
X46 679	W		
X46 681	W		
X46 683	W		
X46 685	W		
X46 687	W		
X46 689	W		

Section G Lab Use Only	
Temp: 0.2	Received on Ice: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Number of Bottles Received: 30	pH Checked: <input checked="" type="checkbox"/>
COC Seats Intact: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Field Blank Included: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Received Via <input checked="" type="checkbox"/> UPS <input type="checkbox"/> FedEx <input type="checkbox"/> Other	Amount
Payment: <input checked="" type="checkbox"/> Invoice <input type="checkbox"/> Cash <input type="checkbox"/> VISA/M/C <input type="checkbox"/> Check #	Received By: <i>[Signature]</i>
	Received By Laboratory: <i>[Signature]</i>
	Received Date: 7/9/21 9:57

- B Analyte detected in the associated method blank.
- BA BOD Alternative Calculation: The initial results performed by Standard Methods did not fall within parameters of the Standard Methods calculation. An alternate approved calculation was performed using the HACH method and the value reported is an estimated concentration.
- C Sample(s) does not meet NELAP/ORELAP sample acceptance criteria. See Case Narrative.
- C1 Sample(s) does not meet NELAP/ORELAP sample acceptance criteria for temperature.
- CF Results confirmed by re-analysis.
- CU Cleanup performed as specified by method.
- D1 The diesel elution pattern for the sample is not typical.
- D2 The sample appears to be a heavier hydrocarbon range than diesel.
- D3 The sample appears to be a lighter hydrocarbon range than diesel.
- D4 Detected hydrocarbons do not have pattern and range consistent with typical petroleum products and may be due to biogenic interference.
- D5 Detected hydrocarbons in the diesel range appear to be weathered diesel.
- E Estimated value.
- ER Elevated reporting limit due to matrix. Report limits (MDLs, MRLs & PQLs) are adjusted based on variations in sample preparation amounts, analytical dilutions, and percent solids, where applicable.
- FC Fecal Coliforms: Sample(s) received past 40 CFR Part 136 specified holding time. Results reported as estimated values.
- G1 The gasoline elution pattern for the sample is not typical.
- G2 The sample appears to be a heavier hydrocarbon range than gasoline.
- G3 The sample appears to be a lighter hydrocarbon range than gasoline.
- G4 Detected hydrocarbons in the gasoline range appear to be weathered gasoline.
- HP Sample re-analysis performed outside of method specified holding time.
- HR Sample received outside of method specified holding time.
- HS Sample analyzed for volatile organics contained headspace.
- HT At the client's request, the sample was analyzed outside of method specified holding time.
- H Analysis performed outside of method specified holding time.
- J Analyte detected below the Minimum Reporting Limit (MRL) and above the Method Detection Limit (MDL). The J flag result is an estimated value and the user should be aware that this data is of limited reliability.
- L Dissolved metals were not filtered within 15 minutes of collection per 40 CFR Part 136.
- M1 Surrogate, Duplicate Sample (DUP) or Matrix Spikes recoveries are out of control limits due to matrix interference. Sample results may be biased.
- N See Case Narrative on page 2 of report.
- NLR No Legionella Recovered.
- PLR Presence of Legionella Recovered.
- Q Initial calibration verification (ICV), continuing calibration verification (CCV) or laboratory control sample (LCS) exceeded high recovery limits, but associated samples are non-detect and the sample results are not affected. Data meets EPA/NELAP requirements.
- R Relative percent difference (RPD) is outside of the accepted recovery limits.
- R1 Relative percent difference (RPD) is outside of the accepted recovery limits. However, analyses are not controlled on RPD values for sample concentrations that are less than the reporting limit.
- R3 The relative percent difference (RPD) and/or percent recovery for the duplicate (DUP) or matrix spike (MS)/matrix spike duplicate (MSD) cannot be accurately calculated due to the concentration of analyte already present in the sample.
- R4 Duplicate analysis failed due to result being at or near the method reporting limit.
- S Surrogate and/or matrix spike recovery is outside of the accepted recovery limits. Sample results may be biased.
- S1 Surrogate or matrix spike recovery is outside of control limits due to dilution necessary for analysis.
- SC Sub-contracted to another laboratory for analysis.
- SP Sample(s) were not collected per EPA Method 5035A protocols. The results are considered minimum values.
- # Value exceeds regulatory level for TCLP contaminant.
- X1 The motor oil elution pattern for the sample is not typical.
- X2 The sample appears to be a heavier hydrocarbon range than motor oil.
- X3 The sample appears to be a lighter hydrocarbon range than motor oil.
- * Value exceeds Maximum Contaminant Level or is outside the acceptable range.

Box R Water Analysis Laboratory LLC

567 NW 2nd Street
 Prineville OR 97754
 Phone: 541 447-4911
 Fax: 541 447-4917

System Identification:

PWID #: N/A
 Name: CWM- H2O Company c/o Ian Godwin
 Address: 1319 SE Martin Luther King Blvd
 City, State, Zip code: Portland OR 97214

Sample identification:

Sample Location: RIV-1
 Sample Date: 07/07/2021

Laboratory Information

Date Received in Lab: 07/07/2021
 Time Received in Lab: 1750
 Sample identification #: X046672A
 Location Analysis Took Place: Box R Laboratory
 Results Sent to State: No

Sample RESULTS: Page 1 of 1

Report Date: 08/02/2021
 X Identification Number: X046672A
 Client ID number#: X046672A

Source of Water: DW

Sampled by: IAG

Sample time: 0550

Date Analyzed: 07/08/2021

Time Analyzed: 1800

Composite Sample: No

ORELAP #: 100054

Analytical Results

<u>Contaminant</u>	<u>Max Contaminant Limit</u>	<u>Your Analysis- Results</u>	<u>Units</u>	<u>Lab Reporting Limit</u>	<u>Method</u>	<u>Notes</u>
<u>Nitrate</u>	<u>10.</u>	<u>0.736</u>	<u>mg/L</u>	<u>1.0</u>	<u>SM4500- NO3-D</u>	<u>"I"</u>

Recommended holding time was in the range for the test method used per The Box R Water Analysis Laboratory LLC. , Quality Assurance Plan, and in accordance with the National Environmental Laboratory Accreditation Conference, (NELAC). This is documented in the sample results section above in this report. All results are valid for the sample submitted only, and all results are for the client listed above and on the Chain of Custody form. Samples will be held for a maximum of 10 days from the report date unless prior arrangements have been set up. Thank-you for choosing the Box R Water Analysis Laboratory LLC., If you need further explanation or if you have any other questions in regards to the testing of your water, please do not hesitate to call us at 541 447-4911. This report can not be reproduced except in full without the written permission from Box R Water Analysis Laboratory LLC.

DATA QUALIFIERS AND DEFINITIONS

MDL = Minimum Detection Limit MCL = Minimum Contaminant Level MRL = Minimum Reporting Limit
 ND = Not Detected at reporting limit LRL = Laboratory Reporting Limit n/a= Not Applicable GW=Ground Water
 J = result between Laboratory MDL and LRL

Laboratory Director


 Sherri Miyazaki
Date: Aug. 2, 2021

Box R Water Analysis Laboratory LLC
 567 NW 2nd St. Prineville, OR 97754
 Phone: (541)447-4911 Fax: (541)447-4917
 ORELAP # 100054

To be filled in by Person Submitting Sample:

Public Water System N/A Realty Transaction N/A

PWS ID #: 41 N/A Source ID: N/A Source Name: CTD

Public Water System or Property Owner: 40 Ian Godwin

Address: CWM-H2O Company
 1319 SE Martin Luther King Blvd.

City, State, Zip: Portland OR 97214

Sampled at: Riv-1 Sampled By: TAG

Date Collected: 07/07/2021 Time Collected: 0550

Sample Composition: Raw or Treated Water | From Source or Distribution | Single or Combined Sample- N/A

To be completed by Laboratory:

Date Received in Lab: 07-07-2021 Date Analyzed: 07-08-2021

Lab Sample ID: X046672A Sample Compositied in Lab: Y | (N)

Contaminant	Code	MCL mg/L	Analysis mg/L	LRL	Method	Analyst
Nitrate	1040	10.	0.736	10 mg/L	SM4500-NO ₃ -D	SKW
Nitrate-Nitrite	1038	10.				
Nitrite	1041	10.				

Box R Water Analysis Laboratory reserves the right to reject any sample that does not meet proper sampling procedures, or does not have a completed chain of custody form.
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Box R Water Analysis Laboratory LLC

567 NW 2nd Street
 Prineville OR 97754
 Phone: 541 447-4911
 Fax: 541 447-4917

System Identification:

PWID #: N/A
 Name: CWM- H2O Company c/o Ian Godwin
 Address: 1319 SE Martin Luther King Blvd
 City, State, Zip code: Portland OR 97214

Sample Identification:

Sample Location: RIV-2
 Sample Date: 07/07/2021

Laboratory Information

Date Received in Lab: 07/07/2021
 Time Received in Lab: 1750
 Sample identification #: X046674A
 Location Analysis Took Place: Box R Laboratory
 Results Sent to State: No

Analytical Results

Sample RESULTS: Page 1 of 1

Report Date: 08/02/2021
 X Identification Number: X046674A
 Client ID number#: X046674A

Source of Water: DW

Sampled by: IAG

Sample time: 0740

Date Analyzed: 07/08/2021
 Time Analyzed: 1800
 Composite Sample: No
 ORELAP #: 100054

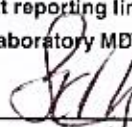
<u>Contaminant</u>	<u>Max Contaminant Limit</u>	<u>Your Analysis-Results</u>	<u>Units</u>	<u>Lab Reporting Limit</u>	<u>Method</u>	<u>Notes</u>
<u>Nitrate</u>	<u>10.</u>	<u>0.531</u>	<u>mg/L</u>	<u>1.0</u>	<u>SM4500-NO3-D</u>	<u>"J"</u>

Recommended holding time was in the range for the test method used per The Box R Water Analysis Laboratory LLC. , Quality Assurance Plan, and in accordance with the National Environmental Laboratory Accreditation Conference, (NELAC). This is documented in the sample results section above in this report. All results are valid for the sample submitted only, and all results are for the client listed above and on the Chain of Custody form. Samples will be held for a maximum of 10 days from the report date unless prior arrangements have been set up. Thank-you for choosing the Box R Water Analysis Laboratory LLC., If you need further explanation or if you have any other questions in regards to the testing of your water, please do not hesitate to call us at 541 447-4911. This report can not be reproduced except in full without the written permission from Box R Water Analysis Laboratory LLC.

DATA QUALIFIERS AND DEFINITIONS

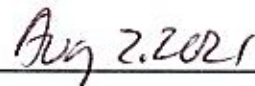
MDL = Minimum Detection Limit MCL = Minimum Contaminant Level MRL = Minimum Reporting Limit
 ND = Not Detected at reporting limit LRL = Laboratory Reporting Limit n/a= Not Applicable GW=Ground Water
 J = result between Laboratory MDL and LRL

Laboratory Director



Sherri Miyazaki

Date:



Box R Water Analysis Laboratory LLC
 567 NW 2nd St. Prineville, OR 97754
 Phone: (541)447-4911 Fax: (541)447-4917
 ORELAP # 100054

To be filled in by Person Submitting Sample:

Public Water System N/A Realty Transaction N/A

PWS ID #: 41 N/A Source ID: N/A Source Name: CJD

Public Water System or Property Owner: 40 Ian Godwin

CWM-H2O Company

Address: 1319 SE Martin Luther King Blvd.

City, State, Zip: Portland OR 97214

Sampled at: Riv-2 Sampled By: TAG

Date Collected: 07/07/2021 Time Collected: 0740

Sample Composition: Raw or Treated Water | From Source or Distribution | Single or Combined Sample - N/A

To be completed by Laboratory:

Date Received in Lab: 07-07-2021 Date Analyzed: 07-08-2021

Lab Sample ID: X046674A Sample Compositing in Lab: Y (N)

Contaminant	Code	MCL mg/L	Analysis mg/L	LRL	Method	Analyst
Nitrate	1040	10.	0.53 mg/L	1.0 mg/L	SM4500-NO ₃ -D	SKM
Nitrate-Nitrite	1038	10.				
Nitrite	1041	10.				

Box R Water Analysis Laboratory reserves the right to reject any sample that does not meet proper sampling procedures, or does not have a completed chain of custody form.
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Box R Water Analysis Laboratory LLC

567 NW 2nd Street
 Prineville OR 97754
 Phone: 541 447-4911
 Fax: 541 447-4917

System Identification:

PWID #: N/A
 Name: CWM- H2O Company c/o Ian Godwin
 Address: 1319 SE Martin Luther King Blvd
 City, State, Zip code: Portland OR 97214

Sample identification:

Sample Location: RIV-3
 Sample Date: 07/07/2021

Laboratory Information

Date Received in Lab: 07/07/2021
 Time Received in Lab: 1750
 Sample Identification #: X046676A
 Location Analysis Took Place: Box R Laboratory
 Results Sent to State: No

Analytical Results

Sample RESULTS: Page 1 of 1
 Report Date: 08/02/2021
 X Identification Number: X046676A
 Client ID number#: X046676A

Source of Water: DW

Sampled by: IAG

Sample time: 1030

Date Analyzed: 07/08/2021
 Time Analyzed: 1800
 Composite Sample: No
 ORELAP #: 100054

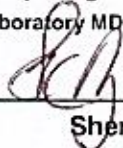
<u>Contaminant</u>	<u>Max Contaminant Limit</u>	<u>Your Analysis-Results</u>	<u>Units</u>	<u>Lab Reporting Limit</u>	<u>Method</u>	<u>Notes</u>
<u>Nitrate</u>	<u>10.</u>	<u>0.456</u>	<u>mg/L</u>	<u>1.0</u>	<u>SM4500-NO3-D</u>	<u>"J"</u>

Recommended holding time was in the range for the test method used per The Box R Water Analysis Laboratory LLC. , Quality Assurance Plan, and in accordance with the National Environmental Laboratory Accreditation Conference, (NELAC). This is documented in the sample results section above in this report. All results are valid for the sample submitted only, and all results are for the client listed above and on the Chain of Custody form. Samples will be held for a maximum of 10 days from the report date unless prior arrangements have been set up. Thank-you for choosing the Box R Water Analysis Laboratory LLC., If you need further explanation or if you have any other questions in regards to the testing of your water, please do not hesitate to call us at 541 447-4911. This report can not be reproduced except in full without the written permission from Box R Water Analysis Laboratory LLC.

DATA QUALIFIERS AND DEFINITIONS

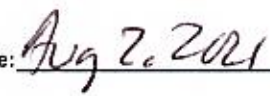
MDL = Minimum Detection Limit MCL = Minimum Contaminant Level MRL = Minimum Reporting Limit
 ND = Not Detected at reporting limit LRL = Laboratory Reporting Limit n/a= Not Applicable GW=Ground Water
 J = result between Laboratory MDL and LRL

Laboratory Director _____



Sherri Miyazaki

Date: _____



Box R Water Analysis Laboratory LLC
 567 NW 2nd St. Prineville, OR 97754
 Phone: (541)447-4911 Fax: (541)447-4917
 ORELAP # 100054

To be filled in by Person Submitting Sample:

Public Water System N/A Realty Transaction N/A

PWS ID #: 41 N/A Source ID: N/A Source Name: CJD

Public Water System or Property Owner: 40 Ian Godwin

CWM-H2O Company

Address: 1319 SE Martin Luther King Blvd.

City, State, Zip: Portland OR 97214

Sampled at: Riv-3 Sampled By: TAG

Date Collected: 07/07/2021 Time Collected: 10:30

Sample Composition: Raw or Treated Water | From Source or Distribution | Single or Combined Sample - N/A

To be completed by Laboratory:

Date Received in Lab: 07-07-2021 Date Analyzed: 07-08-2021

Lab Sample ID: X046676A Sample Compositing in Lab: Y (N)

Contaminant	Code	MCL mg/L	Analysis mg/L	LRL	Method	Analyst
Nitrate	1040	10.	0.456 mg/L	1.0 mg/L	SM4500-NO ₃ -D	SKM
Nitrate-Nitrite	1038	10.				
Nitrite	1041	10.				

Box R Water Analysis Laboratory reserves the right to reject any sample that does not meet proper sampling procedures, or does not have a completed chain of custody form.
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Box R Water Analysis Laboratory LLC

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Prineville OR 97754
Phone: 541 447-4911
Fax: 541 447-4917

Sample RESULTS: Page 1 of 1

Report Date: 08/02/2021
X Identification Number: X046678A
Client ID number#: X046678A

System Identification:

PWID #: N/A
Name: CWM- H2O Company c/o Ian Godwin
Address: 1319 SE Martin Luther King Blvd
City, State, Zip code: Portland OR 97214

Source of Water: DW

Sampled by: IAG

Sample identification:

Sample Location: Pond #1
Sample Date: 07/07/2021

Sample time: 1030

Laboratory Information

Date Received in Lab: 07/07/2021
Time Received in Lab: 1750
Sample identification #: X046678A
Location Analysis Took Place: Box R Laboratory
Results Sent to State: No

Date Analyzed: 07/08/2021
Time Analyzed: 1800
Composite Sample: No
ORELAP #: 100054

Analytical Results

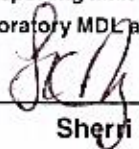
<u>Contaminant</u>	<u>Max Contaminant Limit</u>	<u>Your Analysis-Results</u>	<u>Units</u>	<u>Lab Reporting Limit</u>	<u>Method</u>	<u>Notes</u>
<u>Nitrate</u>	<u>10.</u>	<u>13.4</u>	<u>mg/L</u>	<u>1.0</u>	<u>SM4500-NO3-D</u>	

Recommended holding time was in the range for the test method used per The Box R Water Analysis Laboratory LLC. , Quality Assurance Plan, and in accordance with the National Environmental Laboratory Accreditation Conference, (NELAC). This is documented in the sample results section above in this report. All results are valid for the sample submitted only, and all results are for the client listed above and on the Chain of Custody form. Samples will be held for a maximum of 10 days from the report date unless prior arrangements have been set up. Thank-you for choosing the Box R Water Analysis Laboratory LLC., If you need further explanation or if you have any other questions in regards to the testing of your water, please do not hesitate to call us at 541 447-4911. This report can not be reproduced except in full without the written permission from Box R Water Analysis Laboratory LLC.

DATA QUALIFIERS AND DEFINITIONS

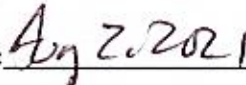
MDL = Minimum Detection Limit MCL = Minimum Contaminant Level MRL = Minimum Reporting Limit
ND = Not Detected at reporting limit LRL = Laboratory Reporting Limit n/a= Not Applicable GW=Ground Water
J = result between Laboratory MDL and LRL

Laboratory Director _____



Sherri Miyazaki

Date: _____



Box R Water Analysis Laboratory LLC
 567 NW 2nd St. Prineville, OR 97754
 Phone: (541)447-4911 Fax: (541)447-4917
 ORELAP # 100054

To be filled in by Person Submitting Sample:

Public Water System N/A Realty Transaction N/A

PWS ID #: 41 N/A Source ID: N/A Source Name: .

Public Water System or Property Owner: 40 Ian Godwin
 CWM-H2O Company

Address: 1319 SE Martin Luther King Blvd.

City, State, Zip: Portland OR 97214

Sampled at: Pond #1 Sampled By: TAG

Date Collected: 07/07/2021 Time Collected: 1030

Sample Composition: Raw or Treated Water + From Source or Distribution + Single or Combined Sample - N/A

To be completed by Laboratory:

Date Received in Lab: 07-07-2021 Date Analyzed: 07-08-2021

Lab Sample ID: X046678A Sample Compositing in Lab: Y (N)

Contaminant	Code	MCL mg/L	Analysis mg/L	LRL	Method	Analyst
Nitrate	1040	10.	13.4	1.0 mg/L	SM4500-NO ₃ -D	SKM
Nitrate-Nitrite	1038	10.				
Nitrite	1041	10.				

Box R Water Analysis Laboratory reserves the right to reject any sample that does not meet proper sampling procedures, or does not have a completed chain of custody form.
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Box R Water Analysis Laboratory LLC

567 NW 2nd Street
 Prineville OR 97754
 Phone: 541 447-4911
 Fax: 541 447-4917

System Identification:

PWID #: N/A
 Name: CWM- H2O Company c/o Ian Godwin
 Address: 1319 SE Martin Luther King Blvd
 City, State, Zip code: Portland OR 97214

Sample identification:

Sample Location: Pond #2
 Sample Date: 07/07/2021

Laboratory Information

Date Received in Lab: 07/07/2021
 Time Received in Lab: 1750
 Sample Identification #: X046680A
 Location Analysis Took Place: Box R Laboratory
 Results Sent to State: No

Sample RESULTS: Page 1 of 1

Report Date: 08/02/2021
 X Identification Number: X046680A
 Client ID number#: X046680A

Source of Water: DW

Sampled by: IAG

Sample time: 1040

Date Analyzed: 07/08/2021

Time Analyzed: 1800

Composite Sample: No

ORELAP #: 100054

Analytical Results

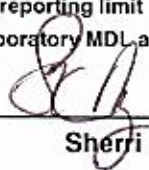
<u>Contaminant</u>	<u>Max Contaminant Limit</u>	<u>Your Analysis- Results</u>	<u>Units</u>	<u>Lab Reporting Limit</u>	<u>Method</u>	<u>Notes</u>
<u>Nitrate</u>	<u>10.</u>	<u>2.26</u>	<u>mg/L</u>	<u>1.0</u>	<u>SM4500- NO3-D</u>	

Recommended holding time was in the range for the test method used per The Box R Water Analysis Laboratory LLC, Quality Assurance Plan, and in accordance with the National Environmental Laboratory Accreditation Conference, (NELAC). This is documented in the sample results section above in this report. All results are valid for the sample submitted only, and all results are for the client listed above and on the Chain of Custody form. Samples will be held for a maximum of 10 days from the report date unless prior arrangements have been set up. Thank-you for choosing the Box R Water Analysis Laboratory LLC., If you need further explanation or if you have any other questions in regards to the testing of your water, please do not hesitate to call us at 541 447-4911. This report can not be reproduced except in full without the written permission from Box R Water Analysis Laboratory LLC.

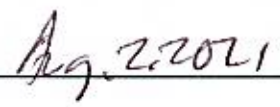
DATA QUALIFIERS AND DEFINITIONS

MDL = Minimum Detection Limit MCL = Minimum Contaminant Level MRL = Minimum Reporting Limit
 ND = Not Detected at reporting limit LRL = Laboratory Reporting Limit n/a= Not Applicable GW=Ground Water
 J = result between Laboratory MDL and LRL

Laboratory Director


 Sherri Miyazaki

Date:


 Aug. 2, 2021

Box R Water Analysis Laboratory LLC
 567 NW 2nd St. Prineville, OR 97754
 Phone: (541)447-4911 Fax: (541)447-4917
 ORELAP # 100054

To be filled in by Person Submitting Sample:

Public Water System N/A Realty Transaction N/A

PWS ID #: 41 N/A Source ID: N/A Source Name: CJD

Public Water System or Property Owner: 40 Ian Godwin

Address: CWM-H2O Company
 1319 SE Martin Luther King Blvd.

City, State, Zip: Portland OR 97214

Sampled at: Pond # 2 Sampled By: TAG

Date Collected: 07/07/2021 Time Collected: 1040

Sample Composition: Raw or Treated Water | From Source or Distribution | Single or Combined Sample - N/A

To be completed by Laboratory:

Date Received in Lab: 07-07-2021 Date Analyzed: 07-08-2021

Lab Sample ID: X046680A Sample Compositing in Lab: Y (N)

Contaminant	Code	MCL mg/L	Analysis mg/L	LRL	Method	Analyst
Nitrate	1040	10.	2.26 ug/L	1.0 mg/L	8M4500-NO ₃ -D	SKW
Nitrate-Nitrite	1038	10.				
Nitrite	1041	10.				

Box R Water Analysis Laboratory reserves the right to reject any sample that does not meet proper sampling procedures, or does not have a completed chain of custody form.
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Box R Water Analysis Laboratory LLC

567 NW 2nd Street
Prineville OR 97754
Phone: 541 447-4911
Fax: 541 447-4917

System Identification:

PWID #: N/A
Name: CWM- H2O Company c/o Ian Godwin
Address: 1319 SE Martin Luther King Blvd
City, State, Zip code: Portland OR 97214

Sample Identification:

Sample Location: CWM-2
Sample Date: 07/07/2021

Laboratory Information

Date Received in Lab: 07/07/2021
Time Received in Lab: 1750
Sample Identification #: X046682A
Location Analysis Took Place: Box R Laboratory
Results Sent to State: No

Sample RESULTS: Page 1 of 1

Report Date: 08/02/2021
X Identification Number: X046682A
Client ID number#: X046682A

Source of Water: DW

Sampled by: IAG

Sample time: 0910

Date Analyzed: 07/08/2021

Time Analyzed: 1800

Composite Sample: No

ORELAP #: 100054

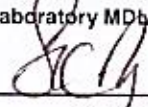
Analytical Results

<u>Contaminant</u>	<u>Max Contaminant Limit</u>	<u>Your Analysis-Results</u>	<u>Units</u>	<u>Lab Reporting Limit</u>	<u>Method</u>	<u>Notes</u>
<u>Nitrate</u>	<u>10.</u>	<u>0.620</u>	<u>mg/L</u>	<u>1.0</u>	<u>SM4500-NO3-D</u>	<u>"I"</u>

Recommended holding time was in the range for the test method used per The Box R Water Analysis Laboratory LLC. , Quality Assurance Plan, and in accordance with the National Environmental Laboratory Accreditation Conference, (NELAC). This is documented in the sample results section above in this report. All results are valid for the sample submitted only, and all results are for the client listed above and on the Chain of Custody form. Samples will be held for a maximum of 10 days from the report date unless prior arrangements have been set up. Thank-you for choosing the Box R Water Analysis Laboratory LLC., If you need further explanation or if you have any other questions in regards to the testing of your water, please do not hesitate to call us at 541 447-4911. This report can not be reproduced except in full without the written permission from Box R Water Analysis Laboratory LLC.

DATA QUALIFIERS AND DEFINITIONS

MDL = Minimum Detection Limit MCL = Minimum Contaminant Level MRL = Minimum Reporting Limit
ND = Not Detected at reporting limit LRL = Laboratory Reporting Limit n/a= Not Applicable GW=Ground Water
J = result between Laboratory MDL and LRL

Laboratory Director 
Sherri Miyazaki

Date: Aug 20 2021

Box R Water Analysis Laboratory LLC
 567 NW 2nd St. Prineville, OR 97754
 Phone: (541)447-4911 Fax: (541)447-4917
 ORELAP # 100054

To be filled in by Person Submitting Sample:

Public Water System N/A Realty Transaction N/A

PWS ID #: 41 N/A Source ID: N/A Source Name: CJD

Public Water System or Property Owner: 40 Ian Godwin

CWM-H2O Company

Address: 1319 SE Martin Luther King Blvd.

City, State, Zip: Portland OR 97214

Sampled at: CWM-2 Sampled By: TAG

Date Collected: 07/07/2021 Time Collected: 0910

Sample Composition: Raw or Treated Water | From Source or Distribution | Single or Combined Sample- N/A

To be completed by Laboratory:

Date Received in Lab: 07-07-2021 Date Analyzed: 07-08-2021

Lab Sample ID: X046682A Sample Compositing in Lab: Y (N)

Contaminant	Code	MCL mg/L	Analysis mg/L	LRL	Method	Analyst
Nitrate	1040	10.	0.620	1.0 mg/L	SM4300-NO ₃ -D	SKW
Nitrate-Nitrite	1038	10.				
Nitrite	1041	10.				

Box R Water Analysis Laboratory reserves the right to reject any sample that does not meet proper sampling procedures, or does not have a completed chain of custody form.
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EJ

Box R Water Analysis Laboratory LLC

567 NW 2nd Street
 Prineville OR 97754
 Phone: 541 447-4911
 Fax: 541 447-4917

System Identification:

PWID #: N/A
 Name: CWM- H2O Company c/o Ian Godwin
 Address: 1319 SE Martin Luther King Blvd
 City, State, Zip code: Portland OR 97214

Sample identification:

Sample Location: MW-6
 Sample Date: 07/07/2021

Laboratory Information

Date Received in Lab: 07/07/2021
 Time Received in Lab: 1750
 Sample Identification #: X046684A
 Location Analysis Took Place: Box R Laboratory
 Results Sent to State: No

Analytical Results

Sample RESULTS: Page 1 of 1
 Report Date: 08/02/2021
 X Identification Number: X046684A
 Client ID number#: X046684A

Source of Water: DW

Sampled by: IAG

Sample time: 0805

Date Analyzed: 07/08/2021
 Time Analyzed: 1800
 Composite Sample: No
 ORELAP #: 100054

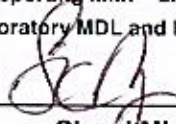
<u>Contaminant</u>	<u>Max Contaminant Limit</u>	<u>Your Analysis-Results</u>	<u>Units</u>	<u>Lab Reporting Limit</u>	<u>Method</u>	<u>Notes</u>
<u>Nitrate</u>	<u>10.</u>	<u>0.652</u>	<u>mg/L</u>	<u>1.0</u>	<u>SM4500-NO3-D</u>	<u>"J"</u>

Recommended holding time was in the range for the test method used per The Box R Water Analysis Laboratory LLC, Quality Assurance Plan, and in accordance with the National Environmental Laboratory Accreditation Conference, (NELAC). This is documented in the sample results section above in this report. All results are valid for the sample submitted only, and all results are for the client listed above and on the Chain of Custody form. Samples will be held for a maximum of 10 days from the report date unless prior arrangements have been set up. Thank-you for choosing the Box R Water Analysis Laboratory LLC., If you need further explanation or if you have any other questions in regards to the testing of your water, please do not hesitate to call us at 541 447-4911. This report can not be reproduced except in full without the written permission from Box R Water Analysis Laboratory LLC.

DATA QUALIFIERS AND DEFINITIONS

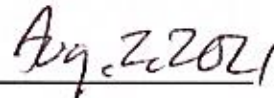
MDL = Minimum Detection Limit MCL = Minimum Contaminant Level MRL = Minimum Reporting Limit
 ND = Not Detected at reporting limit LRL = Laboratory Reporting Limit n/a= Not Applicable GW=Ground Water
 J = result between Laboratory MDL and LRL

Laboratory Director _____



Sheri Miyazaki

Date: _____



Box R Water Analysis Laboratory LLC
 567 NW 2nd St. Prineville, OR 97754
 Phone: (541)447-4911 Fax: (541)447-4917
 ORELAP # 100054

To be filled in by Person Submitting Sample:

Public Water System N/A Realty Transaction N/A

PWS ID #: 41 N/A Source ID: N/A Source Name: CJD

Public Water System or Property Owner: 40 Ian Godwin

CWM-H2O Company

Address: 1319 SE Martin Luther King Blvd.

City, State, Zip: Portland OR 97214

Sampled at: MW-6 Sampled By: TAG

Date Collected: 07/07/2021 Time Collected: 1205

Sample Composition: Raw or Treated Water | From Source or Distribution | Single or Combined Sample - N/A

To be completed by Laboratory:

Date Received in Lab: 07-07-2021 Date Analyzed: 07-08-2021

Lab Sample ID: X046684A Sample Compositing in Lab: Y (N)

Contaminant	Code	MCL mg/L	Analysis mg/L	LRL	Method	Analyst
Nitrate	1040	10.	0.652 mg/L	1.0 mg/L	8M4500-NO ₃ -D	SKW
Nitrate-Nitrite	1038	10.				
Nitrite	1041	10.				

Box R Water Analysis Laboratory reserves the right to reject any sample that does not meet proper sampling procedures, or does not have a completed chain of custody form.
 H:\home\mc\meyer\reports\results.no3 rev 8/25/95

Box R Water Analysis Laboratory LLC

567 NW 2nd Street
Prineville OR 97754
Phone: 541 447-4911
Fax: 541 447-4917

System Identification:

PWID #: N/A
Name: CWM- H2O Company c/o Ian Godwin
Address: 1319 SE Martin Luther King Blvd
City, State, Zip code: Portland OR 97214

Sample identification:

Sample Location: MW-5
Sample Date: 07/07/2021

Laboratory Information

Date Received in Lab: 07/07/2021
Time Received in Lab: 1750
Sample identification #: X046686A
Location Analysis Took Place: Box R Laboratory
Results Sent to State: No

Sample RESULTS: Page 1 of 1

Report Date: 08/02/2021
X Identification Number: X046686A
Client ID number#: X046686A

Source of Water: DW

Sampled by: IAG

Sample time: 0700

Date Analyzed: 07/08/2021

Time Analyzed: 1800

Composite Sample: No

ORELAP #: 100054

Analytical Results

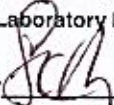
<u>Contaminant</u>	<u>Max Contaminant Limit</u>	<u>Your Analysis-Results</u>	<u>Units</u>	<u>Lab Reporting Limit</u>	<u>Method</u>	<u>Notes</u>
<u>Nitrate</u>	<u>10.</u>	<u>0.574</u>	<u>mg/L</u>	<u>1.0</u>	<u>SM4500-NO3-D</u>	<u>"J"</u>

Recommended holding time was in the range for the test method used per The Box R Water Analysis Laboratory LLC. , Quality Assurance Plan, and in accordance with the National Environmental Laboratory Accreditation Conference, (NELAC). This is documented in the sample results section above in this report. All results are valid for the sample submitted only, and all results are for the client listed above and on the Chain of Custody form. Samples will be held for a maximum of 10 days from the report date unless prior arrangements have been set up. Thank-you for choosing the Box R Water Analysis Laboratory LLC., If you need further explanation or if you have any other questions in regards to the testing of your water, please do not hesitate to call us at 541 447-4911. This report can not be reproduced except in full without the written permission from Box R Water Analysis Laboratory LLC.

DATA QUALIFIERS AND DEFINITIONS

MDL = Minimum Detection Limit MCL = Minimum Contaminant Level MRL = Minimum Reporting Limit
ND = Not Detected at reporting limit LRL = Laboratory Reporting Limit n/a= Not Applicable GW=Ground Water
J = result between Laboratory MDL and LRL

Laboratory Director



Sherri Miyazaki

Date:

Aug 2, 2021

Box R Water Analysis Laboratory LLC
 567 NW 2nd St. Prineville, OR 97754
 Phone: (541)447-4911 Fax: (541)447-4917
 ORELAP # 100054

To be filled in by Person Submitting Sample:

Public Water System N/A Realty Transaction N/A

PWS ID #: 41 N/A Source ID: N/A Source Name: CJD

Public Water System or Property Owner: 40 Ian Godwin

CWM-H2O Company

Address: 1319 SE Martin Luther King Blvd.

City, State, Zip: Portland OR 97214

Sampled at: MW#5 Sampled By: TAG

Date Collected: 07/07/2021 Time Collected: 0700

Sample Composition: Raw or Treated Water | From Source or Distribution | Single or Combined Sample - N/A

To be completed by Laboratory:

Date Received in Lab: 07-07-2021 Date Analyzed: 07-08-2021

Lab Sample ID: X046686A Sample Compositing in Lab: Y (N)

Contaminant	Code	MCL mg/L	Analysis mg/L	LRL	Method	Analyst
Nitrate	1040	10.	2574mg/L	1.0mg/L	SM4500-NO ₃ -D	SKW
Nitrate-Nitrite	1038	10.				
Nitrite	1041	10.				

Box R Water Analysis Laboratory reserves the right to reject any sample that does not meet proper sampling procedures, or does not have a completed chain of custody form.
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Box R Water Analysis Laboratory LLC

567 NW 2nd Street
Prineville OR 97754
Phone: 541 447-4911
Fax: 541 447-4917

System Identification:

PWID #: N/A
Name: CWM- H2O Company c/o Ian Godwin
Address: 1319 SE Martin Luther King Blvd
City, State, Zip code: Portland OR 97214

Sample identification:

Sample Location: MW-7
Sample Date: 07/07/2021

Laboratory Information

Date Received in Lab: 07/07/2021
Time Received in Lab: 1750
Sample identification #: X046688A
Location Analysis Took Place: Box R Laboratory
Results Sent to State: No

Sample RESULTS: Page 1 of 1
Report Date: 08/02/2021
X Identification Number: X046688A
Client ID number#: X046688A

Source of Water: DW

Sampled by: IAG

Sample time: 0610

Date Analyzed: 07/08/2021
Time Analyzed: 1800
Composite Sample: No
ORELAP #: 100054

Analytical Results

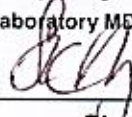
<u>Contaminant</u>	<u>Max Contaminant Limit</u>	<u>Your Analysis-Results</u>	<u>Units</u>	<u>Lab Reporting Limit</u>	<u>Method</u>	<u>Notes</u>
<u>Nitrate</u>	<u>10.</u>	<u>2.86</u>	<u>mg/L</u>	<u>1.0</u>	<u>SM4500-NO3-D</u>	

Recommended holding time was in the range for the test method used per The Box R Water Analysis Laboratory LLC. , Quality Assurance Plan, and in accordance with the National Environmental Laboratory Accreditation Conference, (NELAC). This is documented in the sample results section above in this report. All results are valid for the sample submitted only, and all results are for the client listed above and on the Chain of Custody form. Samples will be held for a maximum of 10 days from the report date unless prior arrangements have been set up. Thank-you for choosing the Box R Water Analysis Laboratory LLC., If you need further explanation or if you have any other questions in regards to the testing of your water, please do not hesitate to call us at 541 447-4911. This report can not be reproduced except in full without the written permission from Box R Water Analysis Laboratory LLC.

DATA QUALIFIERS AND DEFINITIONS

MDL = Minimum Detection Limit MCL = Minimum Contaminant Level MRL = Minimum Reporting Limit
ND = Not Detected at reporting limit LRL = Laboratory Reporting Limit n/a= Not Applicable GW=Ground Water
J = result between Laboratory MDL and LRL

Laboratory Director



Sherri Miyazaki

Date:

Aug 2, 2021

Box R Water Analysis Laboratory LLC
 567 NW 2nd St. Prineville, OR 97754
 Phone: (541)447-4911 Fax: (541)447-4917
 ORELAP # 100054

To be filled in by Person Submitting Sample:

Public Water System N/A Realty Transaction N/A

PWS ID #: 41 N/A Source ID: N/A Source Name: CJD

Public Water System or Property Owner: 40 Ian Godwin

CWM-H2O Company

Address: 1319 SE Martin Luther King Blvd.

City, State, Zip: Portland OR 97214

Sampled at: MW#7 Sampled By: TAG

Date Collected: 07/07/2021 Time Collected: 0600

Sample Composition: Raw or Treated Water | From Source or Distribution | Single or Combined Sample - N/A

To be completed by Laboratory:

Date Received in Lab: 07-07-2021 Date Analyzed: 07-08-2021

Lab Sample ID: X046688A Sample Compositing in Lab: Y (N)

Contaminant	Code	MCL mg/L	Analysis mg/L	LRL	Method	Analyst
Nitrate	1040	10.	2.86 mg/L	1.0 mg/L	SM4500-NO ₃ -D	SKM
Nitrate-Nitrite	1038	10.				
Nitrite	1041	10.				

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Box R Water Analysis Laboratory LLC

567 NW 2nd Street
Prineville OR 97754
Phone: 541 447-4911
Fax: 541 447-4917

System Identification:

PWID #: N/A
Name: CWM- H2O Company c/o Ian Godwin
Address: 1319 SE Martin Luther King Blvd
City, State, Zip code: Portland OR 97214

Sample identification:

Sample Location: CWM-3
Sample Date: 07/07/2021

Laboratory Information

Date Received in Lab: 07/07/2021
Time Received in Lab: 1750
Sample Identification #: X046690A
Location Analysis Took Place: Box R Laboratory
Results Sent to State: No

Sample RESULTS: Page 1 of 1
Report Date: 08/02/2021
X Identification Number: X046690A
Client ID number#: X046690A

Source of Water: DW

Sampled by: IAG

Sample time: 1000

Date Analyzed: 07/08/2021
Time Analyzed: 1800
Composite Sample: No
ORELAP #: 100054

Analytical Results

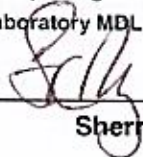
<u>Contaminant</u>	<u>Max Contaminant Limit</u>	<u>Your Analysis- Results</u>	<u>Units</u>	<u>Lab Reporting Limit</u>	<u>Method</u>	<u>Notes</u>
<u>Nitrate</u>	<u>10.</u>	<u>ND</u>	<u>mg/L</u>	<u>1.0</u>	<u>SM4500-NO3-D</u>	

Recommended holding time was in the range for the test method used per The Box R Water Analysis Laboratory LLC. , Quality Assurance Plan, and in accordance with the National Environmental Laboratory Accreditation Conference, (NELAC). This is documented in the sample results section above in this report. All results are valid for the sample submitted only, and all results are for the client listed above and on the Chain of Custody form. Samples will be held for a maximum of 10 days from the report date unless prior arrangements have been set up. Thank-you for choosing the Box R Water Analysis Laboratory LLC., If you need further explanation or if you have any other questions in regards to the testing of your water, please do not hesitate to call us at 541 447-4911. This report can not be reproduced except in full without the written permission from Box R Water Analysis Laboratory LLC.

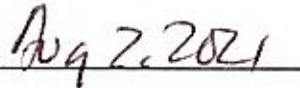
DATA QUALIFIERS AND DEFINITIONS

MDL = Minimum Detection Limit MCL = Minimum Contaminant Level MRL = Minimum Reporting Limit
ND = Not Detected at reporting limit LRL = Laboratory Reporting Limit n/a= Not Applicable GW=Ground Water
J = result between Laboratory MDL and LRL

Laboratory Director


Sherri Miyazaki

Date:



Box R Water Analysis Laboratory LLC
 567 NW 2nd St. Prineville, OR 97754
 Phone: (541)447-4911 Fax: (541)447-4917
 ORELAP # 100054

To be filled in by Person Submitting Sample:

Public Water System N/A Realty Transaction N/A

PWS ID #: 41 N/A Source ID: N/A Source Name: OJD

Public Water System or Property Owner: 40 Ian Godwin

Address: CWM-H2O Company
 1319 SE Martin Luther King Blvd.

City, State, Zip: Portland OR 97214

Sampled at: CWM-3 Sampled By: TAG

Date Collected: 07/07/2021 Time Collected: 1000

Sample Composition: Raw or Treated Water | From Source or Distribution | Single or Combined Sample- N/A

To be completed by Laboratory:

Date Received in Lab: 07-07-2021 Date Analyzed: 07-08-2021

Lab Sample ID: X04669DA Sample Compositing in Lab: Y | (N)

Contaminant	Code	MCL mg/L	Analysis mg/L	LRL	Method	Analyst
Nitrate	1040	10.	ND	10 mg/L	SM4500-NO ₃ -D	SKW
Nitrate-Nitrite	1038	10.				
Nitrite	1041	10.				

Box R Water Analysis Laboratory reserves the right to reject any sample that does not meet proper sampling procedures, or does not have a completed chain of custody form.
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Box R Water Analysis Laboratory

567 NW Second Street
Prineville, Oregon 97754
541-447-4911

Mr. Ian Godwin

August 17, 2021

c/o CWM – H2O

1319 SE MLK Jr. Blvd., Ste 204

Portland, OR 97214

Sample Nbrs: X046671-73-75-77-79-81-83-85-87-89

Dear Mr. Godwin,

Attached is a copy of your 10 Lead sample results, that you requested for Project #2111001, CJD / CWM. Your analysis was performed by Neilson Research Corp. in Medford, OR. Please do not hesitate to call Box R Water Analysis Laboratory with any questions you may have in regards to your water testing.

Thank you for using Box R Water Analysis Laboratory, we appreciate your business.

Sincerely

Sherri K. Miyazaki – Box R Water Analysis Laboratory Director



Neilson Research Corporation
245 S Grape St
Medford, OR 97501
TEL: (541) 770-5678 FAX: (541) 770-2901
Website: www.nrclabs.com

August 12, 2021

Sherri Miyazaki
Box R Waterlab
567 NW Second Street
Princeton, OR 97754
TEL: (541) 447-4911
FAX (541) 447-4917

RE: X046671-89 City of John Day-AMENDED

Order No.: 21070398

Dear Sherri Miyazaki:

Neilson Research Corporation received 10 sample(s) on 7/9/2021 for the analyses presented in the following report.

The results relate only to the parameters tested or to the sample as received by the laboratory. This report shall not be reproduced except in full, without the written approval of Neilson Research Corporation. If you have any questions regarding these test results, please feel free to call.

Sincerely,
Neilson Research Corporation

Tamra Schmedemann
Senior Project Manager
245 S Grape St
Medford, OR 97501



Revision v1



Neilson Research Corporation
245 S Grape St
Medford, OR 97501
TEL: (541) 770-5678 FAX: (541) 770-2901
Website: www.nrclabs.com

Case Narrative

WO#: 21070398
Date: 8/12/2021

CLIENT: Box R Waterlab
Project: X046671-89 City of John Day-AMENDED

The analyses were performed according to the guidelines in the Neilson Research Corporation Quality Assurance Program. This report contains analytical results for the sample(s) as received by the laboratory.

Neilson Research Corporation certifies that this report is in compliance with the requirements of NELAP. No unusual difficulties were experienced during analysis of this batch except as noted below or qualified with data flags on the reports.

The report is amended adding FE to each sample and changing the Sample Location for Client Sample ID 21070398-09 from "MW #2" to "MW #7" per client request on 8/5/2021. TRS

Revision v1



**NEILSON
RESEARCH
CORPORATION**

Neilson Research Corporation
245 S Grape St
Medford, OR 97501
TEL: (541) 770-5678 FAX: (541) 770-2901
Website: www.nrclabs.com

Analytical Report

WO#: 21070398
Date Reported: 8/12/2021

CLIENT: Box R Waterlab
Lab ID: 21070398-01
Client Sample ID X046671
Project: X046671-89 City of John Day-AMENDED
Sample Location: River #1

Collection Date: 7/7/2021 5:50:00 AM
Received Date: 7/9/2021 9:57:00 AM
Matrix: AQUEOUS

Analyses	Method	NELAP Status	Result Qual	DF	MDL	RL	Units	MCL	Date Analyzed	Analyst
ANIONS BY EPA 300.0										
Chloride	E300.0	A	1.95	1	0.0704	1.00	mg/L		07/17/21 8:43	KMC
TRACE METALS BY EPA 200.7 ICP										
Iron	E200.7	A	2.97	1	0.00983	0.0150	mg/L		08/09/21 19:44	SJS
AMMONIA NITROGEN AS N										
Nitrogen, Ammonia (As N)	E350.1	A	ND	1	0.136	0.500	mg/L		07/16/21 15:51	SCV
NITRATE NITROGEN AS N										
Nitrogen, Nitrate-Nitrite	E353.2	A	ND ER	1	0.0157	0.100	mg/L		07/09/21 17:17	KEC
TOTAL PHOSPHORUS AS P										
Phosphorus, Total (As P)	A4500-P-E	A	0.104	1	0.0116	0.0250	mg/L		07/13/21 15:07	ITN
TOTAL DISSOLVED SOLIDS										
Total Dissolved Solids	A2540C		191	1	3.75	10.0	mg/L		07/14/21 16:53	KMC

QUALIFIERS

CI Sample container temperature is out of limit as specified at testcode
MI Recovery outside control limits due to Matrix Interference
PL Permit Limit
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit

Revision v1

NELAP NELAP A Accredited in accordance with NELAP ORFLAP 100016, OR-028



Neilson Research Corporation
 245 S Grape St
 Medford, OR 97501
 TEL: (541) 770-5678 FAX: (541) 770-2901
 Website: www.nrclabs.com

Analytical Report

WO#: 21070398
 Date Reported: 8/12/2021

CLIENT: Box R Waterlab
 Lab ID: 21070398-02
 Client Sample ID X046673
 Project: X046671-89 City of John Day-AMENDED
 Sample Location: River #2

Collection Date: 7/7/2021 7:40:00 AM
 Received Date: 7/9/2021 9:57:00 AM
 Matrix: AQUEOUS

Analyses	Method	NELAP Status	Result Qual	DF	MDL	RL	Units	MCL	Date Analyzed	Analyst
ANIONS BY EPA 300.0										
Chloride	E300.0	A	1.95	1	0.0704	1.00	mg/L		07/17/21 9:10	KMC
TRACE METALS BY EPA 200.7 ICP										
Iron	E200.7	A	0.249	1	0.00983	0.0150	mg/L		08/09/21 19:47	SJS
AMMONIA NITROGEN AS N										
Nitrogen, Ammonia (As N)	E350.1	A	ND	1	0.136	0.500	mg/L		07/16/21 16:01	SCV
NITRATE NITROGEN AS N										
Nitrogen, Nitrate-Nitrite	E353.2	A	ND ER	1	0.0157	0.100	mg/L		07/09/21 17:18	KEC
TOTAL PHOSPHORUS AS P										
Phosphorus, Total (As P)	A4500-P-E	A	0.120	1	0.0116	0.0250	mg/L		07/13/21 15:07	ITN
TOTAL DISSOLVED SOLIDS										
Total Dissolved Solids	A2540C		171	1	3.75	10.0	mg/L		07/14/21 17:01	KMC

QUALIFIERS

CI Sample container temperature is out of limit as specified at testcode
 MI Recovery outside control limits due to Matrix Interference
 PL Percent Limit
 H Holding times for preparation or analysis exceeded
 ND Not Detected at the Reporting Limit

Revision v1

NELAP A Accredited in accordance with NELAP ORELAP 100016, OR-028



Neilson Research Corporation
 245 S Grape St
 Medford, OR 97501
 TEL: (541) 770-5678 FAX: (541) 770-2901
 Website: www.nrclabs.com

Analytical Report

WO#: 21070398
 Date Reported: 8/12/2021

CLIENT: Box R Waterlab
 Lab ID: 21070398-03
 Client Sample ID X046675
 Project: X046671-89 City of John Day-AMENDED
 Sample Location: River #3

Collection Date: 7/7/2021 10:20:00 AM
 Received Date: 7/9/2021 9:57:00 AM
 Matrix: AQUEOUS

Analyses	Method	NELAP Status	Result Qual	DF	MDL	RL	Units	MCL	Date Analyzed	Analyst
ANIONS BY EPA 300.0										
Chloride	E300.0	A	1.95	1	0.0704	1.00	mg/L		07/17/21 9:37	KMC
TRACE METALS BY EPA 200.7 ICP										
Iron	E200.7	A	0.166	1	0.00983	0.0150	mg/L		08/09/21 19:50	SJS
AMMONIA NITROGEN AS N										
Nitrogen, Ammonia (As N)	E350.1	A	ND	1	0.136	0.500	mg/L		07/16/21 16:02	SCV
NITRATE NITROGEN AS N										
Nitrogen, Nitrate-Nitrite	E353.2	A	ND ER	1	0.0157	0.100	mg/L		07/09/21 17:19	KEC
TOTAL PHOSPHORUS AS P										
Phosphorus, Total (As P)	A4500-P-E	A	0.104	1	0.0116	0.0250	mg/L		07/13/21 15:07	ITN
TOTAL DISSOLVED SOLIDS										
Total Dissolved Solids	A2540C		178	1	3.75	10.0	mg/L		07/14/21 17:05	KMC

QUALIFIERS

CI Sample container temperature is out of limit as specified at testcode
 MI Recovery outside control limits due to Matrix Interference
 PL Permit Limit
 H Holding times for preparation or analysis exceeded
 ND Not Detected at the Reporting Limit

Revision v1

NELAP A Accredited in accordance with NELAP ORELAP 100016, OR-028



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Neilson Research Corporation
245 S Grape St
Medford, OR 97501
TEL: (541) 770-5678 FAX: (541) 770-2901
Website: www.nrclabs.com

Analytical Report

WO#: 21070398
Date Reported: 8/12/2021

CLIENT: Box R Waterlab
Lab ID: 21070398-04
Client Sample ID X046677
Project: X046671-89 City of John Day-AMENDED
Sample Location: Pond #1

Collection Date: 7/7/2021 10:30:00 AM
Received Date: 7/9/2021 9:57:00 AM
Matrix: AQUEOUS

Analyses	Method	NELAP Status	Result Qual	DF	MDL	RL	Units	MCL	Date Analyzed	Analyst
ANIONS BY EPA 300.0										
Chloride	E300.0	A	45.8	10	0.704	10.0	mg/L		07/14/21 7:14	KMC
TRACE METALS BY EPA 200.7 ICP										
Iron	E200.7	A	0.460	1	0.00983	0.0150	mg/L		08/09/21 19:54	SJS
AMMONIA NITROGEN AS N										
Nitrogen, Ammonia (As N)	E350.1	A	0.837	1	0.136	0.500	mg/L		07/16/21 16:03	SCM
NITRATE NITROGEN AS N										
Nitrogen, Nitrate-Nitrite	E353.2	A	14.3	10	0.157	1.00	mg/L		07/09/21 17:20	KEC
TOTAL PHOSPHORUS AS P										
Phosphorus, Total (As P)	A4500-P-E	A	6.18	1	0.116	0.250	mg/L		07/12/21 16:32	ITN
TOTAL DISSOLVED SOLIDS										
Total Dissolved Solids	A2540C		471	1	3.75	10.0	mg/L		07/14/21 17:09	KMC

QUALIFIERS

CI Sample container temperature is out of limit as specified at test code
MI Recovery outside control limits due to Matrix Interference
PL Permit Limit
II Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit

Revision v1

NELAP NELAP A Accredited in accordance with NELAP ORELAP 100016, OR-028



**NEILSON
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CORPORATION**

Neilson Research Corporation
245 S Grape St
Medford, OR 97501
TEL: (541) 770-5678 FAX: (541) 770-2901
Website: www.nrclabs.com

Analytical Report

WO#: 21070398
Date Reported: 8/12/2021

CLIENT: Box R Waterlab
Lab ID: 21070398-05
Client Sample ID X046679
Project: X046671-89 City of John Day-AMENDED
Sample Location: Pond #2

Collection Date: 7/7/2021 10:40:00 AM
Received Date: 7/9/2021 9:57:00 AM
Matrix: AQUEOUS

Analyses	Method	NELAP Status	Result Qual	DF	MDL	RL	Units	MCL	Date Analyzed	Analyst
ANIONS BY EPA 300.0										
Chloride	E300.0	A	49.5	10	0.704	10.0	mg/L		07/14/21 7:44	KMC
TRACE METALS BY EPA 200.7 ICP										
Iron	E200.7	A	0.485	1	0.00983	0.0150	mg/L		08/09/21 19:57	SJS
AMMONIA NITROGEN AS N										
Nitrogen, Ammonia (As N)	E350.1	A	1.12	1	0.136	0.500	mg/L		07/16/21 16:05	SCM
NITRATE NITROGEN AS N										
Nitrogen, Nitrate-Nitrite	E353.2	A	2.47	2	0.0314	0.200	mg/L		07/09/21 17:21	KEC
TOTAL PHOSPHORUS AS P										
Phosphorus, Total (As P)	A4500-P-E	A	6.52	1	0.290	0.625	mg/L		07/16/21 13:30	RJC
TOTAL DISSOLVED SOLIDS										
Total Dissolved Solids	A2540C		468	1	3.75	10.0	mg/L		07/14/21 17:13	KMC

QUALIFIERS

CI Sample container temperature is out of limit as specified at test code
MI Recovery outside control limits due to Matrix Interference
PL Permit Limit
II Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit

Revision v1

NELAP A Accredited in accordance with NELAP ORELAP 100016, OR-028



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Website: www.nrelabs.com

Analytical Report

WO#: 21070398
Date Reported: 8/12/2021

CLIENT: Box R Waterlab
Lab ID: 21070398-06
Client Sample ID X046681
Project: X046671-89 City of John Day-AMENDED
Sample Location: CWM #2

Collection Date: 7/7/2021 9:10:00 AM
Received Date: 7/9/2021 9:57:00 AM
Matrix: AQUEOUS

Analyses	Method	NELAP Status	Result Qual	DF	MDL	RL	Units	MCL	Date Analyzed	Analyst
ANIONS BY EPA 300.0										
Chloride	E300.0	A	4.85	1	0.0704	1.00	mg/L		07/17/21 10:57	KMC
TRACE METALS BY EPA 200.7 ICP										
Iron	E200.7	A	2.18	1	0.00983	0.0150	mg/L		08/09/21 20:00	SJS
AMMONIA NITROGEN AS N										
Nitrogen, Ammonia (As N)	E350.1	A	ND	1	0.136	0.500	mg/L		07/16/21 16:06	SCM
NITRATE NITROGEN AS N										
Nitrogen, Nitrate-Nitrite	E353.2	A	ND ER	1	0.0157	0.100	mg/L		07/09/21 17:23	KEC
TOTAL PHOSPHORUS AS P										
Phosphorus, Total (As P)	A4500-P-E	A	0.542	1	0.0116	0.0250	mg/L		07/13/21 15:11	ITN
TOTAL DISSOLVED SOLIDS										
Total Dissolved Solids	A2540C		196	1	3.75	10.0	mg/L		07/14/21 17:17	KMC

QUALIFIERS

CI Sample container temperature is out of limit as specified at testcode
MI Recovery outside control limits due to Matrix Interference
PL Permit Limit
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit

Revision v1

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Analytical Report

WO#: 21070398
 Date Reported: 8/12/2021

CLIENT: Box R Waterlab
 Lab ID: 21070398-07
 Client Sample ID: X046683
 Project: X046671-89 City of John Day-AMENDED
 Sample Location: MW #6

Collection Date: 7/7/2021 8:05:00 AM
 Received Date: 7/9/2021 9:57:00 AM
 Matrix: AQUEOUS

Analyses	Method	NELAP Status	Result Qual	DF	MDL	RL	Units	MCL	Date Analyzed	Analyst
ANIONS BY EPA 300.0										
Chloride	E300.0	A	42.4	10	0.704	10.0	mg/L		07/14/21 8:43	KMC
TRACE METALS BY EPA 200.7 ICP										
Iron	E200.7	A	1.15	1	0.00983	0.0150	mg/L		08/09/21 20:03	SJS
AMMONIA NITROGEN AS N										
Nitrogen, Ammonia (As N)	E350.1	A	ND	1	0.136	0.500	mg/L		07/16/21 16:07	SCV
NITRATE NITROGEN AS N										
Nitrogen, Nitrate-Nitrite	E353.2	A	ND ER	1	0.0157	0.100	mg/L		07/09/21 17:24	KEC
TOTAL PHOSPHORUS AS P										
Phosphorus, Total (As P)	A4500-P-E	A	6.67	1	0.116	0.250	mg/L		07/15/21 18:12	RJC
TOTAL DISSOLVED SOLIDS										
Total Dissolved Solids	A2540C		405	1	3.75	10.0	mg/L		07/14/21 17:21	KMC

QUALIFIERS

CI Sample container temperature is out of limit as specified at testcode
 MI Recovery outside control limits due to Matrix Interference
 PL Permit Limit
 H Holding times for preparation or analysis exceeded
 ND Not Detected at the Reporting Limit

Revision v1

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Analytical Report

WO#: 21070398
Date Reported: 8/12/2021

CLIENT: Box R Waterlab
Lab ID: 21070398-08
Client Sample ID: X046685
Project: X046671-89 City of John Day-AMENDED
Sample Location: MW #5

Collection Date: 7/7/2021 7:00:00 AM
Received Date: 7/9/2021 9:57:00 AM
Matrix: AQUEOUS

Analyses	Method	NELAP Status	Result Qual	DF	MDL	RL	Units	MCL	Date Analyzed	Analyst
ANIONS BY EPA 300.0										
Chloride	E300.0	A	42.1	5	0.352	5.00	mg/L		07/17/21 11:23	KMC
TRACE METALS BY EPA 200.7 ICP										
Iron	E200.7	A	0.585	1	0.00983	0.0150	mg/L		08/09/21 20:13	SJS
AMMONIA NITROGEN AS N										
Nitrogen, Ammonia (As N)	E350.1	A	3.57	1	0.136	0.500	mg/L		07/20/21 15:09	SCM
NITRATE NITROGEN AS N										
Nitrogen, Nitrate-Nitrite	E353.2	A	ND ER	1	0.0157	0.100	mg/L		07/09/21 17:27	KEC
TOTAL PHOSPHORUS AS P										
Phosphorus, Total (As P)	A4500-P-E	A	6.65	1	0.290	0.625	mg/L		07/16/21 13:30	RJC
TOTAL DISSOLVED SOLIDS										
Total Dissolved Solids	A2540C		440	1	3.75	10.0	mg/L		07/14/21 17:25	KMC

QUALIFIERS

CI Sample container temperature is out of limit as specified at testcode
MI Recovery outside control limits due to Matrix Interference
PL Permit Limit
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit

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Analytical Report

WO#: 21070398
Date Reported: 8/12/2021

CLIENT: Box R Waterlab
Lab ID: 21070398-09
Client Sample ID X046687
Project: X046671-89 City of John Day-AMENDED
Sample Location: MW #7

Collection Date: 7/7/2021 6:10:00 AM
Received Date: 7/9/2021 9:57:00 AM
Matrix: AQUEOUS

Analyses	Method	NELAP Status	Result Qual	DF	MDL	RL	Units	MCL	Date Analyzed	Analyst
ANIONS BY EPA 300.0										
Chloride	E300.0	A	2.75	1	0.0704	1.00	mg/L		07/14/21 11:42	KMC
TRACE METALS BY EPA 200.7 ICP										
Iron	E200.7	A	5.36	1	0.00983	0.0150	mg/L		08/09/21 20:17	SJS
AMMONIA NITROGEN AS N										
Nitrogen, Ammonia (As N)	E350.1	A	ND	1	0.136	0.500	mg/L		07/20/21 15:13	SCV
NITRATE NITROGEN AS N										
Nitrogen, Nitrate-Nitrite	E353.2	A	ND ER	1	0.0157	0.100	mg/L		07/09/21 17:29	KEC
TOTAL PHOSPHORUS AS P										
Phosphorus, Total (As P)	A4500-P-E	A	0.146	1	0.0116	0.0250	mg/L		07/13/21 15:11	ITN
TOTAL DISSOLVED SOLIDS										
Total Dissolved Solids	A2540C		221	1	3.75	10.0	mg/L		07/14/21 17:29	KMC

QUALIFIERS

CI Sample container temperature is out of limit as specified at testcode
MI Recovery outside control limits due to Matrix Interference
PL Penmá Limit
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit

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Analytical Report

WO#: 21070398
 Date Reported: 8/12/2021

CLIENT: Box R Waterlab
Lab ID: 21070398-10
Client Sample ID X046689
Project: X046671-89 City of John Day-AMENDED
Sample Location: CWM #3

Collection Date: 7/7/2021 10:00:00 AM
Received Date: 7/9/2021 9:57:00 AM
Matrix: AQUEOUS

Analyses	Method	NELAP Status	Result Qual	DF	MDL	RL	Units	MCL	Date Analyzed	Analyst
ANIONS BY EPA 300.0										
Chloride	E300.0	A	1.79	1	0.0704	1.00	mg/L		07/14/21 12:12	KMC
TRACE METALS BY EPA 200.7 ICP										
Iron	E200.7	A	0.381	1	0.00983	0.0150	mg/L		08/09/21 20:20	SJS
AMMONIA NITROGEN AS N										
Nitrogen, Ammonia (As N)	E350.1	A	ND	1	0.136	0.500	mg/L		07/20/21 15:14	SCM
NITRATE NITROGEN AS N										
Nitrogen, Nitrate-Nitrite	E353.2	A	ND ER	1	0.0157	0.100	mg/L		07/09/21 17:30	KEC
TOTAL PHOSPHORUS AS P										
Phosphorus, Total (As P)	A4500-P-E	A	0.234	1	0.0116	0.0250	mg/L		07/13/21 15:12	ITN
TOTAL DISSOLVED SOLIDS										
Total Dissolved Solids	A2540C		181	1	3.75	10.0	mg/L		07/14/21 17:33	KMC

QUALIFIERS

C1 Sample container temperature is out of limit as specified at testcode
 MI Recovery outside control limits due to Matrix Interference
 PL Permit Limit
 II Holding times for preparation or analysis exceeded
 ND Not Detected at the Reporting Limit

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QC SUMMARY REPORT

WO#: 21070398
 12-Aug-21

Client: Box R Waterlab
Project: X046671-89 City of John Day--AMENDED

TestCode: AMMONIA_W

Sample ID:	MB-13320	SampType:	MBLK	TestCode:	AMMONIA_W	Units:	mg/L	Prep Date:	7/15/2021	RunNo:	23062
Client ID:	PBW	Batch ID:	13320	TestNo:	E350.1	E350.1		Analysis Date:	7/16/2021	SeqNo:	369799
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia (As N)	ND				0.500						

Sample ID:	LCS-13320	SampType:	LCS	TestCode:	AMMONIA_W	Units:	mg/L	Prep Date:	7/15/2021	RunNo:	23062
Client ID:	LCSW	Batch ID:	13320	TestNo:	E350.1	E350.1		Analysis Date:	7/16/2021	SeqNo:	369801
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia (As N)	1.98	0.500	2.000	0	98.8	90	110				

Sample ID:	21070321-04AMS	SampType:	MS	TestCode:	AMMONIA_W	Units:	mg/L	Prep Date:	7/15/2021	RunNo:	23062
Client ID:	BatchQC	Batch ID:	13320	TestNo:	E350.1	E350.1		Analysis Date:	7/16/2021	SeqNo:	369810
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia (As N)	2.02	0.500	2.000	0	101	80	120				

Sample ID:	21070321-04AMSD	SampType:	MSD	TestCode:	AMMONIA_W	Units:	mg/L	Prep Date:	7/15/2021	RunNo:	23062
Client ID:	BatchQC	Batch ID:	13320	TestNo:	E350.1	E350.1		Analysis Date:	7/16/2021	SeqNo:	369811
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia (As N)	2.12	0.500	2.000	0	106	80	120	2.022	4.54	20	

Qualifiers: CL Sample container temperature is out of limit as specified at testcode
 ND Not Detected at the Reporting Limit
 H Holding times for preparation or analysis exceeded
 PL Permit Limit
 MI Recovery outside certified limits due to Matrix In
 RL Reporting Detection Limit



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QC SUMMARY REPORT

WO#: 21070398
 12-Aug-21

Client: Box R Waterlab
Project: X046671-89 City of John Day-AMENDED

TestCode: AMMONIA_W

Sample ID:	MB-13348	SampType:	MBLK	TestCode:	AMMONIA_W	Units:	mg/L	Prep Date:	7/16/2021	RunNo:	23102
Client ID:	PBW	Batch ID:	13348	TestNo:	E350.1		E350.1	Analysis Date:	7/20/2021	SeqNo:	370390
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia (As N)	ND	0.500									

Nitrogen, Ammonia (As N)

Sample ID:	LCS-13348	SampType:	LCS	TestCode:	AMMONIA_W	Units:	mg/L	Prep Date:	7/16/2021	RunNo:	23102
Client ID:	LCSW	Batch ID:	13348	TestNo:	E350.1		E350.1	Analysis Date:	7/20/2021	SeqNo:	370392
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia (As N)	1.99	0.500	2.000	0	99.6	90	110				

Nitrogen, Ammonia (As N)

Sample ID:	21070398-08AMS	SampType:	MS	TestCode:	AMMONIA_W	Units:	mg/L	Prep Date:	7/16/2021	RunNo:	23102
Client ID:	X0466685	Batch ID:	13348	TestNo:	E350.1		E350.1	Analysis Date:	7/20/2021	SeqNo:	370413
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia (As N)	5.30	1.00	2.000	3.569	86.7	80	120				

Nitrogen, Ammonia (As N)

Sample ID:	21070398-08AMSD	SampType:	MSD	TestCode:	AMMONIA_W	Units:	mg/L	Prep Date:	7/16/2021	RunNo:	23102
Client ID:	X0466685	Batch ID:	13348	TestNo:	E350.1		E350.1	Analysis Date:	7/20/2021	SeqNo:	370414
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia (As N)	5.27	1.00	2.000	3.569	85.2	80	120	5.302	0.567	20	

Nitrogen, Ammonia (As N)

Qualifiers: CI Sample container temperature is out of limit as specified at testcode
 ND Not Detected at the Reporting Limit

H Holding times for preparation or analysis exceeded
 PL Permit Limit

MI Recovery outside control limits due to Matrix Is
 RL Reporting Detection Limit

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QC SUMMARY REPORT

WO#: 21070398
 12-Aug-21

Client: Box R Waterlab
Project: X046671-89 City of John Day-AMENDED
TestCode: EPA300_W

Sample ID: MBLK	SampType: MBLK	TestCode: EPA300_W	Units: mg/L	Prep Date:	RunNo: 22940						
Client ID: PBW	Batch ID: R22940	TestNo: E300.0		Analysis Date: 7/14/2021	SeqNo: 367564						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	1.00									

Sample ID: LCS	SampType: LCS	TestCode: EPA300_W	Units: mg/L	Prep Date:	RunNo: 22940						
Client ID: LCSW	Batch ID: R22940	TestNo: E300.0		Analysis Date: 7/14/2021	SeqNo: 367565						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	10.9	1.00	12.00	0	90.9	90	110				

Sample ID: 21070398-07BMS	SampType: MS	TestCode: EPA300_W	Units: mg/L	Prep Date:	RunNo: 22940						
Client ID: X046683	Batch ID: R22940	TestNo: E300.0		Analysis Date: 7/14/2021	SeqNo: 367573						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	98.3	10.0	60.00	42.40	93.2	80	120				

Sample ID: 21070398-07BMSD	SampType: MSD	TestCode: EPA300_W	Units: mg/L	Prep Date:	RunNo: 22940						
Client ID: X046683	Batch ID: R22940	TestNo: E300.0		Analysis Date: 7/14/2021	SeqNo: 367574						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	98.0	10.0	60.00	42.40	92.7	80	120	98.33	0.330	15	

Qualifiers: C1 Sample container temperature is out of limit as specified at testcode
 ND Not Detected at the Reporting Limit
 H Holding time for preparation or analysis exceeded
 PL Permit Limit
 M1 Recovery outside control limits due to Matrix In
 R1 Reporting Detection Limit



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QC SUMMARY REPORT

WO#: 21070398
 12-1Aug-21

Client: Box R Waterlab
Project: X046671-89 City of John Day-AMENDED

TestCode: EPA300_W

Sample ID: MBLK	SampleType: MBLK	TestCode: EPA300_W	Units: mg/L	Prep Date:	RunNo: 22940						
Client ID: PBW	Batch ID: R22940	TestNo: E300.0		Analysis Date: 7/17/2021	SeqNo: 369718						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	1.00									

Sample ID: LCS	SampleType: LCS	TestCode: EPA300_W	Units: mg/L	Prep Date:	RunNo: 22940						
Client ID: LCSW	Batch ID: R22940	TestNo: E300.0		Analysis Date: 7/17/2021	SeqNo: 369719						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	10.9	1.00	12.00	0	91.0	90	110				

Sample ID: LCS	SampleType: LCS	TestCode: EPA300_W	Units: mg/L	Prep Date:	RunNo: 22940						
Client ID: LCSW	Batch ID: R22940	TestNo: E300.0		Analysis Date: 7/13/2021	SeqNo: 369896						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	11.3	1.00	12.00	0	94.1	90	110				

Sample ID: MBLK	SampleType: MBLK	TestCode: EPA300_W	Units: mg/L	Prep Date:	RunNo: 22940						
Client ID: PBW	Batch ID: R22940	TestNo: E300.0		Analysis Date: 7/13/2021	SeqNo: 369897						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	1.00									

Qualifiers: C: Sample container temperature is out of limit as specified at testcode
 ND: Not Detected at the Reporting Limit
 H: Holding times for preparation or analysis exceeded
 PL: Permit Limit
 MI: Recovery outside control limits due to Matrix In
 RL: Reporting Detection Limit

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QC SUMMARY REPORT

WO#: 21070398
 12-Aug-21

Client: Box R Waterlab
Project: X046671-89 City of John Day--AMENDED
TestCode: ICP_200.7_W

Sample ID: MB-13648	SampType: MBLK	TestCode: ICP_200.7_W	Units: mg/L	Prep Date: 8/9/2021	RunNo: 23628						
Client ID: PBW	Batch ID: 13648	TestNo: E200.7	E200.7	Analysis Date: 8/9/2021	SeqNo: 379325						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	ND	0.0150									

Sample ID: LCS-13648	SampType: LCS	TestCode: ICP_200.7_W	Units: mg/L	Prep Date: 8/9/2021	RunNo: 23628						
Client ID: LCSW	Batch ID: 13648	TestNo: E200.7	E200.7	Analysis Date: 8/9/2021	SeqNo: 379326						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	1.01	0.0150	1.000	0	101	85	115				

Sample ID: 21070398-10CMS	SampType: MS	TestCode: ICP_200.7_W	Units: mg/L	Prep Date: 8/9/2021	RunNo: 23628						
Client ID: X046689	Batch ID: 13648	TestNo: E200.7	E200.7	Analysis Date: 8/9/2021	SeqNo: 379339						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	11.6	0.0150	11.00	0.3812	102	70	130				

Sample ID: 21070398-10CMSD	SampType: MSD	TestCode: ICP_200.7_W	Units: mg/L	Prep Date: 8/9/2021	RunNo: 23628						
Client ID: X046689	Batch ID: 13648	TestNo: E200.7	E200.7	Analysis Date: 8/9/2021	SeqNo: 379340						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	11.5	0.0150	11.00	0.3812	101	70	130	11.63	1.04		20

Qualifiers: CI Sample container temperature is out of limit as specified at testcode
 ND Not Detected at the Reporting Limit
 H Holding times for preparation or analysis exceeded
 PL Perma Limit
 MI Recovery outside control limits due to Matrix In
 RL Reporting Detection Limit

Revision v1



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QC SUMMARY REPORT

WO#: 21070398
 12-Aug-21

Client: Box R Waterlab
Project: X046671-89 City of John Day-AMENDED

TestCode: NO2NO3_W

Sample ID: MB	SampType: MBLK	TestCode: NO2NO3_W	Units: mg/L	Prep Date:	RunNo: 22854						
Client ID: PBW	Batch ID: R22854	TestNo: E353.2		Analysis Date: 7/9/2021	SeqNo: 366159						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate-Nitrite	ND	0.100									

Nitrogen, Nitrate-Nitrite

Sample ID: LCS	SampType: LCS	TestCode: NO2NO3_W	Units: mg/L	Prep Date:	RunNo: 22854						
Client ID: LCSW	Batch ID: R22854	TestNo: E353.2		Analysis Date: 7/9/2021	SeqNo: 366161						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate-Nitrite	0.915	0.100	1.000	0	91.5	90	110				

Nitrogen, Nitrate-Nitrite

Sample ID: 21070321-09AMS	SampType: MS	TestCode: NO2NO3_W	Units: mg/L	Prep Date:	RunNo: 22854						
Client ID: BatchQC	Batch ID: R22854	TestNo: E353.2		Analysis Date: 7/9/2021	SeqNo: 366163						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate-Nitrite	2.25	0.200	2.000	0.1777	104	80	120				

Nitrogen, Nitrate-Nitrite

Sample ID: 21070321-09AMSD	SampType: MSD	TestCode: NO2NO3_W	Units: mg/L	Prep Date:	RunNo: 22854						
Client ID: BatchQC	Batch ID: R22854	TestNo: E353.2		Analysis Date: 7/9/2021	SeqNo: 366164						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate-Nitrite	2.24	0.200	2.000	0.1777	103	80	120	2.251	0.499		20

Nitrogen, Nitrate-Nitrite

Qualifiers: C1 Sample container temperature is out of limit as specified at testcode
 ND Not Detected at the Reporting Limit

H Holding times for preparation or analysis exceeded
 PL Permit Limit

ML Recovery outside control limits due to Matrix in
 RL Reporting Description Limit

Revision v1



Neilson Research Corporation
 245 S Grape St
 Medford, OR 97501
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 Website: www.nreqlabs.com

QC SUMMARY REPORT

WO#: 21070398
 12-Aug-21

Client: Box R Waterlab
Project: X046671-89 City of John Day-AMENDED
TestCode: PHOS-T_W

Sample ID: LCS-13262	SampType: LCS	TestCode: PHOS-T_W	Units: mg/L	Prep Date: 7/12/2021	RunNo: 22889						
Client ID: LCSW	Batch ID: 13262	TestNo: A4500-P-E	A4500-P-E	Analysis Date: 7/12/2021	SeqNo: 366763						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Phosphorus, Total (As P) 0.325 0.0250 0.3500 0 92.7 80 120

Sample ID: MB-13262	SampType: MBLK	TestCode: PHOS-T_W	Units: mg/L	Prep Date: 7/12/2021	RunNo: 22889						
Client ID: PBW	Batch ID: 13262	TestNo: A4500-P-E	A4500-P-E	Analysis Date: 7/12/2021	SeqNo: 366764						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Phosphorus, Total (As P) ND 0.0250

Sample ID: 21070234-01AMS	SampType: MS	TestCode: PHOS-T_W	Units: mg/L	Prep Date: 7/12/2021	RunNo: 22889						
Client ID: BatchQC	Batch ID: 13262	TestNo: A4500-P-E	A4500-P-E	Analysis Date: 7/12/2021	SeqNo: 366766						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Phosphorus, Total (As P) 6.45 0.250 2.000 4.605 92.0 80 120

Sample ID: 21070234-01AMSD	SampType: MSD	TestCode: PHOS-T_W	Units: mg/L	Prep Date: 7/12/2021	RunNo: 22889						
Client ID: BatchQC	Batch ID: 13262	TestNo: A4500-P-E	A4500-P-E	Analysis Date: 7/12/2021	SeqNo: 366767						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Phosphorus, Total (As P) 6.47 0.250 2.000 4.605 93.4 80 120 6.445 0.437 15

Qualifiers: C1 Sample container temperature is out of limit as specified at testcode H Holding times for preparation or analysis exceeded MI Recovery outside control limits due to Matrix In
 ND Not Detected at the Reporting Limit PL Permit Limit RL Reporting Detection Limit

Revision v1



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QC SUMMARY REPORT

WO#: 21070398
 12-Aug-21

Client: Box R Waterlab
Project: X046671-89 City of John Day-AMENDED

TestCode: PHOS-T_W

Sample ID:	LCS-13277	SampType:	LCS	TestCode:	PHOS-T_W	Units:	mg/L	Prep Date:	7/13/2021	RunNo:	22909	
Client ID:	LCSW	Batch ID:	13277	TestNo:	A4500-P-E	SPK value	A4500-P-E	Analysis Date:	7/13/2021	SeqNo:	366994	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total (As P)		0.325	0.0250	0.3500	0	92.9	80	120				

Sample ID:	MB-13277	SampType:	MBLK	TestCode:	PHOS-T_W	Units:	mg/L	Prep Date:	7/13/2021	RunNo:	22909	
Client ID:	PBW	Batch ID:	13277	TestNo:	A4500-P-E	SPK value	A4500-P-E	Analysis Date:	7/13/2021	SeqNo:	366995	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total (As P)		ND	0.0250									

Sample ID:	21070398-01AMS	SampType:	MS	TestCode:	PHOS-T_W	Units:	mg/L	Prep Date:	7/13/2021	RunNo:	22909	
Client ID:	X046671	Batch ID:	13277	TestNo:	A4500-P-E	SPK value	A4500-P-E	Analysis Date:	7/13/2021	SeqNo:	366997	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total (As P)		0.301	0.0250	0.2000	0.1043	98.4	80	120				

Sample ID:	21070398-01AMSD	SampType:	MSD	TestCode:	PHOS-T_W	Units:	mg/L	Prep Date:	7/13/2021	RunNo:	22909	
Client ID:	X046671	Batch ID:	13277	TestNo:	A4500-P-E	SPK value	A4500-P-E	Analysis Date:	7/13/2021	SeqNo:	366998	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total (As P)		0.294	0.0250	0.2000	0.1043	94.6	80	120	0.3011	2.54	15	

Qualifiers: CU Sample container temperature is out of limit as specified at testcode H Holding times for preparation or analysis exceeded
 ND Not Detected at the Reporting Limit PL Permit Limit RL Reporting Detection Limit

Revision v1



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QC SUMMARY REPORT

WO#: 21070398
 12-Aug-21

Client: Box R Waterlab
Project: X046671-89 City of John Day-AMENDED

TestCode: PHOS-T_W

Sample ID:	LCS-13317	SampType:	LCS	TestCode:	PHOS-T_W	Units:	mg/L	Prep Date:	7/15/2021	RunNo:	22996
Client ID:	LCSW	Batch ID:	13317	TestNo:	A4500-P-E		A4500-P-E	Analysis Date:	7/15/2021	SeqNo:	369098
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total (As P)	0.327	0.0250	0.3500	0	93.4	80	120				

Sample ID:	MB-13317	SampType:	MBLK	TestCode:	PHOS-T_W	Units:	mg/L	Prep Date:	7/15/2021	RunNo:	22996
Client ID:	PBW	Batch ID:	13317	TestNo:	A4500-P-E		A4500-P-E	Analysis Date:	7/15/2021	SeqNo:	369099
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total (As P)	ND	0.0250									

Sample ID:	21070398-05AMS	SampType:	MS	TestCode:	PHOS-T_W	Units:	mg/L	Prep Date:	7/16/2021	RunNo:	22996
Client ID:	X046679	Batch ID:	13317	TestNo:	A4500-P-E		A4500-P-E	Analysis Date:	7/16/2021	SeqNo:	369101
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total (As P)	12.4	0.625	5.000	6.515	117	80	120				

Sample ID:	21070398-05AMSD	SampType:	MSD	TestCode:	PHOS-T_W	Units:	mg/L	Prep Date:	7/16/2021	RunNo:	22996
Client ID:	X046679	Batch ID:	13317	TestNo:	A4500-P-E		A4500-P-E	Analysis Date:	7/16/2021	SeqNo:	369102
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total (As P)	11.1	0.625	5.000	6.515	91.5	80	120	12.37	10.9	15	

Qualifiers: C1 Sample container temperature is out of limit as specified at testcode
 ND Not Detected at the Reporting Limit
 H Holding times for preservation or analysis exceeded
 PL Permit Limit
 MI Recovery outside control limits due to Matrix In
 RI Reporting Detection Limit

Revision v1



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QC SUMMARY REPORT

WO#: 21070398
 12-Aug-21

Client: Box R Waterlab
Project: X046671-89 City of John Day-AMENDED

TestCode: SOLIDS_TDS_W

Sample ID: MB-13300	Sample Type: MBLK	TestCode: SOLIDS_TDS	Units: mg/L	Prep Date: 7/14/2021	RunNo: 23126						
Client ID: PBW	Batch ID: 13300	TestNo: A2540C		Analysis Date: 7/14/2021	SeqNo: 370685						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	10.0									

Sample ID: LCS-13300	Sample Type: LCS	TestCode: SOLIDS_TDS	Units: mg/L	Prep Date: 7/14/2021	RunNo: 23126						
Client ID: LCSW	Batch ID: 13300	TestNo: A2540C		Analysis Date: 7/14/2021	SeqNo: 370686						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids	108	10.0	100.0	0	108	80	120				

Sample ID: 21070398-01CDUP	Sample Type: DUP	TestCode: SOLIDS_TDS	Units: mg/L	Prep Date: 7/14/2021	RunNo: 23126						
Client ID: X046671	Batch ID: 13300	TestNo: A2540C		Analysis Date: 7/14/2021	SeqNo: 370688						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids	191	10.0						191.2	0	10	

Sample ID: 21070520-01ADUP	Sample Type: DUP	TestCode: SOLIDS_TDS	Units: mg/L	Prep Date: 7/14/2021	RunNo: 23126						
Client ID: BatchQC	Batch ID: 13300	TestNo: A2540C		Analysis Date: 7/14/2021	SeqNo: 370699						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids	725	10.0						727.5	0.344	10	

Qualifiers: C1 Sample container temperature is out of limit as specified at testcode
 ND Not Detected at the Reporting Limit
 H Holding times for preparation or analysis exceeded
 PL Percent Limit
 MI Recovery in/out of control limits due to Matrix In
 RL Reporting Detection Limit

Revision v1



Client Name: **BOX_R_Waterlab**

Work Order Number: **21070398**

RcptNo: **1**

Logged by: **Kalea Adams** 7/9/2021 9:57:00 AM

Completed By: **Sara Stephens** 8/5/2021 4:56:14 PM

Reviewed By: **Dorie Maier** 7/22/2021 11:58:43 AM

[Handwritten signatures]

Chain of Custody

1. Is Chain of Custody complete? Yes No Not Present
 2. How was the sample delivered? UPS

Log In

3. Coolers are present? Yes No NA
 4. Shipping container/cooler in good condition? Yes No
 Custody seals intact on shipping container/cooler? Yes No Not Present
 No. Seal Date: Signed By:
 5. Was an attempt made to cool the samples? Yes No NA
 6. Were all samples received at a temperature of >0° C to 6.0°C Yes No NA
 7. Sample(s) in proper container(s)? Yes No
 8. Sufficient sample volume for indicated test(s)? Yes No
 9. Are samples (except VOA and ONG) properly preserved? Yes No
 10. Was preservative added to bottles? Yes No NA
 11. Is the headspace in the VOA vials less than 1/4 inch or 6 mm? Yes No No VOA Vials
 12. Were any sample containers received broken? Yes No
 13. Does paperwork match bottle labels? Yes No
 (Note discrepancies on chain of custody)
 14. Are matrices correctly identified on Chain of Custody? Yes No
 15. Is it clear what analyses were requested? Yes No
 16. Were all holding times able to be met? Yes No
 (If no, notify customer for authorization.)

Special Handling (if applicable)

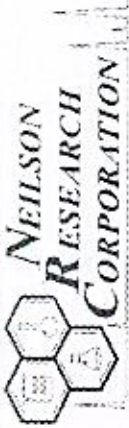
17. Was client notified of all discrepancies with this order? Yes No NA

Person Notified:	<input type="text"/>	Date:	<input type="text"/>
By Whom:	<input type="text"/>	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	<input type="text"/>		
Client Instructions:	<input type="text"/>		

18. Additional remarks:
 The sample submitted was tan in color and contained visible sediments.

Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.2	Good				DLN



Environmental Testing Laboratory
 245 South Grape Street • Medford, OR 97501
 (541) 770-5678 Fax (541) 770-2991

Chain of Custody Record

This Chain of Custody is a LEGAL DOCUMENT and must be filled out accurately.

Section A Required Client Information		Section B Required Project Information		Section C Invoice Information		Section D Rush Status (Subject to Scheduling)	
Company: Box R Water Analysis Laboratory	Project Name: <u>Box R Water Analysis Lab</u>	Attention: <u>SK MUYAZAK</u>	<input checked="" type="checkbox"/> Standard 10-14 Days				
Address: 567 NW Second St Pineville, OR 97754	Project Number: <u>501621-690</u>	Company Name: <u>Box R Water Analysis Lab</u>	<input type="checkbox"/> 5 Business Days (50% surcharge)				
Email: <u>boxrwater@neilsonresearch.com</u>	Report To: <u>Box R Water Lab</u>	Address: <u>567 NW 2nd St</u>	<input type="checkbox"/> 3 Business Days (75% surcharge)				
Phone: <u>541 447 4911</u> Fax: <u>541 447 4917</u>	Copy To: <u>SK MUYAZAK</u>	P.O.#	<input type="checkbox"/> 24 - 48 hours (100% surcharge)				
Collected By (Print): <u>Jim Goodwin</u>	P.O.#		Other	Authorized Yes <input type="checkbox"/> No <input type="checkbox"/>			
Collected By (Sign): <u>Jim Goodwin</u>							
Email Report Yes <input type="checkbox"/> No <input type="checkbox"/> Mait Report Yes <input type="checkbox"/> No <input type="checkbox"/>							
Fax Report Yes <input type="checkbox"/> No <input type="checkbox"/>							

Section E Sample Information		Section F Relinquish/Receive		Section G Lab Use Only		Section H NRC Workorder #		
Sample ID	Cont. (Gals)	Matrix*	Date Collected	Time Collected	No. of Containers	Analysis Requested	Remarks/Field Data	NRC Sample # (Lab Use Only)
X046671	1	W	07/07/04	05:50	3	Fe - T-Phos	River #1	210710398
X046673	1	W	07/07/04	07:40	3	Fe - T-Phos	River #2	01
X046675	1	W	07/07/04	10:20	3	Fe - T-Phos	River #3	02
X046677	1	W	07/07/04	10:30	3	Fe - T-Phos	Pond #1	03
X046679	1	W	07/07/04	10:40	3	Fe - T-Phos	Pond #2	04
X046681	1	W	07/07/04	9:10	3	Fe - T-Phos	Pond #3	05
X046683	1	W	07/07/04	8:05	3	Fe - T-Phos	CUM#2	06
X046685	1	W	07/07/04	7:00	3	Fe - T-Phos	MW#6	07
X046687	1	W	07/07/04	6:10	3	Fe - T-Phos	MW#5	08
X046689	1	W	07/07/04	10:00	3	Fe - T-Phos	MW#7	09
							CUM#3	10

*Matrix: DW - Drinking Water WW - Wastewater W - Water S - Soil/Solid SL - Sludge O - Oil WP - Wipe OT - Other

Relinquished By: <u>SKM</u> Sign	Date: <u>07/07/04</u>	Time: <u>17:50</u>
Received By: <u>SKM</u> Sign	Date: <u>07/07/04</u>	Time: <u>17:50</u>
Relinquished By:	Date:	Time:
Received By:	Date:	Time:
Relinquished By:	Date:	Time:
Received By Laboratory: <u>SKM</u> Sign	Date: <u>7/9/04</u>	Time: <u>9:57</u>

Temp: 0.2 °C Yes No
 Received on Ice: 5 Yes No
 Number of Bottles Received: 30
 pH Checked:
 COC Seals Intact: Yes No
 Field Blank Included: Yes No

Received Via UPS FedEX Other Amount: _____
 Payment: Invoice Cash VISA, M/C Check # _____

- B Analyte detected in the associated method blank.
- BA BOD Alternative Calculation: The initial results performed by Standard Methods did not fall within parameters of the Standard Methods calculation. An alternate approved calculation was performed using the HACH method and the value reported is an estimated concentration.
- C Sample(s) does not meet NELAP/ORELAP sample acceptance criteria. See Case Narrative.
- C1 Sample(s) does not meet NELAP/ORELAP sample acceptance criteria for temperature.
- CF Results confirmed by re-analysis.
- CU Cleanup performed as specified by method.
- D1 The diesel elution pattern for the sample is not typical.
- D2 The sample appears to be a heavier hydrocarbon range than diesel.
- D3 The sample appears to be a lighter hydrocarbon range than diesel.
- D4 Detected hydrocarbons do not have pattern and range consistent with typical petroleum products and may be due to biogenic interference.
- D5 Detected hydrocarbons in the diesel range appear to be weathered diesel.
- E Estimated value.
- ER Elevated reporting limit due to matrix. Report limits (MDLs, MRLs & PQLs) are adjusted based on variations in sample preparation amounts, analytical dilutions, and percent solids, where applicable.
- FC Fecal Coliforms: Sample(s) received past 40 CFR Part 136 specified holding time. Results reported as estimated values.
- G1 The gasoline elution pattern for the sample is not typical.
- G2 The sample appears to be a heavier hydrocarbon range than gasoline.
- G3 The sample appears to be a lighter hydrocarbon range than gasoline.
- G4 Detected hydrocarbons in the gasoline range appear to be weathered gasoline.
- HP Sample re-analysis performed outside of method specified holding time.
- HR Sample received outside of method specified holding time.
- HS Sample analyzed for volatile organics contained headspace.
- HT At the client's request, the sample was analyzed outside of method specified holding time.
- II Analysis performed outside of method specified holding time.
- J Analyte detected below the Minimum Reporting Limit (MRL) and above the Method Detection Limit (MDL). The J flag result is an estimated value and the user should be aware that this data is of limited reliability.
- L Dissolved metals were not filtered within 15 minutes of collection per 40 CFR Part 136.
- MI Surrogate, Duplicate Sample (DUP) or Matrix Spikes recoveries are out of control limits due to matrix interference. Sample results may be biased.
- N See Case Narrative on page 2 of report.
- NLR No Legionella Recovered.
- PLR Presence of Legionella Recovered.
- Q Initial calibration verification (ICV), continuing calibration verification (CCV) or laboratory control sample (LCS) exceeded high recovery limits, but associated samples are non-detect and the sample results are not affected. Data meets EPA/NELAP requirements.
- R Relative percent difference (RPD) is outside of the accepted recovery limits.
- R1 Relative percent difference (RPD) is outside of the accepted recovery limits. However, analyses are not controlled on RPD values for sample concentrations that are less than the reporting limit.
- R3 The relative percent difference (RPD) and/or percent recovery for the duplicate (DUP) or matrix spike (MS)/matrix spike duplicate (MSD) cannot be accurately calculated due to the concentration of analyte already present in the sample.
- R4 Duplicate analysis failed due to result being at or near the method reporting limit.
- S Surrogate and/or matrix spike recovery is outside of the accepted recovery limits. Sample results may be biased.
- S1 Surrogate or matrix spike recovery is outside of control limits due to dilution necessary for analysis.
- SC Sub-contracted to another laboratory for analysis.
- SP Sample(s) were not collected per EPA Method 5035A protocols. The results are considered minimum values.
- # Value exceeds regulatory level for TCLP contaminant.
- X1 The motor oil elution pattern for the sample is not typical.
- X2 The sample appears to be a heavier hydrocarbon range than motor oil.
- X3 The sample appears to be a lighter hydrocarbon range than motor oil.
- * Value exceeds Maximum Contaminant Level or is outside the acceptable range.



August 10, 2021

Mr. Ian Godwin
CwM-H2O
1319 SE MLK Jr Blvd
Suite 204
Portland, Oregon 97214
United States

Dear Mr. Godwin,

Please find enclosed the nitrate isotope ($\delta^{18}\text{O}$ and $\delta^{15}\text{N}$) analysis results for 9 water samples submitted by Mr. Ian Godwin on 07/09/2021.

Samples were analyzed by the chemical reduction of nitrate to nitrous oxide followed by continuous flow (CF) Isotope Ratio Mass Spectrometry (IRMS) (Casciotti et al., 2002; Foreman et al., 2016; and Altabet et al., 2019).

Isotope ratio data are reported as delta (δ) values in units of parts per thousand (per mill) (‰) (Coplen, 2011). Nitrogen isotope ratios are reported relative to N_2 in air (Mariotti, 1983) and oxygen isotope ratios are reported relative to VSMOW reference water and normalized on a scale such that $\delta^{18}\text{OSLAP} = -55.5\text{‰}$ (Coplen, 1994; IAEA, 2017).

The results are also presented graphically on a plot which includes representative areas of the isotopic composition ($\delta^{18}\text{O}$ and $\delta^{15}\text{N}$) of various nitrate sources (Kendall et al., 2007; Hastings et al., 2013).

Thank you for prepaying the analyses. As always, if you have any questions or would like to discuss the results, don't hesitate to contact us.

Sincerely,

Digital signature on file

Chris Patrick
Vice President of Laboratory Operations



Analysis Details

Submitter: Mr. Ian Godwin

Material submitted: Water

Date received: 07/09/2021

Date reported: 08/10/2021

Isotopic analysis: ¹⁸O and ¹⁵N

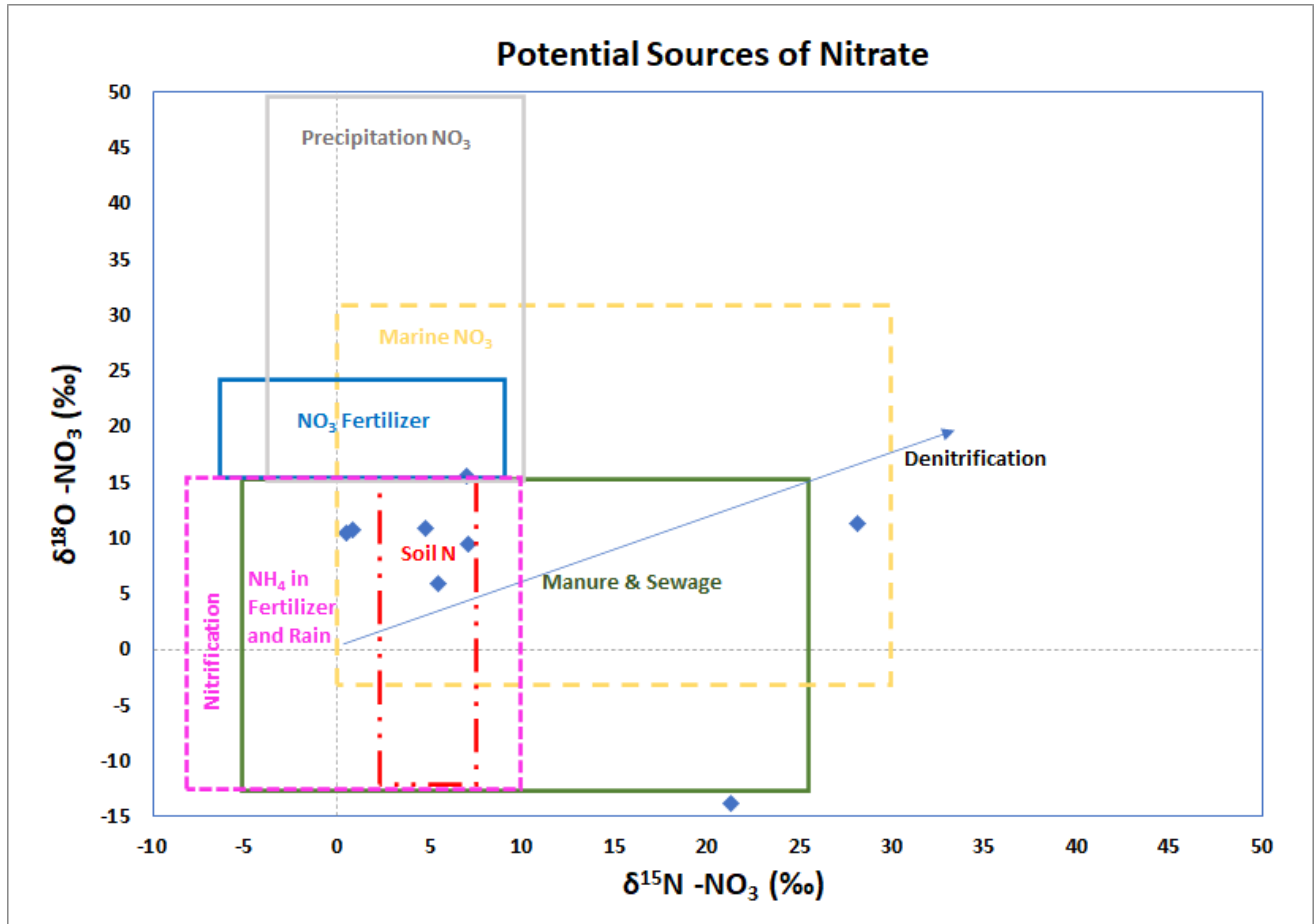
Method: Chemical reduction of nitrate to nitrous oxide followed by continuous flow Isotope Ratio Mass Spectrometry (IRMS) (Foreman et al., 2016, and Altabet et al., 2019)

Instrument: Thermo Scientific Denitrification Kit installed on a Gas Bench II connected to a Thermo Scientific Delta V IRMS

Lab Identification	Submitter ID	Material	Nitrate (mg-N/L)	$\delta^{18}\text{O}$ (‰) (to VSMOW)	$\delta^{15}\text{N}$ (‰) (to Air-N ₂)
Beta-597295	Riv-1	Water	0.06	5.85	5.44
Beta-597296	Riv-2	Water	0.05	10.9	4.78
Beta-597297	Riv-3	Water	0.03	10.5	0.48
Beta-597298	MW-7	Water	0.03	9.41	7.08
Beta-597299	MW-6	Water	0.05	11.3	28.1
Beta-597300	MW-5	Water	0.02	15.5	6.96
Beta-597302	CwM-3	Water	0.03	10.8	0.84
Beta-597303	Pond-1	Water	15.4	-29.7	14.0
Beta-597304	Pond-2	Water	1.63	-13.8	21.3



Results (cont.)



Plot of $^{18}\text{O}-\text{NO}_3$ vs. $^{15}\text{N}-\text{NO}_3$ results for the tested samples. The data are presented on a plot with representative areas of the isotopic composition (^{18}O and ^{15}N) of various nitrate sources (Kendall et al, 2007; Hastings et al., 2013).

This graphical representation is for reference only and should not be construed as an interpretation of the nitrate sources for these test results. The areas for the various nitrate sources overlap and additional data is required to definitively identify sources.



Methods

Each reduced sample was loaded into a PAL auto-sampler which delivered sample gas to a Thermo Scientific Gas Bench II equipped with a denitrification kit installed as per Casciotti et al, 2002. Each sample was run on a continuous flow Delta V IRMS with 10 pulses of reference N₂O gas with a standard deviation of <0.1‰ for ¹⁸O and ¹⁵N. This laboratory reference gas is standardized to USGS-32, USGS-34 and USGS-35 (Coplen, 2018)). The nitrate isotope method uncertainty is ±2‰ (1 SD) for ¹⁸O and ±0.5‰ (1 SD) for ¹⁵N.

Quality Control Reference Standard- ¹⁸O for Nitrate Isotope Analysis

Reference Standard	Measured ¹⁸ O (‰) (to VSMOW-SLAP)	Expected ¹⁸ O (‰) (to VSMOW-SLAP)
USGS 34	-28.5 ± 0.6	-27.9
USGS 35	57.4 ± 0.6	57.5
Lab Mix	-16.4 ± 0.3	-17.2

Quality Control Reference Standard- ¹⁵N for Nitrate Isotope Analysis

Reference Standard	Measured ¹⁵ N (‰) (to Air-N ₂)	Expected ¹⁵ N (‰) (to Air-N ₂)
USGS 34	-2.3 ± 0.2	-1.80
USGS 35	2.9 ± 0.1	2.70
Lab Mix	34.5 ± 0.3	34.6

USGS standards are primary Reference Materials (RMs) prepared and distributed by the Reston Stable Isotope Lab (RSIL) (Coplen, 2018). Lab Mix is a secondary in-house standard traceable to the USGS RMs.



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