

DRA Lower Deschutes River Monitoring

Help Sheet:

Public Data Portal and

Water Quality Standards in the Lower Deschutes River



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Background

Since PGE constructed the Selective Withdrawal (SWW) Tower in Lake Billy Chinook in 2009, there have been numerous negative shifts in the lower Deschutes River. This has included the increase in nuisance algae, decrease in numbers of sensitive aquatic insects, and an increase in worms/snails that transmit disease to salmonids. These well-documented shifts are due to the increased proportion of warm, polluted surface water from Lake Billy Chinook released directly into the lower Deschutes via the Tower. Prior to installation of the Tower, only cool, clean water from the bottom of Lake Billy Chinook was released into the lower Deschutes River. The Deschutes River Alliance (DRA) is a science-based advocacy organization founded in response to the threats facing the Wild and Scenic Deschutes River and its tributaries. We advocate for cooler, cleaner water, a healthy ecosystem, and the recovery and protection of robust populations of resident and anadromous fish.

If you would like additional information, please reference the following resources:

- **Annual water quality reports:** for every year of data collected, the DRA has generated a water quality report, all of which can be accessed on the [reports page](#) of our website.
- **State of the Lower Deschutes Webinar:** provides a thorough summary of the issues facing the lower Deschutes River. It can be accessed at the following [link](#) on our YouTube channel

Purpose

This reference document is to instruct those interested in viewing the DRA's live water quality data at our two monitoring sites near Warm Springs (est. 2016) and in Maupin (est. 2023) in the lower Deschutes River. Additionally, this document provides guidance to Oregon's water quality standards adopted under the Clean Water Act in the lower Deschutes. Lastly, the application of water quality standards throughout the state of Oregon are currently in the process of being updated. The current draft rules do not adequately protect aquatic life, including in the Deschutes Basin. There is an important public comment period that we strongly encourage you to participate in – see “How to make your voice heard” section below.

Water Quality Data: How to View, and Weekly Updates

Our live water quality data at our two stations near Warm Springs and Maupin can be viewed via two outlets. The first is our [Public Portal Website](#), which is a great way to dive into the past 30 days of water quality data. The second is our [Real-Time Data Applet](#), which is a convenient way to see the current water quality readings (collected every 10 min) at each station via your mobile device. Additionally, the DRA science team will provide a weekly update covering the latest data and river conditions. The next three subsections below cover each of these topics in detail.

Public Data Portal:

Link: [click here](#)

The public portal allows the last 30 days of data to be viewed in either graph or table form. Data is collected at each site through our water quality sondes at an interval of every 10 minutes.

Listed below are the steps to view the water quality data at each site:

1. On the [Public Data Portal main page](#), select one of the monitoring stations:

Values listed for each water quality parameter (temperature, DO, etc.) under the selected station represent the most recent reading taken by the water quality sonde at that station.



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Cooler, Cleaner, H2O

The Deschutes River Alliance is a science-based advocacy organization seeking collaborative solutions to the threats facing [more](#)

The DRA is collecting continuous water quality data in the lower Deschutes near Warm Springs and Maupin in order to track ongoing violations of the Clean Water Act

LDR01 - Near Warm Springs ▲

Last Updated 05-10-2023 14:20

Temperature (C)	17.74
ODO (mg/L)	7.70
ODOSat (%)	80.9
pH	6.94
Turbidity (NTU)	19.86

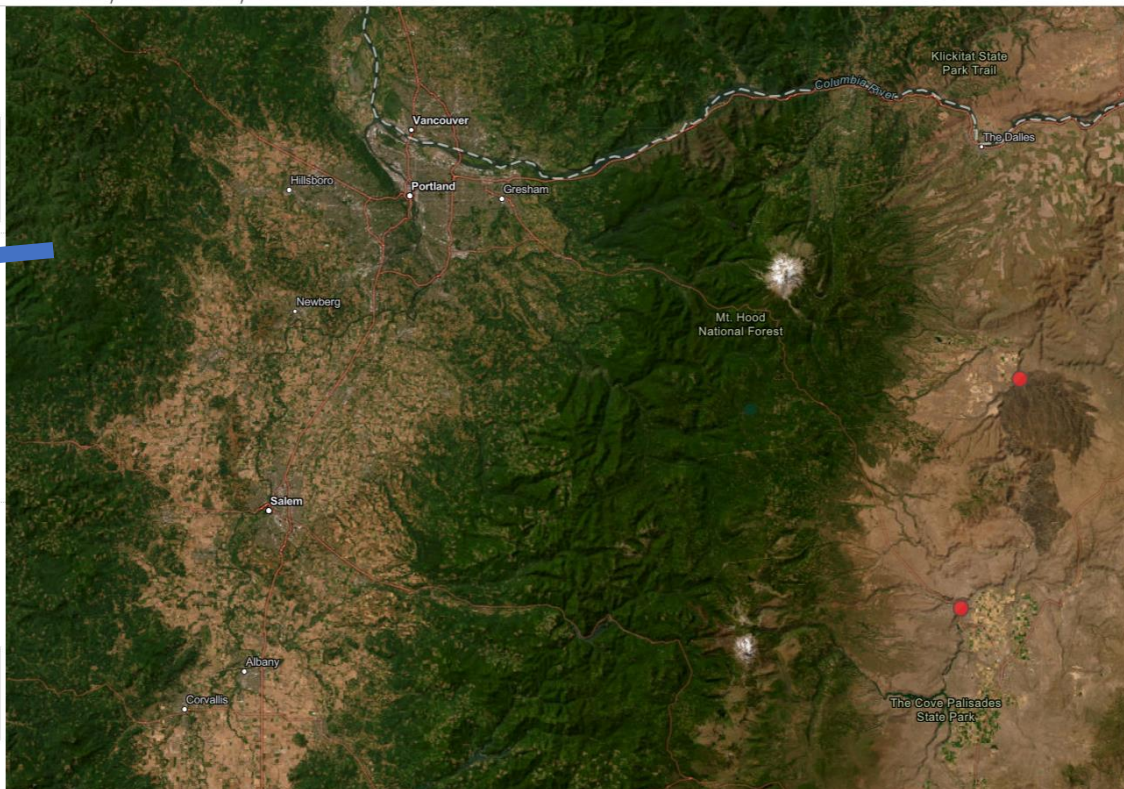
LDR02 - Maupin ▼

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Disclaimer:

Uncertainty and potential for error can be associated with environmental monitoring data. Data users are cautioned [more](#)



- Select an individual parameter at your selected station to see the last 30 days of data in either graph or table form. Select the “Graph” or “Table” tab after selecting the parameter you would like to see.

The Deschutes River Alliance is a science-based advocacy organization seeking collaborative solutions to the threats facing more

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LDR02 - Maupin ▼

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Graph Table

LDR01 - Near Warm Springs ODOSat

ODOSat (%)

16:00 20:00 May 10 04:00 08:00 12:00

That’s it! Reference the “**Water Quality Standards at each Station**” section below to determine whether a particular water quality standard is in compliance or violating Oregon water quality standards. If at least one of the parameters are in violation, that station’s icon on the Public Portal map will appear as red on the map. See section below for what the different station icon colors mean.


Water quality data in excess of 30 days, including previous years of data collected, is available upon request. If you would like access older data, please reach out to the DRA’s Water Quality Coordinator, Derek Miller, at derek@deschutesriveralliance.org. You can also reference annual water quality graphs for each parameter located in our water quality reports posted on our [website](#).

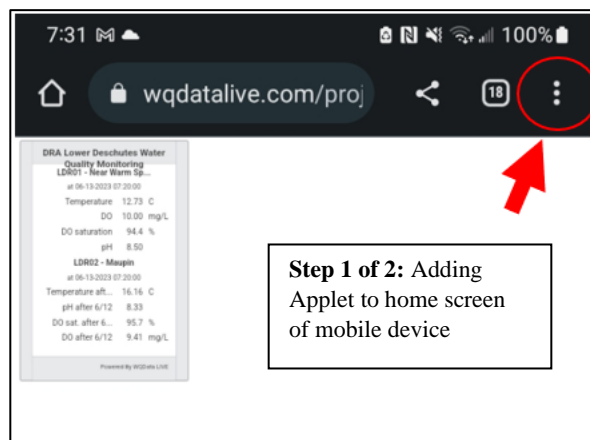
Data portal map - Station icon meanings:

- **Green station icon** ● = all water quality parameters are in compliance with water quality standards at this station
- **Red station icon** ● = one or more water quality standards is being violated at this station
- **Yellow station icon** ● = alert for DRA staff (such as low batteries). All water quality parameters are in compliance with water quality standards for this station.

Real-Time Data Applet:

Link: [click here](#)

The Real-Time Data Applet can be accessed on your mobile device's browser at the link directly above. This will display the last water quality readings for temperature, dissolved oxygen, and pH at both of our stations near Warm Springs and Maupin. For easy access, you can add a link to this webpage on your homescreen. See screenshots on the right side of this page for step-by-step instructions on how to do this on an Android device. The process is identical on iPhones, only first select the  icon on the menu bar at the bottom of the screen instead of the three dots.



Weekly River Conditions Update

Link: [click here](#).

In addition to the public portal, the DRA will be posting a weekly update on our blog detailing the current conditions on the lower Deschutes River. This will include water quality conditions at each monitoring site, weekly flow snapshots from the USGS Madras and Moody gauges, and an update on the latest aquatic insect hatches occurring on the river based on entries we receive from the public on our [Aquatic Insect Hatch App](#).

Water quality update:

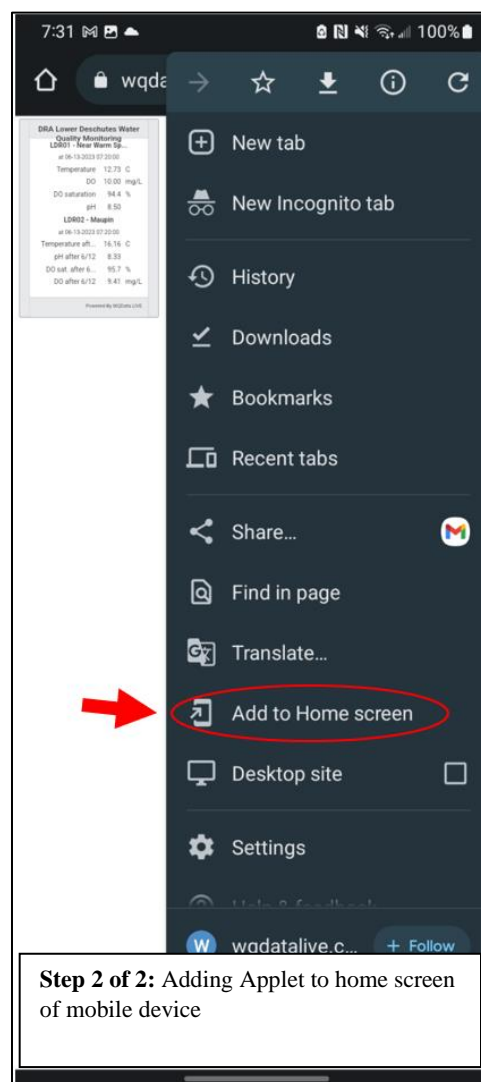
The water quality update will include updated graphs of select water quality parameters (pH, temperature, DO) and a running tally of the total number of days water quality standard violations have occurred for each parameter in the given monitoring year. We encourage you to utilize this resource to stay informed on the current conditions in the river.

Flow update:

Screenshots from the previous week's USGS [Madras Gauge](#) (near Warm Springs) and [Moody Gauge](#) (near the mouth of the lower Deschutes) discharge in cubic feet per second (cfs) will be uploaded.

Aquatic insect hatch update:

We highly encourage you to fill out this survey each time you are out on the river to keep your fellow anglers informed, and provide the DRA with invaluable data. Since 2013, DRA has collected macroinvertebrate hatch data to help track shifts in timing and abundance. For more information, please see our [hatch app webpage](#). Prior to filling out your first survey, we ask that you watch the following identification [training video](#).



Signing up for Automatic Email Alarms

The public portal allows individuals to opt in to receive automatic email notifications of select water quality standard violations. Emails are sent every time a water quality standard changes from being into compliance to being in violation at each station. Note that only absolute maximum or minimum standards have the automatic email capability. Therefore, the automatic alarms only apply to the maximum pH standard of 8.5 and absolute minimum DO standards (see tables in “*Water Quality Standards by Station*” section below). The **Weekly Water Quality Update** (section above) on the DRA’s website is the best way to know which water quality standards are being violated on a weekly basis.

How to subscribe/unsubscribe:

1. Email Derek: derek@deschutesriveralliance.org
 - a) **Subscribe:** use subject line - “Subscribe to Automatic WQ Standard Violation Emails”
 - b) **Unsubscribe:** use subject line - “Unsubscribe to WQ Standard Violation Emails”

Converting Temperature from Celsius to Fahrenheit:

Oregon’s water quality standards are in Celsius, which is largely why the DRA records our temperature data in Celsius. If you would like to know what the associated temperature is in degrees Fahrenheit, use the following equation (or one of the many [conversion sites](#) on the internet):

$$\text{Temperature } (^{\circ}\text{F}) = (\text{Temperature } (^{\circ}\text{C}) \times 1.8) + 32$$

Water Quality Standards at Each Station:

The tables below depict the water quality standards that apply in the lower Deschutes River, organized by monitoring station: *LDR01 – Near Warm Springs* and *LDR02 – Maupin*. Explanations for why these water quality standards are important and what the different Aquatic Life Use Designations mean are outlined in the associated sections below.

Stations: all

Reach: Reregulating Dam to Mouth of the Lower Deschutes River

Parameter	Aquatic Life Use Designation	Standard	Date Range
pH	-	6.5-8.5	Year round

Station: LDR01 – Near Warm Springs

Reach: Reregulating Dam to confluence with the Warm Springs River

Parameter	Aquatic Life Use Designation	Standard	Date Range
Dissolved Oxygen	Salmonid Spawning and Incubation Period	* ≥ 9.0 mg/L, or 95% saturation	Oct 15 – June 15
Dissolved Oxygen	Core Cold-Water Habitat	**8.0 mg/L; 6.5 mg/L; or 6.0 mg/L	June 16 – Oct 14
Temperature	Salmonid Spawning and Incubation Period	$\leq 13.0^{\circ}\text{C}$ 7-DADM***	Oct 15 – June 15
Temperature	Core Cold-Water Habitat	$\leq 16.0^{\circ}\text{C}$ 7-DADM***	Year-round

*Note that the 9.0 mg/L absolute minimum standard during the salmon/steelhead spawning and incubation period applies since intergravel DO studies were performed by PGE shows that adequate (at least 8.0 mg/L) IGDO is present. If this were not the case, a higher standard of 11.0 mg/L 7-day mean minimum would apply. The DRA has concerns about the DO standard as currently applied in the lower Deschutes since studies were only performed within a relatively short distance below the Reregulating Dam.

**8.0 mg/L as a 30-day mean minimum; 6.5 mg/L as a 7-day minimum mean; or 6.0 as absolute minimum when DEQ determines there is sufficient data (continuous data). Violation occurs if any of the three are exceeded.

***Rolling 7-day average daily maximum (7-DADM)

Station: LDR02 - Maupin

Reach: Confluence with the Warm Springs River to the Mouth of the Lower Deschutes River

Parameter	Aquatic Life Use Designation	Standard	Date Range
Dissolved Oxygen	Salmonid Spawning and Incubation Period	* ≥ 9.0 mg/L, or 95% saturation	Oct 15 – May 15
Dissolved Oxygen	Cool-Water Habitat	**6.5 mg/L; 5.0 mg/L; or 4.0 mg/L	May 16 – Oct 14
Temperature	Salmonid Spawning and Incubation Period	$\leq 13.0^{\circ}\text{C}$ 7-DADM***	Oct 15 – May 15
Temperature	Core Cold-Water Habitat	$\leq 18.0^{\circ}\text{C}$ 7-DADM***	May 16 – Oct 14

*Note that the 9.0 mg/L absolute minimum standard during the salmon/steelhead spawning and incubation period applies since intergravel DO studies were performed by PGE shows that adequate (at least 8.0 mg/L) IGDO is present. If this were not the case a higher standard of 11.0 mg/L 7-day mean minimum would apply. The DRA has concerns about the DO standard as currently applied in the lower Deschutes since studies were only performed within a relatively short distance below the Reregulating Dam.

**6.5 mg/L as a 30-day mean minimum; 5.0 mg/L as a 7-day minimum mean; or 4.0 as absolute minimum when DEQ determines there is sufficient data (continuous data). Violation occurs if any of the three are exceeded.

***Rolling 7-day average daily maximum (7DADM).

Why Water Quality Standards are Important:

The standards listed in the tables above are adopted by Oregon Department of Environmental Quality (DEQ) under the Clean Water Act (CWA) in order to protect aquatic life. Since the selective withdrawal tower in Lake Billy Chinook started operating in late 2009, the number of water quality standard violations have increased. This is representative of the negative shifts that have been observed in the lower Deschutes River, including the increased abundance of nuisance algae, decline in aquatic insect abundance and shift in emergence, and increased prevalence of fish disease and parasites. For more information on why each individual water quality parameter is important to aquatic life, and how the river ecosystem has changed in the lower Deschutes following SWW Tower operations as a result to declining water quality, please read our annual [2022 Lower Deschutes River Water Quality Report](#), or watch our recent [State of the Lower Deschutes](#) webinar.

Aquatic Life Use Designations:

Note that some of the temperature and dissolved oxygen standards are seasonal based on the aquatic life use designations, which are set by DEQ with consultation from state, federal, and tribal fish and wildlife agencies. Since salmonids are among the most sensitive aquatic life to water quality conditions, the standards are set to protect the most sensitive life history stages of salmon, steelhead, and resident trout. Figure 1 below depicts the designated fish use in the lower Deschutes River. According to ODEQ's Beneficial Use Definitions ([OAR 340-041-0002](#)):

- **Core Cold Water Habitat** “means waters expected to maintain temperatures within the range generally considered optimal for salmon and steelhead rearing, or that are suitable for bull trout migration, foraging and sub-adult rearing that occurs during the summer.”
 - o **In the lower Deschutes:** From the Reregulating Dam tailrace to the confluence with the Warm Springs River (green section of map in Figure 1)
- **Salmon & Trout Rearing and Migration** “means thermally suitable rearing habitat for salmon, steelhead, rainbow trout, and cutthroat trout”
 - o **In the lower Deschutes:** from the confluence with the Warm Springs River to the mouth (orange section in Figure 1)

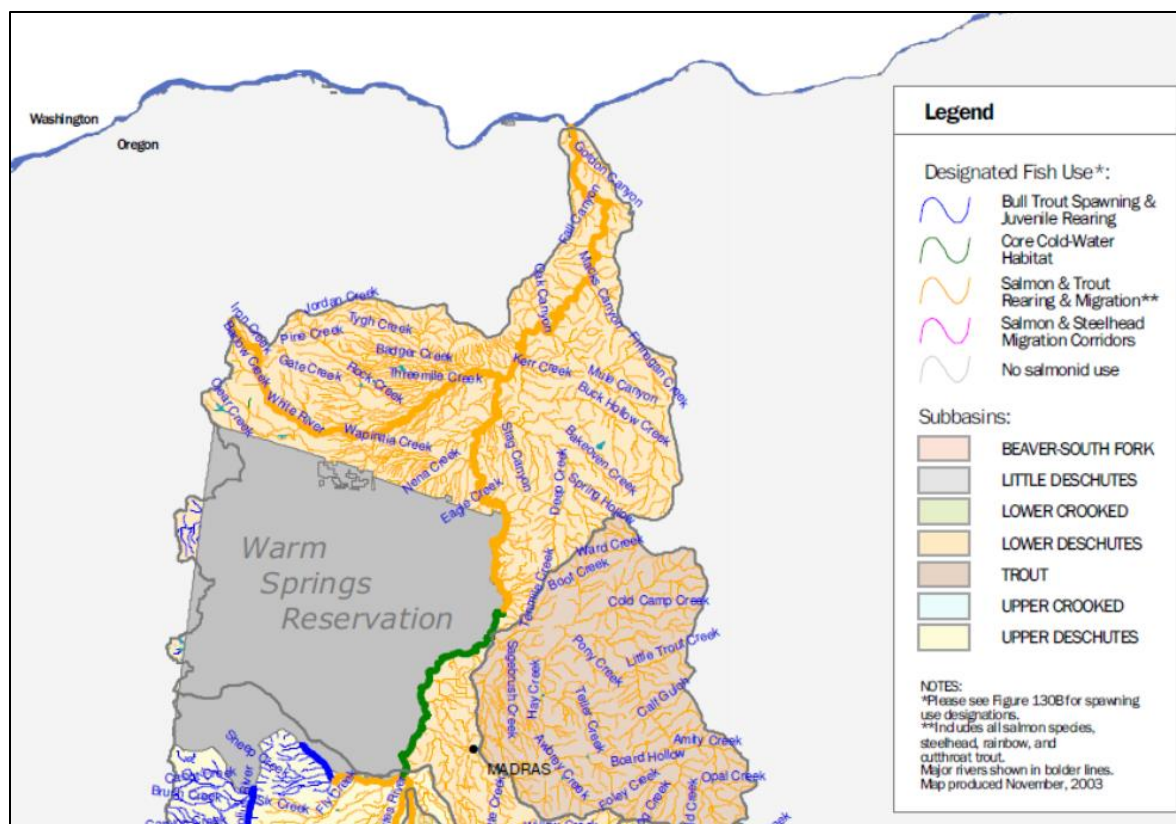


Figure 1. Designated beneficial use map of the lower Deschutes River, adapted from DEQ’s fish use designations map (OAR 340-041-0130 – Figure 130A)

The Core Cold-Water Habitat designation is stricter than the Salmon & Trout Rearing and Migration designation, which is why some of the temperature and dissolved oxygen standards listed in the tables above are stricter at the Warm Springs station relative to the Maupin station. However, these life use designation maps have not been updated since 2003, and because a lot of relevant fish-use data has been collected since 2003, these designations are in need of updating. DEQ is currently in the process of doing this, which is detailed below.

Important: June 2023 – Your Voice is Needed for DEQ’s Aquatic Life Use Updates!

Please note that these maps and beneficial use designations are being updated in DEQ’s 2023 DEQ Aquatic Life Use Updates. Some of the proposed changes will relax standards and provide fewer protections to aquatic life. The public comment period opened on Thursday May 4. We encourage you use your voice and advocate for stronger standards -- we cannot allow DEQ to relax any standards.

How to make your voice heard and stay informed:

1. **Submit public comments:** DRA has a list of concerns based on these draft rules. Our recent blog post, “[DRA’s Top Concerns with DEQ’s Proposed Aquatic Life Rules](#)”, details these concerns. If you are signed up for our newsletters, our May newsletter contains a public comment insert that you can fill out and mail to DEQ to register your comments. You can also submit comments via email to aquaticlife.2022@deq.oregon.gov. **All comments are due by 5pm June 23.**
2. **Sign up for DRA’s email blasts (click here):** This is the best way to receive updates throughout this rulemaking process