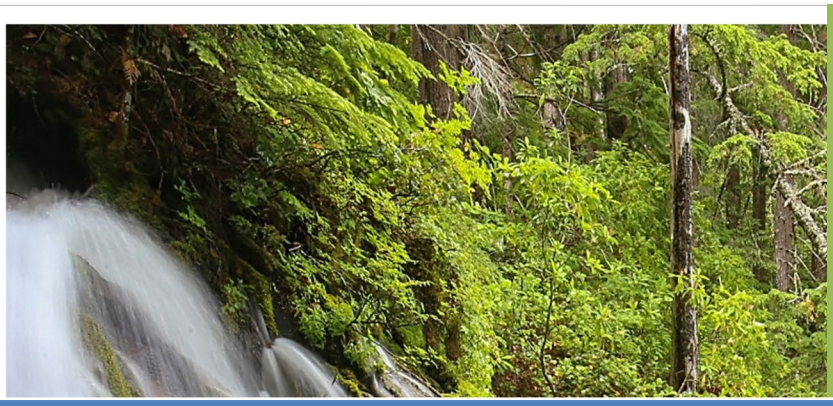
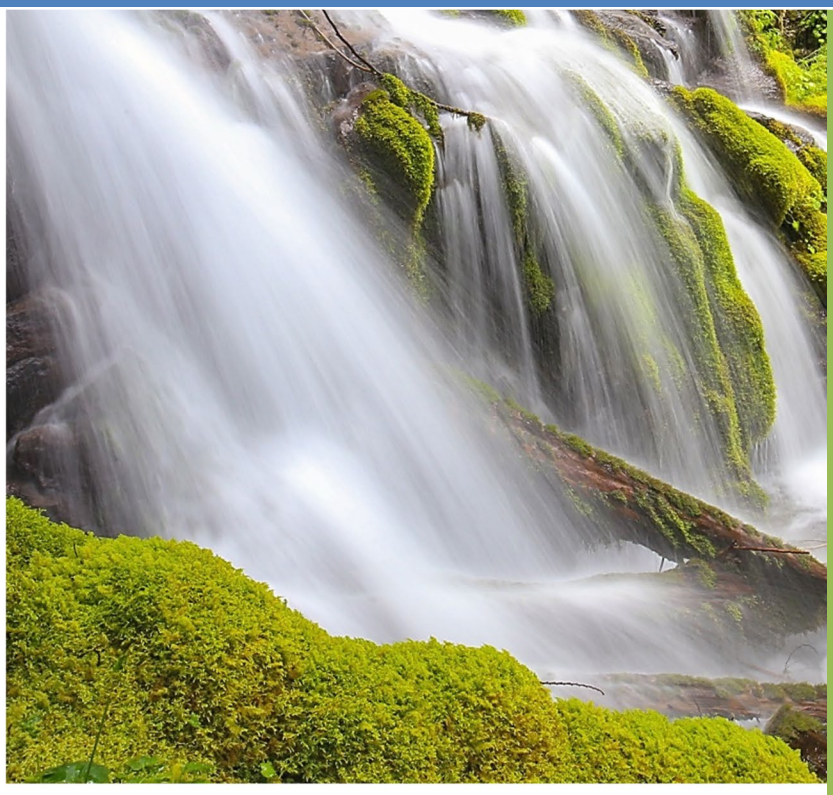


2024

State of the McKenzie Watershed Report

Eugene Water & Electric Board



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February 2025

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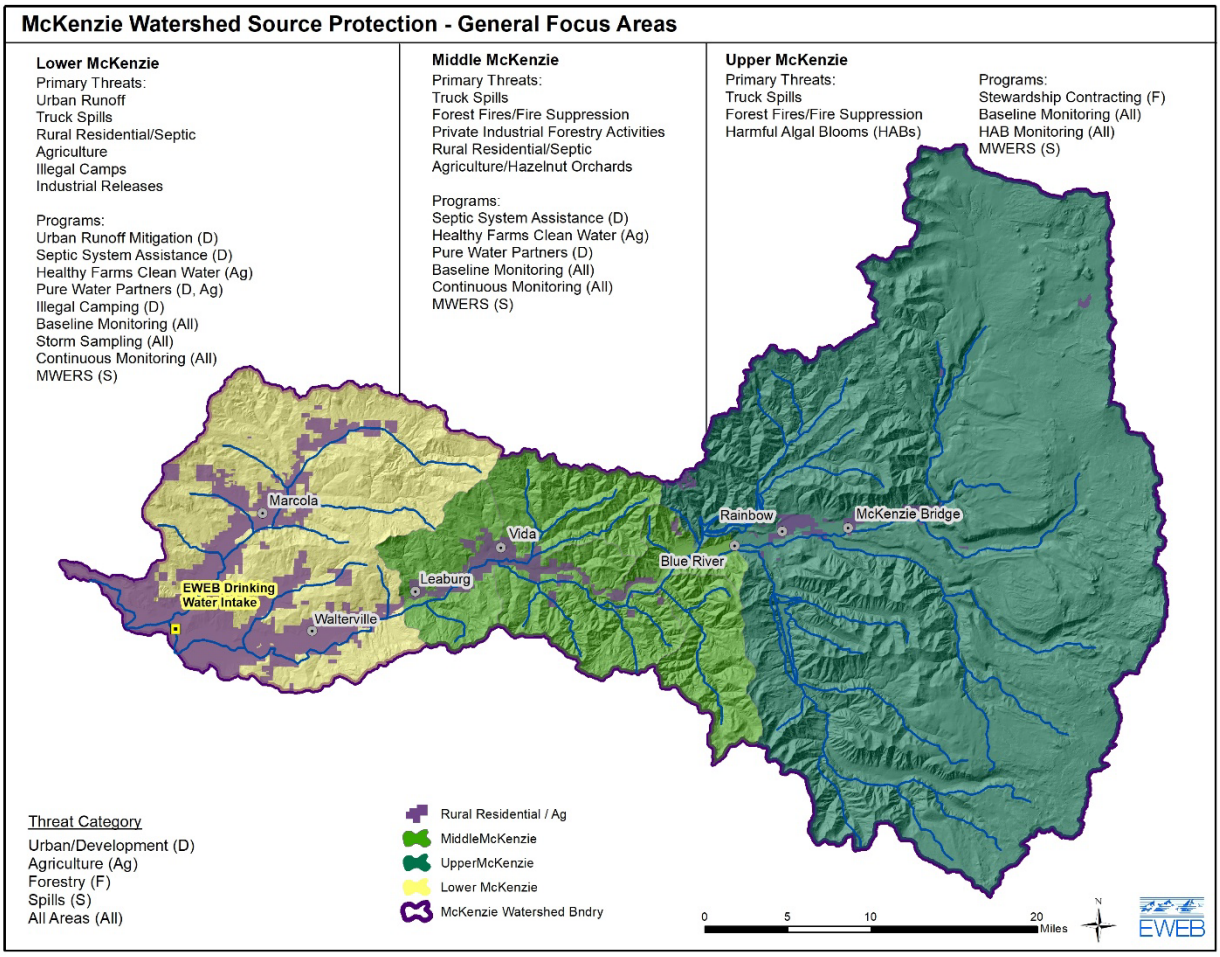
Cover Image: Upper McKenzie Watershed Spring (photo courtesy of David Donahue)

1.0 Executive Summary

The purpose of the State of the McKenzie Watershed Report (SMWR) is to highlight water quality trends, activities that threaten water quality, significant watershed events, and programs designed to mitigate or reduce impacts to water quality. This report is produced annually to show progress being made or challenges encountered as Eugene Water & Electric Board (EWEB) implements the Drinking Water Source Protection (DWSP) Program 10-year strategic plan throughout the McKenzie Watershed (see Figure 1-1). To keep the report brief, background information and programs details are contained in the Strategic Plan Technical Report and the previous SMWR. Both can be found at: http://www.eweb.org/community-and-environment/mckenzie-watershed-protection/drinking-water-source-protection-plan.

Figure 1-1: Map of DWSP Program



The report layout is designed to address goals and objectives, highlight major events in the watershed that have had significant positive or negative impacts and provide a summary of the health of the McKenzie Watershed (Section 1), followed by brief discussions of water quality and quantity trends (Sections 2-3) and updates on the priority threats to water quality and how EWEB programs are

responding to these threats (Sections 4-10). The final section focuses on operationalizing source protection as well as looking at efforts under development and future opportunities (Section 11).

1.1 Source Protection Goals & Objectives

The overarching goal of EWEB's Drinking Water Source Protection (DWSP) program is to measure the balance between watershed health and human use over time and implement actions that maximize the benefits EWEB receives through its investments in the McKenzie River Watershed. The primary objectives to accomplish this goal include:

1. Plan and implement actions that maintain source water quality in a way that balances risks with benefits in partnership with others;
2. Prioritize source protection efforts that provide the greatest benefit to drinking water treatment and electric generation in the McKenzie Watershed; and,
3. Promote public awareness and stewardship of a healthy watershed through targeted actions and programs.

The state of Oregon now awards a certificate of recognition to water systems that have made 'substantial progress in implementing measures to protect their drinking water sources from contamination.' EWEB's Source Water Protection Program was awarded this Drinking Water Protection Award to 'acknowledge excellence in drinking water source protection efforts.'

1.2 Watershed Highlights

Post-Fire Restoration Efforts Continue to be Critical for Landowners

Four years after the Holiday Farm Fire, the Pure Water Partners (PWP) Program, of which EWEB is a participating member, continues to work with watershed landowners on restoration efforts, though at a reduced scale from previous years. The PWP conducts property assessments to evaluate needs and opportunities for replanting in riparian areas, invasive species control, erosion control, and naturescaping. Landowners who participate in PWP sign 7-year Watershed Stewardship Agreements which allow work to be completed and maintained on their properties. As post-fire funding winds down, and natural regeneration increases, the scale of restoration work will continue to decrease over time (see Section 7).

EWEB also distributed over $1 million of the DEQ septic system grants funds to homeowners before the grant obligation deadline of December 31, 2024 (see Section 8). EWEB still has approximately $300,000 remaining for septic system grants through Business Oregon and Lane County to distribute to homeowners affected by the Holiday Farm Fire.

To date, EWEB has brought in $14.6 million dollars of secured grant funding for watershed restoration, including: fuels reduction, replanting, large floodplain restoration projects, and strategic acquisitions. In addition to secured funding, EWEB has been able to leverage another $9.8 million in grant funding awarded to EWEB partners to meet the goals of McKenzie watershed restoration.

Large-Scale Restoration Projects

EWEB continues to work with the McKenzie Watershed Council (MWC), the McKenzie River Trust (MRT), and the U.S. Forest Service (USFS) to implement large-scale restoration projects. In 2024, partners

continued project design for Quartz Creek with implementation scheduled for May 2025. Necessary bridge replacement work was also completed by 2024 to accommodate upcoming restoration efforts (see Figure 1-2). These types of restoration projects have numerous benefits including mitigating floods, turbidity, and organic carbon by spreading out and attenuating flows, dropping out sediment, increasing the uptake of nutrients and organic carbon from upstream severely burned landscapes, storing water, increasing habitat for fish and wildlife, increasing resiliency to wildfire, and increasing cold water refugia.

Figure 1-2: Quartz Creek Bridge Replacement Work Completed in 2024

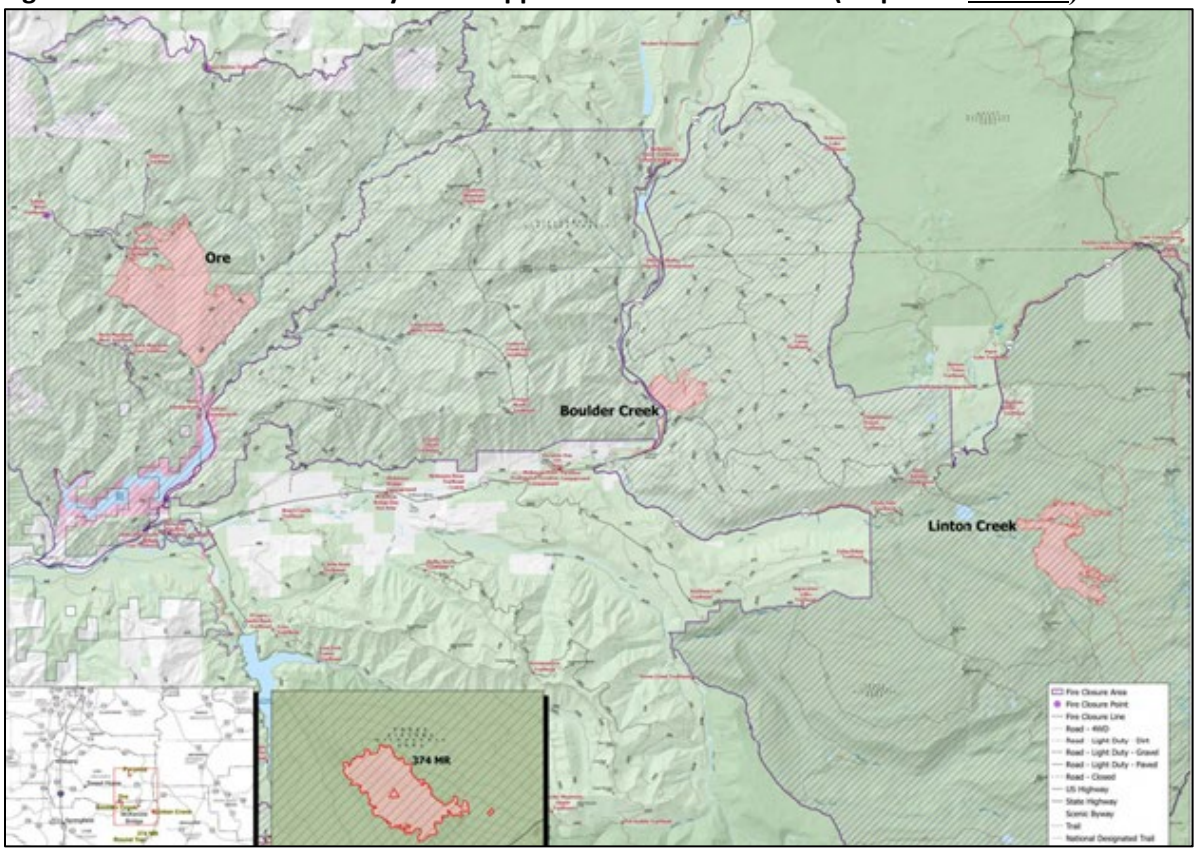
Image Credits: David Donahue

Ore, Boulder Creek, Linton Creek and 374 Fires

Fire activity continued across the Central Cascades and throughout the rest of the state in 2024 after the region experienced an unfortunate combination of lightning storms, excessive heat waves and human-caused events. The Ore, Boulder Creek, Linton Creek and 374 MR Fires, collectively known as the

Willamette Complex Fires North (Figure 1-3), burned over 5,400 acres in the McKenzie watershed in 2024. The largest of these fires, the Ore Fire, burned around 3,400 acres and was confined to the Blue River watershed, above Blue River Reservoir. Fortunately, no structures were lost in any of these fires, although they did create significant smoke locally and forced the evacuation of some residents near McKenzie Bridge as well as close large swaths of Federal land to public access.

Figure 1-3: 2024 Wildfire Activity in the Upper McKenzie Watershed (map from InciWeb)



1.3 Statement of Overall Health

In the 2019 State of the McKenzie Watershed Report staff indicated "it is anticipated that climate change impacts in the McKenzie will show up as extreme weather events (including flooding, drought, and loss of snowpack), resulting in increased wildfires, harmful algal blooms, and property damage in riparian and floodplain areas". The 2020 Holiday Farm Fire (HFF) was an example of such an extreme event that continues to have a significant impact on the McKenzie watershed. Last year brought yet another round of wildfires to the Upper McKenzie, adding to the already sizeable portion of total acres burned throughout the watershed over the past 8 years. Since the HFF, EWEB has worked to mitigate water quality threats from the HFF and other fires by working closely with federal, state, and local partners in a well-coordinated response and restoration effort.

Our water quality monitoring staff continued to conduct baseline and storm event monitoring with a focus on tributaries both within the Holiday Farm Fire and other burn areas and in the urban interface. Routine harmful algal bloom (HAB) monitoring was carried out as planned from spring until fall,

confirming a relatively uneventful and welcomed HAB year across the watershed. Although the McKenzie River has faced some major challenges over the past several years, overall water quality remained excellent in 2024 (see Section 3).

Wastewater releases and hazardous material spills remain high priority threats to water quality. Several spills, mostly minor, were reported in the watershed in 2024, which involved a few vehicle crashes. The McKenzie Watershed Emergency Response System (MWERS) and years of interagency drills continue to provide a platform for effective spill response communication and coordination. In addition to the annual spill drill, which was held at Finn Rock in 2024, Source Protection staff assisted City of Medford with their efforts to develop similar spill response capabilities to protect their drinking water intake, culminating in a 3-day spill response training event held on the Rogue River.

Urban runoff continues to be a source of pollutants to the river in the lower watershed, as indicated by both baseline and storm event monitoring data (see Section 3). The Urban Waters Partnership continues to work together to design and implement green infrastructure in partnership with local businesses to treat stormwater runoff. This partnership is operating with significant funding from the U.S. Environmental Protection Agency (EPA) as well as partner contributions to scale these efforts up in Eugene/Springfield and surrounding areas (see Section 5.2).

2.0 Water Year

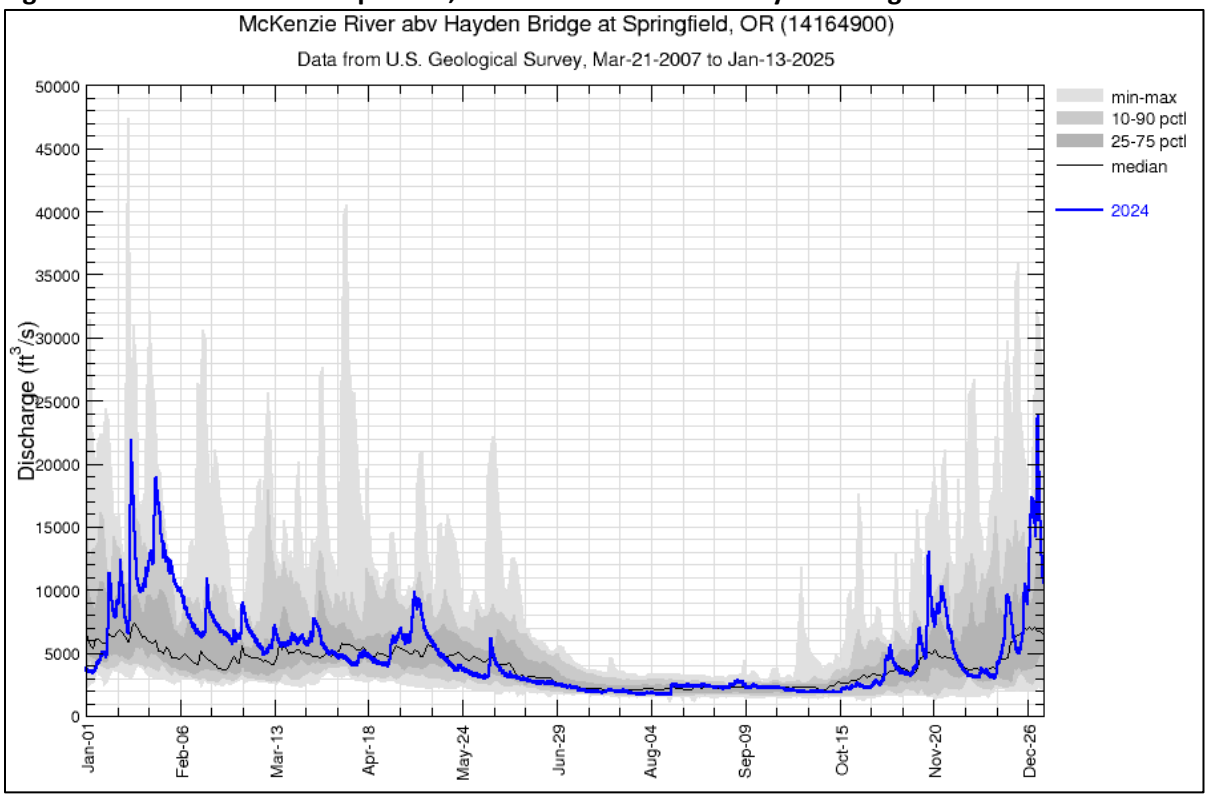
Total precipitation amounts in the Upper McKenzie watershed for the 2023/2024 water year (10/1/2023 thru 9/30/2024) were above median values when compared to a 30-year period from 1991 to 2020, according to figures from the USDA/NRCS National Water and Climate Center. The McKenzie SNOTEL site received 100.2 inches of precipitation for the 2023/2024 water year, or 103% of the median value. The Roaring River SNOTEL site, which is in the southeast corner of the South Fork McKenzie River watershed, received 72.8 inches of precipitation for the 2023/2024 water year, or 107% of the median value. Snow water equivalent levels (or snowpack) at both SNOTEL sites started off the year well below median values, but fortunately a series of mid-January cold fronts brought some much-needed snow to both sites to boost snowpack closer to median values. Snowpack remained fairly close to median values through the rest of the season at the McKenzie site but fell short of median values further south at the Roaring River site, at least until an early May snow event brought levels back up.

Current water year precipitation and snowpack through December 2024 remained above respective median values at the close of the year. However, over the course of 2024, 50% or more of Lane County was considered at least abnormally dry for 20 weeks (3 weeks were considered moderate drought) according to the National Drought Monitor. For the remaining 32 weeks, 50% or more of Lane County was not considered in a dry or drought condition, which improved on the drier conditions of 2023.

Beginning the second week of January 2024, flows in the McKenzie River at Hayden Bridge stayed well above median values until early spring (see Figure 2-1). However, flows dropped below median levels by mid-spring and on into mid-summer with two exceptions, a prolonged series of rain events around the 1st of May and another smaller event near the start of June. Flows climbed back above median levels beginning August 11th when the U.S. Army Corps of Engineers (Corps) began releasing water from both

Cougar and Blue River Reservoirs to augment mainstem Willamette River flows but dropped again by late summer. Heading into fall, pacific storms carried flows above median values through most of November, culminating in the highest flow of the year (provisional USGS data) at Hayden Bridge on December 29th, when flows reached 23,900 cubic feet per second (cfs) after a series of low- to moderate-strength atmospheric river events rolled through the area.

Figure 2-1: Historic Flow Comparison, McKenzie River above Hayden Bridge



3.0 Water Quality and Watershed Health

EWEB's Source Water Protection Program undertakes multiple long-term monitoring efforts year-round to assess water quality conditions throughout the watershed. Water quality conditions are evaluated through a combination of extensive continuous monitoring stations and discrete sampling events. The results are used by staff to better understand overall watershed health, contaminant sources and emerging drinking water threats. Staff continued to focus on post-wildfire impacts in 2024, while also expanding monitoring efforts associated with urban stormwater runoff in East Springfield.

3.1 Continuous Monitoring Network

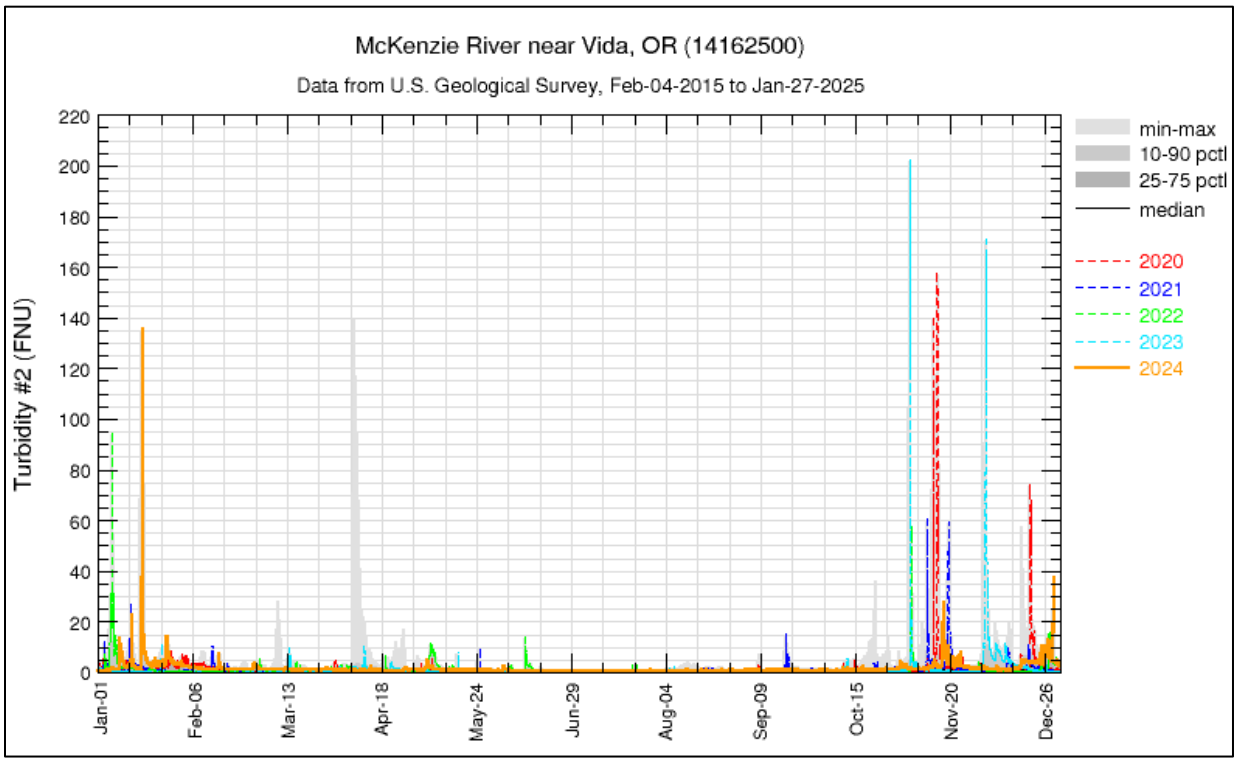
Continuous monitoring stations, whether managed by EWEB or the USGS, use multi-parameter water quality sondes to monitor real-time water quality conditions. The USGS also manages a network of stream gaging stations throughout the watershed that monitor real-time stream stage, which is used to calculate discharge. Two key parameters, turbidity, or the cloudiness of the water, and fluorescent

dissolved organic matter (fDOM), provide meaningful information to staff about rapidly changing conditions that may impact treatment operations. Both parameters can also be viewed as surrogates for additional contaminants potentially entering local waterways. By monitoring these parameters, along with discharge, staff can react accordingly with additional sampling or treatment process adjustments.

The temporary sonde that was deployed in Quartz Creek during 2023 bridge construction was replaced with a new monitoring station in early 2024 by the USGS. The new station is jointly funded by EWEB and the USGS and provides both water quality and discharge information for the Quartz Creek watershed, which was extensively burned during the 2020 Holiday Farm Fire and is currently undergoing a largescale floodplain restoration effort.

As illustrated below in Figure 3-1 by the orange line, turbidity levels (measured in Formazin Nephelometric Units or FNU) in the McKenzie River near Vida peaked in 2024 during storm events on January 17th (136 FNU), November 17th (27.4 FNU) and again on December 29th (37.5 FNU). Turbidity levels in the McKenzie River near Vida are typically less than 2 FNU during most of the year. Turbidity values reported further downstream near Walterville and Hayden Bridge were at or near 50 FNU during the December 29th storm, continuing the trend of at least two 50 FNU turbidity events per year in the mainstem McKenzie River post-Holiday Farm Fire. By comparison, between 2015 and 2019, there were only two events that exceeded 50 FNU.

Figure 3-1: Major Turbidity Event Comparison, McKenzie River near Vida, 2020-2024



3.2 Harmful Algal Bloom (HAB) Monitoring

Cyanobacteria are photosynthetic bacteria found naturally in lakes, streams, ponds, and marine environments, and play an important role globally as a primary producer (organisms that convert sunlight energy and non-living materials into food). However, under certain conditions, like warm, slow-moving water, cyanobacterial harmful algal blooms (HABs) can form that impair water quality and potentially generate toxins that are harmful to humans and pets. Increased nutrients, such as nitrogen and phosphorus, can further exacerbate the formation of HABs. The Oregon Health Authority (OHA) has adopted drinking water and recreational use advisory levels for some of the toxins produced by HABs. Additional information on cyanotoxins can be found on OHA's Cyanotoxin Resources for Drinking Water and Cyanobacteria Bloom pages.

Figure 3-2: Blue River Reservoir at the west end (left image) and east end (right image) on July 15th.

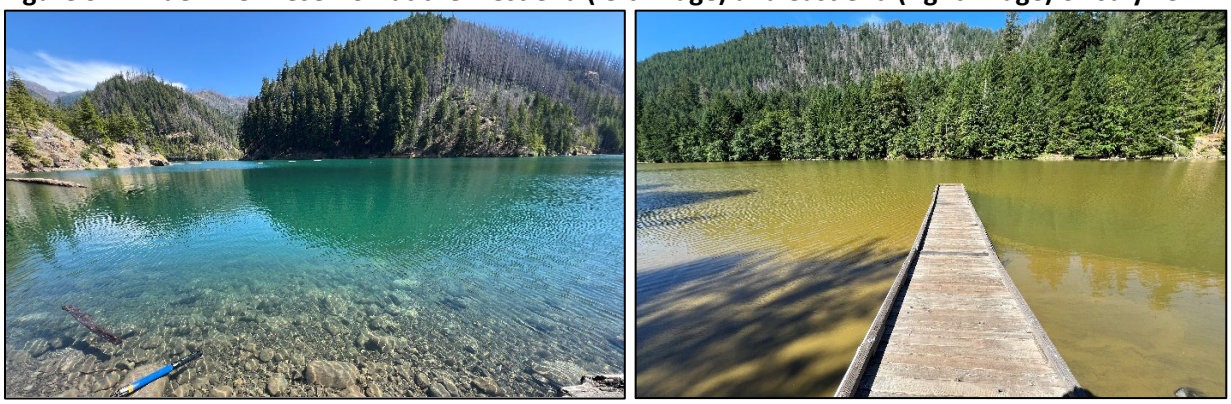


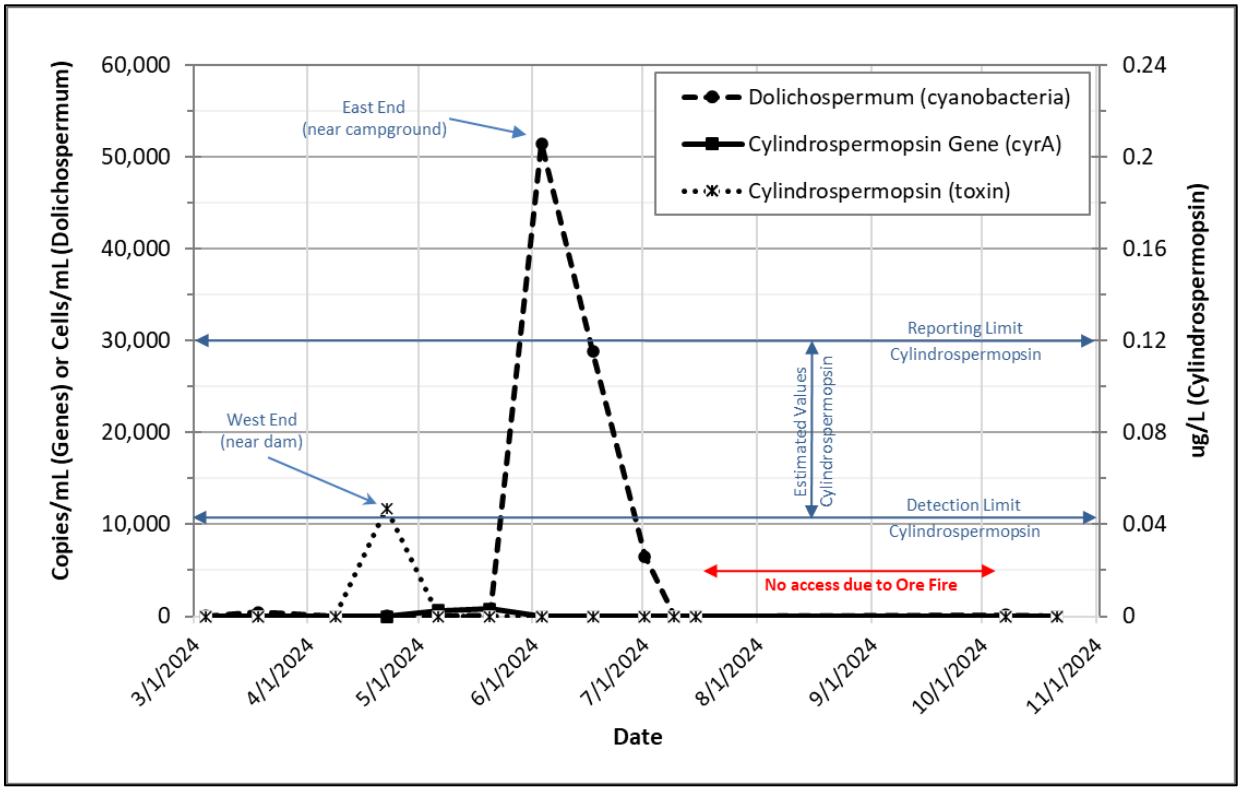
Image Credits: David Donahue

Staff conducted 18 separate HAB monitoring events in 2024. HAB monitoring events typically consist of algal species identification and quantification, genetic analysis for potentially toxigenic genes (select sites only), cyanotoxin analysis, and lastly, major nutrient concentrations. Similar to previous years, 2024 cyanobacteria numbers in both Blue River Reservoir (BRR) and Cougar Reservoir (CR) followed typical seasonal patterns. *Dolichospermum*, a key cyanobacteria genus capable of producing toxins, was first observed in CR beginning in early March, and then in BRR around mid-May, mirroring 2023 appearances. *Dolichospermum* concentrations peaked at the east end of BRR (51,452 cells/mL) in early June (see Figure 3-3 below) and were quite subdued in CR, peaking in mid-July (613 cells/mL) and early September (626 cells/mL). However, *Dolichospermum* numbers were slightly elevated in the South Fork McKenzie River below CR on June 17th (6,920 cells/mL) and July 15th (3,790 cells/mL), which indicates that although Dolichospermum counts were low near the surface of CR, Dolichospermum concentrations at depth were likely higher and coincided with the water release elevation at the CR temperature control tower. Just before the entire area around BRR was closed due to the Ore Fire around mid-July, *Dolichospermum* numbers in BRR declined significantly, while *Gloeotrichia* counts climbed to 3,440,000 cells/mL near the east end of BRR, although the west end remained relatively clear (see Figure 3-2 above). Please note that *Gloeotrichia* is generally considered non-toxic in the Pacific Northwest.

The fire closure around BRR lasted from mid-July to early October, and no samples were collected directly from the reservoir during this time, although staff monitored Blue River further downstream for

cyanotoxins, which were not detected. The continuous water quality profiler deployed in BRR by the USGS and Corps was also active during the 2024 Ore Fire, at least through the end of August, and did not indicate any major bloom production in the west end of the reservoir during the closure period. By early October, both BRR and CR remained relatively clear with little cyanobacteria.

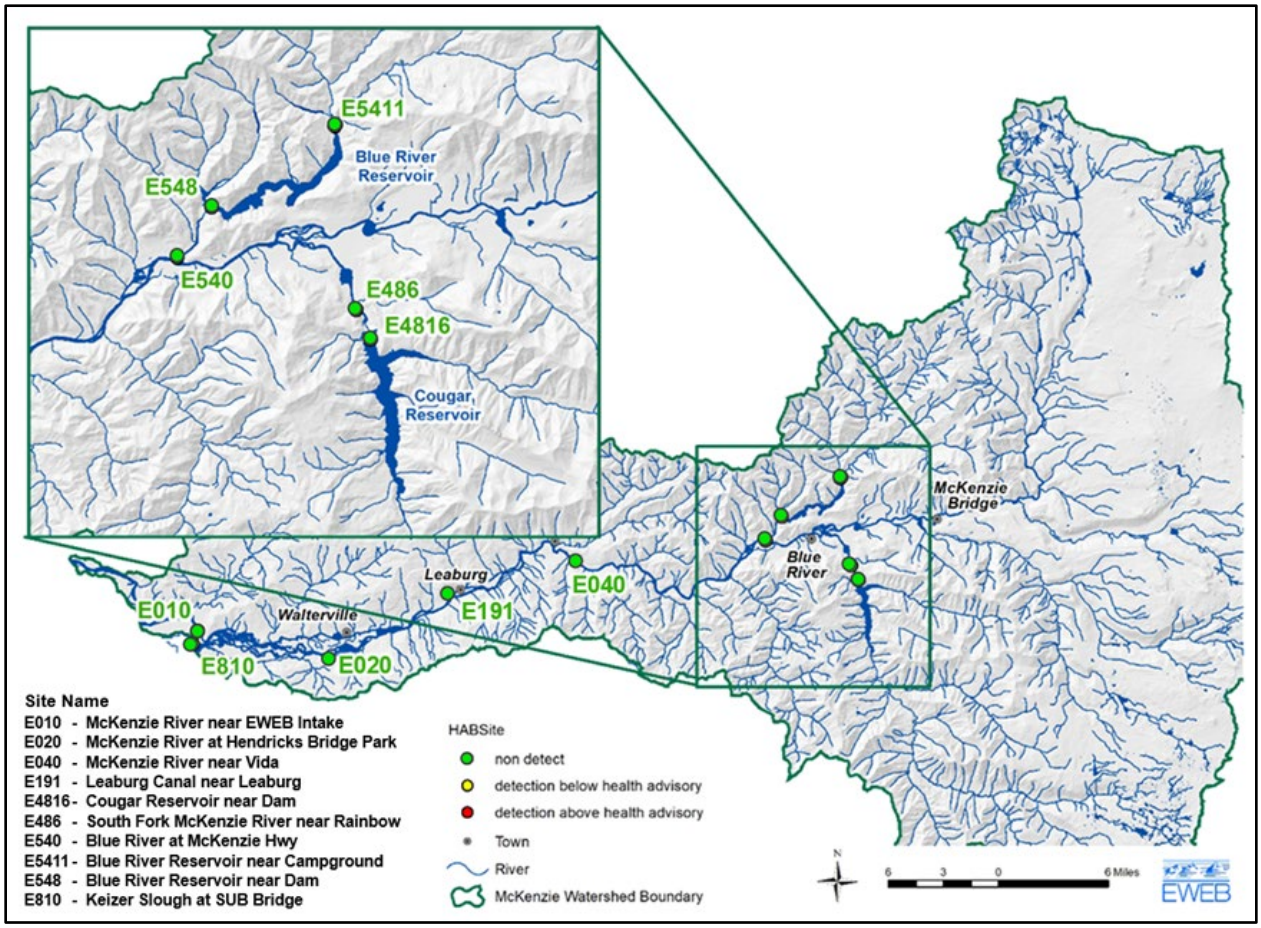
Figure 3-3: 2024 Peak HAB Results for Blue River Reservoir (across all sites)



Certain species of cyanobacteria, including those within the *Dolichospermum* genus, are capable of producing cyanotoxins. In some cases, the genes responsible for producing specific toxins can be identified in samples using quantitative polymerase chain reaction (qPCR) methods. In 2024, toxigenic genes responsible for producing cylindrospermopsin were detected at low levels (<1,000 copies/mL) in BRR during consecutive ambient sampling events in May. Elevated cylindrospermopsin gene detections were reported for the South Fork McKenzie River on June 17th (6,145 copies/mL) and July 9th (16,944 copies/mL), while also climbing in CR to 4,201 copies/mL on July 15th. The presence of toxigenic genes does not always result in measurable toxin concentrations; therefore it is not surprising that cylindrospermopsin was not detected above the method reporting limit throughout the McKenzie Watershed in 2024 (see Figure 3-4) given the generally low-level gene detections. Only a single estimated result (value fell below the reporting limit of .12 ug/L) for cylindrospermopsin was observed in 2024 at .047 ug/L, which occurred in BRR near the dam on April 22nd. The estimated concentration barely exceeded the detection limit (.042 ug/L). For reference, the OHA drinking water threshold for cylindrospermopsin for vulnerable people is .7 ug/L, and 3 ug/L for all other people. OHA also established a health advisory recreational use value for cylindrospermopsin, which currently stands at

15 ug/L. No other toxigenic genes or cyanotoxins were detected in the McKenzie Watershed above applicable reporting limits.

Figure 3-4: 2024 Cyanotoxin Occurrences in the McKenzie Watershed (non-estimated values only)



3.3 Baseline & Storm Data Analysis (including Holiday Farm Fire impacts)

All routine baseline sampling events were completed as scheduled in 2024. Storm sampling events targeting peak flow conditions in urban stormwater outfalls or Holiday Farm Fire (HFF) sites were conducted in the spring and fall. For the discussion below, a selection of baseline and storm data are presented in the following five groups: Metals, Nutrients, Solids, Bacteria, and Organic Compounds. Similar to the past three years, most peak values observed in 2024 were associated with prolonged rain events in urban areas around East Springfield or within burn areas.

Metals

Metals originate from a variety of natural and anthropogenic sources throughout the watershed. Consuming high levels of some metal species, particularly heavy metals, such as cadmium and lead, can increase the risk for a variety of short- and long-term health effects. In general, detectable (above the reporting limit) heavy metal concentrations in the mainstem McKenzie River are uncommon.

Reported concentrations for 19 metal species (including two metalloids) assessed in 2024 during quarterly baseline events were comparable to results from previous years across most sites. Maximum total metal concentrations observed across all sites in 2024 were mainly associated with moderate rainfall/runoff events during late spring (April/May) or first fall flush events (September/November) in East Springfield urban areas and HFF sites respectively. The 42nd stormwater channel registered the highest total metal concentrations for 8 of the 20 metal species evaluated, with other urban stormwater channels reporting peaks for another 5 metals. It is not unusual for urban stormwater channels to report some of the highest total metal concentrations during storm events for any given year, although most peak total metal concentrations observed between 2020 and 2023 were associated with HFF sites during major storm events. Please note that two additional large winter storm events in 2024, one in early January and another in late December, were not sampled (see Figure 3-5). Staff typically target first fall flush events, when contaminants that have accumulated during the summer dry season are mobilized, or during a later spring storm event, after pesticides have been applied in the spring. Large winter storm monitoring is considered more opportunistic, based on factors such as staff availability, storm magnitude, weather forecast accuracy, budget considerations, lab availability and shipping constraints.

Figure 3-5: Simmonds Creek (right) Entering Blue River (left) During Late Winter Runoff Event.

Image Credit: David Donahue

For dissolved metals, the 42nd and 69th Street stormwater channels (42nd and 69th respectively) produced 8 of the highest observed concentrations in 2024 during a late summer storm event, which is similar to results observed in 2023. Additional peak dissolved metal concentrations were associated with other urban stormwater systems and Camp Creek. Similar to previous years, maximum dissolved metal concentrations are routinely associated with urban stormwater systems during storm events, although

dissolved vanadium and lithium levels remained highest in the upper watershed in 2024, likely due to the close proximity of young volcanic rock for vanadium and potentially localized hydrothermal activity for lithium. For comparison, maximum metal concentrations observed across all sites in 2024 did not exceed primary maximum contaminant levels (MCL) for drinking water as established by the EPA.

Nutrients

High nutrient levels can promote HABs, impact ecosystem function, and are a concern for human health (e.g. nitrate and nitrite). Nutrient samples were collected frequently at several mainstem and tributary locations every two weeks from April through October during routine HAB events, quarterly across all baseline sites, and at select sites during large storm events. Overall, nutrient levels in 2024 across mainstem McKenzie River locations were generally similar to previous years during baseline conditions, with many sites reporting values below or just above the reporting limit for several nutrients. Results from sampling efforts targeting spring and fall storm events were also typical of similar magnitude storm events from prior years.

Most nitrate levels reported during quarterly baseline events did not exceed the method reporting limit (RL) of 0.1 mg/L, which also applies to all mainstem McKenzie River monitoring locations for 3 of the 4 baseline events. The November event, which followed on the heels of moderate precipitation across some recently burned areas, did produce slightly elevated nitrate values across all mainstem locations, ranging from 0.12 mg/L (upstream) to 0.17 mg/L (downstream). While the numbers are relatively close to the reporting limit, it is unusual to see non-estimated nitrate values across all mainstem locations. Staff will continue to monitor nitrate levels in the McKenzie River. For other baseline sites that did exceed the nitrate RL, all sites remained at or below 1 mg/L, except for the 52nd stormwater channel, which peaked at 2.1 mg/L. During 2024 storm monitoring events, nitrate values across all HFF sites and urban-related sites stayed at or below 0.89 mg/L. Quartz Creek reported the highest HFF storm-related nitrate value at 0.53 mg/L during a November event. For comparison, the MCL for nitrate in drinking water is 10 mg/L. Nitrite was not detected in the McKenzie Watershed above the RL of 0.1 mg/L.

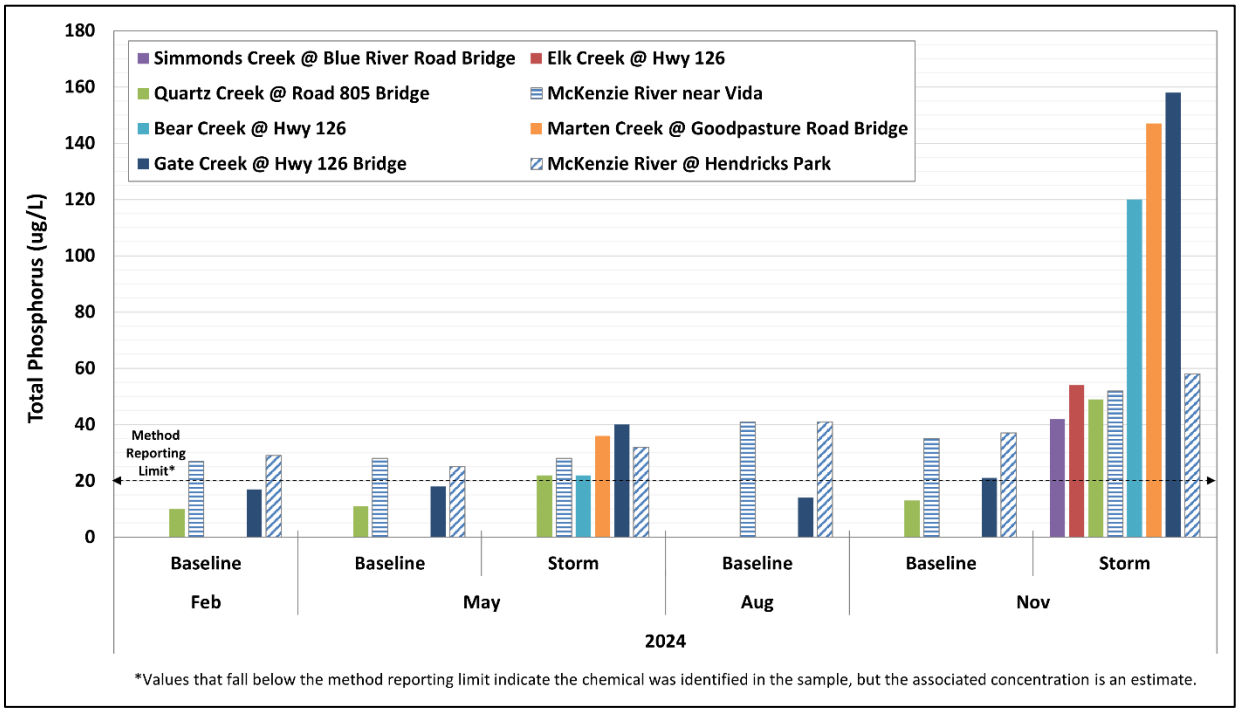
Total Kjeldahl nitrogen (TKN) is the combined measurement of total organic nitrogen and total ammonia. TKN measurements are widely used in the wastewater industry to determine treatment effectiveness, and in surface water to evaluate potential upstream nitrogen sources. Baseline monitoring TKN values ranged from estimated (below the RL of 0.2 mg/L) up to 0.9 mg/L in Camp Creek, although most values fell below 0.5 mg/L. Storm results for HFF sites did not exceed 1 mg/L during sampled spring and fall storm events, with Marten Creek producing the highest TKN value (0.88 mg/L) in November. Following the exceptionally high TKN values observed at two urban stormwater channels in August 2023, similar values were not observed in 2024. The 42nd stormwater channel reported a maximum TKN value of 1.6 mg/L in April (2023 max was 40.6 mg/L), while the 69th stormwater channel reported a maximum value of 1.5 mg/L in September (2023 max was 82.4 mg/L). Detectable ammonia concentrations were observed in several urban storm water channels during April and September storm runoff events, with 42nd reporting the highest value across all sites at 0.55 mg/L. The only other site reporting an ammonia detection above the RL was Keizer Slough (0.11 mg/L) in June, otherwise, ammonia results across all other sites throughout the year fell below the RL (0.1 mg/L).

Quarterly baseline results for both total and dissolved organic carbon (TOC and DOC respectively) were largely typical in 2024 across most sites, although similar to 2023, rainfall preceding the November

sample event likely resulted in upticks for both TOC and DOC across most mainstem McKenzie sites, peaking at 1.5 mg/L near Hayden Bridge. Most baseline results for TOC and DOC fell at or below 1 mg/L, with the highest baseline result for the year observed in Camp Creek in November (4.3 mg/L). Storm-related TOC/DOC results across fire-impacted sites were slightly elevated in the fall as compared to spring, with only a few sites exceeding 3 mg/L. Similar to many other parameters, the highest TOC/DOC values observed in 2024 were associated with a first fall (or late summer) urban flush that occurred in September. DOC in the 69th stormwater channel climbed to 22.1 mg/L, but fortunately well below the peak concentration of 110 mg/L reported in 2023 at the same location. The second highest DOC value observed in 2024 was observed in the nearby 72nd stormwater channel, at 17.1 mg/L.

Total phosphorus and orthophosphate concentrations observed across most baseline sites throughout the year fell below 40 ug/L, with no baseline site exceeding 70 ug/L. For wildfire-impacted sites, the storm response was fairly muted in May and November of 2024 for both total phosphorus and orthophosphate (see Figure 3-6). Gate Creek reported the highest total phosphorus concentrations in 2024 across all HFF sites at 158 ug/L, well below peaks observed in 2023. Only urban stormwater runoff yielded higher total phosphorus/orthophosphate results, with 69th reaching 315 ug/L and 230 ug/L respectively in September to lead all sites in 2024.

Figure 3-6: Phosphorus Results at Sites Impacted by Recent Wildfire Activity

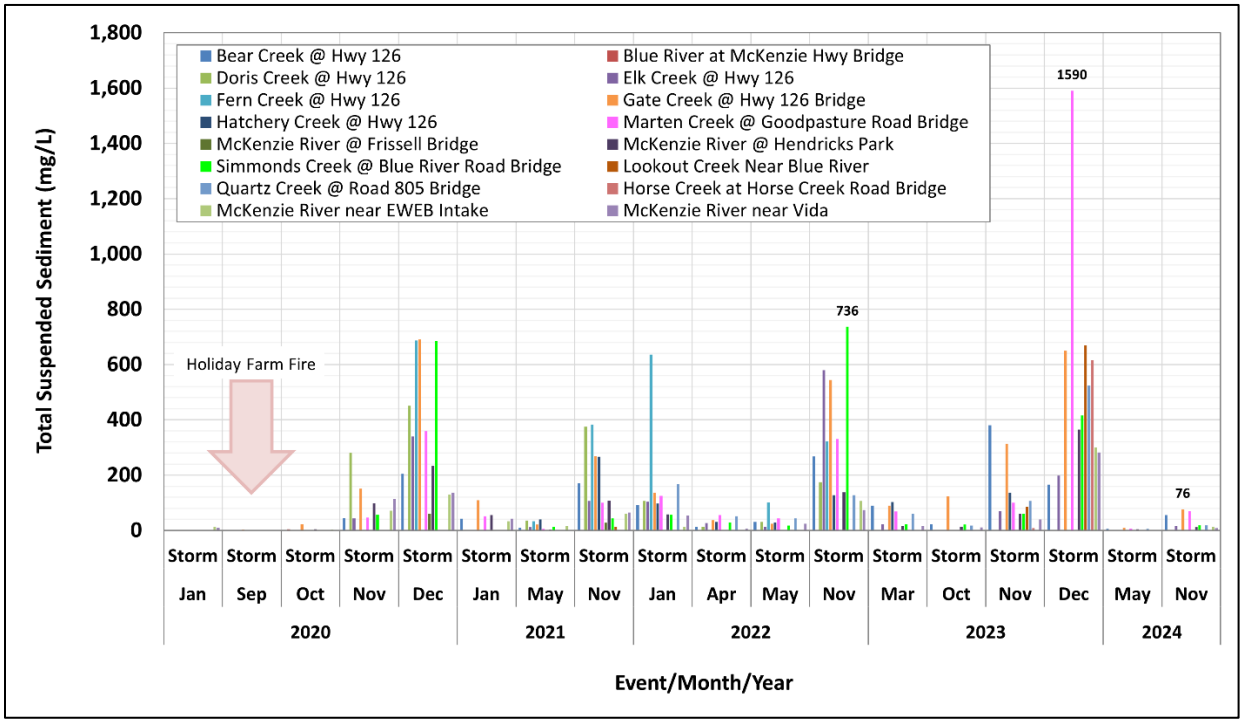


Solids

Solids can carry contaminants and pathogens through the watershed, impacting ecosystem function as well as being a concern for drinking water treatment, particularly around filtration processes. Observed results for total suspended solids (TSS) and total dissolved solids (TDS) in 2024 were typical across most sites during baseline conditions, although a slight increase in TSS values in the McKenzie River near Hayden Bridge was observed in 2024 (6 mg/L peak in November). Unlike previous years post-HFF, 2024

storm sampling events were generally unremarkable and did not produce unusually high TSS values across multiple sites as witnessed in 2023 (see Figure 3-7). The highest observed TSS value across all sites in 2024 occurred in HFF-impacted Gate Creek (76 mg/L) during a moderate runoff event in November, which is orders of magnitude lower than the Marten Creek TSS peak of 1,590 mg/L in 2023. High TSS values were likely present in the McKenzie Watershed in 2024 during early January and late December storm events, but those events were not sampled.

Figure 3-7: Total Suspended Solids (TSS) Across Multiple Holiday Farm Fire Sites, 2020-2024.



The highest TSS value reported in 2024 across all lower tributary and urban stormwater sites occurred in the 42nd stormwater channel during an April storm event (at 74mg/L). For perspective, across all 15 routine baseline sites measured quarterly for TSS, no sites exceeded 6 mg/L, with the average concentration for most sites falling below 3 mg/L.

Contrary to maximum TSS values typically being related to post-wildfire runoff, total dissolved solids (TDS) continue to remain highest in urban stormwater systems. In 2024, the 52nd stormwater channel reached 150 mg/L during an August baseline event, which was the highest TDS value observed across all sites in 2024, but not all that unusual for the 52nd site. Similar to 2023, another somewhat high TDS value came from the McKenzie River near the Cougar Dam Rd crossing. TDS reached 79 mg/L at this site during a November baseline event, making it again the highest mainstem McKenzie value reported in 2023, while upstream and downstream mainstem sites were at least 22 mg/L lower.

Bacteria

Bacteria levels were typical in 2024 across most baseline monitoring events when compared to previous years. The maximum baseline *E. coli* value was observed in Keizer Slough in November at 355 MPN/100mL (most probable number per 100 milliliters). The highest storm-related *E. coli* values

reported for HFF sites occurred in Elk Creek during a November event (410 MPN/100mL), followed by Simmonds Creek (387 MPN/100mL).

The most dramatic *E. coli* values in 2024 were once again observed in lower watershed tributaries and stormwater channels during the second half of 2024. Following up on relatively high bacteria and TKN levels in 2023 across several stormwater channels, EWEB staff ramped up monitoring efforts at select sites throughout 2024. The 42nd, 69th and 72nd stormwater channels, which collectively only contribute a small amount of flow to the mainstem McKenzie, all reported the highest *E. coli* values observed by EWEB staff at each respective site since 2002 (intermittent *E. coli* monitoring conducted at all three sites over the past 23 years). The highest reported *E. coli* value across all sites in 2024 was 129,970 MPN/100mL from the 69th stormwater channel during a September first flush storm event. The same event resulted in elevated *E. coli* values across a host of other stormwater sites, including 72nd (86,640 MPN/100mL), 42nd (48,840 MPN/100mL) and 52nd (4,106 MPN/100mL). A subsequent ambient sampling event in October resulted in another unusually high *E. Coli* value of 46,110 MPN/100mL for the 69th stormwater channel. For perspective, the highest reported *E. coli* value in 2023 was 27,550 MPN/100mL at 69th, while Oregon's freshwater recreational contact maximum guideline value is 406 *E. coli* organisms per 100 mL (MPN/100mL equivalent).

To identify potential sources of fecal bacteria in urban stormwater systems and other lower watershed tributaries, staff began collecting and submitting microbial source tracking samples using digital polymerase chain reaction (PCR) analytical methods in conjunction with standard *E. coli* counts. Digital PCR uses a combination of specific genetic markers to identify host organisms (human, dog, cow, bird, etc.) where the fecal bacteria originated. Preliminary results from 2024 suggest that human bacteria sources might be contributing to unusually high *E. coli* numbers at some sites, with bird and dog sources also factoring in, but to a lesser extent. However, the verdict is still out given the limited sample size, and more sampling needs to be done to confirm preliminary findings, which is expected to continue into 2025 and will include additional fecal biomarkers (such as beaver). Similar efforts in 2015 and 2016 led staff to believe that pet waste, primarily dog, was largely responsible for the spikes in *E. coli* in East Springfield, which resulted in local outreach efforts focusing on proper pet waste disposal.

Organic Compounds

Over 400 organic compounds were analyzed at select sites during storm events in 2024, when contaminants are expected to be flushed into local waterways during heavy rainfall events. To accommodate the large amount of available data, only analytes with at least 1 non-estimated result in 2024 at or above applicable method reporting limits will be included in the discussion below.

Organic compound monitoring in 2024 mostly targeted urban stormwater outfalls located in East Springfield and their associated downstream receiving waters. Gate Creek and Marten Creek, as well as mainstem McKenzie locations, were also sampled during select storm events to assess potential post-fire restoration activities and other impacts. As indicated in Figure 3-8, the 42nd stormwater channel registered the highest number of detections (19 total) for any one single event during a first fall flush in September. It is common for urban stormwater systems to register the highest number of organic compound detections when compared to other sites across the watershed. Although the 52nd and 42nd stormwater channels discharge directly to Keizer Slough, the significant drop in organic compound

detections observed in Keizer Slough can be attributed to dilution, since the McKenzie River flows into the top end of Keizer Slough during moderate to high river levels.

Figure 3-8: Organic Compounds Detected Above Method Reporting Limits by Site, 2024.

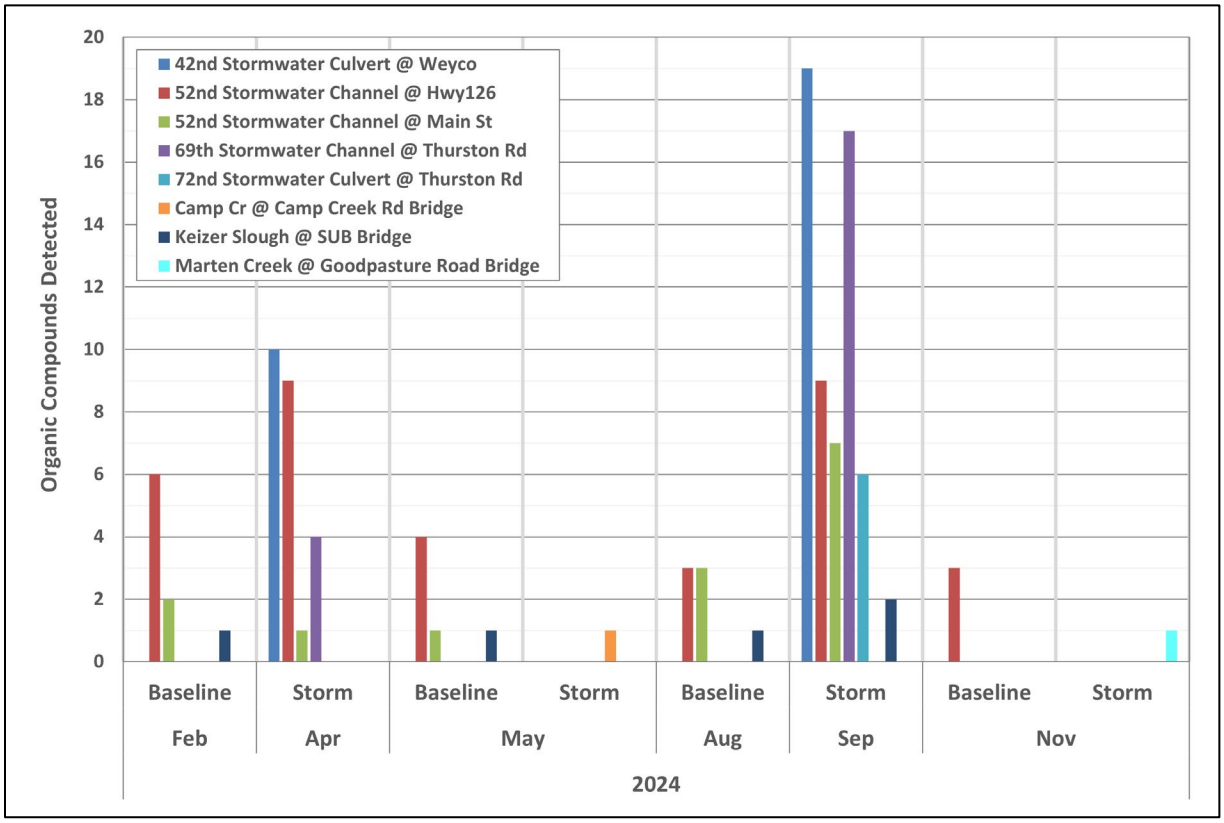


Table 3-1 summarizes 2024 totals for multiple organic compound groups across all sites. Totals include the number of analytes (or compounds) tested for, the total number of analyses conducted (sum of all analytes by site and date), as well as detections for both baseline and storm events (non-estimated values above applicable reporting limits only). Several key findings for 2024 related to organic contaminant monitoring are presented below.

1. Most organic compound detections are considered low level, often less than 0.1 ug/L. Of the approximately 138 non-estimated organic compound detections observed in 2024, 5.8% were above 1 ug/L and 53.6% were below 0.01 ug/L.
2. Multiple per- and polyfluoroalkyl substances (PFAS) were detected in several stormwater outfalls located in East Springfield after staff expanded PFAS sampling in 2024. There were 48 PFAS detections (out of 75 total detections) associated with the 52nd stormwater system, representing 9 different compounds. Please keep in mind that more PFAS testing is done in the 52nd stormwater system, as compared to other stormwater systems, given its unique role as a routine baseline site. Breaking down the 52nd stormwater channel PFAS results even further, 27 detections (representing 5 different compounds) were reported for the downstream location near Hwy 126, while 21 detections (representing 9 different compounds) were reported for the upstream location near the intersection of 48th and Main St. The maximum non-estimated value

observed across the 9 PFAS compounds detected in the 52nd stormwater system was 13 nanograms per liter (ng/L) for Perfluorobutanoic acid (PFBA). Perfluorooctanesulfonic acid (PFOS) was detected 23 times across all sites with a maximum observed concentration of 11 ng/L from the 69th stormwater channel. In addition, Perfluoro-1-butanesulfonic acid (PFBS) was detected 15 times and Perfluorooctanoic acid (PFOA) was detected 13 times, with maximum observed concentrations of 4.6 ng/L and 9.6 ng/L, respectively. For comparison, 13 PFOS detections and 4 PFOA detections observed in stormwater systems in 2024 would exceed the newly-established EPA drinking water MCL criteria of 4 ng/L for each compound. No other PFAS MCLs or the combined Hazard Index for select PFAS compounds were exceeded. Lastly, PFAS compounds were not detected above method reporting limits in mainstem McKenzie River sampling locations or major tributaries.

3. Several compounds related to pharmaceutical and personal care products (PPCP) were detected in samples collected from urban stormwater systems during April and September rainfall events. There were 5 detections of acetaminophen across multiple sites, with a peak value of 0.29 ug/L, along with 1 low-level detection of Metformin (treatment for blood sugar levels). Caffeine, or its metabolite 1,7-Dimethylxanthine, were detected a total 9 times. Lastly, 4 detections of Cotinine (metabolite of nicotine) were observed.
4. TCEP (or tris(2-carboxyethyl)phosphine hydrochloride) is a reducing agent, which may also be used as a flame retardant in synthetic materials, and was detected in three different stormwater systems, with a peak concentration of 0.033 ug/L in the 42nd stormwater channel (no associated EPA MCL). Note: TCEP does not contain fluorine, so it is not considered a PFAS compound which is why it's noted separately.
5. A total of 27 pesticide detections were reported in 2024 across all sites, representing 12 different pesticide compounds, with only one result exceeding 1 ug/L. The herbicide triclopyr was detected in the 69th stormwater channel at 2.8 ug/L in September. Additional low-level pesticide detections in urban stormwater systems involved the herbicides atrazine, dicamba, diuron, imazapyr, hexazinone, picloram and tebuthiuron. Only one pesticide detection was reported for the HFF area and involved the herbicide 2,4-D, which was detected in Marten Creek in November at a concentration of 0.1 ug/L (just at the RL). Outside of the HFF area, and excluding urban sites, the only other herbicide detection was hexazinone in Camp Creek (0.38 ug/L). Concluding with several insecticides, the common active ingredient in insect repellents, DEET (N,N-diethyl-meta-toluamide), was found in the 52nd (0.12 ug/L), 42nd (0.17 ug/L) and 69th (0.22 ug/L) stormwater channels. Another insecticide, Dimethoate, was identified in the 42nd stormwater channel (0.68 ug/L). Finally, low-level pentachlorophenol (PCP) continues to be detected in urban runoff. PCP was detected in the 42nd (max 0.2 ug/L), 52nd (max 0.062 ug/L) and 69th (max 0.11 ug/L) stormwater channels during both the April and September storm sampling events. The EPA drinking water MCL for pentachlorophenol is 1 ug/L.
6. One additional semi-volatile compound (SVOC) was detected in 2024. DEHP (or bis(2-ethylhexyl)phthalate) is a plasticizer and was detected twice in the 42nd stormwater channel (0.73 and 0.78 ug/l) and once in the 52nd stormwater channel (0.67 ug/L). The EPA drinking water MCL for DEHP is 6 ug/L.
7. Several low-level volatile organic compounds (VOCs) continue to be detected at urban-influenced sites. Chloroform was detected on multiple occasions in Keizer Slough, with a peak

2024 value of 2.9 ug/L, which is well below the 80 ug/L drinking water MCL for Total Trihalomethanes (includes chloroform). The chloroform source remains unknown. In addition to chloroform, a pair of methyl ethyl ketone values were also reported for Keizer Slough (peak value of 5.5 ug/L). Lastly, several occurrences of toluene were reported between the 52nd and 42nd stormwater channels, with a peak value of 2.5 ug/L (the EPA MCL is 1,000 ug/L).

Table 3-1: Total Detections (Detects) at or Above Method Reporting Limits for all Sites, 2024

Analyte Group	Analytes	Analyses	Baseline Detects	Storm Detects
General Organic Compounds, Other	2	20	0	10
General Organic Compounds, Pesticides	27	405	0	0
Per- & Poly-fluorinated Substances (PFAS)	40	1,740	44*	31
PPCPs, Pharmaceutical/Hormone	45	458	0	13
SVOCs, Other	54	1,366	0	3
SVOCs, Pesticides	205	5,783	2	25
VOCs	65	2,210	6*	4
Totals:	**438**	**11,982**	**52**	**86**

*Baseline detects include additional urban ambient stormwater monitoring efforts in 2024.

3.4 Baseline Data Summary

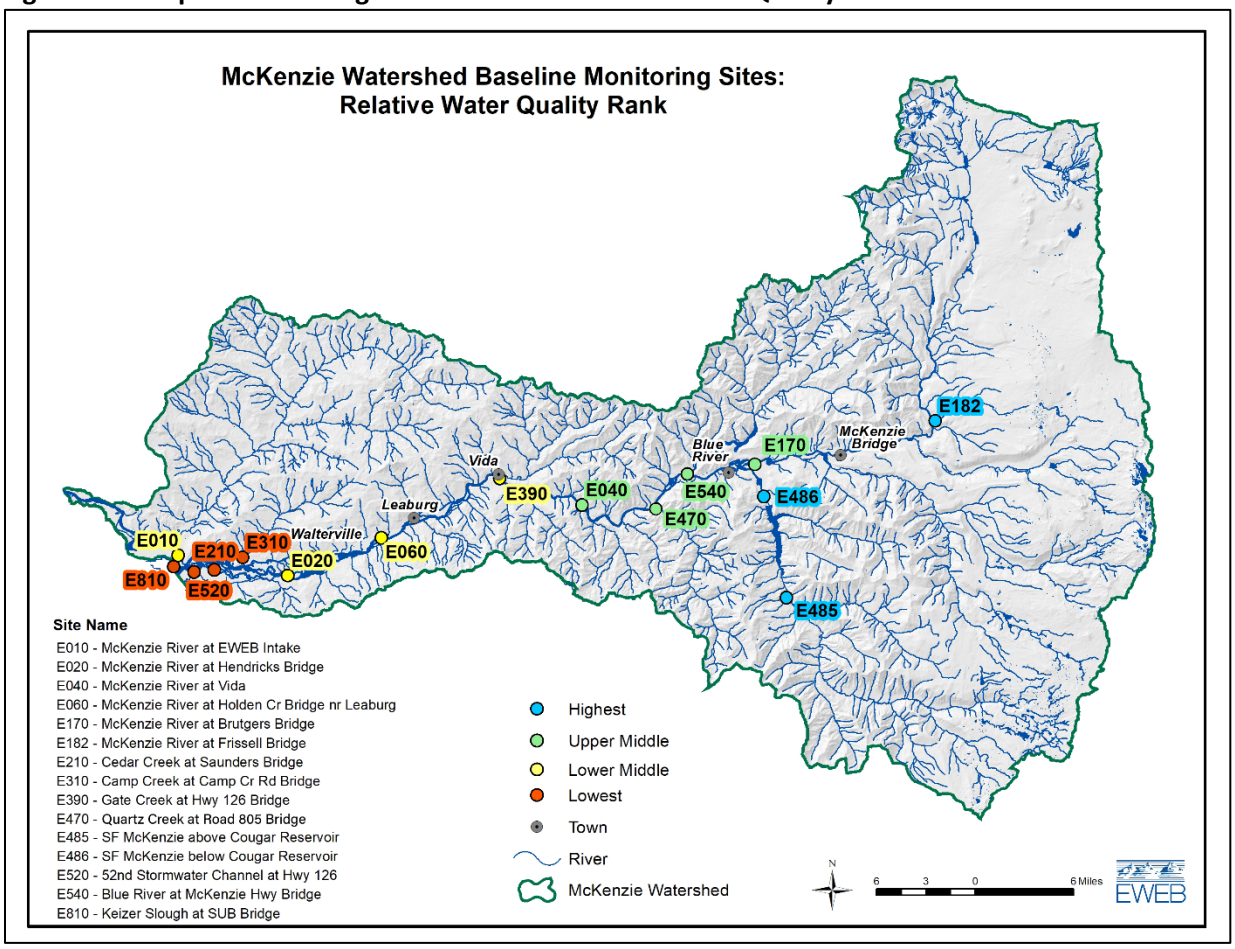
Overall, water quality remains excellent in the McKenzie River. Water quality conditions tracked throughout the McKenzie Watershed during 2024 were largely unremarkable, apart from the significant early January and late December storm events, which resulted in elevated turbidity and high flows throughout the watershed. A prolonged series of winter storms that extended into early spring kept snowpack levels healthy and supported McKenzie River flows that stayed closer to median values throughout the first half of the season, which can help improve instream temperatures and overall water quality. Primary nutrient levels (nitrate, total phosphorus, orthophosphate) across the 6 mainstem McKenzie River monitoring sites stayed at or below 60 ug/L during all quarterly baseline sampling events, with the exception of nitrate levels during the final baseline event in November. For this particular event, nitrate values climbed to 100 ug/L or more for all mainstem baseline sites, which is not typical, but also isolated to one event. A combination of prior precipitation across recently burned areas might be a contributing factor to the elevated nitrate levels. Staff will continue to monitor nitrate levels into 2025. Baseline mainstem metal concentrations stayed well below all applicable drinking water MCLs.

Figure 3-9 illustrates the relative water quality rank of baseline monitoring sites across a variety of water quality parameters, including metals, nutrients, bacteria, and solids. Ranked values for numerous analytes were aggregated and assessed to determine how baseline sites compare to one another. The only ranking change from 2023 to 2024 involved the South Fork McKenzie River below Cougar Reservoir (E486) moving ahead of the McKenzie River at Brutgers Bridge (E170) due to a slightly better water quality ranking score in 2024.

For Figure 3-9 the first group, colored blue, represents sites with the highest or best water quality conditions compared to other sites, and generally reflects the exceptional water quality conditions of

the High Cascades. The second group, or the upper middle group highlighted in green, consists of sites with generally great water quality conditions throughout most of the year, but with slightly higher metal and nutrient values when compared to the first group. The third group, highlighted in yellow and designated the lower middle, consists of sites with very good water quality, but noticeable increases in most analytical concentrations when compared to upstream sites. The fourth group, or lowest ranked group, is highlighted in red. Water quality conditions at sites within the lowest ranked group are generally the poorest and yield the highest analytical concentrations when compared to all other baseline sites within the watershed. However, even these higher analytical concentrations would generally still meet most drinking water standards before standard treatment.

Figure 3-9: Map of Monitoring Locations with Relative Water Quality Rank



4.0 Spill Response & Emergency Preparedness

Hazardous material spills remain a substantial threat to the McKenze River due to the presence of Highway 126 running along the length of EWEB's sole source of drinking water. In addition, spills and releases from urban areas that reach stormwater outfalls and discharge directly to the McKenzie River

above EWEB's intake remain a significant concern. Lastly, accidental releases from agricultural or forestry activities, particularly those associated with pesticide applications, are also potential threats.

4.1 Summary of Spills in the McKenzie Watershed

There were six reported incidents in the McKenzie Watershed in 2024 that EWEB Source Protection staff tracked for potential water quality contamination in the McKenzie River (see Table 4-1). However, none of the incidents resulted in observed releases of hydrocarbons (fuel or oil) directly to the McKenzie River, and most involved single vehicles. The most serious event, which sadly resulted in a fatality, was a crash involving a pickup truck carrying a trailer with hydroseed and a passenger vehicle along Leaburg Lake. The crash shut down the highway for a period of time while investigation and clean-up activities commenced. No release of hydroseed or vehicular fluids to open waterways was reported. The last incident of the year, which occurred during a prolonged rain event the last week of December, involved an overwhelmed sewer pump in East Springfield that forced sewage backflow to the street through a manhole cover near Main St. Although it is not known how much sewage was released or when the release started, by the time the incident was reported, most material that may have reached stormwater outfalls would have been carried past EWEB's intake by the time EWEB staff were aware. Fortunately, plant operations were already in high gear for the storm event and flows in the McKenzie at the time of release were above 20,000 cfs, which offers considerable dilution for urban storm runoff.

Table 4-1: Incidents/Spills/Releases Reported in 2024

Date	Responsible Party	Material Released	Quantity	Details	Response
1/17/2024	Private	Vehicle fluids	Minor	Single vehicle accident adjacent to Leaburg Canal.	MF&R, Towing Co.
1/24/2024	Private	Industrial wastewater	100 gallons	Line leak between primary and secondary treatment.	International Paper
2/6/2024	Private	Vehicle fluids	Unknown	Leaking Bekins moving truck creating sheen on highway.	Towing Co.
10/4/2024	Private	Potential vehicle fluids	Minor	Vehicle with trailer rolled into Leaburg Lake. No sheen.	MF&R, Towing Co., EWEB
10/17/2024	Private	Vehicle fluids & hydroseed	Minor	Truck/trailer carrying hydroseed crashed into private vehicle	MF&R, Towing Co., State Police, ODOT
12/29/2024	City of Springfield	Sewage	Unknown	Pump station overwhelmed causing overflow to stormwater	City of Springfield

4.2 Emergency Preparedness and the Annual MWERS Spill Drill

EWEB worked with multiple partners to coordinate another successful multi-agency spill response drill on the McKenzie River this past fall at the newly-renovated Finn Rock Landing (see Figure 4-1), which is owned and operated by the McKenzie River Trust. The 2024 spill drill involved over 40 participants, representing 10 different agencies or organizations, including staff from the cities of Medford and Salem. Equipment from the McKenzie Watershed Emergency Response System (MWERS) was used to deploy boom across the McKenzie River just above the Quartz Creek Rd bridge. The drill gives first responders an opportunity to familiarize themselves with equipment, build relationships, strengthen communication lines, and to test strategies that could be implemented in the event of an actual spill.

Figure 4-1: MWERS Spill Response Drill, McKenzie River at Finn Rock Landing, 2024

Image Credit: Adam Spencer

In addition to working with our local spill response partners in 2024, EWEB staff also assisted City of Medford staff and other Rogue Valley partners as they work to develop similar spill response capabilities to protect their drinking water intake on the Rogue River. The efforts culminated in a 3-day Rogue River spill response training event that was led by the Texas A&M Engineering Extension Service (see Figure 4-2). EWEB brought staff resources and spill response equipment to augment the 3-day training needs. EWEB staff are interested in supporting regional partners who are looking to develop similar response systems, where ideas, equipment and staff resources can hopefully be shared during major response efforts. The 3-day training was a great segway to the following week's Oregon Spill Response Workshop in Salem on November 13th. The workshop was hosted by EPA Region 10 and brought together

stakeholders from across the state interested in developing effective spill response capabilities. EWEB staff participated and presented at the workshop, along with many of our partners.

Figure 4-2: Rogue River Spill Response Training Hosted by Medford Water, November 2024

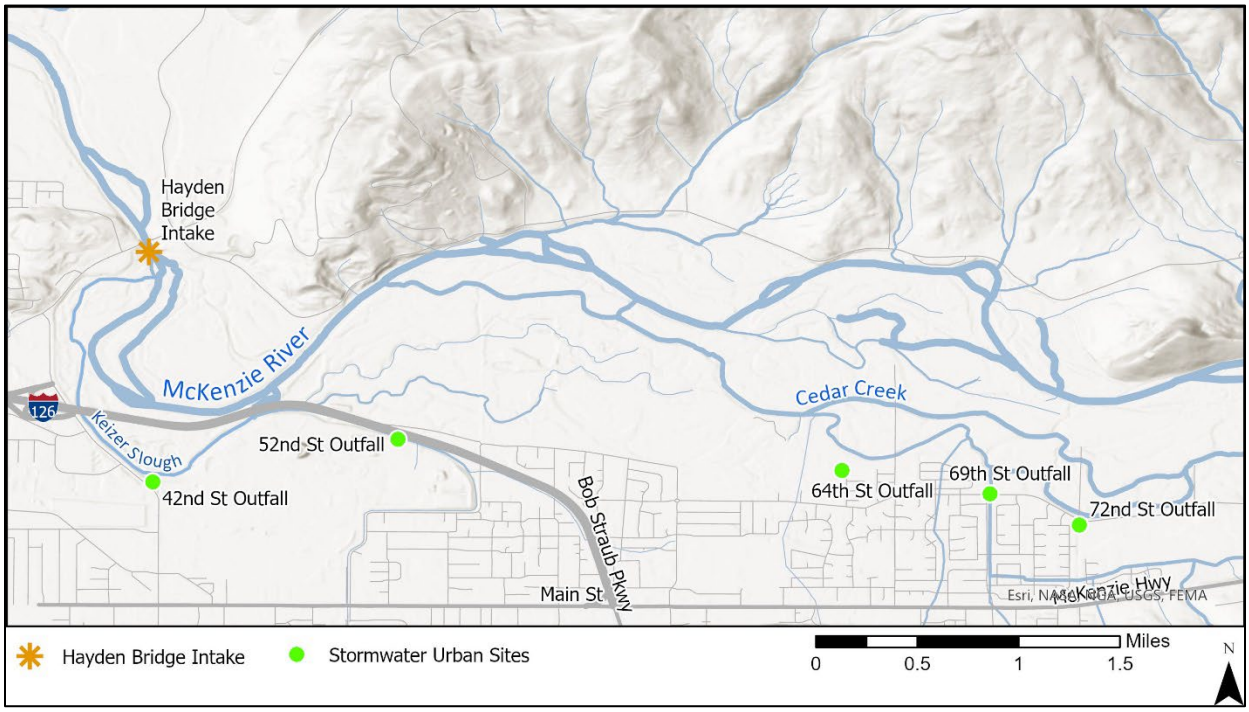
Image Credit: David Donahue

5.0 Urban Runoff Mitigation

Urban runoff from developed areas (residential, commercial and industrial) can be a significant source of pollution during rainfall events, especially from impervious surfaces (roads, parking lots and roofs). Stormwater runoff often contains a variety of metals (such as arsenic, copper, iron, manganese, lead and zinc), petroleum products (including poly aromatic hydrocarbons), nutrients, bacteria (*E. coli*), pesticides, and other chemicals. These pollutants can present a significant threat to aquatic organisms for both short- and long-term exposures. In addition, they can also pose a risk to human health.

Urban runoff is a concern particularly in the lower part of the McKenzie watershed that includes parts of East Springfield. Several stormwater outfalls (42nd, 52nd, 64th, 69th, and 72nd Streets) discharge directly into Cedar Creek and Keizer Slough, and then into the McKenzie River just upstream from EWEB's intake (see Figure 5-1). This area also contains several Springfield Utility Board (SUB) and Rainbow Water District (RWD) municipal well fields.

Figure 5-1: Stormwater Outfalls in East Springfield



5.1 Continuous Monitoring Network Expansion

As stated in the previous report, EWEB staff expanded their continuous water quality monitoring network to include a new monitoring station in Keizer Slough in 2023, which includes telemetry to relay real-time results to staff. This site, along with the continuous monitoring station at 52nd, provides advanced warning of potential water quality changes in runoff from most industrial and commercial areas of East Springfield that discharge directly to the McKenzie River above EWEB's intake. Staff continue to assess additional real-time monitoring opportunities with respect to urban runoff, with a particular emphasis on residential runoff entering Cedar Creek. Moving further upstream, damage to equipment at two continuous monitoring stations in the Holiday Farm Fire area from a major December 2023 storm event were repaired in 2024. Finally, the USGS installed a permanent discharge and water quality monitoring station in Quartz Creek in 2024 that is partially funded by EWEB (reported in Section 3.1 above).

5.2 Urban Waters Partnership/Green Infrastructure

EWEB source water protection staff are part of the Urban Waters Partnership (UWP), a collaborative group focused on reducing toxins entering local waterway by working voluntarily with businesses to improve stormwater management on their sites. Partners include EWEB, SUB, Willamalane, the cities of Eugene and Springfield, Lane County, the Upper Willamette Soil & Water Conservation District and several local watershed councils. The Urban Waters & Wildlife program (UWWP) is the design and implementation branch of the UWP, housed within the Long Tom Watershed Council.

In 2024, staff from the UWWP continued their design work on a project to manage stormwater onsite for the Riverview Center for Growth (formerly The Child Center) property, located adjacent to and upstream from the Hayden Bridge intake. They expect to begin implementation of this project later this summer. Effective management of stormwater onsite will reduce the amount of runoff to the McKenzie River directly upstream of EWEB's drinking water intake.

The Riverview Center for Growth has also signed an agreement to participate in the Pure Water Partners program to receive assistance in controlling invasive species and revegetating areas of the riparian bank above the drinking water intake when funding is available. In 2024, Northwest Youth Corps crews were able to clear a significant amount of blackberry, scotch broom, and ivy from the riparian area and around the site of a proposed rain garden.

For more information about the partnership, visit: https://urbanwatersandwildlife.org/

5.3 Pentachlorophenol (PCP) Plume

Located approximately 1 mile upstream of EWEB's intake, a pentachlorophenol (PCP) plume resulted from wood treatment practices conducted by Weyerhaeuser Company until 1986. Soil contamination was discovered in 1991 at the mill complex. The site is currently owned and managed by International Paper Company (IP), while NV5 (an engineering and environmental consulting firm) conducts groundwater monitoring of the PCP plume on behalf of IP. For the past 2 decades, the Oregon Department of Environmental Quality (DEQ) has been working with relevant parties to address monitoring and reporting objectives related to plume progression. IP was granted approval by DEQ in 2021 to change their progress reporting from semiannual reporting to annual reporting. The annual report will be available in March for the preceding year. The following status update is based on findings in Progress Report Number 95 and the 2023 Annual Report for the Remedial Design and Remedial Action (RD/RA) Project at the Springfield Mill, submitted to DEQ on March 14th, 2024 by NV5 on behalf of IP, along with monthly email communications to EWEB staff regarding Springfield Utility Board/Rainbow Water District (SUB/RWD) well sampling results collected during operational periods (generally June through October). Accordingly, 2024 monitoring well results will not be available until March 15th, 2025 and will be presented in the 2025 State of the McKenzie Watershed Report.

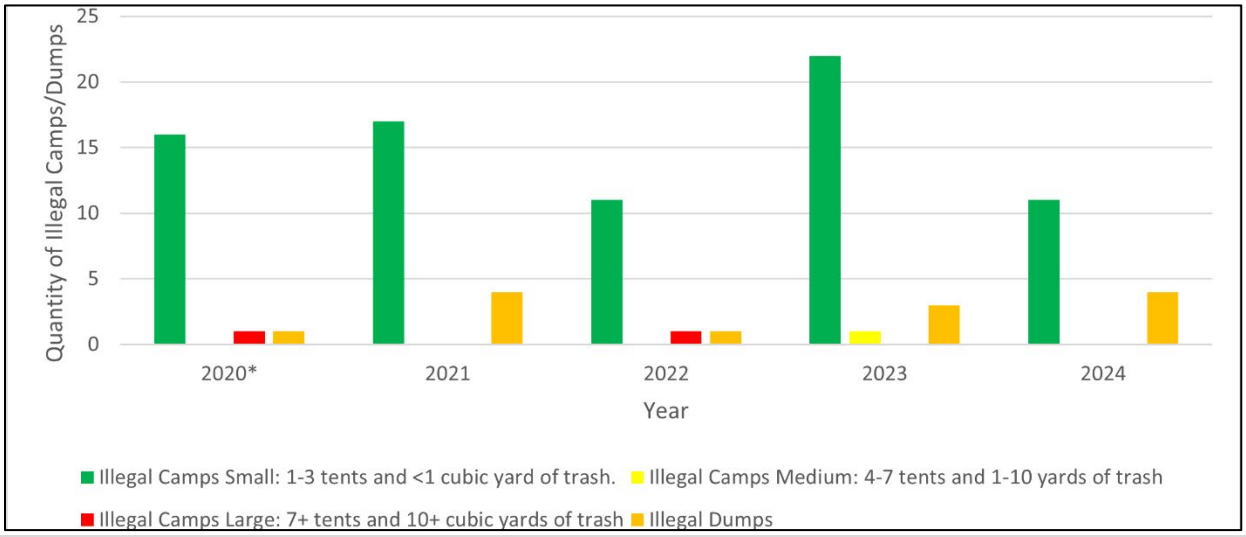
According to direct email communications from NV5, chlorinated phenolic compounds and volatile organic compounds were not detected in SUB/RWD drinking water wells during the 2024 operational period, which included sampling events on July 8th, August 5th and September 4th. These wells are located downgradient of the PCP plume. Analytical results for downgradient groundwater monitoring wells sampled in 2023 (January and July) show continued non-detect or decreasing PCP concentrations at most intermediate and deep well depths. Two exceptions are well MW-18d (deep well), where PCP concentrations (7.3 and 7.9 ug/L respectively) are somewhat variable but show a gradually increasing trend since 2011 (1.6 ug/L), and well MW-19d (deep well), where recent PCP concentrations (9 and 13 ug/L respectively) show some variability, although still on a decreasing trend from peak concentrations in 2010/2013 (32 ug/L). The long-term goal of monitoring efforts is to see groundwater PCP concentrations naturally attenuate below 0.5 ug/L across all sites, which is expected before 2040. According to NV5, groundwater monitoring results from 2023 are consistent with the RD/RA Project continuing to make progress towards this goal.

6.0 Illegal Camping

EWEB's Source Protection staff continue to partner with Willamalane Parks, City of Springfield, and Lane County to reduce the impacts of illegal camping and dumping in riparian areas along the McKenzie River immediately above EWEB's intake. Figure 6-1 shows the locations of illegal camps that were cleaned up in 2024. Figure 6-2 illustrates the low occurrence of large, well established illegal camps due to the coordinated efforts of these agencies and use of the illegal camping application that identifies camps early and notifies agencies of a camp's existence.

Figure 6-1: Map of Illegal Camps and Dumps, 2024

Figure 6-2: Illegal Camping/Dumping Activity Above EWEB's Intake to Keizer Slough, 2020-2024.



7.0 Watershed Restoration

7.1 Pure Water Partners Program

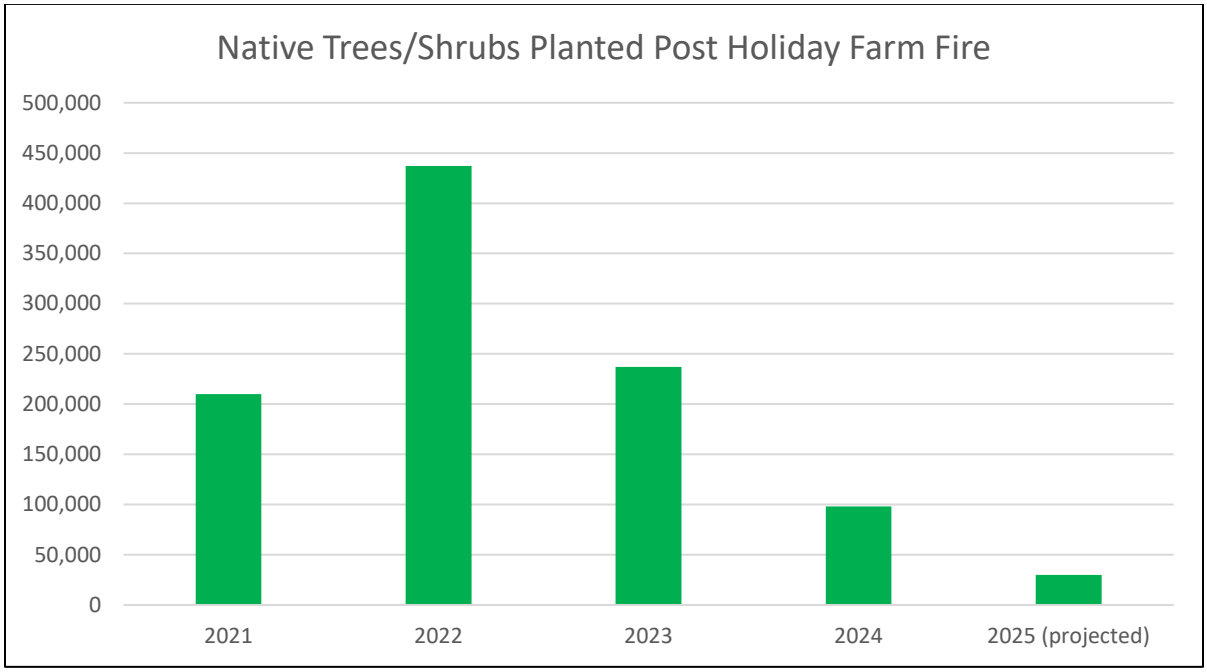
EWEB led the development of the collaborative Pure Water Partners (PWP) Program which began back in 2013. The PWP was designed to provide incentives to McKenzie landowners for protecting high quality forest land along the river and assist landowners in restoring degraded areas in order to help EWEB protect water quality and avoid increases in future water treatment costs (see 2018-2019 State of the Watershed report for more information). After the Holiday Farm Fire, EWEB took a lead role in watershed response and restoration and continues to play a core role in PWP program coordination, data management and the coordination of planting and revegetation contractors. Following the 2020 Holiday Farm Fire, the Pure Water Partners program shifted its focus to carrying out restoration activities on properties impacted by the 2020 Holiday Farm Fire (HFF). This included erosion control, replanting in riparian areas (see Figure 7-1), invasive vegetation removal, fire fuels reduction and naturescaping. In 2024, PWP planted approximately 98,000 native trees and shrubs on 83 properties in the watershed (see Figure 7-2). In addition, contractors treated invasive species on nearly 100 properties. Nine landowners worked on naturescaping projects this year. Currently, over 230 landowners have signed 7-year watershed stewardship agreements under the PWP program.

Figure 7-1: Planting in 2024

During February and March 2025, the PWP is planning to plant about 30,000 native trees and shrubs on 43 landowner properties. This will be the final large-scale post-HFF planting. This work will be followed up with spring invasive vegetation management using the last of Oregon Watershed Enhancement

Board grant funding. This season's plantings, along with an increasing amount of natural regeneration, will help native trees and shrubs reach their 'free-to-grow' status in the next several years. At the end of 2024, the PWP has planted 982,000 native trees and shrubs on landowner properties affected by the fire.

Figure 7-2: Number of Native Trees/Shrubs planted since the Holiday Farm Fire



In 2024, the PWP hired a program coordinator who is housed at the McKenzie Watershed Council but who works on behalf of the PWP program. The PWP Coordinator is responsible for meeting facilitation and overall work tracking, documenting procedures and protocols, and convening subcommittees to seek additional funding and coordinate operations.

During 2024, the PWP program utilized several different grants to help fund the restoration efforts (see Figure 7-3). These grants included funding for invasive species management, site preparation and replanting, See Appendix A for more details on the various funding sources and the work supported by these funds.

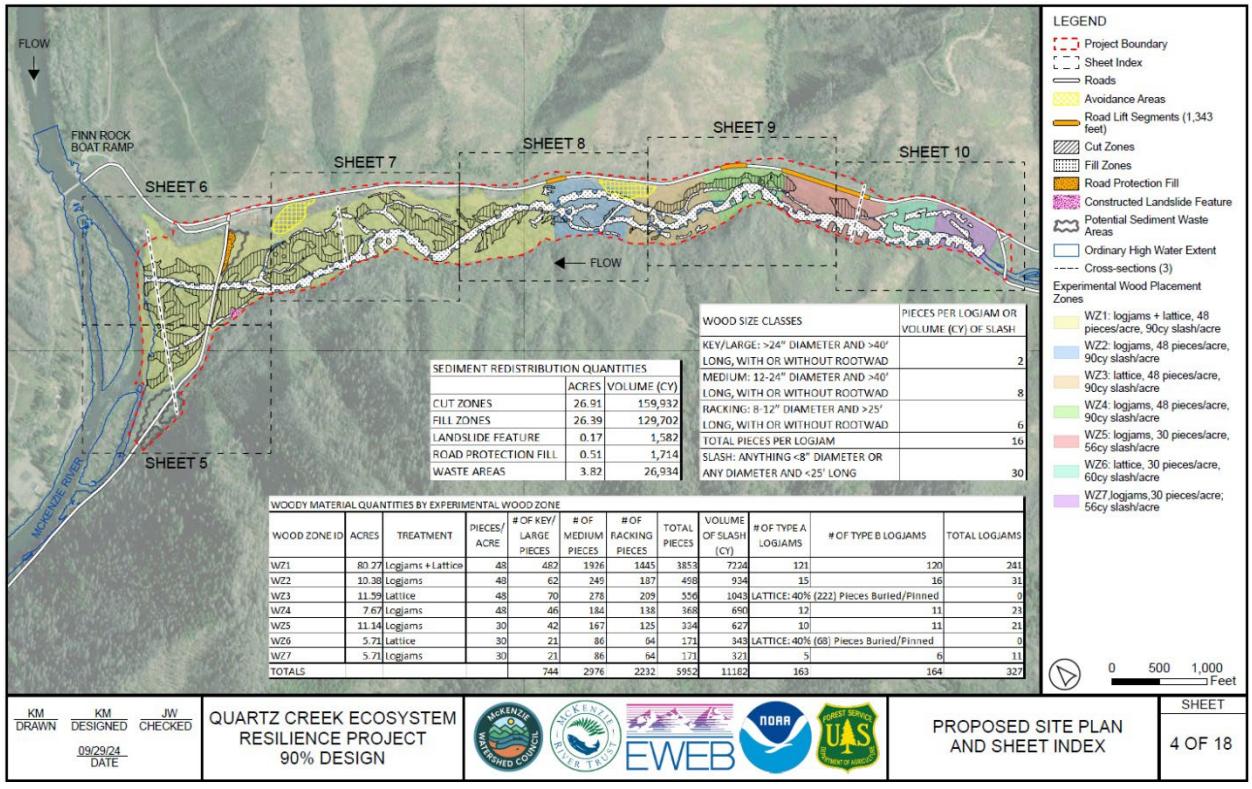
The PWP program completed a 5-year strategic plan in 2024. The program is transitioning out of the post-fire 'response and recovery' mode and will be focusing on engaging landowners with riparian properties upstream of EWEB's drinking water intake (instead of solely focusing on the HFF burn area). PWP will continue to provide landowners with free riparian assessments and stewardship recommendations. For properties with restoration needs, the PWP will seek outside funding to implement on-the-ground restoration work. For properties with healthy riparian areas, EWEB can provide financial incentives to landowners who sign long-term PWP agreements to protect their properties from development and vegetation removal. PWP also provides a variety of technical assistance and resources related to native vegetation, invasive species control, and naturescaping and

Firewise landscaping. All work conducted under the PWP program with landowners is completely voluntary.

7.2 Floodplain Restoration

The Quartz Creek floodplain restoration project is a 1.75 mile floodplain restoration project located at the lower end of Quartz Creek, a degraded tributary that has water quality impacts on the McKenzie River (see Figure 7-3). EWEB secured an 82-acre long-term easement on Campbell Global property for this project and McKenzie River Trust acquired 644 acres in this area in June of 2024. In 2023, MWC was awarded a $7.5 million grant from National Oceanic and Atmospheric Administration (NOAA) that will fund project implementation. This NOAA funding also was used to replace a bridge to widen the area available for floodplain restoration, and the bridge work was completed in the fall of 2023. EWEB source water protection and the USFS are working together to source timber from public lands for use in floodplain restoration work. The Quartz Creek project requires approximately 8,000 trees. To date, EWEB and its partners have secured over 5,161 trees and rootwads, including 127 from the Carmen Smith project and in 2024, another 5,360 cubic yards of slash. This large wood is decked at various log yards near the project location. The design plan for Quartz Creek is 90% complete and the implementation is on schedule for 2025.

Figure 7-3: Quartz Creek Design Overview Map



Mapping done by USFS: MRT

The goal of the Quartz Creek floodplain restoration project is to mitigate post-fire hazards that include the increased likelihood of flooding, landslides, and future wildfires that are exacerbated by climate change. The project will also be beneficial for mitigating fire impacts to water quality and creating fish and aquatic habitat that was degraded by pre-fire human activities and significantly altered post-fire.

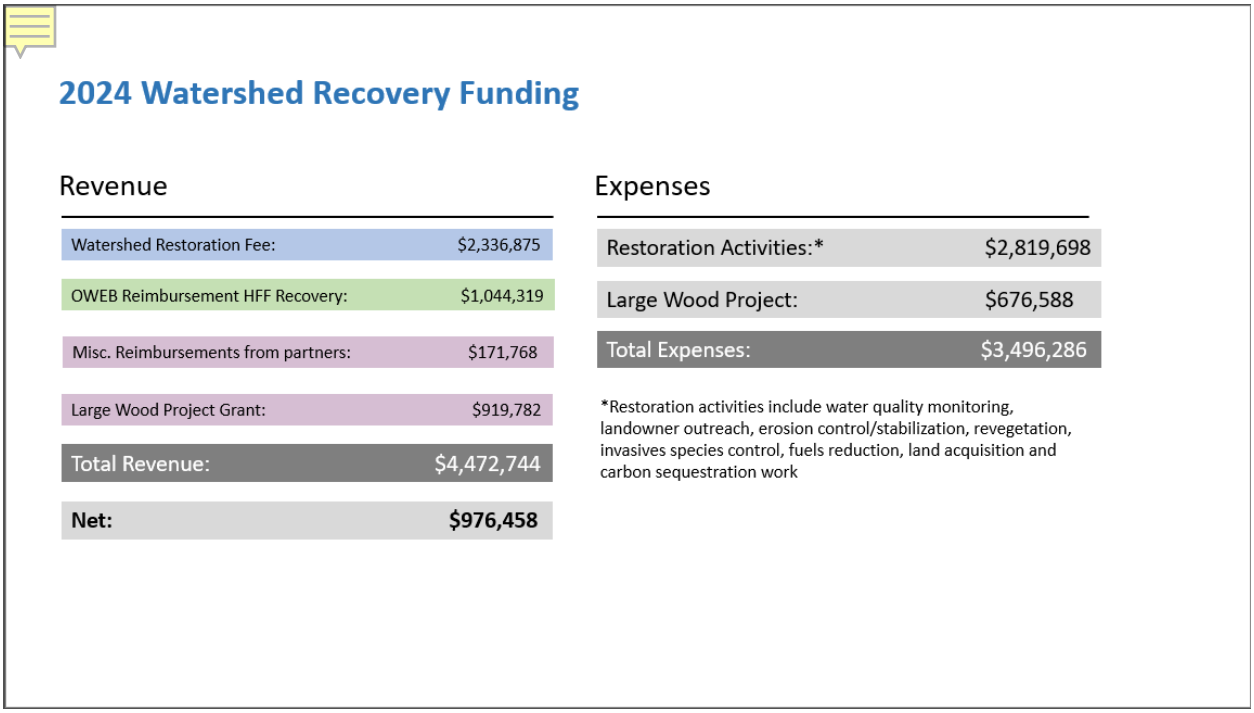
7.3 Carbon Sequestration Work

EWEB continues to support the University of Oregon (UO) Soil-Plant-Atmosphere Laboratory under a 5-year IGA to conduct research at EWEB's 140-acre High Banks Road property. In 2024, monitoring and treatments of the trees and shrubs of the plantings at High Banks continued to promote long-term carbon sequestration and enhancement of biodiversity, habitat, and other ecological values. In 2023, EWEB and UO added Quartz Creek to the portfolio of carbon sequestration research, where UO will research these dynamics in large-scale floodplain restoration projects. Baseline data collection for this effort began in 2024, and post project data collection will begin after the project implementation is complete.

7.4 Watershed Restoration Funding

EWEB funding for watershed restoration post-Holiday Farm Fire comes from the 5-year Watershed Rate Fee established in 2021. Revenues exceeded expenses this year for a variety of reasons (see Figure 7-4). Grant revenue reimbursements started to come back into the program in 2023 and continued into 2024, and our partners were able to secure additional funding sources to help reimburse expenses. We continued to work diligently on cost containment in 2024 by billing expenses for contracted work from grant funding to alleviate the Watershed Rate Fee that has carried much of the program to this point.

Figure 7-4: Summary of Funding Sources for Watershed Restoration Activities



In 2024, EWEB spent approximately $2.3 million of the watershed restoration fee on post-fire restoration activities ($12 million is anticipated over the 5-year life of the restoration fee). Funds went to:

- ***Risk-based activities:*** on non-federal properties (invasive control, replanting, erosion control, and naturescaping) as described above.
- ***Resiliency projects:*** including design, permitting, environmental assessment, sourcing large wood, and implementation of floodplain restoration and large wood projects on Gate Creek and Quartz Creek in the middle McKenzie section of the watershed.
- ***Land Acquisition:*** In June of 2024 in partnership with McKenzie River Trust (MRT) 644 acres were acquired along Quartz Creek. This property will be owned and managed by MRT and contains floodplain forest with extensive wetlands in Quartz and Ennis Creek confluence areas, braided side channels, upland forest, and the mainstem McKenzie River flowing through portions of it. Adding these parcels to the current Finn Rock Reach conservation area will facilitate floodplain restoration work in Quartz and Ennis Creek confluence areas and help ensure both significant fish and wildlife habitat conservation and protection of Eugene's drinking water source.

In early 2021, the Board was provided with an overview of the watershed restoration plan that justified and led to approval of a 5-year watershed restoration fee. Table 7-1 compares what was budgeted as part of the plan versus what was actually spent as part of recovery efforts through 2024.

Table 7-1: Comparison of Watershed Restoration Plan Budget with Actual Expenses (2024)

Activity	2024 Plan	2024 Actual
Risk-Based	$1,978,308	$1,969,698
Floodplain Restoration	$956,418	$676,588
Land Acquisition	$617,000	$650,000
Strategic/Carbon	$66,666	$200,000
Expense Subtotal	**$3,618,392**	**$3,496,286**
Revenue	**$0**	**$4,472,744**
Total Watershed Fee Revenue Spent	**$1,303,392**	**$(976,458)**

For more information on sources of funding flowing into and out of EWEB and PWP for watershed restoration work projected over the new few years, see Appendix A.

8.0 Septic System Assistance

Since EWEB began its Septic System Assistance Program in 2008, over 1,100 septic systems have been inspected and pumped out (see Table 8-1) and a number of systems were repaired as needed. EWEB's ongoing septic system assistance program currently consists of two components:

1) ***Rebate program:*** This program provides homeowners who are in close proximity to the McKenzie River with a $300 rebate to have their septic systems inspected and pumped out, if needed. There were 56 homeowners who took advantage of this incentive in 2024.

2) ***Zero-interest loan program:*** This program allows homeowners who need to make major repairs or replace their septic tank or drainfield to apply for a zero-interest loan of up to $20,000 from EWEB. Forty-four zero-interest loans have been issued to McKenzie homeowners since the beginning of the program, with 30 of those loans going to homeowners affected by the fire. Three zero-interest loans were issued this year.

Feedback around this program has always been extremely positive. The septic system assistance program is now run by the Customer Solutions Department, though Source Protection staff does much of the outreach and collects data on septic system inspections/results by address in a database and in GIS. In 2024, 56 septic systems were inspected and pumped out (see Table 8-1).

Table 8-1: Septic System Participation 2008-2024

Septic Systems Inspected	
Average Inspections/Year	56*
2024 Inspections	56
Cumulative Inspections	1,223

*Average from beginning of septic assistance program in 2011. 2008-2009 inspections were funded through a grant.

Federal funding issued through the American Rescue Plan Act (ARPA) has been available to help McKenzie River homeowners repair or replace septic systems damaged in the Holiday Farm Fire. To leverage this funding, EWEB has partnered with the Oregon Department of Environmental Quality, Lane County, and other agencies to implement this grant program. In total, about $3 million was available in grant funds via two different pathways:

1. $1.5 million flowed through Business Oregon and Lane County, and EWEB has facilitated the distribution of these funds on the ground. Depending on household income, homeowners can receive full or partial grant funding to repair or replace their septic systems. This is typically around $15,000 for a traditional septic system and $35,000 for an alternative treatment system. These funds are applicable to homeowners who owned the property before the fire (or have transferred the property to a family member). Non-profits and local businesses are also eligible to participate in this program.
2. $1,592,410 was awarded to EWEB directly by DEQ to distribute to low- and moderate-income homeowners. DEQ approved funding for local businesses or community centers on a case-by-case basis.

These grant funds are critical to many homeowners in the watershed who were underinsured and who are facing challenges in rebuilding or repairing their homes. Funds from both sources are retroactive to March 3, 2021. Homeowners affected by the fire who already have zero-interest septic loans with EWEB may be eligible to have these loans paid off with grant funds.

Note: At the end of 2023, DEQ amended the contract such that the septic system grant funds were also available to low and moderate income homeowners in the McKenzie watershed with homes upstream of EWEB's drinking water intake, regardless of whether or not they were impacted by the Holiday Farm Fire.

EWEB awarded septic grant funds to support the McKenzie Community Land Trust's first residential project in Blue River, which broke ground in late 2024. The Rose Street Neighborhood will include 6 affordable homes that will be available to McKenzie families earning less than 80% area medium income.

Since the inception of this program in January 2023, over 120 septic grants have been awarded for a total of more than $2 million. This includes over 50 septic grants through DEQ. The DEQ funding source is now closed, as of December 31, 2024; however, approximately $300,000 is still left through the Business Oregon/Lane County pathway and must be obligated by September 30, 2026. For more information about any of the above septic system assistance programs, please visit: www.eweb.org/septic.

9.0 Healthy Farms Clean Water

EWEB's Healthy Farms Clean Water Program is designed to support growers, helping to keep farmland as farmland (i.e. not be sold off for development) and protect water quality. EWEB continues to offer free soil and leaf sampling to growers in the watershed, which helps inform growers of current nutrients levels and allows them to avoid over-applying fertilizers. In addition, EWEB is working with the Upper

Willamette Soil & Water Conservation District (UWSWCD) and local Natural Resources Conservation Service (NRCS) to offer growers cost-share assistance for projects which have a water quality benefit, such as fencing and off-stream watering, composting and nutrient management. We did not have any of these projects in 2024. EWEB continues to be engaged with the UWSWCD around assistance programs that they offer for growers and provides landowners referrals where appropriate.

This past year, EWEB has transitioned the hazelnut grower pesticide reduction project to the UWSWCD, as it may have broader application across the Upper Willamette watersheds in the future and the program is well-suited to the type of work done by soil and water conservation districts.

10.0 Healthy Forests Clean Water

10.1 Forestry

The McKenzie watershed is comprised of 88% forested land, with a mixture of private, state, and federally owned lands. Forested watersheds, like the McKenzie, produce better water quality than any other surface water source. However, forest management activities that may adversely impact downstream water quality include: the use of chemical applications for industrial forest stand treatment; road building; and various timber harvest techniques. These activities may adversely impact water quality due to increased runoff that carries pesticide residues and higher sediment loads that can increase turbidity levels, making it harder and more expensive to treat the water, as well as increasing the likelihood of producing disinfection by-products (DBPs).

Stewardship Contracting

EWEB, the US Forest Service and a number of local partners have been participating in the McKenzie Watershed Stewardship Group (MWSG) for the past 10 years. Stewardship contracting is a mechanism where timber receipts from harvests designed to increase forest health and reduce wildfire risk remain in the watershed to fund restoration on public and private lands. This collaborative group traditionally met bi-monthly to discuss upcoming harvests and provide recommendations to the Forest Service around potential stewardship sales and how to spend retained receipts that result from these projects.

The pace of projects has slowed due to Covid, the Holiday Farm Fire, and other recent wildfires, as well as some continued turnover with facilitation. The stewardship contracting sales that were expected have been delayed, although one project is expected to be completed sometime in the next year. The MWSG convened this past fall for a round of updates from the US Forest Service and partners and plans to meet again before the summer to keep abreast of updates and needs related to stewardship contracting or other opportunities for input into USFS activities. However, with the ongoing budgetary issues through the USFS, projects and timelines are subject to change.

11.0 Operationalizing Source Protection

11.1 Hayden Bridge and Generation Integration Projects

The continuous discharge and water quality monitoring network managed by the USGS and co-funded through EWEB's Source Protection and Generation programs continues to be an integral part of providing Hayden Bridge and Generation staff with timely and critical real-time information for the McKenzie River system. This network becomes exceptionally valuable during rapidly changing conditions, such as during prolonged rain events or sudden operational changes at hydroelectric facilities or dams. The USGS maintains 8 water quality monitoring stations on behalf of EWEB, along with 10 discharge monitoring stations (see Figure 11-1). The USGS maintains 9 additional discharge monitoring stations within the McKenzie Watershed with other partners. EWEB Source Protection staff complement the McKenzie network with 7 additional continuous water quality sites, 4 of which are set up with telemetry to communicate results. Real-time data from these stations is currently available to staff through the McKenzie River Information System (MRIS) and Aquarius, which is a cloud-based data management system for storing, managing and disseminating Source Protection's continuous water quality monitoring data. Staff continued to build capabilities and integrate additional data resources into the Aquarius platform during 2024, including historical data. The data platform will provide both internal and external stakeholders with better access to time-series data collected by Source Protection staff and other external data sources. Access to the Aquarius platform was established for select individuals in 2024, although a full roll-out for a wider audience was postponed until 2025 to provide additional time for staff to apply data corrections and work through historical data records.

Source Protection staff continue to work with partners to improve the Oregon Watershed Emergency Response System (OWERS) online application for spill tracking, information dissemination and follow-up response. The OWERS application is the online regional version of our local MWERS program. Although Source Protection staff stay in regular contact with Duty Operators during actual incidents, the OWERS application has proven to be a useful tool for both internal staff and regional partners to receive timely notifications regarding local spills and potential downstream impacts.

Figure 11-1: New Quartz Creek Discharge and Water Quality Monitoring Station (USGS)

Image Credit: David Donahue

Appendix A - Watershed Restoration Funding

Figure A-1: Risk-Based Actions

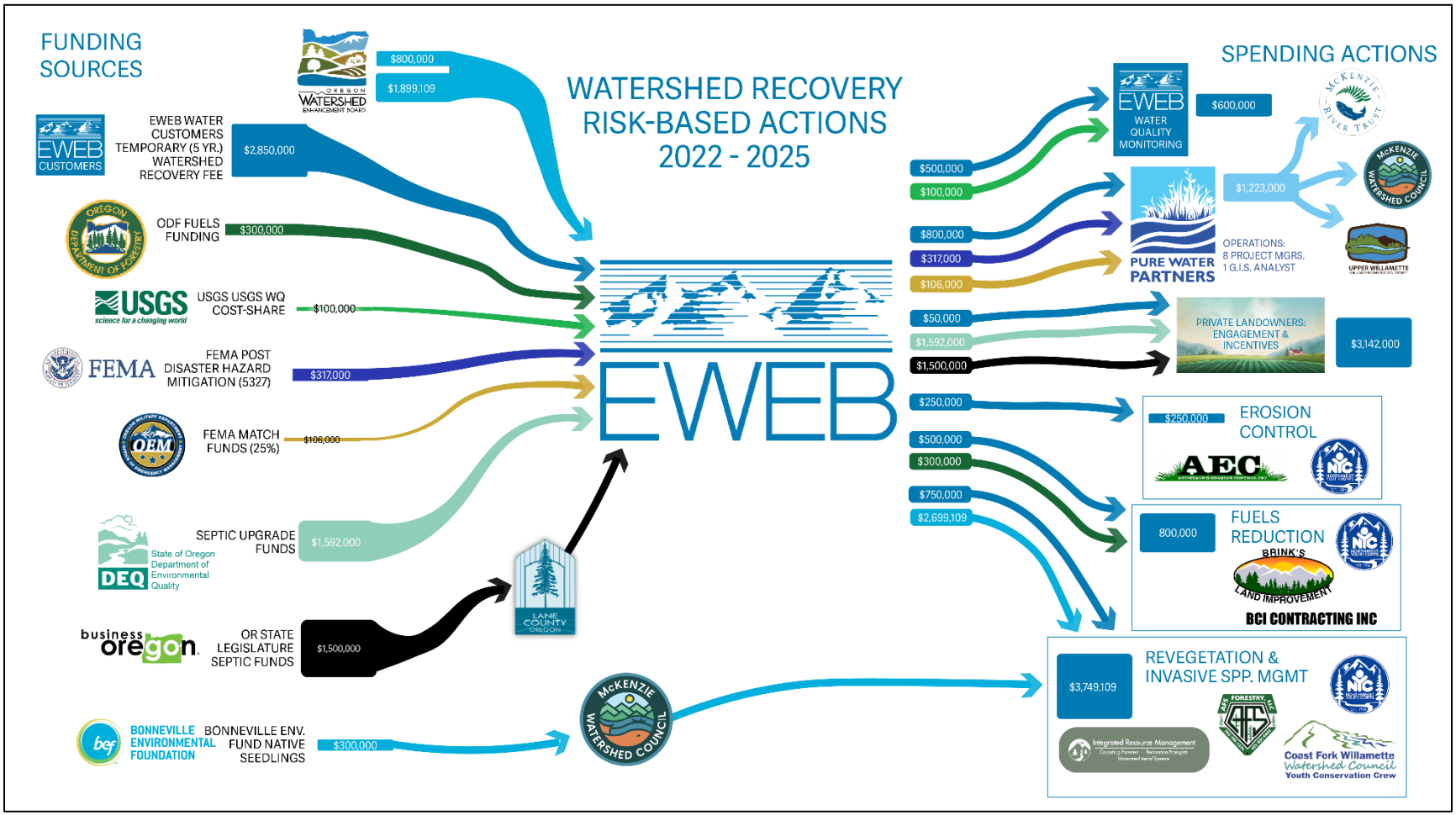


Figure A-2: Holiday Farm Fire Budget, 2021-2024

	2021 ANNUAL BUDGET			2022 ANNUAL BUDGET			2023 ANNUAL BUDGET			2024 ANNUAL BUDGET		
Activity	**PLAN**	**ACTUAL**	**% OF BUDGET**	**PLAN**	**ACTUAL**	**% OF BUDGET**	**PLAN**	**ACTUAL**	**% OF BUDGET**	**PLAN**	**ACTUAL**	**% OF BUDGET**
Risk-Based	$ 2,250,000	$ 1,925,000	86%	$ 2,150,000	$ 4,050,000	188%	$ 3,500,000	$ 2,327,180	66%	$ 1,978,308	$ 1,969,698	100%
Floodplain Restoration	$ 50,000	$ 170,000	340%	$ 150,000	$ 1,020,000	680%	$ 2,850,000	$ 1,666,982	58%	$ 956,418	$ 676,588	71%
Land Acquisition	$ 1,500,000	$ 440,000	29%	$ 1,500,000	$ 240,000	16%	$ 1,500,000	$ 401,030	27%	$ 617,000	$ 650,000	105%
Strategic/Carbon	$ 150,000	$ 15,000	10%	$ 150,000	$ 101,000	67%	$ 150,000	$ 66,000	44%	$ 66,666	$ 200,000	300%
Subtotal	$ 3,950,000	$ 2,550,000	65%	$ 3,950,000	$ 5,411,000	137%	$ 8,000,000	$ 4,461,192	56%	$ 3,618,392	$ 3,496,286	97%
Revenue	$ -	$ (25,000)		$ -	$(1,190,000)		$ 3,000,000	$ 4,617,453	154%	$ 2,315,000	$ 4,472,744	193%
Total Watershed Fee Expense	$ 3,950,000	$ 2,525,000	64%	$ 3,950,000	$ 4,221,000	107%	$ 5,000,000	$ (156,261)	-3%	$ 1,303,392	$ (976,458)	-75%

Figure A-3: Summary of Funding Sources for Watershed Restoration Activities for 2024

Watershed Recovery Funding
2024