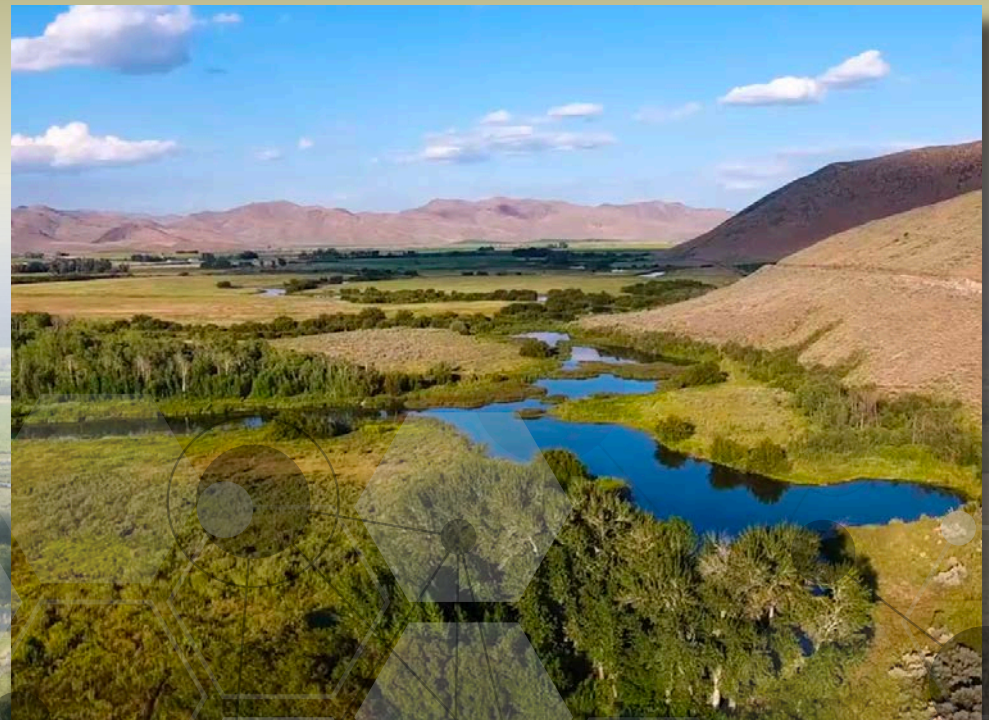


# Silver Creek

# Annual Report

# 2025





# Ecosystem Sciences Foundation

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# Silver Creek Watershed

2025 Annual Monitoring Report

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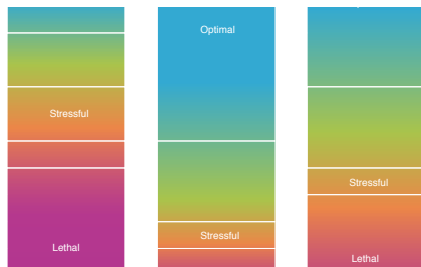
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# Silver Creek Watershed

Ecosystem Sciences Foundation (ESF) has been active in the Silver Creek watershed since 2009, when it partnered with The Nature Conservancy to develop a Restoration and Enhancement Strategy for the basin. That effort identified a range of priority actions, including addressing key data gaps related to streamflow, temperature, and sediment conditions. In response, ESF launched a long-term monitoring program in 2010 to strengthen understanding of the Silver Creek system. Over the past year, ESF and its partners continued collecting critical data on streamflow, temperature, and dissolved oxygen. ESF also contributed to a multi-year effort to integrate water quality and quantity data into an interactive streamflow forecasting model for the Wood River Valley.

To date, the Silver Creek monitoring program has benefited from strong support across a broad group of stakeholders. Because most of the watershed is privately owned, landowners play a central role

and share a vested interest in protecting both ecological health and property rights. These partnerships have been essential to advancing a shared vision for watershed stewardship and to developing and implementing effective stream restoration and enhancement strategies.

## The key findings from 2025 are:

- **In 2025, Silver Creek flows were below the historical average across the system, with all major tributaries experiencing reduced discharge.**
- Stream and spring temperatures increased relative to 2024, with more locations experiencing prolonged periods above thresholds stressful to fish. Higher air temperature and unreliable streamflows contributed to the increases.

- The number of days exceeding the 70°F stress threshold also rose compared to the previous year.
- Dissolved oxygen monitoring showed that concentrations in some areas—particularly Butte Creek—dropped to levels stressful for all trout life stages, especially during early morning hours. However, levels typically rebounded quickly in the afternoon.

Taken together, these findings underscore the increasing stressors facing the Silver Creek system and highlight the importance of continued monitoring, collaborative stewardship, and targeted restoration. Sustained partnerships and data-driven decision-making will be critical to protecting the ecological integrity of the watershed while balancing the needs of the community and its landowners.

For more details please visit: [www.savesilvercreek.com](http://www.savesilvercreek.com)

▲ The information that is presented in this report reflects summarized analysis of all data. We are presenting the most important aspects of the past season's work in a way that tells a story of the stream system and watershed. The information presented here is the result of detailed, scientific analyses, and reflects a considerable amount of field work to collect. The website, which has been recently updated and redesigned, has additional information on programs in the watershed, including raw and tabulated data.

The 2024–25 water year featured snowpack conditions near the recent 30-year average, with April 2025 snow water equivalent (SWE) in the Big Wood Basin reaching 111% of the 1991–2020 median. Despite this, total streamflow volume for the Big Wood River at Hailey (USGS gauge #13139510) was 23% below the long-term median. Forecasts had projected higher runoff than was ultimately observed, and actual flows fell short of expectations. As a result, streamflows remained below historical median levels for much of the season,

contributing to lower-than-normal flows in late summer and early fall.

Precipitation patterns help explain these outcomes. While total precipitation at the Picabo Agrimet Weather Station ranked third highest in the past five years, it remained below the long-term average (1994–2025). Critically, below-normal precipitation during April through June likely reduced streamflows in the Silver Creek system.

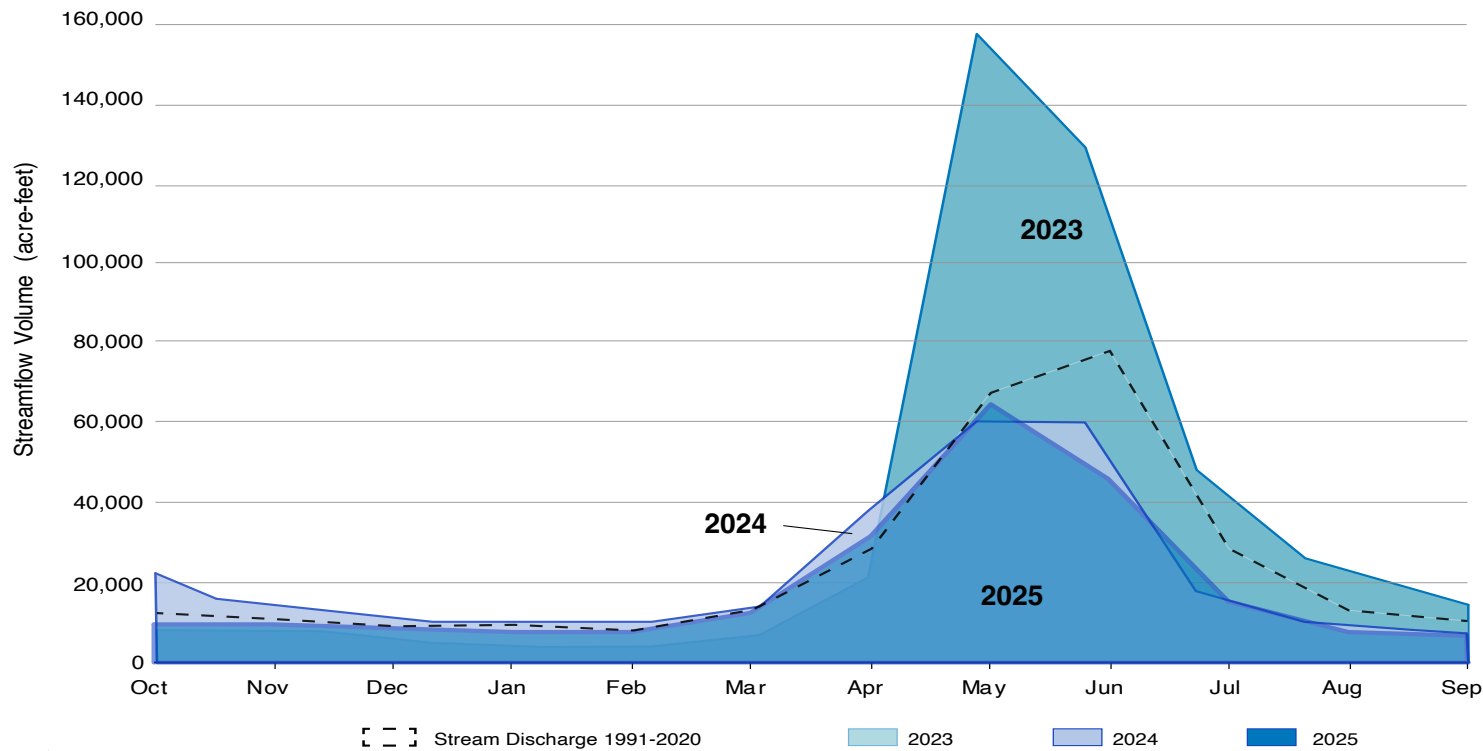
Silver Creek is sustained almost entirely by groundwater from the Wood River Valley aquifer. As a spring-fed system, its flows depend on groundwater upwelling

and diffuse inputs through the streambed. In 2025, tributary monitoring showed reduced spring and streamflows compared to 2024, while groundwater levels and artesian pressure remained relatively stable across most wells from May through October.

These consistent groundwater inputs help moderate summer stream temperatures and underscore groundwater’s central role in maintaining flow and ecological function in the Silver Creek system.



# Winter Snow + 2025 Water Year



▲ Big Wood River stream flows (measured in acre-feet) for 2024 as compared to the 30-year median (1991-2020).

Idaho Water Supply Outlook Report  
April 1, 2025

Big Wood Basin  
**111%**  
of median  
snowpack

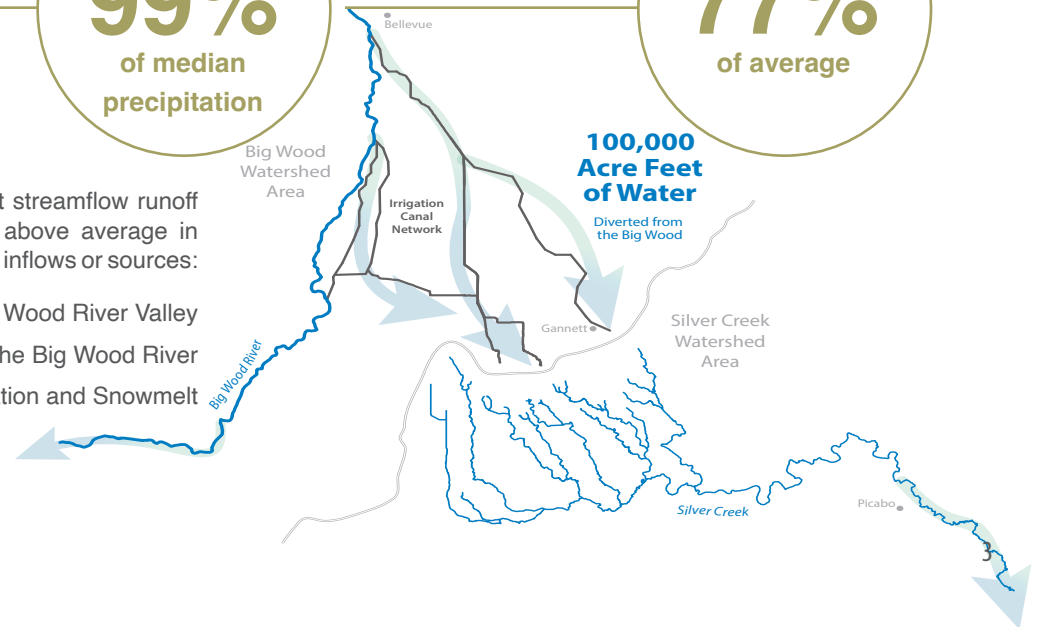
Big Wood Basin  
**99%**  
of median  
precipitation

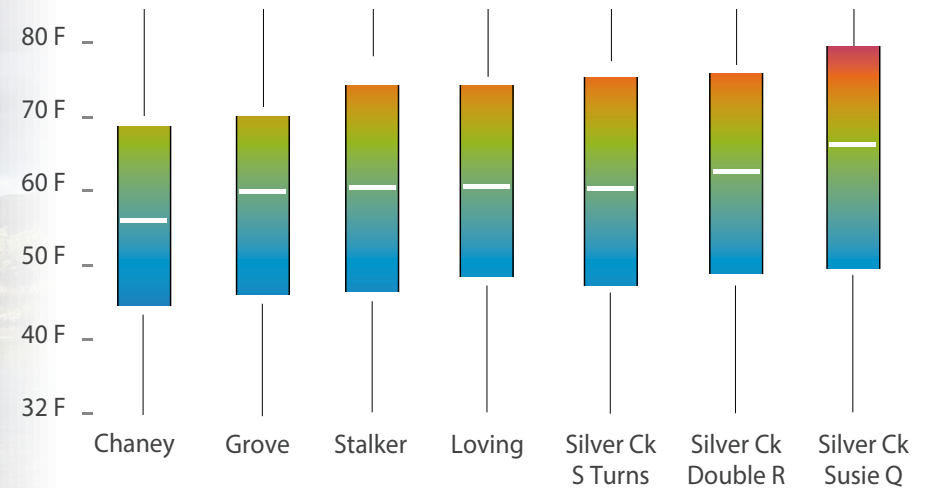
Streamflows up to  
**77%**  
of average

In 2025, the Big Wood Basin received average precipitation. Picabo Accumulated Precipitation was 8.3 inches (April - Sept.)

Snowpack conditions, forecast streamflow runoff and groundwater flows were above average in 2025. Major Silver Creek water inflows or sources:

- 1) Groundwater inflows, Wood River Valley
- 2) Irrigation diversions from the Big Wood River
- 3) Precipitation and Snowmelt





▲ Summer Stream Temperatures: The graph above indicates the maximum, average and minimum summer water temperatures on selected areas of Silver Creek over a fourteen-year period (2011-2025). This year, 38 stream temperature loggers and 12 springhead loggers were monitored throughout Silver Creek and on each tributary to record critical information and track changes in the system.

# Stream Temperature

In 2025, we deployed 12 springhead and 38 stream temperature loggers at key locations across the Silver Creek watershed. Monitoring springheads is critical, as they are the primary water source for the system and deliver consistent, cool flows that help buffer tributaries against fluctuations in air temperature and climate. Across the 12 springhead sites, median temperatures remained near 50°F throughout the summer.

Favorable water year conditions in 2024 helped sustain flows into 2025, limiting temperature increases despite a drier year. Although 2025 was below average, groundwater levels in the valley remained near normal, reinforcing the importance of these spring sources to the health and resilience of Silver Creek.

Temperature monitoring within Silver Creek and its tributaries showed that

median and maximum stream temperatures were above average at most locations. However, median stream temperatures in 2025 were slightly lower—by 0.1°F—than in 2024. This reflects the influence of strong carryover from 2024 and above-average snowpack during the 2024–2025 winter, which helped maintain groundwater levels despite reduced summer precipitation. Some sites experienced notable cooling relative

to 2024, including Upper Stalker (−1.5°F), Lower Thompson Creek (−2.1°F), and Mid Loving Creek (−0.8°F). In contrast, other tributaries warmed, including North Fork Loving Creek (+2.2°F), Mid Mud Creek (+2.1°F), and Lower Grove Creek (+0.4°F).

Overall, these patterns highlight the buffering role of groundwater and spring inputs in moderating stream temperatures, even during drier conditions. Sustaining groundwater levels will be essential to maintaining thermal stability and supporting the long-term health of the Silver Creek ecosystem.

### **A Fifteen Year Review of Stream Temperature Monitoring**

This year marks the 15th year of continuous stream temperature monitoring across tributaries in the Silver Creek subbasin, building on a long-term dataset first evaluated in 2015. This growing record provides valuable insight into spatial patterns and trends in thermal conditions throughout the system.

Consistent temperature “hot spots” across the monitoring period include Silver Creek at Highway 93, Susie Q, and Priest

Bridge, as well as Mid and Lower Mud Creek and North Fork Loving Creek. These sites are generally located farther downstream, where cumulative warming and additional inputs contribute to higher temperatures. In contrast, none of the 12 monitored headwater springs exceeded the 70°F threshold associated with fish stress, underscoring their role as stable, cold-water refugia.

From 2011 to 2025, Silver Creek temperature data show variability rather than a consistent long-term warming trend. During 2011–2017, median daily stream temperatures exceeded 70°F an average of 20.2 days per year, compared to 14.7 days per year from 2018–2025—indicating fewer high-temperature stress days in the more recent period. However, conditions in 2025 suggest renewed warming pressure: days above 70°F increased from 9.7 in 2024 to 14.3 in 2025, and average median temperatures ranked as the second warmest in the past five years.


Across the full 15-year record, the highest average median stream temperatures occurred in 2015 (60.5°F), 2013 (60.3°F), and 2024 (60.2°F). Over the past eight years, average median temperatures have risen to 59.5°F, driven by warmer conditions in

recent years. In 2025, the average median temperature across tributaries was 57.2°F.

Previous analysis in 2016 found that stream temperatures were more strongly correlated with streamflow than with air temperature. While this relationship may evolve over time, below-average flows in both the Silver Creek and Big Wood River systems in 2025 likely contributed to warmer stream and springhead temperatures compared to the previous four years.

Taken together, these long-term patterns emphasize that streamflow and groundwater conditions remain the dominant controls on thermal dynamics in the Silver Creek system. While spring inputs continue to provide critical thermal stability, increasing variability in flows and recent warming trends highlight growing vulnerability.

**Protecting and enhancing groundwater resources, along with maintaining adequate streamflows, will be essential to preserving cold-water habitat and the ecological resilience of Silver Creek into the future.**

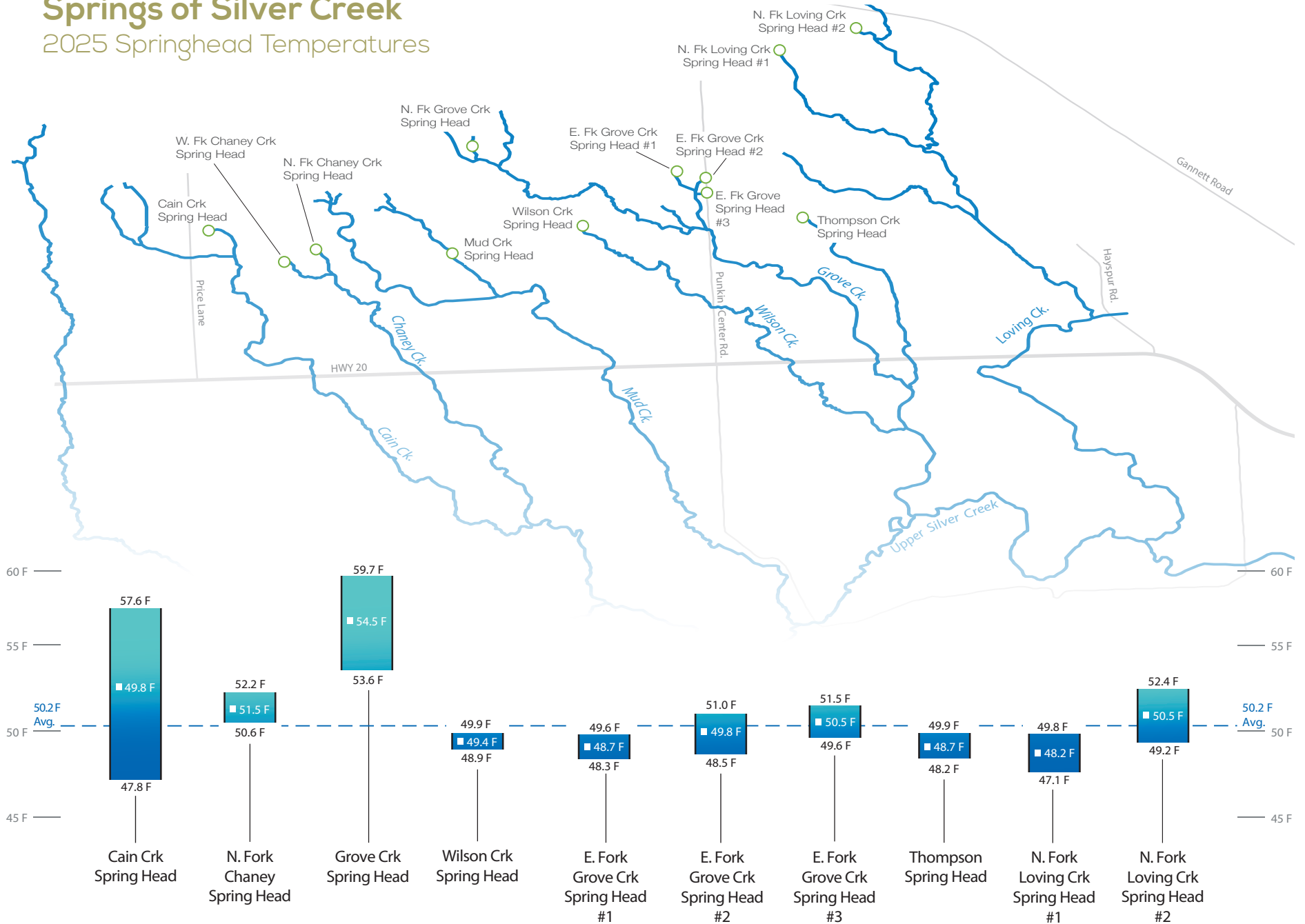
An aerial photograph of the Silver Creek basin. The central feature is a winding, meandering creek that flows through a lush green valley. The valley is densely populated with shrubs and small trees. The surrounding landscape is a vast, flat expanse of green fields, likely agricultural. In the far distance, a range of mountains is visible under a bright blue sky with scattered white clouds. The overall scene depicts a healthy, interconnected water system in a rural setting.

*The hydrology of Silver Creek basin consists of a complexly interconnected surface water - ground water system. Silver Creek rises from a series of springs in the Gannett area, south of Baseline Road, and flows south and eastward out of the basin.*

*These springs are formed as a result of recharge from snowmelt and runoff entering the groundwater system; by application of irrigation water in amounts in excess of consumptive use requirements of crops; and, upward pressure from the underlying artesian aquifer system. The artesian groundwater system contributes to the spring flow by means of upward leakage through the overlying sediments to the surface.*

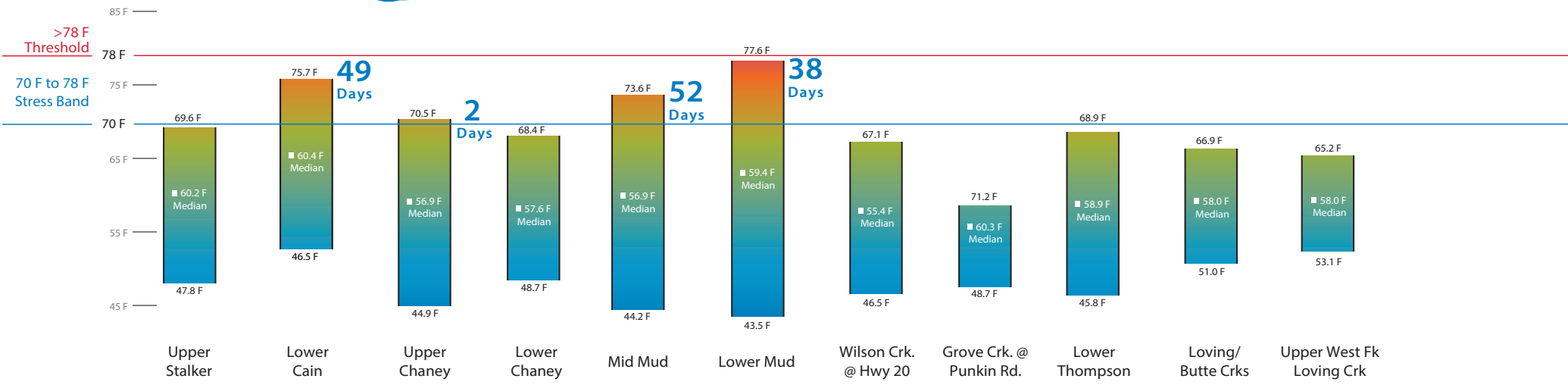
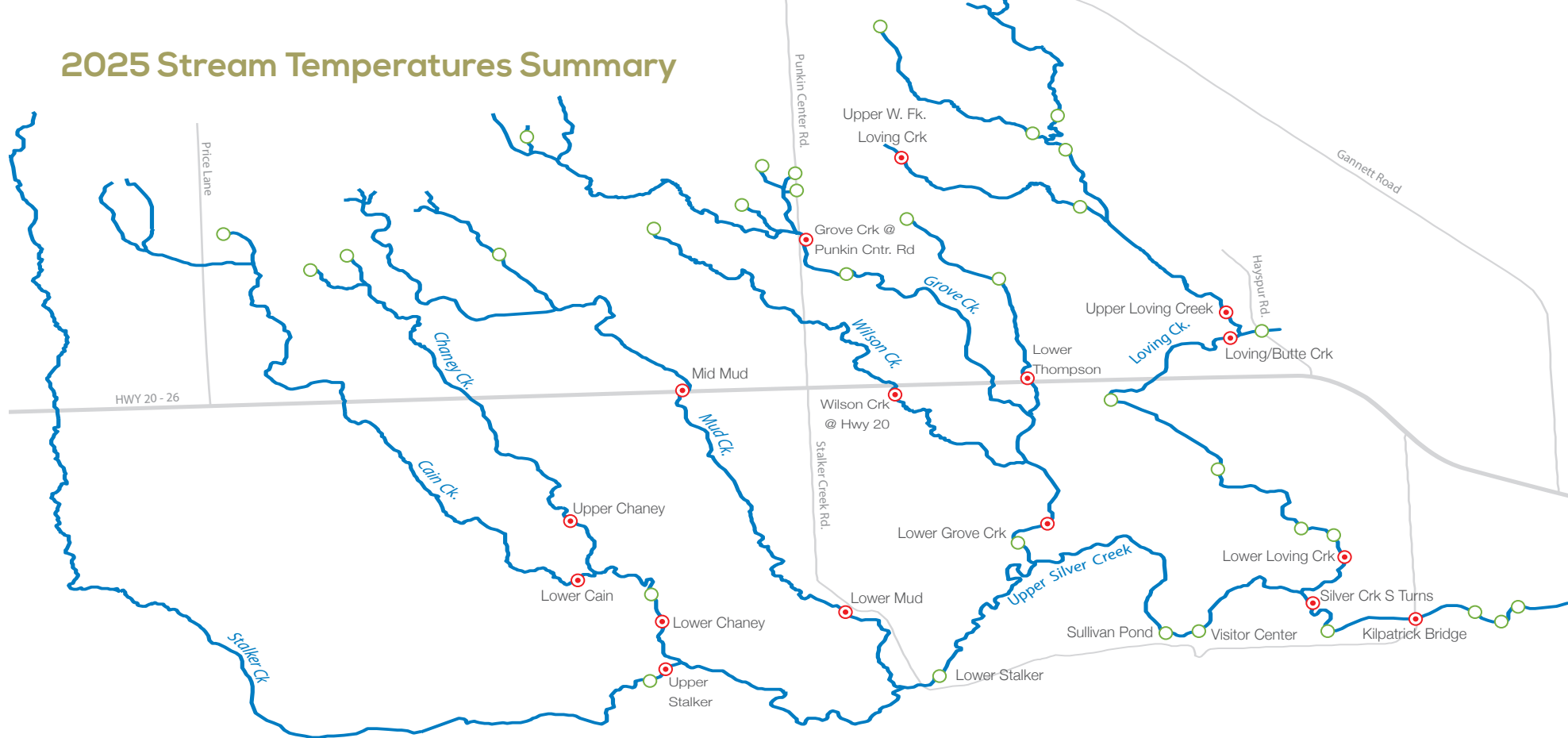
# Springs of Silver Creek

## 2025 Springhead Temperatures



**Springhead Temperature Bands** The figure above presents a summary of spring head temperatures over the summer season (June–September 2025). For each spring, the full temperature range from June 1 through September 30 is shown, including the absolute maximum and minimum values, along with the median water temperature.

# 2025 Stream Temperatures Summary



▲ Stream temperature bands The figure above summarizes summer stream temperature data for a selected set of monitoring locations and data loggers. The analysis focuses on conditions from June through the end of September 2025, highlighting temperature patterns across the stream system during the warmest period of the year. Each graph presents the full temperature range over the period of record, including the absolute maximum and minimum values, as well as the median temperature for each monitoring site.

# Locations of Stream Temperature Logger Array

This map illustrates the Silver Creek stream and tributary system along with the locations of the stream temperature loggers. The temperature loggers are expressed in two categories for discussion and analysis purposes:

- Location of stream temperature loggers illustrated in bottom graphic of seasonal temperatures
- Location of all other stream temperature loggers

Stream temperatures are logged continuously at one-hour intervals. The array of stream temperature loggers in the Silver Creek system is designed to capture temperature differences for each stream and tributary segment, from the spring source to Lower Silver Creek at the Highway 93 crossing.

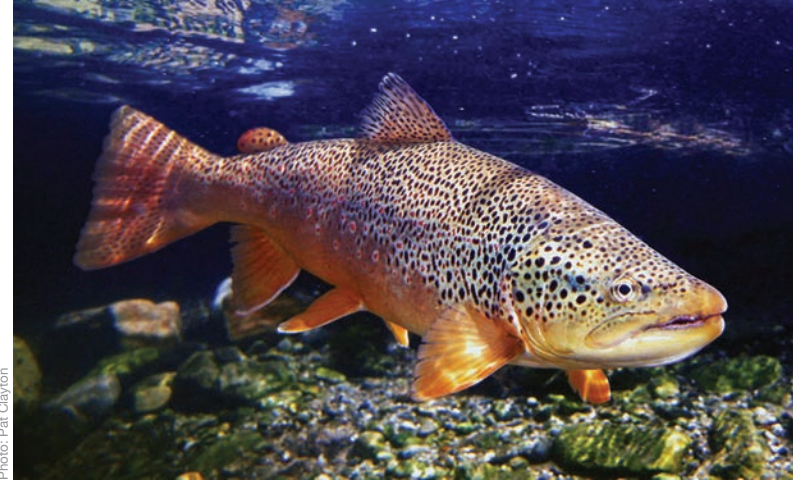
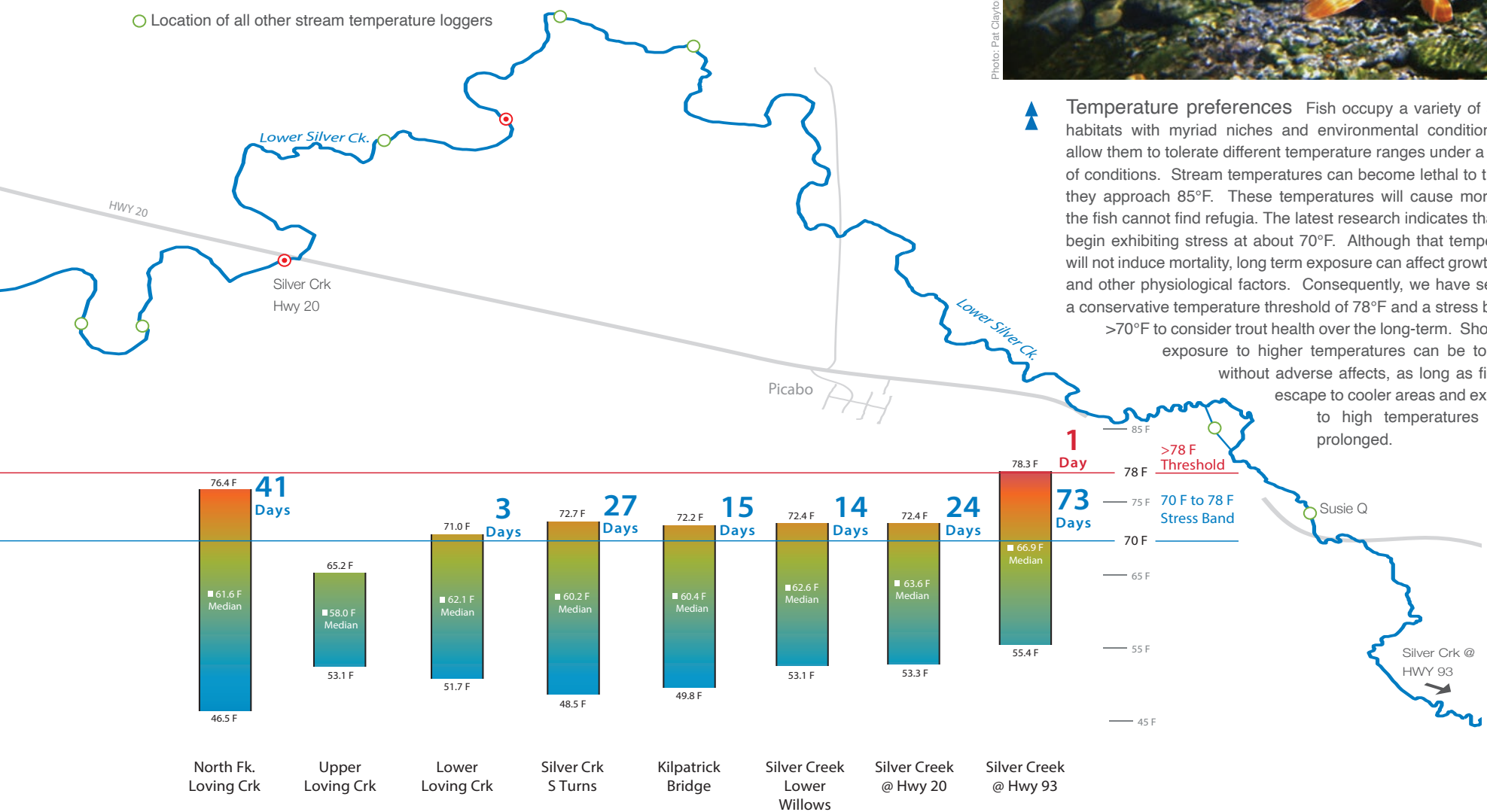


Photo: Pat Clayton



**Temperature preferences** Fish occupy a variety of stream habitats with myriad niches and environmental conditions that allow them to tolerate different temperature ranges under a variety of conditions. Stream temperatures can become lethal to trout as they approach 85°F. These temperatures will cause mortality if the fish cannot find refugia. The latest research indicates that trout begin exhibiting stress at about 70°F. Although that temperature will not induce mortality, long term exposure can affect growth rates and other physiological factors. Consequently, we have selected a conservative temperature threshold of 78°F and a stress band of >70°F to consider trout health over the long-term. Short-term exposure to higher temperatures can be tolerated without adverse affects, as long as fish can escape to cooler areas and exposure to high temperatures is not prolonged.

Median summer temperatures at several locations fell within the preferred range for trout (approximately 55–60°F), including Chaney (57–58°F), Mud (57–59°F), Wilson (55°F), Upper Loving Creek (58°F), and Upper West Fork Loving Creek (59°F). However, the number of days with temperatures in the trout stress range (70–78°F) increased in 2025 compared to 2024. Despite this increase, only one day at the Hwy 93 site exceeded the upper stress threshold of 78°F during the 2025 season.

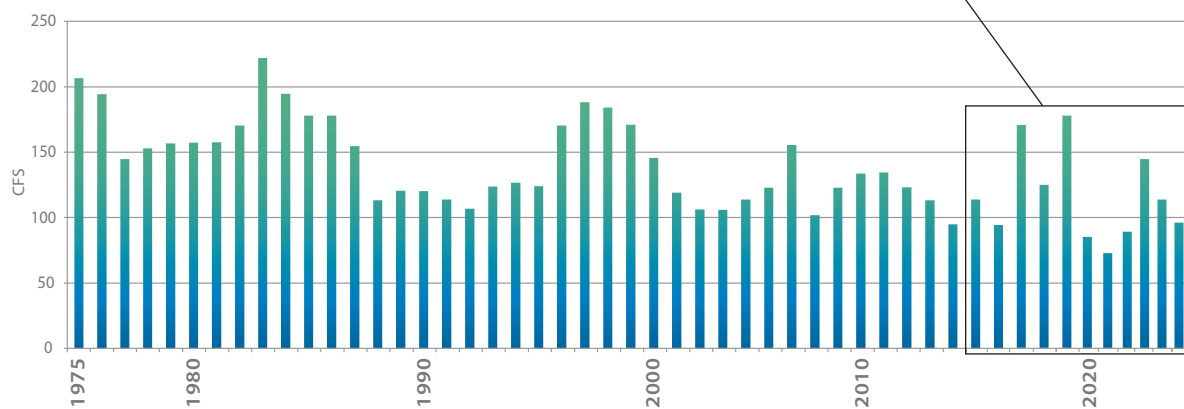
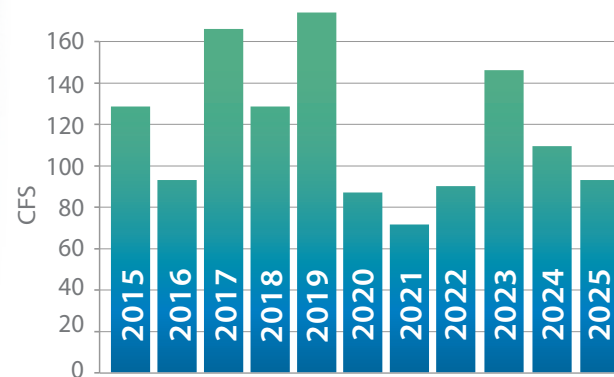


# Stream Hydrology

Monitoring streamflow is critical for understanding both the quantity and sources of water entering Silver Creek’s tributaries, as well as how these inputs influence water temperature, dissolved oxygen, and overall water quality.

In 2025, total annual discharge at Sportsman’s Access was below the 1991–2020 30-year average. Streamflows in Silver Creek’s tributaries were lower than in 2024, but higher than in 2021 and 2022, indicating an overall below-average water year for the system. Flows declined notably during the latter half of the summer, a period when reduced discharge can have the greatest impact on stream conditions. Similarly, the Big Wood River also experienced below-average annual discharge in 2025. The 2025 water year produced below-average streamflows in the Big Wood River, as well as in Silver Creek and its tributaries. At the Hailey gage, flows in 2025 were lower than in 2024 and more comparable to those observed

▼ Annual average streamflow (cfs) at USGS gage (Sportsman Access) 2015 - 2025.



Silver Creek annual average streamflow (cfs) at USGS gage (Sportsman Access) 1975 - 2024.

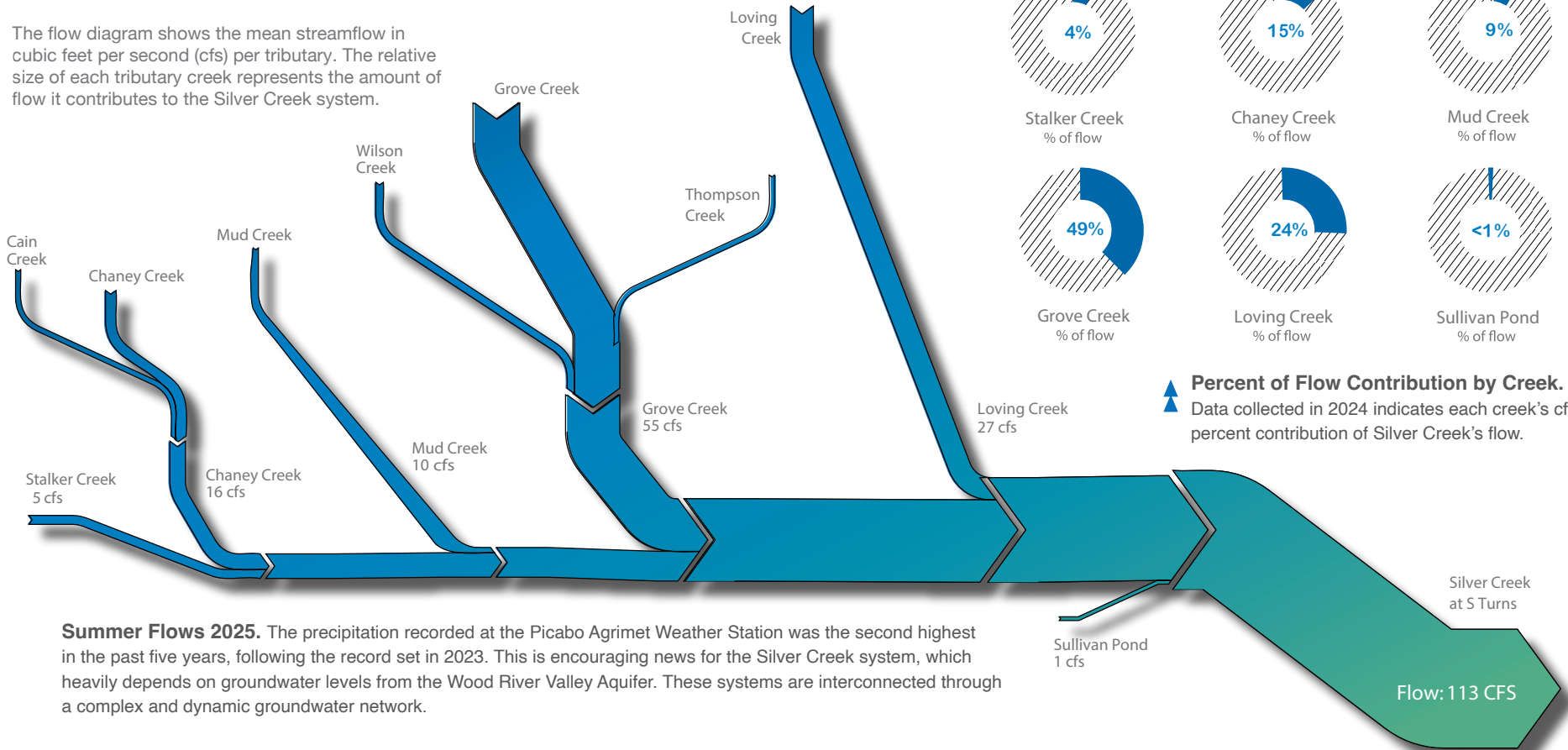
in 2022.

Big Wood River Average Annual Discharge at Hailey (cfs):	
2017	1,003
2018	479
2019	599
2020	254
2021	188
2022	331
2023	690
2024	364
2025	310

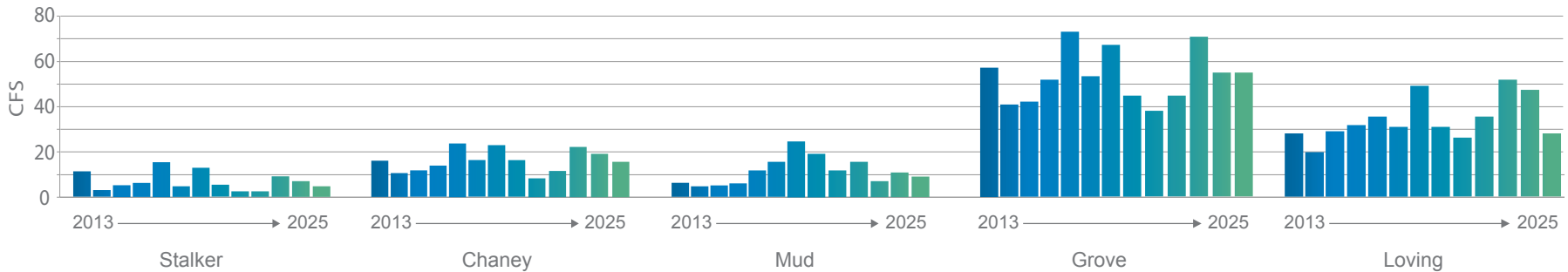
Unlike 2023, the basin did not experience a sustained period of late-spring, cold precipitation that would have extended runoff and bolstered streamflows. Spring 2025 was relatively wet and cool, though less pronounced than in 2023. This led to initially above-average flows early in the season, followed by a steady decline to below-average conditions as the summer progressed. The summer itself was hot and dry, with the exception of a significant storm event in late August. Overall, streamflows remained below average and were slightly lower than those observed in 2024.

# 2025 Streamflow

The flow diagram shows the mean streamflow in cubic feet per second (cfs) per tributary. The relative size of each tributary creek represents the amount of flow it contributes to the Silver Creek system.



**Summer Flows 2025.** The precipitation recorded at the Picabo Agrimet Weather Station was the second highest in the past five years, following the record set in 2023. This is encouraging news for the Silver Creek system, which heavily depends on groundwater levels from the Wood River Valley Aquifer. These systems are interconnected through a complex and dynamic groundwater network.



▲ **Annual average streamflow by creek for 2013-2025.** Data collected from 2013 - 2025 shows each creek's average flow. Recent decreases in overall streamflow affects many critical components of the aquatic ecosystem. Measurements were not continuous, but were distributed throughout the spring, summer, and fall.

# Dissolved Oxygen

Since 2017, dissolved oxygen (DO) has been continuously monitored from June through September at seven sites across the Silver Creek system. Measurements are collected using optical sensors that record DO and water temperature at 15-minute intervals.

Consistent with previous years, the data show that DO conditions vary substantially among locations. Not all reaches of Silver Creek exhibit the same patterns, and at certain sites, DO levels periodically fall into ranges that can stress fish, particularly at specific times of day. Seasonal variability is also evident, as sunlight, temperature, streamflow, and aquatic plant growth shift over the course of the summer.

In many areas, DO exhibits pronounced daily (diurnal) fluctuations, reflecting a highly productive aquatic ecosystem. During daylight hours, aquatic plants and algae produce oxygen through photosynthesis, increasing DO concentrations—typically peaking in the

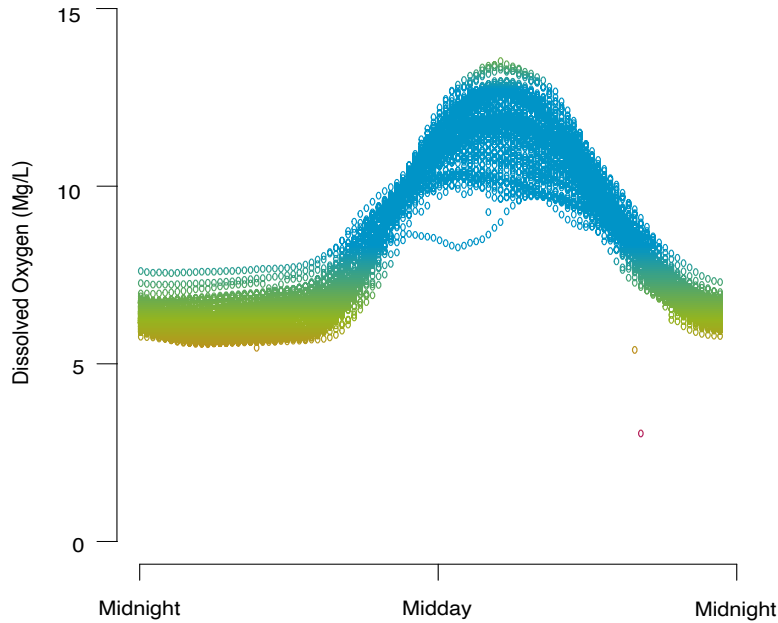
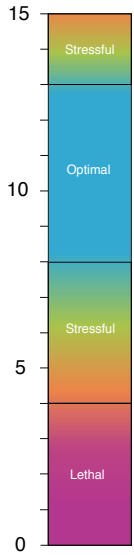
afternoon. At night, photosynthesis ceases while respiration continues, consuming oxygen from the water (biological oxygen demand) and causing DO levels to decline, often reaching their lowest point in the early morning. This cycle produces the distinct diurnal patterns observed in the data.

Importantly, these patterns differ by location. For example, the sensor at Lower Loving Creek shows markedly different diurnal behavior compared to the Butte Creek site, despite their close geographic proximity. These differences are driven by a combination of factors, including streamflow magnitude, water temperature, nutrient availability, and the abundance of aquatic vegetation.

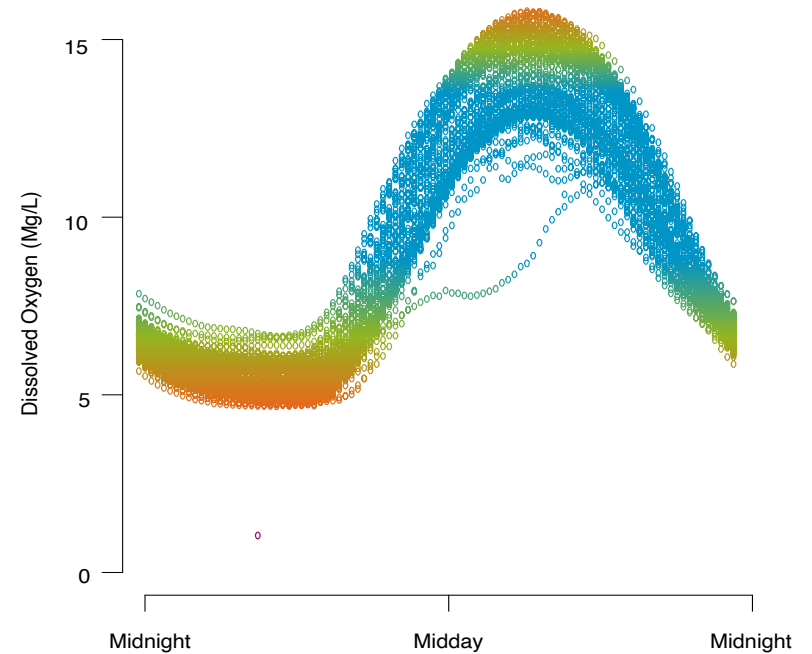
When DO concentrations drop into stressful ranges, fish can move to areas with higher oxygen levels. However, fish eggs—typically deposited within streambed gravels—are immobile and therefore more vulnerable to low-oxygen

conditions. Across the monitored sites in 2025, approximately 15% of all DO measurements fell within stressful to potentially lethal ranges for fish and their eggs. Stressful to lethal ranges of DO concentrations at select sites were 6.0 mg/L at Suzie Q, 5.2 mg/L at Butte Creek, and 5.7 mg/L at Lower Silver Creek near the Trestle. The seasonal graphs present the full set of observations collected during the 2025 monitoring period.



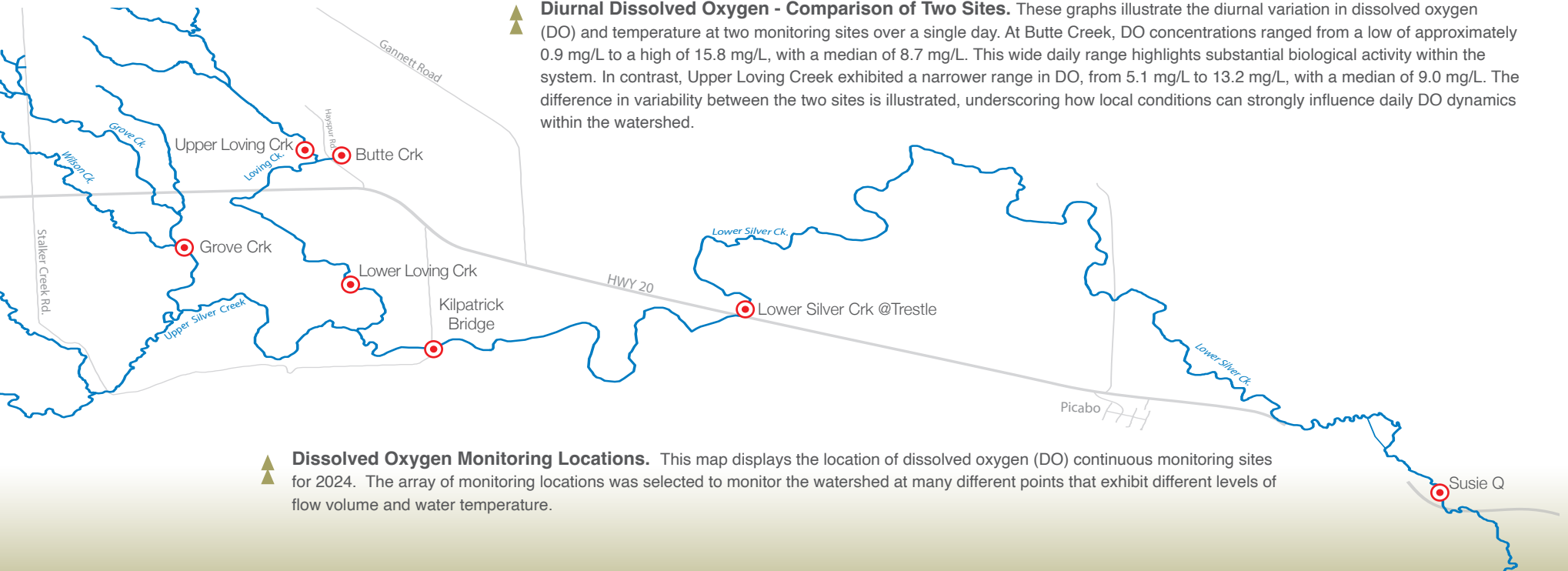


Upper Loving Creek



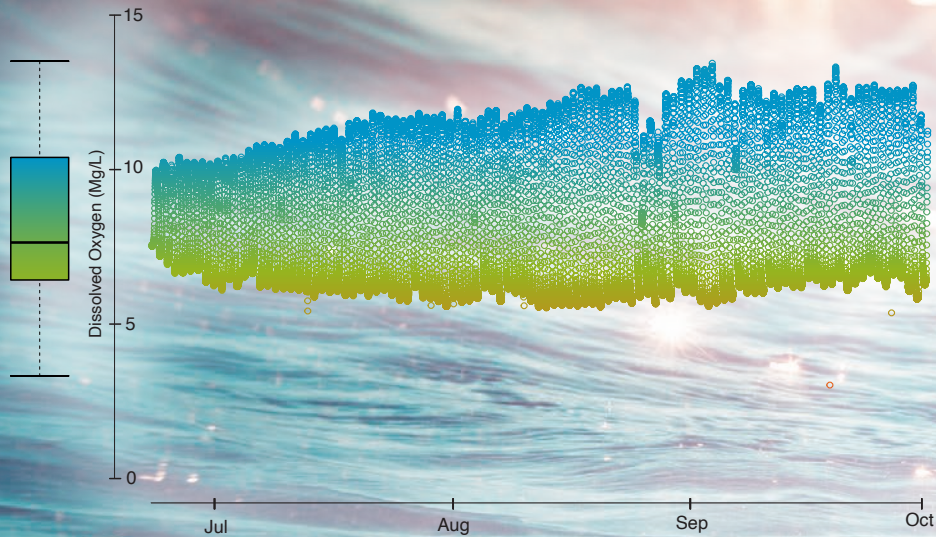
Butte Creek

▲ **Diurnal Dissolved Oxygen - Comparison of Two Sites.** These graphs illustrate the diurnal variation in dissolved oxygen (DO) and temperature at two monitoring sites over a single day. At Butte Creek, DO concentrations ranged from a low of approximately 0.9 mg/L to a high of 15.8 mg/L, with a median of 8.7 mg/L. This wide daily range highlights substantial biological activity within the system. In contrast, Upper Loving Creek exhibited a narrower range in DO, from 5.1 mg/L to 13.2 mg/L, with a median of 9.0 mg/L. The difference in variability between the two sites is illustrated, underscoring how local conditions can strongly influence daily DO dynamics within the watershed.

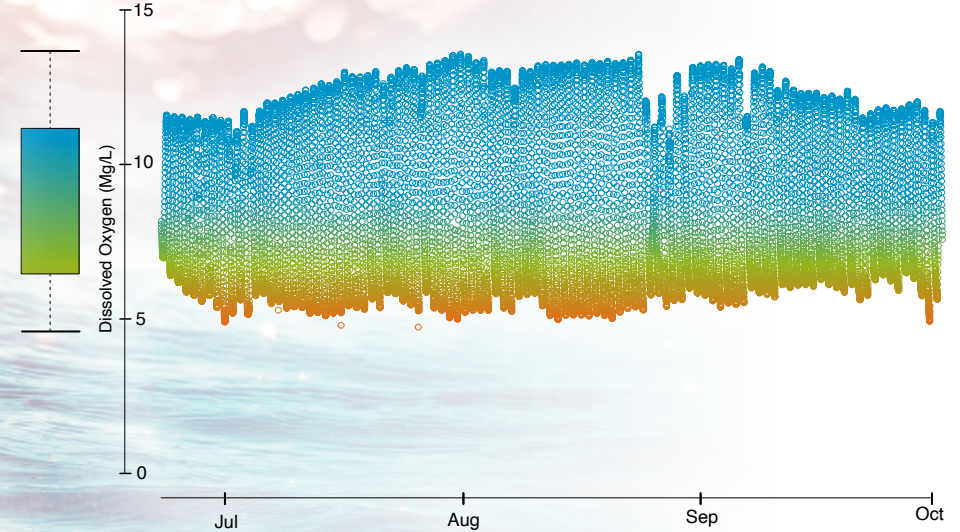


▲ **Dissolved Oxygen Monitoring Locations.** This map displays the location of dissolved oxygen (DO) continuous monitoring sites for 2024. The array of monitoring locations was selected to monitor the watershed at many different points that exhibit different levels of flow volume and water temperature.

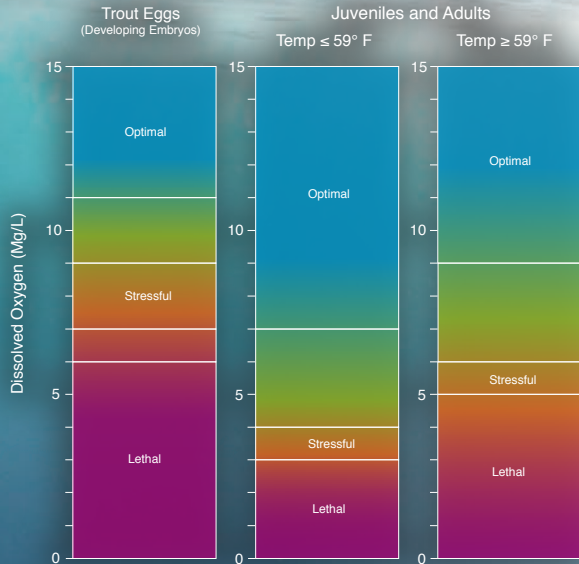
# Dissolved Oxygen Results



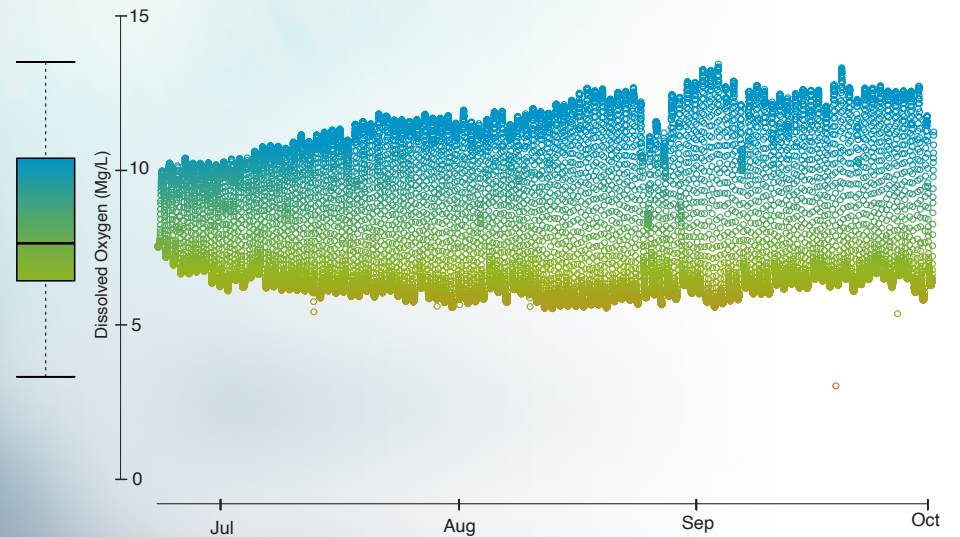
Upper Loving Creek



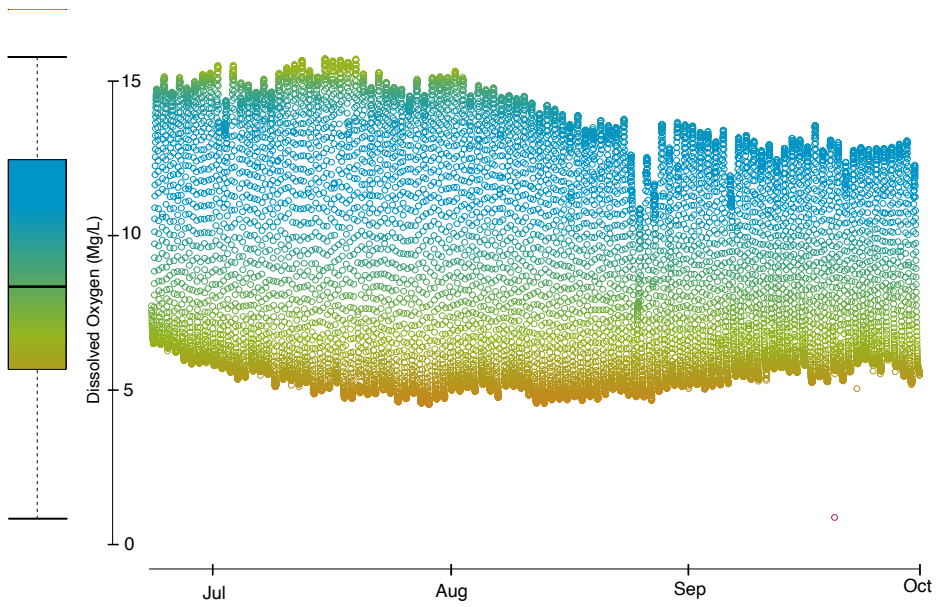
Lower Stalker Creek



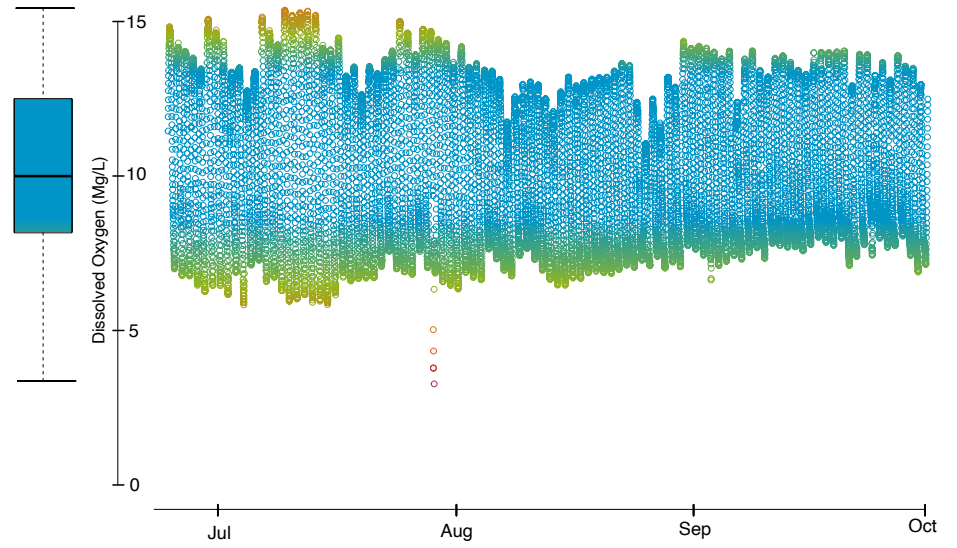
**Average Dissolved Oxygen Requirements for Salmonids.** Trout, depending on their particular life stage (egg, Juvenile, Adult), have differing requirements and thresholds for dissolved oxygen levels. Water temperature also plays a major role in dissolved oxygen levels. (Adapted from EPA's Chapman, 1986, and USFWS's Raleigh et al 1984, and Raleigh et al 1996).



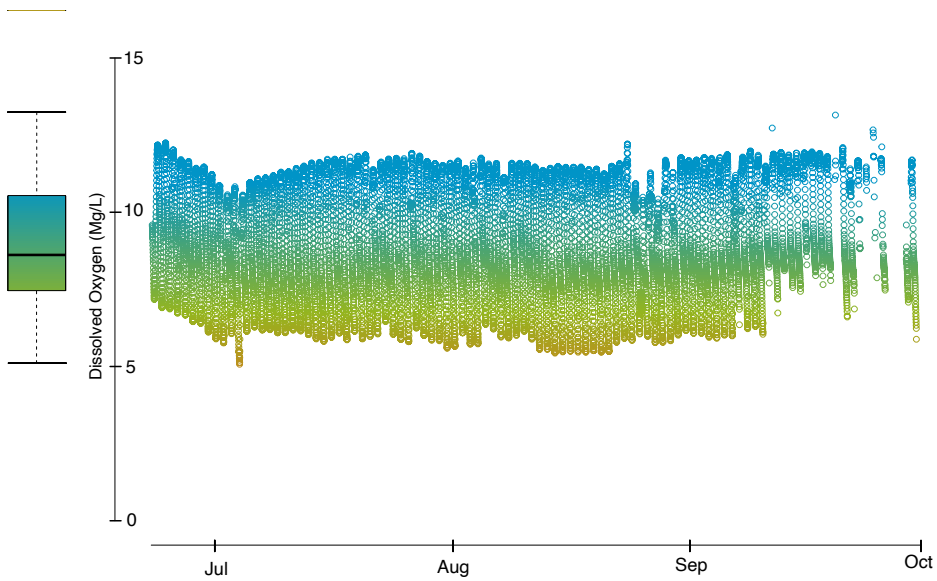
Upper Loving Creek



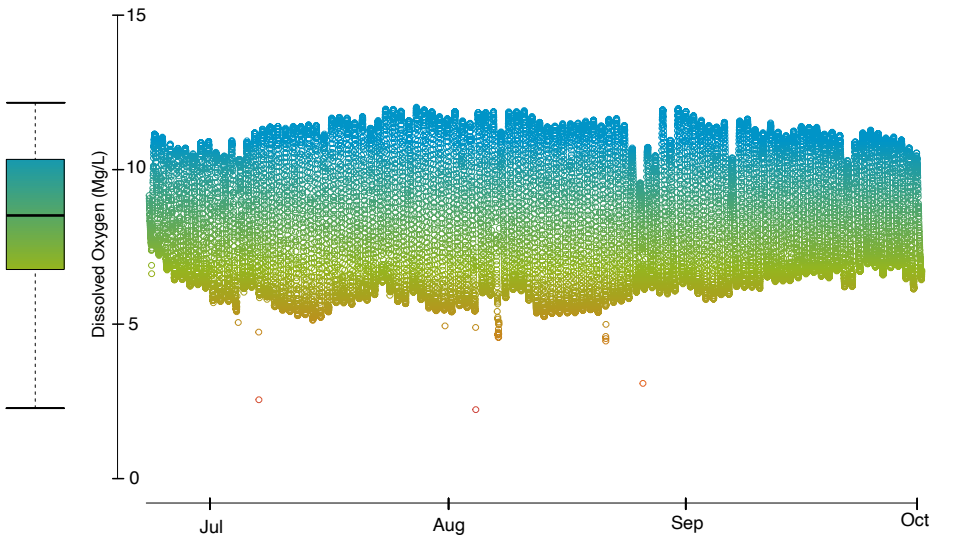
**Butte Creek**



**Lower Silver Creek at Trestle**



**Lower Loving Creek**



**Susie Q**

# Stream Riparian Assessment

**Riparian areas along Loving, Mud, and Chaney Creeks provide substantial ecological and economic value—together contributing more than \$5.4 million annually in ecosystem services while supporting critical functions like water quality, habitat, and erosion control.**

To better understand these benefits, a field-based riparian assessment was conducted across the three creek systems. A total of 106 sampling points were surveyed, where measurements of vegetation structure—specifically tree size (diameter at breast height, or DBH) and canopy cover—were collected. Results show a wide range of conditions, from sparse vegetation to dense, mature stands. On average, canopy cover was relatively high (around 70%), indicating that many areas are well-vegetated and actively contributing to stream health by shading water, stabilizing banks, and reducing erosion.

To build on field observations, high-resolution aerial imagery and a deep learning model were used to map riparian vegetation across the entire project area. This allowed for identification of “woody wetlands”—areas with at least 20% tree or shrub cover and periodic soil saturation—providing a more complete picture of riparian extent and condition.

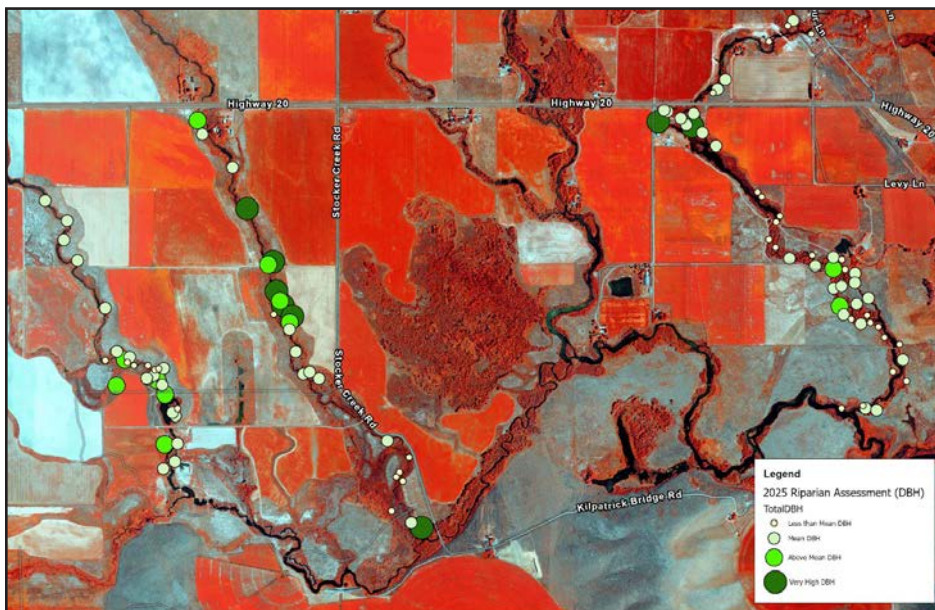
Using these data, ecosystem service values (ESV) were estimated based on vegetation characteristics such as canopy cover and woody biomass. While individual areas vary widely in value, the overall contribution of these riparian systems is significant. Importantly, the analysis shows that larger, continuous patches of dense vegetation deliver the greatest benefits, both ecologically and economically.

Differences between streams help illustrate this point. Loving Creek supports larger, more connected stands with a stronger tree component and higher

canopy cover—conditions that drive the highest ecosystem service values. In contrast, Chaney Creek tends to have smaller, more isolated patches dominated by shrubs, resulting in lower overall value. Mud Creek falls somewhere in between, with relatively dense vegetation but smaller patch sizes limiting its total contribution.

Overall, this assessment highlights a clear takeaway: **healthy, well-connected riparian areas are incredibly valuable assets.** They improve water and air quality, reduce erosion, support wildlife, and provide recreational benefits—while also representing a measurable economic contribution to the landscape. Protecting and expanding these systems will be key to maintaining both ecological function and long-term value in the watershed.

In 2026, ESF plans to continue the assessment on the other riparian areas of Silver Creek for a comprehensive analysis of the stream system.



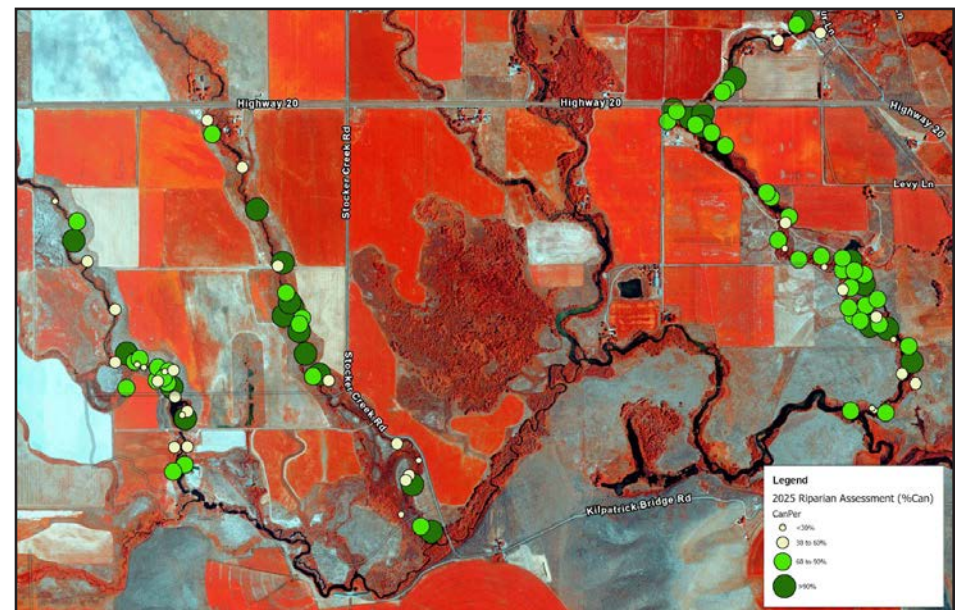
### Woody Biomass (DBH) Assessment

A Diameter at Breast Height (DBH)–based woody biomass assessment provides a simple, field-driven method to quantify tree size, wood volume, biomass, and carbon storage along the Silver Creek corridor. By mapping DBH across riparian areas, individual tree measurements can be scaled to estimate total wood production, standing biomass, and stored carbon using established allometric relationships.

In the Silver Creek system, this information is directly tied to riparian health and stream function. Woody biomass influences:

- Shade and temperature regulation, critical for trout habitat and aquatics
- Bank stability and channel structure, supporting habitat complexity
- Hydrologic interaction, including evapotranspiration, shallow groundwater
- Long-term carbon storage and ecosystem resilience

A DBH-based map provides a spatial baseline to track changes in vegetation condition, evaluate restoration actions, and understand how riparian vegetation interacts with groundwater and streamflow—particularly during late-season and dry-year conditions that are central to Silver Creek management.



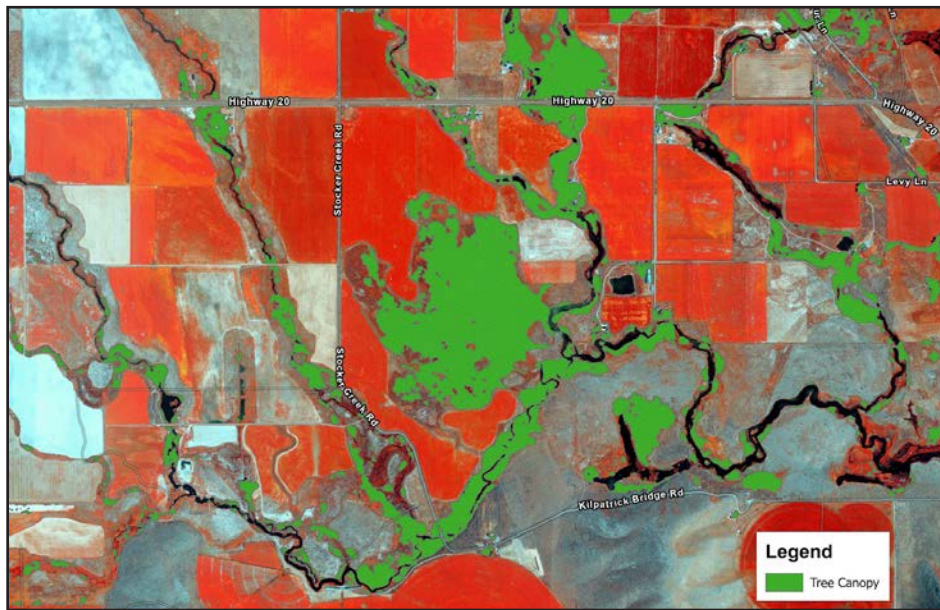
### Percent Canopy Cover Assessment

Percent canopy cover is a direct measure of the extent and density of vegetation over a given area, particularly important in riparian zones along Silver Creek. It reflects how much of the ground or stream surface is shaded by overstory vegetation.

In the Silver Creek system, canopy cover is a key indicator of riparian health and function:

- Dense vegetation protects soils, stabilizes banks, and reduces sediment
- Overhanging canopy provides shade, helping maintain cool water temperatures critical for aquatic species
- Supports diverse riparian and aquatic ecosystems by moderating light and microclimate conditions and influences evapotranspiration and helps maintain near-stream moisture conditions.

Percent canopy mapping provides a practical, spatial metric to assess riparian condition, prioritize restoration areas, and track changes in vegetation cover in response to management or climate variability.



### Woody Wetlands Mapping

Mapping tree and shrub canopy within the project area provides a focused assessment of woody wetlands—defined as areas where forest or shrub vegetation exceeds 20% cover and soils are periodically saturated or inundated. Using a deep learning (AI) classification approach applied to high-resolution NAIP 2023 imagery (0.8 m), riparian vegetation was identified and mapped across the corridor. This allows for accurate delineation of woody wetland extent at a fine spatial scale.

In the Silver Creek system, woody wetlands are critical to:

- Bank stability and erosion reduction through rooted vegetation
- Stream shading and temperature control from dense riparian cover
- Groundwater–surface water interaction, supporting baseflows
- Habitat complexity, providing key ecological conditions for fish/wildlife

The resulting map provides a baseline of woody wetland extent, supporting restoration prioritization, monitoring of vegetation change, and evaluation of how riparian conditions influence streamflow and late-season water availability.

### Ecosystem Services Value

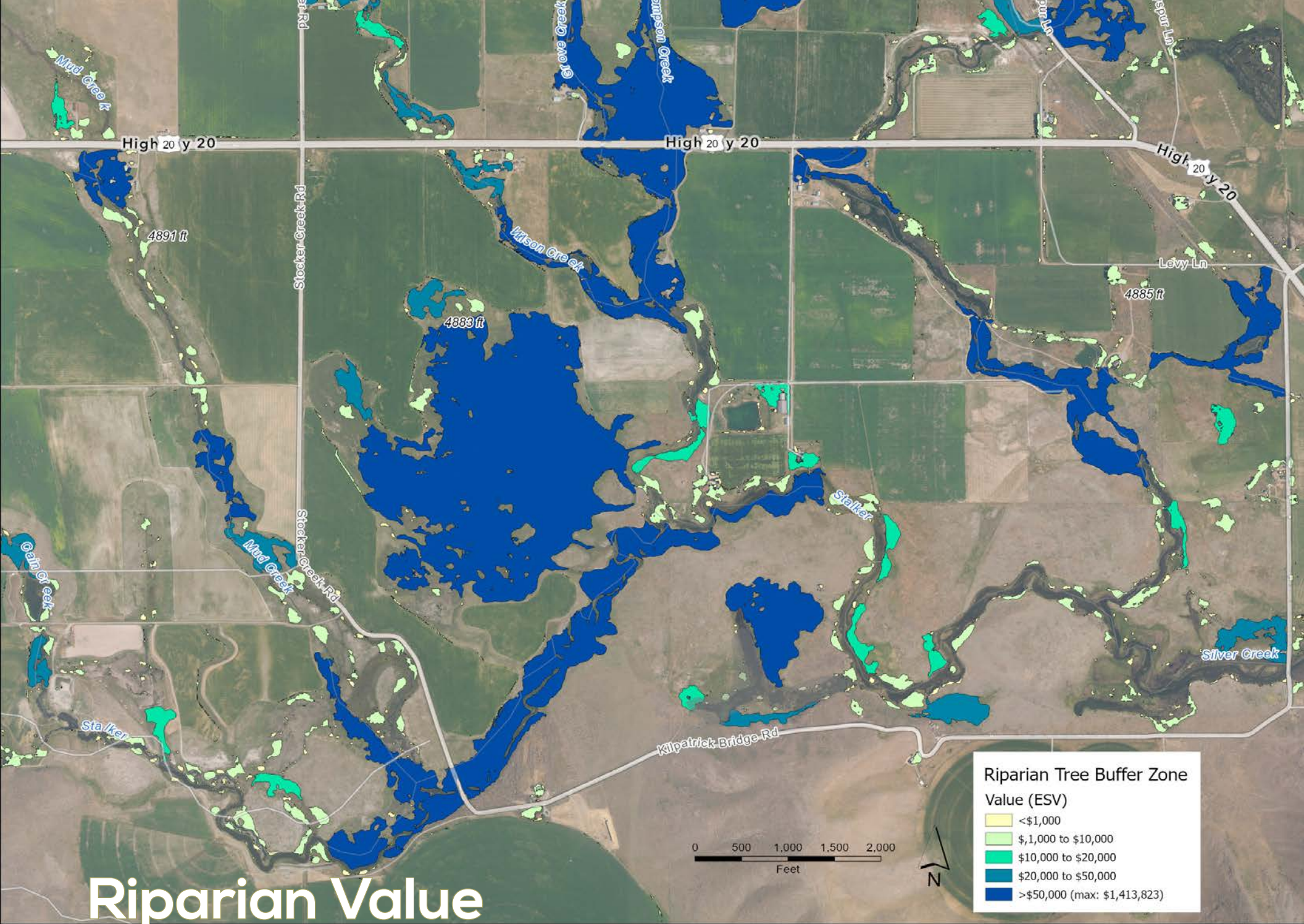
ESV quantifies the economic benefit of woody riparian areas based on area (as a value in dollars per acre), reflecting services such as water filtration, temperature regulation, habitat support, and carbon storage. In the Silver Creek corridor, ESV highlights the importance of connected, contiguous riparian areas. Higher-value zones occur where riparian areas are large and continuous, supporting stronger hydrologic and ecological function. Lower-value areas tend to be small or fragmented patches with reduced functional benefit. ESV identifies priority areas for protection, restoration, and connectivity improvements.

These results provide a quantitative framework to evaluate tradeoffs, justify restoration investments, and link riparian condition to economic and hydrologic benefits. For this assessment, the average ESV value is \$568 per acre, and the maximum is \$1,413,823 per acre. **Overall the total value of these riparian areas is \$5,449,100 annually.**

ESV represents the annual economic value of services provided by the landscape, not a direct market price. It turns ecological function into a comparable economic metric, so decisions about Silver Creek can be evaluated on the same footing as traditional financial considerations. It provides a bridge between hydrology, ecology, and economics—helping quantify how riparian condition supports the very outcomes Silver Creek management is trying to achieve: cool water, sustained flows, and resilient habitat.

#### Examples of ESV being applied across Western U.S.

- Idaho Department of Lands – Endowment lands & watershed management (timber, water yield, habitat)
- US Environmental Protection Agency & Colorado State Forest Service (South Platte) – Forest restoration (water supply, sediment, wildfire risk)
- The Nature Conservancy (CO & Columbia Basin) – Instream flow, habitat, water leasing
- California Department of Water Resources (SGMA) – Groundwater storage, subsidence, baseflow
- City of Snoqualmie – Urban forests & stormwater (runoff, habitat, recreation)
- US Forest Service – Western watershed restoration (water yield, sediment, wildfire risk)



ESV is a way of saying: **If we had to replace what this riparian system is doing for free every year, it would cost about this much.** This assessment highlights a clear takeaway: **healthy, well-connected riparian areas are incredibly valuable assets.** They improve water and air quality, reduce erosion, support wildlife, and provide recreational benefits—while also representing a measurable economic contribution to the landscape.

# Next Steps

## Stream Restoration

Stream restoration that balances water conservation with agricultural land use is critical for sustaining aquatic species and a healthy fishery. Natural channel design offers an effective approach to address these challenges. In Silver Creek, climate pressures, and intensive land use have historically contributed to declines in water quality and quantity, while competition for limited water continues to grow. Many reaches exhibit impaired stream and ecological function, creating clear opportunities for targeted restoration.

Targeted restoration efforts on Silver Creek have demonstrated clear success. The recently completed restoration project along Stalker Creek and Lower Chaney Creek at Silver Creek Preserve

restored 1.1 miles of stream channel and exemplifies how restoration can measurably improve water temperature and dissolved oxygen (DO). Comparisons between pre-restoration conditions (2021) and post-restoration conditions (2025) indicate substantial improvements, even under similar streamflow conditions. After restoration seasonal stream temperatures were consistently lower, and DO levels were more stable, with fewer low-end dips (see the data at [Savesilvercreek.com](http://Savesilvercreek.com)).

Silver Creek offers strong opportunities to improve in-stream conditions and restore ecological integrity. Restoration goals should include: (1) self-maintaining, resilient channels connected to historic floodplains with diverse habitat; (2) off-channel oxbows and restored wetlands/riparian areas; (3) planning for lower summer streamflows; (4) enhanced hydrologic connectivity to baseflows; and (5) improved trout populations and greater diversity of non-salmonid fish and benthic invertebrates in degraded reaches.

## Riparian Buffers

In 2026, the remainder of the riparian buffer zones will be evaluated and an ESV assessment completed. A field effort to collect data on the riparian buffer systems will help to prioritize areas that need improvement, protection and restoration.

## Monitoring and Maintenance

Over the past 14 years, the Silver Creek Program has monitored stream hydrology, water temperature, sedimentation, and dissolved oxygen. Combined, these parameters are indicators of ecosystem health—much like checking our own body temperature and circulatory system. Monitoring is paramount to understanding ecological processes and relationships, identifying trends and establishing effective strategies for enhancement. However, monitoring is a long-term scientific tool that must be done consistently over

time; the more data collected, the more meaningful the results. As our monitoring program continues, it is necessary to periodically replace temperature sensors, redeploy DO sensors, and upgrade stream flow measurement equipment, all of which come at a capital cost. We are seeking additional funding to maintain our monitoring equipment, continue field data collection and data analysis for these important programs.

## Funding

To continue our ongoing monitoring work and perform new analyses, as described above, our Silver Creek Program needs additional funding. Our program is heavily based on monitoring and data analysis; we have found that these activities alone are rarely funded through traditional grant programs. Please consider a donation to continue this important work.

A substantial volunteer effort goes into the Silver Creek program each year and your donations directly support the Program.

Thank you for your support!

Please send donations to:

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**Boise, Idaho 83702**



2025

# Silver Creek Annual Report

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