# *Lopez Lake and Lopez Terminal Watershed Sanitary Survey Five-Year Update (2021-2025)*

Prepared By:
County of San Luis Obispo
Department of Public Works
Water Quality Division

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**<u>Figures</u>**

# SYSTEM INFORMATION

| | |
|---|---|
| State Water Resources Control Board Division of Drinking Water (SWRCB-DDW) System No.: | CA4010022 |
| System Name: | Zone 3 County of San Luis Obispo Flood Control and Water Conservation District (Lopez Project) |
| Survey Period: | January 1, 2021, through December 31, 2025 |
| Name of Agency and Address: | County of San Luis Obispo<br>Department of Public Works<br>County Government Center, Room 206<br>San Luis Obispo, CA 93408 |
| Name of Watersheds: | Lopez Lake<br>Lopez Terminal Reservoir |
| Infrastructure: | Lopez Lake Intake Building<br>• Intake 1 507.6’<br>• Intake 2 492.6’<br>• Intake 3 477.6’<br>• Intake 4 462.6<br>• Intake 5 447.6<br>• Intake 6 432.6<br>• Intake 7 417.6<br>Lopez Lake Terminal Intake Building<br>• Intake 1 323’<br>• Intake 2 317’<br>• Intake 3 311’<br>• Intake 4 305’ |
| Total Watershed Size in acres: | Lopez Lake – 43,000 acres<br>Lopez Terminal Reservoir – 424 acres |
| Watershed Capacity | Lopez Lake : 49,200 acre-feet<br>Lopez Terminal : 844 acre-feet |
| Location: | San Luis Obispo County |
| Name(s) of water treatment plant using the watershed as a source: | Lopez Water Treatment Plant |

# TERMS, ACRONYMS, AND ABBREVIATIONS

| | |
|---|---|
| AF | Acre-feet |
| BPM | Best Management Practices |
| CDPH | California Department of Public Health |
| CFU | Colony Forming Unit |
| CU | Color Unit |
| DBP | Disinfection Byproduct |
| DDW | Division of Drinking Water |
| District | County of San Luis Obispo Flood Control and Water Conservation District – Zone 3 |
| DLR | Detection Limit for the Purposes of Reporting |
| DOC | Dissolved Organic Carbon |
| DWSAP | Drinking Water Source Assessment and Protection |
| HAA | Haloacetic Acid |
| HAB | Harmful Algae Bloom |
| HPC | Heterotrophic Plate Count |
| IEWSWTR | Interim Enhanced Surface Water Treatment Rule |
| L | Liter |
| LWTP | Lopez Water Treatment Plant |
| MCL | Maximum Contaminant Level |
| μg/L | micrograms per liter |
| μmhos/cm | micromhos per centimeter |
| mg/L | milligrams per liter |
| MPN | Most Probable Number |
| ND | Not Detected |
| NTU | Nephelometric Turbidity Unit |
| pCi/L | picoCuries per liter |
| PFAS | Per- and polyfluoroalkyl substances |
| PRBS | perfluorobutane sulfonic acid |
| PFOA | perfluorooctanoic acidco |
| PFOS | perfluorooctanesulfonic acid |
| RAA | Running Annual Average |
| SOC | Synthetic Organic Compound (also Synthetic Organic Chemical) |
| SWRCB | State Water Resources Control Board |
| TDS | Total Dissolved Solids |
| 1,2,3-TCP | 1,2,3-Trichloropropane |
| THM | Trihalomethane |
| TKN | Total Kjeldahl Nitrogen |
| TOC | Total Organic Carbon |
| TON | Threshold Odor Number |
| U. S. EPA | United States Environmental Protection Agency |
| VOC | Volatile Organic Compound (also Volatile Organic Chemical) |

# WATERSHED SURVEY CHECKLIST

(Changes since the last survey are highlighted in red.)

| Category | Significant | Not Significant | Comments |
|---|---|---|---|
| I. GENERAL | | | |
| A. Changes in available water quantity? | X | | Drought |
| B. Construction of water diversion or reservoir projects. | | X | |
| C. Relocation of intakes | | X | |
| II. CONTAMINANT SOURCES | | | |
| A. Wastewater Treatment at Lopez Lake | | | |
| 1. Treatment plant effluent discharges | X | | Lopez Wastewater Eff Pipe Leak |
| 2. Storage, transport, treatment, disposal to land | | X | |
| 3. Residential septic systems | | X | |
| B. Reclaimed Water | | X | |
| C. Urban Areas | | X | |
| D. Agricultural Crop Land Use | | X | |
| E. Pesticide/Herbicide Use | | X | |
| F. Grazing Animals | | X | |
| G. Concentrated Animal Facilities (feedlots, etc) | | X | |
| H. Wild Animal Populations | | X | |
| I. Mines | | | |
| 1. Active | | X | |
| 2. Inactive | | X | |
| J. Disposal Facilities at Lopez Lake | | | |
| 1. Solid waste | | X | |
| 2. Hazardous waste | | X | |
| K. Logging | | X | |
| L. Recreation | | | |
| Reservoir body contact (Lake) | X | | |
| Reservoir body contact (Terminal) | | X | |
| M. Unauthorized Activity | | | |
| 1. Illegal dumping | | X | |
| 2. Underground storage tank leaks | | X | |
| N. Traffic Accidents/Spills | | | |
| 1. Transportation corridors (Lake) | | X | |
| Transportation corridors (Terminal) | X | | Terminal Breach in 2022-2023 |
| 2. History of accidents/spills | | X | |
| O. Groundwater Discharges | | | |
| 1. Natural discharge | | X | |
| 2. Gas, oil, geothermal wells | | X | |
| P. Seawater Intrusion | | X | |
| Q. Geologic Hazards | | | |
| 1. Landslides | X | | |
| 2. Earthquakes | | X | |
| 3. Floods | | X | |
| R. Fires | X | | |
| III. GROWTH | | | |
| A. Population/General Urban Area Increase | | X | |
| B. Land Use Changes | | X | |
| C. Industrial Use Increase | | X | |
| IV. WATER QUALITY | | | |
| A. Changes in Raw Water Quality | | X | |
| B. Difficulty meeting drinking water standards | | X | |

# SUMMARY

The Lopez Lake and Lopez Terminal Reservoir watersheds maintain high water quality through strict security, restricted public access, and the absence of industrial or mining threats. While the Lopez Lake Recreation Area supports full-body contact activities, potential risks are mitigated by daily staff patrols and a dedicated aeration sewage treatment plant that exports all sludge out of the watershed. Security remains a priority, with the Lopez Water Treatment Plant (LWTP) and Terminal Reservoir protected by passcode-operated gates, extensive fencing, and mandatory visitor registration to prevent unauthorized access.

Technological advancements have recently focused on optimizing filtration and pH management. Following its 2007 upgrade to a membrane microfiltration plant, the LWTP transitioned in early 2025 from a hydrochloric acid system to a carbon dioxide (CO2) system for pH suppression. This method, originally approved by the State Water Resources Control Board-Division of Drinking Water (SWRCB-DDW), forms carbonic acid to prevent scaling within the plant when reservoir pH levels exceed 8.2 or temperatures rise above 18°C. These process adjustments ensure the facility remains resilient against seasonal fluctuations in raw water chemistry.

Infrastructure integrity was tested in 2023 by two events resulting from significant storms: a 168-gallon treated sewage spill caused by a collapsed force main and a breach in the Terminal Reservoir's perimeter diversion channel. In both instances, the County utilized drone monitoring and boat-based sampling to confirm that water quality remained uncompromised until repairs could be completed in 2024. Additionally, a 2023 bathymetric study provided critical updated data on storage capacity and sediment accumulation, establishing a modern baseline for drought preparedness and long-term water supply planning.

# INTRODUCTION AND PURPOSE

This Watershed Sanitary Survey (WSS) evaluates the Lopez Lake and Lopez Terminal Reservoir watersheds. Lopez Lake is a surface water source owned and operated by the County of San Luis Obispo Flood Control and Water Conservation District – Zone 3 (District). The information presented in this update is based on water quality data and field observations collected over a five-year period from January 2021 through December 2025. The original survey was completed in December 1995, and this document represents the sixth five-year update.

In accordance with Title 22, California Code of Regulations (CCR), Division 4, Chapter 17, Article 7, Section 64665, water suppliers utilizing surface water or groundwater under the direct influence of surface water are required to conduct a watershed sanitary survey at least once every five years. The purpose of this requirement is to identify existing or potential sources of contamination that could impact drinking water quality.

The primary objectives of this sanitary survey are to characterize the physical and hydrogeologic features of the watershed, summarize source water quality data, and identify current or potential contamination sources that may affect Lopez Lake and the Lopez Terminal Reservoir. The survey also documents significant changes since the previous update, evaluates existing watershed management and control measures, and assesses the system's ability to comply with surface water treatment requirements. Recommendations for corrective actions, where necessary, are provided to support ongoing watershed protection and long-term management planning.

The District owns and operates the Lopez Water Project, a water supply and delivery system consisting of Lopez Lake and the Lopez Terminal Reservoir, each equipped with outlet structures and connected by a three-mile gravity pipeline. The Terminal Reservoir serves as the raw water supply for the Lopez Water Treatment Plant, which produces potable water delivered to a 2.25-million-gallon clear water reservoir and approximately 25 miles of distribution system.

Water supplied by the Lopez Water Project serves the Cities of Arroyo Grande, Grover Beach, and Pismo Beach, as well as the Oceano Community Services District, County Service Area 12, and the Avila Beach Community Services District. This survey update includes an evaluation of both the Lopez Lake watershed and the smaller Terminal Reservoir watershed.

# WATERSHED PHYSICAL AND HYDROGEOLOGICAL DESCRIPTIONS

## Lopez Lake Watershed

### Physical Characteristics

The Lopez Lake watershed encompasses approximately 43,000 acres (roughly 70 square miles) within the southern Santa Lucia Range of San Luis Obispo County (County of San Luis Obispo, 2023). The majority of the landscape remains undeveloped wilderness within the Los Padres National Forest, with the remaining acreage held by private landowners and the District.

### Topography and Geology

The terrain is defined by steep, rugged canyons and high mountains, with elevations rising from 522 feet at the spillway to over 2,800 feet at the peaks of the Santa Lucia Range. The underlying geology primarily consists of the Monterey Formation (shale and chert) and the Franciscan Assemblage (Diblee & Minch, 2007).

These geological formations significantly influence the landscape's stability and water chemistry. The combination of steep gradients and shaly, well-drained loams makes the watershed prone to high runoff velocities and significant erosion during storm events.

### Hydrological Profile

As a key component of the Estero Bay Hydrologic Unit, the watershed is comprised of two primary sub-watersheds: Lopez Canyon and Upper Arroyo Grande Creek. Lopez Lake serves as the primary catchment for the Arroyo Grande Creek Watershed, fed by a network of tributaries including Wittenberg, Vasquez, Big Falls, and Clapboard Canyon Creeks (CCAMP, 2018).

### Precipitation and Inflows

Hydrological patterns are driven by highly seasonal rainfall, occurring mostly between December and March. Precipitation varies sharply with topography, while the lake surface averages 20 inches annually. Inflows naturally carry higher mineral concentrations due to leaching of the surrounding Monterey shale.

**Reservoir Operations and Ecology**

Lopez Lake covers a maximum surface area of 974 acres with a storage capacity of 49,200 acre-feet. It serves as a critical municipal water supply for the Cities of Arroyo Grande, Grover Beach, Pismo Beach, the Oceano Community Services District, County Service Area 12, and Avila Beach Community Services District.

An intake structure near the dam ogee allows operators to select water from seven different elevations to optimize quality for the Lopez Terminal Reservoir (See Appendix A1). The reservoir facilitates environmental flows and groundwater recharge via controlled releases from the dam into Arroyo Grande Creek.

## Lopez Terminal Reservoir

### Physical Characteristics

The Lopez Terminal Reservoir watershed encompasses 424 acres within the Lower Arroyo Grande Creek subwatershed. The landscape is characterized by moderately steep hillsides and rolling grassy foothills. Vegetation across the watershed is dominated by chaparral and native grasslands.

### Geology and Soils

The geology of this portion of the Lower Arroyo Grande Creek system is heavily influenced by the Monterey Formation, featuring significant alluvial and colluvial deposits (Dibblee & Minch, 2007).

The geology is primarily comprised of well-drained shaly loams and stony clay loams. These are highly susceptible to erosion during the intense winter rainfall events typical of San Luis Obispo County. Flatter areas near the LWTP contain tighter silty clay loams. These soils result in high runoff rates and limited infiltration, making surface-water diversion a primary management priority to protect the reservoir from sedimentation.

### Hydrological Profile

Located approximately three miles downstream of Lopez Lake, the Lopez Terminal Reservoir functions as an engineered holding basin. The reservoir covers 37 acres with a storage capacity of 844 acre-feet. The reservoir's primary purpose is to maintain and stabilize water quality before the water undergoes processing at the Lopez Water Treatment Plant (CCAMP, 2018).

The reservoir is managed to provide approximately 30 to 45 days of detention time. This allows for fine particle settling and pathogen reduction from natural UV exposure.

Unlike natural catchments, no defined natural tributaries enter the reservoir. The hydrological system is heavily managed through the following mechanisms:

- **Primary Inflow:** The primary inflow for the Terminal Reservoir is Lopez Lake water, delivered via a gravity-fed pipeline.

- **Diversion Channel:** Most surrounding runoff is intercepted by an 8- to 10-foot-wide diversion channel. This infrastructure leaves only minimal inflow from direct precipitation and limited runoff within the 23.8-acre non-diverted drainage area.
- **Primary Outflow:** The Terminal Reservoir's intake tower has four outlets at different elevations to provide water to the Lopez Water Treatment Plant (Appendix A2).
- **Precipitation:** Direct rainfall on the reservoir surface (averaging ~20 inches annually) provides a minor portion of the total water volume.
- **Orcutt Road:** Orcutt Road bisects the watershed and acts as a physical boundary. However, a half-mile segment of the road drains toward the reservoir, representing the primary risk for point-source contamination (e.g., vehicle spills).

Maps and figures of both watersheds are provided in Appendix B1, B2, and Figure 1.

**Land Use and Ownership**

The watershed includes both District-owned and privately owned parcels. The District maintains exclusive ownership of all land immediately adjacent to the reservoir to ensure a buffer for water quality. Additionally, two residences occupied by District staff are located within the watershed boundaries.

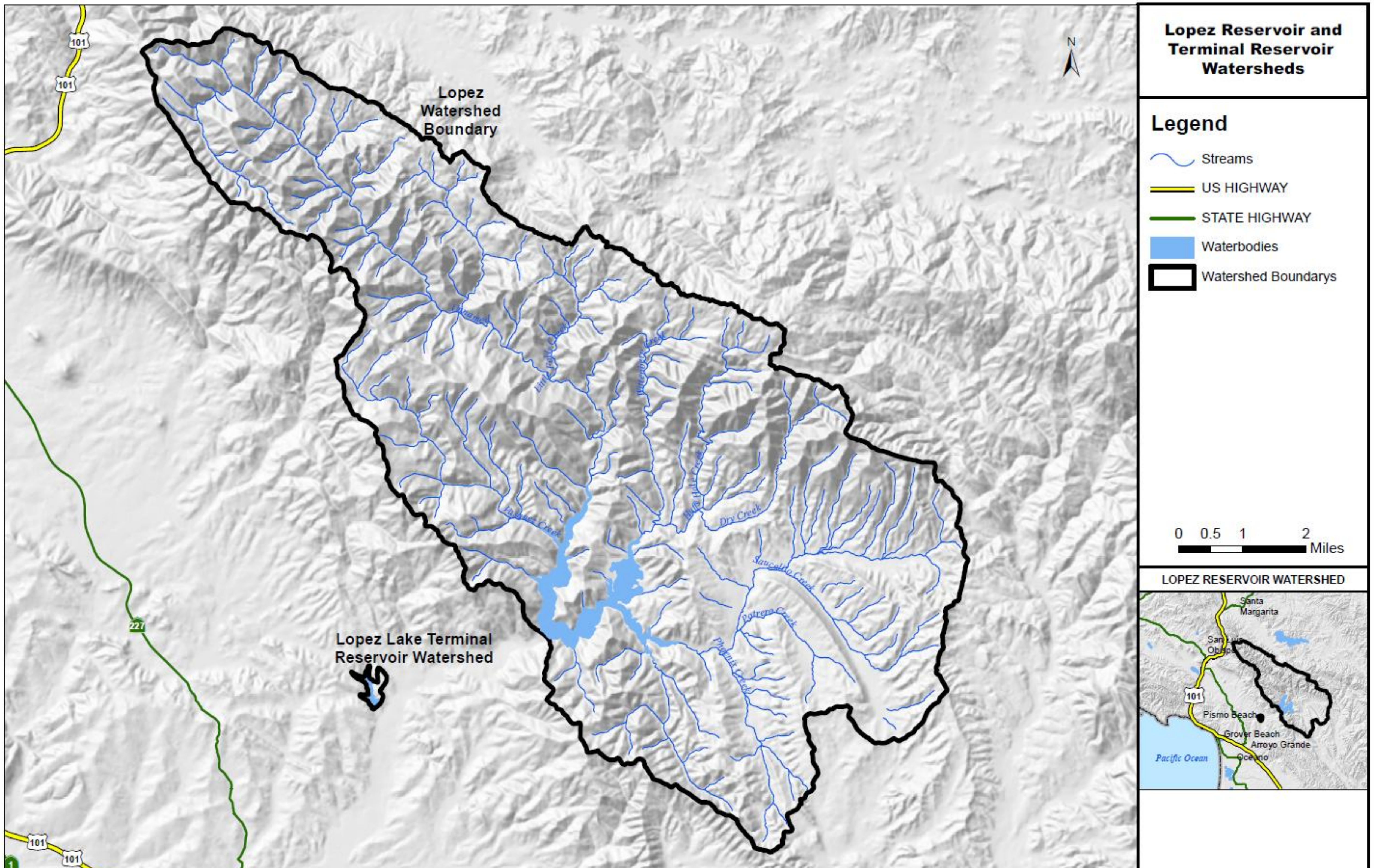



Figure 1: Lopez Lake and Terminal  Watershed

# POTENTIAL SOURCES OF CONTAMINATION IN THE WATERSHED

## Land Use

The Lopez Lake watershed faces multiple pressures from land use and population trends that could impact drinking water quality. Agricultural activities, including vineyards, orchards, row crops, and livestock grazing, can contribute nutrients, pesticides, herbicides, sediment, and microbial contaminants to streams and the reservoir. Low to moderate-density development increases impervious surfaces, alters runoff patterns, and introduces additional pollutants, while projected population growth over the next five years will increase water demand and generate more wastewater and runoff. Combined with the watershed's steep terrain and sensitivity to floods and fires, these factors elevate the risk of sedimentation, turbidity, nutrient enrichment, and chemical or microbial contamination in Lopez Lake. Effective watershed management and land-use planning are essential to protect water quality and ensure a reliable drinking water supply for the surrounding communities. See Table 1.

Table 1: Land Use, Population, and Water Quality Concerns

| Lopez Watershed: Land Use, Population, and Water Quality Concerns | | |
|---|---|---|
| **Factor** | **Description / Trends** | **Watershed Concerns (Lopez Lake as Drinking Water Source)** |
| **Agriculture** | Vineyards, orchards, row crops, livestock grazing across upland and valley areas. | Pesticides, herbicides, and fertilizers can enter runoff; nutrient loads (N, P) and manure can degrade water quality; soil disturbance increases erosion and sediment delivery; microbial contamination from livestock can affect drinking water safety. |
| **Urban / Rural Development** | Low- to moderate-density housing and infrastructure in watershed fringe areas. | Increased impervious surfaces alter runoff patterns, accelerate erosion, and can introduce pollutants (hydrocarbons, fertilizers, septic leachate); risk of sediment, nutrient, and microbial contamination increases. |
| **Population Trends** | Modest growth in South San Luis Obispo County; small communities near Lopez Lake projected to grow ~3–4% over next 5 years. | Higher water demand stresses reservoir storage; increased wastewater generation and runoff risk water quality degradation; cumulative land-use pressures may impair watershed function if unmanaged. |
| **Hydrologic Sensitivity** | Steep slopes and variable precipitation; post-fire and flood-prone areas. | Disturbed soils from agriculture, development, or fires increase sediment and turbidity; peak flows can mobilize pollutants; elevated risk for water treatment challenges. |
| **Overall Concern** | Combined impacts from agriculture, development, and population growth. | Drinking water quality and quantity at Lopez Lake are vulnerable to nutrient loading, chemical contamination, sedimentation, and microbial inputs; careful watershed management and land-use planning are required to protect public water supply. |

## Herbicides and Pesticide

The Lopez Lake Watershed area is known for its crops, vineyards, and farmland. Wine grapes and orchard crops are primarily grown within the 43,000-acre watershed. Pesticide usage is required to be reported to the County of San Luis Obispo Agriculture Commissioner's Office. During the past five years, on average, 1,000 acres per year, or about 2.3 percent of the watershed has been affected by pesticide usage. Over the last five years we can see a decline in the number of pesticides being used (See Table 2). Areas of the watershed where pesticides are being used can be seen in Figure 2.

Table 2: Summary of Pesticides Usage 2021-2025

| Summary of All Pesticide Usage 2021-2025 | | | |
|---|---|---|---|
| **Year** | **Treated Amount (Acre)** | **Treated Amount (Gallons)** | **Treated Amount (Pounds)** |
| 2021 | 1591 | 141 | 392.61 |
| 2022 | 2126 | 2846 | 446.7 |
| 2023 | 1209 | 5762 | 19.17 |
| 2024 | 1785 | 2365 | 65.1 |
| 2025 | 1268 | 2572 | 23.2 |
| **Average** | **1596** | **2737** | **189** |
| **Total** | **7979** | **13686** | **947** |

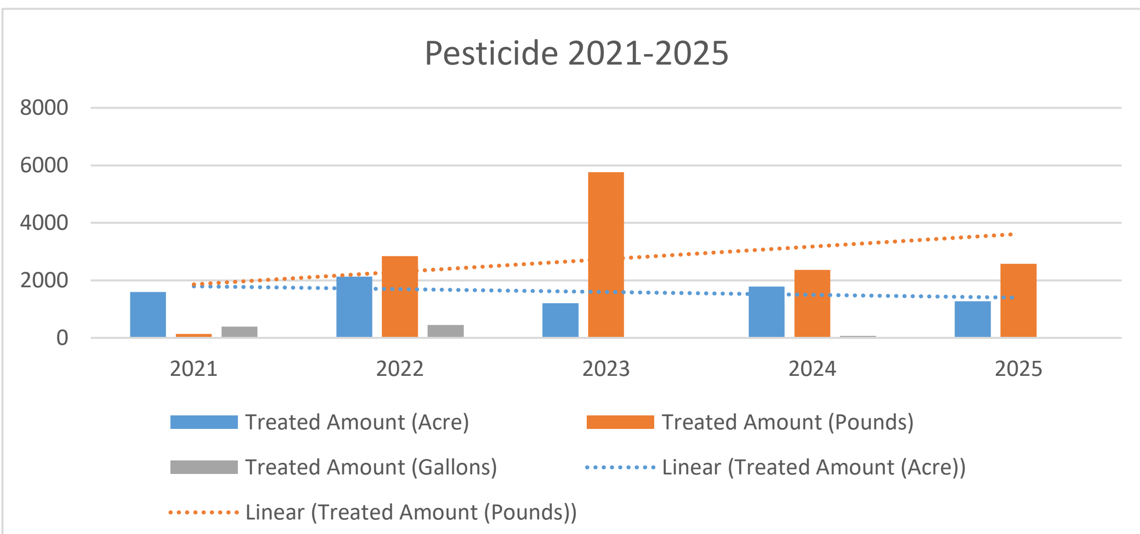



Figure 2: Summary of Pesticides Usage 2021-2025

## Precipitation Impacts and Water Storage

Over the past five years, the rain gage at Lopez Dam recorded approximately 125 inches of rainfall. Previous reports indicated that drought conditions tended to concentrate on certain water quality parameters, including metals, algae, and inorganics.

With the heavy rains in 2023, which resulted in a dam spill, water quality parameters were observed to spike, likely due to runoff and the geological composition of the surrounding hillsides. Table 3 summarizes total rainfall over the past five years, while Figure 3 illustrates monthly rainfall accumulation by year.

Table 3: Rain Total 2021-2025 (January to December).

| **Rain Totals: 2021-2025** | |
|---|---|
| **Year** | **Rain Total (inches)** |
| 2021 | 19.7 |
| 2022 | 16.9 |
| 2023 | 39.3 |
| 2024 | 25.9 |
| 2025 | 23.4 |
| **Total** | **125.2** |

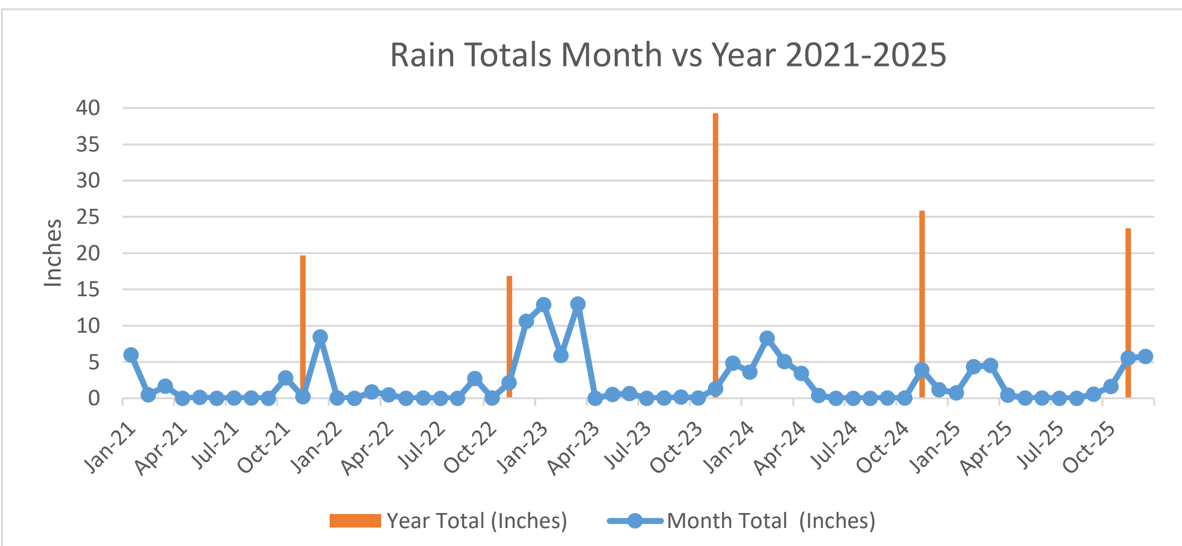



Figure 3: Rain total 2021-2025

Even though releases from Lopez Lake increased in 2025, the reservoir capacity remained above 80% during that year and did not present the same level of concern for lake health. Reservoir capacity plays a critical role in maintaining water quality and overall ecosystem stability at Lopez Lake. This relationship was most evident during the drought conditions of 2021 and 2022, when lake levels declined to approximately 20% capacity. As water levels dropped, higher concentrations of nutrients and metals were observed, and overall water quality conditions began to deteriorate.

Significant rainfall in 2023 refilled the reservoir, increasing storage capacity and improving both water supply reliability and overall lake health. This recovery highlights the importance of maintaining adequate reservoir capacity to support stable water quality conditions in Lopez Lake. Figure 4 shows downstream release and pipeline diversion versus lake capacity.

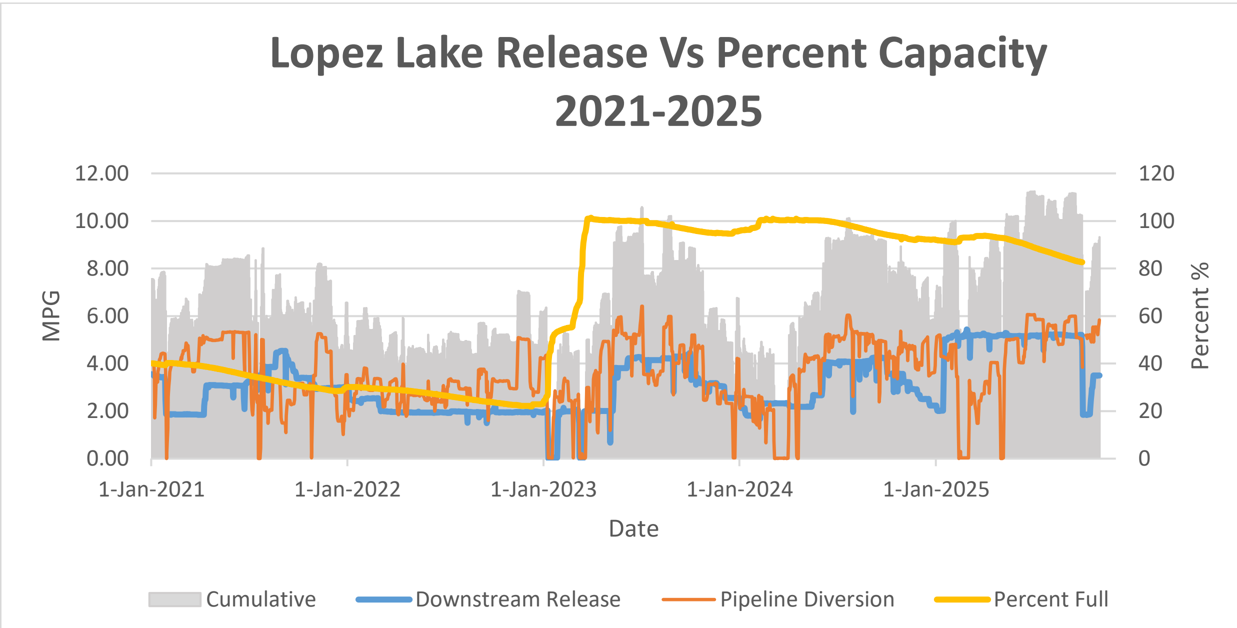



Figure 4: Lopez Lake Release vs Percent Capacity

## Wastewater Facilities

The sewage collection facility within the Lopez Recreation Area is still considered to be the biggest threat to the watershed. The Lopez Recreation Area sewer system is now operated by a subcontractor hired by the County Parks and Recreation Department. The facility is regularly inspected and maintained, mitigating the potential for a contaminating event. Keeping the sludge ponds closest to the creek and lake out of service also helps reduce this threat. All sludge waste is removed from the watershed. Although sewer overflows were reported during the period of this survey (Figure 5), no raw sewage entered Lopez Lake or any surface water within the watershed. For more information, see link below.

https://www.waterboards.ca.gov/water_issues/programs/sso/sso_map/sso_pub.shtml

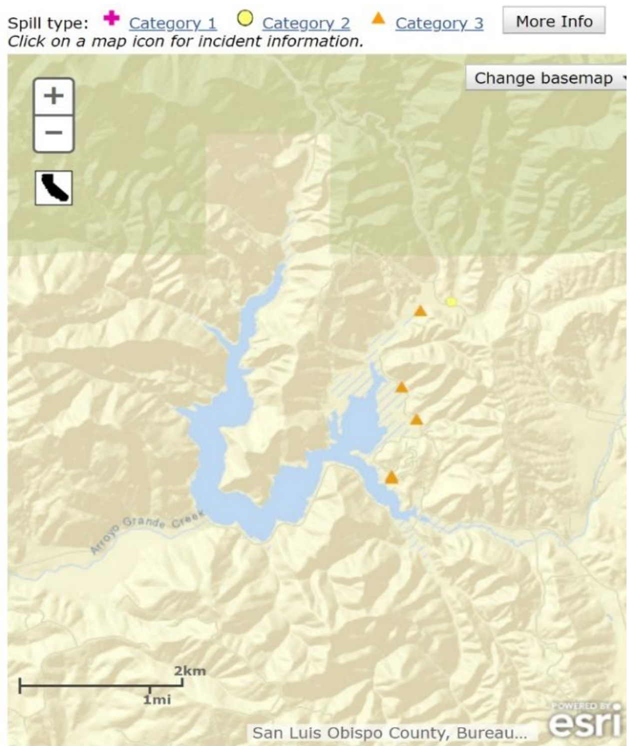



Figure 5: Reported Lopez Recreation Area Sewer Spills

The wastewater plant has a pipe crossing that crosses over the Wittenberg arm. Quarterly, the crossing and all four wastewater percolation ponds are inspected by District Staff (Figures 6-8). The ponds are located on the back side of Lopez Lake, across from Wittenberg Creek Arm.

Figure 6: Wittenberg Crossing

Figure 7: Wastewater Percolation Ponds (Full vs Dry)

Figure 8: Sewer Force Main Wear or Corrosion

## Recreation

Recreational activities at Lopez Lake, including boating, swimming, fishing, camping, hiking, picnicking, and wildlife viewing, are an important community benefit with a long history since the lake's creation in 1968. While these uses enhance public enjoyment, increased human and vessel activity can influence water quality through fuel and oil residues, shoreline erosion, sediment disturbance, invasive species introduction, and localized bacterial inputs, particularly during peak recreation seasons. Proper management, public education, and enforcement of boating and sanitation regulations are essential to protect the lake as a surface drinking water source while allowing safe recreational use.

The surrounding open space and trails support nature walks, birdwatching, and educational programs, while day-use areas and campgrounds host community gatherings and special events throughout the year. These activities provide year-round recreational opportunities while being managed to minimize impacts to the watershed and protect water quality.

Figure 9: Lopez Lake Marina and Launch Ramp

The lake has been divided into sections A-K to better understand and identify the sampling and monitoring areas of the lake. Map scaling is approximate. See Figure 10 below.

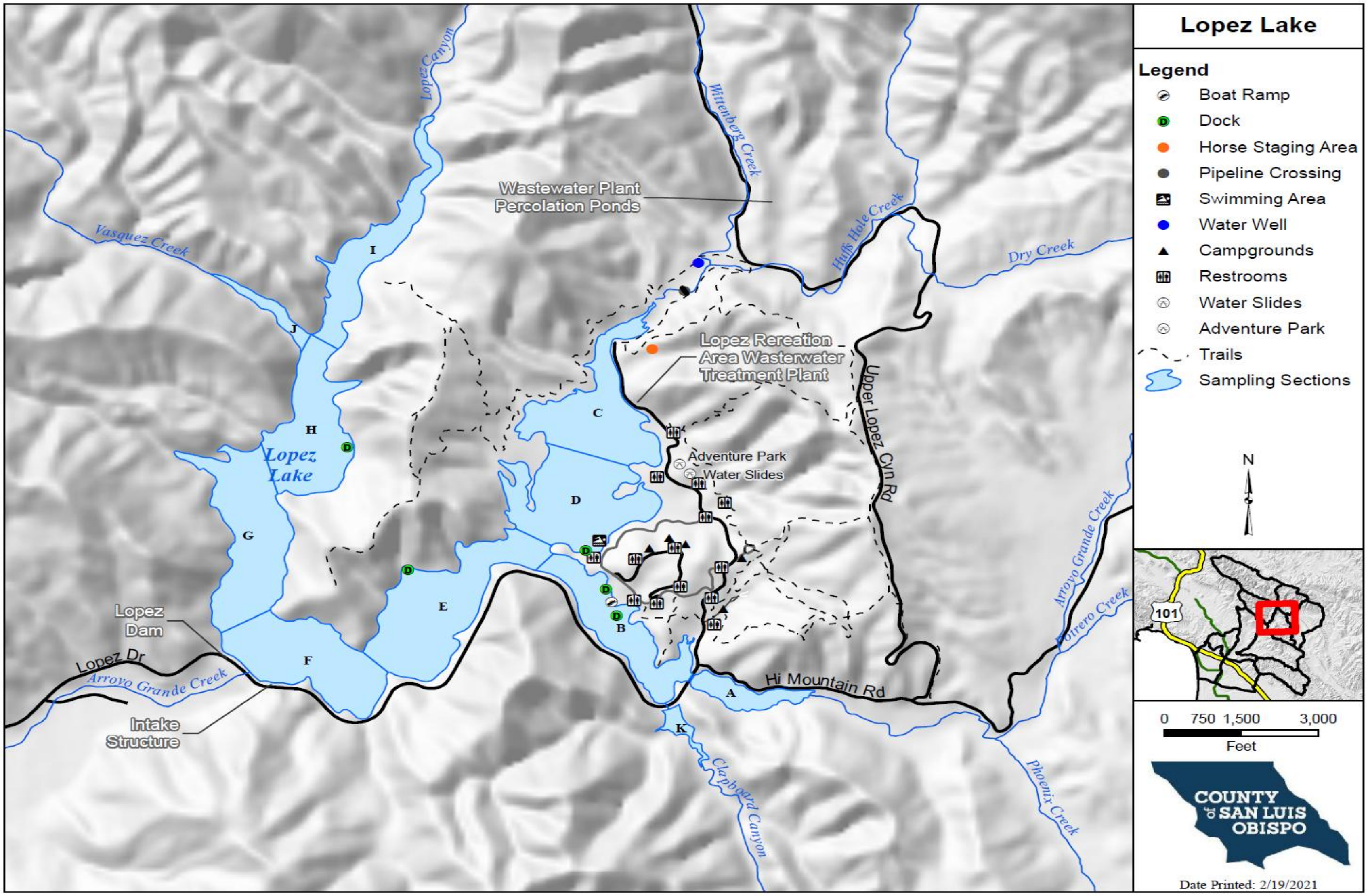



Figure 10: Lopez Reservoir and Creeks in Lopez Watershed

## Mine

Mines can affect lake watersheds in several significant ways, primarily by altering water chemistry, increasing sediment loads, and introducing toxic contaminants. Mining activities can expose naturally occurring minerals that, when in contact with water and air, produce acid mine drainage, lowering pH and mobilizing heavy metals such as arsenic, mercury, and aluminum into streams and lakes. Disturbed soils and waste rock can also increase erosion and sedimentation, reducing water clarity and smothering aquatic habitat. In addition, accidental spills, tailings failures, or legacy mine sites can cause long-term contamination, making watershed protection, monitoring, and remediation critical to safeguarding lake water quality and the downstream drinking water supply.

In our current research, we identified an “unknown” mercury mine on the Upper Lopez Canyon Rd connected to Wittenberg Creek (see Figure 11). For more information about mines, please see the link below: [Mining In San Luis Obispo County, California | The Diggings™](). 

Mercury naturally persists in lake sediments where it can be converted by bacteria into methylmercury and bioaccumulate in fish (OEHHA, 2020a). As a result, in 2020, the California Office of Environmental Health Hazard Assessment (OEHHA) placed Lopez Lake under a site-specific fish consumption advisory due to elevated mercury levels found in several species (OEHHA, 2020b). At this time, there is no evidence that mercury is currently impacting Lopez Lake’s waterways as a drinking water contaminant.

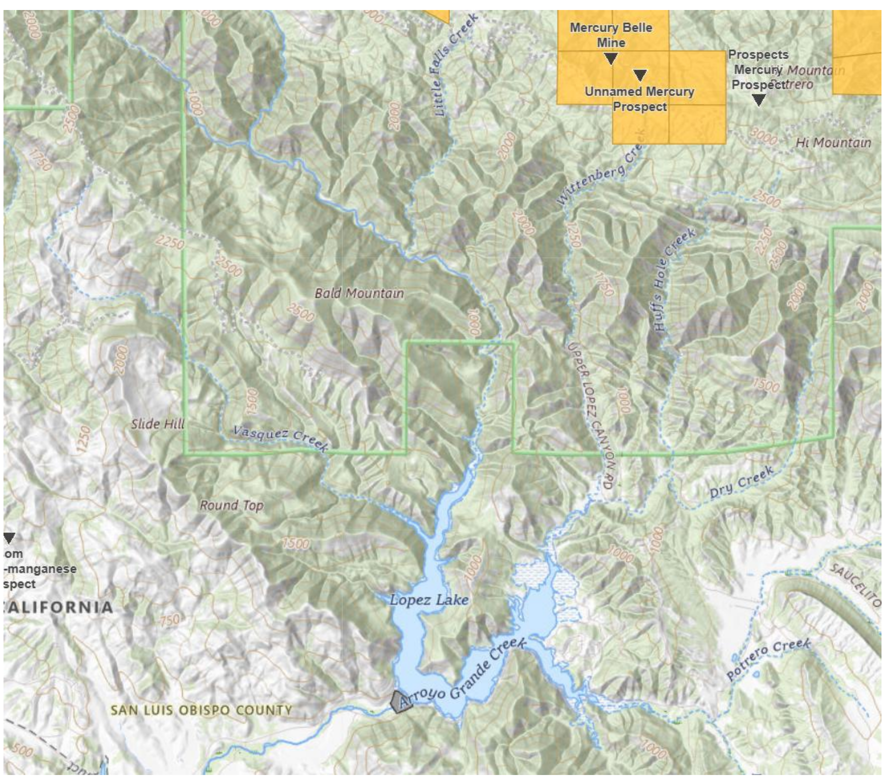


Figure 11: Map of the “Unknown” Mine off Upper Lopez Canyon Rd

## Hazards

**Fault Hazards – Impacts to Watersheds**

Geologic fault hazards, including seismic events and fault displacement, can adversely affect watershed function by altering both natural geomorphic processes and engineered infrastructure. Ground shaking and surface rupture may destabilize slopes, increasing the likelihood of landslides, accelerated erosion, and elevated sediment loading to streams and reservoirs. These processes can degrade water quality, increase turbidity, and negatively impact aquatic habitat and channel stability.

Fault activity may also disrupt groundwater systems by modifying subsurface flow paths, damaging aquifer formations, or altering the location and discharge rates of springs. Seismic events can further compromise water infrastructure, including pipelines, dams, intake structures, and treatment facilities, increasing the potential for contamination, service disruptions, and reduced system reliability.

Overall, geologic fault hazards present both short-term and long-term risks to watershed stability, surface and groundwater quality, and the consistent delivery of potable water. A fault hazard map is provided in Appendix C1.

**Landslide Hazards – Impacts to Watersheds**

Landslides can affect watersheds by washing soil, rocks, and debris into creeks, rivers, and reservoirs. This can make the water muddy, reduce water quality, and harm fish and other aquatic life. Sediment from landslides can also fill in reservoirs over time, reducing their ability to store water.

Landslides may block or change the path of streams, which can increase the risk of flooding in nearby areas. They can also damage water system facilities, such as pipelines and access roads, making it harder to deliver safe and reliable water.

Landslides are most likely to occur after heavy rain, earthquakes, or when hillsides are disturbed, and they remain an ongoing natural hazard in steep watershed areas. A landslide hazard map is provided in Appendix C2.

**Flood Hazards – Impacts to Lopez Lake and Arroyo Grande Creek**

Flood events in the Lopez Lake and Arroyo Grande Creek watershed can significantly affect surface water quality, sediment transport, and infrastructure. Intense or prolonged precipitation can increase runoff and stream flows, resulting in elevated sediment, debris, nutrients, and organic matter entering Arroyo Grande Creek and Lopez Lake. These inputs may increase turbidity, reduce reservoir storage capacity, and degrade aquatic habitat.

High flow conditions can mobilize contaminants from upstream land uses, including agricultural areas, roads, and developed lands, increasing the potential for water quality impacts during and following storm events. Flooding may also contribute to streambank erosion and channel instability within Arroyo Grande Creek, altering flow patterns and impacting riparian corridors.

Flood events pose risks to watershed infrastructure, including intake structures, spillways, access roads, and monitoring equipment. In addition, extreme flood conditions may stress dam and conveyance systems, requiring operational adjustments to maintain public safety and water supply reliability.

Overall, flood hazards present both short-term and long-term concerns for watershed stability, water quality, and the protection of drinking water resources within the Lopez Lake and Arroyo Grande Creek system. A flood hazard map is provided in Appendix C3.

**Fire Hazards – Impacts to the Lopez Lake Watershed**

Wildfire represents a significant geohazard in the Lopez Watershed, especially under conditions of prolonged drought, elevated temperatures, low humidity, and abundant fuels. Severe wildfires can remove vegetation cover and organic soil horizons, altering hydrologic and geomorphic responses across steep terrain. Loss of vegetative interception and root reinforcement increases surface runoff and soil erodibility, elevating the risk of post-fire erosion, sediment yield, and debris flows during subsequent storm events. These effects can degrade water quality, increase turbidity, contribute to reservoir sedimentation, and impair aquatic habitat and infrastructure performance.

In August 2025, the Gifford Fire burned through wildlands northeast of Santa Maria and expanded into San Luis Obispo County, prompting evacuation orders and the temporary closure of the Lopez Lake area as fire behavior advanced toward the watershed. At its peak, the fire consumed well over 100,000 acres in rugged terrain and threatened hundreds of structures and infrastructure components in the region, however, none of the Lopez Lake watershed was impacted by the fire.

**Watershed-Specific Concerns:**

- **Vegetation Loss and Soil Alteration:** Severe burning consumes canopy and understory vegetation and can alter soil properties, including the development of water-repellent (hydrophobic) soil layers. These conditions can increase the volume and velocity of post-fire runoff, elevate peak flows, and enhance the delivery of ash, sediment, and debris to Arroyo Grande Creek and Lopez Lake.

- **Erosion and Sediment Loading:** Post-fire hillslope erosion and channel scour can increase sediment yields to receiving waters, raising turbidity levels and accelerating reservoir sedimentation, which can reduce storage capacity over time and complicate water treatment processes.

- **Debris Flows and Flash Flooding:** In the first several years after a high-severity fire, burned slopes may be susceptible to intense storms producing debris flows and flash flooding, posing risks to water supply infrastructure, roads, bridges, and monitoring stations within the watershed.

- **Water Quality Impacts:** Ash, charcoal, and mobilized soil contain nutrients and potential contaminants that can enter surface waters, affecting chemical and physical water quality parameters (e.g., turbidity, nitrogen, phosphorus), and increasing treatment requirements for potable supply systems.

- **Infrastructure and Public Safety:** Wildfire can directly threaten watershed access roads, transmission lines, and recreation infrastructure. During the Gifford Fire, evacuation orders were issued for zones adjacent to Lopez Lake and within upland portions of the watershed, underscoring direct risk to people and facilities during active wildland fire.

Fire hazards in the Lopez Watershed present both immediate and prolonged risks to watershed stability, hydrology, and water quality. Severe wildfires like the 2025 Gifford Fire significantly increase the potential for post-fire erosion, sedimentation, and water quality degradation. These hazards necessitate integrated planning for fuel reduction, post-fire rehabilitation, watershed monitoring, and adaptive management to safeguard water resources and infrastructure. A fire hazard map is provided in Appendix C4.

## Agriculture

Agriculture in the Lopez Lake watershed includes vineyards, orchards, crop fields, and some livestock grazing. These land uses can contribute chemical runoff (pesticides/herbicides), nutrients, sediment, and microbial contaminants to streams and Lopez Lake. Such inputs pose concerns for water quality, reservoir operations, and aquatic ecosystem health, particularly during storm runoff events or under land management practices that expose soils or allow livestock access to waterways.

**Key Agricultural Types in the Lopez Lake/Arroyo Grande Creek Watershed**

- **Vineyards and Wine Grape Production**
  Wine grapes are widely grown within the Lopez Lake watershed. Vineyard operations often use pesticides, herbicides, and fertilizers to manage vines and pests. These chemicals can be mobilized during rainfall and runoff events, reaching creeks and the reservoir and potentially degrading water quality.
- **Orchard and Crop Farming**
  Orchard crops and other agricultural fields (e.g., vegetables in upland or valley areas) are significant land uses in the watershed. These operations can contribute nutrient and pesticide loads to surface water via runoff. Soil disturbance from tillage can also increase erosion and sediment transport to streams and the reservoir.
- **Grazing and Livestock (Cattle and Horses)**
  Cattle grazing and horse corrals occur on private lands in parts of the watershed upstream of Lopez Lake. Livestock can contribute to nutrient loading (manure),

elevated bacteria levels (e.g., coliforms and E. coli), and bank destabilization, particularly if animals access streams or riparian areas.

## WATER QUALITY ASSESSMENT

This section summarizes water quality issues within the watershed based on analytical results and field inspections conducted over the past five years. In recent years, however, the most significant influence on watershed conditions has been the prolonged reduction in rainfall, both locally and throughout the state of California. Vegetation within the watershed appears visibly dry, and water levels in Lopez Lake, surface waters, and surrounding groundwater aquifers have declined. In contrast, 2023 brought a period of significant rainfall, which had the potential to impact or damage native aquatic and riparian ecosystems.

Data availability has decreased compared to the previous watershed survey due to reduced water levels / drought conditions during half of the monitoring period (2021-2023) and the inability to take samples. All available data, along with historical precipitation records, are provided in the following document for review.

### Water Quality Monitoring Program

The following sample matrix summarizes suggested sampling for the Lopez Project watersheds (see Table 4).

Table 4: Water Quality Monitoring Matrix-System Compliance

| Site | Site Location | Bacteriological | Physical | Limnology | Algal Toxins | General Mineral | Aluminum/Arsenic | Inorganic | Nutrients | VOC | SOC | TOC | Enterococcus | Giardia Cryptosporidium |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Lake** | Creeks | Q | Q | ----- | ----- | Q | Q | A | Q | 3 | 9 | ----- | Q | A |
| | Section C | M | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | M | ----- |
| | Intakes | ----- | W/M | W/M | FD | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- |
| **Terminal and Treatment Plant** | Influent to Terminal | W | W | ----- | ----- | Q | M | A | M | 3 | 9 | M | W | ----- |
| | Influent to Plant | W | W | W | FD | Q | M | A | Q | 3 | 9 | M | ----- | ----- |
| | LWTP Treated | W | W | ----- | FD | Q | M | A | ----- | 3 | 9 | ----- | ----- | ----- |
| | LWTP Delivered | W | W | ----- | FD | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- |

W = Weekly sampling; M = Monthly sampling; W/M = Weekly or monthly sampling based on the season; Q = Quarterly sampling; A = Annual sampling; 3 = Sampling every 3 years; 9 = Sampling every 9 years; FD = following toxin detection

## Constituents of Concern

**Microbial -** Under the Surface Water Treatment Rule (SWTR), water systems using lakes, rivers, or reservoirs must address microbial risks by ensuring effective filtration and disinfection to remove or inactivate pathogens, including bacteria, viruses, and protozoa such as Cryptosporidium and Giardia. Systems are required to monitor source and treated water, use indicator organisms like E. coli to detect contamination, and maintain operational controls to prevent microbial intrusion, including managing runoff, protecting watershed areas, and mitigating algal blooms. The rule ensures that surface water sources deliver safe, pathogen-free drinking water to consumers.

**Inorganics and Metals -** Heavy metals including arsenic, aluminum, and mercury—are primary concerns within a watershed due to their ability to bioaccumulate in sediments and aquatic life. Unlike microbial pollutants, these metals do not degrade over time, posing persistent neurological and toxicological risks to human health and ecosystems. While some originate from natural mineral deposits and atmospheric deposition, others are introduced through industrial discharges or legacy mining runoff.

In the Lopez Lake watershed, these inorganic constituents—including nutrients, salts, and trace metals—typically enter the reservoir through storm runoff, geological erosion, and agricultural activities. Elevated levels can degrade water quality by increasing salinity and altering pH levels. Furthermore, nutrient loading can trigger algal growth, which depletes dissolved oxygen and stresses aquatic habitats. Because Lopez Lake is a primary municipal water source, high concentrations of inorganics can complicate the water treatment process and may pose public health risks if levels exceed regulatory drinking water standards.

**Hardness** - Water hardness results from calcium and magnesium dissolved as water moves through soils and rock. In the Lopez watershed, elevated hardness can indicate increased erosion or sediment input. Hardness is also an important consideration for drinking water treatment, as it can affect chemical dosing and contribute to scaling within the distribution system, potentially impacting overall water quality.

**Nutrients –** Treated wastewater disposal and agricultural activities, including cattle grazing and field crop fertilization, can contribute nutrients to both surface water and groundwater supplies. In the Lopez watershed and reservoir, elevated phosphorus loading is a concern because it can promote algal growth and related water quality issues.

**Algae -** Algae in a watershed and lake can significantly impact water quality and ecosystem health. Excessive algal growth, especially during nutrient-rich conditions, can alter the physical characteristics of the water, causing green or brown discoloration, unpleasant odors, and increased turbidity, which reduces light penetration and affects aquatic life.

Of particular concern are Harmful Algal Blooms (HABs), which produce toxins that threaten human health, wildlife, and livestock. HABs can disrupt recreational use, damage water treatment processes, and cause long-term ecological imbalances, making their prevention, monitoring, and management critical for maintaining safe and clean water supplies.

**Organics -** Organic contaminants in surface water, particularly pesticides and herbicides from agricultural runoff, are a major concern for drinking water sources because they can be toxic to humans and aquatic life even at low concentrations. Additionally, natural organic matter (measured as total organic carbon, TOC) in the water can react with disinfectants like chlorine during treatment to form disinfection byproducts (DBPs), including trihalomethanes (THMs) and haloacetic acids (HAA5), which pose long-term health risks. These combined issues make careful monitoring, watershed management, and treatment processes essential to ensure safe drinking water.

## Microbiological Summary

Total coliform, *E. coli, Giardia* and *Cryptosporidium* levels in the watershed creeks are monitored routinely as a potential indicator of pathogens in the watershed. Less data is available from Clapboard Canyon Creek, Wittenberg, and Vasquez Creeks (no data) since these creeks do not flow year-round.

As shown in Table 5, Clapboard Canyon Creek Arm and Arroyo Grande Creek had the highest total coliform levels on average over the past five years (both creeks had low flow from 2021-2025). Lopez Creek and Arroyo Grande Creeks had the highest *E. coli* levels on average over the last five years (Figure 12 and 13). Cryptosporidium oocysts and Giardia cysts were found in Arroyo Grande Creek. After transitioning from drought conditions to a rainy year, it could be causing significant impacts on all the creeks' data. Arroyo Grande Creek and Lopez Creek have been the only creeks consistently flowing throughout the last five years, whereas the other creeks have become dry. Wading birds, waterfowl, and wildlife inhabit the Lopez watershed area. It is possible that because of drought conditions, they may be concentrating or relocating to these areas, causing an increase in populations in those areas and, in turn, increasing nutrient levels in both creeks.

While wildlife, grazing animals, and agricultural activity have been observed upstream of the sampling locations in all the monitored creeks, Arroyo Grande Creek is believed to have the greatest number of grazing animals and the most agricultural activity.

During the period covered by this survey update, coliform and *E. coli* levels seem to vary with the time of year. However, Arroyo Grande Creek seems to be holding steady from one year to the next, which may have to do with drought conditions. Monitoring of the creeks for pathogens or pathogen indicator species should continue, as wild and domestic animals can be significant sources of microbial pathogens like *Giardia* and *Cryptosporidium*.

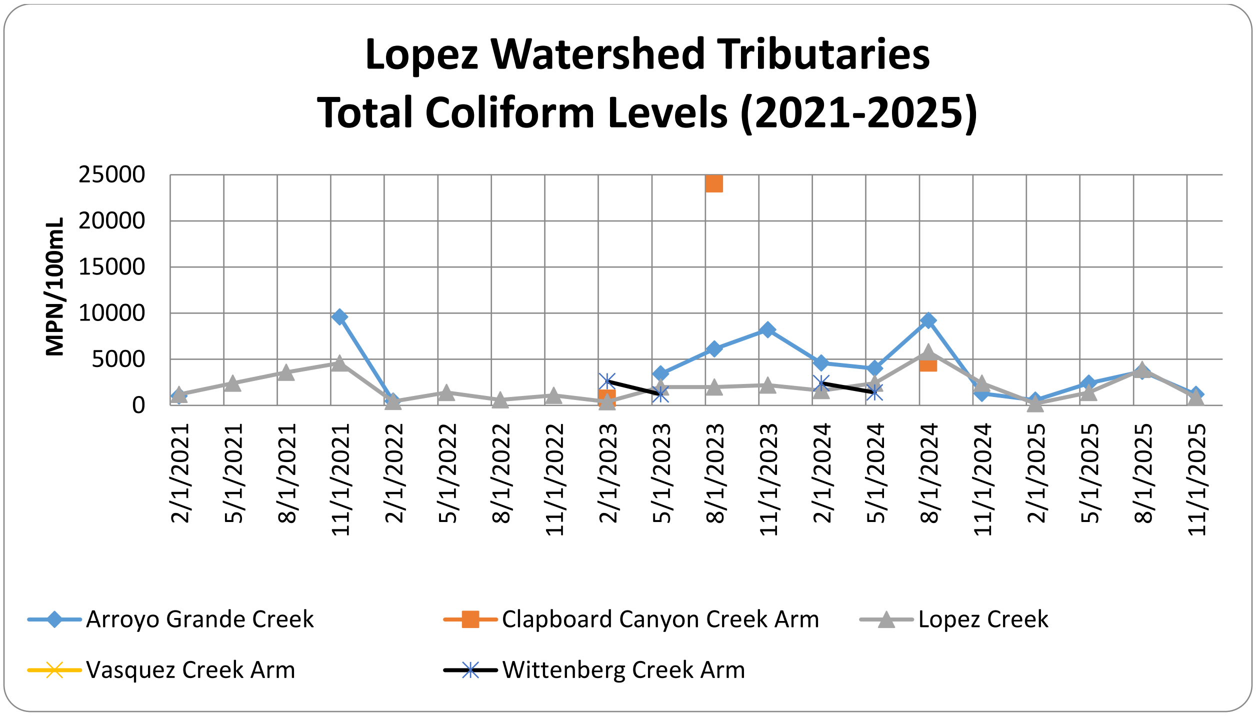



Figure 12: Comparison of Total Coliform levels between Lopez Lake tributaries

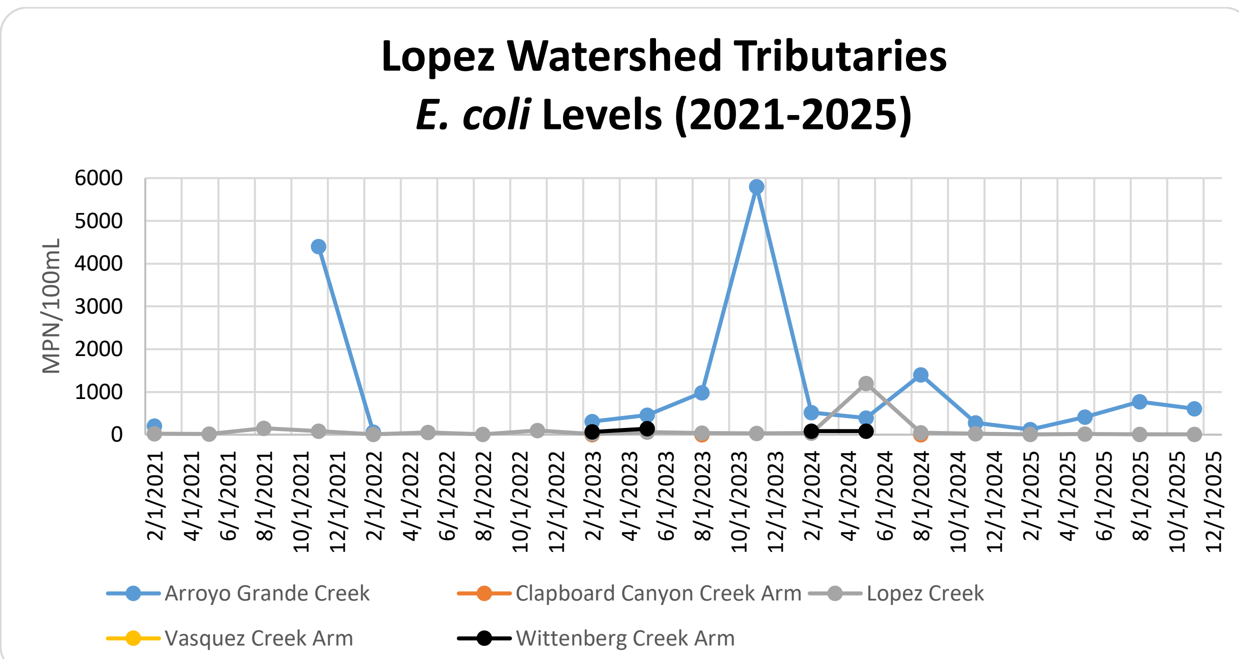



Figure 13: Comparison of *E. coli* levels between Lopez Lake tributaries

**Influent to Terminal:**

The "Influent to Terminal" sample location is used to determine the water quality entering the Terminal Reservoir from Lopez Lake. The "Plant Influent" sample is used to determine the water quality after the 30-to-45-day detention time in the Terminal Reservoir and prior to treatment at the Lopez Water Treatment Plant. Bacteriological water quality is similar at these two locations, except the Plant Influent tends to have both higher *E. coli and total coliform* levels. This may be attributed to waterfowl activity and the nesting swallow population located near the intake structure to the plant influent. Total coliform and *E. coli* levels tend to increase during the spring and taper off during the fall season when water temperatures increase, and nesting ceases (Figures 14 and 15).

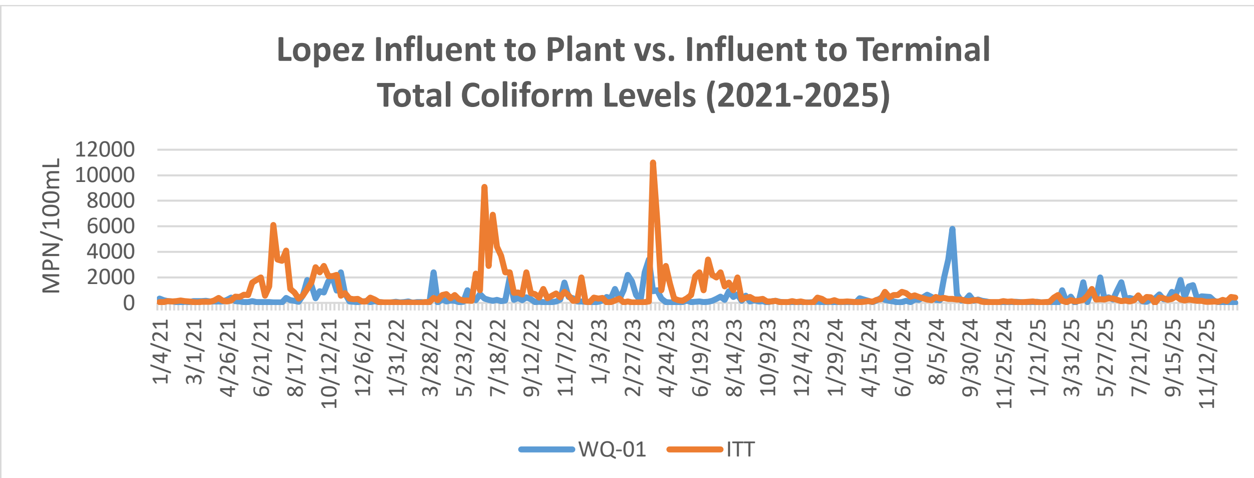



Figure 14: Influent to Plant vs. Influent to Terminal Total Coliform levels

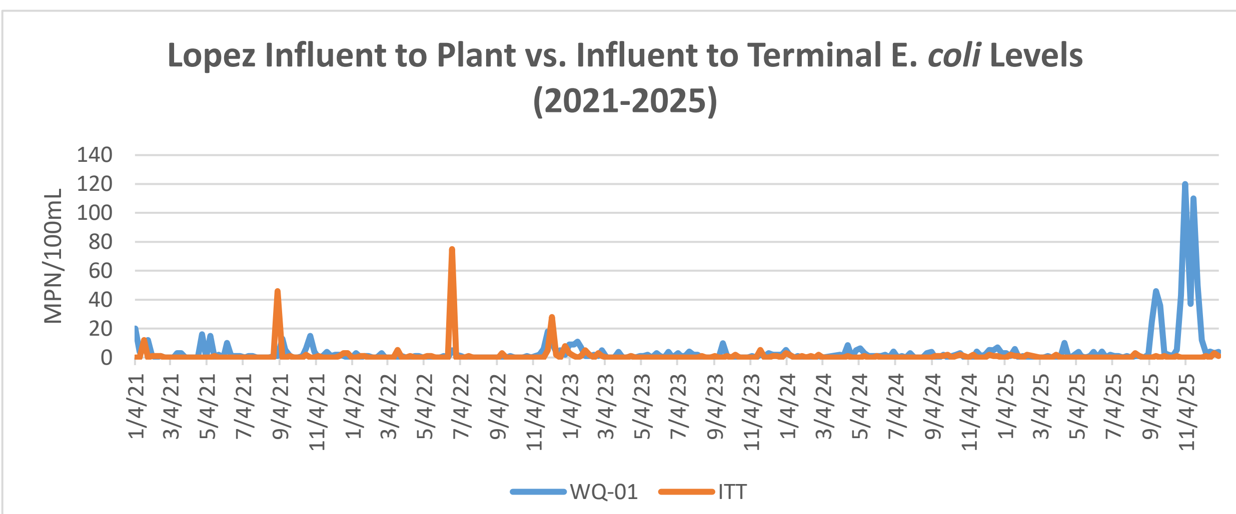



Figure 15: Plant Influent vs. Influent to Terminal *E. Coli* levels

Table 5: Creek and Terminal Microbiological Data Summary, 2021 through 2025

| Site | | Total Coliform (MPN/100 mL) | *E. Coli* (MPN/100 mL) | Cryptosporidium (Oocysts/L) | *Giardia* (Cysts/L) |
|---|---|---|---|---|---|
| Arroyo Grande | Minimum | 460 | 62 | ND | ND |
| | Maximum | 9600 | 5800 | 0.19 | 0.46 |
| | Average | 3883 | 1114 | 0 | 2 |
| | Median | 3400 | 460 | 0.185 | 0.365 |
| | Count | 15 | 15 | 4 | 4 |
| Lopez Creek | Minimum | 200 | 7 | ND | ND |
| | Maximum | 5800 | 1200 | ND | ND |
| | Average | 2024 | 97 | 0 | 0 |
| | Median | 1800 | 26 | 0 | 0 |
| | Count | 20 | 20 | 5 | 5 |
| Vasquez Creek | Minimum | 0 | 0 | 0 | 0 |
| | Maximum | 0 | 0 | 0 | 0 |
| | Average | 0 | 0 | 0 | 0 |
| | Median | 0 | 0 | 0 | 0 |
| | Count | 0 | 0 | 0 | 0 |
| Wittenberg Creek | Minimum | 1200 | 65 | ND | ND |
| | Maximum | 2600 | 140 | ND | ND |
| | Average | 1900 | 93 | ND | ND |
| | Median | 1900 | 84 | ND | ND |
| | Count | 4 | 4 | 2 | 2 |
| Clapboard Cyn Crk | Minimum | 790 | 3 | ND | ND |
| | Maximum | > 24000 | 1 | ---- | ---- |
| | Average | 4600 | 2 | ---- | ---- |
| | Median | 790 | 3 | ND | ND |
| | Count | 4600 | 3 | ND | ND |
| Influent to Terminal | Minimum | ND | ND | ----- | ----- |
| | Maximum | 11000 | 75 | ----- | ----- |
| | Average | 726 | 4 | ----- | ----- |
| | Median | 260 | 1 | ----- | ----- |
| | Count | 250 | 250 | 0 | 0 |
| Influent to Plant | Minimum | 10 | < 1 | ND | ND |
| | Maximum | 5800 | 120 | ND | ND |
| | Average | 372.7 | 6.8 | ND | ND |
| | Median | 140 | 2 | ND | ND |
| | Count | 255 | 255 | 3 | 3 |

Under the California Health and Safety Code Department's draft "Guidance for Freshwater Recreational Areas," body-contact reservoirs must monitor for microbial quality. This monitoring should consist of sampling for total and fecal coliform bacteria. Samples for *E. coli* and enterococcus bacteria are also recommended. Since 2021, Lopez Lake and Influent-to-Terminal sampling have included Enterococci monitoring (see Table 6). The recreation area should post appropriate signage if levels ever exceed the values in Table 7.

Table 6: Enterococci Monitoring

| Site | | Enterococci (MPN/100 mL) |
|---|---|---|
| Section C | Minimum | < 1 |
| | Maximum | 9 |
| | Average | < 1 |
| | Median | < 1 |
| | Number of Samples | 12 |
| Influent to Terminal | Minimum | < 1 |
| | Maximum | 4 |
| | Average | < 1 |
| | Median | < 1 |
| | Number of Samples | 49 |

Table 7: Bacteria Exceedance Levels

| Parameter | Single Sample (MPN/100 mL) | 30-day Average (MPN/100 mL) |
|---|---|---|
| Total coliform | 10,000 | 1,000 |
| Fecal coliform | 400 | 200 |
| *E. coli* | 235 | 126 |
| Enterococcus | 61 | 33 |

## Inorganics and Metal Summary

General minerals and inorganic chemicals are routinely used as indicators of water quality. While these constituents occur naturally in the environment, elevated concentrations may suggest potential industrial or agricultural contamination within the watershed. Aluminum, arsenic, iron, and manganese levels measured in the Creek and Terminal Reservoir are summarized in Table 8 and Table 9.

Table 8: Metal Summary, 2021 through 2025

| Sample Site | | Aluminum (µg/L) | Arsenic (µg/L) | Iron (µg/L) | Manganese (µg/L) |
|---|---|---|---|---|---|
| **DW MCL** | | 200 | 10 | 300 | 50 |
| Arroyo Grande Creek | Minimum | 11.8 | 4.2 | 150 | 76 |
| | Maximum | 170 | 11 | 740 | 380 |
| | Average | 87 | 6 | 370 | 210 |
| | Median | 84 | 6 | 360 | 210 |
| | Count | 6 | 20 | 20 | 20 |
| Lopez Creek | Minimum | < 20 | < 1.0 | 20 | 2.2 |
| | Maximum | 110 | 1 | 170 | 8 |
| | Average | 26.9 | 0.6 | 53 | 5.5 |
| | Median | 20.2 | 0.5 | 34 | 6 |
| | Count | 9 | 19 | 20 | 20 |
| Vasquez Creek | Vasquez Creek was observed to be dry during this time frame. No samples were taken | | | | |
| Wittenberg Creek | Minimum | < 20 | 1.1 | 110 | 14 |
| | Maximum | < 20 | 1.6 | 140 | 50 |
| | Average | < 20 | 1.3 | 130 | 32 |
| | Median | < 20 | 1.2 | 120 | 32 |
| | Count | 2 | 4 | 2 | 2 |
| Clapboard Canyon Creek | Minimum | NA | 2.9 | 120 | 21 |
| | Maximum | NA | 4.2 | 2800 | 490 |
| | Average | NA | 4 | 630 | 173 |
| | Median | NA | 4.1 | 230 | 180 |
| | Count | NA | 3 | 9 | 9 |
| Influent to Terminal | Minimum | < 20 | 2.8 | 21 | 12 |
| | Maximum | 204 | 8.4 | 210 | 380 |
| | Average | 130 | 4.5 | 54 | 85 |
| | Median | 161 | 3.7 | 37 | 71 |
| | Count | 10 | 70 | 18 | 19 |
| Lopez Raw | Minimum | <10 | 3.0 | 1.9 | 3.9 |
| | Maximum | 68 | 8.1 | 190 | 170 |
| | Average | 7.6 | 5.3 | 19 | 29 |
| | Median | 0 | 5.4 | 12 | 18 |
| | Count | 9 | 65 | 120 | 120 |

Table 9: General Mineral/Inorganic Chemicals Summary, 2021 through 2025

| Site | | Total Alkalinity (mg/L) | Chloride (mg/L) | Electrical Conductivity (mg/L) | Sodium (mg/L) | pH-Field | Sulfate (mg/L) | Total Dissolved Solids (mg/L) |
|---|---|---|---|---|---|---|---|---|
| Arroyo Grande | Minimum | 123 | 26 | 840 | 14 | 7.61 | 88 | 550 |
| | Maximum | 343 | 160 | 1100 | 56 | 8.90 | 200 | 790 |
| | Average | 291 | 40 | 956 | 41 | 8.20 | 138 | 657 |
| | Median | 307 | 30 | 950 | 41 | 8.24 | 140 | 650 |
| | Count | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| Lopez Creek | Minimum | 234 | 9 | 700 | 10 | 7.85 | 110 | 460 |
| | Maximum | 331 | 12 | 920 | 60 | 8.77 | 140 | 560 |
| | Average | 290 | 10 | 808 | 16 | 8.26 | 128 | 525 |
| | Median | 290 | 10 | 817 | 14 | 8.26 | 130 | 535 |
| | Count | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Wittenberg Creek | Minimum | 210 | 13 | 730 | 31 | 8.09 | 150 | 510 |
| | Maximum | 233 | 150 | 810 | 33 | 8.60 | 170 | 530 |
| | Average | 220 | 48 | 760 | 32 | 8.34 | 158 | 520 |
| | Median | 218 | 14 | 750 | 32 | 8.34 | 155 | 520 |
| | Count | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| Clapboard Cyn Crk | Minimum | 181 | 25 | 730 | 34 | 7.27 | 140 | 490 |
| | Maximum | 218 | 30 | 900 | 36 | 8.71 | 240 | 610 |
| | Average | 194 | 27 | 790 | 35 | 8.20 | 177 | 533 |
| | Median | 183 | 25 | 740 | 35 | 8.62 | 150 | 500 |
| | Count | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Influent to Terminal | Minimum | 162 | 12 | 580 | 18 | 7.71 | 29 | 370 |
| | Maximum | 306 | 30 | 930 | 34 | 8.58 | 180 | 660 |
| | Average | 237 | 17 | 658 | 25 | 8.10 | 120 | 507 |
| | Median | 230 | 15 | 630 | 22 | 8.08 | 110 | 490 |
| | Count | 18 | 18 | 18 | 17 | 18 | 18 | 18 |
| Influent to Plant | Minimum | 187 | 14 | 630 | 20 | 8.06 | 97 | 400 |
| | Maximum | 283 | 31 | 905 | 62 | 8.43 | 160 | 610 |
| | Average | 238 | 19 | 736 | 34 | 8.26 | 122 | 496 |
| | Median | 234 | 16 | 685 | 32 | 8.27 | 111 | 462 |
| | Count | 5 | 5 | 5 | 5 | 5 | 5 | 5 |

Some additional constituents monitored at our source water but did not detect above State reporting limits: antimony, beryllium, chromium, copper, cyanide, mercury, MBAS, nickel, perchlorate, potassium, thallium, selenium, silver, VOC, and zinc.

Aluminum is regulated under a secondary drinking water standard with a maximum contaminant level (MCL) of 200 µg/L. Aluminum concentrations in the creeks are generally below this secondary MCL. A slight increase was observed in Arroyo Grande Creek in 2023 and 2024, likely attributable to the unusually high rainfall experienced in 2023 (Figure 16).

While aluminum levels remain well below the MCL, average concentrations in several watershed creeks have increased compared to the previous five-year survey period. In contrast, aluminum concentrations in treated water from the Lopez Water Treatment Plant have consistently met all MCL requirements and remained relatively stable. Overall, aluminum does not appear to pose a concern within the watershed at this time.

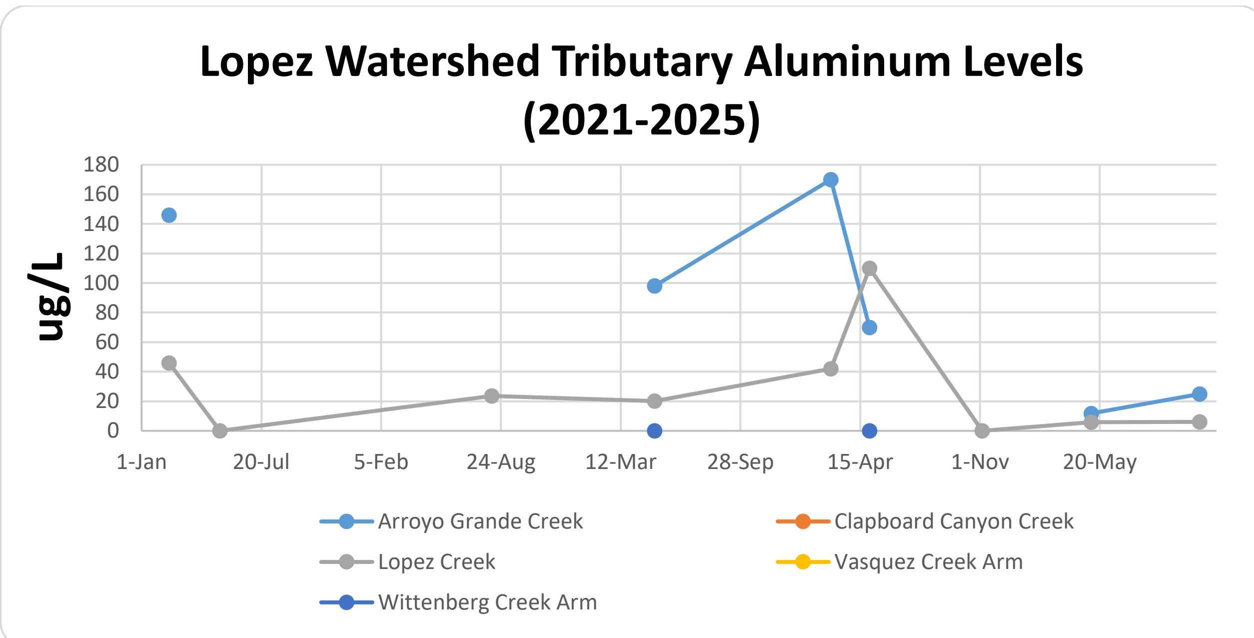



Figure 16: Aluminum Levels in Creeks in the Lopez Watershed

Arsenic is regulated under a primary Maximum Contaminant Level (MCL) of 10 µg/L in drinking water and may originate from both natural sources, such as erosion of geologic deposits and runoff from orchard areas, as well as anthropogenic activities. Arsenic concentrations in Arroyo Grande Creek show a gradual upward trend. In February 2023, arsenic levels in the creek exceeded the 10 µg/L MCL, likely a result of runoff associated with heavy rainfall in January 2023, when nearly 13 inches of precipitation were recorded.

During this event, arsenic concentrations in both the LWTP's raw water and finished (treated) water remained below the MCL. However, over the past five years, arsenic levels have exceeded one-half of the MCL during multiple months in the Influent to Terminal, Influent to LWTP, and LWTP Treated water (see Figure 17). In response, arsenic sampling at LWTP was increased from quarterly to monthly frequency to provide closer monitoring of concentrations in drought conditions.

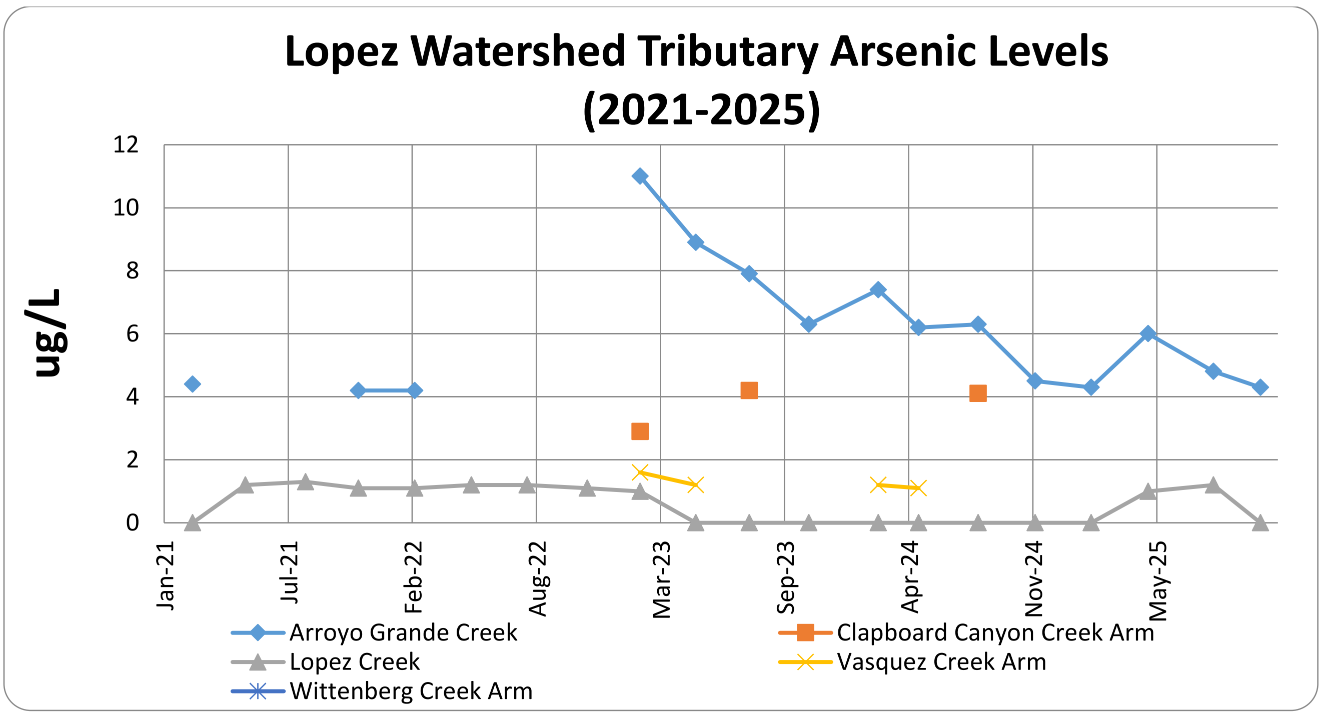



Figure 17: Arsenic Levels in Creeks in the Lopez Watershed

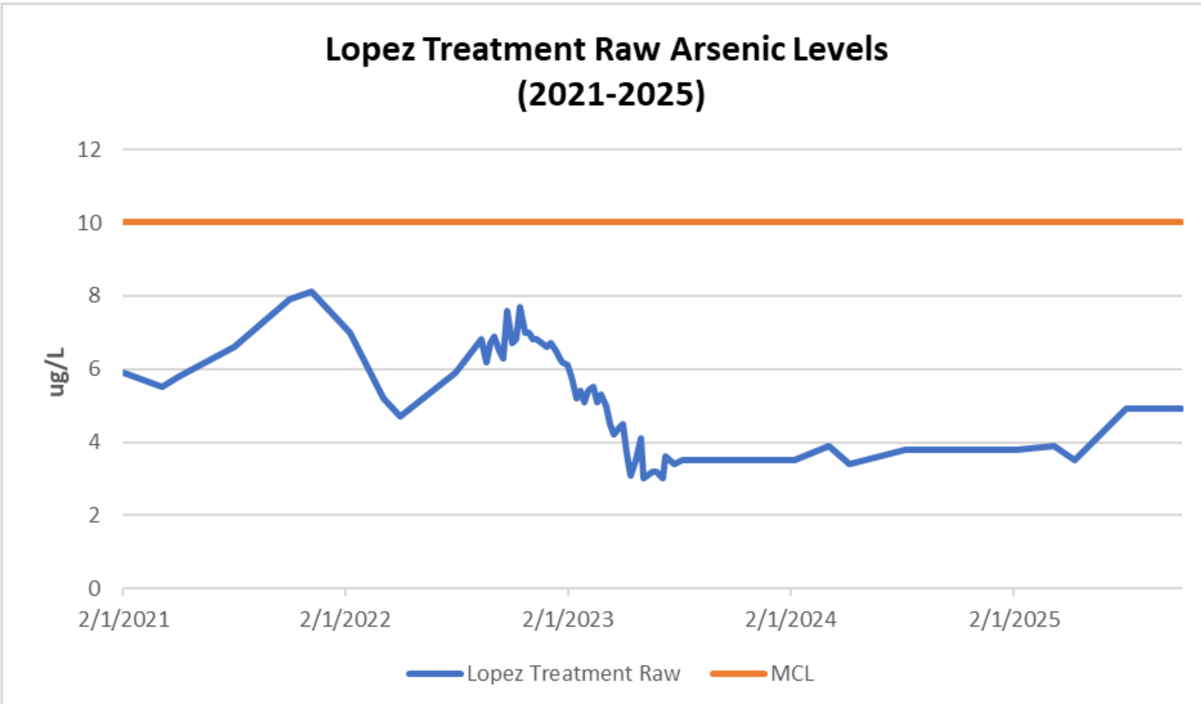



Figure 18: Arsenic Levels Lopez Treatment Raw

## Hardness Summary

Elevated hardness levels in Arroyo Grande Creek and Lopez Creek from 2021–2025 have possibly helped with the increase in the concentration of calcium and magnesium entering Lopez Lake. Arroyo Grande Creek and Lopez Creek contribute to the watershed that feeds the reservoir, and sustained high hardness has gradually raised overall hardness in Lopez Lake. This has direct implications for the water delivered to the Lopez Terminal and subsequently treated at the Lopez Water Treatment Plant.

Higher hardness increases the demand for treatment chemicals and complicates conventional treatment processes. Specifically:

- **Elevated chemical usage:** More coagulants and sequestrants are required to manage scaling and prevent mineral buildup in treatment equipment.
- **Increased scaling potential:** Hard water promotes scale formation in pipes, filters, and membranes, which can reduce operational efficiency and increase maintenance costs.
- **Treatment efficiency challenges:** Higher hardness can interfere with sedimentation and filtration, potentially reducing contaminant removal efficiency.
- **Operational costs:** Overall treatment costs rise due to increased chemical consumption, energy use, and more frequent maintenance.

Water hardness is typically categorized by concentration ranges of calcium carbonate ($CaCO_3$). Low hardness (soft water) generally falls below 60 mg/L, which can be more corrosive to pipes and may increase the leaching of metals from plumbing. Moderate hardness ranges from 60–120 mg/L and is often considered ideal for drinking water because it balances corrosion control and scaling potential. High hardness is defined as 120–180 mg/L, while very high hardness exceeds 180 mg/L. At these higher ranges, hardness can contribute to scale formation in pipes, valves, and treatment equipment, interfere with treatment processes, and increase operational, and maintenance demands at water treatment facilities. You can see in the table and graph below that the Lopez Watershed ranges are extremely high. See Figure 19 and Table 10.

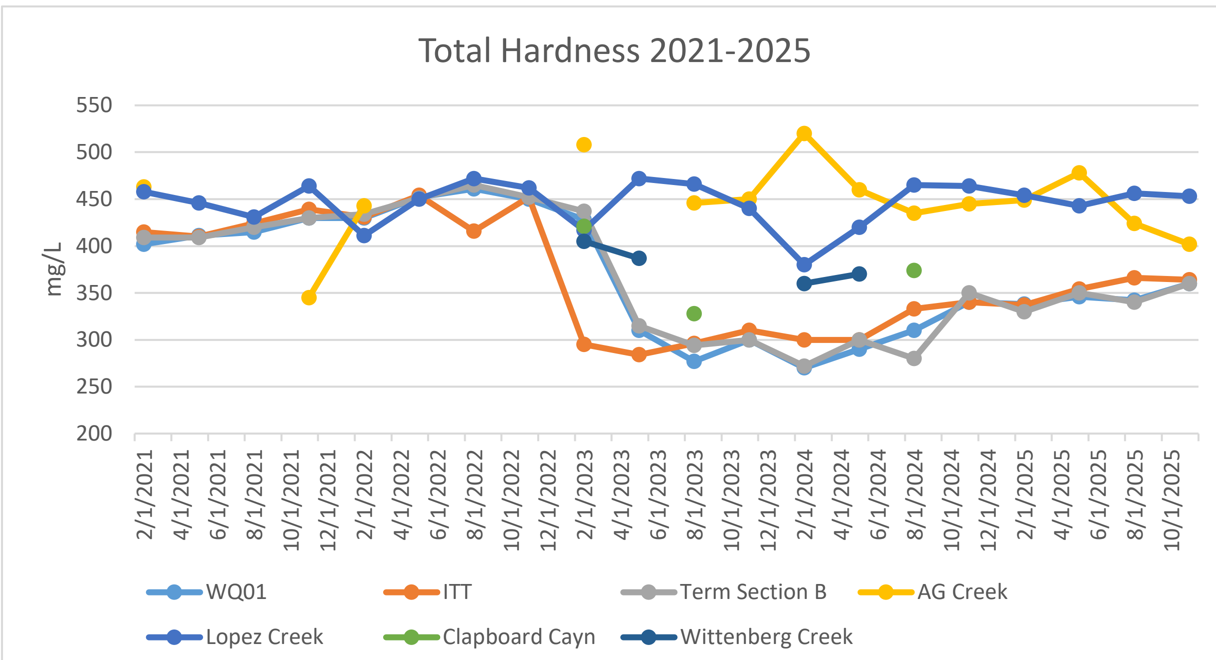



Figure 19: Hardness Levels in Creeks in the Lopez Watershed

Table 10: Creek and Terminal Hardness Data Summary, 2021 through 2025

| Site | | Ca (mg/L) | Mg (mg/L) | Total Hardness (mg/L) |
|---|---|---|---|---|
| Arroyo Grande | Minimum | 94 | 17 | 345 |
| | Maximum | 160 | 50 | 520 |
| | Average | 138 | 26 | 450 |
| | Median | 140 | 25 | 449 |
| | Count | 15 | 15 | 15 |
| Lopez Creek | Minimum | 85 | 21 | 380 |
| | Maximum | 129 | 52 | 472 |
| | Average | 100 | 48 | 446 |
| | Median | 99 | 50 | 454 |
| | Count | 20 | 20 | 20 |
| Wittenberg Creek | Minimum | 84 | 36 | 360 |
| | Maximum | 98 | 39 | 405 |
| | Average | 90 | 38 | 381 |
| | Median | 89 | 38 | 379 |
| | Count | 4 | 4 | 4 |
| Clapboard Cyn Crk | Minimum | 79 | 32 | 328 |
| | Maximum | 99 | 42 | 421 |
| | Average | 89 | 37 | 374 |
| | Median | 88 | 38 | 374 |
| | Count | 3 | 3 | 3 |
| Influent to Terminal | Minimum | 70 | 26 | 284 |
| | Maximum | 105 | 50 | 454 |
| | Average | 87 | 37 | 366 |
| | Median | 87 | 35 | 359 |
| | Count | 20 | 20 | 20 |
| Terminal Section B | Minimum | 62 | 26 | 270 |
| | Maximum | 111 | 53 | 491 |
| | Average | 86 | 38 | 362 |
| | Median | 86 | 35 | 340 |
| | Count | 59 | 59 | 59 |
| Influent to Plant | Minimum | 63 | 26 | 270 |
| | Maximum | 105 | 52 | 476 |
| | Average | 86 | 38 | 371 |
| | Median | 85 | 35 | 355 |
| | Count | 60 | 60 | 60 |

As a result, managing hardness has become an important operational focus for ensuring consistent water quality from Lopez Lake through the treatment process and into distribution.

Hardness levels decreased in 2023 due to heavy rainfall, which introduced large volumes of low-mineral rainwater into the watershed. This influx diluted naturally occurring calcium and magnesium ions that contribute to water hardness. In addition, increased surface runoff and reservoir inflows reduced the proportion of mineral-rich groundwater and shortened the amount of time water was in contact with geologic materials.

As a result, less calcium and magnesium dissolved into the water, leading to lower measured hardness levels. This is illustrated in the graph above, Figure 18.

## Nutrient Summary

Nutrient inputs to watersheds can result from a variety of sources and environmental conditions. In the Lopez Watershed, several factors may contribute to elevated nutrient levels, including animal agriculture, agricultural fertilizer use, temperature increases, runoff of nutrient-rich soils, and drought conditions. The presence of blue-green algal blooms is a strong indicator that nutrient concentrations in the watershed have increased.

The growth of macrophytes (aquatic plants) and phytoplankton (algae) can be stimulated by nutrients like phosphorus and nitrogen. "Nutrient-stimulated primary production is more often seen in lakes and estuaries as primary production in flowing water is thought to be controlled by physical factors, such as light penetration, timing of flow, and the type of substrate available, rather than by nutrients."[1] However, phosphorus and nitrogen are important plant nutrients and, when in abundance, can lead to over-fertilization of a lake. This will promote the growth of aquatic plants, which may deplete the oxygen from the water that many native species need to survive.

Nitrogen and phosphate levels are monitored in the watershed creeks to determine nutrient loading on Lopez Lake, and subsequently, on the Terminal Reservoir. When total phosphorus levels exceed 0.025 mg/L in lakes and reservoirs, excessive or nuisance growths of algae and other aquatic plants may be stimulated (EPA Quality Criteria for Water 1986). According to North Carolina State's "WATERSHEDS" program, "the increasing concentration of available phosphorus allows plants to assimilate more nitrogen before the phosphorus is depleted. Thus, if sufficient phosphorus is available, high concentrations of nitrates will lead to phytoplankton and macrophyte production."[2] Man-made sources of nitrate and phosphorus (typically present as orthophosphate) primarily include chemical fertilizers. Additional nutrient inputs may originate from domesticated animals kept in close proximity to creeks. These nutrients are highly soluble; any portion not taken up by plants in agricultural fields, gardens, or lawns can be transported via runoff or infiltration into groundwater, streams, ponds, lakes, and reservoirs. Elevated concentrations of nutrients such as nitrogen and phosphorus can promote algal blooms in Lopez Lake or the Terminal Reservoir. Excess nutrient loading may lead to eutrophication, resulting in degraded water quality and adverse impacts on aquatic ecosystems (Carpenter et al., 1998).

[1] https://doi.org/10.1890/1051-0761(1998)008[0559:NPOSWW]2.0.CO;2, McCabe et al., 1985

[2] North Carolina State University. (n.d.). *Watersheds program: Nutrient dynamics (nitrogen and phosphorus)*.

In 2023, San Luis Obispo County experienced increased rainfall, during which Arroyo Grande Creek, Clapboard Canyon Creek, and the Wittenberg Creek Arm were actively flowing. All creeks, with the exception of Vasquez Creek, exhibited surface flow in 2023 and parts of 2024. Vasquez Creek is characterized as a subterranean stream, flowing both above and below ground. During subsurface flow, water undergoes "subterranean nutrient cycling," a process that can enhance natural purification and improve water quality (Lewis Thomas, Science Findings, 2004). As shown in Table 11, nitrate and phosphate concentrations were higher in both the Wittenberg Creek Arm and Arroyo Grande Creek.

Table 11: Creek and Terminal Nutrient Data Summary, 2021 through 2025

| **Sample Site** | | **Nitrite as N (µg/L)** | **Nitrate as N (µg/L)** | **Total Kjeldahl Nitrogen (mg/L)** | **Total Nitrogen (mg/L)** | **Total Phosphate as P (mg/L)** |
|---|---|---|---|---|---|---|
| Arroyo Grande Creek | Minimum | < 100 | < 100 | < 0.10 | < 0.10 | <0.02 |
| | Maximum | < 100 | 16 | 1 | 1 | 1 |
| | Average | < 100 | < 100 | 0.4 | 0.5 | 0.8 |
| | Median | < 100 | < 100 | 0.3 | 0.3 | 0.8 |
| | Count | 7 | 7 | 7 | 7 | 7 |
| Lopez Creek | Minimum | ND | ND | ND | 0.12 | 0.13 |
| | Maximum | ND | 140 | ND | 0.13 | 0.22 |
| | Average | ND | 120 | ND | 0.1 | 0.19 |
| | Median | ND | 120 | ND | 0.12 | 0.19 |
| | Count | 38 | 38 | 36 | 37 | 37 |
| Wittenberg Creek | Minimum | ND | 113 | 0.24 | 0.36 | 0.35 |
| | Maximum | ND | 2800 | 0.44 | 3.2 | 0.67 |
| | Average | ND | 670 | 0.32 | 0.98 | 0.46 |
| | Median | ND | 160 | 0.32 | 0.49 | 0.42 |
| | Count | 6 | 6 | 6 | 6 | 6 |
| Clapboard Canyon Creek | Minimum | < 400 | <100 | < 0.10 | < 0.10 | 0.15 |
| | Maximum | < 400 | 190.0 | 1.9 | 2.5 | 1.0 |
| | Average | < 400 | 190.0 | 1.2 | 1.5 | 0.7 |
| | Median | < 400 | 190.0 | 0.6 | 1.9 | 0.6 |
| | Count | 3 | 3 | 3 | 3 | 3 |
| Influent to Terminal | Minimum | < 100 | < 100 | < 0.20 | < 1.0 | 0.27 |
| | Maximum | < 100 | < 100 | 0.6 | 5.2 | 0.6 |
| | Average | < 100 | < 100 | 0.51 | 0.63 | 0.51 |
| | Median | < 100 | < 100 | 0.52 | 0.66 | 0.53 |
| | Count | 60 | 60 | 59 | 48 | 60 |
| Lopez Raw | Minimum | ND | ND | ND | ND | 0.26 |
| | Maximum | ND | 380 | 0.88 | 1.2 | 0.57 |
| | Average | ND | 220 | 0.56 | 0.79 | 0.45 |
| | Median | ND | 200 | 0.57 | 0.79 | 0.47 |
| | Count | 29 | 29 | 26 | 27 | 24 |

## Limnology, Physical and Algae Summary

High concentrations of certain algae can impact taste and odor, clog filters, and cause an increased chlorine demand in the water. From April through the end of October, staff monitors algae levels in the reservoirs weekly. The District treats the Terminal Reservoir with an algaecide before algae bloom becomes a significant problem.

Odor levels of the Terminal Reservoir raw water have exceeded the secondary MCL of 3 TON as shown in Table 10, but the treatment process is able to remove most objectionable odors prior to delivery to the consumer.

Lopez Lake typically forms a thermocline at depths of approximately 20 to 40 feet during the summer months. Water within the epilimnion (the layer above the thermocline) generally contains dissolved oxygen concentrations exceeding 5 mg/L, which is sufficient to support aerobic organisms and helps minimize dissolved manganese. Algal concentrations are usually highest near the water surface and can contribute to objectionable odors. For this reason, epilimnion water located below the surface algal layer and above the thermocline is preferred for conveyance to the Terminal Reservoir.

During cooler months, surface water temperatures decrease and the reservoir undergoes seasonal turnover. As the colder, denser surface water sinks, it mixes with deeper water that typically contains lower dissolved oxygen levels and higher concentrations of dissolved metals. Hydrogen sulfide may also be present under these conditions. Elevated dissolved metals can increase oxidant demand during water treatment. To address this, the District may apply a combination of chlorine, potassium permanganate, and chlorine dioxide to oxidize iron and manganese. Powdered activated carbon is added at the plant influent to mitigate odor issues.

Beginning in 2017, and continuing through 2021–2025, the District Water Quality Laboratory implemented the use of an electronic microscope (FlowCam) to classify and enumerate algae in both Lopez Lake and the Terminal Reservoir. The FlowCam provides more quantitative and reliable data, enhancing the understanding of algal density and distribution. Algal enumeration supports early detection of harmful algal blooms (HABs) by enabling the quantification of blue-green algae and subsequent algal toxin screening. HABs are most commonly associated with cyanobacteria, which can produce toxins that pose health risks to humans and animals. Algal monitoring results are summarized in Table 11.

In 2023, lake levels rose rapidly due to an exceptionally wet rainy season. During the summer, a widespread bloom of blue-green algae developed throughout Lopez Lake. In response, both the District and the California State Water Resources Control Board conducted enhanced harmful algal bloom (HAB) monitoring during this period. To ensure the highest possible water quality downstream, the District adjusts intake depths as needed based on changing water conditions.

Table 12: Lake Physical Data (January 2021-December 2025)

| Site | | Depth (Feet) | Dissolved Oxygen (mg/L) | Odor (TON) | pH-Field | Temperature (°C) | Turbidity (NTU) |
|---|---|---|---|---|---|---|---|
| **Lake Intake 1** | Minimum | 5 | 3 | 1 | 8 | 11 | 1 |
| | Maximum | 18 | 12 | 8 | 9 | 23 | 20 |
| | Average | 13 | 8 | 3 | 9 | 19 | 4 |
| | Median | 15 | 8 | 3 | 9 | 21 | 3 |
| | Count | 82 | 82 | 81 | 82 | 82 | 81 |
| **Lake Intake 2** | Minimum | 10 | 1 | 1 | 7 | 11 | 1 |
| | Maximum | 30 | 11 | 6 | 9 | 23 | 12 |
| | Average | 27 | 6 | 3 | 8 | 19 | 3 |
| | Median | 30 | 6 | 2 | 9 | 19 | 3 |
| | Count | 91 | 91 | 91 | 91 | 91 | 91 |
| **Lake Intake 3** | Minimum | 15 | 0.0 | ND | 7.36 | 10.7 | 0.8 |
| | Maximum | 45 | 8.8 | 6.5 | 8.91 | 22.5 | 22 |
| | Average | 42 | 3.6 | 2.7 | 7.97 | 15.8 | 2.9 |
| | Median | 45 | 3.3 | 2.3 | 7.94 | 15.1 | 2.3 |
| | Count | 93 | 93 | 93 | 93 | 93 | 93 |
| **Lake Intake 4** | Minimum | 5 | 0.0 | 0 | 7.22 | 10.7 | 0.64 |
| | Maximum | 60 | 10.4 | 12 | 8.71 | 22.7 | 130 |
| | Average | 43 | 3.9 | 2.8 | 8.01 | 15.2 | 3.9 |
| | Median | 55 | 3.5 | 2 | 7.93 | 13.9 | 2.3 |
| | Count | 132 | 132 | 131 | 132 | 132 | 132 |
| **Lake Intake 5** | Minimum | 10 | 0.01 | ND | 7.22 | 10.6 | 0.69 |
| | Maximum | 75 | 9.6 | 100 | 8.70 | 23.4 | 22 |
| | Average | 51 | 4.0 | 3.1 | 8.02 | 15.2 | 3.2 |
| | Median | 70 | 4.1 | 2 | 7.92 | 13.2 | 2.8 |
| | Count | 157 | 157 | 156 | 157 | 157 | 157 |
| **Lake Intake 6** | Minimum | 25 | 0 | ND | 7.29 | 10.5 | 0.62 |
| | Maximum | 90 | 9.0 | 100 | 8.66 | 22.5 | 18 |
| | Average | 66 | 3.0 | 3.0 | 7.96 | 14.8 | 3.0 |
| | Median | 85 | 2.4 | 2 | 7.88 | 12.8 | 2.9 |
| | Count | 157 | 157 | 157 | 157 | 157 | 155 |
| **Lake Intake 7** | Minimum | 40 | 0 | 0 | 8 | 11 | 2 |
| | Maximum | 75 | 9 | 8 | 9 | 22 | 22 |
| | Average | 53 | 3 | 2 | 8 | 17 | 5 |
| | Median | 50 | 2 | 2 | 8 | 17 | 4 |
| | Count | 65 | 64 | 65 | 65 | 65 | 65 |
| **Lake Section E** | Minimum | 2 | 4.14 | NA | 7.85 | 10.9 | 1.2 |
| | Maximum | 8 | 12.1 | NA | 9.35 | 23.7 | 30 |
| | Average | 4 | 8.3 | NA | 8.58 | 19.6 | 4.9 |
| | Median | 5 | 8.5 | NA | 8.55 | 21 | 3.9 |
| | Count | 157 | 157 | NA | 157 | 157 | 157 |
| **Lake Section F** | Minimum | 1 | 0.1 | NA | 7.53 | 8.5 | 1.3 |
| | Maximum | 10 | 11.4 | NA | 9.44 | 23.6 | 29 |
| | Average | 5 | 7.9 | NA | 8.57 | 19.3 | 4.7 |
| | Median | 5 | 8.1 | NA | 8.55 | 20.7 | 3.5 |
| | Count | 158 | 158 | NA | 158 | 158 | 157 |
| **Lake Section G** | Minimum | 2 | 4.1 | NA | 7.85 | 10.9 | 1.2 |
| | Maximum | 8 | 12.1 | NA | 9.35 | 24 | 30 |
| | Average | 4 | 8.3 | NA | 8.58 | 19.4 | 4.9 |
| | Median | 5 | 8.5 | NA | 8.55 | 20.9 | 3.9 |
| | Count | 157 | 157 | NA | 157 | 157 | 157 |

Table 13: Lake Algae Data (January 2021 to December 2025)

| Site | | Golden (cells/mL) | Cryptomonads (cells/mL) | Dinoflagellates (cells/mL) | Blue-greens (cells/mL) | Diatoms (cells/mL) | Flagellates (cells/mL) | Greens (cells/mL) | Total Algae Counts (cells/mL) |
|---|---|---|---|---|---|---|---|---|---|
| **Lake Intake 1** | Minimum | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Maximum | 1847 | 419 | 1200 | 340000 | 1800 | 110 | 4600 | 340000 |
| | Average | 55 | 49 | 82 | 6093 | 93 | 6 | 435 | 6824 |
| | Median | 0 | 15 | 15 | 72 | 12 | 0 | 110 | 549 |
| | Count | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 |
| **Lake Intake 2** | Minimum | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 |
| | Maximum | 2800 | 210 | 900 | 12000 | 960 | 130 | 5000 | 20000 |
| | Average | 73 | 24 | 49 | 1162 | 63 | 4 | 448 | 1812 |
| | Median | 0 | 6 | 6 | 48 | 6 | 0 | 96 | 540 |
| | Count | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 |
| **Lake Intake 3** | Minimum | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Maximum | 410 | 320 | 500 | 51000 | 460 | 190 | 2400 | 51000 |
| | Average | 12 | 19 | 21 | 952 | 42 | 5 | 163 | 1212 |
| | Median | 0 | 0 | 3 | 0 | 6 | 0 | 55 | 215 |
| | Count | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| **Lake Intake 4** | Minimum | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Maximum | 520 | 260 | 220 | 5400 | 1300 | 130 | 2700 | 6200 |
| | Average | 9 | 20 | 15 | 330 | 55 | 8 | 187 | 592 |
| | Median | 0 | 4 | 3 | 12 | 7 | 0 | 68 | 260 |
| | Count | 131 | 131 | 131 | 131 | 131 | 131 | 131 | 131 |
| **Lake Intake 5** | Minimum | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Maximum | 350 | 180 | 630 | 3700 | 1400 | 70 | 2300 | 4000 |
| | Average | 6 | 14 | 22 | 283 | 42 | 4 | 144 | 513 |
| | Median | 0 | 1 | 3 | 12 | 5 | 0 | 49 | 230 |
| | Count | 156 | 156 | 156 | 156 | 156 | 156 | 156 | 156 |
| **Lake Intake 6** | Minimum | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Maximum | 470 | 160 | 260 | 4900 | 950 | 80 | 1400 | 6000 |
| | Average | 5 | 11 | 12 | 216 | 32 | 2 | 107 | 384 |
| | Median | 0 | 0 | 0 | 0 | 3 | 0 | 34.5 | 135 |
| | Count | 156 | 156 | 156 | 156 | 156 | 156 | 156 | 156 |
| **Lake Intake 7** | Minimum | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Maximum | 13 | 200 | 160 | 29000 | 28000 | 360 | 160 | 660 |
| | Average | 1 | 17 | 16 | 1171 | 1026 | 28 | 8 | 80 |
| | Median | 0 | 0 | 0 | 120 | 0 | 5 | 0 | 23 |
| | Count | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 |
| **Lake Section E** | Minimum | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Maximum | 510 | 620 | 480 | 540000 | 1200 | 140 | 5900 | 540000 |
| | Average | 14 | 44 | 62 | 6273 | 64 | 7 | 340 | 6789 |
| | Median | 0 | 15 | 13 | 56 | 12 | 0 | 98 | 670 |
| | Count | 157 | 157 | 157 | 157 | 157 | 157 | 157 | 157 |
| **Lake Section F** | Minimum | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |
| | Maximum | 2300 | 690 | 660 | 500000 | 1000 | 130 | 7200 | 500000 |
| | Average | 27 | 44 | 65 | 5568 | 59 | 9 | 347 | 6083 |
| | Median | 0 | 11 | 17.5 | 100 | 11.5 | 0 | 81 | 720 |
| | Count | 158 | 158 | 158 | 158 | 158 | 158 | 158 | 158 |
| **Lake Section G** | Minimum | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Maximum | 510 | 620 | 480 | 540000 | 540000 | 140 | 5900 | 540000 |
| | Average | 14 | 44 | 62 | 6273 | 6273 | 7 | 340 | 6789 |
| | Median | 0 | 15 | 13 | 56 | 56 | 0 | 98 | 670 |
| | Count | 157 | 157 | 157 | 157 | 157 | 157 | 157 | 157 |

## Volatile and Synthetic Organic Chemicals Summary

Arroyo Grande Creek, Lopez Creek, Influent to Terminal Reservoir, LWTP raw water, treated water, and delivered water were sampled for volatile organic compounds (VOCs) in 2022, with additional sampling of Lopez Treatment Plant raw water conducted in 2025. No VOCs were detected, with the exception of expected trihalomethanes (THMs) identified in the treated and delivered water samples.

Influent to Terminal Reservoir, LWTP Raw, and the LWTP Treated were sampled for SOCs in 2018. No SOCs were detected. The next sampling event for SOCs is scheduled for 2027.

Monitoring for VOCs is conducted every three years in January for our watershed sites and every year for LWTP influent water. Additional monitoring for SOCs is conducted every nine years. Synthetic or volatile organic compounds are not seen as a significant water quality threat to the watershed at this time. No changes in potential contaminating activities were identified in the last five years and none are anticipated in the foreseeable future.

## Radiological Summary

Testing for gross alpha radiation is conducted on LWTP Raw water every nine years. Gross alpha is a screening measurement that indicates the total amount of alpha particle radiation in the water. Alpha particles are a type of radiation emitted naturally by certain radioactive elements, such as radium and uranium. This test does not identify specific elements but helps determine whether additional, more detailed testing is needed.

Some of the naturally occurring radioactive elements that can contribute to gross alpha results include radium-226, radium-228, and uranium-238. Radium-226 and radium-228 are radioactive forms of radium that can be found in soil and rock and may enter water supplies in small amounts.

Radiological monitoring was completed in 2022 and 2025. The average combined radium level measured in Lopez Plant Raw during these sampling events was 0.595 picocuries per liter (pCi/L), which is a unit used to measure radioactivity in water. The highest gross alpha level detected in 2022 was 4.56 pCi/L, well below the U.S. Environmental Protection Agency's maximum contaminant level (MCL) of 15 pCi/L for gross alpha radiation. No significant changes in gross alpha levels are anticipated in the foreseeable future.

# WATERSHED CONTROL AND LAKE MANAGEMENT PRACTICES

## Invasive Mussel Prevention Program

Quagga and zebra mussels are invasive freshwater bivalves native to the Black and Caspian Seas. Using strong byssal threads, they attach to hard surfaces such as boats, docks, water intake structures, and delivery systems. They reproduce rapidly, producing millions of offspring each year, and can cause significant damage to infrastructure, recreation, and local ecosystems. Since their discovery in the Great Lakes in the 1980s, these mussels have spread to 29 U.S. states, including Arizona, Nevada, Colorado, and California.

Golden mussels (*Limnoperna fortunei*) were first detected in California in 2024, marking a significant new invasive species threat to the state's waterways. Likely introduced through ballast water or contaminated equipment, golden mussels pose serious risks because they reproduce rapidly, form dense colonies, and readily attach to infrastructure such as water intake pipes, pumps, and treatment facilities, leading to operational and economic impacts. Unlike zebra or quagga mussels, golden mussels can tolerate a wider range of temperatures, lower calcium concentrations, and poorer water quality, allowing them to spread into waters previously considered low risk for other invasive mussels. Their high adaptability and fast growth increase the potential for ecological disruption, including competition with native species and altered nutrient cycling, making early detection and management critical for California's water resources.

To help **PREVENT** the spread of invasive mussels to the lakes in the County of San Luis Obispo, officials at lakes Nacimiento, Lopez, and Santa Margarita expect all boaters to comply with a **"CLEAN, DRAIN, DRY"** program. All watercraft must be **"CLEAN, DRAIN, and DRY"** upon arrival at any local lakes.

Monitoring for invasive mussels began in June 2008 and continues year-round. Park Rangers and trained staff inspect vessels for signs of infestation. In addition, staff conduct monthly monitoring of submerged substrates placed at marinas, fishing docks, and log booms to detect early colonization. Preventing the introduction of invasive mussels protects lake infrastructure, public access, the environment, and the local economy. The County of San Luis Obispo maintains a State-approved mussel prevention program.

To find out more about mussel prevention and how to help stop the spread, please visit the following link: https://www.usgs.gov/ecosystems/invasive-species-program/maps

For the most updated map of infested California lakes, scan the QR code below:

**Quagga and Zebra Information**

**Golden Mussel Information**

No suspicious organisms or evidence of their existence in Lopez Lake, Terminal Reservoir or their watersheds has been observed since monitoring began.

## Algal Toxins

Cyanobacteria, other freshwater algae, and their toxins are on the EPA's Contaminant Candidate List. The Contaminant Candidate List (CCL) is a list of contaminants that are currently not subject to any proposed or promulgated national primary drinking water regulations, but are known or anticipated to occur in public water systems. Contaminants listed on the CCL may require future regulation under the Safe Drinking Water Act (SDWA). For more information, please go to the EPA's website at https://www.epa.gov/ccl/contaminant-candidate-list-4-ccl-4-0.3.

Cyanotoxins, from certain types of blue-green algae, in high concentrations have been known to cause illness, paralysis, and even death in livestock and wildlife. Algae which have been known to produce toxins, such as Aphanizomenon, Anabaena, Microcystis, and Oscillatoria were found at Lopez Lake and the Terminal Reservoir during certain times of the year. The District attempts to treat algae at the Terminal Reservoir using copper sulfate and/or PAK®27 (a blue-green algaecide from Peroxide Solutions) before it becomes a problem. The California Water Quality Control Board regulates aquatic pesticide application at Lopez Lake and Terminal Reservoir under a general NPDES permit. This permit regulates the frequency, application amount, and aquatic pesticide used for algae treatment.

[3] https://www.epa.gov/ccl/what-epa-does-ccl

The District and SWRCB actively monitors for harmful algal blooms (HABs) and, while algal growth can occur, State Water quality data show no confirmed harmful algal toxin exceedances that would trigger health advisories in Lopez Lake and the Lopez Terminal Reservoir.

Based on cyanotoxin testing results and or visual indicators confirming the presence of Harmful Algal Blooms, the State requires each body of water to post an advisory level, CAUTION, WARNING or DANGER (Figure 20 & 21).

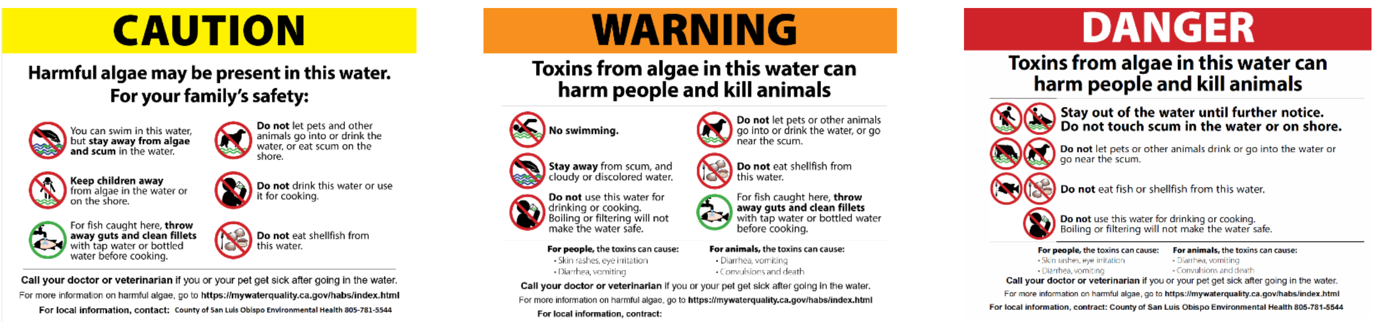



Figure 20: Algal Bloom and Toxin Signage

Figure 21: Blue-green Algal Bloom at Lopez Lake (Section H)

**Finding more information on Harmful Algae Blooms (HABs)**

The SWRCB has an interactive map showing which sites were tested for HABs at the following link: https://mywaterquality.ca.gov/habs/where/freshwater_events.html

During the summer months approximately 75% of the lakes and rivers are associated with a recommended advisory. For more information on HABs , please visit the link below:

https://mywaterquality.ca.gov/habs/resources/faqs_for_hab_signs.html

A satellite imagery detection map can be located at the following link: https://fhab.sfei.org/

## Mercury Levels in Fish at Lopez Lake

In 2020 the California Office of Environmental Health Hazard Assessment (OEHHA) compared chemical levels of mercury found in fish caught at Lopez Lake to levels considered safe for human consumption. OEHHA had issued a safe-eating advisory for seven fish species at Lopez Lake: Black Bass, Brown Bullhead, Crappie, Inland Silverside, Sacramento Sucker, Sunfish species, and Threadfin Shad. For more information, please visit the link below:

https://oehha.ca.gov/media/downloads/advisories/factlopezlake111020.pdf.

Mercury is a metal found naturally in rocks and soil. It can be released into the environment from soil erosion, mining, and forest fires. Certain bacteria and chemical processes can convert mercury from the environment into a form of mercury that accumulates easily in body tissue. This form of mercury moves up the food chain until it accumulates in some fish to unsafe levels. Once fish are consumed, mercury can damage the brain and nervous system, especially in developing fetuses and children. Mercury has not been detected in the raw water or treated drinking water. The allowable limit for mercury in drinking water is two parts per billion.

For fish species found in Lopez Lake that are not included in this advisory, OEHHA recommends following the statewide advisory for eating fish from California lakes and reservoirs without site-specific advice.

## Management Practices

**Source Protection & Monitoring**

- Weekly inspections of Lopez Lake Recreation Area; monthly reservoir inspection reports submitted to the California Division of Drinking Water.
- Comprehensive water quality monitoring program for Lopez Lake and Terminal Reservoir.
- Terminal Reservoir provides 30–45 days of detention for sedimentation and natural solar/UV attenuation.

- Grazing eliminated on adjacent lands; significant watershed areas are designated as restricted-use wilderness.
- Aquatic Invasive Mussel Monitoring and Prevention Program in place.
- County Agricultural Commissioner regulates pesticide use within the watershed.

**Access Control & Security**

- Controlled public access through the main park entrance.
- Intake protected by exclusion zone with buoys and log boom.
- Terminal Reservoir fenced, posted, and closed to public access.
- Active lake patrols enforce state and local boating regulations.
- Emergency response plan established for contamination events.

**Wastewater & Infrastructure Protection**

- Wastewater effluent discharge to the lake is prohibited.
- Treatment plant and disposal facilities located remote from intake; percolation ponds >0.5 mile from lake.
- Sewer infrastructure located above high-water mark; force mains are fail-safe, alarmed, and supported by standby power and emergency storage.
- Surface drainage diverted away from treatment and disposal facilities.
- No septic systems adjacent to Lopez Lake and near Terminal Reservoir are downstream and remote.
- 24-hour operator availability.

**Recreation & Facility Controls**

- Fueling facilities off-lake with secondary containment.
- No floating sewage-discharge facilities permitted.
- Fish cleaning, restroom, and equestrian facilities properly sited, maintained, and setback from shoreline to prevent runoff to the reservoir.
- Refuse disposal managed to prevent shoreline or water contamination.
- Swimming and high-contact recreation areas located away from the intake.

# SIGNIFICANT CHANGES IN THE WATERSHED

## Summary of Findings

This watershed sanitary survey update covers the period from January 2021 through December 2025. During this time, no significant changes were observed in overall watershed water quality. During significant storms in January 2023, two major infrastructure incidents occurred involving failure of the Lopez Terminal perimeter channel and the failure of the wastewater effluent pipeline serving the Lopez Lake Recreation Area. District staff conducted field evaluations of the Lopez Terminal, Lopez Lake, and the surrounding watershed throughout the period. Overall, the condition of the watershed perimeter remains stable. However, the primary impacts to water quality in Lopez Lake during this period were significant and extreme fluctuations in water supply, driven by climate conditions that included severe drought followed by flooding, and further compounded by stringent environmental requirements.

There is continued agricultural activity, including various crops, vineyards, cattle, and horses in the Arroyo Grande arm of the Lopez Lake watershed. Increases in these activities or increases in population density have the potential to adversely impact water quality in the watershed. Significant increases are unlikely with the present zoning regulations. (Planning Department Rural Land Use Category and Rural Combining Designation Maps are included in Appendix C5).

In 2023, a bathymetric survey of Lopez Lake was completed. A detailed survey of lake depth and bottom contours is critical for understanding how a lake functions physically, chemically, and biologically, especially when it serves as a drinking water reservoir. Overall, a bathymetric study provides the foundational data needed to manage lake storage, protect water quality, anticipate regulatory challenges, and guide long-term reservoir sustainability.

## Major Impacts

The perimeter channel for the Lopez Terminal Reservoir collapsed during the storms in early 2023. The channel failure occurred when runoff exceeded its capacity and caused it to breach on the far north side of the reservoir, and furthest upstream end from the Treatment Plant intake tower. DDW was notified of the perimeter channel breach as soon as it was discovered. DDW requested that an enhanced sampling plan be implemented until the perimeter channel could be repaired. The sampling plan was developed and implemented to ensure the Lopez Water Project continued to meet all *Giardia, Cryptosporidium*, and virus removal, inactivation, and permit requirements. See the damage to the perimeter channel in Figure 22.

The perimeter channel repairs required coordination with the Department of Water Resources, because the State Water Project pipeline runs under and adjacent to the repair site. The repair was completed in the fall of 2024 after resolving DWR concerns about potential impacts from repair activities to the State Water Project pipeline.

Figure 22: Perimeter Channel Breach on North Side of Terminal Reservoir

Sampling at the Terminal Reservoir was conducted until the perimeter breach was no longer flowing. Parameters analyzed included total coliform, fecal coliform, *E. coli*, and *Enterococcus*. Sample sites collected are shown in Figure 23.

Sample sites:

- Perimeter Channel Breach (Location of the break)
- Perimeter Channel Combined
- Section A
- Section B by the intake tower
- Lopez Treatment Plant Raw or Influent to Plant

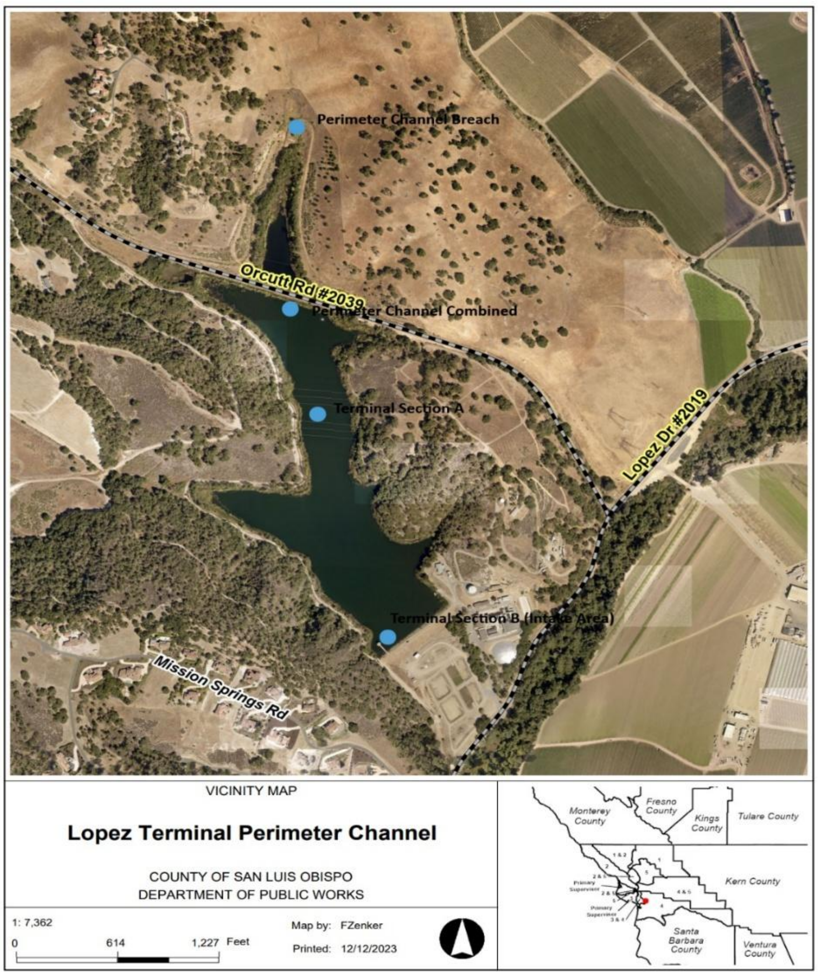



Figure 23: Location of Sample Sites

Table 14: Microbiological Data Summary, 2021 through 2025

| Site | | Total Coliform (MPN/100 mL) | *E. Coli (MPN/100 mL)* | Fecal (MPN/100 mL) | Enterococcus (MPN/100 mL) |
|---|---|---|---|---|---|
| Perimeter Channel Breach | Minimum | 31 | < 1 | 4.1 | 6 |
| | Maximum | 490 | 12 | 820 | 650 |
| | Average | 271 | 2.9 | 192 | 85.6 |
| | Median | 300 | 2.0 | 35.0 | 35.0 |
| | Count | 20 | 20 | 13 | 14 |
| Perimeter Channel Combined | Minimum | 610 | 1 | < 1 | < 1 |
| | Maximum | 24000 | 860 | 150 | 8.4 |
| | Average | 13731 | 176 | 11.5 | 3.2 |
| | Median | 13000 | 67.5 | 4.1 | 3.0 |
| | Count | 14 | 14 | 19 | 20 |
| Section A | Minimum | 9.4 | < 1 | < 1 | < 1 |
| | Maximum | 1000 | 8.6 | 10 | 14 |
| | Average | 220 | 2.8 | 3.6 | 4.0 |
| | Median | 165 | 3.1 | 3.1 | 3.1 |
| | Count | 20 | 20 | 19 | 20 |
| Section B by Intake Tower | Minimum | 32 | < 1 | < 1 | < 1 |
| | Maximum | 370 | 23 | 10 | 12 |
| | Average | 139 | 4.7 | 3.5 | 5.1 |
| | Median | 114 | 3.1 | 3.1 | 4.1 |
| | Count | 20 | 20 | 19 | 20 |
| Lopez Treatment Plant Raw (WQ-01) | Minimum | < 1 | < 1 | < 1 | < 1 |
| | Maximum | 290 | 5.5 | 5.2 | 4.4 |
| | Average | 66.2 | 1.4 | 1.1 | 1.2 |
| | Median | 34.0 | 1.0 | 0.5 | 0.0 |
| | Count | 15 | 15 | 14 | 15 |

**Importance of the Repair**

In October 2025, the perimeter channel breach was repaired in accordance with applicable environmental review, encroachment permitting, and funding approval.

The construction activities and the completed repair of the breach site can have both short- and long-term effects on site conditions and water quality.

During construction, activities such as earthwork, grading, and channel stabilization may temporarily increase turbidity and suspended sediment in nearby surface waters. Disturbed soils can also contribute nutrients or debris during storm events if not properly controlled. These impacts are typically localized and minimized through best management practices (BMPs) such as silt fencing, straw wattles, and staged construction.

Over the long term, the repair restores proper flow conveyance, prevents uncontrolled erosion, and reduces the risk of untreated runoff leaving the site. A stabilized channel also protects infrastructure, reduces downstream sediment transport, and supports compliance with stormwater and water quality requirements. Although minor short-term impacts may occur during construction, the repair provides overall environmental and operational benefits.

A perimeter channel breach can also affect a system's risk category under the Surface Water Treatment Rule by altering the quality and stability of source water delivered to the LWTP. A breach may allow uncontrolled runoff, sediment, and debris to enter the conveyance system, increasing vulnerability to waterborne pathogens and potentially requiring additional treatment. It is critical to make repairs to a channel breach and reduce these risks.  The repaired channel is shown in Figure 24.

Figure 24: Perimeter Channel Breach Before Repairs vs Perimeter Channel After Repaired

Figure 25 illustrates the Terminal Reservoir watershed. The red line represents the watershed boundary.

The Perimeter Channel is a diversion channel surrounding most of the Terminal Reservoir. The purpose of the Perimeter Channel is to collect runoff from the watershed and divert it away from the Terminal Reservoir to reduce the threat of contamination from agriculture, grazing animals, and the private homes that surround the terminal reservoir.

A small section at the northeast corner of the watershed, east of Orcutt Road, is not protected by the Perimeter Channel. Following sustained heavy rains, this section has the potential for draining onto Orcutt Road. Orcutt Road drainage continues to be a potential problem, with runoff making its way into the Terminal Reservoir.

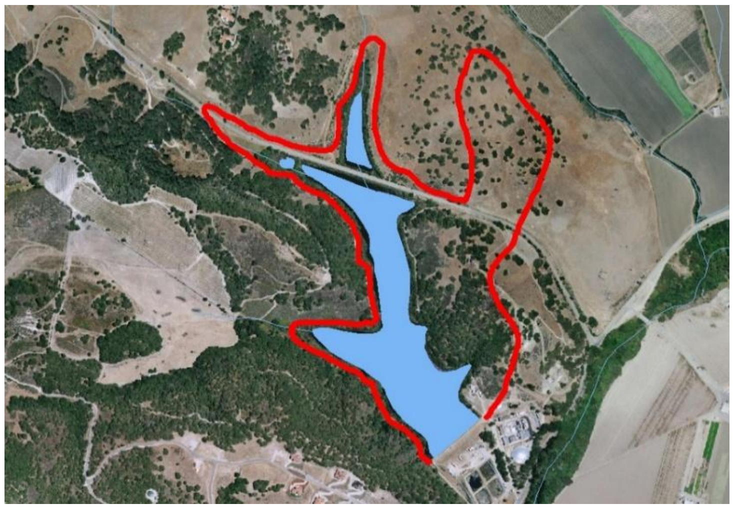
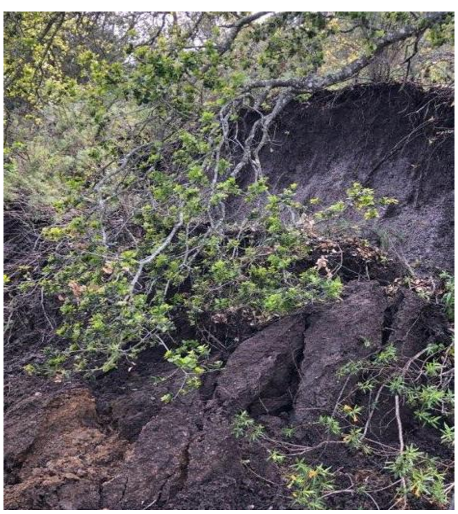


Figure 25: Lopez Terminal Reservoir Watershed Boundary

During the rain event, localized slope failures occurred along the south side of the diversion channel due to increased stormwater flows. There was no evidence of water overtopping or breaching into the terminal facility. Water Operations crews performed debris removal and channel stabilization activities to restore full conveyance capacity in advance of the next rainy season. See Figure 26 and 27 below.



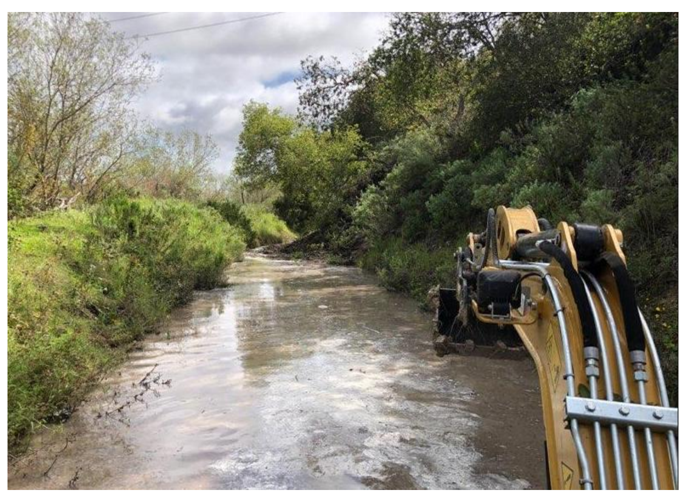


Figure 26: Lopez Terminal Reservoir Diversion Channel Landslide damage

Figure 27: Diversion Channel repair

**Wastewater Effluent Breach**

A treated water spill into a lake can affect water quality depending on the volume and characteristics of the discharge, as well as the size and existing condition of the lake. Even properly treated water may contain residual nutrients such as nitrogen and phosphorus, which can stimulate algal growth, contribute to harmful algal blooms, and reduce water clarity. Organic matter in the discharge can increase biochemical oxygen demand, potentially lowering dissolved oxygen levels and stressing aquatic life, particularly in deeper waters. If residual disinfectants such as chlorine are present, they may pose toxicity risks to fish and invertebrates. Temperature differences between the discharge and lake water can also disrupt stratification and aquatic habitat. In a drinking water reservoir, such a spill may require increased monitoring, operational adjustments, and regulatory reporting, even if overall impacts are limited.

In January 2023, a force main at the Lopez Recreation Area carrying treated effluent collapsed, resulting in the release of approximately 168 gallons of treated wastewater into Lopez Lake. Road conditions and creek flooding made it difficult to fully assess the extent of the damage at the time. Boat-based sampling and drone monitoring were conducted to evaluate the affected area and confirm that the spill did not impact reservoir water quality. San Luis Obispo County Parks responded promptly, repairing the damaged pipe and rerouting it beneath the road to help prevent a similar failure in the future. See Figure 28.

Figure 28: Lopez Lake Treated Effluent Line Break

**Bathymetric Study**

A bathymetric study of Lopez Lake was performed in 2023[4] and the data evaluated in 2024[5]. The information gained from these surveys is important as they provide a snapshot in time of the floor of the reservoir; mapping the lake's underwater topography and showing depth contours, basin shape, and volume. Tracking this information over time is essential for managing water resources, predicting thermal stratification, understanding sediment accumulation, and planning reservoir operations such as water withdrawal and habitat protection. The information also supports water quality modeling, helping to identify areas prone to low oxygen, nutrient buildup, or algal growth, which is critical for safe drinking water and ecological health.

The 2023 bathymetric survey of the lake indicated a total calculated capacity at the spillway of 49,476.48 acre-feet (AF). When compared to the initial 1973 model, the lake has experienced an overall loss of 2,277.32 AF, while relative to the previous 2002 model at the spill elevation of 522.6', there is a slight gain of 88.17 AF. Over the past 51 years between 1973 and 2024, the estimated mean siltation rate has been 44.65 AF per year, resulting in an overall loss of 4.4% of total capacity. On average, this corresponds to a relative mean siltation rate of 0.09% per year, reflecting gradual sediment accumulation over Lopez Lake's history of operation.

[4] 2023 Lopez Lake Bathymetric Survey, by *Reese Water & Land Surveying Services*

[5] 2024 Lopez Reservoir Capacity Model Update, by *The San Luis Obispo Flood Control and Water Conservation District*

To assess long-term trends, the 2023 dataset was compared with both the 1973 capacity table and the 2002 bathymetric survey.

Results indicate that overall lake volume has remained nearly unchanged since 2002. The slight increase in capacity is attributed to improvements in sensor and GPS technology enabling a more comprehensive scan of the reservoir floor. The low level of siltation between 2002-2023 is attributed mainly to a regionwide multi-year drought reducing the size of storm events and lowering the levels of upstream watershed erosion.

Although differences in the technologies used for the 1973, 2002, and 2023 models partially obscure the comparison, Figure 28 suggests that the period from 2002 to 2024 departs from the reservoir's typical siltation patterns. The comparison curve shows a less consistent slope, indicating relatively minor sediment accumulation. This likely reflects reduced sedimentation rates during drought conditions compared to non-drought periods. Because the reservoir did not spill between 2002 and 2023, spill events provide a useful benchmark for distinguishing typical from atypical conditions when evaluating the reservoir.

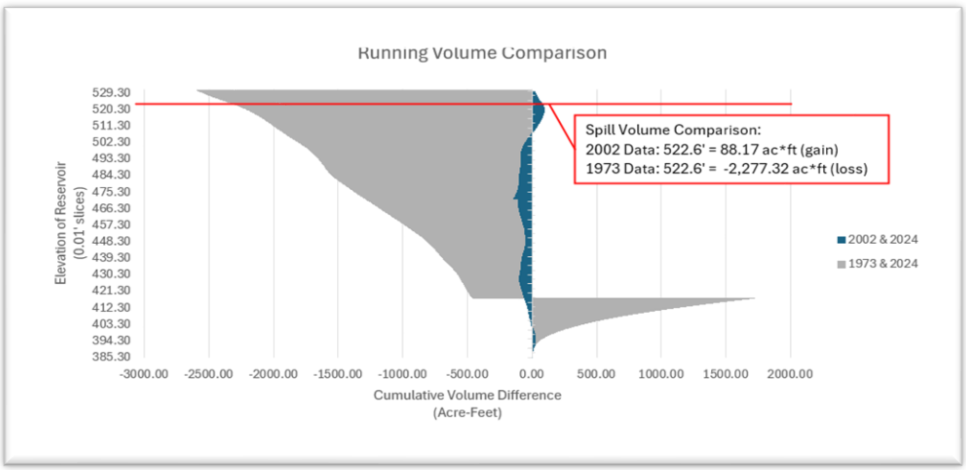



Figure 29: Cumulative Reservoir Capacity from 1973 to 2002 (Reese, 2024)

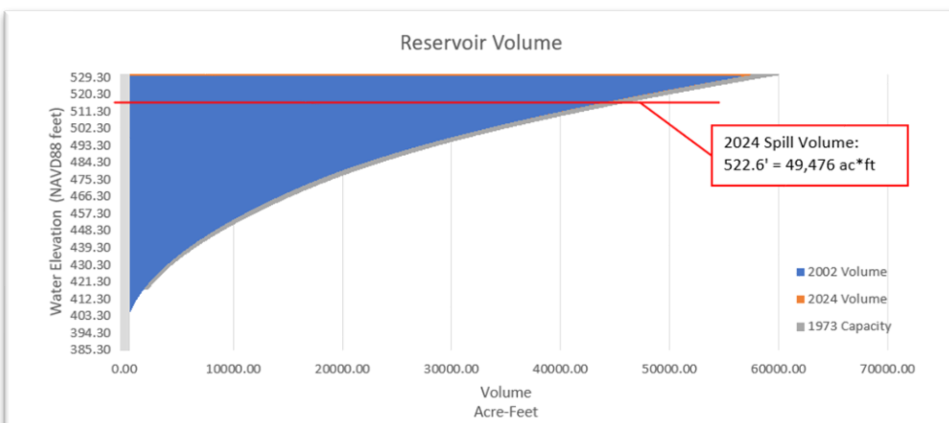



Figure 30: Cumulative Reservoir Capacity from 1973,2002 and 2024 (Reese, 2024)

The data analysis concluded that if storm events causing spills were to become more frequent, the reservoir would likely revert to its historic siltation rate of approximately 51 AF per year. If it is assumed that all sediment accumulation occurred between 1973 and 2002, with minimal siltation from 2002 to 2024, the estimated siltation rate would increase to roughly 89.46 AF per non-drought year.

## Security

A security and vulnerability assessment has been completed for the system. The County is a member of the Water ISAC Water Security Network.

The Lopez Terminal Reservoir and Water Treatment Plant facility are entirely fenced with chain-linked or barbed wire fencing. “No trespassing” signs are prominently posted around the facility. The remoteness of the treatment facility and the housing of two District employees at the site enhance security.

Access to the Lopez Water Treatment Plant is controlled by a locked entrance gate. All visitors are required to sign-in at the plant’s main office.

Other than an occasional fisherman, trespassing in the Lopez Terminal watershed has not been a problem. When trespassers are encountered, they are asked to leave. If they refuse or are problematic in any way, the County of San Luis Obispo Sheriff Department is notified and asked to respond.

Access to the treatment facility is controlled through a locked, passcode-protected gate that is monitored during regular working hours, and all visitors are required to check in at the office upon arrival. Entry through adjacent private property is strictly prohibited. The most visible areas of the Terminal Reservoir watershed are secured with chain-link fencing topped with barbed wire, while the remaining perimeter is enclosed with barbed wire fencing. Although fencing alone cannot prevent access by a determined intruder, extending the chain-link fencing with barbed wire around the watershed has significantly reduced casual trespassing. In addition, the District provides on-site housing for two Water Treatment Plant employees, which enhances watershed security during non-working hours.



Figure 31: Key Pad coded lock to get into Lopez Terminal and WTP

Security at a lake intake building is critical to protect both water quality and the infrastructure that delivers safe drinking water. Unauthorized access or tampering could introduce contaminants, damage equipment, or disrupt water delivery, posing risks to public health. Maintaining controlled access, fencing, surveillance, and on-site personnel helps prevent vandalism and trespassing, ensuring that the intake operates reliably and the water supply remains safe for the community. See figure 32.


Figure 32: Locked gate at Intake structure.

## Field Inspection Summary of Sections

**Lopez Lake: Field Inspection Summary of Sections A, B, and K**

Sections A, B, and K of Lopez Lake are fed by the Clapboard Canyon Creek arm. When water levels are sufficient, wading birds primarily use Section A and occasionally Section B. Deer are frequently observed along the shoreline of Section B.

**Lopez Lake: Field Inspection Summary of Sections C and D**

Lopez Lake Section C is fed by Wittenberg Creek Arm. Vista Lago, a designated swim area, is located along the shore of Section C and Section D. This section of the lake is popular for windsurfers and swimmers. The wastewater treatment plant for the Lopez Recreation Area is also located adjacent to Section C. Wittenberg Creek Arm does not flow year-round; therefore, Section C water can become stagnant. The increased water temperature, low circulation, and prevailing wind patterns can promote algae and weed growth. Wittenberg Creek Arm is tested quarterly for coliform bacteria when flowing. Bacteriological monitoring of Section C is scheduled monthly (Table 15). During this time, a bacteriological sample was taken from Section D to ensure recreation was safe for body contact sports.

In 2024, there was a small fire in the Northern part of Wittenberg Creek Arm due to a campfire. The fire was quickly controlled and did not spread to the lake or harm the watershed. Lopez Lake has a high fire watch during the dry, windy, warm months.

Table 15: Summary of Section C Bacteriological Data

| Section C Bacteriological Data | | |
|---|---|---|
| **Date** | **Total Coliforms (MPN/100 mL)** | ***E. coli* *(MPN/100 mL)*** |
| **Minimum** | **2100** | **<1** |
| **Maximum** | **24000** | **11** |
| **Average** | **2902** | **4** |
| **Median** | **1500** | **2.5** |
| **Count** | **34** | **34** |

**Lopez Lake: Field Inspection Summary of Sections E, F, and G**

Several deer and bear can be found along the edge of the lake throughout the year in these sections. Sections E, F, and G, are the most popular for recreational vessels and water skiers. Occasionally cattle from a nearby ranch are found near the water's edge in section F (Figure 33). These areas tend to be very windy in the afternoon.

Keeping cows out of a drinking water reservoir is essential to protect water quality and ensure effective surface water treatment. Livestock can introduce bacteria, nutrients, and sediments into the reservoir, increasing the risk of harmful algal growth and contamination. This can make it more difficult for treatment plants to remove pathogens and impurities, requiring additional treatment and increasing operational costs. Preventing livestock access helps maintain cleaner source water, supporting safer, more efficient surface water treatment and a reliable drinking water supply

Section F is where you will find the Lopez Lake's intake structure. A monthly/weekly limnology profile is taken by lab staff to determine the best water quality to deliver to Lopez Terminal. Lopez dam and spillway are also located near section F.

Figure 33: Cattle on hillside near Sections F and G

**Lopez Lake: Field Inspection Summary of Sections H, I, and J**

Section H is popular for windsurfers and water skiers. This section can become busy during the summer season. Section J is fed by Vasquez Creek and section I is fed by Lopez Creek. This area is most popular for fishing boats. Many types of waterfowl and deer are found in section I along the water edge and in the water. Deer and bear have been spotted in section J near the Vasquez Creek area.

Lopez Lake delivers water to the terminal through an intake structure located in Section F. To ensure that the highest water quality is maintained at Lopez Terminal, laboratory personnel conduct regular field measurements on a weekly or monthly basis. Water samples are also collected weekly at both the Influent to Terminal and Influent to Plant points. A log boom is installed to protect the intake structure from recreational users and large debris. Figures 34 show the log boom and accumulated debris that could potentially interfere with water delivery or release, and a view of Lopez Lake's intake structure

Figure 34: Lopez Lake Log Boom and Intake Building

In 2023, heavy rains significantly impacted Lopez Lake by increasing inflows and raising water levels, as seen in Figure 35. The elevated runoff carried sediments and organic material into the reservoir, temporarily reducing water clarity and potentially increasing nutrient loads. Rising water levels also tested the reservoir's intake structures and spillway operations, requiring careful monitoring to maintain water quality and ensure safe water delivery downstream.

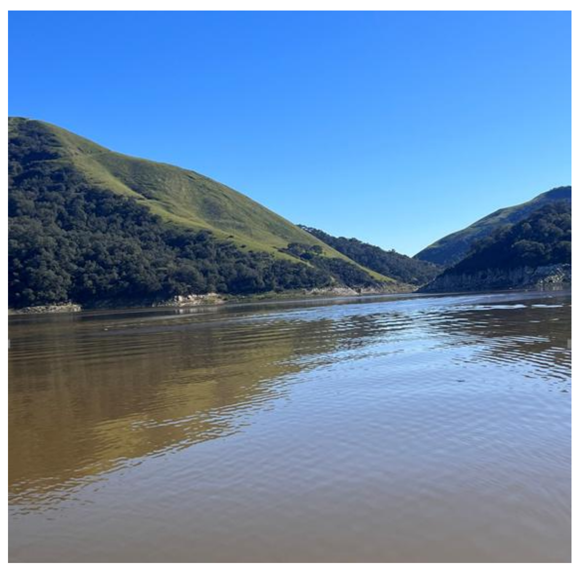


Figure 35: Lake inspection photos after the 2023 storms

# SYSTEM COMPLIANCE WITH NEW AND FUTURE REGULATIONS

## Surface Water Treatment Rule

Surface water treatment requirements under the U.S. Environmental Protection Agency's (EPA) Surface Water Treatment Rule (SWTR) and the Safe Drinking Water Act ensure that public water systems using surface water or groundwater under the influence of surface water provide multiple barriers against microbial contamination. Required processes include coagulation, flocculation, sedimentation, filtration, and disinfection, aimed at reducing pathogens such as Giardia, Cryptosporidium, and viruses. Systems must also monitor turbidity, microbial indicators, and disinfectant residuals to confirm treatment effectiveness. Enhanced requirements, including the Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR), address higher-risk waters and sensitive populations by requiring additional pathogen removal based on source water quality (EPA, 1989; EPA, 2006).

In California, the State Water Resources Control Board, Division of Drinking Water (SWRCB-DDW) enforces both federal surface water treatment rules and additional state-specific requirements. Systems must monitor for microbial indicators, turbidity, and disinfection byproducts, and maintain operational standards to ensure compliance. Periodic sanitary surveys and source water assessments evaluate watershed protection, treatment performance, and potential contamination risks, ensuring public health protection and adherence to both federal and state standards

Since all historical testing has not detected any *Cryptosporidium* in the Raw or Treated water, Lopez Project is classified in the lowest risk category, which carries no additional treatment requirement. Beginning in October of 2015, samples were collected on a monthly basis for cryptosporidium as part of the LT2ESWTR.

Sampling was completed in 2017, and all results were non-detect. The Lopez Project is in full compliance with the LT2ESWTR.

## Per- and polyfluoroalkyl substances (PFAS) Information

Per- and polyfluoroalkyl substances (PFAS), including perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS), are persistent man-made chemicals used in products that resist heat, oil, and water. Because they do not readily break down, PFAS can migrate through soil, contaminate groundwater, and bioaccumulate in fish, wildlife, and humans. Studies have linked certain PFAS to increased cholesterol, low infant birth weight, immune system effects, thyroid disruption, and some cancers. In April 2024, the U.S. Environmental Protection Agency finalized enforceable national drinking water standards (Maximum Contaminant Levels) for several PFAS, including PFOA and PFOS at 4 ng/L (ppt), with monitoring and compliance requirements phased in over the next several years.

In California, notification and response levels remain in effect while additional state-specific regulations are developed. Notification levels are precautionary, health-based advisory levels. Response levels are higher concentrations at which water systems are recommended to remove a source from service, provide treatment, or issue public notification. All California public water systems will be required to monitor for PFAS by 2027, with earlier testing required for systems considered at risk. On April 10, 2024, the USEPA finalized national drinking water standards for five individual PFAS: PFOA, PFOS, PFNA, PFHxS, and HFPO-DA (known as GenX Chemicals) and a Hazard Index level for two or more of four PFAS as a mixture: PFNA, PFHxS, HFPO-DA, and PFBS. These are legally enforceable drinking water limits and reduce PFAS exposure for approximately 100 million Americans served by public drinking water systems.

A response level has also been established for these analytes. A response level (RL) is set higher than a notification level and represents a recommended chemical concentration level at which water systems consider taking a water source out of service or provide treatment if that option is available to them. Starting in January 2020, water systems that receive an order and detect levels of PFAS substances that exceed their response level shall take a water source out of use, treat the water delivered, or provide public notification (See Table 16).

Table 16: PFAS Notification Limits

| Analyte | Notification Level, ng/L | Response Level, ng/L (running four quarter average) |
|---|---|---|
| **PFOA** (Perfluorooctanoic acid) | 4.0 | 10 |
| **PFOS** (Perfluorooctane sulfonic acid) | 4.0 | 40 |
| **PFHxS** (Perfluorohexane sulfonic acid) | 3.0 | 10 |
| **PFHxA** (Perfluorohexanoic acid) | 1,000 | 10,000 |
| **PFBS** (Perfluorobutane sulfonic acid) | 500 | 5,000 |

By 2027, all public water systems in California will be required to monitor their drinking water for PFAS. Water systems may receive an order to test if they are considered at risk of contamination, either because of nearby facilities that manufacture, use, or store PFAS, or due to proximity to a water source already impacted by PFAS. A list of public water systems and sources required to conduct sampling is available online. More information and guidance can be found through the State Water Resources Control Board, Division of Drinking Water. More information can be found at: https://www.waterboards.ca.gov/water_issues/programs/pfas/

As of 2026, Lopez Treatment Raw has completed 3 out of the 4 quarters required by the State Water Resource Control Board and the EPA.

## Algal Toxin

The U.S. Environmental Protection Agency (EPA) has issued non-enforceable health advisories for cyanotoxins in drinking water, including microcystin-LR (0.3 µg/L for children; 1.6 µg/L for adults) and cylindrospermopsin (0.7 µg/L for children; 3.0 µg/L for adults) (EPA, 2015). In California, the California State Water Resources Control Board has established an enforceable maximum contaminant level (MCL) of 1.0 µg/L for microcystin-LR and a notification level of 0.7 µg/L for cylindrospermopsin, requiring monitoring, public notification, and treatment when levels warrant action (SWRCB, 2024). Conventional surface water treatment processes—such as coagulation, filtration, activated carbon adsorption, and oxidation—are recognized as effective barriers for cyanotoxin control (EPA, 2015).

Future regulatory development is expected to proceed through the EPA's Contaminant Candidate List (CCL) process, which identifies unregulated contaminants that may require national standards under the Safe Drinking Water Act (EPA, 2023). Cyanotoxins have been included in prior CCL cycles, and continued occurrence data collection may support regulatory determinations and potential federal MCLs. At the state level, California continues to evaluate harmful algal bloom impacts and emerging contaminant data, which could result in expanded monitoring requirements or additional health-based standards as scientific understanding advances (SWRCB, 2024).

## Unregulated Contaminant Monitoring Rule (UCMR)

The Unregulated Contaminant Monitoring Rule (UCMR), administered by the U.S. Environmental Protection Agency, requires public water systems to monitor for contaminants that do not yet have established MCLs (EPA, 2023a). Data generated through UCMR cycles provide nationwide occurrence information that supports health assessments and regulatory determinations under the Safe Drinking Water Act. This structured monitoring approach serves as the primary mechanism for identifying contaminants that may warrant future federal drinking water standards.

Recent UCMR monitoring has included lithium to better understand its prevalence in drinking water supplies (EPA, 2023a). Although no federal or California MCL currently exists for lithium, monitoring data will inform future health risk evaluations. Lithium is used therapeutically at controlled doses for bipolar disorder, but long-term exposure to elevated levels in drinking water may affect kidney and thyroid function (EPA, 2023a). Depending on nationwide occurrence and health risk findings, future regulatory actions could include health advisories, notification levels, or eventual establishment of enforceable MCLs. Sanitary Survey Recommendations

# CONCLUSIONS AND RECOMMENDATIONS

All previous survey recommendations have been implemented, with the exception of Recommendations 1–4 listed below, which are the only items carried over from the prior report.

**Recommendation 1 - Potential Hazardous Spills**

The ability to bypass the Terminal Reservoir could provide a quick, workable solution if a hazardous materials spill occurred on Orcutt Road. The 18" bypass was pressure tested and visually inspected in 2019 and determined to be in good condition. The ability to bypass the terminal reservoir seems feasible. The Health and Safety code prohibits direct use of any reservoir water stored for domestic use that has had body contact (from swimming, water skiing, etc). Legislative change at the State level would be required to use water directly from Lopez Lake at the LTWP. Continue to evaluate the options of diverting Orcutt Road drainage away from the Terminal Reservoir in case of a hazardous materials transportation spill.

**Recommendation 2:**

Investigate further treatment options, and vendors, to help combat odor issues when there is a presence of MIB and geosmin.

**Recommendation 3:**

The District should continue to make efforts to limit the amount of grazing in and around the watershed areas, including Lopez Terminal Reservoir and Lopez Lake.

**Recommendation 4:**

Continue to add fencing around the Terminal Reservoir watershed as needed, especially in areas not visible from the treatment plant site.

**Recommendation 5 (Completed, ongoing):**

The scope of the inflow creek sampling program should be maintained and/or expanded in terms of scope and frequency. Recommending analysis after major events like fire, storms, etc.

**Recommendation 6 (Completed, ongoing):**

Develop a public education brochure or newsletter that is sent out to residents or given to visitors of Lopez Lake and watershed areas. This educational handout will include information about how to protect the watershed and lake from items such as wildfire, nutrient overload, and invasive species.

**Recommendation 7 (Completed, ongoing):**

Continuing to monitor Nutrients at ITT (monthly)and the Creeks (quarterly). We added ortho-phosphate to the package to help us understand our algae issue more. Possibly down the road (when funding is available), we will inquire to get our sediment tested. This will help us with treating algae as a long-lasting goal.

**Recommendation 8 (In process):**

Future Water Quality Monitoring Program

The following sample matrix summarizes suggested sampling for the Lopez Project watersheds (See Table 17).

Table 17: Water Quality Monitoring Matrix-System Compliance with New and Future

| Site | Site Location | Bacteriological | Physical | Limnology | Algal Toxins | General Mineral | Aluminum/Arsenic | Inorganic | Nutrients | VOC | SOC | TOC | Enterococcus | Giardia Cryptosporidium |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lake | Creeks | Q | Q | ----- | ----- | Q | Q | A | Q | 3 | 9 | ----- | Q | A |
| | Section C | M | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | M | ----- |
| | Intakes | ----- | W/M | W/M | FD-Intake in use | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- |
| Terminal and Treatment Plant | Influent to Terminal | W | W | ----- | ----- | Q | M | A | M | 3 | 9 | M | M | ----- |
| | Influent to Plant | W | W | W | FD | Q | M | A | Q | A | 9 | M | ----- | ----- |
| | LWTP Treated | W | W | ----- | FD | Q | M | A | ----- | 3 | 9 | ----- | ----- | ----- |
| | LWTP Delivered | W | W | ----- | FD | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- |

W = Weekly sampling; M = Monthly sampling; W/M = Weekly or monthly sampling based on the season; Q = Quarterly sampling; A = Annual sampling; 3 = Sampling every 3 years; 9 = Sampling every 9 years; FD = following toxin detection in Terminal

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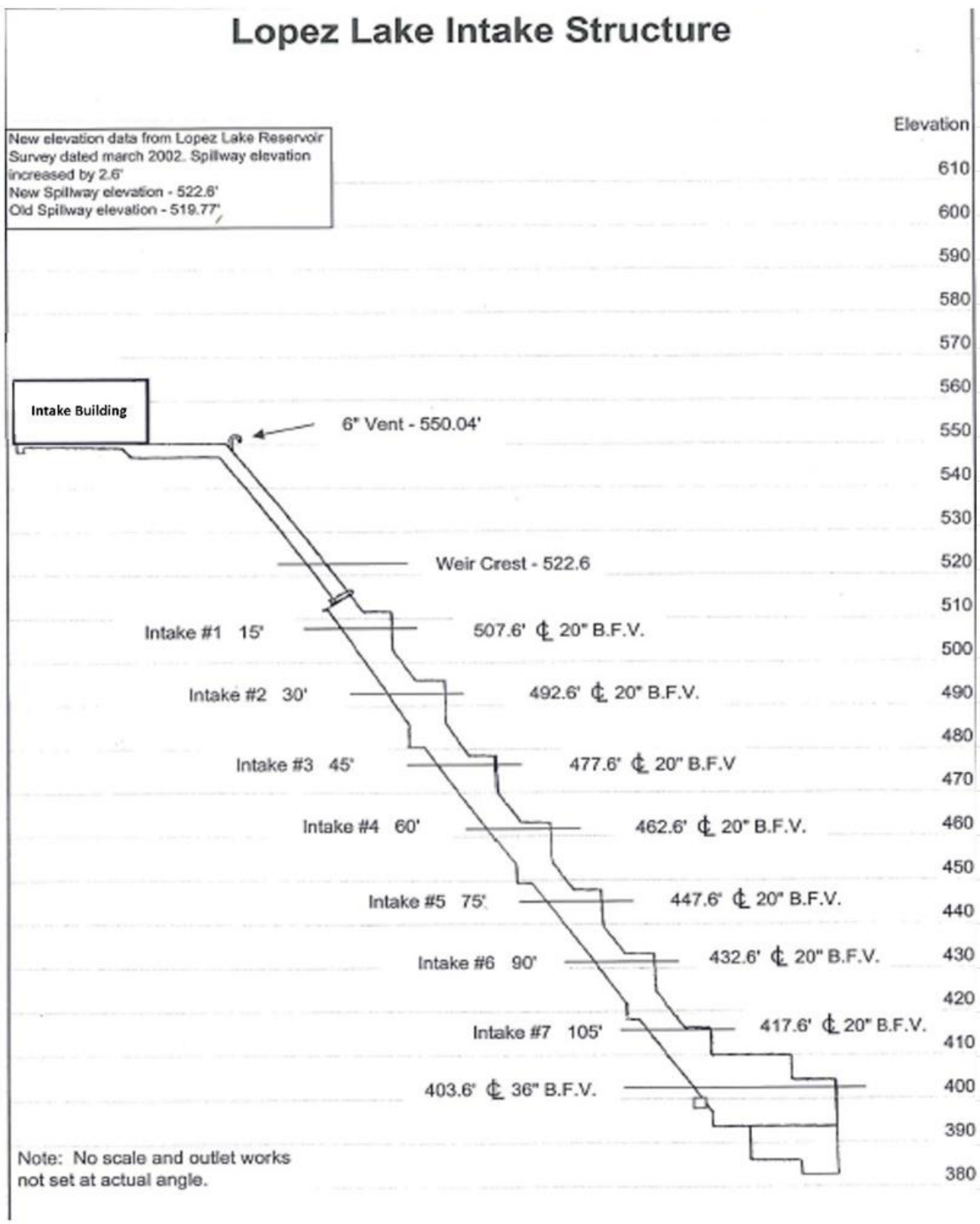
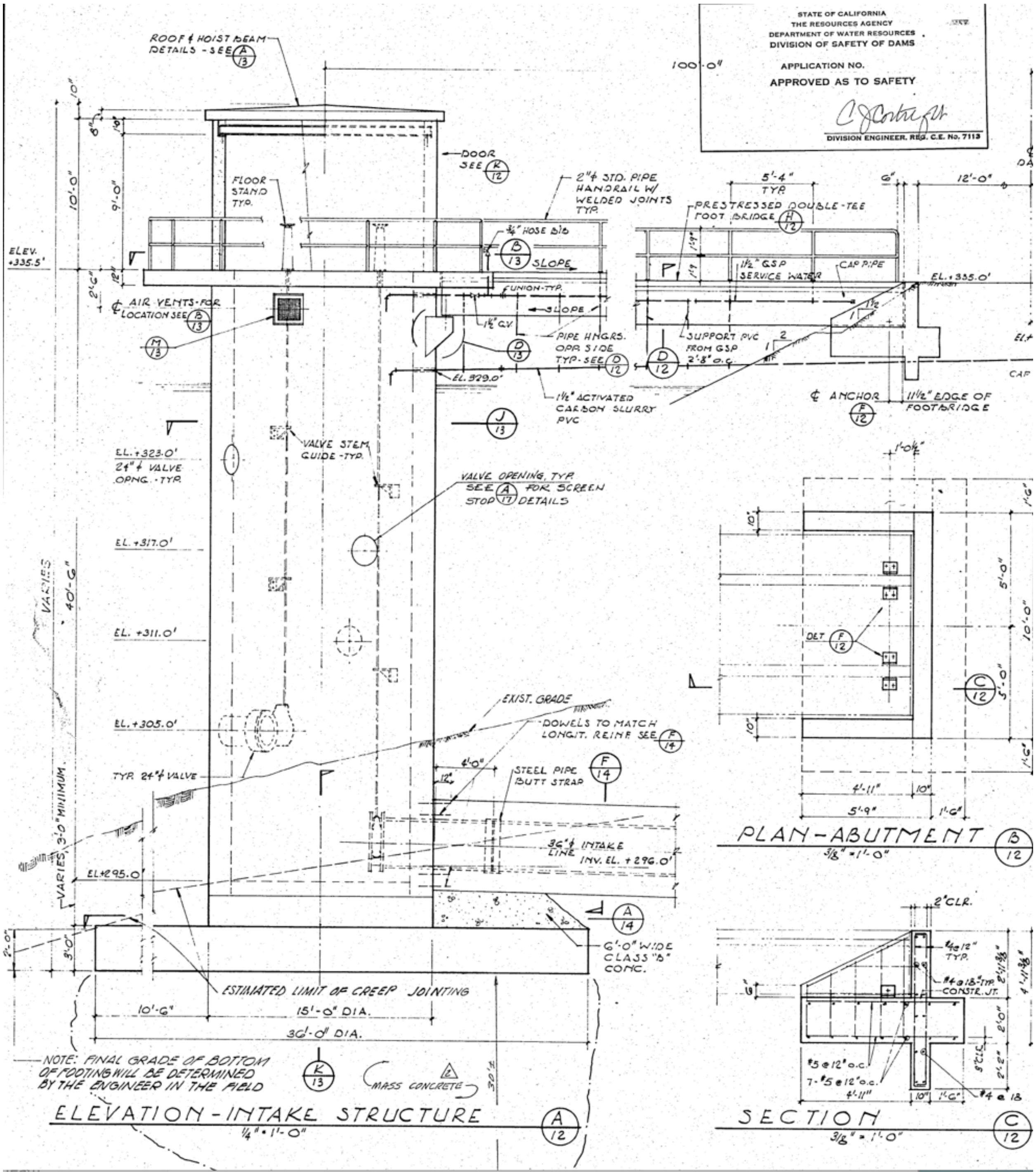
# APPENDICES

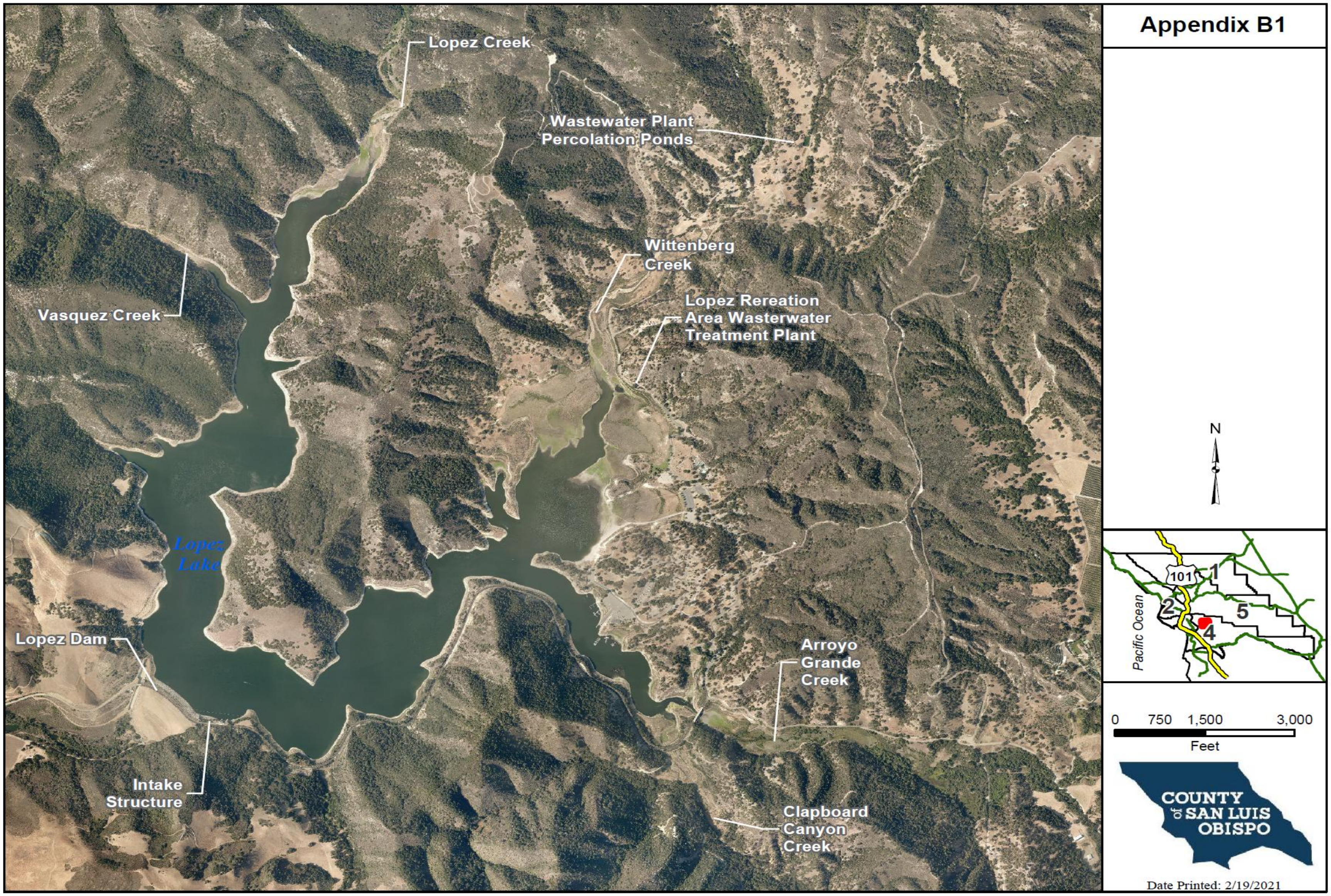
## Appendix A1: Lopez Lake Intake Diagram



## Appendix A2: Lopez Terminal Intake Diagram

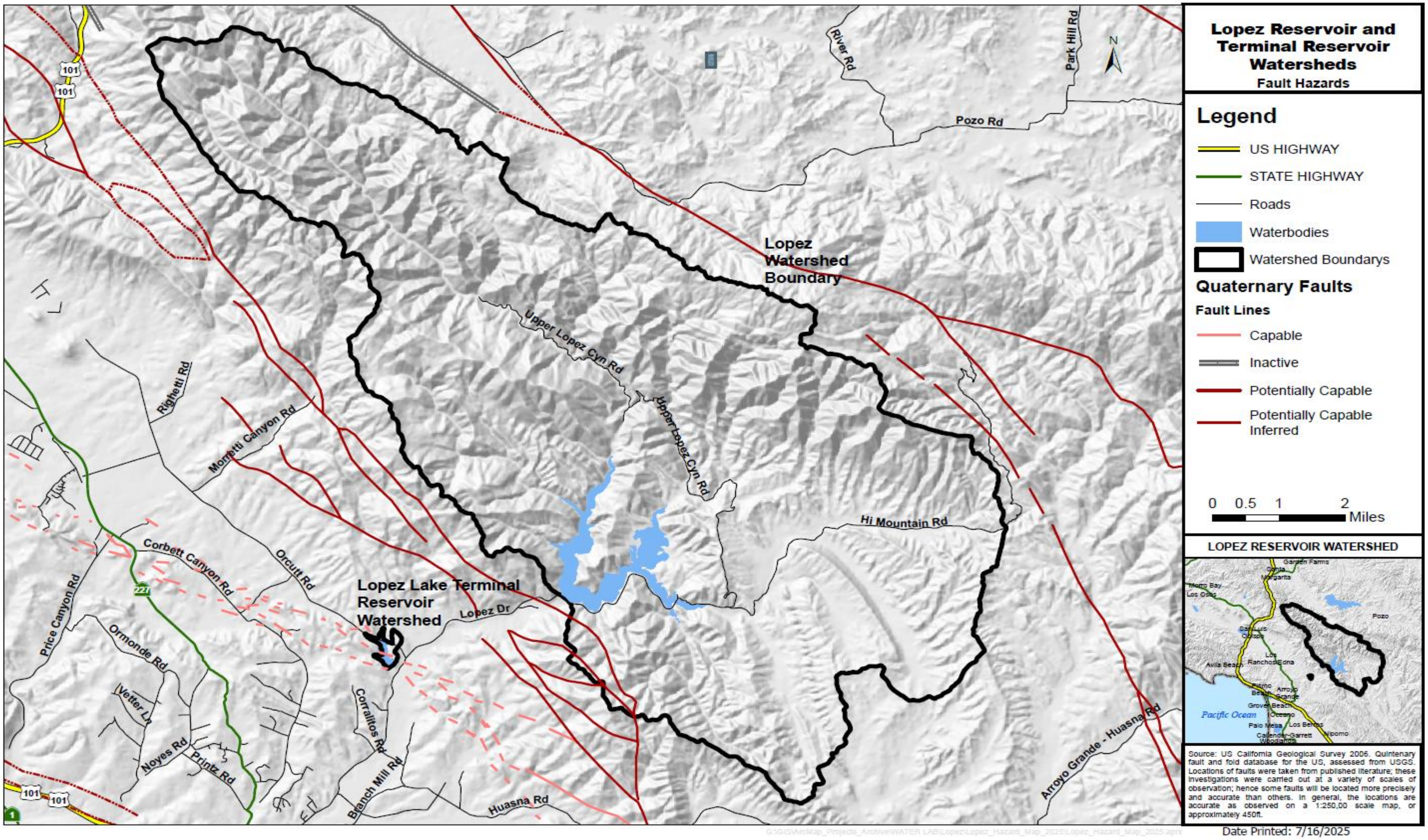


## Appendix B1: Aerial Photograph of Lopez Lake

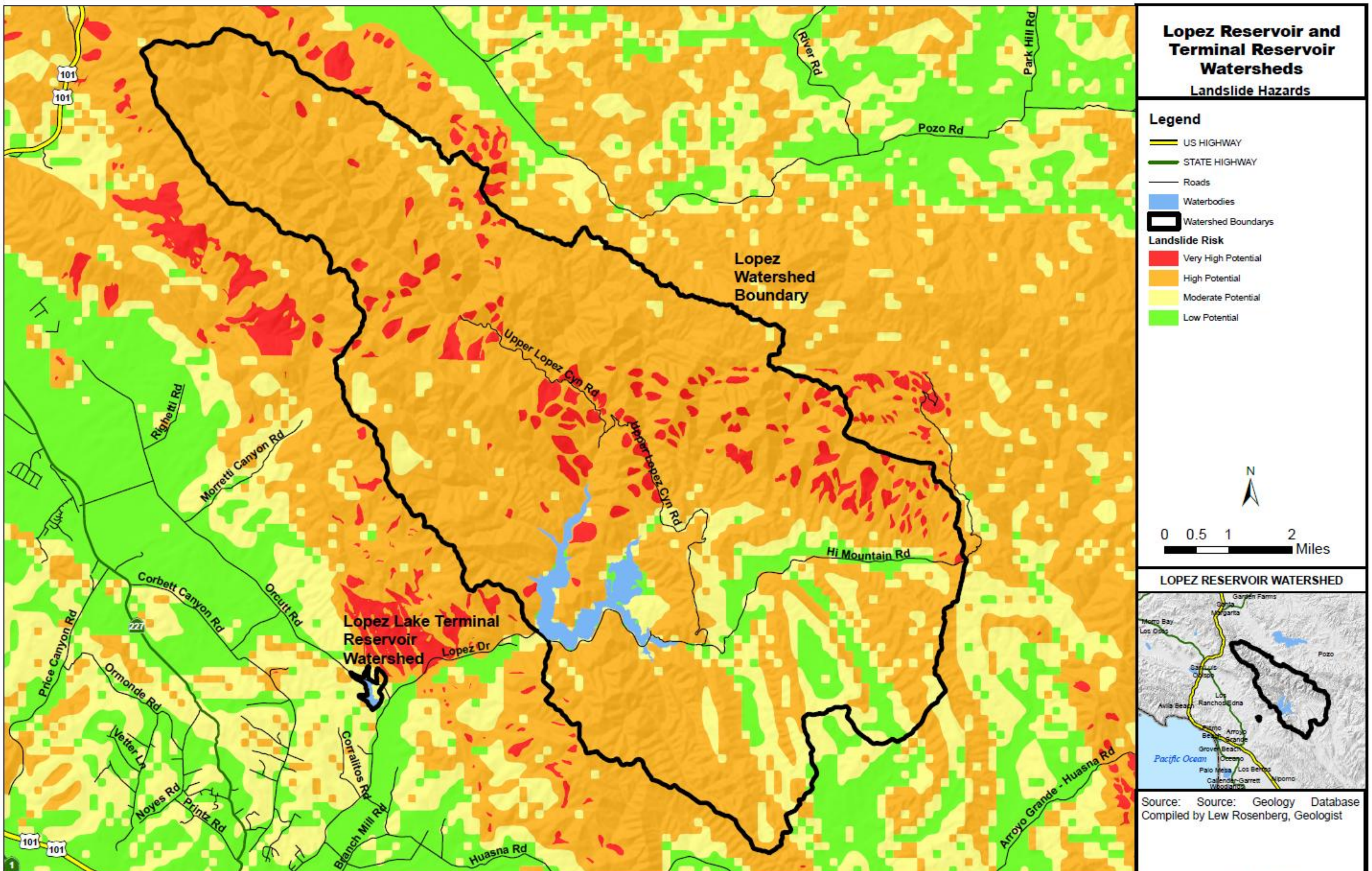


## Appendix B2: Aerial Photograph of Lopez Terminal

## Appendix C1: Fault Hazards, County of San Luis Obispo



## Appendix C2: Landslide Hazards, County of San Luis Obispo



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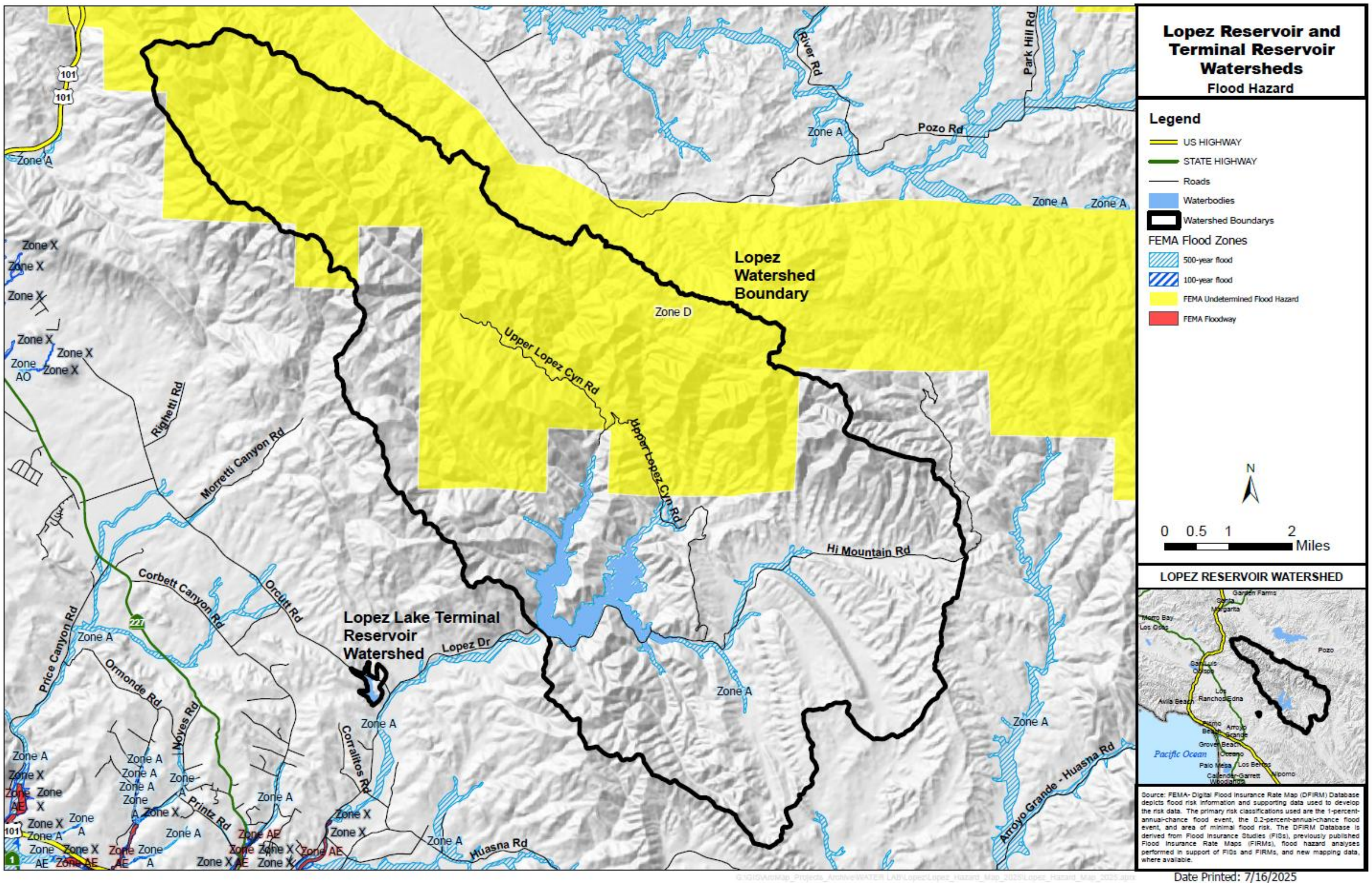
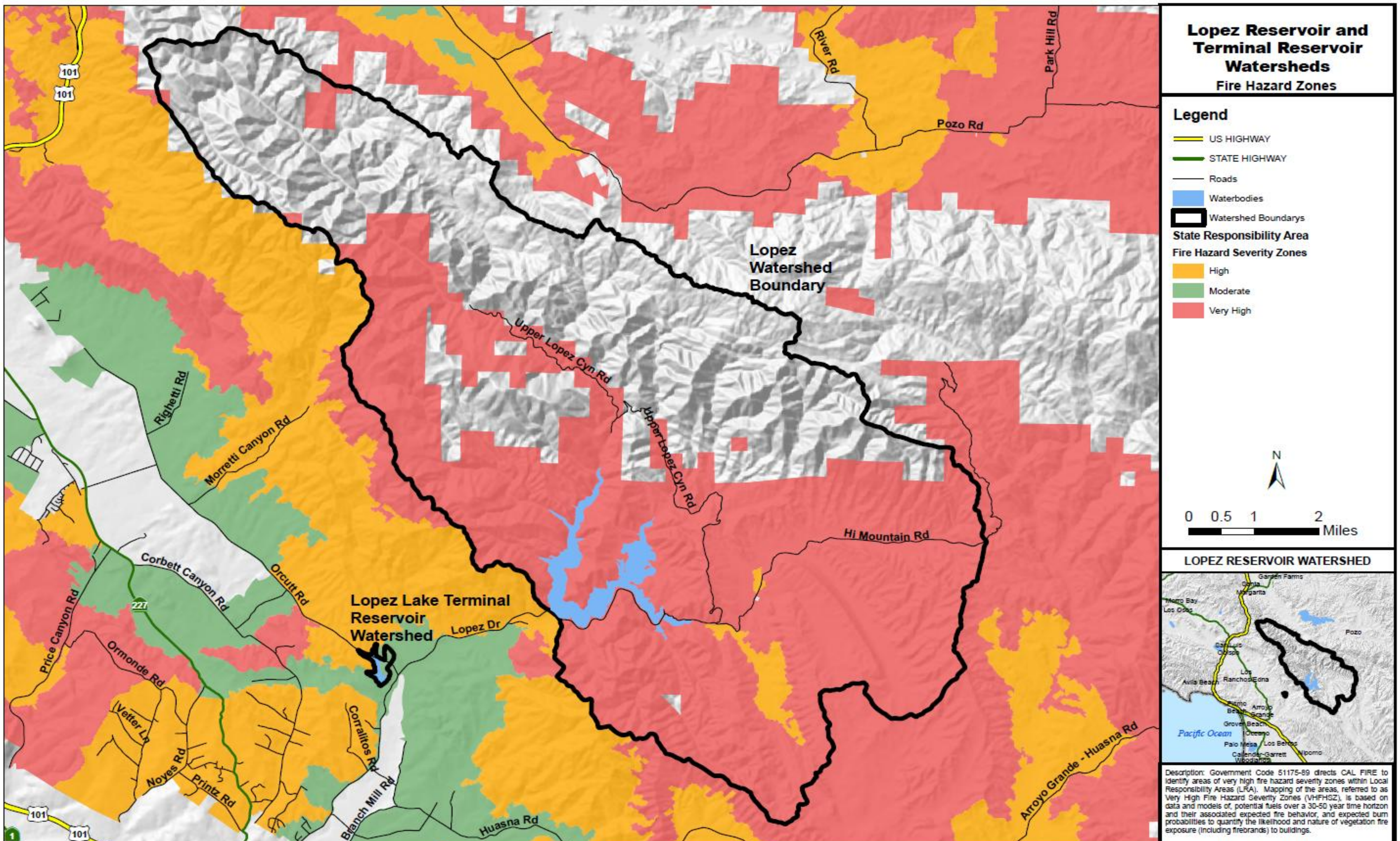
## Appendix C3: Flood Hazards, County of San Luis Obispo



## Appendix C4: Fire Hazard Zone, County of San Luis Obispo

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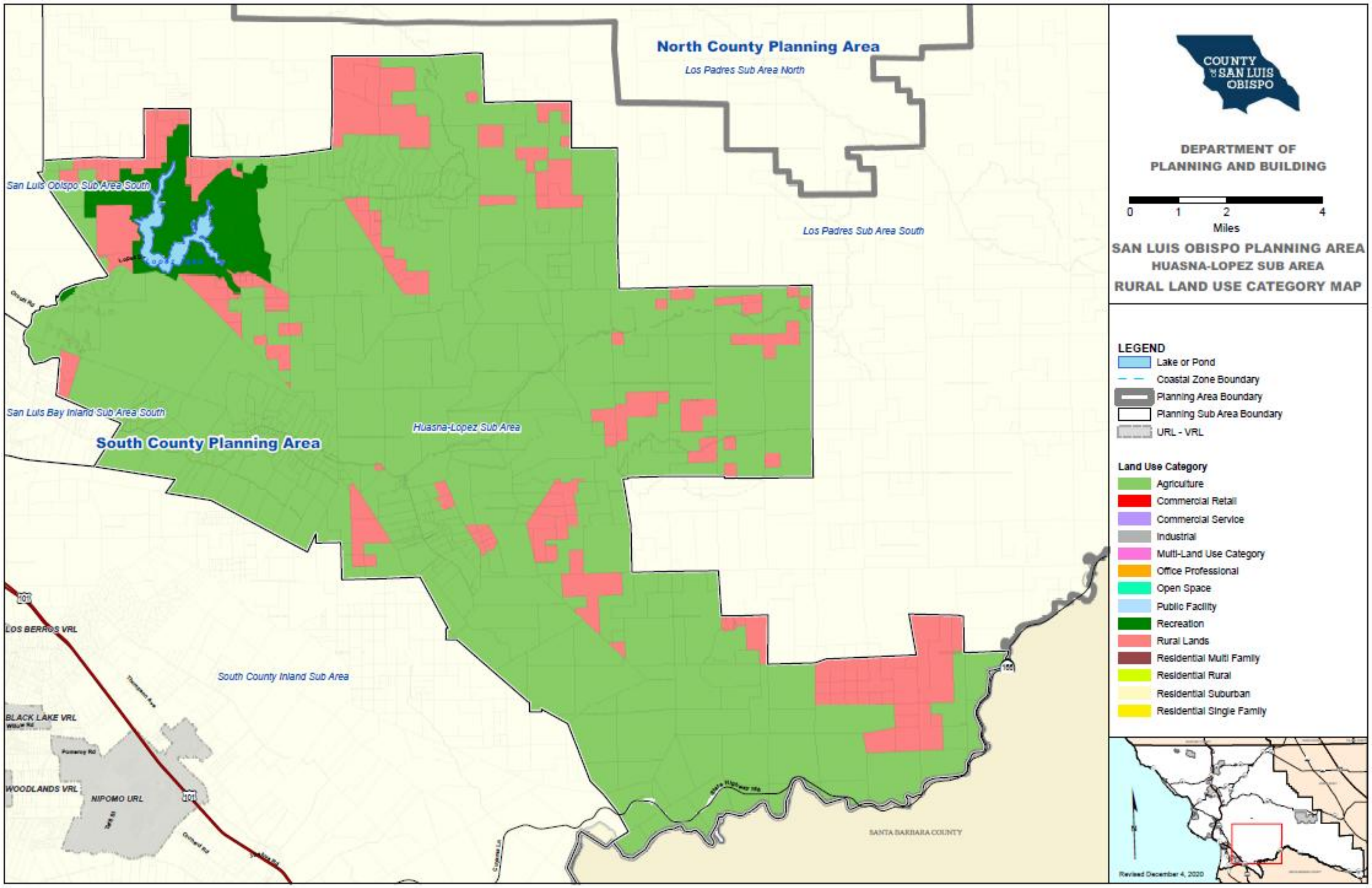
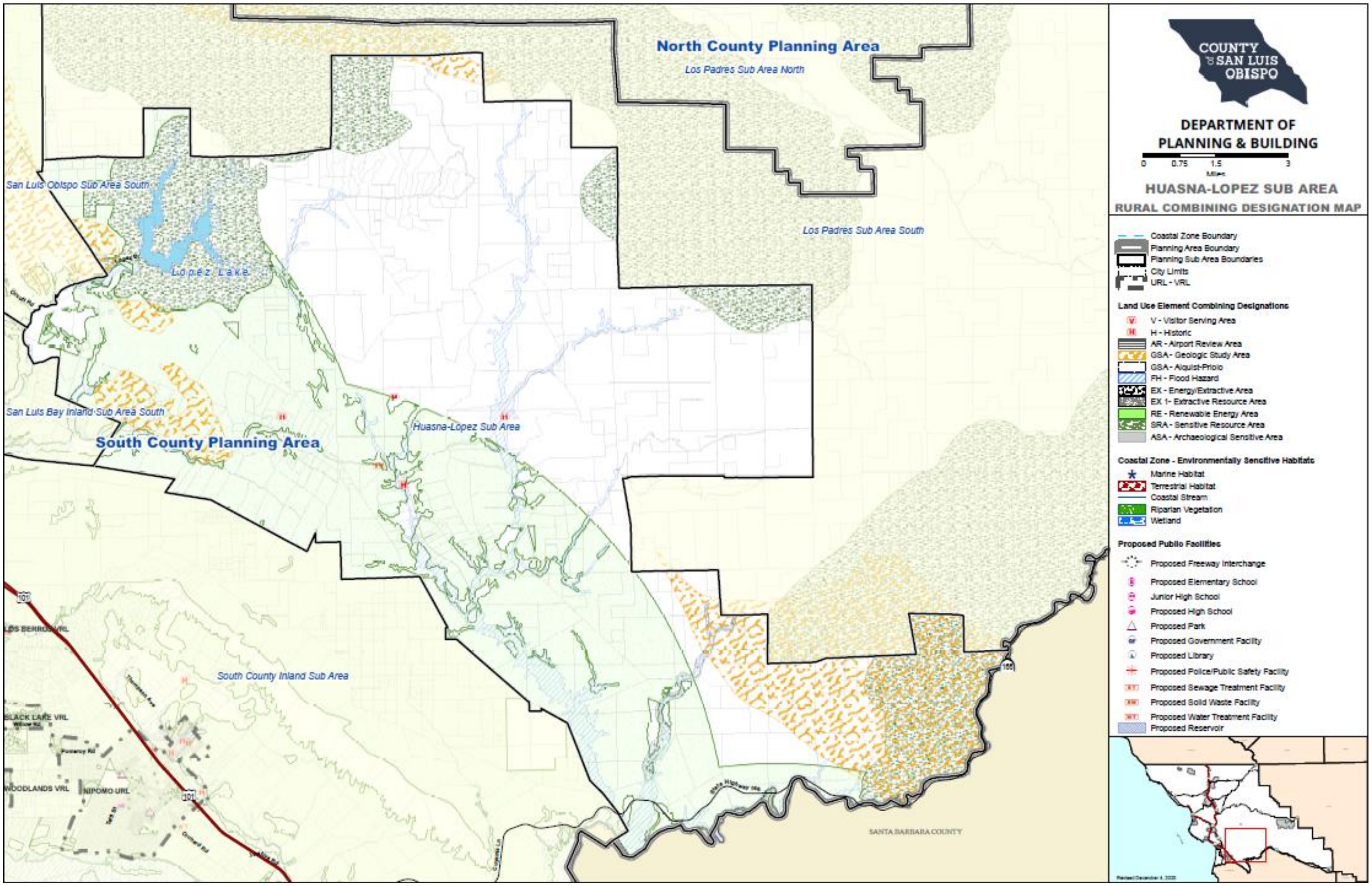
## Appendix C5: Rural Land Use, County of San Luis Obispo



## Appendix C6: Rural Combining Designation, County of San Luis Obispo



## Appendix D1 Data: Lopez Lake Temperature Limnology

| Lopez Lake Temperature Profile, °C versus Depth, Feet | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Date** | **2'** | **5'** | **10'** | **15'** | **20'** | **25'** | **30'** | **35'** | **40'** | **45'** | **50'** | **55'** | **60'** | **65'** | **70'** | **75'** | **80'** |
| 1/13/2021 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 |
| 2/10/2021 | 11.4 | 11.4 | 11.3 | 11.3 | 11.3 | 11.3 | 11.3 | 11.1 | 11.0 | 11.0 | 10.9 | 10.9 | 10.9 | 10.9 | 11.0 | 11.0 | 11.0 |
| 3/10/2021 | 12.1 | 12.1 | 12.1 | 12.1 | 12.1 | 12.1 | 12.1 | 12.1 | 12.1 | 12.1 | 12.1 | 12.1 | 12.0 | 11.9 | 11.9 | 11.9 | 11.9 |
| 4/7/2021 | 15.1 | 15.1 | 15.1 | 15.0 | 15.0 | 15.0 | 15.0 | 14.7 | 14.3 | 14.1 | 13.8 | 13.8 | 13.6 | 13.3 | 13.2 | 13.1 | 13.6 |
| 4/14/2021 | 15.9 | 15.5 | 15.5 | 15.5 | 15.5 | 15.4 | 15.4 | 15.3 | 15.3 | 15.1 | 15.0 | 14.5 | 14.2 | 13.9 | 13.7 | 13.5 | 14.0 |
| 4/21/2021 | 16.1 | 16.2 | 16.2 | 16.2 | 16.2 | 16.1 | 15.9 | 15.8 | 15.5 | 15.5 | 15.5 | 15.2 | 15.1 | 15.0 | 14.0 | 14.0 | 14.9 |
| 4/28/2021 | 16.5 | 16.4 | 16.2 | 16.2 | 16.2 | 16.1 | 16.1 | 16.1 | 16.0 | 16.0 | 15.8 | 15.8 | 15.6 | 15.2 | 14.9 | 14.9 | 15.2 |
| 5/5/2021 | 17.9 | 17.8 | 17.8 | 17.7 | 17.7 | 17.0 | 16.4 | 16.2 | 16.0 | 15.9 | 15.7 | 15.6 | 15.6 | 15.5 | 15.4 | 15.2 | 15.0 |
| 5/12/2021 | 19.0 | 18.9 | 18.7 | 18.7 | 18.7 | 18.1 | 17.8 | 17.4 | 17.0 | 16.7 | 16.2 | 15.8 | 15.6 | 15.5 | 15.2 | 15.0 | 15.0 |
| 5/19/2021 | 18.7 | 18.6 | 18.6 | 18.6 | 18.5 | 18.4 | 18.4 | 18.3 | 18.2 | 17.5 | 16.4 | 16.0 | 15.9 | 15.7 | 15.2 | 15.0 | 16.1 |
| 5/26/2021 | 19.1 | 19.1 | 18.8 | 18.6 | 18.6 | 18.6 | 18.3 | 17.9 | 17.7 | 17.6 | 17.4 | 16.7 | 16.1 | 16.0 | 16.1 | 16.1 | 19.7 |
| 6/3/2021 | 20.1 | 19.9 | 19.7 | 19.7 | 19.7 | 19.7 | 19.7 | 19.7 | 19.7 | 19.7 | 19.7 | 19.7 | 19.7 | 19.7 | 19.7 | 19.7 | 15.2 |
| 6/9/2021 | 20.0 | 20.0 | 19.8 | 19.8 | 19.8 | 19.7 | 19.5 | 18.7 | 18.4 | 17.9 | 17.7 | 17.3 | 16.4 | 15.7 | 15.4 | 15.3 | 18.6 |
| 6/16/2021 | 22.0 | 21.2 | 21.1 | 21.0 | 21.0 | 20.9 | 20.3 | 19.6 | 19.1 | 18.8 | 18.7 | 18.8 | 18.8 | 18.7 | 18.6 | 18.6 | 16.0 |
| 6/23/2021 | 22.1 | 21.9 | 21.9 | 21.8 | 21.8 | 21.5 | 20.6 | 19.9 | 19.4 | 18.9 | 18.1 | 16.8 | 16.4 | 15.9 | 15.9 | 16.0 | 15.8 |
| 6/30/2021 | 21.9 | 21.9 | 21.8 | 21.8 | 21.7 | 21.7 | 21.6 | 20.4 | 19.8 | 19.8 | 18.0 | 17.0 | 16.4 | 15.9 | 15.8 | 15.7 | 16.0 |
| 7/7/2021 | 22.2 | 22.2 | 22.2 | 22.2 | 22.2 | 22.1 | 21.6 | 20.8 | 20.3 | 19.5 | 18.1 | 17.1 | 16.7 | 16.0 | 15.8 | 16.0 | 16.1 |
| 7/13/2021 | 22.9 | 22.8 | 22.7 | 22.6 | 22.6 | 22.6 | 22.5 | 22.3 | 21.3 | 20.1 | 18.5 | 17.1 | 16.3 | 16.1 | 16.0 | 16.1 | 16.8 |
| 7/20/2021 | 22.8 | 22.7 | 22.7 | 22.7 | 22.7 | 22.6 | 22.3 | 21.5 | 21.1 | 20.2 | 18.2 | 16.8 | 16.5 | 16.7 | 16.7 | 16.8 | 16.0 |
| 7/27/2021 | 22.2 | 22.3 | 22.2 | 22.2 | 22.2 | 22.2 | 22.1 | 22.0 | 21.7 | 20.1 | 18.9 | 18.9 | 16.5 | 16.0 | 16.0 | 15.9 | 16.1 |
| 8/5/2021 | 22.3 | 22.3 | 22.3 | 22.3 | 22.3 | 22.3 | 22.3 | 21.7 | 21.3 | 20.6 | 19.4 | 17.6 | 16.4 | 16.0 | 15.9 | 16.0 | 17.9 |
| 8/10/2021 | 22.4 | 22.4 | 22.2 | 22.1 | 22.1 | 22.1 | 22.1 | 22.1 | 21.9 | 20.6 | 20.4 | 17.7 | 17.7 | 17.7 | 17.8 | 17.9 | 17.6 |
| 8/17/2021 | 22.7 | 22.6 | 22.6 | 22.4 | 22.3 | 22.3 | 22.2 | 22.0 | 21.6 | 21.3 | 20.4 | 18.1 | 17.9 | 17.5 | 17.5 | 17.6 | 16.2 |
| 8/24/2021 | 22.1 | 22.1 | 22.1 | 22.1 | 22.1 | 22.1 | 22.0 | 21.8 | 21.4 | 20.0 | 17.8 | 16.8 | 16.0 | 16.1 | 16.1 | 16.1 | 16.8 |
| 8/31/2021 | 22.3 | 22.3 | 22.2 | 22.2 | 22.1 | 22.1 | 22.1 | 22.1 | 21.6 | 21.2 | 20.6 | 18.6 | 16.3 | 16.5 | 16.6 | 16.7 | 16.4 |
| 9/8/2021 | 22.3 | 22.2 | 21.9 | 21.9 | 21.9 | 21.9 | 21.8 | 21.8 | 21.7 | 21.4 | 21.4 | 17.1 | 16.2 | 16.1 | 16.2 | 16.3 | 16.8 |
| 9/14/2021 | 21.9 | 21.9 | 21.9 | 21.9 | 21.8 | 21.8 | 21.8 | 21.8 | 21.6 | 21.5 | 21.2 | 20.4 | 16.8 | 16.4 | 16.7 | 16.8 | 17.2 |
| 9/21/2021 | 21.3 | 21.2 | 21.1 | 21.1 | 21.1 | 21.1 | 21.1 | 21.1 | 21.1 | 21.1 | 21.0 | 20.9 | 17.0 | 16.9 | 17.0 | 17.1 | 17.0 |
| 9/29/2021 | 21.0 | 21.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 17.0 | 17.0 | 17.0 | 17.3 |
| 10/27/2021 | 17.4 | 17.4 | 17.3 | 17.3 | 17.3 | 17.3 | 17.3 | 17.3 | 17.3 | 17.3 | 17.3 | 17.3 | 17.3 | 17.3 | 17.3 | 17.3 | 16.5 |
| 11/16/2021 | 16.6 | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 | 14.0 |
| 12/8/2021 | 14.4 | 14.1 | 14.1 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | 11.2 |
| 1/12/2022 | 11.2 | 11.2 | 11.1 | 11.1 | 11.1 | 11.1 | 11.1 | 11.1 | 11.1 | 11.1 | 11.1 | 11.1 | 11.1 | 11.1 | 11.2 | 11.2 | 10.9 |
| 2/2/2022 | 11.4 | 11.1 | 11.0 | 11.0 | 11.0 | 11.0 | 10.9 | 10.9 | 10.9 | 10.9 | 10.9 | 10.9 | 10.9 | 10.9 | 10.9 | 10.9 | 12.1 |
| 3/15/2022 | 12.9 | 12.7 | 12.6 | 12.6 | 12.6 | 12.6 | 12.5 | 12.3 | 12.1 | 12.1 | 12.1 | 12.1 | 12.1 | 12.1 | 12.1 | 12.1 | 13.4 |
| 4/5/2022 | 16.1 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 15.2 | 14.8 | 14.6 | 14.4 | 14.0 | 13.5 | 13.4 | 13.4 | 13.4 | 13.4 | 13.5 |

**Lopez Lake Temperature Profile, °C versus Depth, Feet**

| Date | 2' | 5' | 10' | 15' | 20' | 25' | 30' | 35' | 40' | 45' | 50' | 55' | 60' | 65' | 70' | 75' | 80' |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4/13/2022 | 16.2 | 16.1 | 16.1 | 16.1 | 16.1 | 16.1 | 16.1 | 16.1 | 16.0 | 15.3 | 14.6 | 14.1 | 13.9 | 13.8 | 13.5 | 13.5 | 14.4 |
| 4/19/2022 | 16.5 | 16.2 | 16.2 | 16.2 | 16.2 | 16.1 | 16.2 | 16.1 | 16.0 | 15.9 | 15.4 | 15.0 | 14.3 | 14.4 | 14.4 | 14.4 | 15.3 |
| 4/27/2022 | 16.9 | 16.9 | 16.8 | 16.8 | 16.8 | 16.8 | 16.8 | 16.6 | 16.2 | 16.0 | 15.9 | 15.6 | 15.3 | 15.3 | 15.3 | 15.3 | 17.0 |
| 5/4/2022 | 18.0 | 18.0 | 18.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 16.0 | 16.0 | 17.0 | 16.0 | 16.0 | 16.1 |
| 5/11/2022 | 18.1 | 17.8 | 17.6 | 17.6 | 17.6 | 17.5 | 17.4 | 17.4 | 17.3 | 17.1 | 16.7 | 16.4 | 16.2 | 16.1 | 16.1 | 16.1 | 17.1 |
| 5/18/2022 | 18.3 | 18.4 | 18.4 | 18.3 | 18.3 | 18.2 | 18.2 | 18.0 | 17.6 | 17.3 | 17.2 | 17.1 | 17.1 | 17.1 | 17.1 | 17.1 | 16.6 |
| 5/23/2022 | 19.6 | 19.5 | 19.1 | 19.1 | 19.0 | 19.8 | 18.3 | 18.1 | 17.7 | 17.3 | 17.2 | 16.9 | 16.6 | 16.6 | 16.6 | 16.6 | 16.5 |
| 5/31/2022 | 19.9 | 19.8 | 19.6 | 19.6 | 19.5 | 19.5 | 19.5 | 19.2 | 17.8 | 17.6 | 17.2 | 17.0 | 16.4 | 16.5 | 16.5 | 16.5 | 16.7 |
| 6/9/2022 | 21.6 | 21.4 | 21.0 | 20.8 | 20.7 | 20.6 | 19.9 | 19.6 | 18.7 | 18.2 | 17.8 | 16.7 | 16.7 | 16.7 | 16.7 | 16.7 | 17.3 |
| 6/13/2022 | 22.0 | 21.9 | 21.8 | 21.8 | 21.6 | 21.5 | 21.4 | 19.9 | 19.0 | 18.6 | 17.5 | 17.2 | 17.1 | 17.2 | 17.2 | 17.3 | 17.0 |
| 6/20/2022 | 21.8 | 21.3 | 21.1 | 21.1 | 21.1 | 21.0 | 21.0 | 21.0 | 19.8 | 18.3 | 18.0 | 17.6 | 17.0 | 16.9 | 16.9 | 17.0 | 17.1 |
| 6/27/2022 | 21.8 | 21.8 | 21.8 | 21.7 | 21.6 | 21.5 | 21.6 | 20.6 | 19.7 | 18.8 | 17.8 | 17.1 | 17.0 | 17.0 | 17.0 | 17.1 | 17.0 |
| 7/6/2022 | 21.8 | 21.9 | 21.9 | 21.9 | 21.9 | 21.9 | 21.7 | 21.2 | 20.5 | 18.6 | 18.2 | 17.5 | 17.1 | 17.0 | 17.0 | 17.0 | 18.0 |
| 7/11/2022 | 23.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 21.0 | 21.0 | 20.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 17.3 |
| 7/20/2022 | 22.7 | 22.7 | 22.7 | 22.6 | 22.5 | 22.3 | 21.9 | 21.5 | 20.8 | 20.0 | 18.5 | 17.5 | 17.2 | 17.3 | 17.3 | 17.4 | 17.9 |
| 7/25/2022 | 22.6 | 22.4 | 22.2 | 22.1 | 22.1 | 22.1 | 22.0 | 22.0 | 21.6 | 19.9 | 18.5 | 17.6 | 17.7 | 17.7 | 17.8 | 17.8 | 21.0 |
| 8/1/2022 | 23.1 | 23.1 | 22.6 | 22.3 | 22.1 | 22.0 | 21.9 | 21.6 | 21.5 | 21.1 | 21.0 | 21.0 | 21.1 | 21.1 | 21.1 | 21.0 | 18.7 |
| 8/8/2022 | 22.9 | 23.1 | 23.0 | 23.0 | 22.9 | 22.5 | 22.3 | 21.9 | 21.6 | 20.8 | 18.4 | 18.4 | 18.4 | 18.6 | 18.6 | 18.6 | 18.8 |
| 8/15/2022 | 22.7 | 22.8 | 22.7 | 22.7 | 22.7 | 22.7 | 22.5 | 22.4 | 22.1 | 21.4 | 18.8 | 18.4 | 18.4 | 18.5 | 18.6 | 18.7 | 19.0 |
| 8/22/2022 | 22.6 | 22.6 | 22.3 | 22.2 | 22.2 | 22.2 | 22.2 | 22.2 | 22.0 | 21.3 | 19.6 | 19.1 | 19.3 | 19.3 | 19.3 | 19.3 | 18.5 |
| 8/31/2022 | 22.2 | 22.2 | 22.2 | 22.1 | 22.1 | 22.1 | 22.1 | 22.0 | 22.0 | 22.0 | 21.0 | 18.8 | 18.4 | 18.4 | 18.5 | 18.5 | 21.9 |
| 9/7/2022 | 23.6 | 23.5 | 23.4 | 23.2 | 23.1 | 22.4 | 22.2 | 22.1 | 22.0 | 21.9 | 21.8 | 21.8 | 21.8 | 21.8 | 21.8 | 21.9 | 19.2 |
| 9/14/2022 | 23.6 | 23.6 | 23.4 | 23.4 | 23.2 | 22.8 | 22.4 | 22.2 | 22.0 | 21.8 | 21.4 | 19.7 | 18.9 | 19.0 | 19.1 | 19.2 | 21.9 |
| 9/19/2022 | 22.2 | 22.2 | 22.2 | 22.2 | 22.2 | 22.2 | 22.2 | 22.2 | 22.2 | 22.0 | 21.9 | 21.9 | 21.9 | 21.9 | 21.9 | 21.9 | 18.8 |
| 9/26/2022 | 21.9 | 21.9 | 21.8 | 21.8 | 21.8 | 21.8 | 21.8 | 21.8 | 21.7 | 21.7 | 21.4 | 18.8 | 18.6 | 18.7 | 18.8 | 18.8 | 20.8 |
| 10/5/2022 | 21.2 | 21.1 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 20.9 | 20.8 | 20.8 | 20.8 | 20.8 | 17.5 |
| 11/2/2022 | 18.2 | 18.0 | 17.7 | 17.6 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 12.4 |
| 12/7/2022 | 12.5 | 12.6 | 12.4 | 12.4 | 12.4 | 12.4 | 12.4 | 12.4 | 12.4 | 12.4 | 12.4 | 12.4 | 12.4 | 12.4 | 12.4 | 12.4 | 11.4 |
| 1/25/2023 | 11.6 | 11.4 | 11.4 | 11.4 | 11.4 | 11.4 | 11.4 | 11.4 | 11.4 | 11.4 | 11.4 | 11.6 | 11.5 | 11.5 | 11.4 | 11.6 | 11.0 |
| 2/15/2023 | 11.2 | 11.1 | 11.1 | 11.1 | 11.1 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 10.4 |
| 3/8/2023 | 11.7 | 10.8 | 10.8 | 10.8 | 10.8 | 10.1 | 10.7 | 10.7 | 10.7 | 10.7 | 10.7 | 10.6 | 10.5 | 10.5 | 10.5 | 10.5 | 10.7 |
| 4/5/2023 | 13.6 | 13.4 | 13.4 | 13.4 | 13.4 | 13.4 | 13.4 | 12.7 | 11.8 | 11.2 | 11.0 | 11.0 | 10.9 | 10.8 | 10.8 | 10.8 | 10.8 |
| 4/10/2023 | 15.1 | 15.0 | 14.8 | 14.8 | 14.3 | 13.2 | 12.6 | 12.3 | 11.5 | 11.2 | 11.1 | 11.1 | 11.0 | 11.0 | 10.8 | 10.8 | 10.8 |
| 4/19/2023 | 15.5 | 15.5 | 15.5 | 15.4 | 15.4 | 15.3 | 15.3 | 15.1 | 13.3 | 11.9 | 11.4 | 11.1 | 11.0 | 10.9 | 10.9 | 10.8 | 10.8 |
| 4/24/2023 | 16.8 | 16.4 | 16.2 | 16.1 | 16.1 | 15.9 | 15.2 | 14.2 | 12.9 | 11.9 | 11.7 | 11.4 | 11.1 | 11.0 | 10.9 | 10.9 | 10.9 |
| 5/1/2023 | 17.5 | 17.5 | 17.5 | 17.5 | 17.4 | 17.4 | 15.5 | 14.1 | 13.3 | 12.1 | 11.5 | 11.2 | 11.0 | 11.0 | 10.9 | 10.9 | 10.9 |
| 5/10/2023 | 18.1 | 17.3 | 17.2 | 17.2 | 17.0 | 16.7 | 16.8 | 14.7 | 13.5 | 12.9 | 12.2 | 11.5 | 11.4 | 11.2 | 11.1 | 11.0 | 10.9 |
| 5/15/2023 | 18.7 | 18.6 | 18.6 | 18.6 | 18.3 | 16.7 | 16.0 | 14.7 | 14.0 | 12.7 | 11.5 | 11.3 | 11.3 | 11.1 | 11.0 | 11.0 | 11.0 |

| Lopez Lake Temperature Profile, °C versus Depth, Feet | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Date** | **2'** | **5'** | **10'** | **15'** | **20'** | **25'** | **30'** | **35'** | **40'** | **45'** | **50'** | **55'** | **60'** | **65'** | **70'** | **75'** | **80'** |
| 5/22/2023 | 19.8 | 19.6 | 19.5 | 19.5 | 19.4 | 18.4 | 16.5 | 15.2 | 14.2 | 12.9 | 12.0 | 11.5 | 11.5 | 11.4 | 11.1 | 11.0 | 11.0 |
| 5/31/2023 | 19.5 | 19.3 | 19.1 | 19.0 | 19.0 | 18.9 | 18.0 | 16.2 | 14.2 | 13.2 | 12.1 | 11.7 | 11.4 | 11.2 | 11.1 | 11.1 | 11.0 |
| 6/5/2023 | 19.7 | 19.7 | 19.7 | 19.7 | 19.7 | 19.6 | 17.6 | 15.5 | 15.4 | 13.1 | 12.3 | 11.7 | 11.5 | 11.2 | 11.1 | 11.0 | 11.0 |
| 6/14/2023 | 20.1 | 20.1 | 19.9 | 19.6 | 19.6 | 18.3 | 17.5 | 15.7 | 15.0 | 14.1 | 12.4 | 11.9 | 11.5 | 11.3 | 11.2 | 11.1 | 11.1 |
| 6/19/2023 | 20.8 | 20.6 | 20.5 | 20.4 | 19.5 | 18.5 | 17.8 | 16.1 | 14.8 | 13.2 | 12.6 | 12.0 | 11.7 | 11.7 | 11.2 | 11.1 | 11.1 |
| 6/26/2023 | 20.6 | 20.5 | 20.3 | 20.2 | 20.2 | 18.7 | 17.8 | 15.7 | 14.4 | 13.1 | 12.7 | 12.2 | 11.6 | 11.4 | 11.1 | 11.1 | 11.1 |
| 7/3/2023 | 21.1 | 21.1 | 21.0 | 21.0 | 21.0 | 20.8 | 17.9 | 16.1 | 15.2 | 14.3 | 12.8 | 12.2 | 11.7 | 11.4 | 11.3 | 11.2 | 11.2 |
| 7/12/2023 | 21.8 | 21.8 | 21.7 | 21.5 | 21.4 | 21.2 | 18.6 | 16.5 | 14.7 | 13.7 | 13.2 | 12.4 | 12.1 | 11.8 | 11.4 | 11.2 | 11.2 |
| 7/19/2023 | 22.3 | 22.3 | 22.2 | 22.2 | 22.2 | 21.7 | 20.0 | 17.5 | 15.4 | 14.4 | 13.2 | 12.4 | 12.0 | 11.6 | 11.4 | 11.3 | 11.2 |
| 7/24/2023 | 22.7 | 22.6 | 22.5 | 22.4 | 22.4 | 22.3 | 19.2 | 17.2 | 16.1 | 14.0 | 13.4 | 12.4 | 11.9 | 11.6 | 11.4 | 11.3 | 11.2 |
| 8/2/2023 | 22.7 | 22.7 | 22.5 | 22.5 | 22.4 | 22.4 | 22.0 | 19.0 | 16.0 | 14.2 | 13.4 | 12.7 | 12.2 | 11.6 | 11.4 | 11.3 | 11.4 |
| 8/7/2023 | 22.6 | 22.7 | 22.5 | 22.4 | 22.4 | 22.3 | 20.6 | 18.6 | 16.3 | 14.3 | 13.6 | 12.6 | 12.3 | 11.9 | 11.9 | 11.6 | 11.3 |
| 8/14/2023 | 22.8 | 22.7 | 22.6 | 22.6 | 22.6 | 22.5 | 21.7 | 19.7 | 16.6 | 14.5 | 13.5 | 12.8 | 12.4 | 11.7 | 11.5 | 11.4 | 11.3 |
| 8/21/2023 | 23.5 | 23.3 | 23.3 | 23.4 | 23.3 | 22.0 | 21.7 | 19.9 | 18.2 | 14.5 | 13.3 | 12.6 | 12.1 | 11.6 | 11.5 | 11.4 | 11.4 |
| 8/28/2023 | 23.4 | 23.2 | 23.1 | 23.1 | 23.1 | 23.1 | 23.0 | 22.2 | 17.6 | 14.9 | 14.0 | 13.1 | 12.5 | 11.9 | 11.6 | 11.5 | 11.3 |
| 9/6/2023 | 22.4 | 22.2 | 22.2 | 22.2 | 22.2 | 22.2 | 22.2 | 22.2 | 18.5 | 15.6 | 14.2 | 13.1 | 12.6 | 12.0 | 11.6 | 11.4 | 11.4 |
| 9/11/2023 | 22.5 | 22.2 | 22.2 | 22.2 | 22.2 | 22.1 | 22.0 | 20.7 | 17.5 | 15.5 | 13.9 | 13.0 | 12.4 | 11.9 | 11.6 | 11.5 | 11.4 |
| 9/18/2023 | 21.6 | 21.6 | 21.6 | 21.6 | 21.6 | 21.6 | 21.5 | 21.2 | 19.7 | 15.7 | 14.1 | 13.3 | 12.5 | 11.8 | 11.5 | 11.4 | 11.4 |
| 9/25/2023 | 20.8 | 20.8 | 20.8 | 20.8 | 20.8 | 20.8 | 20.8 | 20.8 | 20.6 | 17.3 | 13.9 | 13.1 | 12.7 | 12.1 | 11.7 | 11.5 | 11.4 |
| 10/3/2023 | 20.8 | 20.3 | 20.2 | 20.2 | 20.1 | 20.1 | 20.1 | 20.1 | 20.1 | 20.0 | 14.7 | 13.1 | 12.4 | 12.0 | 11.7 | 11.5 | 11.5 |
| 11/13/2023 | 16.0 | 16.0 | 16.1 | 16.1 | 16.1 | 16.1 | 16.1 | 16.1 | 16.1 | 16.1 | 16.1 | 16.0 | 13.2 | 12.1 | 11.8 | 11.6 | 11.6 |
| 12/12/2023 | 13.5 | 13.1 | 13.3 | 13.3 | 13.3 | 13.3 | 13.3 | 13.3 | 13.3 | 13.3 | 13.3 | 13.3 | 13.2 | 13.2 | 13.2 | 13.1 | 12.0 |
| 1/10/2024 | 12.1 | 12.1 | 12.1 | 12.1 | 12.1 | 12.1 | 12.1 | 12.1 | 12.1 | 12.1 | 12.1 | 12.1 | 12.1 | 12.0 | 12.0 | 12.0 | 11.9 |
| 2/7/2024 | 12.4 | 12.5 | 12.4 | 12.4 | 12.4 | 12.3 | 12.3 | 12.3 | 12.2 | 12.2 | 12.2 | 12.1 | 12.0 | 12.0 | 12.0 | 11.9 | 12.3 |
| 4/3/2024 | 15.7 | 15.6 | 15.6 | 15.5 | 15.3 | 14.4 | 13.7 | 13.3 | 13.0 | 12.8 | 12.7 | 12.6 | 12.5 | 12.5 | 12.4 | 12.4 | 12.7 |
| 4/10/2024 | 15.5 | 15.4 | 15.4 | 15.1 | 15.1 | 15.1 | 15.1 | 15.0 | 14.8 | 14.4 | 14.0 | 13.6 | 13.1 | 13.5 | 12.7 | 12.7 | 12.4 |
| 4/15/2024 | 15.4 | 15.3 | 15.2 | 15.2 | 15.2 | 15.2 | 15.2 | 15.0 | 14.4 | 13.7 | 13.4 | 13.4 | 12.7 | 12.6 | 12.5 | 12.4 | 12.5 |
| 4/22/2024 | 17.0 | 17.0 | 16.9 | 16.9 | 16.9 | 16.1 | 14.9 | 14.5 | 14.3 | 14.1 | 13.8 | 13.2 | 12.9 | 12.9 | 12.7 | 12.6 | 12.6 |
| 4/29/2024 | 17.6 | 17.4 | 17.4 | 17.4 | 17.3 | 17.3 | 17.3 | 16.7 | 14.3 | 14.1 | 13.8 | 13.3 | 13.1 | 12.9 | 12.7 | 12.6 | 12.7 |
| 5/8/2024 | 17.8 | 17.7 | 17.5 | 17.4 | 17.4 | 17.3 | 17.3 | 15.8 | 14.9 | 14.5 | 13.8 | 14.0 | 13.2 | 13.0 | 12.9 | 12.6 | 12.5 |
| 5/13/2024 | 18.5 | 18.5 | 18.3 | 18.3 | 18.3 | 18.3 | 16.9 | 15.9 | 15.1 | 14.7 | 14.1 | 13.7 | 13.6 | 13.0 | 12.8 | 12.7 | 12.8 |
| 5/20/2024 | 19.0 | 19.0 | 18.9 | 18.9 | 18.8 | 19.3 | 17.1 | 16.0 | 15.3 | 14.9 | 14.3 | 13.8 | 13.5 | 13.2 | 13.0 | 12.9 | 12.7 |
| 5/29/2024 | 19.7 | 19.6 | 19.4 | 19.4 | 19.3 | 19.2 | 17.6 | 19.4 | 16.0 | 14.9 | 14.2 | 14.0 | 13.6 | 13.4 | 13.2 | 12.9 | 12.8 |
| 6/3/2024 | 19.9 | 19.7 | 19.7 | 19.7 | 19.6 | 19.6 | 19.6 | 18.2 | 16.7 | 15.4 | 14.5 | 14.0 | 13.7 | 13.4 | 13.2 | 13.0 | 12.8 |
| 6/17/2024 | 21.7 | 20.9 | 20.7 | 20.6 | 20.6 | 20.5 | 20.4 | 18.6 | 16.2 | 15.5 | 14.2 | 13.9 | 13.7 | 13.3 | 13.1 | 12.9 | 13.0 |
| 6/24/2024 | 21.9 | 21.8 | 21.8 | 21.6 | 21.3 | 20.4 | 20.2 | 18.5 | 16.2 | 15.6 | 14.7 | 14.0 | 13.8 | 13.6 | 13.5 | 13.2 | 12.9 |
| 7/1/2024 | 21.7 | 21.7 | 21.7 | 21.6 | 21.6 | 21.4 | 20.0 | 18.5 | 17.6 | 15.1 | 14.6 | 14.3 | 14.0 | 13.8 | 13.3 | 13.1 | 13.2 |
| 7/10/2024 | 22.6 | 22.6 | 22.4 | 22.3 | 22.2 | 22.2 | 19.8 | 19.2 | 18.7 | 17.6 | 15.4 | 15.3 | 14.6 | 14.1 | 13.7 | 13.4 | 13.0 |

| Lopez Lake Temperature Profile, °C versus Depth, Feet | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | 2' | 5' | 10' | 15' | 20' | 25' | 30' | 35' | 40' | 45' | 50' | 55' | 60' | 65' | 70' | 75' | 80' |
| 7/17/2024 | 22.3 | 22.3 | 22.3 | 22.3 | 22.2 | 22.2 | 21.0 | 19.6 | 17.6 | 16.0 | 15.1 | 14.2 | 13.8 | 13.5 | 13.3 | 13.1 | 12.9 |
| 7/22/2024 | 22.2 | 22.1 | 22.0 | 22.0 | 22.0 | 22.0 | 20.7 | 17.2 | 14.7 | 14.2 | 13.7 | 13.2 | 13.3 | 13.2 | 13.2 | 13.0 | 12.9 |
| 7/29/2024 | 22.5 | 22.5 | 22.5 | 22.4 | 22.4 | 22.4 | 22.4 | 21.7 | 19.0 | 16.4 | 14.9 | 14.4 | 13.9 | 13.6 | 13.3 | 13.2 | 13.0 |
| 8/5/2024 | 22.2 | 22.2 | 22.2 | 22.2 | 22.1 | 22.1 | 22.1 | 21.7 | 19.4 | 16.6 | 15.1 | 14.3 | 14.0 | 13.6 | 13.3 | 13.1 | 13.0 |
| 8/14/2024 | 22.3 | 22.3 | 22.2 | 22.1 | 22.1 | 22.1 | 22.0 | 22.0 | 20.9 | 16.9 | 15.0 | 14.3 | 13.9 | 13.7 | 13.4 | 13.1 | 12.9 |
| 8/19/2024 | 22.4 | 22.4 | 22.3 | 22.3 | 22.3 | 22.2 | 22.2 | 22.2 | 21.9 | 16.7 | 15.2 | 14.3 | 14.0 | 13.5 | 13.4 | 13.1 | 13.0 |
| 8/26/2024 | 22.2 | 22.1 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 21.8 | 17.9 | 15.4 | 14.4 | 13.8 | 13.5 | 13.2 | 13.1 | 13.0 |
| 9/4/2024 | 22.1 | 22.1 | 22.1 | 22.0 | 22.0 | 22.0 | 22.0 | 21.9 | 21.6 | 18.8 | 15.4 | 14.5 | 13.9 | 13.5 | 13.3 | 13.1 | 13.0 |
| 9/9/2024 | 22.7 | 22.6 | 22.6 | 22.6 | 22.5 | 22.5 | 22.3 | 21.6 | 21.0 | 19.4 | 15.5 | 14.4 | 14.1 | 14.1 | 13.7 | 13.1 | 13.2 |
| 9/16/2024 | 21.6 | 21.6 | 21.6 | 21.6 | 21.6 | 21.6 | 21.5 | 21.0 | 18.0 | 16.2 | 15.5 | 15.0 | 14.3 | 13.9 | 13.6 | 13.4 | 13.0 |
| 9/25/2024 | 20.9 | 20.9 | 20.9 | 20.9 | 20.9 | 20.9 | 20.9 | 20.9 | 20.9 | 16.7 | 15.5 | 14.8 | 14.2 | 13.6 | 13.4 | 13.1 | 12.9 |
| 10/2/2024 | 21.0 | 20.8 | 20.7 | 20.7 | 20.7 | 20.7 | 20.7 | 20.7 | 20.6 | 20.5 | 15.4 | 14.8 | 14.2 | 13.9 | 13.2 | 13.0 | 12.9 |
| 11/5/2024 | 17.5 | 17.3 | 17.3 | 17.3 | 17.3 | 17.3 | 17.3 | 17.3 | 17.3 | 17.2 | 16.4 | 16.5 | 14.0 | 13.6 | 13.3 | 13.1 | 12.9 |
| 12/16/2024 | 13.0 | 13.0 | 12.9 | 12.9 | 12.9 | 12.9 | 12.9 | 12.9 | 12.9 | 12.9 | 12.9 | 12.9 | 12.9 | 12.9 | 12.9 | 12.9 | 13.2 |
| 1/15/2025 | 11.8 | 11.8 | 11.8 | 11.8 | 11.8 | 11.8 | 11.8 | 11.8 | 11.8 | 11.8 | 11.8 | 11.8 | 11.8 | 11.8 | 11.8 | 11.8 | 11.8 |
| 2/10/2025 | 11.8 | 11.5 | 11.4 | 11.4 | 11.4 | 11.4 | 11.4 | 11.4 | 11.4 | 11.4 | 11.4 | 11.4 | 11.4 | 11.3 | 11.3 | 11.3 | 11.3 |
| 3/3/2025 | 13.8 | 13.2 | 13.0 | 13.0 | 12.9 | 12.8 | 12.4 | 12.0 | 11.8 | 11.8 | 11.7 | 11.7 | 11.7 | 11.7 | 11.6 | 11.6 | 11.5 |
| 4/14/2025 | 16.9 | 16.8 | 16.8 | 16.8 | 16.8 | 16.8 | 14.8 | 13.9 | 13.6 | 13.3 | 13.0 | 12.8 | 12.7 | 12.6 | 12.5 | 12.5 | 12.4 |
| 4/9/2025 | 16.3 | 16.2 | 16.0 | 16.0 | 16.0 | 15.9 | 14.8 | 14.4 | 13.5 | 12.9 | 12.7 | 12.6 | 12.5 | 12.5 | 12.4 | 12.4 | 12.4 |
| 4/21/2025 | 17.2 | 17.2 | 17.2 | 17.2 | 17.2 | 17.1 | 15.5 | 14.2 | 13.6 | 13.4 | 13.3 | 13.0 | 12.8 | 12.6 | 12.5 | 12.5 | 12.3 |
| 4/29/2025 | 17.3 | 17.3 | 17.3 | 17.2 | 17.1 | 17.0 | 16.8 | 16.1 | 14.5 | 13.8 | 13.4 | 13.2 | 12.9 | 12.7 | 12.6 | 12.5 | 12.4 |
| 5/5/2025 | 17.9 | 17.9 | 17.8 | 17.7 | 17.7 | 17.7 | 17.6 | 15.9 | 15.4 | 13.7 | 13.2 | 13.0 | 13.0 | 12.9 | 12.7 | 12.6 | 12.5 |
| 5/12/2025 | 19.1 | 19.2 | 19.0 | 19.0 | 19.0 | 18.7 | 17.1 | 15.8 | 15.3 | 14.7 | 13.8 | 13.3 | 12.9 | 12.8 | 12.8 | 12.6 | 12.6 |
| 5/28/2025 | 20.0 | 19.9 | 19.7 | 19.7 | 19.6 | 19.5 | 17.7 | 16.2 | 15.9 | 15.9 | 15.8 | 14.8 | 13.6 | 13.2 | 13.1 | 12.8 | 12.7 |
| 5/19/2025 | 19.5 | 19.4 | 19.1 | 19.1 | 19.1 | 19.1 | 19.1 | 17.2 | 16.3 | 14.9 | 13.9 | 13.8 | 13.1 | 12.9 | 12.8 | 12.6 | 12.5 |
| 6/2/2025 | 20.6 | 20.6 | 20.6 | 20.6 | 20.6 | 20.6 | 19.1 | 18.3 | 17.1 | 17.0 | 16.1 | 14.8 | 14.0 | 13.5 | 13.1 | 12.8 | 12.8 |
| 6/30/2025 | 20.9 | 20.8 | 20.8 | 20.8 | 20.8 | 20.8 | 20.5 | 19.5 | 19.5 | 19.5 | 18.4 | 16.4 | 16.4 | 15.8 | 14.7 | 13.7 | 13.3 |
| 6/11/2025 | 20.9 | 20.8 | 20.8 | 20.8 | 20.6 | 19.4 | 18.8 | 18.5 | 17.8 | 16.7 | 15.7 | 14.3 | 13.5 | 13.0 | 12.9 | 12.7 | 12.7 |
| 6/16/2025 | 20.7 | 20.6 | 20.6 | 20.6 | 20.6 | 20.5 | 19.7 | 18.7 | 18.2 | 17.2 | 16.1 | 14.9 | 13.8 | 13.2 | 13.2 | 13.1 | 13.0 |
| 6/23/2025 | 20.7 | 20.7 | 20.6 | 20.6 | 20.5 | 20.5 | 20.5 | 20.5 | 19.2 | 17.3 | 16.0 | 14.3 | 13.8 | 13.4 | 13.0 | 12.7 | 12.6 |
| 7/7/2025 | 21.1 | 21.1 | 21.1 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 20.9 | 16.5 | 14.6 | 13.7 | 13.3 | 13.2 | 13.1 | 13.0 |
| 7/21/2025 | 22.3 | 22.1 | 22.1 | 22.0 | 22.0 | 22.0 | 22.0 | 21.5 | 20.6 | 19.9 | 18.0 | 15.9 | 14.5 | 13.7 | 13.2 | 12.9 | 12.7 |
| 7/15/2025 | 21.8 | 21.8 | 21.8 | 21.7 | 21.7 | 21.7 | 21.4 | 20.6 | 20.2 | 19.1 | 17.3 | 15.4 | 14.3 | 13.5 | 13.1 | 12.9 | 12.8 |
| 7/28/2025 | 22.2 | 22.2 | 22.2 | 22.2 | 22.2 | 22.2 | 22.0 | 22.0 | 20.9 | 19.4 | 18.4 | 16.9 | 14.6 | 13.2 | 13.2 | 13.0 | 12.9 |
| 8/4/2025 | 21.9 | 21.9 | 21.9 | 21.9 | 21.9 | 21.9 | 21.9 | 21.8 | 21.5 | 20.1 | 18.9 | 16.1 | 14.9 | 13.8 | 13.1 | 12.9 | 12.8 |
| 8/26/2025 | 22.7 | 22.7 | 22.6 | 22.5 | 22.4 | 22.4 | 22.4 | 21.7 | 21.3 | 20.6 | 19.8 | 17.3 | 16.0 | 15.3 | 14.0 | 13.1 | 12.9 |
| 8/21/2025 | 22.4 | 22.3 | 22.3 | 22.3 | 22.2 | 22.2 | 22.2 | 22.1 | 21.5 | 21.3 | 20.9 | 20.8 | 19.5 | 18.7 | 15.3 | 15.1 | 13.7 |
| 9/3/2025 | 23.0 | 23.0 | 22.8 | 22.8 | 22.7 | 22.7 | 22.7 | 21.8 | 21.3 | 20.5 | 19.9 | 17.4 | 16.0 | 14.2 | 13.4 | 12.9 | 12.8 |

| Lopez Lake Temperature Profile, °C versus Depth, Feet | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Date** | **2'** | **5'** | **10'** | **15'** | **20'** | **25'** | **30'** | **35'** | **40'** | **45'** | **50'** | **55'** | **60'** | **65'** | **70'** | **75'** | **80'** |
| 9/8/2025 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.4 | 21.2 | 19.5 | 18.4 | 15.3 | 14.9 | 14.3 | 13.7 | 13.6 |
| 9/15/2025 | 22.4 | 22.4 | 22.4 | 22.4 | 22.3 | 22.3 | 22.3 | 22.3 | 22.2 | 21.1 | 18.9 | 17.0 | 15.4 | 14.4 | 13.5 | 13.2 | 13.0 |
| 9/22/2025 | 22.2 | 22.2 | 22.2 | 22.2 | 22.2 | 22.2 | 22.2 | 22.2 | 22.1 | 21.9 | 20.0 | 17.4 | 16.0 | 13.9 | 13.5 | 13.0 | 12.8 |
| 10/8/2025 | 21.2 | 21.1 | 21.1 | 21.1 | 21.1 | 21.1 | 21.1 | 21.1 | 21.1 | 21.1 | 20.8 | 16.4 | 14.9 | 14.4 | 13.7 | 13.5 | 13.4 |
| 10/20/2025 | 19.2 | 19.2 | 19.2 | 19.2 | 19.2 | 19.2 | 19.2 | 19.2 | 19.2 | 19.1 | 19.1 | 19.1 | 15.4 | 14.2 | 13.5 | 13.1 | 12.9 |
| 11/10/2025 | 18.1 | 18.0 | 17.9 | 17.9 | 17.9 | 17.9 | 17.9 | 17.9 | 17.9 | 17.9 | 17.9 | 17.8 | 17.8 | 16.8 | 13.9 | 13.1 | 12.8 |
| 12/3/2025 | 15.3 | 15.2 | 15.1 | 15.1 | 15.1 | 15.1 | 15.1 | 15.1 | 15.1 | 15.1 | 15.1 | 15.1 | 15.1 | 15.1 | 15.1 | 15.1 | 15.0 |

## Appendix D2 Data: Lopez Lake DO Limnology

| Lopez Lake DO Profile, mg/L vs Depth, Feet | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Date** | **2'** | **5'** | **10'** | **15'** | **20'** | **25'** | **30'** | **35'** | **40'** | **45'** | **50'** | **55'** | **60'** | **65'** | **70'** | **75'** | **80'** |
| 1/13/2021 | 8.0 | 7.9 | 7.9 | 7.8 | 7.8 | 7.8 | 7.7 | 7.7 | 7.6 | 7.5 | 7.5 | 7.4 | 7.3 | 7.3 | 7.3 | 4.1 | 3.6 |
| 2/10/2021 | 9.0 | 9.0 | 9.1 | 8.9 | 8.6 | 8.7 | 8.4 | 8.0 | 7.5 | 7.0 | 6.7 | 6.7 | 6.7 | 7.1 | 6.4 | 6.1 | 5.8 |
| 3/10/2021 | 9.4 | 9.3 | 9.3 | 9.0 | 8.9 | 9.2 | 9.1 | 9.0 | 8.9 | 8.6 | 8.6 | 8.6 | 8.1 | 7.7 | 7.4 | 7.2 | 0.1 |
| 4/7/2021 | 9.2 | 9.5 | 9.3 | 9.4 | 9.1 | 9.1 | 9.0 | 8.1 | 7.2 | 6.6 | 6.0 | 5.8 | 5.3 | 4.3 | 4.1 | 4.0 | 0.8 |
| 4/14/2021 | 8.2 | 8.5 | 8.2 | 8.0 | 8.0 | 7.9 | 7.7 | 7.6 | 7.3 | 6.9 | 6.7 | 5.7 | 4.7 | 4.0 | 3.7 | 2.8 | 0.1 |
| 4/21/2021 | 8.4 | 8.3 | 8.2 | 8.0 | 8.0 | 7.6 | 7.2 | 6.8 | 6.0 | 5.8 | 5.8 | 5.3 | 5.0 | 4.4 | 2.0 | 0.2 | 0.2 |
| 4/28/2021 | 9.2 | 8.1 | 7.8 | 7.9 | 7.9 | 7.4 | 7.3 | 7.5 | 7.4 | 7.0 | 6.4 | 6.0 | 5.3 | 3.7 | 2.6 | 0.3 | 0.1 |
| 5/5/2021 | 9.0 | 8.6 | 8.5 | 8.4 | 8.3 | 6.6 | 5.6 | 5.2 | 4.9 | 4.3 | 3.8 | 3.3 | 3.1 | 2.9 | 2.2 | 0.2 | 0.1 |
| 5/12/2021 | 9.0 | 8.4 | 8.3 | 8.2 | 8.0 | 6.4 | 5.5 | 4.6 | 4.4 | 3.9 | 3.2 | 2.1 | 1.9 | 0.9 | 0.1 | 0.1 | 0.1 |
| 5/19/2021 | 8.3 | 8.7 | 7.9 | 7.9 | 7.8 | 7.2 | 7.1 | 6.4 | 6.3 | 3.7 | 2.1 | 1.6 | 1.4 | 0.9 | 0.1 | 0.1 | 0.2 |
| 5/26/2021 | 9.1 | 8.9 | 8.3 | 8.2 | 8.2 | 7.7 | 6.6 | 4.2 | 3.8 | 3.3 | 2.5 | 1.2 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 |
| 6/3/2021 | 9.5 | 8.7 | 8.4 | 8.6 | 8.7 | 8.6 | 8.4 | 8.5 | 8.3 | 8.3 | 8.3 | 8.3 | 8.1 | 8.2 | 8.2 | 8.7 | 0.1 |
| 6/9/2021 | 9.5 | 9.9 | 8.7 | 8.5 | 8.4 | 8.6 | 5.9 | 1.8 | 1.4 | 0.8 | 0.7 | 0.3 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 6/16/2021 | 10.4 | 8.4 | 7.9 | 7.8 | 7.7 | 7.6 | 6.6 | 4.3 | 2.5 | 1.7 | 1.2 | 1.2 | 1.2 | 1.1 | 1.1 | 1.1 | 0.1 |
| 6/23/2021 | 9.6 | 9.6 | 9.4 | 9.2 | 9.2 | 7.4 | 3.8 | 2.7 | 1.8 | 0.9 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 6/30/2021 | 7.9 | 7.7 | 7.4 | 6.6 | 6.0 | 5.6 | 4.4 | 0.5 | 0.1 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 7/7/2021 | 5.6 | 5.6 | 5.5 | 5.6 | 5.6 | 5.3 | 1.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 |
| 7/13/2021 | 6.6 | 6.3 | 5.6 | 5.5 | 5.5 | 5.3 | 5.3 | 2.8 | 0.1 | 0.1 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 |
| 7/20/2021 | 6.5 | 6.2 | 5.9 | 5.9 | 6.1 | 5.2 | 2.9 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 7/27/2021 | 6.7 | 6.8 | 6.7 | 6.5 | 6.3 | 6.4 | 6.4 | 4.7 | 1.6 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 |
| 8/5/2021 | 7.1 | 7.0 | 7.0 | 6.8 | 6.8 | 6.9 | 6.8 | 1.3 | 0.5 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 |
| 8/10/2021 | 7.3 | 7.3 | 6.9 | 6.6 | 6.8 | 6.8 | 6.7 | 6.2 | 5.1 | 1.4 | 1.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 8/17/2021 | 8.4 | 8.3 | 8.2 | 7.6 | 7.7 | 6.9 | 5.5 | 3.6 | 1.4 | 0.7 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 |
| 8/24/2021 | 7.4 | 7.2 | 7.4 | 7.2 | 6.9 | 7.1 | 6.2 | 3.7 | 1.3 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 |

| Lopez Lake DO Profile, mg/L vs Depth, Feet | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | 2' | 5' | 10' | 15' | 20' | 25' | 30' | 35' | 40' | 45' | 50' | 55' | 60' | 65' | 70' | 75' | 80' |
| 8/31/2021 | 7.3 | 7.3 | 7.1 | 6.7 | 7.3 | 6.8 | 6.7 | 6.5 | 2.9 | 1.3 | 0.2 | 0.1 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 |
| 9/8/2021 | 8.0 | 8.0 | 7.1 | 7.0 | 6.8 | 6.9 | 6.5 | 5.9 | 5.1 | 3.0 | 2.6 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 |
| 9/14/2021 | 7.6 | 7.2 | 7.3 | 7.1 | 6.8 | 6.8 | 6.8 | 6.6 | 4.3 | 2.7 | 0.5 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | NA |
| 9/29/2021 | 6.7 | 6.5 | 6.4 | 6.2 | 6.3 | 6.1 | 6.1 | 6.1 | 6.1 | 6.2 | 6.3 | 5.6 | 0.3 | 0.1 | 0.1 | 0.1 | 0.9 |
| 10/27/2021 | 6.5 | 6.4 | 6.2 | 6.3 | 6.2 | 6.1 | 6.1 | 6.1 | 6.0 | 6.0 | 3.2 | 2.3 | 1.5 | 1.2 | 1.1 | 1.0 | 3.8 |
| 11/16/2021 | 6.0 | 5.7 | 5.8 | 5.8 | 5.9 | 5.8 | 5.6 | 5.6 | 5.5 | 5.7 | 5.5 | 5.7 | 4.8 | 4.5 | 4.2 | 3.9 | 4.4 |
| 12/8/2021 | 6.1 | 5.7 | 5.5 | 5.6 | 5.5 | 5.5 | 5.5 | 5.5 | 5.6 | 5.7 | 5.5 | 5.5 | 5.7 | 5.1 | 4.7 | 4.6 | 1.7 |
| 1/12/2022 | 7.8 | 7.5 | 7.5 | 7.5 | 7.3 | 7.7 | 7.5 | 7.2 | 7.4 | 7.5 | 7.3 | 6.7 | 5.5 | 4.5 | 3.3 | 2.4 | 5.1 |
| 2/2/2022 | 8.6 | 8.1 | 8.0 | 8.3 | 8.2 | 8.1 | 7.8 | 7.5 | 7.4 | 7.1 | 7.1 | 6.1 | 5.8 | 5.6 | 5.3 | 5.2 | 6.4 |
| 3/15/2022 | 10.6 | 10.4 | 10.2 | 10.0 | 9.6 | 10.0 | 9.3 | 9.0 | 8.0 | 7.9 | 7.9 | 7.7 | 7.6 | 7.1 | 6.7 | 6.6 | 0.4 |
| 4/5/2022 | 8.0 | 7.9 | 7.6 | 7.6 | 7.6 | 7.6 | 6.4 | 6.0 | 5.7 | 5.0 | 4.5 | 3.7 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 |
| 4/13/2022 | 7.8 | 7.8 | 7.5 | 7.4 | 7.4 | 7.4 | 7.3 | 7.0 | 7.0 | 5.6 | 4.1 | 3.3 | 2.4 | 2.3 | 2.0 | 2.0 | 1.7 |
| 4/19/2022 | 8.0 | 8.1 | 7.9 | 7.8 | 7.7 | 7.9 | 7.6 | 7.5 | 6.9 | 6.8 | 4.7 | 3.2 | 2.2 | 1.9 | 1.8 | 1.7 | 0.1 |
| 4/27/2022 | 8.5 | 8.3 | 8.4 | 8.3 | 8.2 | 8.2 | 8.2 | 7.0 | 5.8 | 5.1 | 4.3 | 3.6 | 0.4 | 0.6 | 0.4 | 0.3 | 0.3 |
| 5/4/2022 | 8.8 | 8.6 | 8.4 | 7.6 | 7.3 | 7.0 | 6.4 | 5.6 | 5.0 | 4.6 | 3.7 | 3.7 | 3.3 | 3.0 | 3.0 | 3.0 | 0.0 |
| 5/11/2022 | 7.7 | 7.8 | 7.4 | 7.1 | 7.1 | 7.2 | 6.4 | 6.5 | 5.7 | 4.9 | 3.2 | 2.7 | 1.3 | 0.1 | 0.0 | 0.0 | 0.0 |
| 5/18/2022 | 8.0 | 8.0 | 7.6 | 7.6 | 7.3 | 7.4 | 7.0 | 6.5 | 5.3 | 4.5 | 3.6 | 2.7 | 3.1 | 2.9 | 2.7 | 2.7 | 0.2 |
| 5/23/2022 | 8.8 | 8.7 | 8.2 | 8.0 | 8.0 | 7.4 | 6.1 | 5.4 | 4.5 | 3.8 | 3.2 | 2.0 | 0.5 | 0.2 | 0.2 | 0.2 | 0.0 |
| 5/31/2022 | 8.0 | 7.9 | 6.9 | 7.1 | 7.2 | 6.7 | 6.4 | 5.5 | 2.5 | 2.2 | 1.6 | 0.8 | 0.1 | 0.0 | 0.0 | 0.0 | 0.2 |
| 6/9/2022 | 9.2 | 8.8 | 8.7 | 8.2 | 7.9 | 7.8 | 5.3 | 4.4 | 2.6 | 1.8 | 1.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.2 | 0.0 |
| 6/13/2022 | 7.7 | 7.5 | 7.2 | 7.2 | 6.9 | 6.7 | 6.0 | 3.3 | 2.1 | 1.8 | 0.4 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 | 0.2 |
| 6/20/2022 | 8.4 | 8.4 | 8.3 | 7.9 | 7.6 | 7.7 | 7.6 | 7.5 | 2.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 6/27/2022 | 8.7 | 8.7 | 8.4 | 7.8 | 7.6 | 6.4 | 3.9 | 2.1 | 0.5 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 |
| 7/6/2022 | 9.2 | 8.6 | 8.6 | 8.6 | 8.4 | 8.3 | 6.2 | 4.8 | 1.6 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.1 |
| 7/11/2022 | 8.9 | 8.5 | 8.7 | 8.2 | 8.1 | 6.1 | 2.1 | 0.9 | 0.6 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 7/20/2022 | 7.6 | 7.5 | 7.9 | 7.2 | 6.6 | 4.2 | 0.9 | 0.3 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 |
| 7/25/2022 | 8.0 | 7.0 | 6.8 | 6.3 | 6.1 | 6.1 | 5.7 | 5.7 | 2.9 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 8/1/2022 | 9.9 | 10.0 | 8.0 | 6.1 | 4.2 | 3.6 | 3.0 | 2.2 | 1.6 | 0.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 |
| 8/8/2022 | 6.9 | 6.6 | 6.6 | 6.1 | 5.5 | 3.6 | 2.2 | 1.5 | 0.7 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 8/15/2022 | 6.7 | 6.8 | 6.3 | 5.8 | 5.8 | 5.9 | 5.0 | 4.2 | 1.4 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 8/22/2022 | 7.7 | 7.7 | 7.2 | 7.1 | 6.9 | 6.7 | 6.0 | 5.2 | 3.1 | 1.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 |
| 8/31/2022 | 7.1 | 6.9 | 6.8 | 6.7 | 6.5 | 6.2 | 6.1 | 5.7 | 5.4 | 5.2 | 1.6 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 |
| 9/7/2022 | 8.6 | 8.7 | 8.2 | 7.0 | 6.3 | 4.8 | 2.9 | 2.7 | 2.3 | 1.3 | 0.9 | 0.8 | 0.7 | 0.7 | 0.7 | 0.7 | 0.0 |

| Lopez Lake DO Profile, mg/L vs Depth, Feet | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | 2' | 5' | 10' | 15' | 20' | 25' | 30' | 35' | 40' | 45' | 50' | 55' | 60' | 65' | 70' | 75' | 80' |
| 9/14/2022 | 8.2 | 7.5 | 7.4 | 7.2 | 6.1 | 1.5 | 0.9 | 0.6 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 |
| 9/19/2022 | 4.9 | 4.7 | 4.7 | 4.6 | 4.5 | 4.5 | 4.6 | 4.3 | 4.0 | 1.3 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 |
| 9/26/2022 | 6.7 | 6.2 | 6.1 | 6.2 | 5.8 | 5.6 | 5.3 | 4.9 | 4.3 | 3.8 | 1.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 10/5/2022 | 5.7 | 5.6 | 5.2 | 5.1 | 5.2 | 5.2 | 5.3 | 5.2 | 4.9 | 5.0 | 4.8 | 3.7 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 |
| 11/2/2022 | 6.3 | 5.3 | 4.7 | 4.3 | 4.1 | 4.0 | 3.9 | 3.8 | 3.7 | 3.4 | 3.2 | 2.5 | 2.0 | 1.8 | 1.8 | 1.7 | 5.0 |
| 12/7/2022 | 8.3 | 6.3 | 5.9 | 5.4 | 5.3 | 5.2 | 5.0 | 4.8 | 4.8 | 5.1 | 4.9 | 5.0 | 5.1 | 5.0 | 5.1 | 5.0 | 4.9 |
| 1/25/2023 | 8.9 | 8.3 | 8.0 | 7.7 | 7.6 | 7.5 | 7.3 | 7.3 | 7.2 | 7.2 | 6.4 | 5.5 | 5.2 | 5.0 | 5.0 | 4.9 | 8.7 |
| 2/15/2023 | 8.7 | 8.7 | 8.5 | 8.5 | 8.7 | 8.7 | 8.7 | 8.8 | 7.9 | 8.8 | 8.9 | 8.8 | 8.7 | 8.9 | 8.6 | 8.8 | 7.2 |
| 3/8/2023 | 9.4 | 9.3 | 9.0 | 8.8 | 8.9 | 8.8 | 9.0 | 8.8 | 8.9 | 8.5 | 8.4 | 8.3 | 7.7 | 7.5 | 7.2 | 7.1 | 6.4 |
| 4/5/2023 | 8.0 | 7.8 | 7.6 | 7.7 | 7.6 | 7.8 | 7.6 | 7.6 | 6.8 | 7.9 | 7.1 | 7.0 | 7.0 | 6.4 | 6.7 | 6.7 | 6.4 |
| 4/10/2023 | 8.2 | 7.5 | 7.5 | 7.3 | 7.2 | 7.1 | 6.8 | 6.5 | 6.2 | 6.1 | 6.1 | 6.1 | 6.2 | 6.2 | 6.4 | 6.4 | 5.9 |
| 4/19/2023 | 8.2 | 8.5 | 8.3 | 8.3 | 8.3 | 8.2 | 8.1 | 8.1 | 6.5 | 6.0 | 6.1 | 6.4 | 6.5 | 6.4 | 6.4 | 6.4 | 6.1 |
| 4/24/2023 | 8.8 | 8.3 | 8.4 | 8.0 | 8.0 | 7.6 | 6.8 | 6.2 | 5.3 | 5.1 | 5.0 | 5.7 | 5.8 | 6.1 | 6.4 | 6.2 | 5.5 |
| 5/1/2023 | 8.9 | 8.8 | 8.9 | 8.7 | 8.6 | 8.7 | 5.7 | 4.3 | 3.6 | 4.2 | 4.7 | 5.1 | 5.4 | 5.5 | 5.3 | 5.3 | 5.0 |
| 5/10/2023 | 8.1 | 8.1 | 8.0 | 8.1 | 7.9 | 6.5 | 5.2 | 4.1 | 3.3 | 3.3 | 3.8 | 5.0 | 5.0 | 5.0 | 5.0 | 5.2 | 5.3 |
| 5/15/2023 | 9.0 | 9.1 | 8.9 | 8.8 | 8.2 | 6.3 | 5.4 | 4.1 | 3.3 | 3.5 | 4.5 | 5.0 | 5.1 | 5.3 | 5.1 | 5.1 | 4.7 |
| 5/22/2023 | 9.1 | 9.1 | 8.8 | 8.7 | 8.8 | 8.5 | 5.2 | 2.7 | 2.3 | 2.7 | 3.1 | 4.1 | 4.1 | 4.6 | 4.7 | 4.8 | 4.3 |
| 5/31/2023 | 7.4 | 6.4 | 7.0 | 7.0 | 6.9 | 6.7 | 5.1 | 3.0 | 1.6 | 1.8 | 2.5 | 3.7 | 4.0 | 4.4 | 4.1 | 4.1 | 4.4 |
| 6/5/2023 | 8.4 | 8.2 | 7.8 | 7.9 | 7.9 | 7.7 | 5.4 | 3.2 | 1.6 | 1.9 | 2.2 | 3.3 | 3.9 | 4.2 | 4.1 | 4.3 | 3.9 |
| 6/14/2023 | 8.6 | 8.0 | 8.2 | 8.4 | 8.3 | 5.6 | 4.1 | 2.5 | 1.6 | 1.1 | 2.0 | 3.0 | 3.4 | 3.6 | 3.7 | 3.7 | 3.6 |
| 6/19/2023 | 8.2 | 7.6 | 7.6 | 7.7 | 6.5 | 4.7 | 3.9 | 2.6 | 2.1 | 1.8 | 2.1 | 2.7 | 3.0 | 3.1 | 3.5 | 3.7 | 3.3 |
| 6/26/2023 | 7.6 | 7.4 | 6.9 | 6.9 | 7.0 | 4.1 | 1.9 | 1.1 | 0.8 | 0.9 | 1.2 | 1.6 | 2.6 | 3.2 | 3.3 | 3.3 | 3.0 |
| 7/3/2023 | 6.5 | 6.5 | 6.4 | 6.5 | 6.6 | 6.3 | 0.7 | 0.2 | 0.1 | 0.6 | 0.8 | 1.6 | 2.0 | 2.9 | 2.8 | 2.7 | 2.6 |
| 7/12/2023 | 8.3 | 8.2 | 7.9 | 7.8 | 7.7 | 7.0 | 3.1 | 2.3 | 1.9 | 1.7 | 0.9 | 1.2 | 1.5 | 2.0 | 2.3 | 2.5 | 2.8 |
| 7/19/2023 | 8.2 | 8.1 | 7.9 | 7.9 | 7.9 | 7.2 | 5.1 | 3.3 | 2.7 | 1.4 | 1.1 | 1.3 | 1.5 | 2.3 | 3.0 | 2.7 | 2.2 |
| 7/24/2023 | 7.9 | 7.7 | 7.4 | 7.3 | 7.3 | 7.0 | 3.4 | 2.9 | 1.6 | 1.3 | 1.0 | 1.2 | 1.5 | 2.1 | 2.2 | 2.3 | 1.9 |
| 8/2/2023 | 9.1 | 7.9 | 8.4 | 8.4 | 8.3 | 8.5 | 6.8 | 3.4 | 2.1 | 1.9 | 1.6 | 1.2 | 1.2 | 2.0 | 1.8 | 1.8 | 1.9 |
| 8/7/2023 | 9.8 | 9.9 | 9.8 | 9.5 | 9.1 | 8.7 | 5.3 | 3.5 | 3.1 | 2.6 | 2.0 | 1.7 | 1.5 | 1.8 | 1.8 | 1.8 | 1.3 |
| 8/14/2023 | 10.4 | 10.1 | 9.9 | 10.0 | 9.6 | 9.6 | 7.0 | 2.3 | 1.7 | 1.5 | 1.1 | 0.6 | 0.6 | 0.9 | 1.0 | 1.2 | 0.8 |
| 8/21/2023 | 6.1 | 5.6 | 5.2 | 5.4 | 5.2 | 3.2 | 2.4 | 1.5 | 1.4 | 0.5 | 0.4 | 0.3 | 0.4 | 0.4 | 0.6 | 0.7 | 0.8 |
| 8/28/2023 | 8.0 | 7.5 | 7.4 | 7.4 | 6.9 | 6.7 | 6.5 | 3.5 | 2.9 | 1.2 | 1.0 | 0.9 | 0.7 | 0.9 | 1.2 | 0.8 | 0.3 |
| 9/6/2023 | 6.2 | 6.3 | 6.2 | 6.7 | 7.1 | 7.2 | 7.1 | 4.4 | 1.5 | 1.0 | 0.6 | 0.4 | 0.3 | 0.3 | 0.3 | 0.4 | 0.2 |
| 9/11/2023 | 6.5 | 7.0 | 7.1 | 7.2 | 6.9 | 6.6 | 6.0 | 2.9 | 0.5 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |

| Lopez Lake DO Profile, mg/L vs Depth, Feet | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Date** | **2'** | **5'** | **10'** | **15'** | **20'** | **25'** | **30'** | **35'** | **40'** | **45'** | **50'** | **55'** | **60'** | **65'** | **70'** | **75'** | **80'** |
| 9/18/2023 | 7.5 | 7.1 | 6.9 | 6.7 | 6.7 | 6.7 | 6.6 | 5.3 | 2.0 | 1.1 | 0.6 | 0.5 | 0.4 | 0.3 | 0.3 | 0.2 | 0.1 |
| 9/25/2023 | 6.4 | 6.1 | 6.1 | 5.8 | 6.0 | 5.9 | 5.8 | 5.8 | 5.0 | 0.9 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 10/3/2023 | 5.1 | 5.2 | 5.3 | 5.1 | 5.0 | 4.9 | 4.9 | 4.9 | 4.8 | 4.7 | 0.4 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.2 |
| 11/13/2023 | 7.4 | 7.4 | 7.3 | 7.2 | 7.1 | 7.0 | 7.0 | 6.9 | 6.8 | 6.8 | 6.7 | 5.8 | 1.3 | 0.9 | 0.5 | 0.3 | 0.4 |
| 12/12/2023 | 7.6 | 7.1 | 6.7 | 6.5 | 6.5 | 6.3 | 6.2 | 6.1 | 6.1 | 5.9 | 5.9 | 5.7 | 5.5 | 5.3 | 5.2 | 4.5 | 3.4 |
| 1/10/2024 | 6.3 | 5.9 | 5.6 | 5.5 | 5.3 | 5.3 | 5.3 | 5.1 | 5.1 | 5.1 | 4.9 | 4.7 | 4.7 | 4.6 | 4.1 | 4.1 | 3.4 |
| 2/7/2024 | 8.2 | 8.0 | 7.5 | 7.1 | 6.8 | 6.6 | 6.4 | 5.8 | 5.3 | 5.2 | 4.7 | 4.4 | 4.1 | 4.0 | 3.8 | 3.4 | 3.0 |
| 4/3/2024 | 9.1 | 9.5 | 9.4 | 9.4 | 9.3 | 7.4 | 6.3 | 5.5 | 5.0 | 4.5 | 4.3 | 3.9 | 3.7 | 3.4 | 3.2 | 3.1 | 2.6 |
| 4/10/2024 | 9.4 | 9.1 | 9.1 | 9.0 | 8.9 | 8.9 | 8.9 | 8.8 | 6.7 | 4.5 | 4.9 | 4.6 | 4.3 | 3.7 | 3.4 | 3.1 | 1.7 |
| 4/15/2024 | 9.7 | 9.7 | 9.6 | 9.6 | 9.5 | 9.5 | 9.4 | 8.7 | 7.2 | 5.1 | 4.1 | 3.1 | 2.4 | 2.0 | 1.7 | 1.7 | 2.6 |
| 4/22/2024 | 9.8 | 9.7 | 9.9 | 9.7 | 9.6 | 8.7 | 6.7 | 6.4 | 5.7 | 5.1 | 4.7 | 4.3 | 3.9 | 3.5 | 3.1 | 2.8 | 0.7 |
| 4/29/2024 | 7.4 | 7.7 | 8.0 | 8.0 | 8.0 | 8.2 | 8.3 | 7.6 | 4.0 | 3.7 | 3.1 | 2.2 | 1.7 | 1.5 | 1.2 | 1.0 | 0.7 |
| 5/8/2024 | 8.5 | 8.4 | 8.3 | 8.3 | 8.2 | 7.8 | 8.0 | 5.4 | 3.5 | 2.8 | 2.3 | 1.7 | 1.4 | 1.0 | 0.9 | 0.8 | 0.2 |
| 5/13/2024 | 8.7 | 8.3 | 8.6 | 8.2 | 8.3 | 8.1 | 5.8 | 3.1 | 2.1 | 1.5 | 1.0 | 1.0 | 0.9 | 0.5 | 0.3 | 0.3 | 0.3 |
| 5/20/2024 | 8.7 | 8.7 | 8.6 | 8.8 | 8.6 | 6.7 | 4.7 | 2.7 | 1.5 | 1.2 | 0.9 | 0.8 | 0.8 | 0.5 | 0.5 | 0.4 | 0.2 |
| 5/29/2024 | 9.6 | 9.7 | 9.5 | 9.2 | 9.0 | 8.2 | 4.2 | 2.4 | 1.4 | 0.9 | 0.5 | 0.5 | 0.3 | 0.3 | 0.3 | 0.2 | 0.9 |
| 6/3/2024 | 8.3 | 8.2 | 8.0 | 8.0 | 8.0 | 7.9 | 7.8 | 5.2 | 3.8 | 2.6 | 2.2 | 2.0 | 1.8 | 1.6 | 1.4 | 1.1 | 0.2 |
| 6/17/2024 | 10.7 | 10.7 | 10.2 | 10.1 | 9.9 | 9.9 | 9.7 | 5.4 | 3.8 | 2.3 | 1.3 | 0.8 | 0.4 | 0.3 | 0.3 | 0.3 | 0.0 |
| 6/24/2024 | 10.0 | 10.0 | 10.1 | 9.3 | 8.6 | 5.6 | 4.9 | 1.5 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 |
| 7/1/2024 | 9.4 | 9.5 | 9.3 | 8.8 | 8.1 | 6.9 | 2.4 | 0.4 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 |
| 7/10/2024 | 9.6 | 9.9 | 9.4 | 8.8 | 8.7 | 8.6 | 4.3 | 0.7 | 0.4 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| 7/17/2024 | 8.2 | 9.0 | 8.9 | 8.8 | 8.6 | 8.6 | 5.7 | 4.3 | 3.9 | 3.1 | 2.5 | 0.6 | 0.3 | 0.3 | 0.2 | 0.2 | 0.1 |
| 7/22/2024 | 8.9 | 8.6 | 8.0 | 7.9 | 7.6 | 7.6 | 2.4 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 |
| 7/29/2024 | 8.2 | 8.3 | 8.3 | 8.3 | 8.3 | 8.2 | 7.9 | 5.6 | 4.3 | 2.6 | 1.2 | 0.6 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 |
| 8/5/2024 | 7.8 | 7.7 | 7.8 | 7.8 | 7.6 | 7.6 | 7.5 | 5.0 | 4.2 | 3.1 | 2.2 | 1.6 | 1.0 | 0.6 | 0.4 | 0.3 | 0.6 |
| 8/14/2024 | 7.4 | 7.2 | 6.8 | 6.6 | 6.5 | 6.4 | 6.1 | 5.9 | 3.9 | 4.0 | 3.0 | 2.3 | 1.9 | 1.2 | 0.7 | 0.6 | 0.1 |
| 8/19/2024 | 8.1 | 7.8 | 7.1 | 6.8 | 6.7 | 6.6 | 6.4 | 6.6 | 3.5 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 8/26/2024 | 5.3 | 4.7 | 4.9 | 4.9 | 4.8 | 4.6 | 4.6 | 4.7 | 3.5 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 |
| 9/4/2024 | 6.4 | 6.5 | 6.2 | 6.2 | 6.0 | 6.0 | 6.0 | 5.3 | 3.5 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 9/9/2024 | 7.5 | 7.8 | 7.7 | 7.3 | 7.3 | 7.2 | 5.1 | 1.9 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 9/16/2024 | 6.1 | 5.8 | 5.6 | 5.6 | 5.6 | 5.6 | 5.1 | 1.2 | 0.8 | 0.5 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 9/25/2024 | 6.0 | 6.0 | 5.9 | 5.7 | 5.7 | 5.5 | 5.5 | 5.3 | 5.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 10/2/2024 | 7.0 | 6.8 | 6.8 | 6.9 | 6.8 | 6.6 | 6.6 | 6.5 | 6.5 | 5.3 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

**Lopez Lake DO Profile, mg/L vs Depth, Feet**

| Date | 2' | 5' | 10' | 15' | 20' | 25' | 30' | 35' | 40' | 45' | 50' | 55' | 60' | 65' | 70' | 75' | 80' |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11/5/2024 | 6.9 | 6.5 | 6.3 | 6.3 | 6.1 | 6.1 | 6.2 | 6.1 | 6.0 | 5.8 | 4.4 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 3.1 |
| 12/16/2024 | 3.3 | 3.1 | 3.0 | 3.1 | 3.1 | 3.0 | 3.1 | 3.1 | 3.0 | 3.1 | 3.0 | 3.0 | 3.0 | 3.1 | 3.1 | 3.1 | 1.8 |
| 1/15/2025 | 7.0 | 7.0 | 6.9 | 6.9 | 6.8 | 6.8 | 6.9 | 6.6 | 7.0 | 6.7 | 6.4 | 6.4 | 6.5 | 6.5 | 6.5 | 6.3 | 6.6 |
| 2/10/2025 | 8.4 | 8.6 | 8.3 | 8.5 | 8.6 | 8.5 | 8.5 | 8.5 | 8.4 | 8.4 | 8.3 | 8.4 | 8.2 | 8.0 | 7.7 | 7.5 | 7.4 |
| 3/3/2025 | 11.2 | 11.8 | 11.7 | 11.5 | 11.5 | 11.4 | 10.3 | 8.9 | 8.6 | 8.0 | 7.9 | 7.9 | 7.8 | 7.8 | 7.4 | 7.6 | 7.5 |
| 4/14/2025 | 8.4 | 9.0 | 9.0 | 9.3 | 9.5 | 9.3 | 6.8 | 5.1 | 4.6 | 4.3 | 3.7 | 3.6 | 3.5 | 3.1 | 3.0 | 3.0 | 2.9 |
| 4/9/2025 | 10.2 | 10.1 | 10.1 | 10.1 | 10.0 | 10.0 | 8.5 | 7.2 | 5.5 | 4.7 | 4.3 | 4.2 | 3.9 | 3.7 | 3.4 | 3.3 | 3.2 |
| 4/21/2025 | 9.9 | 9.6 | 9.4 | 7.9 | 8.6 | 8.9 | 6.5 | 5.0 | 4.3 | 3.8 | 3.5 | 3.2 | 3.2 | 2.8 | 2.6 | 2.5 | 2.5 |
| 4/29/2025 | 9.7 | 8.7 | 8.6 | 8.6 | 8.9 | 8.8 | 8.1 | 6.5 | 3.7 | 2.8 | 2.9 | 2.6 | 2.4 | 2.4 | 2.1 | 2.0 | 2.0 |
| 5/5/2025 | 9.9 | 10.3 | 10.3 | 10.3 | 10.3 | 10.1 | 10.2 | 7.2 | 5.2 | 4.9 | 4.7 | 4.4 | 4.2 | 3.6 | 3.0 | 2.3 | 2.2 |
| 5/12/2025 | 11.4 | 11.3 | 11.1 | 11.0 | 11.0 | 10.4 | 8.3 | 6.8 | 5.4 | 4.5 | 3.3 | 3.0 | 2.3 | 2.1 | 1.9 | 1.8 | 1.7 |
| 5/28/2025 | 10.4 | 9.8 | 9.3 | 9.3 | 8.7 | 8.3 | 4.4 | 2.2 | 2.0 | 1.9 | 0.7 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 |
| 5/19/2025 | 10.9 | 11.9 | 9.2 | 9.8 | 9.8 | 10.0 | 10.2 | 5.4 | 4.3 | 2.8 | 1.4 | 1.1 | 1.0 | 0.8 | 0.9 | 0.9 | 0.8 |
| 6/2/2025 | 8.5 | 9.0 | 8.9 | 8.8 | 8.8 | 8.4 | 4.2 | 2.7 | 1.2 | 0.4 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 |
| 6/30/2025 | 8.2 | 8.0 | 7.4 | 7.3 | 7.1 | 7.1 | 6.5 | 6.1 | 5.4 | 5.0 | 2.0 | 0.9 | 0.4 | 0.3 | 0.2 | 0.2 | 0.1 |
| 6/11/2025 | 7.6 | 8.4 | 8.6 | 8.3 | 8.0 | 4.5 | 3.3 | 2.3 | 1.6 | 1.2 | 0.9 | 0.4 | 0.3 | 0.2 | 0.1 | 0.1 | 0.1 |
| 6/16/2025 | 8.3 | 8.2 | 8.2 | 8.1 | 8.0 | 7.9 | 3.2 | 0.9 | 0.8 | 0.5 | 0.4 | 0.3 | 0.3 | 0.3 | 0.1 | 0.1 | 0.1 |
| 6/23/2025 | 7.8 | 7.3 | 7.0 | 7.1 | 6.7 | 6.6 | 6.8 | 6.7 | 3.3 | 1.0 | 0.5 | 0.3 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 |
| 7/7/2025 | 6.6 | 6.8 | 6.7 | 6.6 | 6.3 | 6.3 | 6.2 | 6.2 | 6.1 | 5.9 | 2.3 | 1.1 | 0.6 | 0.5 | 0.2 | 0.2 | 0.2 |
| 7/21/2025 | 8.0 | 7.8 | 7.6 | 7.6 | 7.6 | 7.6 | 7.5 | 5.5 | 3.4 | 2.4 | 0.9 | 0.7 | 0.5 | 0.4 | 0.1 | 0.1 | 0.0 |
| 7/15/2025 | 7.9 | 8.5 | 8.2 | 8.1 | 7.9 | 7.8 | 7.0 | 4.3 | 2.6 | 1.4 | 1.0 | 0.8 | 0.5 | 0.4 | 0.2 | 0.2 | 0.1 |
| 7/28/2025 | 5.9 | 5.6 | 5.8 | 5.8 | 5.7 | 5.7 | 5.6 | 2.5 | 0.4 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 |
| 8/4/2025 | 5.4 | 5.4 | 5.5 | 5.5 | 5.4 | 5.5 | 5.5 | 5.3 | 3.3 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 8/26/2025 | 7.1 | 8.1 | 7.9 | 7.9 | 7.8 | 7.7 | 7.6 | 5.1 | 3.7 | 3.0 | 2.1 | 1.9 | 1.3 | 1.0 | 0.8 | 0.8 | 0.7 |
| 8/21/2025 | 7.8 | 8.9 | 6.9 | 6.4 | 6.0 | 5.9 | 5.9 | 5.1 | 5.0 | 4.0 | 3.1 | 2.6 | 2.2 | 2.0 | 1.7 | 1.6 | 1.2 |
| 9/3/2025 | 8.4 | 8.3 | 8.2 | 8.0 | 7.9 | 7.8 | 7.4 | 4.3 | 2.9 | 2.1 | 0.9 | 0.5 | 0.4 | 0.3 | 0.2 | 0.1 | 0.1 |
| 9/8/2025 | 7.8 | 7.7 | 7.6 | 7.6 | 7.4 | 7.3 | 7.3 | 7.1 | 7.0 | 3.8 | 2.8 | 2.0 | 1.7 | 1.4 | 0.9 | 0.7 | 0.5 |
| 9/15/2025 | 7.2 | 7.2 | 7.1 | 7.1 | 6.9 | 6.8 | 6.8 | 6.7 | 6.5 | 2.0 | 0.3 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 |
| 9/22/2025 | 6.0 | 6.7 | 6.7 | 7.0 | 7.0 | 6.9 | 7.1 | 7.1 | 7.0 | 5.6 | 0.4 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 |
| 10/8/2025 | 6.5 | 6.5 | 6.4 | 6.2 | 6.2 | 6.1 | 6.1 | 6.1 | 6.2 | 6.1 | 3.9 | 2.2 | 1.5 | 1.2 | 1.1 | 0.4 | 0.2 |
| 10/20/2025 | 7.1 | 6.9 | 6.7 | 6.7 | 6.7 | 6.5 | 6.6 | 6.5 | 6.4 | 6.4 | 6.3 | 6.4 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 |
| 11/10/2025 | 6.6 | 6.5 | 6.3 | 6.3 | 6.1 | 6.0 | 5.9 | 5.9 | 6.0 | 6.2 | 6.1 | 5.9 | 5.2 | 0.8 | 0.3 | 0.1 | 0.2 |
| 12/3/2025 | 5.7 | 5.9 | 5.9 | 5.9 | 5.9 | 5.8 | 5.8 | 5.9 | 5.9 | 5.9 | 5.9 | 5.9 | 5.9 | 6.0 | 6.0 | 6.0 | 5.9 |