Updated May 30, 2024

Raw Water PFAS Testing

LACSD is conducting extensive testing in the watershed to try to understand where the PFAS is coming from and how it's getting into Lake Arrowhead. We have tested multiple areas under varying conditions to try to determine if PFAS are coming from discharges or from stormwater runoff.

The following samples were taken from water that has not yet been treated. It is important to note that **these are not drinking water results**. There is no regulatory limit applicable to these samples at this time.

Lake Arrowhead

PFOA and PFOS are the most common PFAS chemicals. We are finding that the highest concentrations of PFOA are in Lake Arrowhead while the tributaries contain higher levels of PFOS. Any PFAS chemical not listed here was not detected.

All amounts are nanograms per liter (ng/L), also referred to as parts per trillion (ppt).
ND = Non-Detect

Lake Arrowhead Raw Water Samples

Chemical	North Bay	Emerald Bay	Meadow Bay	Meadow Bay	North Bay	Meadow Bay	Emerald Bay	Blue Jay Bay	Blue Jay Bay	North Bay
Test Date	10/3/2023	10/3/2023	10/23/2023	12/21/2023	1/11/2024	1/24/2024	2/8/2024	2/6/2024	4/17/2024	5/8/2024
PFOA	16	16	16	13	15	12	12	0	7.5	13
PFOS	6.6	6.2	7.5	8	6.7	6.3	5.1	0	5.8	6.2
PFHpA	5.7	6	5.4	4.8	5.6	4.8	0	0	0	5.6
PFHxA	6.1	5.8	5.8	5.2	5.9	5.9	5.1	0	3.4	5.1
PFPeA	5.4	5.4	0	0	6.3	4.4	4.5	0	0	4.9
PFDA	3.6	3.5	4.5	5.2	4	0	2.9	0	0	3.2
PFBS	2.6	2.7	2.5	0	2.9	0	2.8	0	0	2.7
PFHxS	3	3.2	3.4	2.1	3.2	0	2.8	0	0	2.5
PFNA	4.7	5.2	6	5.6	5.5	0	3.9	0	0	4.7
HFPO-DA	0	0	0	0	0	0	4.4	0	0	0
PFTrDA	0	0	2.4	0	0	0	0	0	0	0
PFDoA	0	0	3.3	0	0	0	0	0	0	0
PFBA	6.2	6	0	0	3	0	3.3	0	0	3.2

Lake Arrowhead Tributaries

Samples were taken from the tributaries to Lake Arrowhead. PFOA concentrations are lower in the tributaries than the lake but could be the source of PFOS.

Lake Arrowhead Tributary Raw Water Samples

Chemical	Blue Jay Creek	Blue Jay Creek	Blue Jay Creek	Burnt Mill Creek	Burnt Mill Creek	Burnt Mill Creek
Test Date	10/23/2023	12/21/2023	1/24/2024	10/23/2023	12/21/2023	1/24/2024
PFOA	0	3.0	0	0	2.2	0
PFOS	4.1	3.4	0	3.8	2.8	0
PFHpA	0	0	0	0	0	0
PFHxA	0	2.5	0	0	0	0
PFPeA	0	0	0	0	0	0
PFDA	0	0	0	0	0	0
PFTDA	0	2.5	0	0	0	0
PFBS	0	0	0	0	0	0
PFHxS	0	0	0	0	0	0
PFNA	0	0	0	0	0	0

Chemical	Flemming Creek	Flemming Creek	Orchard Creek	Orchard Creek	Orchard Creek	Fire Station 92
Test Date	10/23/2023	1/24/2024	10/23/2023	12/21/2023	1/24/2024	4/17/2024
PFOA	0	0	0	0	0	4.7
PFOS	3.8	0	0	0	0	9.4
PFHpA	0	0	0	0	0	0
PFHxA	0	0	0	0	0	5.5
PFPeA	0	0	0	0	0	5.6
PFDA	0	0	0	0	0	0
PFTDA	0	0	0	0	0	0
PFBS	2.4	0	0	0	0	4.2
PFHxS	0	0	0	0	0	0
PFNA	0	0	0	0	0	0

Emerald Bay Creek had the highest PFAS concentrations of all the tributaries to Lake Arrowhead. Because of this, additional testing was conducted upstream of the original sampling site. Higher levels of PFOS were detected in the Cedar Glen fork. Concentrations after a rainstorm were lower. District staff also noticed some cloudy water in the Emerald Bay silt basin so samples were taken which revealed the highest concentration of PFOS found to date.

Emerald Bay Creek Raw Water Samples

	Downstream	Upstream	Upstream	Downstream	Upstream	Upstream	Downstream	Upstream	Upstream	
Chemical	Emerald Bay Creek	Cedar Glen	Cumberland	Emerald Bay Creek	Cedar Glen	Cumberland	Silt Basin	Hook Creek Rd	Cedar Terrace	Hook Ck Tunnel
Test Date	10/23/23	12/18/23	12/18/23	1/24/24	1/24/24	1/24/24	1/24/24	2/6/24	2/6/24	4/17/24
PFOA	6.5	7.6	5.6	0	0	0	0	0	0	0
PFOS	12.0	16.0	6.0	7.1	5.4	0	24	0	0	0
PFHpA	0	2.5	0	0	0	0	0	0	0	0
PFHxA	3.3	2.7	2.2	0	0	0	0	0	0	5.3
PFDA	0	6.0	0	0	0	0	0	0	0	5
PFTDA	0	0	0	0	0	0	0	0	0	0
PFBS	11.0	0	2.8	7.2	0	0	6.7	0	0	6.8
PFHxS	3.3	0	2.4	0	0	0	0	0	0	0
PFNA	0	4.8	0	0	0	0	0	0	0	0

Grass Valley Watershed

On an annual average, approximately 527 acre-feet of water flows from the Grass Valley watershed to Lake Arrowhead through a tunnel, equivalent to 1% of the volume of Lake Arrowhead. PFAS sampling shows that Grass Valley Lake has lower levels of PFOA but higher levels of PFOS than Lake Arrowhead, similar to the tributaries.

Grass Valley Lake			Downstream
Chemical	Grass Valley Lake	Grass Valley Lake	Oakmont
Test Date	10/23/23	1/24/24	2/6/24
PFOA	9.3	0	4.1
PFOS	11	6.6	4.7
PFHpA	0	0	0
PFHxA	7.6	4.7	6.7
PFPeA	0	0	0
PFDA	0	0	0
PFTDA	0	0	0
PFBS	6.7	5	0
PFHxS	5.3	0	0
PFNA	2.4	0	0

Testing was conducted on creeks upstream of the Lake Arrowhead Country Club (LACC) to determine the PFAS levels before reaching the golf course which is irrigated with recycled water. Results indicate PFAS levels are higher before the creek reaches LACC. Additional samples were taken at upstream tributaries to try to identify a source.

	Upstream	Upstream	Upstream	Upstream Post-Storm	Upstream Post-Storm	Upstream	Upstream
Chemical	Grass Valley Creek	Grass Valley Creek	Clubhouse	Clubhouse	Clubhouse	Thunderbird	Camp
Test Date	12/18/23	1/24/24	12/18/23	12/21/23	1/24/24	1/24/24	1/24/24
PFOA	0	0	0	5.6	0	0	0
PFOS	0	0	6.8	17	8.4	4.4	7.5
PFHpA	0	0	0	0	0	0	0
PFHxA	0	0	0	2.9	0	0	0
PFPeA	0	0	0	0	0	0	0
PFDA	0	0	0	0	0	0	0
PFTDA	0	0	0	0	0	0	0
PFBS	0	0	0	5.2	0	0	0
PFHxS	0	0	0	10	0	0	4.5
PFNA	0	0	0	0	0	0	0

<u>Papoose Lake</u>

Papoose Lake does not receive any water from Lake Arrowhead. Preliminary results show the levels of PFAS are lower in Papoose than in Lake Arrowhead but are still at measurable levels.

Chemical	Papoose Lake	Papoose Lake	McKay Detention Basin
Test Date	12/21/2023	1/24/2024	4/17/2024
PFOA	6.5	5.6	6.6
PFOS	5.9	4.5	4.6
PFHpA	2.2	0	0
PFHxA	2.6	0	5.7
PFDA	2.1	0	0
PFBS	0	0	0
PFHxS	0	0	0
PFNA	2.9	0	0

Rainwater

Multiple scientific studies have revealed PFAS in rainwater and air particulates. LACSD tested the rainwater on February 5, 2024 and the results were negative for PFAS. Additional samples will be taken in the future.

Additional testing has been conducted for which results have not yet been received. We will continue to update our website with more information as it becomes available at lakearrowheadcsd.com or call us at (909) 336-7100.