



LIVE OAK CITY COUNCIL

REGULAR MEETING AGENDA FEBRUARY 19, 2025 6:00 PM

MEETING LOCATION
LIVE OAK COUNCIL CHAMBERS
9955 LIVE OAK BOULEVARD
LIVE OAK, CALIFORNIA 95953

MEMBERS OF THE COUNCIL

JERAMY CHAPDELAINE, MAYOR
AARON PAMMA, VICE MAYOR
ASHLEY HERNANDEZ, COUNCILMEMBER
NANCY SANTANA, COUNCILMEMBER
BOB WOTEN, COUNCILMEMBER

RICK CRABTREE,
INTERIM CITY MANAGER

NICOLE ROSSER,
CITY ATTORNEY

The Council may take up any agenda item at any time, regardless of the order listed. Action may be taken on any item on this agenda. Materials related to an item on this Agenda submitted to the Council after distribution of the agenda packet are available for public inspection at City Hall, 9955 Live Oak Boulevard, Live Oak, during normal business hours. Such documents are also available on the City of Live Oak's website at www.liveoakcity.org, subject to staff's availability to post the documents before the meeting.

In compliance with the Americans with Disabilities Act, the meeting room is wheelchair accessible and disabled parking is available. If you have a disability and need disability-related modifications or accommodations to participate in this meeting, please contact the City Clerk's office at (530) 695-2112 x107. Requests must be made at least 24 hours in advance.

- **Remote Viewing:**

- Members of the public can view a livestream of the meeting online at https://liveoakca.granicus.com/ViewPublisher.php?view_id=1.
- Members of the public can access the Zoom webinar as follows:
 - **Join by Electronic Device:**
<https://us02web.zoom.us/j/89846268753>
 - **Join by Phone:**
1-669-900-6833 or 1-833-548-0282 (Toll Free)
Webinar ID: 898 4626 8753

- **Public Comment:** Members of the public can submit general public comments, as well as comment on specific agenda items in the following ways:
 - **Public Attendance:** Members of the public who attend in person may make comments from the Council Chamber podium.

- **Live Remote Public Comment:** Members of the public can submit a live remote public comment by:
 - *Joining the virtual Council meeting via the link below. When public comment is opened, raise your virtual hand and be called upon to speak for up to 3 minutes.*

<https://us02web.zoom.us/j/89846268753>
 - *Joining the virtual Council meeting by calling the phone number below. When public comment is opened, dial *9 to raise your hand and be called upon to speak for up to 3 minutes.*

 1-669-900-6833 or 1-833-548-0282 (Toll Free)
Webinar ID: 898 4626 8753
 - **Email Public Comment:** Comments from the public on agenda items will be accepted until 1:00 pm on the date of the meeting, via email to the City Clerk at cmenchaca@liveoakcity.org. Comments will be distributed to Council prior to the meeting and attached to the minutes. Please note that emailed comments will NOT be read aloud by staff during the meeting.
 - **eComment Feature:** Comments from the public on agenda items will be accepted until 1:00 pm on the date of the meeting, via the eComment feature at https://liveoakca.granicus.com/ViewPublisher.php?view_id=1. Comments will be distributed to Council prior to the meeting and attached to the minutes. Please note that eComments will NOT be read aloud by staff during the meeting.
-

CALL TO ORDER**ROLL CALL****PLEDGE OF ALLEGIANCE AND INVOCATION****CORRECTIONS AND/OR CHANGES TO THE AGENDA BY CITY MANAGER ONLY****PRESENTATIONS AND RECOGNITIONS**

- A. SACOG Presentation on the 2025 Blueprint Project

PUBLIC COMMENT

Any person wishing to address the City Council on general jurisdictional matters or consent calendar items may do so at this time. If you are commenting on an agenda item, your comments will be heard at the time that item is scheduled for discussion. The City Council adopted a time limit of three minutes per person. The Brown Act does not allow for Council discussion of items not on the agenda. Councilmembers may only a) refer the matter to staff; b) ask for additional information; c) request a report back; or d) provide a limited factual response for items not listed on the agenda.

CONSENT ITEMS

Consent Calendar is passed by one motion with exceptions and separate votes as noted.

1. City Council Meeting Minutes
Recommendation: Approve the February 5, 2025, City Council Regular Meeting minutes.
(Clarissa Menchaca, City Clerk)
2. City Council Meeting Minutes
Recommendation: Approve the February 8, 2025, City Council Special Meeting minutes.
(Clarissa Menchaca, City Clerk)
3. Reappointment to the Regional Housing Authority Board of Commissioners
Recommendation: Confirm the Mayor's reappointment of Jeramy Chapdelaine to the Regional Housing Authority Board of Commissioners as the Community Member, with a term ending January 31, 2029.
(Rick Crabtree, Interim City Manager)

DISCUSSION ITEMS

4. Well 2 PFAS Update
Recommendation: Information only.
(Jeff Nelson, Interim Public Works Director)

BUSINESS ITEMS

5. Assignment of PIO Responsibilities/Tasks
Recommendation: Discussion and possible direction.
(Rick Crabtree, Interim City Manager)

ITEMS REMOVED FROM THE CONSENT AGENDA FOR COUNCIL CONSIDERATION AND ACTION**UPDATES AND ANNOUNCEMENTS FROM THE CITY ATTORNEY AND CITY MANAGER**

COUNCILMEMBER REPORTS / COMMENTS / REQUESTS

ADJOURNMENT



**City of Live Oak
Report to City Council**

Meeting Date:

February 19, 2025

Title:

SACOG Presentation on the 2025 Blueprint Project

Background:**Background on SACOG:**

The Sacramento Area Council of Governments is where local government leaders across the region come together to advance the goals of economic prosperity, connected communities, and vibrant places. SACOG works with the six counties and 22 cities in the region to solve challenges that are too big for any one jurisdiction to solve on its own. SACOG plays a central role in transportation infrastructure planning and funding assistance for cities, counties, transit operators, and other entities responsible for providing for the mobility needs of the region's residents. One of SACOG's main roles as the state and federally recognized Metropolitan Planning Organization for the region, is to maintain the region's long-range, fiscally constrained, transportation plan and accompanying land use strategy. This plan must be updated every four years in coordination with local government agencies and demonstrate how the region is working to advance local, regional, state, and federal policy priorities. SACOG is currently undergoing an update of this plan, titled Blueprint, and anticipates adoption of the plan in 2025.

Background on Blueprint:

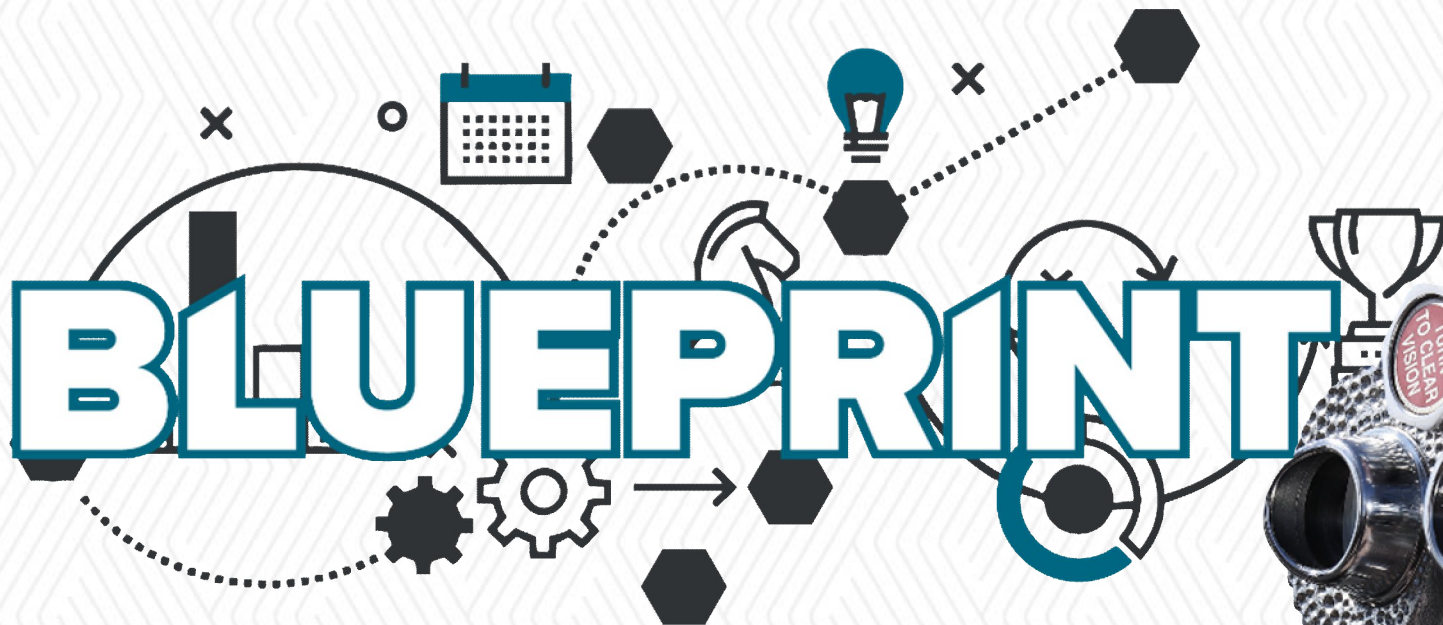
The 2025 Blueprint will outline recommendations for public land use policy and transportation investment strategies for the Sacramento region for the next 30 years. This plan will lay out a set of strategies for an integrated, multimodal transportation system and a regional land use development pattern that can create a more thriving region that works for all residents. The plan aims to connect housing to jobs, education, goods and services, and recreational opportunities while protecting and enhancing our region's natural and working landscapes.

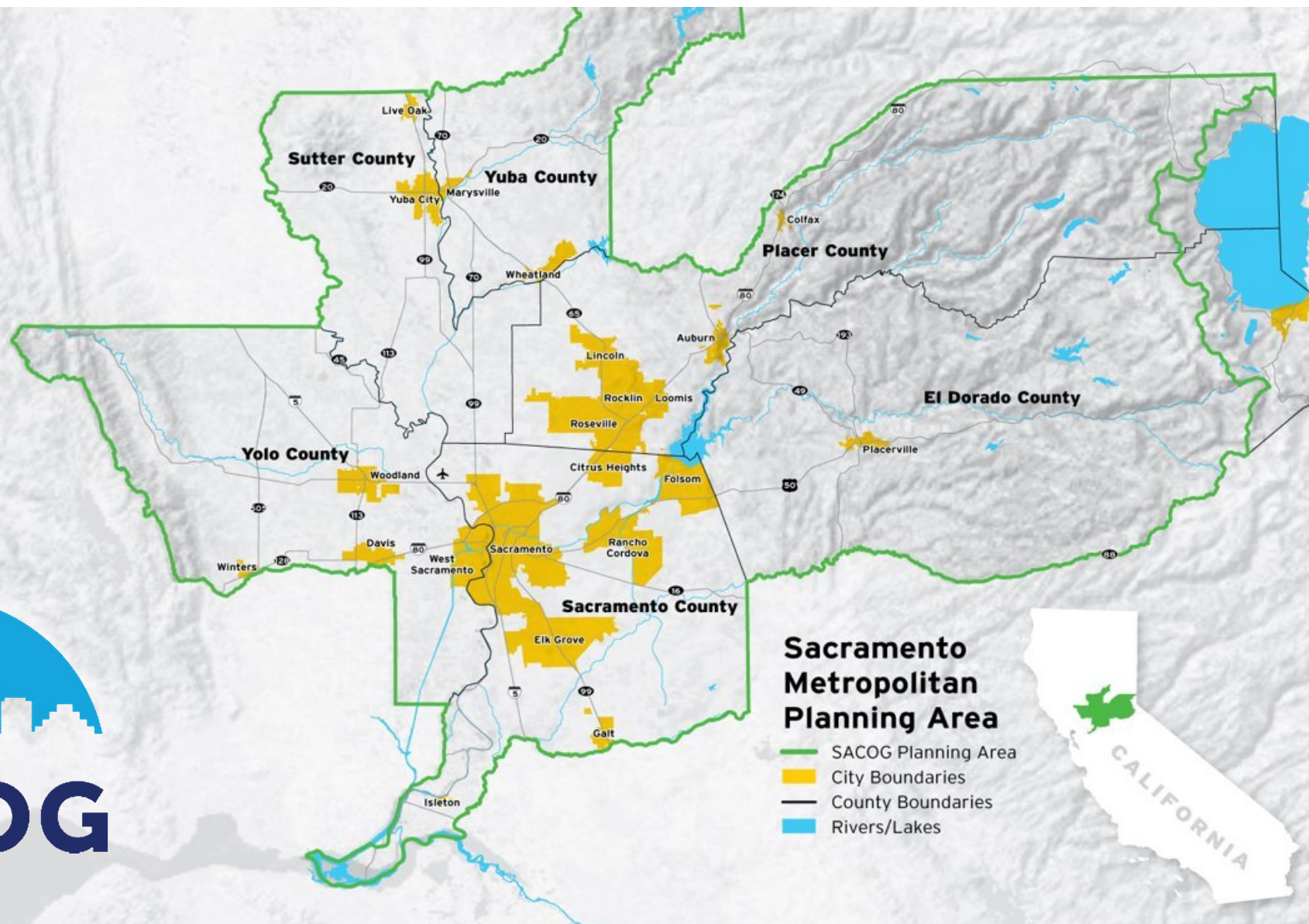
Aside from this plan being a federal and state requirement, SACOG will use the 2025 Blueprint update to help local agencies coordinate and prioritize efforts to attract greater investment in the region through grants, private investment, and economic growth while protecting our region's natural environment, existing economies, and improving quality of life for all residents.

At the Live Oak City Council meeting, Clint Holtzen, from SACOG, will provide a short presentation and answer any council questions on the 2025 Blueprint. The presentation will outline the findings from the outreach process and the land use analysis. It will also provide an overview of the opportunities SACOG is offering for public and stakeholder involvement in the Environmental Impact Report and Draft Plan. Additionally, the presentation will provide a summary of the various programs SACOG has available or is developing to assist public agencies in implementing the region's vision for the future.

Attachments:

[PowerPoint Presentation](#)





Triple Bottom Line Framework



Equity



Economy



Environment



What We've Heard

Themes From Outreach & Engagement



Outreach & Engagement



ENSURE ACCESS
AND OPPORTUNITY
FOR ALL RESIDENTS



PROVIDE HOUSING
OPTIONS FOR ALL
INCOMES AND LIFE STAGES



CREATE COMPLETE
COMMUNITIES



INVEST IN
EXISTING COMMUNITIES



SUPPORT SAFE
AND CONVENIENT
TRANSPORTATION OPTIONS



PREPARE FOR NATURAL
DISASTERS TO PROTECT
PEOPLE AND PROPERTY



PROTECT AND
CONSERVE OPEN
SPACE AND AGRICULTURE





**“We need housing options to
accommodate every stage of life”**

2023 SACOG Focus Groups

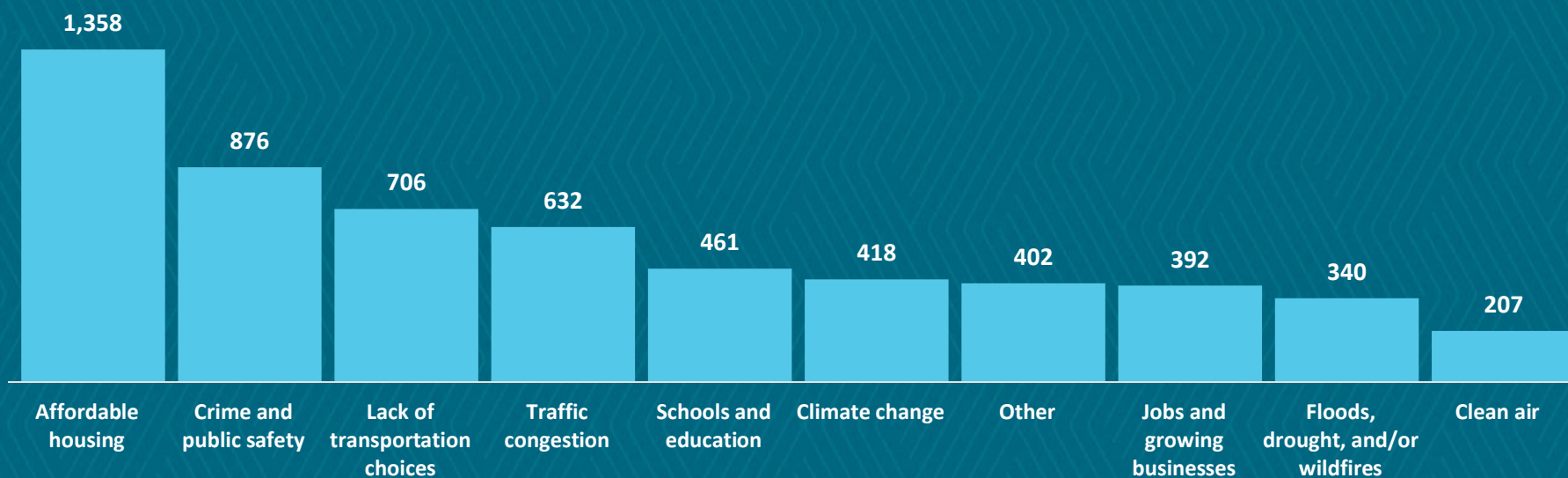


**“I could ride my bike places but
it’s too dangerous”**

2023 SACOG Focus Groups

Provide Housing Options for all Incomes and Life Stages

What are the biggest challenges your community is facing?



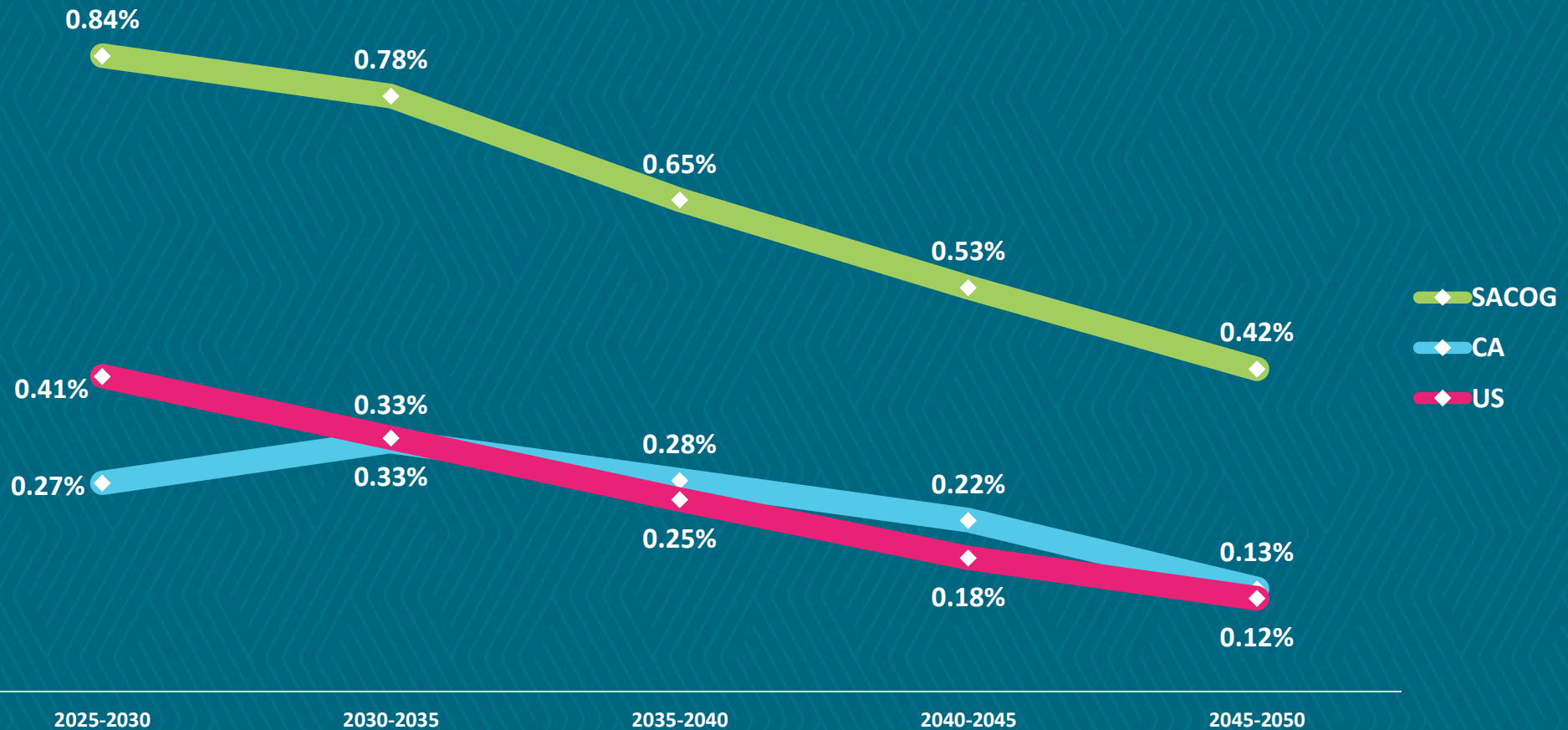
2023 SACOG led Survey



What We've Learned

Technical Analysis

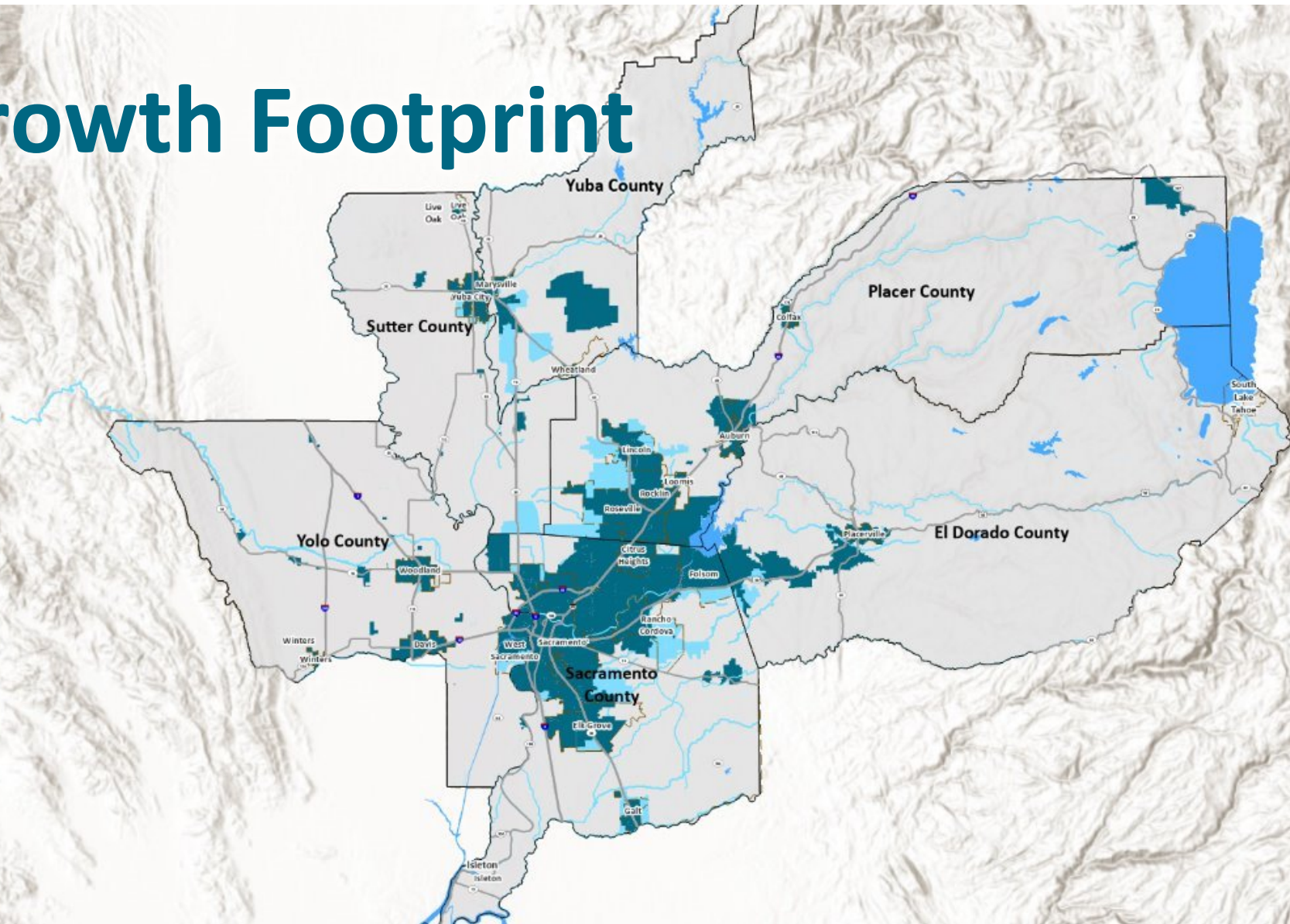
Average Annual Population Growth



Growth Forecast

	Region		Live Oak	
	2020	Change, '20-'50	2020	Change, '20-'50
Population	2,500,000	+600,000	9,159	+2,000
Jobs	1,170,000	+260,000	1,400	+550
Housing Units	945,000	+278,000	3,120	+900

Growth Footprint





Where We're Going

Transportation and Regional Programs

Blueprint in Live Oak



Transportation



Addressing Transportation Challenges

- Prioritize **maintenance and repair**
- Prioritize **safety** projects
- **Technology** solutions to maximize existing capacity
- Prioritize lower cost and **quicker** projects

BOARD



Implementation
Strategy
Discussions



Release
Blueprint and
EIR for Public
Review



Review Final
Draft Plan



Plan Adoption and
Certification of the EIR

2025

JAN

FEB

MAR

APR

MAY

JUN

JUL

AUG

SEP

OCT

NOV

DEC

STAFF

Drafting of Blueprint Plan and EIR documents continued

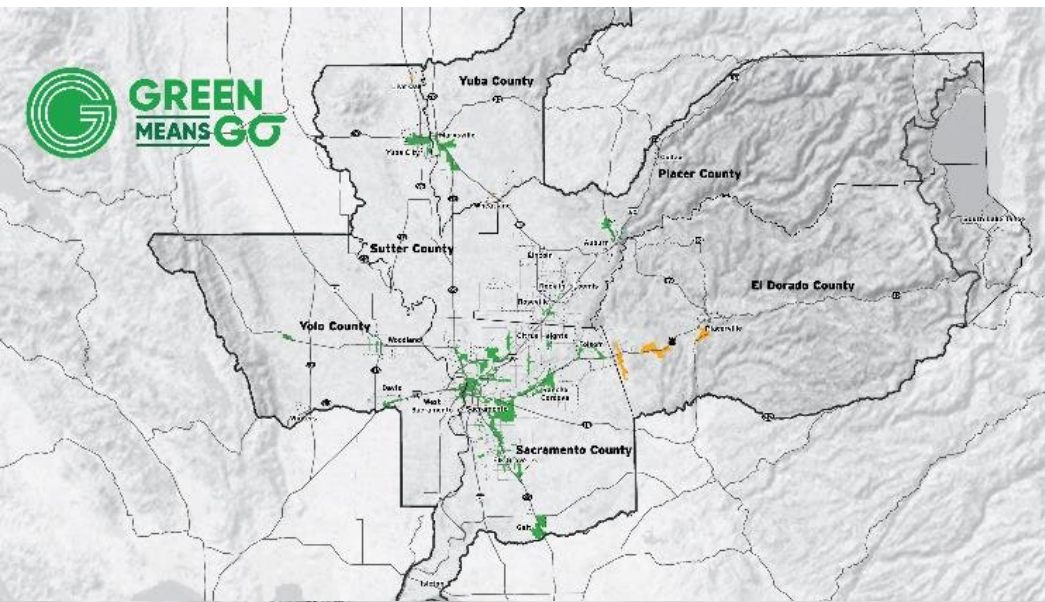
Blueprint and EIR public review period

Response to public comments

Submission
of Blueprint
to State
and Federal
Regulators

Submission
of SCS to
California Air
Resources
Board

2025



Ready, Set,
TRAILS!
VISION FOR A CONNECTED
SACRAMENTO REGION



Funding round



Time for Teamwork



Time for Teamwork







**City of Live Oak
Report to City Council**

Meeting Date: February 19, 2025

Title: City Council Meeting Minutes

Contact Information: Clarissa Menchaca, City Clerk

Recommendation: Approve the February 5, 2025, City Council Regular Meeting minutes.

Attachments:

[Minutes](#)



LIVE OAK CITY COUNCIL

MINUTES
FEBRUARY 5, 2025
6:00 PM

MEETING LOCATION
LIVE OAK COUNCIL CHAMBERS
9955 LIVE OAK BOULEVARD
LIVE OAK, CALIFORNIA 95953

MEMBERS OF THE COUNCIL

JERAMY CHAPDELAINE, MAYOR
AARON PAMMA, VICE MAYOR
ASHLEY HERNANDEZ, COUNCILMEMBER
NANCY SANTANA, COUNCILMEMBER
BOB WOTEN, COUNCILMEMBER

RICK CRABTREE,
INTERIM CITY MANAGER

NICOLE ROSSER,
CITY ATTORNEY

CALL TO ORDER

Meeting called to order by Mayor Chapdelaine at Live Oak City Council Chambers, 9955 Live Oak Boulevard, Live Oak, CA at 6:03 pm.

ROLL CALL

Present: Councilmembers Woten, Santana, Vice Mayor Pamma, and Mayor Chapdelaine

Absent: Councilmember Hernandez

PLEDGE OF ALLEGIANCE AND INVOCATION

Vice Mayor Pamma led the Pledge of Allegiance. Mayor Chapdelaine delivered the invocation.

CORRECTIONS AND/OR CHANGES TO THE AGENDA BY CITY MANAGER ONLY

There were no corrections and/or changes.

PRESENTATIONS AND RECOGNITIONS

There were no presentations and/or recognitions.

PUBLIC COMMENT

The following member of the public submitted a written public comment: Dale Carlson.

CONSENT ITEMS

Consent Calendar is passed by one motion with exceptions and separate votes as noted.

MOTION: APPROVE THE CONSENT AGENDA.
(MOTION: WOTEN; SECOND: SANTANA)

VOTE: MOTION PASSED 4-0-1
AYES: COUNCILMEMBERS WOTEN, SANTANA, VICE MAYOR PAMMA, AND MAYOR CHAPDELAINE
NOES: NONE
ABSENT: COUNCILMEMBER HERNANDEZ

1. City Council Meeting Minutes
Clarissa Menchaca, City Clerk
Council action: January 15, 2025, City Council Regular Meeting minutes approved.
2. Appointments to the Feather River Air Quality Management District
Rick Crabtree, Interim City Manager
Council action: Approved the following appointments to the Feather River Air Quality Management District as required by Health and Safety Code Section 40152(b): City of Marysville Councilman Stuart Gilchrist as Director, City of Marysville Councilman Bruce Buttacovoli as Alternate Director, City of Yuba City Councilman Mike Pasquale as Director, City of Yuba City Councilman Wade Kirchner as Alternate Director, City of Wheatland Councilman Brian Abe as Director, and City of Wheatland Councilman John Abe as Alternate Director.
3. Adoption of an Ordinance Adding in its Entirety Chapter 13.38 Authorizing the Implementation of an Electric Power Community Choice Aggregation Program in the City of Live Oak
Rick Crabtree, Interim City Manager
Council action: 1) Waived the second reading of the ordinance; 2) Ordinance No. 587 adopted; and 3) Resolution No. 01-2025 adopted.

BUSINESS ITEMS

4. Annual Audited Financial Statements – Year Ended June 30, 2024
James Ramsey, Finance Director

James Ramsey, Finance Director, and Brianna Schultz, CPA with RAMS, provided a report for the Council.

Public Comment was opened and closed without any speakers.

MOTION: ACCEPT AND FILE ANNUAL FINANCIAL STATEMENTS.
(MOTION: SANTANA; SECOND: WOTEN)

VOTE: MOTION PASSED 4-0-1

AYES: COUNCILMEMBERS WOTEN, SANTANA, VICE MAYOR PAMMA, AND MAYOR CHAPDELAINE

NOES: NONE

ABSENT: COUNCILMEMBER HERNANDEZ

5. City Council Consideration of Appointments to City of Live Oak Planning Commission
 Laura Stewart, Associate Planner

Mayor Chapdelaine introduced the item.

Public Comment was opened and closed without any speakers.

MOTION: REAPPOINT MICHELLE SERPA TO A FOUR-YEAR TERM ENDING JANUARY 31, 2029, AND APPOINT HARRY SIDHU TO A TWO-YEAR TERM ENDING JANUARY 31, 2027.
 (MOTION: WOTEN; SECOND: CHAPDELAINE)

VOTE: MOTION FAILED 2-1-1-1
 AYES: COUNCILMEMBERS WOTEN AND MAYOR CHAPDELAINE
 NOES: VICE MAYOR PAMMA
 ABSTAIN: COUNCILMEMBER SANTANA
 ABSENT: COUNCILMEMBER HERNANDEZ

MOTION: REAPPOINT MICHELLE SERPA TO A FOUR-YEAR TERM ENDING JANUARY 31, 2029.
 (MOTION: PAMMA; SECOND: CHAPDELAINE)

VOTE: MOTION PASSED 3-0-1-1
 AYES: COUNCILMEMBERS WOTEN, VICE MAYOR PAMMA, AND MAYOR CHAPDELAINE
 NOES: NONE
 ABSTAIN: COUNCILMEMBER SANTANA
 ABSENT: COUNCILMEMBER HERNANDEZ

ITEMS REMOVED FROM THE CONSENT AGENDA FOR COUNCIL CONSIDERATION AND ACTION

There were no items removed from the Consent Agenda for Council consideration and action.

UPDATES AND ANNOUNCEMENTS FROM THE CITY ATTORNEY AND CITY MANAGER

Rick Crabtree, Interim City Manager, highlighted the Strategic Planning Session scheduled for Saturday, February 8, 2025, at 10:00 am at City Hall.

COUNCILMEMBER COMMENTS

Councilmember Santana congratulated Councilmember Hernandez on the birth of her baby girl. Councilmember Santana highlighted the new mural at the Fire Station and the upcoming spaghetti dinner hosted by the Fire Department. Additionally, Councilmember Santana touched on incorporating banners on the streetlights along the highway. Councilmember Santana inquired about who is responsible for paying the electricity bill at the Depot.

Vice Mayor Pamma touched on the upcoming Strategic Planning Session. Vice Mayor Pamma requested staff put together an orientation for Planning Commission members.

Mayor Chapdelaine touched on his previous attendance at a new Planning Commissioner workshop through the Regional Planning Association and suggested potentially bringing in the association to hold a workshop for the Live Oak Planning Commissioners. Mayor Chapdelaine discussed the upcoming Strategic Planning Session.

Lastly, Mayor Chapdelaine highlighted his attendance at the Sacramento Area Council of Governments meeting and Sutter Butte Flood Control Agency meeting.

ADJOURNMENT

Mayor Chapdelaine adjourned the meeting at 7:14 pm.

Jeramy Chapdelaine, Mayor

ATTEST:

Clarissa Menchaca, City Clerk



**City of Live Oak
Report to City Council**

Meeting Date: February 19, 2025

Title: City Council Meeting Minutes

Contact Information: Clarissa Menchaca, City Clerk

Recommendation: Approve the February 8, 2025, City Council Special Meeting minutes.

Attachments:

[Minutes](#)



LIVE OAK CITY COUNCIL

SPECIAL MEETING MINUTES FEBRUARY 8, 2025 10:00 AM

MEETING LOCATION
LIVE OAK COUNCIL CHAMBERS
9955 LIVE OAK BOULEVARD
LIVE OAK, CALIFORNIA 95953

MEMBERS OF THE COUNCIL

JERAMY CHAPDELAINE, MAYOR
AARON PAMMA, VICE MAYOR
ASHLEY HERNANDEZ, COUNCILMEMBER
NANCY SANTANA, COUNCILMEMBER
BOB WOTEN, COUNCILMEMBER

RICK CRABTREE,
INTERIM CITY MANAGER

NICOLE ROSSER,
CITY ATTORNEY

CALL TO ORDER

Meeting called to order by Mayor Chapdelaine at Live Oak City Council Chambers, 9955 Live Oak Boulevard, Live Oak, CA at 10:06 am.

ROLL CALL

Present: Councilmembers Woten, Santana, Vice Mayor Pamma, and Mayor Chapdelaine

Appeared via teleconference: Councilmember Hernandez

PLEDGE OF ALLEGIANCE AND INVOCATION

Vice Mayor Pamma led the Pledge of Allegiance. Councilmember Woten delivered the invocation.

MOTION: APPROVE MAYOR HERNANDEZ'S REMOTE APPEARANCE.
(MOTION: WOTEN; SECOND: SANTANA)

VOTE: MOTION PASSED UNANIMOUSLY

DISCUSSION ITEMS

1. Strategic Planning Session
Rick Crabtree, Interim City Manager

Rick Crabtree, Interim City Manager, provided an introduction for the Council.

The following members of the public addressed the Council: Cruz Mora, Mike Tuman, CJ Stone with California American Water, Supervisor Jeff Boone, Amanda Angulo, Jose, Superintendent Matt Gulbrandsen, Supervisor Dan Flores, Director Dominic Belza, Alan Deala, and J.R. Thiara.

*Clerk's Note: Council recessed at 11:59 pm and reconvened at 12:18 pm.

Council action: Conducted the Strategic Planning meeting with discussion on topics as presented during the meeting.

ADJOURNMENT

Mayor Chapdelaine adjourned the meeting at 2:18 pm.

Jeramy Chapdelaine, Mayor

ATTEST:

Clarissa Menchaca, City Clerk



City of Live Oak Report to City Council

Meeting Date:	February 19, 2025
Title:	Reappointment to the Regional Housing Authority Board of Commissioners
Contact Information:	Rick Crabtree, Interim City Manager
Background:	The Regional Housing Authority Board of Commissioners establish policies under which the organization conducts its business, seeing that the policies are being followed by the employees and insuring that the enterprise is successful. The City of Live Oak is allocated one councilmember appointee, as well as one community member appointee. The community member commissioner serves a four-year term. The term of our commissioner Jeramy Chapdelaine expired on January 31, 2025, allowing the appointment of one commissioner term expiring January 31, 2029. The City Council may consider one community member appointment to the Commission. The opportunity to serve was advertised and one completed application was received from Jeramy Chapdelaine. The application is included in the staff report for your review. Staff recommends the Mayor consider the reappointment of Jeramy Chapdelaine to the Regional Housing Authority Board of Commissioners as the Community Member, with a term ending January 31, 2029, with Council then confirming the Mayor's reappointment.
Fiscal Impacts:	None.
Recommendation:	Confirm the Mayor's reappointment of Jeramy Chapdelaine to the Regional Housing Authority Board of Commissioners as the Community Member, with a term ending January 31, 2029.
Attachments:	

[Application - Jeramy Chapdelaine](#)
[Supplemental Questionnaire - Jeramy Chapdelaine](#)



REGIONAL HOUSING AUTHORITY

Serving the Cities of Live Oak, Yuba City and Colusa • Counties of Sutter, Nevada, Colusa and Yuba

1455 Butte House Road • Yuba City, CA 95993

Phone: (530) 671-0220 • Toll Free: (888) 671-0220 • TTY: (866) 735-2929 • Fax: (530) 673-0775

www.RegionalHA.org

APPLICATION TO THE REGIONAL HOUSING AUTHORITY

BOARD OF COMMISSIONERS

Name: Jeremy Chapdelaine

Address: [REDACTED]

City, Zip: Live Oak, 95953

Phone: Home: [REDACTED]

Work: [REDACTED]

Email: [REDACTED]

Are you currently serving on a board/commission/committee/council? Yes X No

I am currently appointed to the Regional Housing Authority Board of Commissioners.

Employment experience: 28 years of development and construction experience, 20 of which have been working in local government in the Community Development, Public Works and Capital Projects departments in a variety of positions including Building Inspector, Construction Inspector, Senior Project Manager and Construction and Facilities Development Manager.

Community and organization volunteer experience: I am the Current Mayor of the City of Live Oak, have served as a Sutter County Planning Commissioner, Chairperson for the Live Oak Planning Commission and currently represent Live Oak on the Board of Commissioners for the Regional Housing Authority, SACOG and SBFA.

Education: I have an A.S. Degree in Building Inspection Technology am a Certified Building Official and have completed management Courses through UC Davis and the International City/County Management Association (ICMA).

Other experience or training: Certified ADA Coordinator

COMMISSIONER QUALIFICATIONS AND REQUIREMENTS

Commissioner appointments to the Regional Housing Authority have certain statutory and regulatory qualifications and requirements that must be met by candidates. These qualifications and requirements include but are not limited to:

1. If applying for the Tenant Commissioner position, you must be a resident at one of the properties owned/managed by the Regional Housing Authority
2. Able to participate in public meetings and willing to make necessary time commitment.
3. Able to work as a team member with other commissioners and Executive Director on building consensus towards the best stewardship of scarce public resources to address local housing needs.
4. Prior public commission or committee experience is desirable.

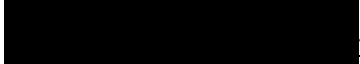


The Housing Authority is an equal opportunity employer and housing provider.



5. Knowledge of local community and interest in affordable housing issues. Specialized knowledge of real estate, construction, landlord/tenant, finance, or Social Services is beneficial.
6. Cannot have any Conflict of Interest with any housing programs (See Code of Conduct attached)

Certification: I certify that all of the above statements made on this application are true to the best of my knowledge. I understand that any incorrect statements made may disqualify me from appointments to the Board of Commissioners of the Regional Housing Authority.

Signature  _____

Date 2/7/2025 _____

Thank you for your application. Applications are only good for one year. Your application will be considered by the Regional Housing Authority if a vacancy exists and you meet the requirements. **Please mail or deliver your completed application to Regional Housing Authority, 1455 Butte House Road, Yuba City, CA 95993.**



REGIONAL HOUSING AUTHORITY

Serving the Cities of Live Oak, Yuba City and Colusa • Counties of Sutter, Nevada, Colusa and Yuba

1455 Butte House Road • Yuba City, CA 95993

Phone: (530) 671-0220 • Toll Free: (888) 671-0220 • TTY: (866) 735-2929 • Fax: (530) 673-0775

www.RegionalHA.org

SUPPLEMENTAL QUESTIONNAIRE Regional Housing Authority– Board of Commissioners

Name: Jeremy Chapdelaine
Address: [REDACTED]
City, Zip: Live Oak, 95953

Phone: Home: [REDACTED]
Work: [REDACTED]
Email: [REDACTED]

Please answer the following questions (use additional sheets, if necessary):

Describe why you are interested in becoming a Commissioner of the Regional Housing Authority (RHA).

I would like to continue to serve my community by dedicating my time, knowledge and experience to the Regional Housing Authority as a fair and reasonable decision maker. I am also a huge advocate of the programs and projects RHA administers, and it would be an honor to continue to serve as a Commissioner.

Describe some of the issues facing RHA and indicate how you would address them.

Fluctuations in available funding are always a challenge. I believe we need to have an experienced board that work with staff to find solutions and additional efficiencies to funding gaps. Over my past terms we have dealt with many of those situations. Finding new partners and receiving tax credits is also challenging and very competitive, I am always willing to jump in and help anywhere I can, in the past I have passed along info for new grant programs and other regional opportunities that I'm aware of through my professional experience.

Certification: I certify that all of the above statements made on this supplemental questionnaire are true to the best of my knowledge. I understand that any incorrect statements made may disqualify me from appointments to the Regional Housing Authority Board of Commissioners.

Signature [REDACTED]

Date 2/7/2025

Thank you for completing the supplemental questionnaire. **Please mail or hand deliver this document and your résumé (or a detailed list of your educational background, employment history, and volunteer activities) to Regional Housing Authority, 1455 Butte House Road, Yuba City, CA 95993.**



The Housing Authority is an equal opportunity employer and housing provider.





City of Live Oak Report to City Council

Meeting Date: February 19, 2025

Title: Well 2 PFAS Update

Contact Information: Jeff Nelson, interim Public Works Director

Location: Well 2

Background: The State of California had groundwater samples collected from the City's 5 water supply wells on 8 August 19, 2024 and had the samples tested for Polyfluoroalkyl Substances (PFAS). One of the four PFAS chemicals tested for, PFHxS, was detected in Well 2 at a concentration of 3.3 nanograms/liter or parts per trillion (ppt); above the State's adopted Notification Level of 3 ppt, but below the State's adopted Response Level of 20 ppt. Staff reported these results to City Council during the November 20, 2024 Regular City Council meeting. As this concentration was below the Response Level of 20 ppt, the State required no further action be taken regarding this detection of PFHxS.

Analysis:

While not required by the State, Staff resampled Wells 1, 2 and 4 on December 5, 2024. PFHxS was detected at a concentration of 3.4 ppt in the sample collected from Well 2, similar to the results from the sample collected from this well in August, 2024. Again, 3.4 ppt of PFHxS is below the State's Response Level of 20 ppt.

Please also note that water from Well 2 is blended/mixed with water from Well 1 at the Booster Pump Station (BPS) where it is then pumped into the City's water supply system. A blended water sample was collected directly from the BPS; PFHxS was detected at a concentration of 2.5 ppt in this sample, below the Notification Level of 3.0 ppt.

Staff will continue to monitor the City's wells for the presence of PFAS. Staff are also working on identifying the potential sources of PFAS in the City's wells. Staff will keep the City Council informed of these activities with periodic reports at future City Council meetings.

The laboratory reports from the December 5, 2024 sampling event, as well as some fact sheets and other relevant information are included as an appendix to this staff report. Additional information regarding PFAS can be found at the following web sites:

U.S. EPA (<https://www.epa.gov/pfas>)
California State Water Resources Control Board
(<https://www.waterboards.ca.gov/pfas>)

Fiscal Impacts:

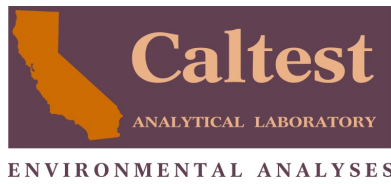
None.

Recommendation:

Information only.

Attachments:

[LIVE OAK WELLS 1, 2, 4 12-05-2024 Final Report](#)
[LIVE OAK WELL 1A, 2A \(blended\) 12-05-2024 Final Report](#)
[EPA pfas explained](#)
[PFAS Occurance in CA Public Water Systems](#)
[PFAS FAQs SWRCB](#)
[Parts per trillion perspective](#)



Tuesday, December 31, 2024

Emilio Flores
City of Yuba City
302 Burns Drive
Yuba City, CA 95991

Re Lab Order: Z120354
Project ID: 7130-LIVE OAK WELL|5110001

Collected By: TW
PO/Contract#:

Dear Emilio Flores:

Enclosed are the analytical results for sample(s) received by the laboratory on Thursday, December 05, 2024. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Enclosures

Project Manager: Greg Martindale

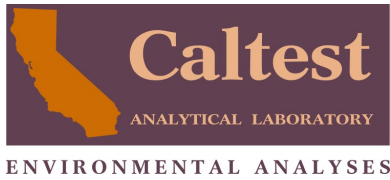
REPORT OF LABORATORY ANALYSIS



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1885 North Kelly Road • Napa, California 94558
(707) 258-4000 • e-mail: info@caltestlabs.com





SAMPLE SUMMARY

Lab Order: Z120354
Project ID: 7130-LIVE OAK WELL|5110001

Lab ID	Sample ID	Matrix	Date Collected	Date Received
Z120354001	ZB30724-WELL1A 5110001_011_011	Drinking Water	12/05/24 08:06	12/05/24 17:05
Z120354002	ZB30732-FB 1A 5110001_011_011	Drinking Water	12/05/24 08:06	12/05/24 17:05
Z120354003	ZB30725-WELL2A 5110001_013_013	Drinking Water	12/05/24 08:00	12/05/24 17:05
Z120354004	ZB30733-FB 2A 5110001_013_013	Drinking Water	12/05/24 08:00	12/05/24 17:05
Z120354005	ZB30726-WELL4 5110001_004_004	Drinking Water	12/05/24 07:44	12/05/24 17:05
Z120354006	ZB30734-FB W4 5110001_004_004	Drinking Water	12/05/24 07:44	12/05/24 17:05

REPORT OF LABORATORY ANALYSIS



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NARRATIVE

Lab Order: Z120354
Project ID: 7130-LIVE OAK WELL|5110001

General Qualifiers and Notes

Caltest authorizes this report to be reproduced only in its entirety. Results are specific to the sample(s) as submitted and only to the parameter(s) reported.

Caltest certifies that test results meet California Environmental Laboratory Accreditation Program (CA-ELAP) and/or National Environmental Laboratory Accreditation Program (NELAP) requirements, as applicable, unless stated otherwise.

All analyses performed by EPA Methods or Standard Methods.

Dilution Factors (DF) reported greater than '1' have been used to adjust the result, Reporting Limit (RL), and Method Detection Limit (MDL).

All Solid, sludge, and/or biosolids data is reported in Wet Weight, unless otherwise specified.

Analyses performed at Caltest for pH, Dissolved Oxygen, and Chlorine Residual, as well as laboratory filtrations for Dissolved Metals (excluding Mercury) are not performed within the 15 minute holding time as specified by 40CFR 136.3 table II.

Results Qualifiers: Report fields may contain codes and non-numeric data correlating to one or more of the following definitions:

ND - indicates analytical result has not been detected at or above the Reporting Limit (RL), or at above the Method Detection Limit (MDL) when it is included on the report and is not otherwise noted.

RL - Reporting Limit is the quantitation limit at which the laboratory is able to detect an analyte. An analyte not detected at or above the RL is reported as ND unless otherwise noted or qualified. For analyses pertaining to the State Implementation Plan of the California Toxics Rule, the Caltest Reporting Limit (RL) is equivalent to the Minimum Level (ML). A standard is always run at or below the ML. Where Reporting Limits are elevated due to dilution, the ML calibration criteria has been met.

MDL - The Method Detection Limit is defined as the minimum measured concentration of a substance that can be reported with 99% confidence that the measured concentration is distinguishable from method blank results.

J - reflects estimated analytical result value detected below the Reporting Limit (RL) and above the Method Detection Limit (MDL). The 'J' flag is equivalent to the DNQ Estimated Concentration flag.

B - indicates the analyte has been detected in the blank associated with the sample.

SS - compound is a Surrogate Spike used per laboratory quality assurance manual.

NOTE: This document represents a complete Analytical Report for the samples referenced herein and should be retained as a permanent record thereof.

ANALYTICAL RESULTS

Lab Order: Z120354
Project ID: 7130-LIVE OAK WELL|5110001

Lab ID	Z120354001	Date Collected:	12/05/24 08:06			Matrix:	Drinking Water				
Sample ID	ZB30724- WELL1A 5110001_011_011	Date Received:	12/05/24 17:05								
Parameter	Result	Units	RL	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual	

PFAS by EPA 533

Subcontracted to Weck Laboratory (see attached report)

Lab ID	Z120354002	Date Collected:	12/05/24 08:06	Matrix:	Drinking Water						
Sample ID	ZB30732-FB	Date Received:	12/05/24 17:05								
	1A 5110001_011_011										
Parameter	Result	Units	RL	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual	

PFAS by EPA 533

Subcontracted to Weck Laboratory (see attached report)

Lab ID	Z120354003	Date Collected:	12/05/24 08:00				Matrix:	Drinking Water			
Sample ID	ZB30725- WELL2A 5110001_013_013	Date Received:	12/05/24 17:05								
Parameter	Result	Units	RL	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual	

PFAS by EPA 533

Subcontracted to Weck Laboratory (see attached report)

Lab ID	Z120354004	Date Collected:	12/05/24 08:00			Matrix:	Drinking Water				
Sample ID	ZB30733-FB 2A 5110001_013_013	Date Received:	12/05/24 17:05								
Parameter	Result	Units	RL	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual	

PFAS by EPA 533

Subcontracted to Weck Laboratory (see attached report)

Lab ID	Z120354005	Date Collected:	12/05/24 07:44			Matrix:	Drinking Water				
Sample ID	ZB30726- WELL4 5110001_004_004	Date Received:	12/05/24 17:05								
Parameter	Result	Units	RL	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual	

PFAS by EPA 533

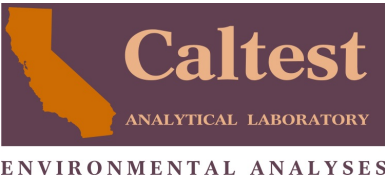
Subcontracted to Weck Laboratory (see attached report)

Lab ID	Z120354006	Date Collected:	12/05/24 07:44				Matrix:	Drinking Water			
Sample ID	ZB30734-FB	Date Received:	12/05/24 17:05								
	W4 5110001_004_004										
Parameter	Result	Units	RL	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual	

PFAS by EPA 533

Subcontracted to Weck Laboratory (see attached report)





QUALITY CONTROL DATA QUALIFIERS

Lab Order: Z120354
Project ID: 7130-LIVE OAK WELL|5110001

Quality Control Parameter Qualifiers

Results Qualifiers: Report fields may contain codes and non-numeric data correlating to one or more of the following definitions:

NS - means not spiked and will not have recoveries reported for Analyte Spike Amounts

QC Codes Keys: These descriptors are used to help identify the specific QC samples and clarify the report.

MB - Method Blank

Method Blanks are reported to the same Method Detection Limits (MDLs) or Reporting Limits (RLs) as the analytical samples in the corresponding QC batch.

LCS/LCSD - Laboratory Control Spike / Laboratory Control Spike Duplicate

DUP - Duplicate of Original Sample Matrix

MS/MSD - Matrix Spike / Matrix Spike Duplicate

RPD - Relative Percent Difference

%Recovery - Spike Recovery stated as a percentage

REPORT OF LABORATORY ANALYSIS



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1885 North Kelly Road • Napa, California 94558
(707) 258-4000 • e-mail: info@caltestlabs.com



[illegible]

Work Orders: 4L10061

Project: Z120354

Attn: Client Services

Client: Caltest Analytical Laboratory
1885 North Kelly Road
Napa, CA 94558

Report Date: 12/26/2024

Received Date: 12/10/2024

Turnaround Time: Normal

Phones: (707) 258-4000

Fax: (707) 226-1001

P.O. #: Z120354

Billing Code:

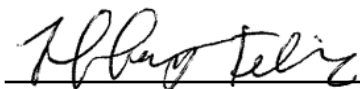
DoD-ELAP ANAB #ADE-2882 • DoD-ISO ANAB # • ELAP-CA #1132 • EPA-UCMR #CA00211 • ISO17025 ANAB #L2457.01 • LACSD #10143 • NELAP-OR #4047

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. The report may include analytes that are not currently accreditable by some state agencies or accrediting bodies. This analytical report must be reproduced in its entirety.

Dear Client Services,

Enclosed are the analytical results for the samples submitted under the attached Chain of Custody document. All analyses adhered to the method criteria, except where noted in the case narrative, sample condition checklist, and/or data qualifiers.

Reviewed by:



Tiffany T. Felix
Project Manager



Sample Condition

Temperature	2.80 C	
COC present	✓	COC completed properly ✓
COC matches sample labels	✓	Wet ice ✓
Blue ice		Sample(s) intact ✓
Sample(s) using proper containers	✓	Sample(s) have sufficient sample volume ✓
Sample(s) received within hold time	✓	Sample(s) labels have correct preservation ✓
Sample(s) have acceptable pH	✓	Sample(s) have acceptable CI ✓

Sample Summary

Sample Name	Sampled By	Lab ID	Matrix	Sampled	Qualifiers
Z120354001, Alias: ZB30724-WELL1A, RegID: CA5110001_011_011	TW	4L10061-01	Water	12/05/24 08:06	
Z120354002, Alias: ZB30732-FB1A, RegID: CA5110001_011_011	TW	4L10061-02	Water	12/05/24 08:06	
Z120354003, Alias: ZB30725-WELL2A, RegID: CA5110001_013_013	TW	4L10061-03	Water	12/05/24 08:00	
Z120354004, Alias: ZB30725-FB2A, RegID: CA5110001_013_013	TW	4L10061-04	Water	12/05/24 08:00	
Z120354005, Alias: ZB30726-WELL4, RegID: CA5110001_004_004	TW	4L10061-05	Water	12/05/24 07:44	
Z120354006, Alias: ZB30734-FB-W4, RegID: CA5110001_004_004	TW	4L10061-06	Water	12/05/24 07:44	

Caltest Analytical Laboratory
1885 North Kelly Road
Napa, CA 94558

Project Number: Z120354

Project Manager: Client Services

Reported:
12/26/2024 11:13

Sample Results

Sample: Z120354001, Alias: ZB30724-WELL1A, RegID: CA5110001_011_011

Sampled: 12/05/24 8:06 by TW

4L10061-01 (Water)

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
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Per- and Polyfluorinated Alkyl Substances (PFAS) by LC-MS/MS

Method: EPA 533

Instr: LCMS06

Batch ID: W4L1095

Preparation: EPA 533/SPE

Prepared: 12/13/24 12:49

Analyst: rjr

11CI-PF3OUdS	ND	0.16	1.7	ng/l	1	12/17/24	
4:2 FTS	ND	0.35	1.7	ng/l	1	12/17/24	
6:2 FTS	ND	0.21	1.7	ng/l	1	12/17/24	
8:2 FTS	ND	0.31	1.7	ng/l	1	12/17/24	
9CI-PF3ONS	ND	0.23	1.7	ng/l	1	12/17/24	
ADONA	ND	0.26	1.7	ng/l	1	12/17/24	
HFPO-DA	ND	0.28	1.7	ng/l	1	12/17/24	
NFDHA	ND	0.51	1.7	ng/l	1	12/17/24	
PFBA	1.2	0.13	1.7	ng/l	1	12/17/24	J
PFBS	1.1	0.29	1.7	ng/l	1	12/17/24	J
PFDA	ND	0.23	1.7	ng/l	1	12/17/24	
PFDoA	ND	0.40	1.7	ng/l	1	12/17/24	
PFEESA	ND	0.086	1.7	ng/l	1	12/17/24	
PFHpA	0.89	0.37	1.7	ng/l	1	12/17/24	J
PFHpS	ND	0.33	1.7	ng/l	1	12/17/24	
PFHxA	1.8	0.28	1.7	ng/l	1	12/17/24	
PFHxS	1.8	0.25	1.7	ng/l	1	12/17/24	
PFMBA	ND	0.19	1.7	ng/l	1	12/17/24	
PFMPA	ND	0.19	1.7	ng/l	1	12/17/24	
PFNA	ND	0.45	1.7	ng/l	1	12/17/24	
PFOA	2.0	0.27	1.7	ng/l	1	12/17/24	
PFOS	2.7	0.46	1.7	ng/l	1	12/17/24	
PFPeA	2.4	0.098	1.7	ng/l	1	12/17/24	
PFPeS	0.30	0.10	1.7	ng/l	1	12/17/24	J
PFUnA	ND	0.28	1.7	ng/l	1	12/17/24	

Surrogate(s)

13C2-4:2 FTS	114%	Conc: 37.6	50-200	12/17/24
13C2-6:2 FTS	110%	Conc: 36.2	50-200	12/17/24
13C2-8:2 FTS	107%	Conc: 35.4	50-200	12/17/24
13C2-PFDoA	88%	Conc: 7.27	50-200	12/17/24
13C3-PFBS	117%	Conc: 9.69	50-200	12/17/24
13C3-PFHxS	113%	Conc: 9.36	50-200	12/17/24
13C4-PFBA	108%	Conc: 8.89	50-200	12/17/24
13C4-PFHpA	104%	Conc: 8.59	50-200	12/17/24

Caltest Analytical Laboratory
1885 North Kelly Road
Napa, CA 94558

Project Number: Z120354

Project Manager: Client Services

Reported:
12/26/2024 11:13

Sample Results

(Continued)

Sample: Z120354001, Alias: ZB30724-WELL1A, RegID: CA5110001_011_011

Sampled: 12/05/24 8:06 by TW

4L10061-01 (Water)

(Continued)

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Per- and Polyfluorinated Alkyl Substances (PFAS) by LC-MS/MS (Continued)							
Method: EPA 533			Instr: LCMS06				
Batch ID: W4L1095		Preparation: EPA 533/SPE		Prepared: 12/13/24 12:49		Analyst: rjr	
13C5-PFHxA	105%	Conc: 8.70	50-200			12/17/24	
13C5-PFPeA	108%	Conc: 8.94	50-200			12/17/24	
13C6-PFDA	80%	Conc: 6.64	50-200			12/17/24	
13C7-PFUnA	82%	Conc: 6.78	50-200			12/17/24	
13C8-PFOA	97%	Conc: 7.98	50-200			12/17/24	
13C8-PFOS	110%	Conc: 9.09	50-200			12/17/24	
13C9-PFNA	87%	Conc: 7.16	50-200			12/17/24	
HFPO-DA-13C3	101%	Conc: 8.34	50-200			12/17/24	

Caltest Analytical Laboratory
1885 North Kelly Road
Napa, CA 94558

Project Number: Z120354

Project Manager: Client Services

Reported:
12/26/2024 11:13

Sample Results

(Continued)

Sample: Z120354002, Alias: ZB30732-FB1A, RegID: CA5110001_011_011

Sampled: 12/05/24 8:06 by TW

4L10061-02 (Water)

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
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Per- and Polyfluorinated Alkyl Substances (PFAS) by LC-MS/MS

Method: EPA 533

Instr: LCMS06

Batch ID: W4L1095

Preparation: EPA 533/SPE

Prepared: 12/13/24 12:49

Analyst: rjr

11CI-PF3OUdS	ND	0.17	1.7	ng/l	1	12/17/24	
4:2 FTS	ND	0.37	1.7	ng/l	1	12/17/24	
6:2 FTS	ND	0.22	1.7	ng/l	1	12/17/24	
8:2 FTS	ND	0.33	1.7	ng/l	1	12/17/24	
9CI-PF3ONS	ND	0.25	1.7	ng/l	1	12/17/24	
ADONA	ND	0.28	1.7	ng/l	1	12/17/24	
HFPO-DA	ND	0.30	1.7	ng/l	1	12/17/24	
NFDHA	ND	0.54	1.7	ng/l	1	12/17/24	
PFBA	ND	0.14	1.7	ng/l	1	12/17/24	
PFBS	ND	0.30	1.7	ng/l	1	12/17/24	
PFDA	ND	0.24	1.7	ng/l	1	12/17/24	
PFDoA	ND	0.42	1.7	ng/l	1	12/17/24	
PFEESA	ND	0.091	1.7	ng/l	1	12/17/24	
PFHpA	ND	0.39	1.7	ng/l	1	12/17/24	
PFHpS	ND	0.35	1.7	ng/l	1	12/17/24	
PFHxA	ND	0.30	1.7	ng/l	1	12/17/24	
PFHxS	ND	0.27	1.7	ng/l	1	12/17/24	
PFMBA	ND	0.20	1.7	ng/l	1	12/17/24	
PFMPA	ND	0.20	1.7	ng/l	1	12/17/24	
PFNA	ND	0.48	1.7	ng/l	1	12/17/24	
PFOA	ND	0.29	1.7	ng/l	1	12/17/24	
PFOS	ND	0.49	1.7	ng/l	1	12/17/24	
PFPeA	ND	0.10	1.7	ng/l	1	12/17/24	
PFPeS	ND	0.11	1.7	ng/l	1	12/17/24	
PFUnA	ND	0.30	1.7	ng/l	1	12/17/24	

Surrogate(s)

13C2-4:2 FTS	111%	Conc: 38.6	50-200	12/17/24
13C2-6:2 FTS	108%	Conc: 37.6	50-200	12/17/24
13C2-8:2 FTS	100%	Conc: 34.8	50-200	12/17/24
13C2-PFDoA	104%	Conc: 9.08	50-200	12/17/24
13C3-PFBS	112%	Conc: 9.75	50-200	12/17/24
13C3-PFHxS	111%	Conc: 9.71	50-200	12/17/24
13C4-PFBA	111%	Conc: 9.64	50-200	12/17/24
13C4-PFHpA	108%	Conc: 9.45	50-200	12/17/24

4L10061

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Sample Results

(Continued)

Sample: Z120354002, Alias: ZB30732-FB1A, RegID: CA5110001_011_011

Sampled: 12/05/24 8:06 by TW

4L10061-02 (Water)

(Continued)

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Per- and Polyfluorinated Alkyl Substances (PFAS) by LC-MS/MS (Continued)							
Method: EPA 533			Instr: LCMS06				
Batch ID: W4L1095		Preparation: EPA 533/SPE		Prepared: 12/13/24 12:49		Analyst: rjr	
13C5-PFHxA	110%	Conc: 9.62	50-200			12/17/24	
13C5-PFPeA	111%	Conc: 9.67	50-200			12/17/24	
13C6-PFDA	102%	Conc: 8.89	50-200			12/17/24	
13C7-PFUnA	103%	Conc: 9.00	50-200			12/17/24	
13C8-PFOA	107%	Conc: 9.32	50-200			12/17/24	
13C8-PFOS	114%	Conc: 9.92	50-200			12/17/24	
13C9-PFNA	104%	Conc: 9.03	50-200			12/17/24	
HFPO-DA-13C3	104%	Conc: 9.03	50-200			12/17/24	

Caltest Analytical Laboratory
1885 North Kelly Road
Napa, CA 94558

Project Number: Z120354

Project Manager: Client Services

Reported:
12/26/2024 11:13

Sample Results

(Continued)

Sample: Z120354003, Alias: ZB30725-WELL2A, RegID: CA5110001_013_013

Sampled: 12/05/24 8:00 by TW

4L10061-03 (Water)

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
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Per- and Polyfluorinated Alkyl Substances (PFAS) by LC-MS/MS

Method: EPA 533

Instr: LCMS06

Batch ID: W4L1095

Preparation: EPA 533/SPE

Prepared: 12/13/24 12:49

Analyst: rjr

11CI-PF3OUdS	ND	0.17	1.7	ng/l	1	12/17/24	
4:2 FTS	ND	0.37	1.7	ng/l	1	12/17/24	
6:2 FTS	ND	0.22	1.7	ng/l	1	12/17/24	
8:2 FTS	ND	0.33	1.7	ng/l	1	12/17/24	
9CI-PF3ONS	ND	0.24	1.7	ng/l	1	12/17/24	
ADONA	ND	0.28	1.7	ng/l	1	12/17/24	
HFPO-DA	ND	0.30	1.7	ng/l	1	12/17/24	
NFDHA	ND	0.53	1.7	ng/l	1	12/17/24	
PFBA	1.8	0.13	1.7	ng/l	1	12/17/24	
PFBS	2.4	0.30	1.7	ng/l	1	12/17/24	
PFDA	ND	0.24	1.7	ng/l	1	12/17/24	
PFDoA	ND	0.41	1.7	ng/l	1	12/17/24	
PFEESA	ND	0.090	1.7	ng/l	1	12/17/24	
PFHpA	1.6	0.39	1.7	ng/l	1	12/17/24	J
PFHpS	ND	0.34	1.7	ng/l	1	12/17/24	
PFHxA	3.6	0.29	1.7	ng/l	1	12/17/24	
PFHxS	3.4	0.26	1.7	ng/l	1	12/17/24	
PFMBA	ND	0.20	1.7	ng/l	1	12/17/24	
PFMPA	ND	0.20	1.7	ng/l	1	12/17/24	
PFNA	ND	0.47	1.7	ng/l	1	12/17/24	
PFOA	3.4	0.28	1.7	ng/l	1	12/17/24	
PFOS	3.0	0.48	1.7	ng/l	1	12/17/24	
PFPaA	4.3	0.10	1.7	ng/l	1	12/17/24	
PFPaS	0.55	0.11	1.7	ng/l	1	12/17/24	J
PFUnA	ND	0.29	1.7	ng/l	1	12/17/24	

Surrogate(s)

13C2-4:2 FTS	109%	Conc: 37.4	50-200	12/17/24
13C2-6:2 FTS	111%	Conc: 38.2	50-200	12/17/24
13C2-8:2 FTS	111%	Conc: 38.2	50-200	12/17/24
13C2-PFDoA	102%	Conc: 8.75	50-200	12/17/24
13C3-PFBS	112%	Conc: 9.59	50-200	12/17/24
13C3-PFHxS	111%	Conc: 9.58	50-200	12/17/24
13C4-PFBA	109%	Conc: 9.36	50-200	12/17/24
13C4-PFHpa	107%	Conc: 9.22	50-200	12/17/24

4L10061

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Sample Results

(Continued)

Sample: Z120354003, Alias: ZB30725-WELL2A, RegID: CA5110001_013_013

Sampled: 12/05/24 8:00 by TW

4L10061-03 (Water)

(Continued)

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
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Per- and Polyfluorinated Alkyl Substances (PFAS) by LC-MS/MS (Continued)

Method: EPA 533

Instr: LCMS06

Batch ID: W4L1095

Preparation: EPA 533/SPE

Prepared: 12/13/24 12:49

Analyst: rjr

13C5-PFHxA	106%	Conc: 9.13	50-200			12/17/24	
13C5-PFPeA	112%	Conc: 9.62	50-200			12/17/24	
13C6-PFDA	99%	Conc: 8.51	50-200			12/17/24	
13C7-PFUnA	99%	Conc: 8.49	50-200			12/17/24	
13C8-PFOA	104%	Conc: 8.91	50-200			12/17/24	
13C8-PFOS	104%	Conc: 8.94	50-200			12/17/24	
13C9-PFNA	105%	Conc: 9.00	50-200			12/17/24	
HFPO-DA-13C3	107%	Conc: 9.18	50-200			12/17/24	

Caltest Analytical Laboratory
1885 North Kelly Road
Napa, CA 94558

Project Number: Z120354

Project Manager: Client Services

Reported:
12/26/2024 11:13

Sample Results

(Continued)

Sample: Z120354004, Alias: ZB30725-FB2A, RegID: CA5110001_013_013

Sampled: 12/05/24 8:00 by TW

4L10061-04 (Water)

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
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Per- and Polyfluorinated Alkyl Substances (PFAS) by LC-MS/MS

Method: EPA 533

Instr: LCMS06

Batch ID: W4L1046

Preparation: EPA 533/SPE

Prepared: 12/13/24 07:56

Analyst: ROM

11CI-PF3OUdS	ND	0.17	1.7	ng/l	1	12/17/24	
4:2 FTS	ND	0.37	1.7	ng/l	1	12/17/24	
6:2 FTS	ND	0.22	1.7	ng/l	1	12/17/24	
8:2 FTS	ND	0.33	1.7	ng/l	1	12/17/24	
9CI-PF3ONS	ND	0.25	1.7	ng/l	1	12/17/24	
ADONA	ND	0.28	1.7	ng/l	1	12/17/24	
HFPO-DA	ND	0.30	1.7	ng/l	1	12/17/24	
NFDHA	ND	0.53	1.7	ng/l	1	12/17/24	
PFBA	0.38	0.13	1.7	ng/l	1	12/17/24	J
PFBS	ND	0.30	1.7	ng/l	1	12/17/24	
PFDA	ND	0.24	1.7	ng/l	1	12/17/24	
PFDoA	ND	0.41	1.7	ng/l	1	12/17/24	
PFEESA	ND	0.090	1.7	ng/l	1	12/17/24	
PFHpA	ND	0.39	1.7	ng/l	1	12/17/24	
PFHpS	ND	0.34	1.7	ng/l	1	12/17/24	
PFHxA	ND	0.29	1.7	ng/l	1	12/17/24	
PFHxS	ND	0.26	1.7	ng/l	1	12/17/24	
PFMBA	ND	0.20	1.7	ng/l	1	12/17/24	
PFMPA	ND	0.20	1.7	ng/l	1	12/17/24	
PFNA	ND	0.47	1.7	ng/l	1	12/17/24	
PFOA	ND	0.29	1.7	ng/l	1	12/17/24	
PFOS	ND	0.48	1.7	ng/l	1	12/17/24	
PFPeA	ND	0.10	1.7	ng/l	1	12/17/24	
PFPeS	ND	0.11	1.7	ng/l	1	12/17/24	
PFUnA	ND	0.29	1.7	ng/l	1	12/17/24	

Surrogate(s)

13C2-4:2 FTS	125%	Conc: 43.1	50-200	12/17/24
13C2-6:2 FTS	109%	Conc: 37.5	50-200	12/17/24
13C2-8:2 FTS	101%	Conc: 34.8	50-200	12/17/24
13C2-PFDoA	104%	Conc: 8.92	50-200	12/17/24
13C3-PFBS	115%	Conc: 9.94	50-200	12/17/24
13C3-PFHxS	110%	Conc: 9.45	50-200	12/17/24
13C4-PFBA	110%	Conc: 9.51	50-200	12/17/24
13C4-PFHpA	104%	Conc: 8.94	50-200	12/17/24

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Project Number: Z120354

Project Manager: Client Services

Reported:
12/26/2024 11:13

Sample Results

(Continued)

Sample: Z120354004, Alias: ZB30725-FB2A, RegID: CA5110001_013_013

Sampled: 12/05/24 8:00 by TW

4L10061-04 (Water)

(Continued)

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
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Per- and Polyfluorinated Alkyl Substances (PFAS) by LC-MS/MS (Continued)

Method: EPA 533

Instr: LCMS06

Batch ID: W4L1046

Preparation: EPA 533/SPE

Prepared: 12/13/24 07:56

Analyst: ROM

13C5-PFHxA	105%	Conc: 9.09	50-200			12/17/24	
13C5-PFPeA	113%	Conc: 9.73	50-200			12/17/24	
13C6-PFDA	103%	Conc: 8.88	50-200			12/17/24	
13C7-PFUnA	101%	Conc: 8.73	50-200			12/17/24	
13C8-PFOA	103%	Conc: 8.91	50-200			12/17/24	
13C8-PFOS	109%	Conc: 9.40	50-200			12/17/24	
13C9-PFNA	104%	Conc: 8.95	50-200			12/17/24	
HFPO-DA-13C3	98%	Conc: 8.45	50-200			12/17/24	

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Project Number: Z120354

Project Manager: Client Services

Reported:
12/26/2024 11:13

Sample Results

(Continued)

Sample: Z120354005, Alias: ZB30726-WELL4, RegID: CA5110001_004_004

Sampled: 12/05/24 7:44 by TW

4L10061-05 (Water)

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
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Per- and Polyfluorinated Alkyl Substances (PFAS) by LC-MS/MS

Method: EPA 533

Instr: LCMS06

Batch ID: W4L1046

Preparation: EPA 533/SPE

Prepared: 12/13/24 07:56

Analyst: ROM

11CI-PF3OUdS	ND	0.17	1.7	ng/l	1	12/17/24	
4:2 FTS	ND	0.36	1.7	ng/l	1	12/17/24	
6:2 FTS	ND	0.21	1.7	ng/l	1	12/17/24	
8:2 FTS	ND	0.32	1.7	ng/l	1	12/17/24	
9CI-PF3ONS	ND	0.24	1.7	ng/l	1	12/17/24	
ADONA	ND	0.27	1.7	ng/l	1	12/17/24	
HFPO-DA	ND	0.29	1.7	ng/l	1	12/17/24	
NFDHA	ND	0.52	1.7	ng/l	1	12/17/24	
PFBA	0.65	0.13	1.7	ng/l	1	12/17/24	J
PFBS	0.67	0.29	1.7	ng/l	1	12/17/24	J
PFDA	ND	0.24	1.7	ng/l	1	12/17/24	
PFDoA	ND	0.40	1.7	ng/l	1	12/17/24	
PFEESA	ND	0.088	1.7	ng/l	1	12/17/24	
PFHpA	0.41	0.38	1.7	ng/l	1	12/17/24	J
PFHpS	ND	0.34	1.7	ng/l	1	12/17/24	
PFHxA	0.86	0.29	1.7	ng/l	1	12/17/24	J
PFHxS	2.1	0.26	1.7	ng/l	1	12/17/24	
PFMBA	ND	0.19	1.7	ng/l	1	12/17/24	
PFMPA	ND	0.19	1.7	ng/l	1	12/17/24	
PFNA	ND	0.46	1.7	ng/l	1	12/17/24	
PFOA	2.6	0.28	1.7	ng/l	1	12/17/24	
PFOS	2.0	0.47	1.7	ng/l	1	12/17/24	
PFPeA	0.89	0.10	1.7	ng/l	1	12/17/24	J
PFPeS	0.24	0.11	1.7	ng/l	1	12/17/24	J
PFUnA	ND	0.29	1.7	ng/l	1	12/17/24	

Surrogate(s)

13C2-4:2 FTS	111%	Conc: 37.2	50-200	12/17/24
13C2-6:2 FTS	105%	Conc: 35.3	50-200	12/17/24
13C2-8:2 FTS	109%	Conc: 36.6	50-200	12/17/24
13C2-PFDoA	89%	Conc: 7.51	50-200	12/17/24
13C3-PFBS	109%	Conc: 9.14	50-200	12/17/24
13C3-PFHxS	112%	Conc: 9.43	50-200	12/17/24
13C4-PFBA	106%	Conc: 8.90	50-200	12/17/24
13C4-PFHpA	93%	Conc: 7.84	50-200	12/17/24

Sample Results

(Continued)

Sample: Z120354005, Alias: ZB30726-WELL4, RegID: CA5110001_004_004

Sampled: 12/05/24 7:44 by TW

4L10061-05 (Water)

(Continued)

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
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Per- and Polyfluorinated Alkyl Substances (PFAS) by LC-MS/MS (Continued)

Method: EPA 533

Instr: LCMS06

Batch ID: W4L1046

Preparation: EPA 533/SPE

Prepared: 12/13/24 07:56

Analyst: ROM

13C5-PFHxA	101%	Conc: 8.50	50-200			12/17/24	
13C5-PFPeA	105%	Conc: 8.88	50-200			12/17/24	
13C6-PFDA	71%	Conc: 5.94	50-200			12/17/24	
13C7-PFUnA	83%	Conc: 7.01	50-200			12/17/24	
13C8-PFOA	83%	Conc: 7.01	50-200			12/17/24	
13C8-PFOS	110%	Conc: 9.27	50-200			12/17/24	
13C9-PFNA	73%	Conc: 6.18	50-200			12/17/24	
HFPO-DA-13C3	92%	Conc: 7.71	50-200			12/17/24	

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Project Number: Z120354

Project Manager: Client Services

Reported:
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Sample Results

(Continued)

Sample: Z120354006, Alias: ZB30734-FB-W4, RegID: CA5110001_004_004

Sampled: 12/05/24 7:44 by TW

4L10061-06 (Water)

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
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Per- and Polyfluorinated Alkyl Substances (PFAS) by LC-MS/MS

Method: EPA 533

Instr: LCMS06

Batch ID: W4L1046

Preparation: EPA 533/SPE

Prepared: 12/13/24 07:56

Analyst: ROM

11CI-PF3OUdS	ND	0.17	1.7	ng/l	1	12/17/24	
4:2 FTS	ND	0.36	1.7	ng/l	1	12/17/24	
6:2 FTS	ND	0.21	1.7	ng/l	1	12/17/24	
8:2 FTS	ND	0.32	1.7	ng/l	1	12/17/24	
9CI-PF3ONS	ND	0.24	1.7	ng/l	1	12/17/24	
ADONA	ND	0.27	1.7	ng/l	1	12/17/24	
HFPO-DA	ND	0.29	1.7	ng/l	1	12/17/24	
NFDHA	ND	0.52	1.7	ng/l	1	12/17/24	
PFBA	0.49	0.13	1.7	ng/l	1	12/17/24	J
PFBS	ND	0.29	1.7	ng/l	1	12/17/24	
PFDA	ND	0.24	1.7	ng/l	1	12/17/24	
PFDoA	ND	0.40	1.7	ng/l	1	12/17/24	
PFEESA	ND	0.087	1.7	ng/l	1	12/17/24	
PFHpA	ND	0.38	1.7	ng/l	1	12/17/24	
PFHpS	ND	0.34	1.7	ng/l	1	12/17/24	
PFHxA	ND	0.28	1.7	ng/l	1	12/17/24	
PFHxS	ND	0.26	1.7	ng/l	1	12/17/24	
PFMBA	ND	0.19	1.7	ng/l	1	12/17/24	
PFMPA	ND	0.19	1.7	ng/l	1	12/17/24	
PFNA	ND	0.46	1.7	ng/l	1	12/17/24	
PFOA	ND	0.28	1.7	ng/l	1	12/17/24	
PFOS	ND	0.47	1.7	ng/l	1	12/17/24	
PFPeA	ND	0.10	1.7	ng/l	1	12/17/24	
PFPeS	ND	0.10	1.7	ng/l	1	12/17/24	
PFUnA	ND	0.29	1.7	ng/l	1	12/17/24	

Surrogate(s)

13C2-4:2 FTS	118%	Conc: 39.7	50-200	12/17/24
13C2-6:2 FTS	105%	Conc: 35.2	50-200	12/17/24
13C2-8:2 FTS	100%	Conc: 33.7	50-200	12/17/24
13C2-PFDoA	104%	Conc: 8.73	50-200	12/17/24
13C3-PFBS	114%	Conc: 9.59	50-200	12/17/24
13C3-PFHxS	107%	Conc: 9.00	50-200	12/17/24
13C4-PFBA	112%	Conc: 9.42	50-200	12/17/24
13C4-PFHpA	106%	Conc: 8.91	50-200	12/17/24

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Caltest Analytical Laboratory
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Project Number: Z120354

Project Manager: Client Services

Reported:
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Sample Results

(Continued)

Sample: Z120354006, Alias: ZB30734-FB-W4, RegID: CA5110001_004_004

Sampled: 12/05/24 7:44 by TW

4L10061-06 (Water)

(Continued)

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
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Per- and Polyfluorinated Alkyl Substances (PFAS) by LC-MS/MS (Continued)

Method: EPA 533

Instr: LCMS06

Batch ID: W4L1046

Preparation: EPA 533/SPE

Prepared: 12/13/24 07:56

Analyst: ROM

13C5-PFHxA	107%	Conc: 8.97	50-200			12/17/24	
13C5-PFPeA	112%	Conc: 9.36	50-200			12/17/24	
13C6-PFDA	103%	Conc: 8.63	50-200			12/17/24	
13C7-PFUnA	108%	Conc: 9.05	50-200			12/17/24	
13C8-PFOA	111%	Conc: 9.27	50-200			12/17/24	
13C8-PFOS	107%	Conc: 8.97	50-200			12/17/24	
13C9-PFNA	110%	Conc: 9.22	50-200			12/17/24	
HFPO-DA-13C3	116%	Conc: 9.70	50-200			12/17/24	

Caltest Analytical Laboratory
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Project Number: Z120354

Project Manager: Client Services

Reported:
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Quality Control Results

Per- and Polyfluorinated Alkyl Substances (PFAS) by LC-MS/MS

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	Limit	RPD	Limit	Qualifier
Batch: W4L1046 - EPA 533											
Blank (W4L1046-BLK1)						Prepared: 12/13/24 Analyzed: 12/17/24					
11CI-PF3OUdS	ND	0.20	2.0	ng/l							
4:2 FTS	ND	0.43	2.0	ng/l							
6:2 FTS	ND	0.25	2.0	ng/l							
8:2 FTS	ND	0.38	2.0	ng/l							
9CI-PF3ONS	ND	0.28	2.0	ng/l							
ADONA	ND	0.32	2.0	ng/l							
HFPO-DA	ND	0.34	2.0	ng/l							
NFDHA	ND	0.62	2.0	ng/l							
PFBA	ND	0.16	2.0	ng/l							
PFBS	ND	0.35	2.0	ng/l							
PFDA	ND	0.28	2.0	ng/l							
PFDoA	ND	0.48	2.0	ng/l							
PFEESA	ND	0.10	2.0	ng/l							
PFHpA	ND	0.45	2.0	ng/l							
PFHpS	ND	0.40	2.0	ng/l							
PFHxA	ND	0.34	2.0	ng/l							
PFHxS	ND	0.30	2.0	ng/l							
PFMBA	ND	0.23	2.0	ng/l							
PFMPA	ND	0.23	2.0	ng/l							
PFNA	ND	0.55	2.0	ng/l							
PFOA	ND	0.33	2.0	ng/l							
PFOS	ND	0.56	2.0	ng/l							
PFPeA	ND	0.12	2.0	ng/l							
PFPeS	ND	0.12	2.0	ng/l							
PFUnA	ND	0.34	2.0	ng/l							
Surrogate(s)											
13C2-4:2 FTS	46.0			ng/l	40.0		115	50-200			
13C2-6:2 FTS	42.7			ng/l	40.0		107	50-200			
13C2-8:2 FTS	39.9			ng/l	40.0		100	50-200			
13C2-PFDoA	10.8			ng/l	10.0		108	50-200			
13C3-PFBS	11.2			ng/l	10.0		112	50-200			
13C3-PFHxS	10.6			ng/l	10.0		106	50-200			
13C4-PFBA	11.3			ng/l	10.0		113	50-200			
13C4-PFHpA	11.3			ng/l	10.0		113	50-200			
13C5-PFHxA	11.0			ng/l	10.0		110	50-200			
13C5-PFPeA	11.4			ng/l	10.0		114	50-200			
13C6-PFDA	10.9			ng/l	10.0		109	50-200			
13C7-PFUnA	10.9			ng/l	10.0		109	50-200			
13C8-PFOA	10.9			ng/l	10.0		109	50-200			

Caltest Analytical Laboratory
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Project Number: Z120354

Project Manager: Client Services

Reported:
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Quality Control Results

(Continued)

Per- and Polyfluorinated Alkyl Substances (PFAS) by LC-MS/MS (Continued)

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W4L1046 - EPA 533 (Continued)											
Blank (W4L1046-BLK1)					Prepared: 12/13/24 Analyzed: 12/17/24						
Surrogate(s)											
13C8-PFOS	11.1			ng/l	10.0		111	50-200			
13C9-PFNA	10.9			ng/l	10.0		109	50-200			
HFPO-DA-13C3	11.2			ng/l	10.0		112	50-200			
LCS (W4L1046-BS1)					Prepared: 12/13/24 Analyzed: 12/17/24						
11CI-PF3OUdS	19.3	0.20	2.0	ng/l	20.0		97	70-130			
4:2 FTS	16.1	0.43	2.0	ng/l	20.0		81	70-130			
6:2 FTS	18.9	0.25	2.0	ng/l	20.0		94	70-130			
8:2 FTS	19.5	0.38	2.0	ng/l	20.0		97	70-130			
9CI-PF3ONS	18.8	0.28	2.0	ng/l	20.0		94	70-130			
ADONA	19.5	0.32	2.0	ng/l	20.0		98	70-130			
HFPO-DA	20.0	0.34	2.0	ng/l	20.0		100	70-130			
NFDHA	21.4	0.62	2.0	ng/l	20.0		107	70-130			
PFBA	19.3	0.16	2.0	ng/l	20.0		97	70-130			
PFBS	19.7	0.35	2.0	ng/l	20.0		99	70-130			
PFDA	19.7	0.28	2.0	ng/l	20.0		98	70-130			
PFDoA	19.5	0.48	2.0	ng/l	20.0		97	70-130			
PFEESA	18.4	0.10	2.0	ng/l	20.0		92	70-130			
PFHpA	19.9	0.45	2.0	ng/l	20.0		100	70-130			
PFHpS	19.2	0.40	2.0	ng/l	20.0		96	70-130			
PFHxA	20.0	0.34	2.0	ng/l	20.0		100	70-130			
PFHxS	19.6	0.30	2.0	ng/l	20.0		98	70-130			
PFMBA	20.3	0.23	2.0	ng/l	20.0		101	70-130			
PFMPA	19.3	0.23	2.0	ng/l	20.0		96	70-130			
PFNA	19.2	0.55	2.0	ng/l	20.0		96	70-130			
PFOA	20.0	0.33	2.0	ng/l	20.0		100	70-130			
PFOS	18.5	0.56	2.0	ng/l	20.0		92	70-130			
PFPeA	19.8	0.12	2.0	ng/l	20.0		99	70-130			
PFPeS	20.4	0.12	2.0	ng/l	20.0		102	70-130			
PFUnA	19.9	0.34	2.0	ng/l	20.0		100	70-130			
Surrogate(s)											
13C2-4:2 FTS	43.8			ng/l	40.0		109	50-200			
13C2-6:2 FTS	43.3			ng/l	40.0		108	50-200			
13C2-8:2 FTS	39.9			ng/l	40.0		100	50-200			
13C2-PFDoA	10.5			ng/l	10.0		105	50-200			
13C3-PFBS	11.2			ng/l	10.0		112	50-200			
13C3-PFHxS	10.4			ng/l	10.0		104	50-200			
13C4-PFBA	11.2			ng/l	10.0		112	50-200			
13C4-PFHpA	10.8			ng/l	10.0		108	50-200			

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Project Number: Z120354

Project Manager: Client Services

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Quality Control Results

(Continued)

Per- and Polyfluorinated Alkyl Substances (PFAS) by LC-MS/MS (Continued)

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Qualifier
Batch: W4L1046 - EPA 533 (Continued)										
LCS (W4L1046-BS1)					Prepared: 12/13/24 Analyzed: 12/17/24					
Surrogate(s)										
13C5-PFHxA	10.8			ng/l	10.0		108 50-200			
13C5-PFPeA	10.9			ng/l	10.0		109 50-200			
13C6-PFDA	10.2			ng/l	10.0		102 50-200			
13C7-PFUnA	10.3			ng/l	10.0		103 50-200			
13C8-PFOA	10.7			ng/l	10.0		107 50-200			
13C8-PFOS	10.5			ng/l	10.0		105 50-200			
13C9-PFNA	10.5			ng/l	10.0		105 50-200			
HFPO-DA-13C3	10.6			ng/l	10.0		106 50-200			
LCS Dup (W4L1046-BSD1)					Prepared: 12/13/24 Analyzed: 12/17/24					
11CI-PF3OUdS	18.0	0.20	2.0	ng/l	20.0		90 70-130	7	30	
4:2 FTS	16.0	0.43	2.0	ng/l	20.0		80 70-130	0.8	30	
6:2 FTS	19.3	0.25	2.0	ng/l	20.0		97 70-130	2	30	
8:2 FTS	18.7	0.38	2.0	ng/l	20.0		93 70-130	4	30	
9CI-PF3ONS	17.7	0.28	2.0	ng/l	20.0		89 70-130	6	30	
ADONA	20.2	0.32	2.0	ng/l	20.0		101 70-130	4	30	
HFPO-DA	19.2	0.34	2.0	ng/l	20.0		96 70-130	4	30	
NFDHA	20.1	0.62	2.0	ng/l	20.0		101 70-130	6	30	
PFBA	19.4	0.16	2.0	ng/l	20.0		97 70-130	0.4	30	
PFBS	18.6	0.35	2.0	ng/l	20.0		93 70-130	6	30	
PFDA	19.2	0.28	2.0	ng/l	20.0		96 70-130	2	30	
PFDoA	20.0	0.48	2.0	ng/l	20.0		100 70-130	3	30	
PFEESA	18.4	0.10	2.0	ng/l	20.0		92 70-130	0.06	30	
PFHpA	20.1	0.45	2.0	ng/l	20.0		100 70-130	0.7	30	
PFHpS	18.8	0.40	2.0	ng/l	20.0		94 70-130	3	30	
PFHxA	19.9	0.34	2.0	ng/l	20.0		99 70-130	0.5	30	
PFHxS	19.6	0.30	2.0	ng/l	20.0		98 70-130	0.4	30	
PFMBA	19.6	0.23	2.0	ng/l	20.0		98 70-130	3	30	
PFMPA	19.2	0.23	2.0	ng/l	20.0		96 70-130	0.2	30	
PFNA	18.3	0.55	2.0	ng/l	20.0		92 70-130	5	30	
PFOA	19.5	0.33	2.0	ng/l	20.0		97 70-130	2	30	
PFOS	17.5	0.56	2.0	ng/l	20.0		88 70-130	5	30	
PFPeA	19.1	0.12	2.0	ng/l	20.0		96 70-130	4	30	
PFPeS	19.8	0.12	2.0	ng/l	20.0		99 70-130	3	30	
PFUnA	19.5	0.34	2.0	ng/l	20.0		98 70-130	2	30	
Surrogate(s)										
13C2-4:2 FTS	46.9			ng/l	40.0		117 50-200			
13C2-6:2 FTS	42.5			ng/l	40.0		106 50-200			
13C2-8:2 FTS	40.4			ng/l	40.0		101 50-200			

Quality Control Results

(Continued)

Per- and Polyfluorinated Alkyl Substances (PFAS) by LC-MS/MS (Continued)

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	Limit	RPD	Limit	Qualifier
Batch: W4L1046 - EPA 533 (Continued)											
LCS Dup (W4L1046-BSD1)						Prepared: 12/13/24 Analyzed: 12/17/24					
Surrogate(s)											
13C2-PFDoA	10.7			ng/l	10.0		107	50-200			
13C3-PFBS	11.4			ng/l	10.0		114	50-200			
13C3-PFHxS	10.9			ng/l	10.0		109	50-200			
13C4-PFBA	11.1			ng/l	10.0		111	50-200			
13C4-PFHpA	10.4			ng/l	10.0		104	50-200			
13C5-PFHxA	10.9			ng/l	10.0		109	50-200			
13C5-PFPeA	11.2			ng/l	10.0		112	50-200			
13C6-PFDA	10.7			ng/l	10.0		107	50-200			
13C7-PFUnA	10.4			ng/l	10.0		104	50-200			
13C8-PFOA	10.9			ng/l	10.0		109	50-200			
13C8-PFOS	11.2			ng/l	10.0		112	50-200			
13C9-PFNA	10.9			ng/l	10.0		109	50-200			
HFPO-DA-13C3	10.9			ng/l	10.0		109	50-200			

Batch: W4L1095 - EPA 533

Blank (W4L1095-BLK1)						Prepared: 12/13/24 Analyzed: 12/17/24					
11CI-PF3OUdS	ND	0.20	2.0	ng/l							
4:2 FTS	ND	0.43	2.0	ng/l							
6:2 FTS	ND	0.25	2.0	ng/l							
8:2 FTS	ND	0.38	2.0	ng/l							
9CI-PF3ONS	ND	0.28	2.0	ng/l							
ADONA	ND	0.32	2.0	ng/l							
HFPO-DA	ND	0.34	2.0	ng/l							
NFDHA	ND	0.62	2.0	ng/l							
PFBA	ND	0.16	2.0	ng/l							
PFBS	ND	0.35	2.0	ng/l							
PFDA	ND	0.28	2.0	ng/l							
PFDoA	ND	0.48	2.0	ng/l							
PFEESA	ND	0.10	2.0	ng/l							
PFHpA	ND	0.45	2.0	ng/l							
PFHpS	ND	0.40	2.0	ng/l							
PFHxA	ND	0.34	2.0	ng/l							
PFHxS	ND	0.30	2.0	ng/l							
PFMBA	ND	0.23	2.0	ng/l							
PFMPA	ND	0.23	2.0	ng/l							
PFNA	ND	0.55	2.0	ng/l							
PFOA	ND	0.33	2.0	ng/l							
PFOS	ND	0.56	2.0	ng/l							
PFPeA	ND	0.12	2.0	ng/l							

Caltest Analytical Laboratory
1885 North Kelly Road
Napa, CA 94558

Project Number: Z120354

Project Manager: Client Services

Reported:
12/26/2024 11:13

Quality Control Results

(Continued)

Per- and Polyfluorinated Alkyl Substances (PFAS) by LC-MS/MS (Continued)

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Qualifier
Batch: W4L1095 - EPA 533 (Continued)										
Blank (W4L1095-BLK1)					Prepared: 12/13/24 Analyzed: 12/17/24					
PFPeS	ND	0.12	2.0	ng/l						
PFOUnA	ND	0.34	2.0	ng/l						
<i>Surrogate(s)</i>										
13C2-4:2 FTS	44.4			ng/l	40.0		111 50-200			
13C2-6:2 FTS	44.2			ng/l	40.0		111 50-200			
13C2-8:2 FTS	43.1			ng/l	40.0		108 50-200			
13C2-PFDoA	10.6			ng/l	10.0		106 50-200			
13C3-PFBS	11.5			ng/l	10.0		115 50-200			
13C3-PFHxS	12.0			ng/l	10.0		120 50-200			
13C4-PFBA	11.2			ng/l	10.0		112 50-200			
13C4-PFHpA	10.7			ng/l	10.0		107 50-200			
13C5-PFHxA	10.8			ng/l	10.0		108 50-200			
13C5-PFPeA	11.3			ng/l	10.0		113 50-200			
13C6-PFDA	10.2			ng/l	10.0		102 50-200			
13C7-PFOUnA	10.1			ng/l	10.0		101 50-200			
13C8-PFOA	10.9			ng/l	10.0		109 50-200			
13C8-PFOS	11.0			ng/l	10.0		110 50-200			
13C9-PFNA	10.3			ng/l	10.0		103 50-200			
HFPO-DA-13C3	10.6			ng/l	10.0		106 50-200			
LCS (W4L1095-BS1)					Prepared: 12/13/24 Analyzed: 12/17/24					
11CI-PF3OUdS	57.5	0.20	2.0	ng/l	60.0		96 70-130			
4:2 FTS	48.7	0.43	2.0	ng/l	60.0		81 70-130			
6:2 FTS	60.7	0.25	2.0	ng/l	60.0		101 70-130			
8:2 FTS	59.6	0.38	2.0	ng/l	60.0		99 70-130			
9CI-PF3ONS	58.7	0.28	2.0	ng/l	60.0		98 70-130			
ADONA	57.9	0.32	2.0	ng/l	60.0		97 70-130			
HFPO-DA	58.8	0.34	2.0	ng/l	60.0		98 70-130			
NFDHA	57.0	0.62	2.0	ng/l	60.0		95 70-130			
PFBA	60.2	0.16	2.0	ng/l	60.0		100 70-130			
PFBS	57.6	0.35	2.0	ng/l	60.0		96 70-130			
PFDA	57.7	0.28	2.0	ng/l	60.0		96 70-130			
PFDoA	60.7	0.48	2.0	ng/l	60.0		101 70-130			
PFEESA	56.9	0.10	2.0	ng/l	60.0		95 70-130			
PFHpA	58.0	0.45	2.0	ng/l	60.0		97 70-130			
PFHpS	57.6	0.40	2.0	ng/l	60.0		96 70-130			
PFHxA	60.6	0.34	2.0	ng/l	60.0		101 70-130			
PFHxS	58.3	0.30	2.0	ng/l	60.0		97 70-130			
PFMBA	57.3	0.23	2.0	ng/l	60.0		95 70-130			
PFMPA	59.7	0.23	2.0	ng/l	60.0		100 70-130			

Caltest Analytical Laboratory
1885 North Kelly Road
Napa, CA 94558

Project Number: Z120354

Project Manager: Client Services

Reported:
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Quality Control Results

(Continued)

Per- and Polyfluorinated Alkyl Substances (PFAS) by LC-MS/MS (Continued)

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Qualifier
Batch: W4L1095 - EPA 533 (Continued)										
LCS (W4L1095-BS1)					Prepared: 12/13/24 Analyzed: 12/17/24					
PFNA	57.8	0.55	2.0	ng/l	60.0		96 70-130			
PFOA	58.4	0.33	2.0	ng/l	60.0		97 70-130			
PFOS	57.6	0.56	2.0	ng/l	60.0		96 70-130			
PFPeA	58.4	0.12	2.0	ng/l	60.0		97 70-130			
PFPeS	60.9	0.12	2.0	ng/l	60.0		102 70-130			
PFUnA	58.2	0.34	2.0	ng/l	60.0		97 70-130			
Surrogate(s)										
13C2-4:2 FTS	46.0			ng/l	40.0		115 50-200			
13C2-6:2 FTS	43.8			ng/l	40.0		110 50-200			
13C2-8:2 FTS	40.1			ng/l	40.0		100 50-200			
13C2-PFDoA	10.3			ng/l	10.0		103 50-200			
13C3-PFBS	11.1			ng/l	10.0		111 50-200			
13C3-PFHxS	10.8			ng/l	10.0		108 50-200			
13C4-PFBA	10.7			ng/l	10.0		107 50-200			
13C4-PFHpA	10.7			ng/l	10.0		107 50-200			
13C5-PFHxA	10.6			ng/l	10.0		106 50-200			
13C5-PFPeA	10.9			ng/l	10.0		109 50-200			
13C6-PFDA	9.78			ng/l	10.0		98 50-200			
13C7-PFUnA	10.0			ng/l	10.0		100 50-200			
13C8-PFOA	10.6			ng/l	10.0		106 50-200			
13C8-PFOS	10.7			ng/l	10.0		107 50-200			
13C9-PFNA	10.1			ng/l	10.0		101 50-200			
HFPO-DA-13C3	10.7			ng/l	10.0		107 50-200			
LCS Dup (W4L1095-BSD1)					Prepared: 12/13/24 Analyzed: 12/17/24					
11CI-PF3OUdS	59.5	0.20	2.0	ng/l	60.0		99 70-130	3	30	
4:2 FTS	51.8	0.43	2.0	ng/l	60.0		86 70-130	6	30	
6:2 FTS	58.0	0.25	2.0	ng/l	60.0		97 70-130	5	30	
8:2 FTS	58.2	0.38	2.0	ng/l	60.0		97 70-130	2	30	
9CI-PF3ONS	59.2	0.28	2.0	ng/l	60.0		99 70-130	0.8	30	
ADONA	55.8	0.32	2.0	ng/l	60.0		93 70-130	4	30	
HFPO-DA	56.8	0.34	2.0	ng/l	60.0		95 70-130	3	30	
NFDHA	56.7	0.62	2.0	ng/l	60.0		94 70-130	0.6	30	
PFBA	58.5	0.16	2.0	ng/l	60.0		98 70-130	3	30	
PFBS	58.7	0.35	2.0	ng/l	60.0		98 70-130	2	30	
PFDA	57.7	0.28	2.0	ng/l	60.0		96 70-130	0.02	30	
PFDoA	59.5	0.48	2.0	ng/l	60.0		99 70-130	2	30	
PFEESA	58.5	0.10	2.0	ng/l	60.0		98 70-130	3	30	
PFHpA	56.8	0.45	2.0	ng/l	60.0		95 70-130	2	30	
PFHpS	59.0	0.40	2.0	ng/l	60.0		98 70-130	2	30	

Caltest Analytical Laboratory
1885 North Kelly Road
Napa, CA 94558

Project Number: Z120354

Project Manager: Client Services

Reported:
12/26/2024 11:13

Quality Control Results

(Continued)

Per- and Polyfluorinated Alkyl Substances (PFAS) by LC-MS/MS (Continued)

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	Limit	RPD	Limit	Qualifier
Batch: W4L1095 - EPA 533 (Continued)											
LCS Dup (W4L1095-BSD1)						Prepared: 12/13/24 Analyzed: 12/17/24					
PFHxA	60.8	0.34	2.0	ng/l	60.0		101	70-130	0.4	30	
PFHxS	55.7	0.30	2.0	ng/l	60.0		93	70-130	5	30	
PFMBA	55.3	0.23	2.0	ng/l	60.0		92	70-130	4	30	
PFMPA	57.2	0.23	2.0	ng/l	60.0		95	70-130	4	30	
PFNA	59.6	0.55	2.0	ng/l	60.0		99	70-130	3	30	
PFOA	55.9	0.33	2.0	ng/l	60.0		93	70-130	4	30	
PFOS	58.7	0.56	2.0	ng/l	60.0		98	70-130	2	30	
PFPeA	57.8	0.12	2.0	ng/l	60.0		96	70-130	1	30	
PFPeS	59.2	0.12	2.0	ng/l	60.0		99	70-130	3	30	
PFUnA	58.9	0.34	2.0	ng/l	60.0		98	70-130	1	30	
<i>Surrogate(s)</i>											
13C2-4:2 FTS	45.7			ng/l	40.0		114	50-200			
13C2-6:2 FTS	47.0			ng/l	40.0		117	50-200			
13C2-8:2 FTS	44.0			ng/l	40.0		110	50-200			
13C2-PFDoA	8.85			ng/l	10.0		89	50-200			
13C3-PFBS	11.0			ng/l	10.0		110	50-200			
13C3-PFHxS	11.4			ng/l	10.0		114	50-200			
13C4-PFBA	9.14			ng/l	10.0		91	50-200			
13C4-PFHpA	8.68			ng/l	10.0		87	50-200			
13C5-PFHxA	8.46			ng/l	10.0		85	50-200			
13C5-PFPeA	9.19			ng/l	10.0		92	50-200			
13C6-PFDA	7.64			ng/l	10.0		76	50-200			
13C7-PFUnA	8.31			ng/l	10.0		83	50-200			
13C8-PFOA	8.48			ng/l	10.0		85	50-200			
13C8-PFOS	10.6			ng/l	10.0		106	50-200			
13C9-PFNA	7.48			ng/l	10.0		75	50-200			
HFPO-DA-13C3	8.59			ng/l	10.0		86	50-200			

Notes and Definitions

Item	Definition
J	Estimated conc. detected <MRL and >MDL.
%REC	Percent Recovery
Dil	Dilution
MDL	Method Detection Limit
MRL	Method Reporting Limit (MRL) is the minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ)
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
RPD	Relative Percent Difference

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.



ENVIRONMENTAL ANALYSES

Subcontract Chain of Custody
Project ID/PO Number - Z120354

PM Review: GR

Turnaround: Standard

4410001

Sending Laboratory
Caltest Analytical Laboratory
1885 N. Kelly Rd.
Napa, CA 94558
Phone: (707) 258-4000
Report To: Client Services
pmgr@caltestlabs.com

Receiving Laboratory
Weck Laboratories, Inc.
14859 East Clark Ave
Hacienda Heights, CA 91745
Phone (626) 336-2139

Sampled By: TW

Lab ID*	See EDD request Sample ID*	Matrix	Collect Date/Time	Container Type	Preservative	PFAS by 533 Full List	Requested Analysis	Notes
Z120354001	ZB30724- WELL1A15110001_011_011	DW	12/05/2024 08:06	HPT	TRIZMA	X		*** J-Flag ***
Z120354002	ZB30732-FB 1A15110001_011_011	DW	12/05/2024 08:06	HPT	TRIZMA	X		*** J-Flag ***
Z120354003	ZB30725- WELL2A15110001_013_013	DW	12/05/2024 08:00	HPT	TRIZMA	X		*** J-Flag ***
Z120354004	ZB30733-FB 2A15110001_013_013	DW	12/05/2024 08:00	HPT	TRIZMA	X		*** J-Flag ***
Z120354005	ZB30726- WELL415110001_004_004	DW	12/05/2024 07:44	HPT	TRIZMA	X		*** J-Flag ***
Z120354006	W415110001_004_004	DW	12/05/2024 07:44	HPT	TRIZMA	X		*** J-Flag ***

☐ Caltest EDD
* If EDD box is checked, please use
Lab ID for sample description,
otherwise use Sample ID

☒ CLIP Submission Required

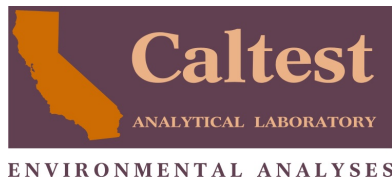
Relinquished By	Date/Time	Received By	Date/Time
<u>W</u>	12/9/24 10:00	TRK#770611272254	
<u>Fed Ex</u>	12/10/24 1000	<u>CSA</u>	12/10/24 1000

FEDEx

Matrix: W - Water DW - Drinking Water (Regulatory) S - Soil/Sludge/Solid ML - Wastewater Final Effluent (Low Level/Minimum Level RLs)

Friday, December 6, 2024 11:45:06 AM

$$\frac{2.7}{2.8} = 0.96$$



Tuesday, December 31, 2024

Emilio Flores
City of Yuba City
302 Burns Drive
Yuba City, CA 95991

Re Lab Order: Z120353
Project ID: 7129-LIVE OAK WELL 1A/2A

Collected By: TW
PO/Contract#:

Dear Emilio Flores:

Enclosed are the analytical results for sample(s) received by the laboratory on Thursday, December 05, 2024. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Enclosures

Project Manager: Greg Martindale

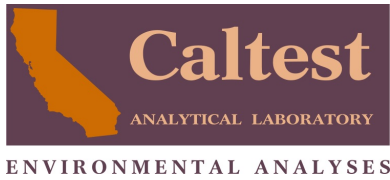
REPORT OF LABORATORY ANALYSIS



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(707) 258-4000 • e-mail: info@caltestlabs.com





SAMPLE SUMMARY

Lab Order: Z120353
Project ID: 7129-LIVE OAK WELL 1A/2A

Lab ID	Sample ID	Matrix	Date Collected	Date Received
Z120353001	ZB30727- 1A/2A 5110001_015_015	Drinking Water	12/05/24 08:10	12/05/24 17:05
Z120353002	ZB30735- FB 5110001_015_015	Drinking Water	12/05/24 08:10	12/05/24 17:05

REPORT OF LABORATORY ANALYSIS



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NARRATIVE

Lab Order: Z120353
Project ID: 7129-LIVE OAK WELL 1A/2A

General Qualifiers and Notes

Caltest authorizes this report to be reproduced only in its entirety. Results are specific to the sample(s) as submitted and only to the parameter(s) reported.

Caltest certifies that test results meet California Environmental Laboratory Accreditation Program (CA-ELAP) and/or National Environmental Laboratory Accreditation Program (NELAP) requirements, as applicable, unless stated otherwise.

All analyses performed by EPA Methods or Standard Methods.

Dilution Factors (DF) reported greater than '1' have been used to adjust the result, Reporting Limit (RL), and Method Detection Limit (MDL).

All Solid, sludge, and/or biosolids data is reported in Wet Weight, unless otherwise specified.

Analyses performed at Caltest for pH, Dissolved Oxygen, and Chlorine Residual, as well as laboratory filtrations for Dissolved Metals (excluding Mercury) are not performed within the 15 minute holding time as specified by 40CFR 136.3 table II.

Results Qualifiers: Report fields may contain codes and non-numeric data correlating to one or more of the following definitions:

ND - indicates analytical result has not been detected at or above the Reporting Limit (RL), or at above the Method Detection Limit (MDL) when it is included on the report and is not otherwise noted.

RL - Reporting Limit is the quantitation limit at which the laboratory is able to detect an analyte. An analyte not detected at or above the RL is reported as ND unless otherwise noted or qualified. For analyses pertaining to the State Implementation Plan of the California Toxics Rule, the Caltest Reporting Limit (RL) is equivalent to the Minimum Level (ML). A standard is always run at or below the ML. Where Reporting Limits are elevated due to dilution, the ML calibration criteria has been met.

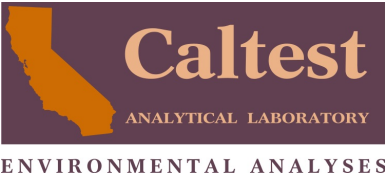
MDL - The Method Detection Limit is defined as the minimum measured concentration of a substance that can be reported with 99% confidence that the measured concentration is distinguishable from method blank results.

J - reflects estimated analytical result value detected below the Reporting Limit (RL) and above the Method Detection Limit (MDL). The 'J' flag is equivalent to the DNQ Estimated Concentration flag.

B - indicates the analyte has been detected in the blank associated with the sample.

SS - compound is a Surrogate Spike used per laboratory quality assurance manual.

NOTE: This document represents a complete Analytical Report for the samples referenced herein and should be retained as a permanent record thereof.



ANALYTICAL RESULTS

Lab Order: Z120353
Project ID: 7129-LIVE OAK WELL 1A/2A

Lab ID	Z120353001	Date Collected:	12/05/24 08:10	Matrix:	Drinking Water					
Sample ID	ZB30727-1A/2A 5110001_015_015	Date Received:	12/05/24 17:05							
Parameter	Result	Units	RL	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual

PFAS by EPA 533

Subcontracted to Weck Laboratory (see attached report)

Lab ID	Z120353002	Date Collected:	12/05/24 08:10	Matrix:	Drinking Water					
Sample ID	ZB30735- FB 5110001_015_015	Date Received:	12/05/24 17:05							
Parameter	Result	Units	RL	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual

PFAS by EPA 533

Subcontracted to Weck Laboratory (see attached report)





ENVIRONMENTAL ANALYSES

QUALITY CONTROL DATA QUALIFIERS

Lab Order: Z120353
Project ID: 7129-LIVE OAK WELL 1A/2A

Quality Control Parameter Qualifiers

Results Qualifiers: Report fields may contain codes and non-numeric data correlating to one or more of the following definitions:

NS - means not spiked and will not have recoveries reported for Analyte Spike Amounts

QC Codes Keys: These descriptors are used to help identify the specific QC samples and clarify the report.

MB - Method Blank

Method Blanks are reported to the same Method Detection Limits (MDLs) or Reporting Limits (RLs) as the analytical samples in the corresponding QC batch.

LCS/LCSD - Laboratory Control Spike / Laboratory Control Spike Duplicate

DUP - Duplicate of Original Sample Matrix

MS/MSD - Matrix Spike / Matrix Spike Duplicate

RPD - Relative Percent Difference

%Recovery - Spike Recovery stated as a percentage

REPORT OF LABORATORY ANALYSIS

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without the written consent of CALTEST ANALYTICAL LABORATORY

1885 North Kelly Road • Napa, California 94558
(707) 258-4000 • e-mail: info@caltestlabs.com



CLIENT:
CITY OF YUBA CITY

MAILING ADDRESS:
302 BURNS DRIVE, YUBA CITY

BILLING ADDRESS:

PHONE NUMBER: (530) 822-7695

FAX PHONE NUMBER: (530) 822-4773

SAMPLE NAME: TW

PROJECT NAME / PROJECT NUMBER:
7129 - Live Oak Well 1A/2A

REPORT ATTN: Emilio Flores

STATE: CALIFORNIA

ZIP: 95991

ANALYSES REQUESTED:

DATE SAMPLED	TIME SAMPLED	SAMPLE MATRIX	CONTAINER TYPE & AMOUNT	PRESERVATIVE	SAMPLE IDENTIFICATION / SITE	CLIENT LAB #	COMP. or GRAB
12/5/2024	810	DW	PLASTIC	VARIOUS	ZB 30727- LO Well 1A/2A		GRAB
12/5/2024	810	DW	PLASTIC	VARIOUS	ZB 30735- LO 1A/2A Field Blank		GRAB

RECEIVED BY: *[Signature]*

DATE/TIME: 12/5/24 17:05

RECEIVED BY: *[Signature]*

DATE/TIME: 01:00

REMARKS:

ANY QUESTIONS, PLEASE CALL

Emilio Flores AT (530) 822-5387

PLEASE INCLUDE MDL ON REPORT

WELL 1A/2A: CA6110001_015_015



Work Orders: 4L10060

Project: Z120353

Attn: Client Services

Client: Caltest Analytical Laboratory
1885 North Kelly Road
Napa, CA 94558

Report Date: 12/26/2024

Received Date: 12/10/2024

Turnaround Time: Normal

Phones: (707) 258-4000

Fax: (707) 226-1001

P.O. #: Z120353

Billing Code:

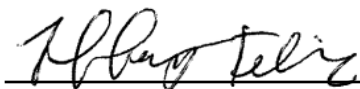
DoD-ELAP ANAB #ADE-2882 • DoD-ISO ANAB # • ELAP-CA #1132 • EPA-UCMR #CA00211 • ISO17025 ANAB #L2457.01 • LACSD #10143 • NELAP-OR #4047

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. The report may include analytes that are not currently accreditable by some state agencies or accrediting bodies. This analytical report must be reproduced in its entirety.

Dear Client Services,

Enclosed are the analytical results for the samples submitted under the attached Chain of Custody document. All analyses adhered to the method criteria, except where noted in the case narrative, sample condition checklist, and/or data qualifiers.

Reviewed by:



Tiffany T. Felix
Project Manager



Project Number: Z120353

Project Manager: Client Services

Reported:
12/26/2024 11:16

Sample Condition

Temperature	2.80 C	
COC present	✓	COC completed properly ✓
COC matches sample labels	✓	Wet ice ✓
Blue ice		Sample(s) intact ✓
Sample(s) using proper containers	✓	Sample(s) have sufficient sample volume ✓
Sample(s) received within hold time	✓	Sample(s) labels have correct preservation ✓
Sample(s) have acceptable pH	✓	Sample(s) have acceptable CI ✓

Sample Summary

Sample Name	Sampled By	Lab ID	Matrix	Sampled	Qualifiers
Z120353001, Alias: ZB30727-1A/2A, RegID: CA5110001_015_015	TW	4L10060-01	Water	12/05/24 08:10	
Z120353002, Alias: ZB30727-1A/2A, RegID: CA5110001_015_015	TW	4L10060-02	Water	12/05/24 08:10	

Caltest Analytical Laboratory
1885 North Kelly Road
Napa, CA 94558

Project Number: Z120353

Project Manager: Client Services

Reported:
12/26/2024 11:16

Sample Results

Sample: Z120353001, Alias: ZB30727-1A/2A, RegID: CA5110001_015_015

Sampled: 12/05/24 8:10 by TW

4L10060-01 (Water)

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
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Per- and Polyfluorinated Alkyl Substances (PFAS) by LC-MS/MS

Method: EPA 533

Instr: LCMS06

Batch ID: W4L1095

Preparation: EPA 533/SPE

Prepared: 12/13/24 12:49

Analyst: rjr

11CI-PF3OUdS	ND	0.17	1.7	ng/l	1	12/17/24	
4:2 FTS	ND	0.37	1.7	ng/l	1	12/17/24	
6:2 FTS	ND	0.21	1.7	ng/l	1	12/17/24	
8:2 FTS	ND	0.32	1.7	ng/l	1	12/17/24	
9CI-PF3ONS	ND	0.24	1.7	ng/l	1	12/17/24	
ADONA	ND	0.27	1.7	ng/l	1	12/17/24	
HFPO-DA	ND	0.29	1.7	ng/l	1	12/17/24	
NFDHA	ND	0.53	1.7	ng/l	1	12/17/24	
PFBA	1.4	0.13	1.7	ng/l	1	12/17/24	J
PFBS	1.7	0.30	1.7	ng/l	1	12/17/24	
PFDA	ND	0.24	1.7	ng/l	1	12/17/24	
PFDoA	ND	0.41	1.7	ng/l	1	12/17/24	
PFEESA	ND	0.089	1.7	ng/l	1	12/17/24	
PFHpA	1.1	0.38	1.7	ng/l	1	12/17/24	J
PFHpS	ND	0.34	1.7	ng/l	1	12/17/24	
PFHxA	2.6	0.29	1.7	ng/l	1	12/17/24	
PFHxS	2.5	0.26	1.7	ng/l	1	12/17/24	
PFMBA	ND	0.19	1.7	ng/l	1	12/17/24	
PFMPA	ND	0.20	1.7	ng/l	1	12/17/24	
PFNA	ND	0.47	1.7	ng/l	1	12/17/24	
PFOA	2.8	0.28	1.7	ng/l	1	12/17/24	
PFOS	2.7	0.48	1.7	ng/l	1	12/17/24	
PFPeA	3.0	0.10	1.7	ng/l	1	12/17/24	
PFPeS	0.49	0.11	1.7	ng/l	1	12/17/24	J
PFUnA	ND	0.29	1.7	ng/l	1	12/17/24	

Surrogate(s)

13C2-4:2 FTS	115%	Conc: 39.1	50-200	12/17/24
13C2-6:2 FTS	110%	Conc: 37.5	50-200	12/17/24
13C2-8:2 FTS	109%	Conc: 36.9	50-200	12/17/24
13C2-PFDoA	101%	Conc: 8.57	50-200	12/17/24
13C3-PFBS	115%	Conc: 9.80	50-200	12/17/24
13C3-PFHxS	119%	Conc: 10.1	50-200	12/17/24
13C4-PFBA	110%	Conc: 9.34	50-200	12/17/24
13C4-PFHpA	103%	Conc: 8.78	50-200	12/17/24

Sample Results

(Continued)

Sample: Z120353001, Alias: ZB30727-1A/2A, RegID: CA5110001_015_015

Sampled: 12/05/24 8:10 by TW

4L10060-01 (Water)

(Continued)

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
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Per- and Polyfluorinated Alkyl Substances (PFAS) by LC-MS/MS (Continued)

Method: EPA 533

Instr: LCMS06

Batch ID: W4L1095

Preparation: EPA 533/SPE

Prepared: 12/13/24 12:49

Analyst: rjr

13C5-PFHxA	107%	Conc: 9.09	50-200			12/17/24	
13C5-PFPeA	111%	Conc: 9.42	50-200			12/17/24	
13C6-PFDA	100%	Conc: 8.54	50-200			12/17/24	
13C7-PFUnA	98%	Conc: 8.33	50-200			12/17/24	
13C8-PFOA	100%	Conc: 8.53	50-200			12/17/24	
13C8-PFOS	109%	Conc: 9.27	50-200			12/17/24	
13C9-PFNA	99%	Conc: 8.38	50-200			12/17/24	
HFPO-DA-13C3	101%	Conc: 8.63	50-200			12/17/24	

Caltest Analytical Laboratory
1885 North Kelly Road
Napa, CA 94558

Project Number: Z120353

Project Manager: Client Services

Reported:
12/26/2024 11:16

Sample Results

(Continued)

Sample: Z120353002, Alias: ZB30727-1A/2A, RegID: CA5110001_015_015

Sampled: 12/05/24 8:10 by TW

4L10060-02 (Water)

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
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Per- and Polyfluorinated Alkyl Substances (PFAS) by LC-MS/MS

Method: EPA 533

Instr: LCMS06

Batch ID: W4L1095

Preparation: EPA 533/SPE

Prepared: 12/13/24 12:49

Analyst: rjr

11CI-PF3OUdS	ND	0.17	1.7	ng/l	1	12/17/24	
4:2 FTS	ND	0.37	1.7	ng/l	1	12/17/24	
6:2 FTS	ND	0.22	1.7	ng/l	1	12/17/24	
8:2 FTS	ND	0.33	1.7	ng/l	1	12/17/24	
9CI-PF3ONS	ND	0.25	1.7	ng/l	1	12/17/24	
ADONA	ND	0.28	1.7	ng/l	1	12/17/24	
HFPO-DA	ND	0.30	1.7	ng/l	1	12/17/24	
NFDHA	ND	0.54	1.7	ng/l	1	12/17/24	
PFBA	ND	0.14	1.7	ng/l	1	12/17/24	
PFBS	ND	0.30	1.7	ng/l	1	12/17/24	
PFDA	ND	0.24	1.7	ng/l	1	12/17/24	
PFDoA	ND	0.42	1.7	ng/l	1	12/17/24	
PFEESA	ND	0.091	1.7	ng/l	1	12/17/24	
PFHpA	ND	0.39	1.7	ng/l	1	12/17/24	
PFHpS	ND	0.35	1.7	ng/l	1	12/17/24	
PFHxA	ND	0.30	1.7	ng/l	1	12/17/24	
PFHxS	ND	0.27	1.7	ng/l	1	12/17/24	
PFMBA	ND	0.20	1.7	ng/l	1	12/17/24	
PFMPA	ND	0.20	1.7	ng/l	1	12/17/24	
PFNA	ND	0.48	1.7	ng/l	1	12/17/24	
PFOA	ND	0.29	1.7	ng/l	1	12/17/24	
PFOS	ND	0.49	1.7	ng/l	1	12/17/24	
PFPeA	ND	0.10	1.7	ng/l	1	12/17/24	
PFPeS	ND	0.11	1.7	ng/l	1	12/17/24	
PFUnA	ND	0.30	1.7	ng/l	1	12/17/24	

Surrogate(s)

13C2-4:2 FTS	111%	Conc: 38.6	50-200	12/17/24
13C2-6:2 FTS	109%	Conc: 38.0	50-200	12/17/24
13C2-8:2 FTS	99%	Conc: 34.4	50-200	12/17/24
13C2-PFDoA	106%	Conc: 9.21	50-200	12/17/24
13C3-PFBS	111%	Conc: 9.66	50-200	12/17/24
13C3-PFHxS	109%	Conc: 9.46	50-200	12/17/24
13C4-PFBA	112%	Conc: 9.80	50-200	12/17/24
13C4-PFHpA	106%	Conc: 9.27	50-200	12/17/24

4L10060

Page 5 of 11

Sample Results

(Continued)

Sample: Z120353002, Alias: ZB30727-1A/2A, RegID: CA5110001_015_015

Sampled: 12/05/24 8:10 by TW

4L10060-02 (Water)

(Continued)

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Per- and Polyfluorinated Alkyl Substances (PFAS) by LC-MS/MS (Continued)							
Method: EPA 533			Instr: LCMS06				
Batch ID: W4L1095		Preparation: EPA 533/SPE		Prepared: 12/13/24 12:49		Analyst: rjr	
13C5-PFHxA	109%	Conc: 9.50	50-200			12/17/24	
13C5-PFPeA	111%	Conc: 9.70	50-200			12/17/24	
13C6-PFDA	108%	Conc: 9.40	50-200			12/17/24	
13C7-PFUnA	105%	Conc: 9.17	50-200			12/17/24	
13C8-PFOA	107%	Conc: 9.28	50-200			12/17/24	
13C8-PFOS	104%	Conc: 9.10	50-200			12/17/24	
13C9-PFNA	110%	Conc: 9.55	50-200			12/17/24	
HFPO-DA-13C3	96%	Conc: 8.39	50-200			12/17/24	

Caltest Analytical Laboratory
1885 North Kelly Road
Napa, CA 94558

Project Number: Z120353

Project Manager: Client Services

Reported:
12/26/2024 11:16

Quality Control Results

Per- and Polyfluorinated Alkyl Substances (PFAS) by LC-MS/MS

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	Limits	RPD	RPD Limit	Qualifier
Batch: W4L1095 - EPA 533											
Blank (W4L1095-BLK1)						Prepared: 12/13/24 Analyzed: 12/17/24					
11CI-PF3OUdS	ND	0.20	2.0	ng/l							
4:2 FTS	ND	0.43	2.0	ng/l							
6:2 FTS	ND	0.25	2.0	ng/l							
8:2 FTS	ND	0.38	2.0	ng/l							
9CI-PF3ONS	ND	0.28	2.0	ng/l							
ADONA	ND	0.32	2.0	ng/l							
HFPO-DA	ND	0.34	2.0	ng/l							
NFDHA	ND	0.62	2.0	ng/l							
PFBA	ND	0.16	2.0	ng/l							
PFBS	ND	0.35	2.0	ng/l							
PFDA	ND	0.28	2.0	ng/l							
PFDoA	ND	0.48	2.0	ng/l							
PFEESA	ND	0.10	2.0	ng/l							
PFHpA	ND	0.45	2.0	ng/l							
PFHpS	ND	0.40	2.0	ng/l							
PFHxA	ND	0.34	2.0	ng/l							
PFHxS	ND	0.30	2.0	ng/l							
PFMBA	ND	0.23	2.0	ng/l							
PFMPA	ND	0.23	2.0	ng/l							
PFNA	ND	0.55	2.0	ng/l							
PFOA	ND	0.33	2.0	ng/l							
PFOS	ND	0.56	2.0	ng/l							
PFPeA	ND	0.12	2.0	ng/l							
PFPeS	ND	0.12	2.0	ng/l							
PFUnA	ND	0.34	2.0	ng/l							
<i>Surrogate(s)</i>											
13C2-4:2 FTS	44.4			ng/l	40.0		111	50-200			
13C2-6:2 FTS	44.2			ng/l	40.0		111	50-200			
13C2-8:2 FTS	43.1			ng/l	40.0		108	50-200			
13C2-PFDoA	10.6			ng/l	10.0		106	50-200			
13C3-PFBS	11.5			ng/l	10.0		115	50-200			
13C3-PFHxS	12.0			ng/l	10.0		120	50-200			
13C4-PFBA	11.2			ng/l	10.0		112	50-200			
13C4-PFHpA	10.7			ng/l	10.0		107	50-200			
13C5-PFHxA	10.8			ng/l	10.0		108	50-200			
13C5-PFPeA	11.3			ng/l	10.0		113	50-200			
13C6-PFDA	10.2			ng/l	10.0		102	50-200			
13C7-PFUnA	10.1			ng/l	10.0		101	50-200			
13C8-PFOA	10.9			ng/l	10.0		109	50-200			

Caltest Analytical Laboratory
1885 North Kelly Road
Napa, CA 94558

Project Number: Z120353

Project Manager: Client Services

Reported:
12/26/2024 11:16

Quality Control Results

(Continued)

Per- and Polyfluorinated Alkyl Substances (PFAS) by LC-MS/MS (Continued)

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W4L1095 - EPA 533 (Continued)											
Blank (W4L1095-BLK1)				Prepared: 12/13/24 Analyzed: 12/17/24							
Surrogate(s)											
13C8-PFOS	11.0			ng/l	10.0		110	50-200			
13C9-PFNA	10.3			ng/l	10.0		103	50-200			
HFPO-DA-13C3	10.6			ng/l	10.0		106	50-200			
LCS (W4L1095-BS1)				Prepared: 12/13/24 Analyzed: 12/17/24							
11CI-PF3OUdS	57.5	0.20	2.0	ng/l	60.0		96	70-130			
4:2 FTS	48.7	0.43	2.0	ng/l	60.0		81	70-130			
6:2 FTS	60.7	0.25	2.0	ng/l	60.0		101	70-130			
8:2 FTS	59.6	0.38	2.0	ng/l	60.0		99	70-130			
9CI-PF3ONS	58.7	0.28	2.0	ng/l	60.0		98	70-130			
ADONA	57.9	0.32	2.0	ng/l	60.0		97	70-130			
HFPO-DA	58.8	0.34	2.0	ng/l	60.0		98	70-130			
NFDHA	57.0	0.62	2.0	ng/l	60.0		95	70-130			
PFBA	60.2	0.16	2.0	ng/l	60.0		100	70-130			
PFBS	57.6	0.35	2.0	ng/l	60.0		96	70-130			
PFDA	57.7	0.28	2.0	ng/l	60.0		96	70-130			
PFDoA	60.7	0.48	2.0	ng/l	60.0		101	70-130			
PFEESA	56.9	0.10	2.0	ng/l	60.0		95	70-130			
PFHpA	58.0	0.45	2.0	ng/l	60.0		97	70-130			
PFHpS	57.6	0.40	2.0	ng/l	60.0		96	70-130			
PFHxA	60.6	0.34	2.0	ng/l	60.0		101	70-130			
PFHxS	58.3	0.30	2.0	ng/l	60.0		97	70-130			
PFMBA	57.3	0.23	2.0	ng/l	60.0		95	70-130			
PFMPA	59.7	0.23	2.0	ng/l	60.0		100	70-130			
PFNA	57.8	0.55	2.0	ng/l	60.0		96	70-130			
PFOA	58.4	0.33	2.0	ng/l	60.0		97	70-130			
PFOS	57.6	0.56	2.0	ng/l	60.0		96	70-130			
PFPeA	58.4	0.12	2.0	ng/l	60.0		97	70-130			
PFPeS	60.9	0.12	2.0	ng/l	60.0		102	70-130			
PFUnA	58.2	0.34	2.0	ng/l	60.0		97	70-130			
Surrogate(s)											
13C2-4:2 FTS	46.0			ng/l	40.0		115	50-200			
13C2-6:2 FTS	43.8			ng/l	40.0		110	50-200			
13C2-8:2 FTS	40.1			ng/l	40.0		100	50-200			
13C2-PFDoA	10.3			ng/l	10.0		103	50-200			
13C3-PFBS	11.1			ng/l	10.0		111	50-200			
13C3-PFHxS	10.8			ng/l	10.0		108	50-200			
13C4-PFBA	10.7			ng/l	10.0		107	50-200			
13C4-PFHpA	10.7			ng/l	10.0		107	50-200			

Caltest Analytical Laboratory
1885 North Kelly Road
Napa, CA 94558

Project Number: Z120353

Project Manager: Client Services

Reported:
12/26/2024 11:16

Quality Control Results

(Continued)

Per- and Polyfluorinated Alkyl Substances (PFAS) by LC-MS/MS (Continued)

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Qualifier
Batch: W4L1095 - EPA 533 (Continued)										
LCS (W4L1095-BS1)					Prepared: 12/13/24 Analyzed: 12/17/24					
Surrogate(s)										
13C5-PFHxA	10.6			ng/l	10.0		106 50-200			
13C5-PFPeA	10.9			ng/l	10.0		109 50-200			
13C6-PFDA	9.78			ng/l	10.0		98 50-200			
13C7-PFUnA	10.0			ng/l	10.0		100 50-200			
13C8-PFOA	10.6			ng/l	10.0		106 50-200			
13C8-PFOS	10.7			ng/l	10.0		107 50-200			
13C9-PFNA	10.1			ng/l	10.0		101 50-200			
HFPO-DA-13C3	10.7			ng/l	10.0		107 50-200			
LCS Dup (W4L1095-BSD1)					Prepared: 12/13/24 Analyzed: 12/17/24					
11CI-PF3OUdS	59.5	0.20	2.0	ng/l	60.0		99 70-130	3	30	
4:2 FTS	51.8	0.43	2.0	ng/l	60.0		86 70-130	6	30	
6:2 FTS	58.0	0.25	2.0	ng/l	60.0		97 70-130	5	30	
8:2 FTS	58.2	0.38	2.0	ng/l	60.0		97 70-130	2	30	
9CI-PF3ONS	59.2	0.28	2.0	ng/l	60.0		99 70-130	0.8	30	
ADONA	55.8	0.32	2.0	ng/l	60.0		93 70-130	4	30	
HFPO-DA	56.8	0.34	2.0	ng/l	60.0		95 70-130	3	30	
NFDHA	56.7	0.62	2.0	ng/l	60.0		94 70-130	0.6	30	
PFBA	58.5	0.16	2.0	ng/l	60.0		98 70-130	3	30	
PFBS	58.7	0.35	2.0	ng/l	60.0		98 70-130	2	30	
PFDA	57.7	0.28	2.0	ng/l	60.0		96 70-130	0.02	30	
PFDoA	59.5	0.48	2.0	ng/l	60.0		99 70-130	2	30	
PFEESA	58.5	0.10	2.0	ng/l	60.0		98 70-130	3	30	
PFHpA	56.8	0.45	2.0	ng/l	60.0		95 70-130	2	30	
PFHpS	59.0	0.40	2.0	ng/l	60.0		98 70-130	2	30	
PFHxA	60.8	0.34	2.0	ng/l	60.0		101 70-130	0.4	30	
PFHxS	55.7	0.30	2.0	ng/l	60.0		93 70-130	5	30	
PFMBA	55.3	0.23	2.0	ng/l	60.0		92 70-130	4	30	
PFMPA	57.2	0.23	2.0	ng/l	60.0		95 70-130	4	30	
PFNA	59.6	0.55	2.0	ng/l	60.0		99 70-130	3	30	
PFOA	55.9	0.33	2.0	ng/l	60.0		93 70-130	4	30	
PFOS	58.7	0.56	2.0	ng/l	60.0		98 70-130	2	30	
PFPeA	57.8	0.12	2.0	ng/l	60.0		96 70-130	1	30	
PFPeS	59.2	0.12	2.0	ng/l	60.0		99 70-130	3	30	
PFUnA	58.9	0.34	2.0	ng/l	60.0		98 70-130	1	30	
Surrogate(s)										
13C2-4:2 FTS	45.7			ng/l	40.0		114 50-200			
13C2-6:2 FTS	47.0			ng/l	40.0		117 50-200			
13C2-8:2 FTS	44.0			ng/l	40.0		110 50-200			

Caltest Analytical Laboratory
1885 North Kelly Road
Napa, CA 94558

Project Number: Z120353

Project Manager: Client Services

Reported:
12/26/2024 11:16

Quality Control Results

(Continued)

Per- and Polyfluorinated Alkyl Substances (PFAS) by LC-MS/MS (Continued)

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W4L1095 - EPA 533 (Continued)											
LCS Dup (W4L1095-BSD1)					Prepared: 12/13/24 Analyzed: 12/17/24						
Surrogate(s)											
13C2-PFDoA	8.85			ng/l	10.0		89	50-200			
13C3-PFBS	11.0			ng/l	10.0		110	50-200			
13C3-PFHxS	11.4			ng/l	10.0		114	50-200			
13C4-PFBA	9.14			ng/l	10.0		91	50-200			
13C4-PFHpA	8.68			ng/l	10.0		87	50-200			
13C5-PFHxA	8.46			ng/l	10.0		85	50-200			
13C5-PFPeA	9.19			ng/l	10.0		92	50-200			
13C6-PFDA	7.64			ng/l	10.0		76	50-200			
13C7-PFUnA	8.31			ng/l	10.0		83	50-200			
13C8-PFOA	8.48			ng/l	10.0		85	50-200			
13C8-PFOS	10.6			ng/l	10.0		106	50-200			
13C9-PFNA	7.48			ng/l	10.0		75	50-200			
HFPO-DA-13C3	8.59			ng/l	10.0		86	50-200			

Notes and Definitions

Item	Definition
J	Estimated conc. detected <MRL and >MDL.
%REC	Percent Recovery
Dil	Dilution
MDL	Method Detection Limit
MRL	Method Reporting Limit (MRL) is the minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ)
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
RPD	Relative Percent Difference

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.



ENVIRONMENTAL ANALYSES

Subcontract Chain of Custody
Project ID/PO Number - Z120353

PM Review:

CA

Turnaround:

Standard

410000

Sending Laboratory
Caltest Analytical Laboratory
1885 N. Kelly Rd.
Napa, CA 94558
Phone: (707) 258-4000
Report To: Client Services
pmgr@caltestlabs.com

Receiving Laboratory
Weck Laboratories, Inc.
14859 East Clark Ave
Hacienda Heights, CA 91745
Phone (626) 336-2139

Sampled By: TW

Lab ID*	See EDD request Sample ID*	Matrix	Collect Date/Time	Container Type	Preservative	Requested Analysis										Notes
						PFAS by 533 Full List										
Z120353001	ZB30727- 1A/2A/5110001_015_015	DW	12/05/2024 08:10	HPT	TRIZMA	X										*** J-Flag ***
Z120353002	ZB30735- FBI/5110001_015_015	DW	12/05/2024 08:10	HPT	TRIZMA	X										*** J-Flag ***

☐ Caltest EDD
* If EDD box is checked, please use
Lab ID for sample description,
otherwise use Sample ID

☒ CLIP Submission Required

FEDEX

Relinquished By	Date/Time	Received By	Date/Time
<i>MA</i>	12/9/24 10:00	TRK#770611272254	
Red EX	12/10/24 1000	CSA <i>ceae</i>	12/10/24 1000

Matrix: W - Water DW - Drinking Water (Regulatory) S - Soil/Sludge/Solid ML - Wastewater Final Effluent (Low Level/Minimum Level Plus)

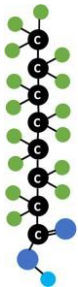
Friday, December 6, 2024 1:43:42 PM

T0307/2.7
2.8. 4 12/10

PFAS Explained:



Scientific studies have shown that exposure to some PFAS in the environment is linked to harmful health effects in humans and animals.



What are PFAS?

PFAS are manufactured chemicals that have been used in industry and consumer products since the 1940s.

Because of their widespread use and their persistence in the environment, many PFAS are found in the blood of people and animals all over the world. There are thousands of different PFAS, some of which have been more widely used and studied than others.



Are PFAS safe?

Research is ongoing to determine how exposure to different PFAS can lead to a variety of health effects. Studies have shown that exposure to certain levels of PFAS may lead to:



Cancer Effects

Increased risk of some cancers, including prostate, kidney, and testicular cancers.



Weight Effects

Increased cholesterol levels and/or risk of obesity.



Immune Effects

Reduced ability of the body's immune system to fight infections.



Developmental Effects

Low birth weight, accelerated puberty, bone variations, or behavioral changes.



Reproductive Effects

Decreased fertility or increased high blood pressure in pregnant women.

The more we learn about PFAS chemicals, the more we learn that certain PFAS can cause health risks even at very low levels. This is why anything we can do to reduce PFAS in water, soil, and air, can have a meaningful impact on health. EPA is taking action to reduce PFAS in water and in the environment. You can also take action if you remain concerned about your own risk.

Read on to learn where PFAS are coming from, and how EPA is taking action on PFAS.



Where Are PFAS Found?



Most people in the United States have been exposed to some PFAS. People can be exposed to PFAS by touching, drinking, eating, or breathing in materials containing PFAS. PFAS may be present in:



Drinking Water

Drinking water contaminated by other sources of PFAS.



Waste Sites

Soil and water at or near landfills, disposal sites, and hazardous waste sites.



Fire Extinguishing Foam

Used in training and emergency response events at airports and firefighting training facilities.



Facilities

Chrome plating, electronics, and certain textile and paper manufacturers that produce or use PFAS.



Consumer Products

Stain- or water-repellent, or non-stick products, paints, sealants, and some personal care products.



Food Packaging

Grease-resistant paper, microwave popcorn bags, pizza boxes, and candy wrappers.



Biosolids

Fertilizer from wastewater treatment plants used on agricultural lands can affect ground and surface water.



Food

Fish caught from water contaminated by PFAS and dairy products from livestock exposed to PFAS.

Very little of the PFAS in water can get into your body through your skin, so, showering, bathing, and washing dishes in water containing PFAS are unlikely to significantly increase your risk.

EPA's researchers and partners across the country are working hard to understand how much PFAS people are exposed to and how.



2

Keep reading to find out how EPA is taking action on PFAS.



EPA Is Taking Action to Address PFAS

In October 2021, EPA released its PFAS Strategic Roadmap, which highlights concrete actions the Agency will take across a range of environmental media and EPA program offices to protect people and the environment from PFAS contamination. The Roadmap is guided by three primary goals:



Research

Invest in research, development, and innovation



Restrict

Prevent PFAS from entering air, land, and water



Remediate

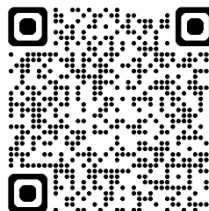
Broaden and accelerate the cleanup of PFAS contamination

Since the Roadmap's release, EPA has taken a number of key actions including:



- Began distributing \$10 billion in funding to address emerging contaminants such as PFAS under the Bipartisan Infrastructure Law (BIL).
- Finalized legally enforceable standards for six PFAS substances in drinking water.
- Designated two PFAS as CERCLA hazardous substances.
- Finalized rules to significantly enhance data on PFAS uses and releases.

To learn more about the PFAS Strategic Roadmap and key actions taken by EPA scan the QR code.



Turn the page to learn more about what actions you can take.



If You Are Concerned about PFAS in Your Drinking Water:



1

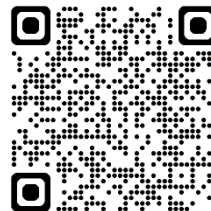
Contact your drinking water utility:

People who are concerned about PFAS in their drinking water should first contact their drinking water utility to find out more about their drinking water, including if the utility is monitoring for PFAS, what contaminants may be present, what the levels are, and to see whether any actions are being taken to reduce exposure.

2

If you remain concerned after talking to your utility, then consider using or installing in-home water treatment (e.g., filters) that is certified to lower the levels of PFAS in your water and/or contact your health care provider as well as your state or local health department.

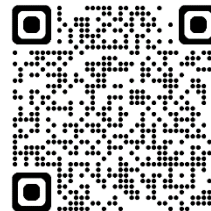
Scan this code for more information about water filters that help reduce PFAS:



3

Finally, if you get your water from a home drinking water well, then EPA recommends you conduct regular testing. If PFAS are found, you can take steps to lower the levels of PFAS including using or installing in-home water treatment.

Scan this code for more information about the PFAS drinking water rule:



4

EPA makes frequent updates to its website. To learn more about PFAS go to <https://www.epa.gov/pfas>.

2022 & 2024 DDW Order - PFAS Occurrence Level Exceedances in Public Water System Wells



2022 & 2024 ORDER	Detects (CCRD)	> Notification Level	> Response Level	>Federal MCL
PFOA	25%	20%	9%	20%
PFOS	31%	23%	3%	17%
PFHxS	32%	31%	4%	9%
PFBS	24%	0%	0%	0%

MCLs:

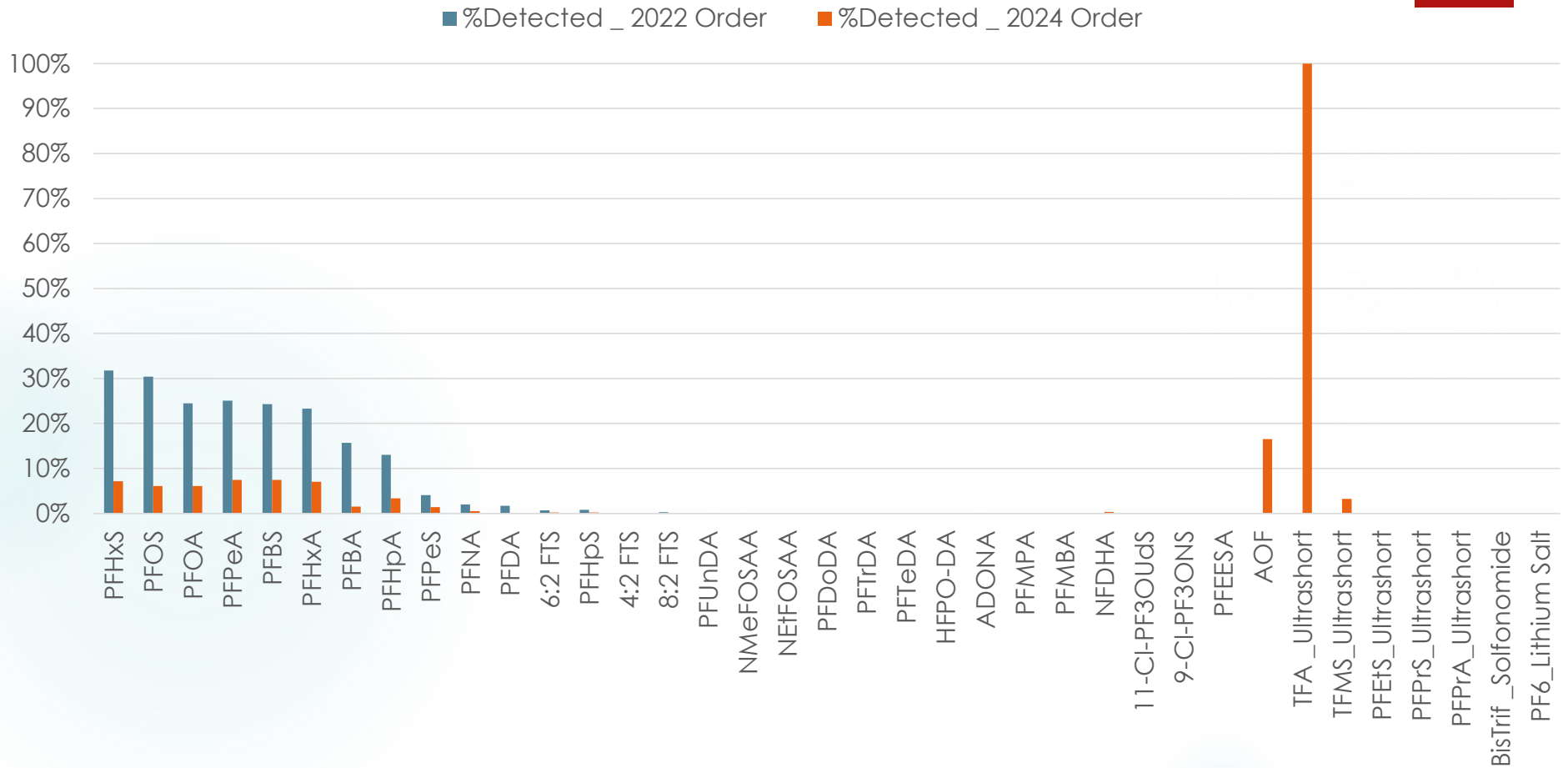
PFOA and PFOS = 4 ng/L

PFHxS = 10 ng/L

n=2,253; data collected in 2024

PUBLIC WATER SYSTEM WELLS - BY WELL

PFAS PERCENT DETECTED in 2024 (as of Decemeber 7, 2024)



PFAS – Frequently Asked Questions

SWRCB - DIVISION OF WATER QUALITY

UPDATED: 3/19/2020

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BACKGROUND

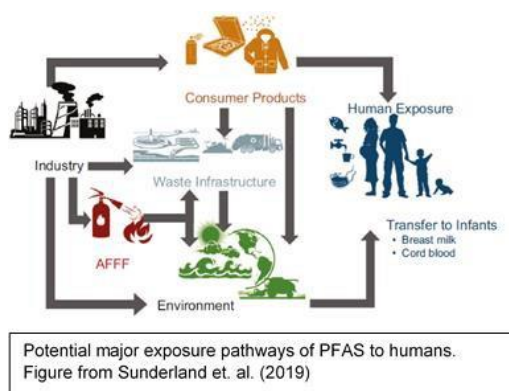
What are per- and polyfluoroalkyl substances (PFAS)?

Per- and polyfluoroalkyl substances (PFAS) are a large group of human-made substances that do not occur naturally in the environment and are resistant to heat, water, and oil. PFAS have been used extensively in surface coating and protectant formulations due to their unique ability to reduce the surface tension of liquids [1]. Perfluorooctane sulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) are two types of PFAS that are no longer manufactured or imported into the United States [2]; however, there could be some imported goods containing trace amounts of these substances[3].

Other PFAS goods and materials are still produced and used in the United States [4]. PFAS are persistent in the environment, can accumulate within the human body over time, and are toxic at relatively low concentrations [5]. Exposure to unsafe levels of PFOA/PFOS may result in adverse health effects including developmental effects to fetuses during pregnancy, cancer, liver effects, immune effects, thyroid effects, and other effects (such as cholesterol changes)[6]. PFOA and PFOS were found in the blood of nearly all people tested in several national surveys[7], [8]. According to the Center for Disease Control (CDC), blood levels of both PFOS and PFOA have steadily decreased in U.S. residents since 1999-2000[9].

How are people exposed to PFOA, PFOS and other PFAS?

PFAS can be introduced into the body by eating or drinking contaminated food or liquid (including water), breathing in or touching products treated with PFAS, such as carpets or clothing [10]. Exposure to PFOA and PFOS is generally dominated by the ingestion of food [11]. Food can be contaminated by the migration of PFAS from packaging [12], and some foods such as fish, meat, eggs and leafy vegetables may contain PFAS due to bioaccumulation and crop uptake [13]. Contaminated drinking water has led to high levels of exposure to PFOA, PFOS, and other PFAS for some populations residing



near manufacturing facilities[14]. Workers in facilities that make or use PFAS can be exposed to higher amounts of these chemicals and have higher levels in their blood [15].

Infants may be exposed to PFAS through breastfeeding [16]. However, the benefits of breastfeeding are well known and generally outweigh potential risks from transfer of chemicals [17], but you can talk with your doctor if you have concerns.

Where are PFOA, PFOS and other PFAS found in the environment?

PFAS, especially PFOS and PFOA, have been detected in air, water, and soil in and around manufacturing facilities; however, these releases have been declining since companies began phasing out the production and use of several PFAS in the early

2000s[18]. Due to their chemical structure, PFAS are very stable in the environment and are resistant to breaking down.

Some PFAS are volatile and can be carried long distances through the air, which may lead to contamination of soils and groundwater far from the source of the PFAS emission [19]. PFAS have been detected in many parts of the world, including oceans and the Arctic, indicating that long-range transport is possible[20].

How does PFAS get into drinking water?

The four major sources of PFAS are: fire training/fire response sites, industrial sites, landfills, and wastewater treatment plants/biosolids[10]. PFAS can get into drinking water when products containing them are used or spilled onto the ground or into lakes and rivers[21]. Once in groundwater, PFAS are easily transported large distances and can contaminate drinking wells [10]. PFAS in the air can also end up in rivers and lakes used for drinking water[10]. Additional information regarding the fate and transport of PFAS in the environment may be found on the Interstate Technology Regulatory Council.

Are PFAS still being produced in the United States?

PFAS have been used extensively in surface coating and protectant formulations due to their unique ability to repel oil, grease and water. Major applications have included protectants for paper and cardboard packaging products, carpets, leather products, and textiles that enhance water, grease, and soil repellency, and in firefighting foams[22].

PFAS have also been used as processing aids in the manufacture of nonstick coatings on cookware[22].

Under the PFOA Stewardship Program with the U.S. Environmental Protection Agency (US EPA), eight major PFAS producers have phased out PFOA and other PFAS substances from emissions and products[2]. However, manufacturers are developing replacement technologies in the PFAS family by substituting longer-chain substances with shorter-chain substances such as GenX and ADONA [23]. While less information is available for these shorter-chain substances, studies have shown that they behave in a similar toxicological manner as their longer-chain counterparts [24], [25]. Due to the wide range of chemicals within the PFAS family and the observed similarities in their toxic mode-of-action, efforts are underway to calculate relative potency estimates for chemicals within the PFAS class in order to better inform regulation [26].

To complement the PFOA Stewardship Program, US EPA has issued regulations, known as Significant New Use Rules (SNURs), requiring manufacturers and processors of these chemicals to notify US EPA of new uses of these chemicals before they are commercialized[27]. Specifically, the regulations require that anyone who intends to manufacture (including import) or process any chemicals for uses contained in the SNUR must submit a notification to US EPA at least 90 days before beginning the activity[27].

This provides US EPA with an opportunity to review and, if necessary, place limits on manufacturers or processors who intend to reintroduce or import products with these chemicals.

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HEALTH EFFECTS

How can PFAS affect people's health?

Laboratory studies in animals who were exposed to per- and polyfluoroalkyl substances (PFAS) found links between the chemicals and increased cholesterol, changes in the body's hormones, alterations of the immunologic system, decreased fertility, increased risk of cancer (especially kidney and testicular), low birth weight, delayed puberty onset, and birth defects[1].

Since humans and animals react differently to PFAS, not all effects observed in animals may occur in humans. Although many epidemiology studies have examined the potential of PFAS to result in adverse health effects, most of the studies are cross-sectional in design and do not establish causality. Based on several factors outlined in the report of PFAS by the Center for Disease Control (CDC) including the consistency of findings across studies, the available epidemiology studies suggest associations between PFAS exposure and several health outcomes in humans [1]:

- Pregnancy-induced hypertension/pre-eclampsia (PFOA, PFOS)
- Liver damage, as evidenced by increases in serum enzymes and decreases in serum bilirubin levels (PFOA, PFOS, PFHxS)
- Increases in serum lipids, particularly total cholesterol and low-density lipoprotein (LDL) cholesterol (PFOA, PFOS, PFNA, PFDeA)
- Increased risk of thyroid disease (PFOA, PFOS)
- Decreased antibody response to vaccines (PFOA, PFOS, PFHxS, PFDeA)
- Increased risk of asthma diagnosis (PFOA)
- Increased risk of decreased fertility (PFOA, PFOS)
- Small decreases in birth weight (PFOA, PFOS)

The International Agency for Research on Cancer has classified PFOA as possibly carcinogenic (causing cancer) to humans [2], but it has not evaluated whether other PFAS may also cause cancer. The Department of Health and Human Services has not yet evaluated whether PFOA and other PFAS can cause cancer.

In August 2019, the Office of Health Hazard and Assessment (OEHHA) developed PFOA reference levels in drinking water associated with pancreatic and liver tumors. The level of 0.1 ng/L (nanogram/liter) or parts per trillion (ppt) represents the concentration of PFOA in drinking water that would not pose more than a one in one million cancer risk. OEHHA developed PFOS reference levels in drinking water associated with liver tumors. The level of 0.4 ng/L (nanogram/liter) or parts per trillion (ppt) represents the concentration of PFOS in drinking water that would not pose more than a one in one million cancer risk.

Are PFAS found in people?

CDC scientists measured PFAS in the blood serum (the clear portion of blood) of 98% of participants aged 12 years and older who took part in the National Health and Nutrition

Examination Survey (NHANES) since 1999, indicating widespread exposure to PFAS in the U.S. population [3]. Median PFOA serum levels of 45,276 non- occupationally exposed individuals residing in southeastern Ohio and West Virginia who were exposed to PFOA via contaminated drinking water were approximately 6 times greater than the median concentration of the general population [3], [4].

Due in large part to the phasing out of certain PFAS compounds by the US EPA's PFOA Stewardship Program [5], serum levels of PFOA and PFOS in the general population of the United States have decreased dramatically in recent years [3]. For example, the geometric mean concentrations of PFOA and PFOS in the general population were 5.2 and 30.4 micrograms per liter (or parts per billion, ppb), respectively, in 1999–2000, but have decreased to 1.56 ppb (PFOA) and 4.72 ppb (PFOS) in 2015–2016 [3].

Learn more about the US EPA's actions on PFAS at <https://www.epa.gov/pfas>. Learn more about the California State Water Board's actions on PFAS at <https://www.waterboards.ca.gov/pfas/>.

References

- [1] ATSDR, "Toxicological Profile for Perfluoroalkyls, Draft for Public Comment," 2018.
- [2] IARC (International Agency for Research on Cancer, "Perfluorooctanoic acid. Volume 110.," Lyon, France: World Health Organization.
- [3] CDC, "National Report on Human Exposure to Environmental Chemicals," 2019.
- [4] H.-M. Shin et al., "Environmental Fate and Transport Modeling for Perfluorooctanoic Acid Emitted from the Washington Works Facility in West Virginia," Environ. Sci. Technol., vol. 45, no. 4, pp. 1435–1442, Feb. 2011.
- [5] US EPA, "PFOA Stewardship Program Docket ID Number EPA-HQ-OPPT-2006- 0621. US Environmental Protection Agency, Washington, DC.," 2006.

¹ Out of 12 PFAS measured, four PFAS (PFOS or perfluorooctanesulfonate, PFOA or perfluorooctanoic acid, PFHxS or perfluorohexane sulfonic acid, and PFNA or perfluorononanoic acid) had detection frequencies in serum of greater than 98% of people tested.

REGULATORY

What are the per-and polyfluoroalkyl substances (PFAS) safe drinking water levels?

In May 2016, the United States Environmental Protection Agency (US EPA) issued a lifetime health advisory (LHA) for PFOA and PFOS in drinking water, advising municipalities that they should notify their customers of the presence of levels over 70 nanograms per liter (or parts per trillion) in community water supplies. The LHA is the level, or amount, calculated to offer a margin of protection against adverse health effects to the most sensitive populations. The LHA level is 70 (ppt) for PFOA and PFOS individually or combined. Currently, the US EPA has not set health advisory levels for the other PFAS chemicals.

In June 2018, the California Office of Environmental Health Hazard Assessment (OEHHA) recommended interim notification levels for PFOA (based on liver toxicity, as well as cancer risks) and for PFOS (based on immunotoxicity). OEHHA made these recommendations following its review of currently available health-based advisories and standards and supporting documentation. After independent review of the available information on the risks, the California State Water Resources Control Board's Division of Drinking Water (DDW) established interim notification levels.

In August 2019, OEHHA provided updated information on health-impacts. Based on this updated information, DDW established notification levels at concentrations of 6.5 ppt for PFOS and 5.1 ppt for PFOA, consistent with OEHHA's recommendations.

What is California doing?

A summary of California regulatory agency's actions regarding PFAS is provided below.

California State Water Board – Division of Drinking Water

Pursuant to Health and Safety Code section 116400, DDW has issued orders to public water systems requiring testing for PFOA, PFOS and certain other PFAS chemicals in March 2019. Public water system wells were selected that were adjacent to locations such as airports with fire training and response areas, and municipal solid waste landfills. Targeted testing is underway to identify the extent of contamination of drinking water sources in California. A list of public water systems and sources that are required to be sampled can be found at State Water Board's DDW website (https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/pfos_and_pfoa/pfas_watersystemorders.pdf)

More water system data will be requested in the area of other types of sources in 2019, including industrial sites. The assessment of this data will be used to determine data information gaps. Additional and more assessment will be required in the coming years.

AB 756 authorizes the State Water Board to more broadly order water systems to monitor for PFAS and report their detections.

In August 2019, California's Division of Drinking Water established notification levels for perfluorooctane sulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) (6.5 parts per trillion for PFOS and 5.1 parts per trillion for PFOA), as well as a single health advisory response level which offers a margin of protection for all persons throughout their life from adverse health effects resulting from exposure to PFOA and PFOS in drinking water. Notification levels are a nonregulatory, precautionary health-based measure for concentrations in drinking water that warrant notification and further monitoring and assessment. Public water systems are encouraged to test their water for contaminants with notification levels, and in some circumstance may be ordered to test. If the systems do test, they are required to report exceedances to their governing boards and the State Water Board and are urged to report this information to customers.

DDW also has requested that OEHHA develop public health goals (PHGs) for both PFOA and PFOS, the next step in the process of establishing regulatory standards, known as maximum contaminant levels (MCLs), in drinking water. Other chemicals in the

broader group of per- and polyfluoroalkyl substances (PFAS) may be considered later, either individually or grouped, as data permits.

On February 6, 2020, the DDW and Waterboards reduced the levels of PFOA and PFOS in drinking water that trigger responses by local water systems. The DDW and Waterboards set the new response levels to 10 ppt for PFOA and 40 ppt for PFOS based on a running four quarter average.

California State Water Board – Division of Water Quality

In coordination with DDW, the Division of Water Quality issued state-wide Water Code 13267 Orders to 226 locations (30 commercial airports and 196 municipal solid waste landfills), potential source areas of PFAS. Data from these investigations will continue to be collected until early 2020. More investigation data will be requested in the area of other types of PFAS sources in 2019, including industrial sites. Additional and more assessment will be required in the coming years.

California Office of Environmental Health Hazard Assessment

In November 2017, OEHHA added PFOA and PFOS under Proposition 65, which requires manufacturers to disclose the presence of these chemicals as a potential carcinogenic compound in materials in which they are present. Documentation supporting OEHHA's determination that the criteria for administrative listing have been satisfied for PFOA and PFOS is available on OEHHA's website (<https://oehha.ca.gov/>).

Department of Toxic Substances Control

The Department of Toxic Substances Control (DTSC) included food packaging as a product category in the Safer Consumer Products 2018-20 Work Plan due to concerns regarding exposure to PFAS and other chemicals included in food packaging, including the migration of PFAS from food packaging into packaged foods, becoming indirect food additives.

On February 15, 2018, DTSC released its Product-Chemical Profile on Carpets and Rugs with PFASs, documenting potential exposures and harm from these products. The Priority Product listing regulation triggers requirements that manufacturers look for safer alternatives. The process to make the requirements into regulations is likely to begin in the spring of 2019. The latest information about PFAS in the Safer Consumer Products program can be found on DTSC's website. (<https://dtsc.ca.gov/scp/carpets-and-rugs-with-perfluoroalkyl-and-polyfluoroalkyl-substances-pfass/>)

California Air Resources Board

In June 2018, California Air Resources Board (CARB) began a rulemaking effort to amend the Hexavalent Chromium Airborne Toxic Control Measure for Chrome Plating and Chromic Acid Anodizing Operations (Chrome Plating ATCM). Throughout this process, CARB staff is collecting information and soliciting input on ways to further reduce emissions of hexavalent chromium from chrome plating and chromic acid anodizing operations, and to address concerns about potential health and environmental impacts of PFAS-containing chemical fume suppressants. More information about CARB

is available on CARB's website (<https://ww2.arb.ca.gov/>).

[California Department of Public Health - Biomonitoring](#)

Biomonitoring California's Scientific Guidance Panel designated PFAS as a program priority. Its California Regional Exposure (CARE) study includes 12 PFAS chemicals and is analyzing sources of exposures in the Asian Pacific Islander Community Exposure projects. More information about Biomonitoring in California is provided on the Biomonitoring in California's website (<https://biomonitoring.ca.gov/>).

DRINKING WATER

What is a notification level?

A notification level is a nonregulatory, precautionary health-based measure for concentrations of chemicals in drinking water that warrant notification and further monitoring and assessment. Public water systems are encouraged to test their water for contaminants with notification levels. If the systems test, they are required to report exceedances to their governing boards and are urged by the State Water Board to report this information to customers.

Establishing notification levels based on current health studies is an initial step toward setting regulatory standards for these chemicals in drinking water. The Water Board's investigation of a broader group of PFAS chemicals in water systems and groundwater will help inform this process.

In May 2016, the United States Environmental Protection Agency (US EPA) issued a lifetime health advisory for PFOS and PFOA for drinking water, advising municipalities that they should notify their customers of the presence of levels over 70 parts per trillion in community water supplies. US EPA recommended that customer notifications include information on the increased risk to health, especially for susceptible populations.

On July 13, 2018, DDW established an interim notification level of 14 parts per trillion (ppt) for PFOA and 13 ppt for PFOS and a single response level of 70 ppt for the combined concentrations of PFOA and PFOS.

In August 2019, DDW evaluated updated health-impact information provided by OEHHA. Based on this, DDW revised the notification levels to 6.5 parts per trillion for PFOS and 5.1 parts per trillion for PFOA.

What is a response level?

A response level is a nonregulatory, precautionary health-based measure that is set higher than a notification level and represents a recommended level that water systems consider taking a water source out of service or provide treatment if that option is available to them.

In May 2016, the United States Environmental Protection Agency (US EPA) issued a lifetime health advisory for PFOS and PFOA for drinking water, advising municipalities that they should notify their customers of the presence of levels over 70 parts per trillion in community water supplies. US EPA recommended that customer notifications include

information on the increased risk to health, especially for susceptible populations.

On July 13, 2018, DDW established an interim notification level of 14 parts per trillion (ppt) for PFOA and 13 ppt for PFOs and a single response level of 70 ppt for the combined concentrations of PFOA and PFOS.

On February 6, 2020, the DDW and Waterboards reduced the levels of PFOA and PFOS in drinking water that trigger responses by local water systems. The DDW and Waterboards set the new response levels to 10 ppt for PFOA and 40 ppt for PFOS based on a running four quarter average.

What is a public health goal?

A public health goal (PHG) is a level of a contaminant in drinking water that does not pose a significant health risk. A PHG reflects the risk from long-term exposure to a contaminant and should not be used to estimate risks from short-term or acute exposure. Developed by OEHHHA, PHGs are not regulatory requirements, but instead represent non-mandatory goals.

What is a maximum contaminant level?

Maximum contaminant levels (MCLs) are health-protective drinking water standards to be met by public water systems. MCLs consider not only health risks from exposure to a chemical, but factors such as detectability and treatability, as well as costs of treatment to reduce a chemical's presence in drinking water. Health & Safety Code §116365(a) (https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=HSC§ionNum=116365) requires the State Water Board to establish a contaminant's MCL at a level as close to its PHG as is technically and economically feasible, placing primary emphasis on the protection of public health.

How do we establish maximum contaminant levels?

The first goal of the State Water Board is to establish an MCL as close as possible to the PHG. This is a complex task that involves consideration of many factors, including the following:

- What different contaminant levels are found throughout water systems in California?
- What are the population sizes that are being affected?
- What technology is available to treat our water?
- What is the cost of the treatment to treat and monitor our water?
- What amount of health benefit is achieved at each increment?

Establishing an MCL is a public process that follows the Administrative Procedures Act.

PFOA and PFOS Notification Levels:

In May 2016, the United States Environmental Protection Agency (US EPA) issued a lifetime health advisory for PFOS and PFOA for drinking water, advising municipalities that they should notify their customers of the presence of levels over 70 parts per trillion

(ppt) in community water supplies. US EPA recommended that customer notifications include information on the increased risk to health, especially for susceptible populations.

On July 13, 2018, the State Water Board established an interim notification level of 14 ppt for PFOA and 13 ppt for PFOS and a single response level of 70 ppt for the combined concentrations of PFOA and PFOS.

In August 2019, the State Water Board evaluated updated health-impact information provided by OEHHA. Based on this, the State Water Board revised the notification levels to 6.5 parts per trillion for PFOS and 5.1 parts per trillion for PFOA. The single health advisory response level (for the combined values of PFOS and PFOA) remained at 70 ppt.

On February 6, 2020, the State Water Board reduced the levels of PFOA and PFOS in drinking water that trigger responses by local water systems. The State Water Board set the new response levels to 10 ppt for PFOA and 40 ppt for PFOS based on a running four quarter average.

Testing in California Drinking Water

From 2013 to 2015, the US EPA, under the Unregulated Contaminant Monitoring Rule (UCMR 3), required all large water systems (i.e., water systems serving over 10,000 people) nationwide to collect and analyze more than 12,000 drinking water samples for PFOS and PFOA. In addition, some water systems serving less than 10,000 people reported approximately 400 drinking water results for PFOS and PFOA. This occurrence data identified 36 sources with PFOS detections and 32 sources with PFOA detections. A summary of the findings for California is available on the [EPA website](https://www.epa.gov/dwucmr/occurrence-data-unregulated-contaminant-monitoring-rule) (<https://www.epa.gov/dwucmr/occurrence-data-unregulated-contaminant-monitoring-rule>).

In March 2019, the Division of Drinking Water issued Health and Safety Code 116400 Orders to 600 water system sites, and nearly 250 locations such as airports with fire training and response areas, and municipal solid waste landfills are being reported to the State Water Boards and will continue to be collected until into early 2020. More water system data will be requested in the area of other types of sources in 2019, including industrial sites. The assessment of this data will be used to determine data information gaps. Additional and more assessment will be required in the coming years.

Testing Methods in California Drinking Water

Some analytical methods using liquid chromatography-mass spectrometry-electrospray ionization methods (LC/MS/ESI) can achieve reporting limits for PFOA and PFOS at the nanogram per liter (ng/L) level. For the UCMR 3 monitoring program, LC/MS/MS-EPA Method 537 (rev 1.1) was required with minimum reporting limits of 20 ng/L and 40 ng/L for PFOA and PFOS, respectively. In November 2018, revised US EPA Method 537.1 was published that can detect PFOA, PFOS, and 16 other per- and polyfluorinated alkyl substances. Compliance with the recently changed NLs to 5.1 ng/L (PFOA) and 6.5 ng/L (PFOS) will require reporting limits lower than what can be achieved with US EPA Method 537. US EPA Method 537.1 is reported to be able to achieve lowest concentration minimum reporting levels (LCMRL) of 0.82 ng/L (PFOA) and 2.7 ng/L

(PFOS). An LCMRL is defined as the lowest true concentration for which the future recovery is predicted to fall, with 99% confidence, between 50 and 150% recovery of the matrix spike (US EPA, Method 537.1, 2018).

Further information regarding PFAS in drinking water may be found at the [Division of Drinking Water PFOA/PFOS webpage](https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/PFOA_PFOS.html) (https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/PFOA_PFOS.html).

If a water system detects PFOA or PFOS in the source water, what is required to be done?

When chemicals are found at concentrations greater than their notification levels in drinking water that is provided to consumers, certain noticing requirements and recommendations apply. DDW recommends that the water system inform its customers and consumers about the presence of the chemical, and about health concerns associated with exposure to it.

To provide consumer notice, the utility may use its annual Consumer Confidence Report, a separate mailing, or other method. DDW strongly recommends that a water system provide annual notification if a source that exceeds a notification level continues to be used.

When chemicals exceed their response levels in drinking water, DDW recommends that water systems consider taking a water source out of service or provide treatment if that option is available to them. Under AB 756, drinking water sources with PFAS levels above the response level are either to be taken out of service or the water system must provide public notice of the exceedance level.

How will results of the PFAS sampling be made public?

All chemical compounds required to be sampled by public water systems are to be included in the annual Consumer Confidence Report required by Health and Safety Code section 116455.

The State Water Board will also provide a map of the sampling completed to date by the end of the summer 2019. The map along with a spreadsheet of all available data will be made available to the public.

PFAS LABORATORY TESTING & SAMPLING

What are the testing methods for PFAS?

Some analytical methods using liquid chromatography-mass spectrometry-electrospray ionization methods (LC/MS/ESI) can achieve reporting limits for perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS) at the nanogram per liter (ng/L) or parts per trillion, ppt) level. For the US EPA's Third Unregulated Contaminant Monitoring Rule (UCMR 3) study, LC/MS/MS-EPA Method 537 (rev 1.1) was required with minimum reporting limits of 20 ng/L and 40 ng/L for PFOA and PFOS, respectively [1], [2].

In November 2018, revised US EPA Method 537.1 was published that can detect PFOA,

PFOS, and 16 other per- and polyfluorinated alkyl substances (PFAS) [3].

US EPA Method 537.1 is reported to be able to achieve lowest concentration minimum reporting levels (LCMRL) of 0.82 ng/L (PFOA) and 2.7 ng/L (PFOS). An LCMRL is defined as the lowest true concentration for which the future recovery is predicted to fall, with 99% confidence, between 50 and 150% recovery of the matrix spike.

Laboratories have developed proprietary modified methods of US EPA Method 537, which have been adapted to account for additional media (wastewater, sludge, soil, sediments, tissue, etc.). These methods use LC-MS/MS with isotopically labeled standards to calculate recovery. Analyte lists currently vary from 24-39 PFAS compounds.

Are labs accredited by the California Environmental Laboratory Accreditation Program to test for PFAS?

The California Environmental Laboratory Accreditation Program (ELAP) accredits environmental laboratories that analyze environmental samples for regulatory purposes/compliance. In July 2018, ELAP began offering accreditation for US EPA Method 537 revision 1.1 (method is limited to 14 PFAS compounds in potable water samples) and US EPA Method 537.1 in September 2018.

As of April 3, 2019, ELAP's website posted the announcement for PFAS analysis for non-drinking water matrices. Based on qualified laboratories accredited by the Department of Defense to use the proprietary LC-MS/MS with isotopically labeled standard methods as specified in Table B-15 of Quality Systems Manual version 5.1 (or later)[4], California ELAP will certify up to 38 PFAS analytes.

Further information on labs accredited by ELAP to analyze PFAS (drinking water and non-drinking water matrices) may be found on the ELAP website: (https://www.waterboards.ca.gov/drinking_water/certlic/labs/).

What sample containers or other materials will I need for testing?

The laboratory that you choose should provide sampling materials for you to use, which will include PFAS-free sample bottles. It is important to use these for sample collection. Many laboratories only accept samples returned in their sample containers and may qualify your test results from any other container; it is highly recommended you only use the materials sent from the lab that have been verified to be PFAS-free.

General sampling guidance for non-drinking water and drinking water samples is provided on the Waterboard's PFAS website (<https://www.waterboards.ca.gov/pfas/>).

As a public water system customer, how can I sample my water for PFAS?

Sampling and testing require strict adherence to sampling procedures and care to avoid errors or misleading test results. DDW recommends you contact your water system for assistance. If the water system cannot assist you, DDW recommends using an accredited laboratory. (Laboratory map: https://www.waterboards.ca.gov/drinking_water/certlic/labs/)

References

- [1]J. Shoemaker, P. . Grimmer, and B. K. Boutin, “Method 537. Determination of selected perfluorinated alkyl acids in drinking water by solid phase extraction and liquid chromatography/tandem mass spectrometry (LC/MS/MS). Version 1.1.” USEPA, 2009.
- [2]US Environ. Prot. Agency, “Revisions to the Unregulated Contaminant Monitoring Regulation (UCMR 3) for public water systems. A proposed rule by the Environmental Protection Agency. March 3. No. 2011-4691,” Fed Regist, vol. 76, no. 42, pp. 11713–37, 2011.
- [3]J. Shoemaker and D. Tettendorst, “Method 537.1: Determination of Selected Per- and Polyfluorinated Alkyl Substances in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS).,” U.S. Environmental Protection Agency, Office of Research and Development, National Center for Environmental Assessment, Washington, DC, 2018.
- [4]Department of Defense (DoD), “DoD Quality Systems Manual Version 5.1,” 2017.

TREATMENT & REMEDIATION

What treatment techniques are used to reduce per- and polyfluoroalkyl (PFAS) levels in drinking water?

Most conventional water treatment techniques (i.e. coagulation/sedimentation/filtration, chlorination, ozonation, UV/H₂O₂) are ineffective for reducing PFAS levels in drinking water. Several treatments have shown to be effective in the removal of PFAS from drinking water. Promising techniques include granular activated carbon (GAC), powdered activated carbon (PAC), high pressure membranes (reverse osmosis/nanofiltration) and ion exchange resin.

Activated carbon treatment is the most studied treatment for PFAS removal. Activated carbon is commonly used to adsorb natural organic compounds, taste and odor compounds, and synthetic organic chemicals in drinking water treatment systems.

Adsorption is both the physical and chemical process of accumulating a substance, such as PFAS, at the interface between liquid and solids phases. Activated carbon is an effective adsorbent because it is a highly porous material and provides a large surface area to which contaminants may adsorb. Activated carbon (GAC) is made from organic materials with high carbon contents such as wood, lignite, and coal; and is often used in granular form called **granular activated carbon (GAC)**.

GAC has been shown to effectively remove PFAS from drinking water when it is used in a flow through filter mode after particulates have already been removed. GAC works well on longer-chain PFAS like PFOA and PFOS, but shorter chain PFAS like Perfluorobutanesulfonic acid (PFBS) and Perfluorobutyrate (PFBA) do not adsorb as

well.

Another type of activated carbon treatment is **powdered activated carbon (PAC)** which is the same material as GAC, but it is smaller in size- powder like. Because of the small particle size, PAC cannot be used in a flow through bed, but can be added directly to the water and then removed with the other natural particulates in the clarification stage (conventional water treatment or low-pressure membranes - microfiltration or ultrafiltration). Used in this way, PAC is not as efficient or economical as GAC at removing PFAS.

Another treatment option is **anion exchange treatment**, or resins. Ion exchange resins are made up of highly porous, polymeric material that is acid, base, and water insoluble. The tiny beads that make up the resin are made from hydrocarbons. There are two broad categories of ion exchange resins: cationic and anionic. The negatively charged cationic exchange resins (CER) are effective for removing positively charged contaminants and positively charged anion exchange resins (AER) are effective for removing negatively charged contaminants, like PFAS. Ion exchange resins are like tiny powerful magnets that attract and hold the contaminated materials from passing through the water system. Negatively charged ions of PFAS are attracted to the positively charged anion resins. AER has shown to have a high capacity for many PFAS; however, it is typically more expensive than GAC. Of the different types of AER resins, perhaps the most promising is an AER in a single use mode followed by incineration of the resin. One benefit of this treatment technology is that there is no need for resin regeneration so there is no contaminant waste stream to handle, treat, or dispose.

Like GAC, AER removes 100 percent of the PFAS for a time that is dictated by the choice of resin, bed depth, flow rate, which PFAS need to be removed, and the degree and type of background organic matter and other contaminants.

High-pressure membranes, such as nanofiltration or reverse osmosis (RO), are extremely effective at removing PFAS. RO membranes are tighter than nanofiltration membranes. Research shows that these types of membranes are typically more than 90 percent effective at removing a wide range of PFAS, including shorter chain PFAS. With both high-pressure membrane types, approximately 80 percent of the feedwater, the water coming into the membrane, passes through the membrane to the effluent (treated water). Approximately 20 percent of the feedwater is retained as a high-strength concentrated waste. A high-strength waste stream at 20 percent of the feed flow can be difficult to treat or dispose, especially for a contaminant such as PFAS. High pressure membranes may be best suited as a point of use technology for a homeowner, since the volume of water being treated is much smaller and the waste stream could be disposed of more easily with less cause for concern.

Treatment & Remediation Table

	Granular Activated Carbon (GAC)	Powdered Activated Carbon (PAC)	Anion Exchange Resin (PFAS Selective)	High Pressure Membranes (Reverse Osmosis or Nanofiltration)
Short-Chain PFAS (i.e. PFBA) Removal	Moderately Effective	Not Effective	Moderately Effective	Effective
Long-Chain PFAS (i.e. PFOA, PFOS) Removal	Very Effective	Moderately Effective	Very Effective	Effective
Co-contaminant Removal	Very Effective	Not Effective	Moderately Effective	Very Effective
Relative Cost (\$-\$\$\$\$)	\$-\$\$	\$\$	\$\$\$	\$\$\$\$
Disposal Requirements	Difficult	Difficult	Difficult	Difficult
Challenges	Desorption can diminish effectiveness when influent concentrations are variable; fate of PFASs during thermal regeneration not understood	Performance dependent on activated carbon properties and background water matrix	Performance dependent on resin properties; background water matrix effects unexplored	High energy requirement; membrane fouling; concentrate needs to be managed

- [ITRC fact sheet: Naming Conventions and Physical and Chemical Properties of PFAS](https://pfas-1.itrcweb.org/wp-content/uploads/2018/03/pfas_fact_sheet_naming_conventions__3_16_18.pdf) (https://pfas-1.itrcweb.org/wp-content/uploads/2018/03/pfas_fact_sheet_naming_conventions__3_16_18.pdf)



(<https://baywest.com>)



WHAT DOES 4 PARTS PER TRILLION LOOK LIKE?



08/05/2024

The Environmental Protection Agency has set the maximum contaminant level (MCL) for perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS) at 4 parts per trillion (ppt). These substances are part of a larger group called per- and polyfluoroalkyl substances (PFAS) and are known as “forever chemicals” because they are highly persistent and can accumulate over time in the environment and the human body. These minuscule concentrations can be difficult to visualize, yet they have significant implications for our health and the environment. Four ppt is an incredibly low concentration and can be challenging to get your head wrapped around. So, let’s compare this to something more tangible.

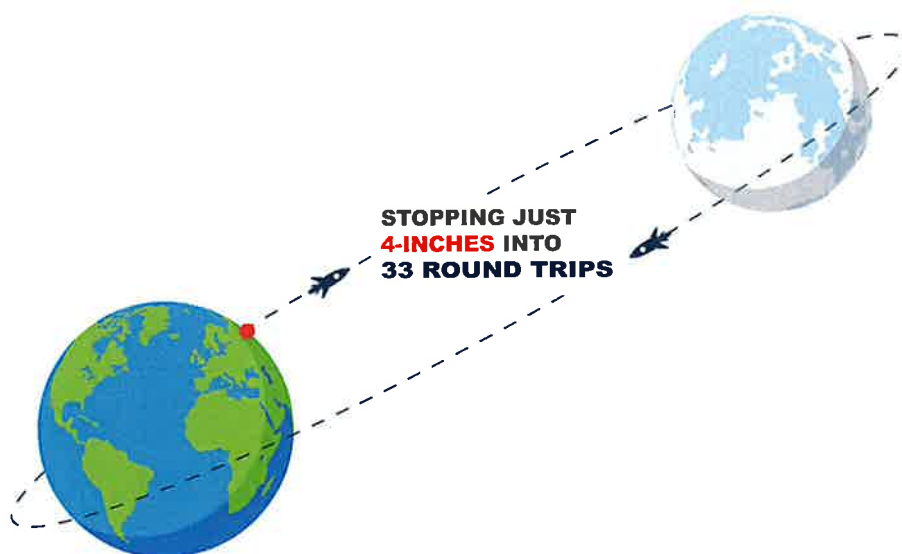


(<https://baywest.com>)

FIVE OLYMPIC SWIMMING POOLS



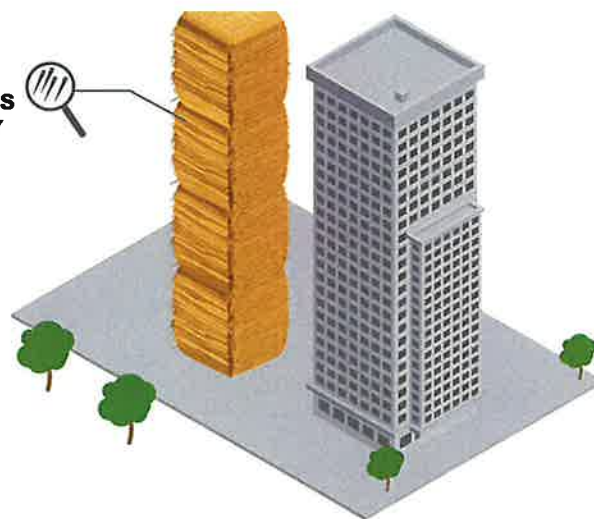
A single drop of water is about 0.05 milliliters. An Olympic-sized swimming pool holds 2.5 million liters of water, which is equivalent to 50 billion drops of water. If you were to put a single drop of black food coloring in an Olympic pool, it would hardly be noticeable. At 4 ppt, you would need to dilute one drop of PFAS in five Olympic-sized swimming pools to meet the MCL. It's almost undetectable. This is why it's crucial for samplers to follow proper procedures to prevent any possible cross-contamination of water samples.



Now, let's switch gears and talk about distance instead of liquid volume. The moon is approximately 238,900 miles from Earth, which is about 15,136,704,000 inches. This means you would have to make 33 round trips to the moon to travel a trillion inches. Just to give you a sense of scale, if you prepared to make 33 trips to the moon and back, and then stopped just 4 inches into your trip, that would be the equivalent of 4 ppt.



(<https://baywest.com>)



Consider another common analogy of finding a needle in a haystack. A typical haystack might contain around a million pieces of hay. Let's scale that up to a haystack containing one trillion pieces of hay – this would be roughly equivalent to the height of a 24-story building. Detecting 4 ppt is akin to finding four needles in a 24-story-tall haystack.

Understanding the concept of parts per trillion helps highlight just how miniscule yet significant these measurements are. According to the Center for Disease Control and Prevention, there are 5 micrograms per liter of PFOS in your blood right now. This means your blood has 1,250 times the allowable limit of PFOS in drinking water. So please, be cautious and avoid getting cut if you go swimming!

At Bay West, we offer full-spectrum PFAS solutions (<https://baywest.com/service/pfas-management-and-solutions/>), from detection to destruction. Our extensive experience and advanced technologies enable us to tackle the complexities of PFAS contamination, provide solutions, and ensure the safety and health of our clients and the environment.

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City of Live Oak Report to City Council

Meeting Date:	February 19, 2025
Title:	Assignment of Public Information Officer Responsibilities/Tasks
Contact Information:	Rick Crabtree, Interim City Manager
Background:	At this meeting, the Council will discuss possible assignment of the Public Information Officer role to a staff member. Discussion will include what the Council's expectations are of this role.
Recommendation:	Discussion and possible direction.