



Why Is the Navy Sampling for PFOS and PFOA?

Additional information can be found online at www.secnav.navy.mil/eie/pages/pfc-pfas.aspx

For updates as more information becomes available, visit <http://go.usa.gov/xkMBc>

If you have specific questions, please contact PAO_feedback@navy.mil (email) or 360-396-1030 (voicemail)

The Navy is being protective by identifying potential exposure to unregulated compounds (PFAS) in drinking water. The Navy is taking responsibility for our previous operations.

- The Navy used AFFF, a source of PFAS, for fire fighting.
- The EPA established a lifetime health advisory (70 ppt) for two PFAS, specifically PFOS and PFOA, in drinking water.
- Navy policy is to identify and prioritize locations with the potential for exposure to PFOS and/or PFOA.
- The Navy has tested and continues to test for PFOS and PFOA in drinking water to prevent exposure and protect human health.



AFFF	aqueous film forming foam	PFAS	per- and polyfluoroalkyl substances
EPA	U.S. Environmental Protection Agency	PFOA	perfluorooctanoic acid
LHA	lifetime health advisory	PFOS	perfluorooctane sulfonate
OLF	Outlying Landing Field	ppt	parts per trillion

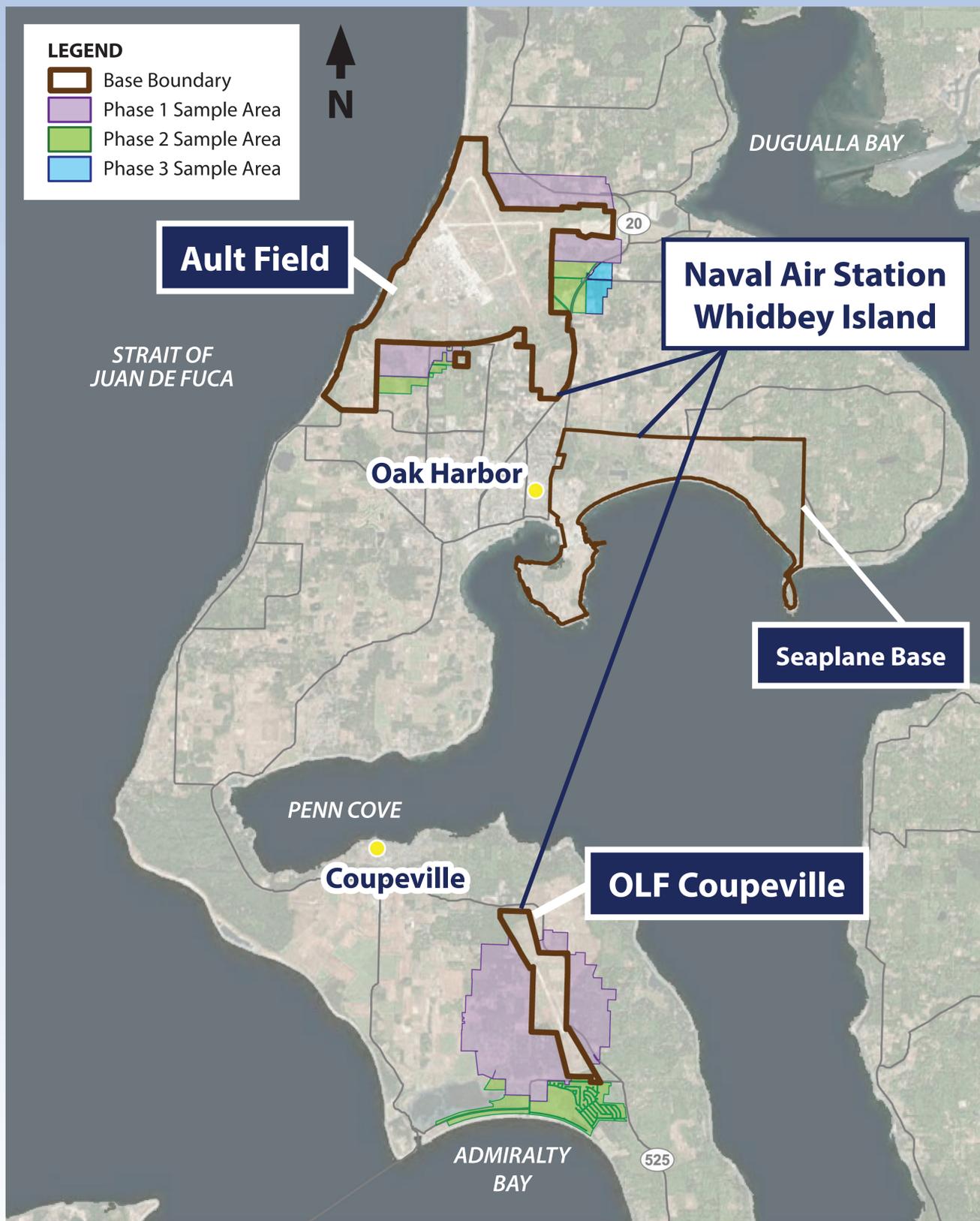


Off-base Drinking Water Sampling near Ault Field and OLF Coupeville

Additional information can be found online at www.secnv.navy.mil/eie/pages/pfc-pfas.aspx

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Drinking Water and Groundwater Investigations

Drinking water and groundwater investigations for Naval Air Station Whidbey Island are ongoing due to confirmed releases of AFFF at Ault Field locations and evidence of AFFF release at OLF Coupeville.

Phase 3 Decision Making Process

- Ault Field: The Phase 3 sampling area includes a step-out a half-mile in the direction of groundwater flow from a Phase 2 exceedance of the PFOS and/or PFOA LHA.
- OLF Coupeville: A Phase 3 sampling area will not be established as Phase 2 data did not identify any additional drinking water samples above the LHA.
- The Navy provides bottled water if PFOS and/or PFOA results exceed LHA.
- If your property is in the Phase 1 or 2 sampling areas and has not been sampled, the Navy will still sample your well.

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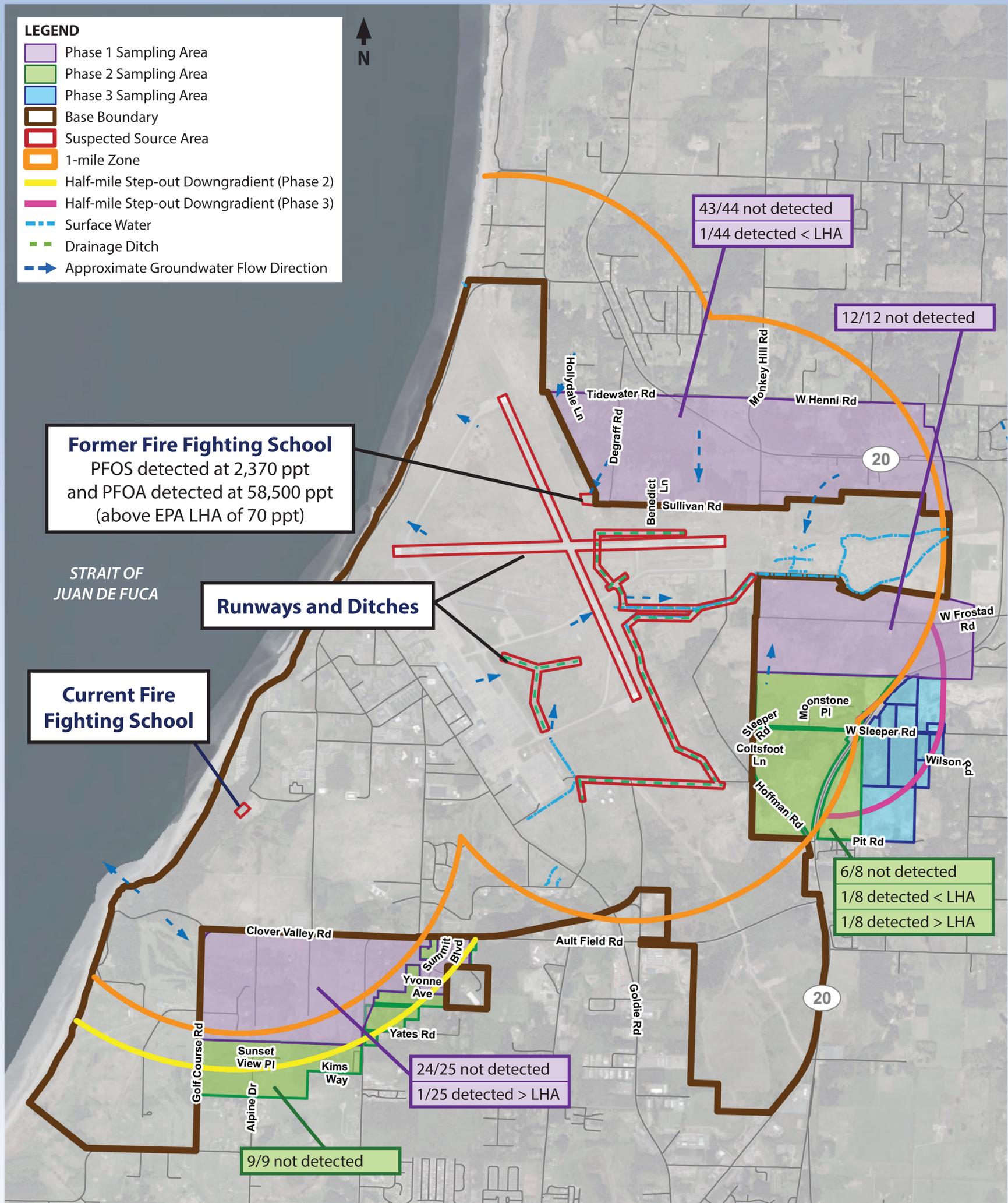


Ault Field Drinking Water Investigation

Additional information can be found online at www.secnv.navy.mil/eie/pages/pfc-pfas.aspx

For updates as more information becomes available, visit <http://go.usa.gov/xkMBc>

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Note: Figure represents PFOS and/or PFOA detection results for unique wells sampled.

AFFF	aqueous film forming foam	OLF	Outlying Landing Field	PFOS	perfluorooctane sulfonate
EPA	U.S. Environmental Protection Agency	PFAS	per- and polyfluoroalkyl substances	ppt	parts per trillion
LHA	lifetime health advisory	PFOA	perfluorooctanoic acid		



Ault Field Drinking Water Investigation Timeline

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Ault Field Results Summary

PFAS Known and Suspected Release Locations on Ault Field

- Former Fire Fighting School
 - Two on-base monitoring wells > EPA LHA for PFOS and PFOA
- Runways and potential migration into adjacent runway ditches
- Current Fire Fighting School
 - No groundwater sampling has been conducted

Nov 28–Jan 28: PFAS Off-base Sampling – Phase 1

- 176 properties identified in Phase 1 sampling area
- 55 drinking water samples collected in Phase 1 sampling area during Phase 1 sampling
- Two sampling results with PFOS and/or PFOA detections < EPA LHA
- Bottled water provided to one property with sampling result > EPA LHA for PFOS and/or PFOA

Feb 20–Mar 4: PFAS Off-base Sampling – Phase 2

- Expanded sampling area based on validated Phase 1 off-base drinking water results and additional information; extends a half-mile downgradient of LHA exceedance and accounts for uncertainty in groundwater flow
- 60 properties identified in Phase 2 sampling area
- 17 drinking water samples collected in Phase 2 sampling area
- 27 additional water samples collected in Phase 1 sampling area during Phase 2 sampling
- Bottled water provided to one additional property with sampling results > EPA LHA for PFOS and/or PFOA

June 5–10 PFAS Off-base Sampling – Phase 3

- Expanded sampling area based on validated Phase 2 off-base drinking water results; extends a half-mile downgradient of LHA exceedance
- 14 properties identified in Phase 3 sampling area; letters requesting sampling sent late May 2017
- Phase 3 sampling scheduled for June 2017
- If your property is within the Phase 1 or Phase 2 sampling areas and your drinking water well was not previously sampled, the Navy requests to sample your well during Phase 3 sampling.

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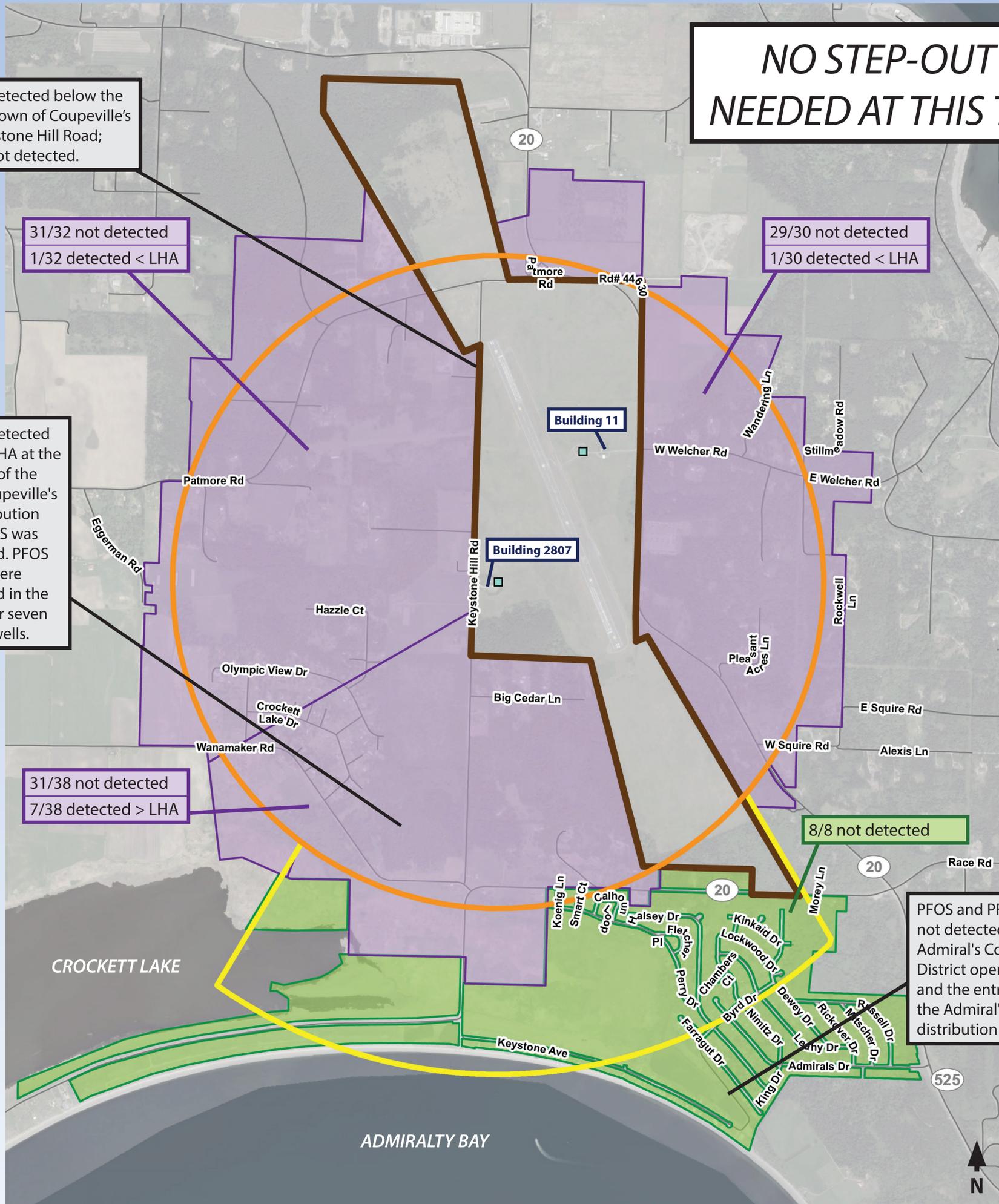


OLF Coupeville Drinking Water Investigation

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For updates as more information becomes available, visit <http://go.usa.gov/xkMBC>

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PFOA was detected below the LHA in the Town of Coupeville's well on Keystone Hill Road; PFOS was not detected.

31/32 not detected
1/32 detected < LHA

NO STEP-OUT IS NEEDED AT THIS TIME.

29/30 not detected
1/30 detected < LHA

PFOA was detected below the LHA at the entry point of the Town of Coupeville's water distribution system; PFOS was not detected. PFOS and PFOA were not detected in the Town's other seven Fort Casey wells.

31/38 not detected
7/38 detected > LHA

8/8 not detected

PFOS and PFOA were not detected in the Admiral's Cove Water District operating wells and the entry point of the Admiral's Cove water distribution system.

LEGEND

- Phase 1 Sampling Area
- Phase 2 Sampling Area
- Base Boundary
- OLF Drinking Water Well
- 1-mile Zone
- Half-mile Step-out Downgradient

Note: Figure represents PFOS and/or PFOA detection results for unique wells sampled.

AFFF aqueous film forming foam
 EPA U.S. Environmental Protection Agency
 LHA lifetime health advisory

OLF Outlying Landing Field
 PFAS per- and polyfluoroalkyl substances
 PFOA perfluorooctanoic acid

PFOS perfluorooctane sulfonate
 ppt parts per trillion



OLF Coupeville Drinking Water Investigation Timeline

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OLF Coupeville Results Summary

On-base Sampling at OLF Coupeville

- One detection of PFOA < EPA LHA in drinking water well at Building 2807; PFOS and PFOA not detected in drinking water well at Building 11
- Navy initiated site inspection at OLF Coupeville to define the source of PFOS and/or PFOA release and to determine groundwater flow

Nov 28–Jan 28: PFAS Off-base Sampling – Phase 1

- 397 properties identified in Phase 1 sampling area
- 75 drinking water samples collected in the Phase 1 sampling area, including the Town of Coupeville water distribution system
- Three sampling results with PFOS and/or PFOA detections < EPA LHA (including Town of Coupeville distribution point)
- Bottled water provided to eight properties (seven wells) with sampling result > EPA LHA for PFOS and/or PFOA

Feb 20–Mar 4: PFAS Off-base Sampling – Phase 2

- Expanded sampling area based on validated Phase 1 off-base drinking water results; extends a half-mile downgradient of LHA exceedance and accounts for uncertainty of groundwater flow
- 795 additional properties identified for Phase 2; of these properties, 768 serviced by and/or within the Admiral's Cove Water District
- Nine drinking water samples collected (eight wells and the entry point of Admiral's Cove water distribution system)
- 26 additional water samples collected in Phase 1 sampling area during Phase 2 sampling
- PFOS and/or PFOA not detected in any sample taken within the Phase 2 sampling area
- At this time, the Navy is not planning to expand the sampling area at OLF Coupeville. If your property is within the Phase 1 or Phase 2 sampling areas and your drinking water well was not previously sampled, the Navy requests to sample your well during Phase 3 sampling.

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 LHA lifetime health advisory

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Understanding Data Packages

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The result for PFOS:

PFOS was detected in the sample at 0.022 µg/L (0.022 ppb or 22 ppt).

The "J" qualifier means that the result detected is an estimated level.

The result for PFOA:

PFOA was detected in the sample at 0.015 µg/L (0.015 ppb or 15 ppt).

The "M" qualifier means that laboratory staff had to further verify the value the instrument produced.

The result for PFBS:*

PFBS was not detected in the sample.

The "U" qualifier means that the compound was not detected with a high degree of confidence at the LOD.

$$1 \mu\text{g/L} = 1 \text{ ppb} = 1,000 \text{ ppt}$$

microgram(s) per liter part(s) per billion part(s) per trillion

$$0.010 \mu\text{g/L} = 0.010 \text{ ppb} = 10 \text{ ppt}$$

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.:

SDG No.:

Client Sample ID: WI-CV- -1116 Lab Sample ID:

Matrix: Water Lab File ID:

Analysis Method: 537 Date Collected: 11/28/2016 16:59

Extraction Method: 537 Date Extracted: 12/02/2016 07:42

Sample wt/vol: 267.2 (mL) Date Analyzed: 12/07/2016 22:25

Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1

Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)

% Moisture: GPC Cleanup: (Y/N) N

Analysis Batch No.: 140946 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.022	J	0.056 (56 ppt)	0.045 (45 ppt)	0.015 (15 ppt)
335-67-1	Perfluorooctanoic acid (PFOA)	0.015	J M	0.028 (28 ppt)	0.022 (22 ppt)	0.0088 (8.8 ppt)
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13 (130 ppt)	0.10 (100 ppt)	0.045 (45 ppt)

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		70-130
STL00996	13C2 PFDA	114		70-130

This column identifies the data qualifiers that apply to a given result.

The limit of quantitation (LOQ) is the lowest level at which the laboratory can reliably measure this compound with a known degree of confidence and accuracy.

The limit of detection (LOD) is the lowest level at which the laboratory can reliably "see" this compound is **not** present.

The detection limit (DL) is the lowest level at which the laboratory can reliably "see" that this compound is present.

* There is not a health advisory level for PFBS; therefore, no action is currently being taken based on this result. This chemical has health effects information that can be used to evaluate potential impact under the Navy's Environmental Restoration Program.

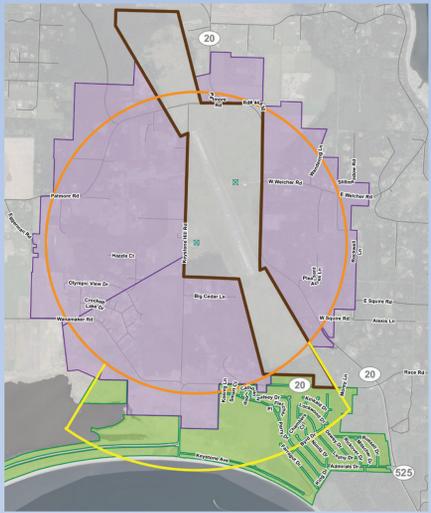


OLF Coupeville Site Inspection

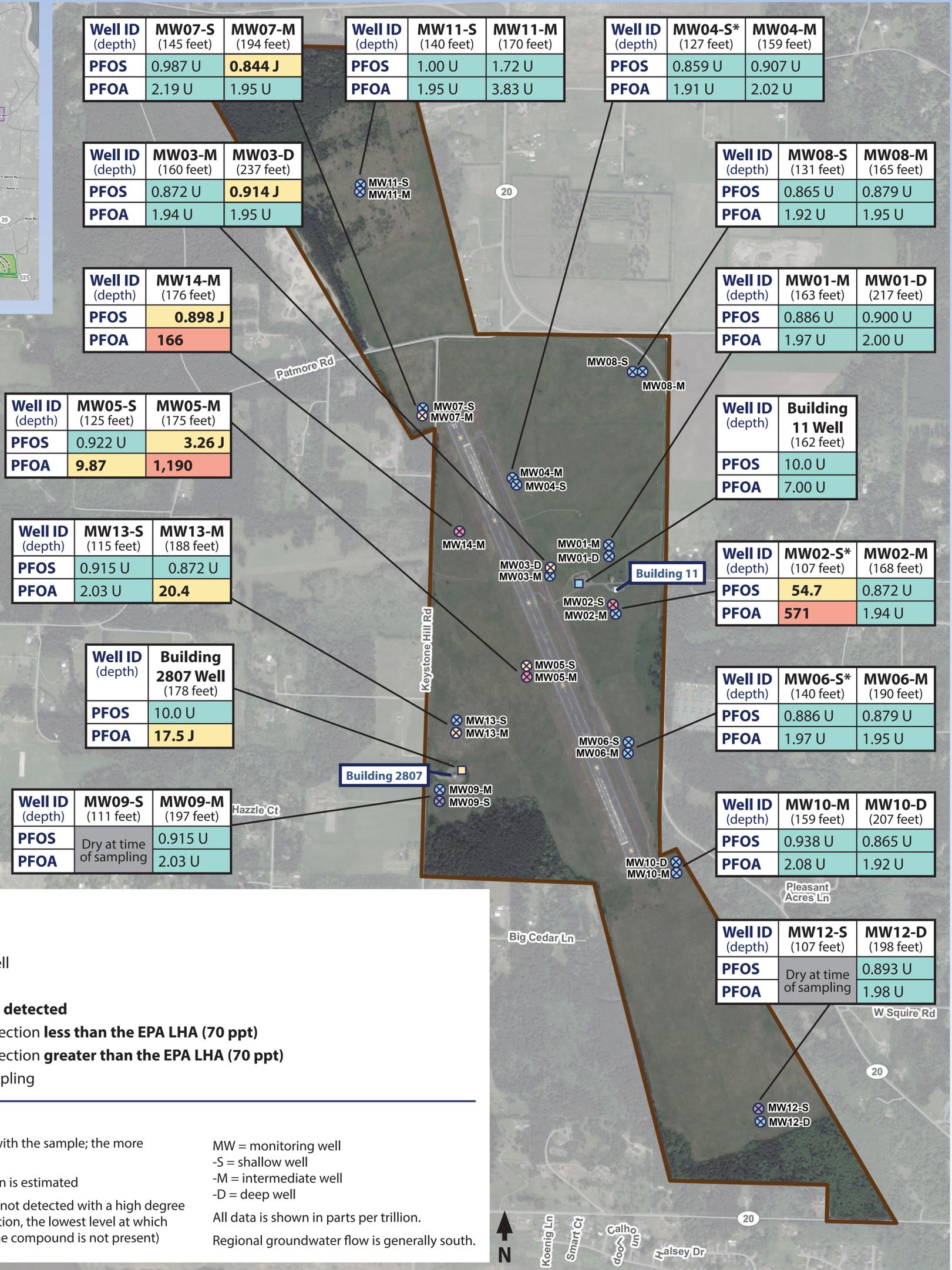
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OLF Coupeville Drinking Water Sampling Areas



LEGEND

- Base Boundary
- OLF Drinking Water Well
- Monitoring Well
- PFOS and/or PFOA not detected
- PFOS and/or PFOA detection less than the EPA LHA (70 ppt)
- PFOS and/or PFOA detection greater than the EPA LHA (70 ppt)
- Well dry at time of sampling

Notes:

* A field duplicate was collected with the sample; the more conservative result is reported.

J = analyte detected, concentration is estimated

U = not detected (compound was not detected with a high degree of confidence at the limit of detection, the lowest level at which the laboratory can reliably "see" the compound is not present)

MW = monitoring well
 -S = shallow well
 -M = intermediate well
 -D = deep well

All data is shown in parts per trillion.
 Regional groundwater flow is generally south.



OLF Coupeville Site Inspection

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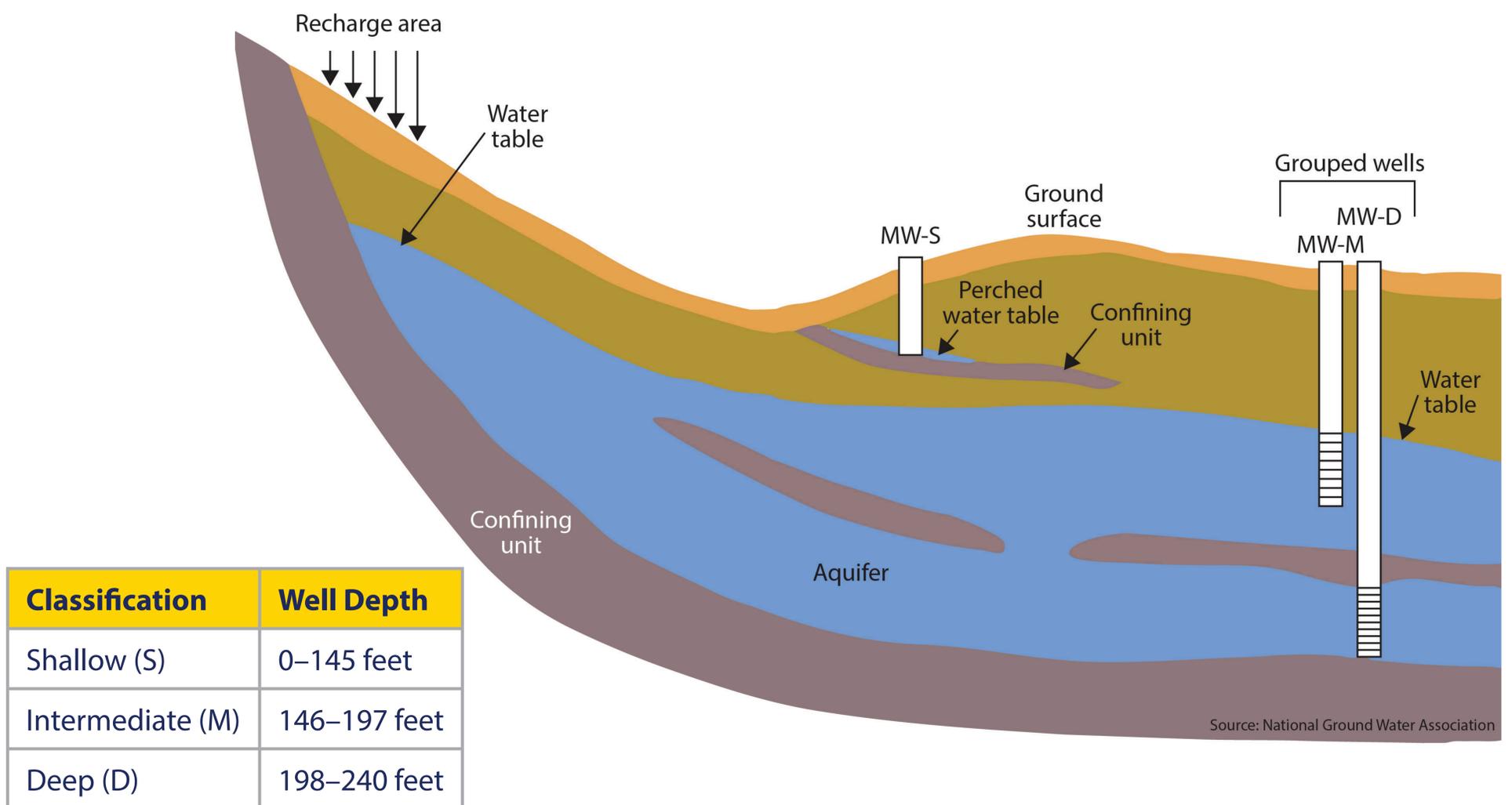
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Objectives of Site Inspection

- Developing conceptual site model
 - Measuring PFOS and PFOA concentrations
 - Determining aquifer characteristics, including groundwater flow and direction
 - Identifying potentially impacted off-base drinking water wells based on on-base groundwater results
- Partnering with stakeholders in activities that include:
 - Evaluating site data and information
 - Planning additional investigation to fill any data gaps
 - Identifying potential removal actions
 - Developing path forward and continuing public outreach

Example Conceptual Site Model



AFFF aqueous film forming foam
 EPA U.S. Environmental Protection Agency
 LHA lifetime health advisory

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 PFAS per- and polyfluoroalkyl substances
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Path Forward

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Removal Actions

May be implemented at any time within the process

- A response implemented in an expedited manner to address situations that require prompt action
- Removal action response type is based on situation, urgency, and required planning period

- **Emergency Removal Action**
Response required immediately

The Navy will provide bottled water for cooking and drinking to households whose water exceeds the EPA LHA for PFOS and/or PFOA.

- **Time-Critical Removal Action**

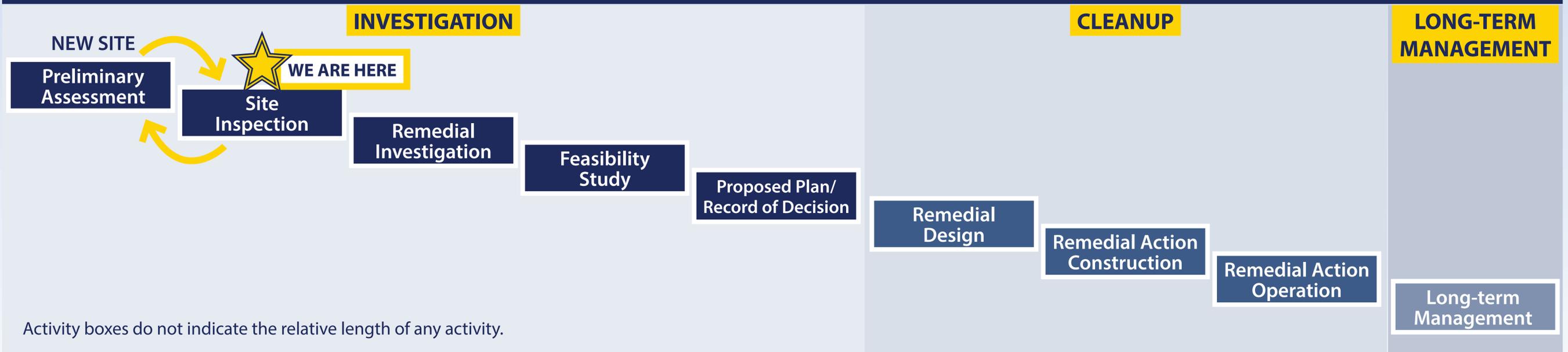
- **Non-Time-Critical Removal Action**

Time-Critical and Non-Time-Critical Removal Actions may include:

- Point of service treatment
- Hook up to alternative source
- Drinking water monitoring
- New well
- Others to be determined

The Navy will be involved until necessary actions are complete.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Implementation Process



AFFF aqueous film forming foam
EPA U.S. Environmental Protection Agency

LHA lifetime health advisory
OLF Outlying Landing Field

PFAS per- and polyfluoroalkyl substances
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Per- and Polyfluoroalkyl Substances (PFAS)

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Where Do PFAS Come From?

- Manufactured compounds, no natural occurrence
- Used since 1950s in many products
- Last a long time in the environment
- Globally distributed and detected in people, wildlife, and fish



AFFF



carpets



fabrics



paints and stains



nonstick cookware



food packaging

What Is the EPA Health Advisory for PFOS and PFOA?

- Sets a concentration of 70 ppt in drinking water
- Protects against adverse health effects to sensitive populations and the general public, even for lifetime exposure
- Compares the total concentration of both PFOS and PFOA found to the 70 ppt advisory
- Provides information to state agencies and public health officials on health effects and treatment so they can take steps to reduce exposures
- Is non-enforceable

How Is the EPA Health Advisory Calculated?

- Based on studies of health effects with PFOS and PFOA in laboratory animals
- Considers information regarding health effects of people exposed to PFOS and PFOA
- Protects sensitive populations including the fetuses or nursing infants of mothers who are exposed
- Assumes 20 percent of overall exposure is from drinking water, 80 percent of exposures is from other sources

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ATSDR	Agency for Toxic Substances and Disease Registry	OLF	Outlying Landing Field
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Exposure and Health Effects

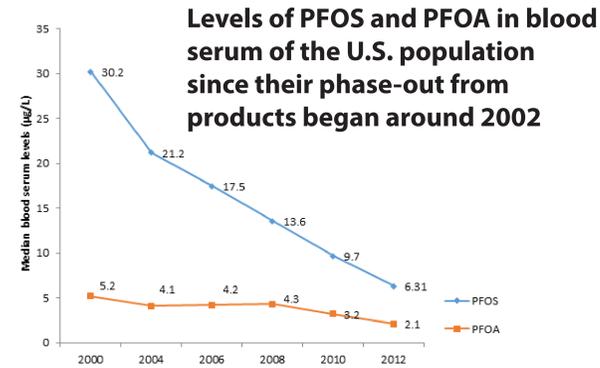
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PFAS in People

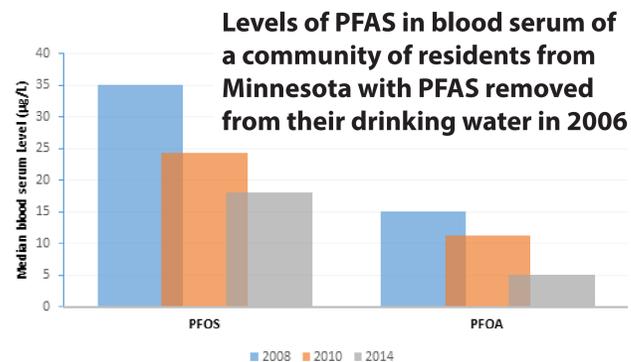
- CDC monitoring estimates that most people in the U.S. have PFAS in their bodies.
- Levels of PFOS and PFOA are going down over time following their phase-out from use.
- Some PFAS stay in the body a long time – there is no recommended medical treatment to reduce PFAS in the body.



Source: CDC National Health and Nutrition Examination Survey)

Exposures to PFAS

- Appear to be widespread across the globe
- Are primarily through
 - Ingestion of contaminated food, water, or soil
 - Breathing air that contains contaminated dust from carpets, upholstery, clothing, etc.
- Will build up in the body until exposure stops
- Reach the fetuses or nursing infants of mothers who are exposed
- Are not significant through skin contact when bathing or showering



Source: Minnesota Department of Health. Available from: <http://www.health.state.mn.us/divs/hpcd/tracking/biomonitoring/projects/emetro-landing.html>

How To Reduce Exposure

- If water contains PFOS and PFOA above the health advisory level, you can reduce exposure by using a different water source for drinking, cooking, and brushing teeth.
- Use certified granular activated carbon or high-pressure membrane systems, such as reverse osmosis, to filter water. These treatment systems require ongoing maintenance.

Health Effects

- Based on limited evidence from studies with people, the potential health effects include:
 - Increased cholesterol levels
 - Changes in growth, learning, and behavior of the developing fetus and child
 - Immune system changes
 - Decreased fertility
 - Altered thyroid function
 - Increased the risk of certain types of cancer
- Animals given large doses exhibit developmental, reproductive, and liver effects, along with increased rates of cancer.
- The levels of PFOS or PFOA in your wells do not predict what, if any, health impact might occur as a result of exposure.
- More research is needed to confirm or rule out possible links between exposure and health effects.

Should I Have My Blood Tested?

ATSDR and CDC understand and acknowledge that you may want to know the level of PFAS in your body. However, there are some limitations with blood tests to consider:

- Test results will not provide clear answers for existing or possible health effects.
- Blood testing for PFAS is not a routine test that health care providers offer.
- Consult with your doctor for more information.

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Next Steps

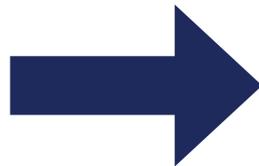
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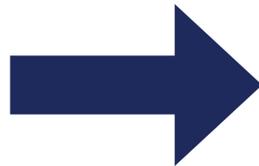
The Navy has expanded the off-base sampling area and will continue to notify residents of results.

Is the result **above** the health-based level?



The Navy will provide alternate water for drinking and cooking.

Is the result **at or below** the health-based level?



No immediate action is needed; the Navy may monitor as necessary.

Please help us:

- **Locate unrecorded wells to aid site investigations.**
- **Access wells to aid site investigations.**
- **Participate in the Restoration Advisory Board.**

Ongoing Actions

- Provide bottled water to limit exposure to PFOS and/or PFOA.
- Expand sampling area based on sampling results for Ault Field area.
- Establish a plan to verify that wells where PFOS and/or PFOA were detected remain below the LHA.
- Meet with homeowners with results above EPA LHA to gather data needed to develop solutions.
- Install groundwater wells to address data gaps.
- Continue to monitor the science and regulations related to PFAS.
- Continue to communicate with residents through the press, websites, emails, phone line, and Restoration Advisory Board.
- Continue to investigate groundwater for PFAS source locations, migration, and exposure pathways.
- Continue to partner with local, state, and federal environmental and health agencies to determine the best path forward.

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We Need Your Help – Drinking Water Sampling Process

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Sampling Process

- We encourage you to contact us if you've received a sampling notification letter and have not signed up for sampling.
- We need your help to:
 - Make your appointment (sampling will take less than an hour).
 - Review and fill out the questionnaire.
- A team of qualified professionals will:
 - Collect cold water from the sample point (water will run for 3–5 minutes).
 - Analyze the sample according to EPA guidelines for a sampling and analysis process that follows strict quality control and quality assurance protocols.

Other Ways to Schedule an Appointment

To schedule an appointment for sampling your drinking water, please contact: PAO_feedback@navy.mil (email) or **360-396-1030** (voicemail)



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Sign Up for Your Sampling Appointment Here

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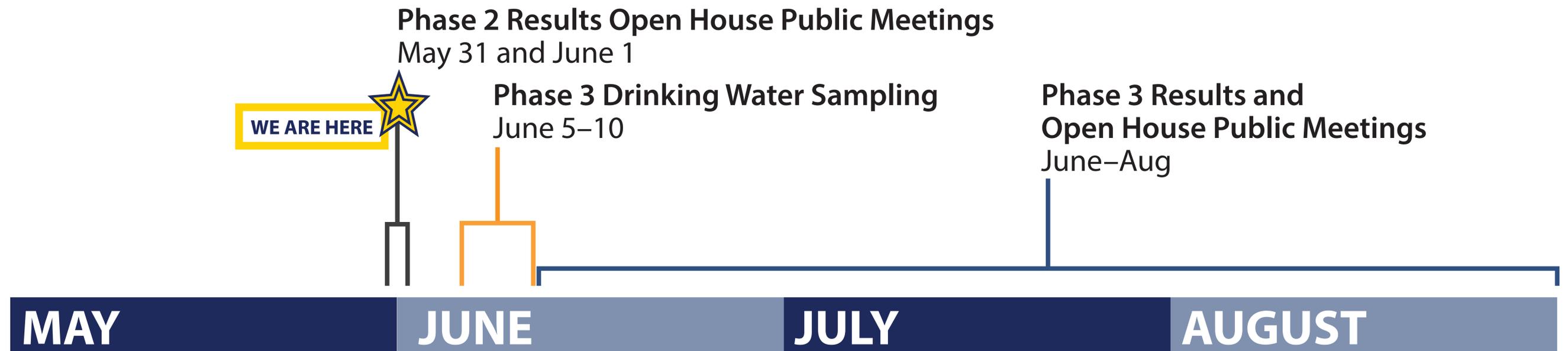
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Off-base Drinking Water Well Sampling

- Drinking water samples will be collected **Monday–Saturday, June 5–10.**
- Sampling appointments are available **8 a.m.–7 p.m.**
- The homeowner must give permission for sampling.
- Sampling takes less than an hour.
- An adult resident (18 years of age or older) must be present during sampling.

Off-base Drinking Water Sampling Phase 3 Activities





Email Distribution List

Additional information can be found online at
www.secnav.navy.mil/eie/pages/pfc-pfas.aspx

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