Virginia PFAS Occurrence & Monitoring Subgroup
Virginia Department of Health Office of Drinking Water
February 4, 2021, 2 pm – 4 pm
Virtual Meeting by WebEx

1. Call to Order

   Bob Edelman with the Office of Drinking Water called the meeting to order at 2:01 p.m. The meeting was virtual via WebEx. Minutes and the PowerPoint presentation will be posted on Town Hall. Refer to the PowerPoint presentation along with these minutes.

2. Attendance/Introductions

   Members
   David Jurgen (City of Chesapeake)
   Jamie Hedges (Fairfax Water)
   Mark Estes (Halifax County Service Authority)
   Jessica Edwards (Loudoun Water)
   Mike McEvoy (Western Virginia Water Authority)
   Henry Brandza (Consultant, formerly with DuPont)
   Jeff Steers (VDEQ)
   Anna Killius (James River Association)
   Dwight Flammia (VDH State Toxicologist)
   Tony Singh (VDH-ODW)
   Jack Hinselwood (VDH-ODW)
   Bob Edelman (VDH-ODW)

   VDH/ODW
   Nelson Daniel
   Kris Latino

   Guests
   Ellen Egen (Aqua Law)
   Amanda Waters (Aqua Law)
   Scott Powers (Fairfax Water)
   Bailey Davis (DCLS)
   Carroll Courtney (Southern Environmental Law Center)
   Paul Nyffeler (Chem Law)
   Ashley Pierce (DCLS)

3. Meeting Overview – Review Agenda

   Bob reviewed the agenda and the topics to be discussed.

4. Approve minutes from the previous subgroup meetings

   The members agreed to adopt the minutes from the December 15, 2020, and January 13, 2021 meetings and approved them without changes. ODW will post copies of the final minutes on Town Hall.

5. Meeting Scheduling

   To simplify scheduling for future meetings, Bob suggested scheduling subgroup meetings on the same day and time monthly. The members agreed and selected to meet the 1st Thursday of the month at 2:00 p.m. Bob will forward the WebEx login information to the members. ODW will post Workgroup and subgroup meetings in the calendar folder in the PFAS Workgroup External SharePoint.

6. Hybrid Sampling Plan

   The PFAS Occurrence subgroup is tasked with developing a PFAS Sampling Study Plan recommendation for the larger committee. The objective is obtain an agreement on the approach rather than specific sample sites. See Slide 7. This approach is based on:
   - available funding,
   - maximum public health risk reduction,
   - risk to potential PFAS contamination, and
   - limited to 50 waterworks and major sources of water.

   Based on these requirements, Bob described a hybrid approach that focuses on three groups of potential sampling sites:

   1. Largest waterworks in Virginia (Group 1). This consists of the 17 largest waterworks (based on the population served) and sampling at the entry points to the distribution systems (after all treatment) of the treatment plants and at consecutive connections. A list of the large waterworks is in the PowerPoint presentation. This would involve 33 sample locations, which will cover roughly 4.5 million consumers. See slides 8 and 9.

      Mike McEvoy requested to update the Western VA Water Authority to 2 plants and 2 reservoirs.

      The members discussed that some samples at consecutive connections could be considered duplicates of entry points. Bob explained that ODW could look into this and could potentially reduce the number of samples by eliminating some consecutive connections, if that is helpful to the study. Tony pointed out ODW wishes to monitor the entry points to the consecutive systems in this category, considering the number of persons served and the amount of data available. Bob explained that although the amount of samples could change, the number of systems sampled would stay the same.

   2. Groundwater systems (Group 2) is based on potential for PFAS contamination. This group includes groundwater wells that are in close proximity to sites where PFAS may be

present based on the use of the site. DEQ provided ODW a list of unlined landfills and their locations. ODW plotted airport locations using USGS data and identified wells used by waterworks that are located within ½ mile and 1 mile of the airports and unlined landfills. ODW excluded small airstrips (i.e., those with grass landing areas and limited or no commercial flights). Because unlined landfills may contain PFAS in waste products that can leach into groundwater and many airports use AFFF for training and fire suppression, ODW classified wells within ½ mile as high risk of PFAS contamination and wells within 1 mile of airports or unlined landfills as moderate risk of PFAS contamination. ODW focused on community and nontransient noncommunity waterworks for this phase. See slides 10 through 14.

This approach identified 6 high risks wells belonging to 5 waterworks and 15 medium risks wells, adding 11 waterworks.

One member asked about PFAS sampling of groundwater monitoring wells at landfills. Jeff Steers indicated DEQ intends to revise the landfill groundwater monitoring requirements, but said it couldn't happen in the timeframe needed for this study. One member suggested that schools should be a priority due to the vulnerable population served and another agreed. Mike suggest possibly dropping some of the smaller noncommunity systems on the list, to enable sampling at a higher priority location. David pointed out that the wells at the Naval Auxiliary Landing Field (NALF) Fentress Field are out of service due to PFAS contamination and there is a lot of data from them. He questioned the need for sampling at this location. He also pointed out that the list has waterworks with more than one well on the list, suggesting sampling from only one well per system to free up samples. Bob pointed out that this would free up samples, but would not reduce the number of systems sampled. Jeff Steers also indicated that DEQ has information regarding the direction of groundwater flow near landfills that are in "corrective action."

3. Major water supplies (Group 3) is also based on risk potential for PFAS contamination (See slides 15 – 20). ODW has updated this group from the last meeting. ODW used DEQ lists of Publicly Owned Treatment Works (POTWs) that receive wastewater from significant industrial users and Virginia Pollution Discharge Elimination System (VPDES) discharge permits (direct dischargers). DEQ completed a desktop evaluation using Standard Industrial Classification (SIC) Codes of significant industrial users and direct discharges with potential use and/or discharge of PFAS. ODW located these discharge points on a map, using a Geographic Information System (GIS). ODW used the following approach to identify surface water intakes potentially impacted by upstream discharges:

   - Starting with the listed discharge points, trace downstream to identify potentially impacted drinking water intakes (45 intakes)
   - Make a list of impacted intakes
   - Exclude intakes from 17 large systems – these are covered by entry point sampling
   - Sort from largest to smallest populations served
   - Select one intake for each PWS

- Yields 29 intakes
- Select 17 from the list
- DEQ and ODW input may adjust priority from this list

This approach yielded the list on slide 20. The three intakes at the bottom of the list are wholesale systems, which means that they each consist of an intake and water treatment plant that sells directly to one or more consecutive waterworks. ODW will determine the population served by these facilities, which will move them higher in the list.

One member commented this group should reflect geographic coverage of the state, to include the southwest portion of Virginia, which is not included in waterworks in groups 1 and 2. Another group member mentioned the Dan River. ODW will select at least one intake on the Dan River, New River and the Clinch River. A member pointed out that, especially in rural areas, there are many closed industrial sites that potentially used PFAS that we would not know about and therefore it's a good idea to strive for geographic coverage.

Slide 21 summarizes the hybrid approach and the number of sample locations planned. Bob explained that the total number water samples allowed by the budget is approximately 110, based on a budget of $40,000 (assuming $300 per sample and the number of QA/QC samples equal to 20% of the water samples). The number of sample locations is less than the total number of samples, to allow for confirmation samples, which would be triggered when PFAS is detected. ODW has an aspirational goal of collecting confirmation samples when PFAS is detected, but has a limited budget for confirmation samples. ODW could limit confirmation samples to detections of specific analytes, for example, PFOA and PFOS. In addition, ODW intends to establish method reporting limits above the detection limits.

Subgroup members were generally happy with the hybrid approach but wanted to retain the ability to add or delete sample locations if ODW feels a location is missing or is an unnecessary duplication.

Tony asked if there are anything else important that needed to be considered. Jeff indicated that DEQ recently received some information regarding CERCLA Superfund sites and other hazardous waste corrective action sites that may have used PFAS in the past. DEQ will look to see if these sites are outside the areas already identified with potential sources. Mike inquired if DEQ did any sampling of air sources of PFAS and if there is any evidence of air discharges of PFAS. DEQ is evaluating air source information. DEQ is aware of waste to energy facilities that may emit PFAS.

Bob explained that the General Assembly may allocate some funds in the Budget for studying PFAS occurrence and EPA may provide additional funds for emerging contaminants. Therefore, there is a possibility of studying occurrence further next year to build on what comes out of the study required by HB586.

Subgroup members were in agreement with the approach for the study design, based comments in the chat window. Tony pointed out that subgroup members will have another opportunity to provide input when the study design is presented to the PFAS Workgroup.

The subgroup intends to request existing PFAS monitoring data from waterworks. The criteria for this data request is shown on Slide 23.

Subgroup members recommended requesting data from the military bases and felt it would not hurt to request data from waterworks and other sources. We can set up a folder on SharePoint for the information. One member suggested mapping the data to show where PFAS is detected. Another member asked about restricting data to method 533. The group discussed that limiting the method to 533 would significantly limit the amount of data, and since both methods 533 and 537.1 are validated methods, we should accept both. The subgroup accepted the idea to cast a wide net for requesting existing PFAS monitoring data.

PFAS Sampling Study Plan Limitations (see slide 26):

- HB586 limits sampling to no more than 50 representative waterworks and sources of water. It does not specify how many samples can be collected and analyzed from the 50 locations.
- Budget constraint: $40,000 for PFAS analytical & shipping
- Leads to budget of 111 water samples and 22 field reagent blank samples

Considerations for sampling (see slides 27-28):

- One sample per location
- Training for samplers – a member suggested the instructions should include the do's and don'ts and the instructions should not be too difficult.
- There will be limited field reagent blank samples
- Collect field reagent blanks samples with confirmation samples
- Specify and use the method reporting limit (MRL)
- At least one confirmation sample upon detection at or above the MRL
- Confirmation samples may be limited by budget constraints.
- Waterworks personnel to collect samples
- Detailed sampling protocol/instructions
- Harmonize ODW sampling instructions with the laboratory's instructions
- Proposing a sampling instructional video
- Samples results are sensitive to PPE and clothes worn by sampler

7. Method Selection
    - Drinking Water (Slide 29):
        - Recommend Method 533 with complete list of analytes
        - Laboratory meets NELAC accreditation requirements
        - ODW has no plan to create a sampling instructional video
        - EPA Method 537.1 and 533 applicable only to drinking water
    - Source Water method (Slide 30):

- Solid phase extraction followed by analysis with LC/MS/MS, isotope dilution, meeting requirements of Table B-15 of the DoD ELAP QSM.
- List of analytes – Same as EPA Method 533
- Method Reporting Limits – Same as EPA Method 533
- DoD accredited for the isotope dilution method by LC/MS/MS

The group discussed existing source water data analyzed by EPA Methods 537.1 and/or 533. A member suggested to not rule out existing source water results analyzed by these methods. ODW should be willing to accept existing data using other analytical methods such as the DoD method. Consider requesting matrix spike quality control data to determine if source water samples analyzed by these methods exhibit matrix problems.

The subgroup expressed approval for the recommended approach for Method Selection.

One member asked for a document summarizing the approach. Another member requested to review the sample location list. ODW agreed to summarize the sampling study design in a word document and share it by the middle of February. As part of this, ODW will map the sample locations for the three groups. After we share the study design, we intend to convene a meeting of the entire PFAS Workgroup to review and finalize the study design, end of February or first week of March.

8. Public Comments –

Bailey Davis suggested that ODW reach out to other waterworks that did not meet the criteria for sampling under this study. Some waterworks may wish to sample now and contribute data. As part of our request for existing data, ODW can offer to accept data collected in the future. Tony can ask if waterworks have PFAS sampling data to share during the next Waterworks Advisory Committee (WAC) meeting.

Adjourned meeting 4:02 pm

Virginia PFAS Workgroup

Monitoring and Occurrence Subgroup

Bob Edelman
Virginia Department of Health
February 4, 2020

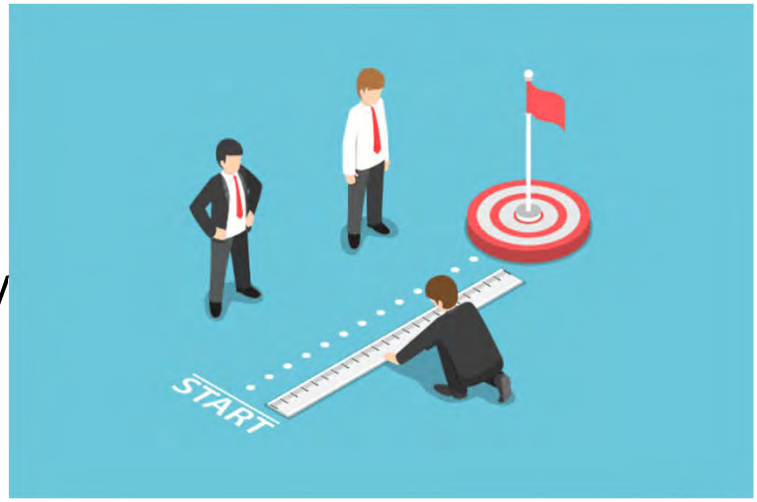
Subgroup Members

David Jurgen (City of Chesapeake)
Jamie Hedges (Fairfax Water)
Mark Estes (Halifax County Service Authority)
Jessica Edwards (Loudoun Water)
Mike McEvoy (Western Virginia Water Authority)
Henry Bryndza (Consultant, formerly with DuPont)
Jeff Steers (VDEQ)
Dwight Flammia (State Toxicologist)
Anna Killius (James River Assoc)
Tony Singh (VDH ODW)
Jack Hinshelwood (VDH ODW)
Bob Edelman (VDH ODW) - VDH Lead*

PFAS Workgroup Meeting Overview

Meeting Overview

- Call to Order
- Attendance/Introductions
- Meeting Overview – Review Agenda
- Approve minutes from the previous subgroup meetings
- Meeting Scheduling
- Hybrid Sampling Plan
- Analytical Method Considerations
- Deliverable: Recommend a Virginia PFAS Sampling Study
- Action Item Review
- Public Comments



Meeting Minutes

Minutes are published on:

- Virginia Town Hall
- https://townhall.virginia.gov/ search for **PFAS**

Members receive email with minutes

Minutes saved on the PFAS Workgroup SharePoint

- PFAS Monitoring and Occurrence Subgroup > Meetings

Need to approve meeting minutes of:

- December 14, 2020
- January 13, 2021

Virginia PFAS Workgroup – Objectives

- **Determine the occurrence of PFAS in drinking water throughout the Commonwealth,**
- Identify possible sources of PFAS contamination,
- May develop recommendations for specific maximum contaminant levels (MCLs)

Six specific PFAS, including:

- Perfluorooctanoic acid (PFOA)
- Perfluorooctane sulfonate (PFOS)
- Perfluorobutyrate (PFBA)
- Perfluoroheptanoic acid (PFHpA)
- Perfluorohexane sulfonate (PFHxS)
- Perfluorononanoic acid (PFNA)

Other PFAS “as deemed necessary”

Subgroup Deliverables

1. Research PFAS Occurrence/Sampling Studies in other states – internal deliverable – Week of January 11, 2021
2. Virginia PFAS Sampling Study Plan – **Due Now**
3. Organize, tabulate, and summarize Virginia PFAS Occurrence data - TBD

Proposed PFAS Sampling/Monitoring Study

Approaches based on:

- Available funding → number of sampling sites, frequency of sampling
- Maximum public health risk reduction
- Risk to potential PFAS contamination
- Limited to 50 waterworks and sources of water

Asking to recommend the **Approach**

Hybrid Approach:

1. Largest waterworks (17) in Virginia serving appx. 4.5 million consumers
2. Groundwater systems – based on risk potential for PFAS contamination – VDH & DEQ data
3. Major water supplies – based on risk potential for PFAS contamination

17 Large Waterworks

PWSID	PWS name	City / County	Population	# SWTPs	# Raw	# EPs	#CCs
6059501	FAIRFAX COUNTY WATER AUTHORITY	FAIRFAX COUNTY	1074422	2	2	2	1
3810900	VIRGINIA BEACH, CITY OF	VIRGINIA BEACH	446067	0	0	0	1
3700500	NEWPORT NEWS, CITY OF	NEWPORT NEWS	407300	2	2	2	0
4041845	CHESTERFIELD CO CENTRAL WATER SYSTEM	CHESTERFIELD	320658	1	1	1	2
4087125	HENRICO COUNTY WATER SYSTEM	HENRICO	292000	1	1	1	1
6107350	LOUDOUN WATER - CENTRAL SYSTEM	LOUDOUN	286202	1	1	1	1
3710100	NORFOLK, CITY OF	NORFOLK	234220	2	2	2	0
6013010	ARLINGTON COUNTY	ARLINGTON	215000	0	0	0	1
4760100	RICHMOND, CITY OF	RICHMOND CITY	197000	1	1	1	0
3550051	CITY OF CHESAPEAKE - NORTHWEST RIVER SYS	CHESAPEAKE	166704	2	2	2	0
2770900	WESTERN VIRGINIA WATER AUTHORITY	ROANOKE CITY	155000	4	4	4	0
6153600	PWCSA - EAST	PRINCE WILLIAM	153000	0	0	0	1
6510010	ALEXANDRIA, CITY OF	ALEXANDRIA	146970	0	0	0	2
6153251	PWCSA - WEST	PRINCE WILLIAM	130001	0	0	0	2
3740600	PORTSMOUTH, CITY OF	PORTSMOUTH	120400	1	3	1	0
6179100	STAFFORD COUNTY UTILITIES	STAFFORD	112285	2	2	2	0
6177300	SPOTSYLVANIA COUNTY UTILITIES	SPOTSYLVANIA	84390	2	2	2	0
Totals				21	23	21	12
Total EP + CC				33			

17 Large Waterworks

Surface water systems:

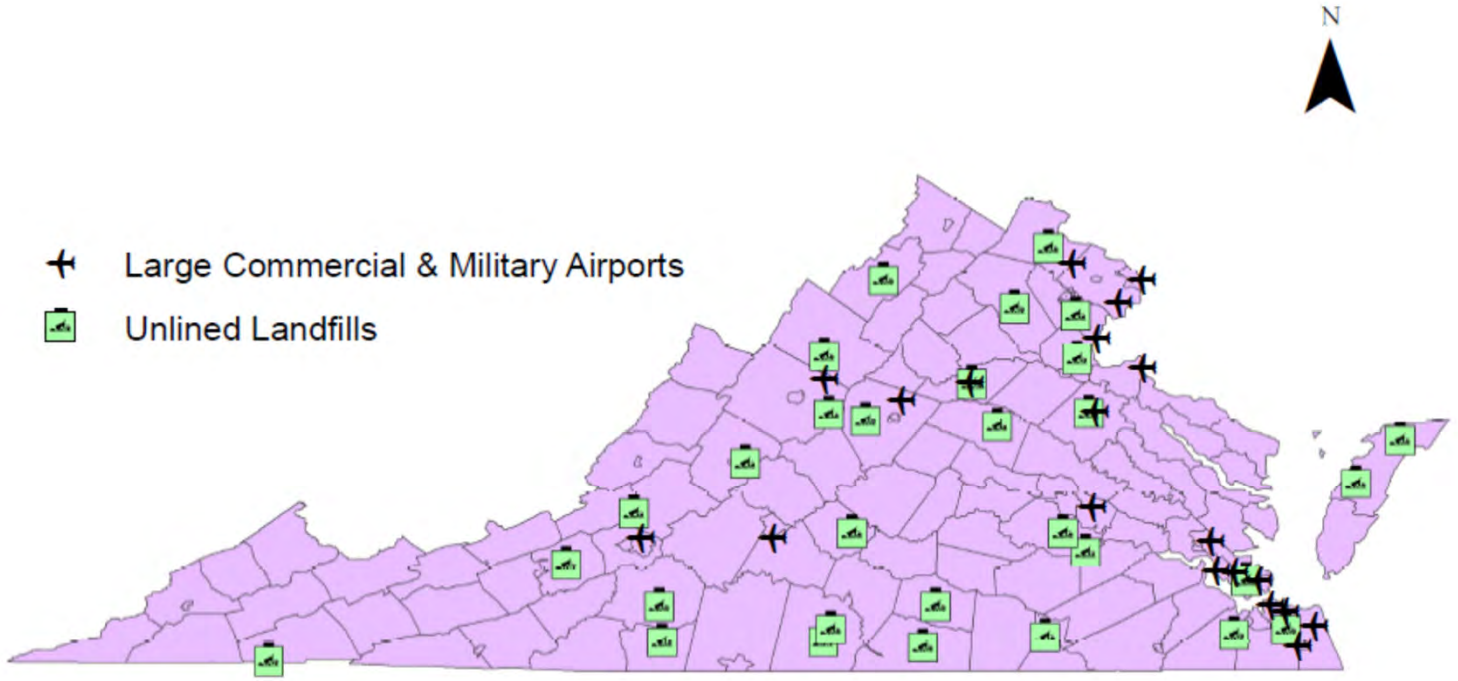
- 23 Raw sources
- 21 Water Treatment Plants
- 21 Entry Points
- 12 Consecutive Connections

- Entry Points + Consecutive Connections = 33 locations

Potential PFAS Contamination Risk

- List of unlined landfills from DEQ
- Prioritize based on risk due to proximity to certain activities:
  - Landfills – DEQ List
  - Airports (large) based on USGS airport data
- Focus on groundwater sources for community and NTNC waterworks

- No data on PFAS levels in groundwater
- No data on groundwater flow direction
- No data on well recharge areas
- Relative risk – not exact
- Does not consider potential impact to surface waters



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0 50 100 200 Miles

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Groundwater Systems Approach

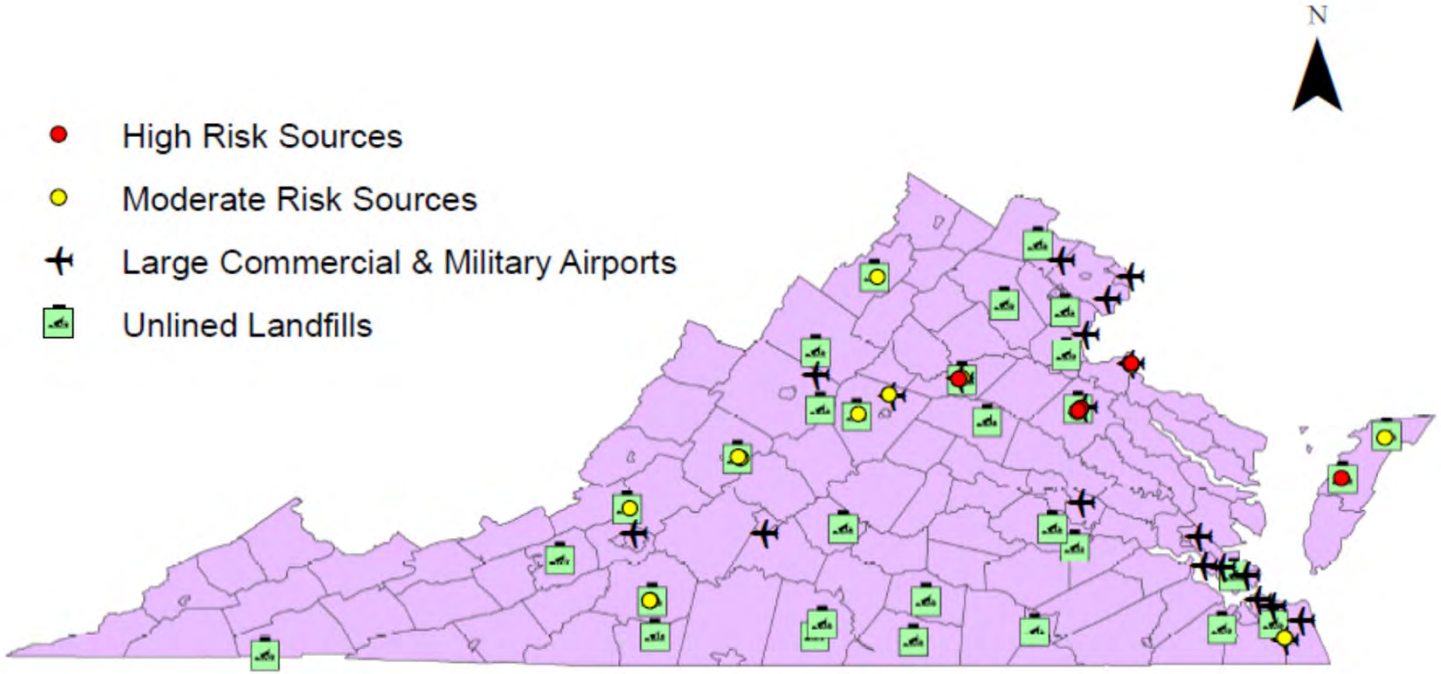
High Risk = within ½ mile of large airport or unlined landfill

Moderate risk = within 1 mile of large airport or unlined landfill

Groundwater sources:

1. Start with list of sources that are ranked as high and medium risk from GIS
2. Select community and NTNC waterworks

6 – High risk wells	5 Systems
15 – Medium risk wells	11 Systems



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Groundwater Systems – Based on Risk

System Name	PWSID	Facility Name	ID	System Type	Population Served
NAVAL SUPPORT FACILITY_ DAHLGREN	6099340	WELL 3 - BLDG 274A (RESERVOIR WELL)	WL003	C	11000
NAVAL SUPPORT FACILITY_ DAHLGREN	6099340	WELL 1 - BLDG 1288 (BRONSON WELL)	WL001	C	11000
BOWLING GREEN_ TOWN OF	6033550	WELL 4	WL004	C	1152
PUNGOTEAGUE ELEMENTARY SCHOOL	3001790	WELL	WL001	NTNC	610
RSA ROUTE 20	6137120	WELL #2 (MAY LANE)	WL002	C	387
FT A P HILL - HEADQUARTERS	6033251	WELL HQ #2 (PWAT 28)	WL028	C	180
NAVAL SUPPORT FACILITY_ DAHLGREN	6099340	WELL 2 - BLDG 1190 (CASKEY WELL)	WL002	C	11000
BOWLING GREEN_ TOWN OF	6033550	WELL 5	WL005	C	1152
BOWLING GREEN_ TOWN OF	6033550	WELL 1A	WL01A	C	1152
LONG HOLLOW	2163400	LHWDC WELL 1	WL001	C	578
LONG HOLLOW	2163400	LHWDC WELL 2	WL002	C	578
EARLYSVILLE FOREST	2003255	WELL 6	WL006	C	488
EARLYSVILLE FOREST	2003255	WELL 5	WL005	C	488
PEACOCK HILL SUBDIVISION	2003650	WELL 8	WL008	C	475
RSA ROUTE 20	6137120	WELL #1 (PORTER RD)	WL001	C	387
MOUNTAIN VIEW ELEM SCHOOL	2163560	MTN VIEW WELL	WL001	NTNC	250
ROANOKE CEMENT COMPANY	2023180	WELL - ROANOKE CEMENT COMPANY	WL001	NTNC	190
FT A P HILL - HEADQUARTERS	6033251	WELL HQ #1 (PWAT 29)	WL029	C	180
FRANKLIN COUNTY COMMERCE CENTER	5067137	WELL NO. 5	WL005	NTNC	103
NALF FENTRESS FIELD	3550615	WELL NO. 2	WL002	NTNC	40
NALF FENTRESS FIELD	3550615	WELL NO. 1	WL001	NTNC	40

6

15

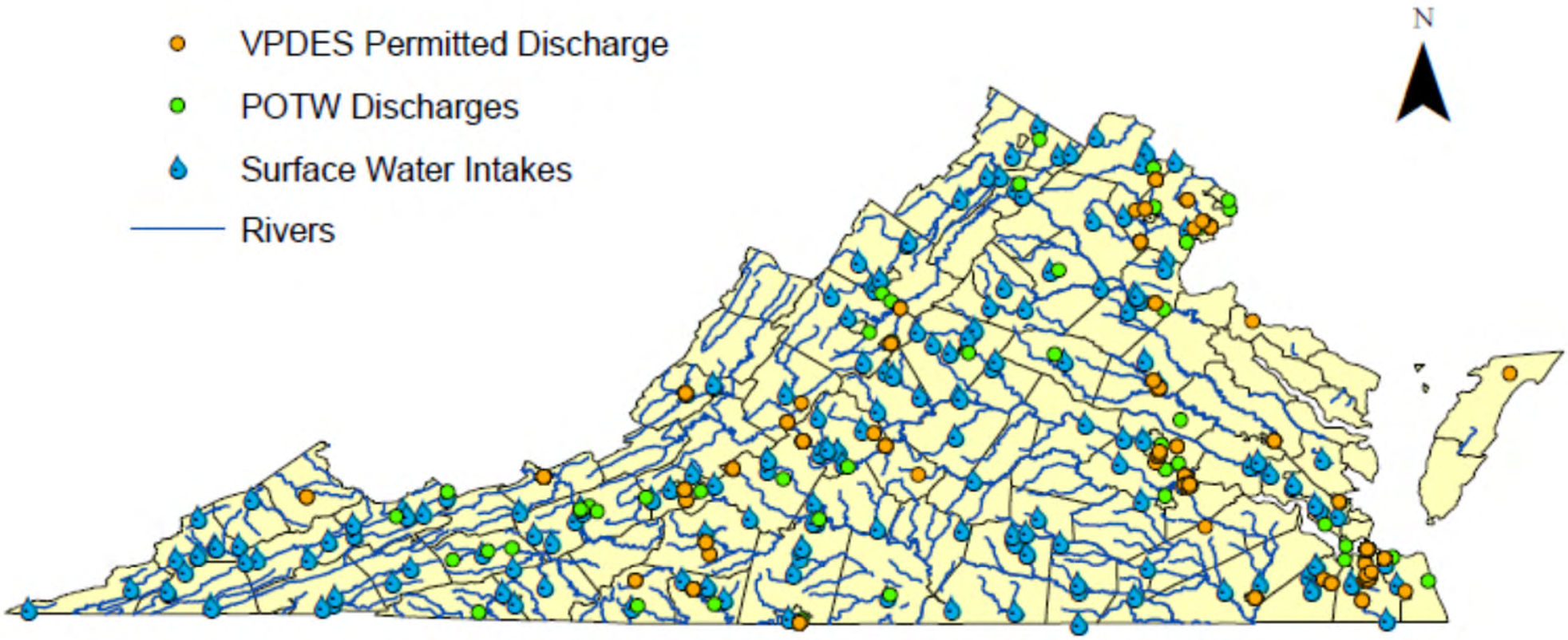
Major Water Sources

DEQ lists of potential sources of PFAS:

- POTWs with Significant Industrial Users
- VPDES discharge permits (direct dischargers)
- Locations on a map
- Based on Standard Industrial Classification (SIC) Codes for
  - Significant Industrial Users
  - Direct Dischargers
  - Potential use and/or discharge PFAS

Approach:

Use these to identify major water sources potentially impacted by PFAS



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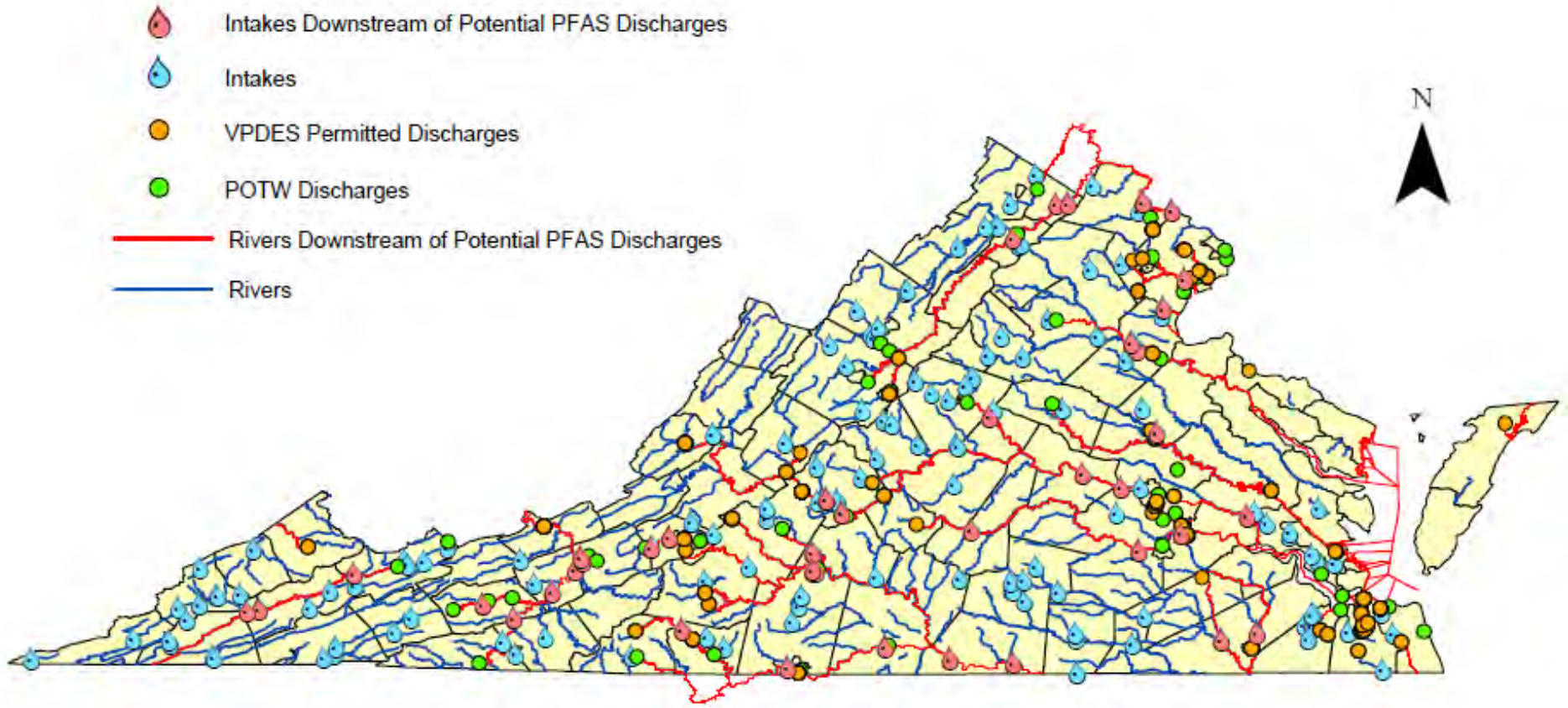

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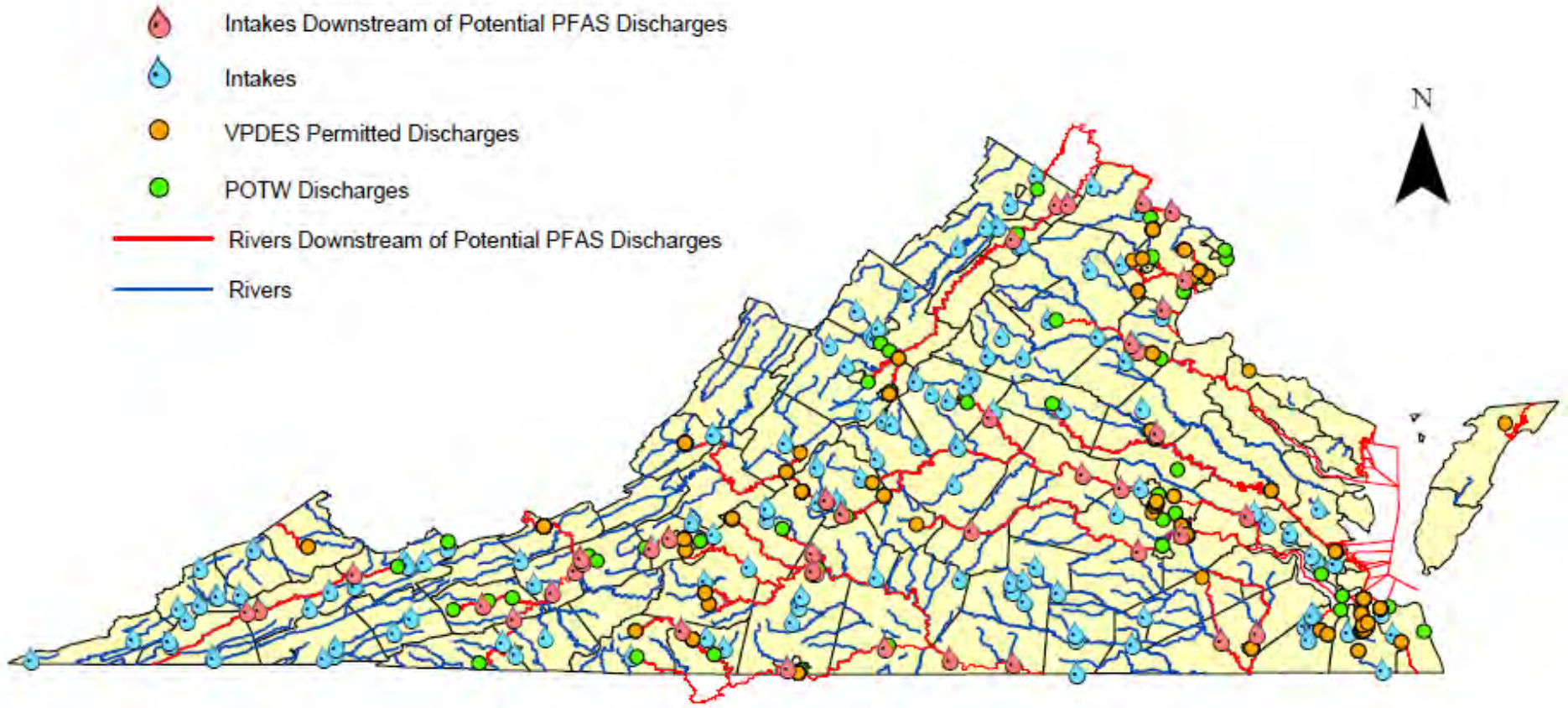
Major Water Sources - Approach

- Use DEQ lists of direct dischargers and POTWs
- Trace downstream to identify impacted drinking water intakes (45 intakes)
- Identify impacted intakes in list from GIS
- Exclude intakes from 17 large systems - covered by entry point sampling
- Sort from largest to smallest population served
- Select one intake for each PWS
  - Yields 29 intakes
  - Select 17 from this list
  - DEQ and ODW input may adjust priority from this list



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PWSID	System	Facility
5680200	LYNCHBURG, CITY OF	JAMES RIVER-ABERT
4085398	HANOVER SUBURBAN WATER SYSTEM	NORTH ANNA RWI
6107300	LEESBURG_ TOWN OF	POTOMAC INTAKE
5590100	DANVILLE, CITY OF	DAN RIVER INTAKE
5089852	UPPER SMITH RIVER WATER SUPPLY	SMITH RIVER INTAKE
3670800	VIRGINIA-AMERICAN WATER CO.	APPOMATTOX RIVER
2775300	CITY OF SALEM WTP	ROANOKE RIVER
5031150	CAMPBELL COUNTY CENTRAL SYSTEM	BIG OTTER RIVER
6153675	QUANTICO MARINE BASE-MAINSIDE	BRECKINRIDGE RESERVOIR
1750100	RADFORD_ CITY OF	INTAKE ON NEW RIVER
2187406	FRONT ROYAL_ TOWN OF	SOUTH FORK SHENANDOAH RIVER
2065480	LAKE MONTICELLO	RIVANNA RIVER
1195900	WISE COUNTY REGIONAL WATER SYSTEM	CLINCH RIVER INTAKE
1155641	PULASKI COUNTY PSA	CLAYTOR LAKE
5780600	HCSA- LEIGH STREET PLANT	RAW WATER INTAKE
5147170	FARMVILLE_ TOWN OF	APPOMATTOX RIVER
1197810	WYTHEVILLE_ TOWN OF	REED CREEK
4075735	JAMES RIVER CORRECTIONAL CTR	JAMES RIVER INTAKE
1185695	RICHLANDS_ TOWN OF	IN001 - CLINCH RIVER INTAKE
2043125	BERRYVILLE_ TOWN OF	SHENANDOAH RIVER
5031050	ALTAVISTA, TOWN OF	STAUNTON RIVER
1121643	RADFORD ARMY AMMUNITION PLANT	NEW RIVER
5117310	CLARKSVILLE_ TOWN OF	KERR RESERVOIR INTAKE
1195700	ST PAUL_ TOWN OF	CLINCH RIVER
5117707	ROANOKE RIVER SERVICE AUTHORITY	LAKE GASTON INTAKE
2043634	MOUNT WEATHER EMERGENCY OPERATIONS CENTE	SHENANDOAH RIVER
1121057	NRV REGIONAL WATER AUTHORITY	NEW RIVER (RAW WATER) PUMP STATION
1197435	NEW RIVER REGIONAL WATER AUTHORITY	INTAKE - NEW RIVER
4041035	APPOMATTOX RIVER WATER AUTHORITY	LAKE CHESDIN RAW WATER INTAKE

Hybrid Approach

	# Samples	# Systems	Population
17 Large	33	17	4,541,619
GW - High Risk	6	5	13,329
GW - Medium Risk	15	11	2,124
Major Water Sources	17	17	
Total	71	50	4,557,072
Maximum	106	50	

Sample site selection

Discussion:

Can the Subgroup recommend the **Approach** for the following phases:

1. Large systems
2. Groundwater - High and moderate risk systems
3. Major Sources

Request Existing PFAS Monitoring Data

Criteria from waterworks:

- Sampled/analyzed in 2018 to date
- EPA Method 533 or 537.1
- Entry Points
- Raw Water
- Passes QA/QC

Virginia already has UCMR3 data

UCMR5 sampling in 2023 - 2025

Consider other data sources of environmental data?

Request Existing PFAS Monitoring Data - Homework

- This seems fair, however there will be discrepancies with methodologies.
- … ask for all available data that anyone is willing to share, regardless of testing methodology or date range.
- Calling for available data from within the past 3 years and, assuming it passes data quality standards, use any reports as data points to allow addition of additional sampling points in the study.
- Call for waterworks participation when they have the funding available for their own testing.
- Use UCMR5 data

Request Existing PFAS Monitoring Data - Discussion

Can the Subgroup recommend Requesting Existing PFAS Monitoring Data as part of the overall approach?

Virginia PFAS Sampling Study Plan

Scope of sampling, number of samples, frequency

- HB 586: "…the Department of Health shall sample no more than 50 representative waterworks and major sources of water…"
- Budget: $40,000 for PFAS analytical + shipping
- Approximately $300/sample
- $40,000 ÷ $300/sample = 133 samples
- Assume 20% of water samples = FRB samples
  - 111 water samples
  - 22 FRB Samples

Number of samples per location

- Most state occurrence studies used one sample per location
- Some states used confirmation samples upon detection of PFAS

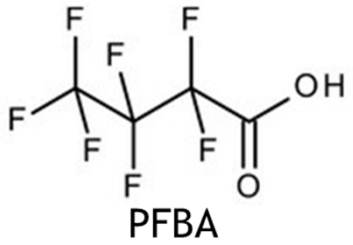
Recommendation:

- One sample per sample location
- Training for samplers (video)
- Limited Field Reagent Blank (FRB) samples (20%) for first samples
- Collect FRB samples with confirmation samples
- Specify and use the Method Reporting Limits (MRL) in consultation with laboratory
- At least one confirmation sample upon detection > MRL of PFAS
- Take confirmation samples soon after a detection is reported
- Confirmation samples may be limited by budget constraints

Sample Protocol Considerations

- Waterworks personnel to collect samples
- Detailed sampling protocol/instructions
- Harmonize ODW sampling instructions with laboratory's instructions
- Proposing a sampling instructional video
- Samples results are sensitive to PPE and clothes worn by sampler

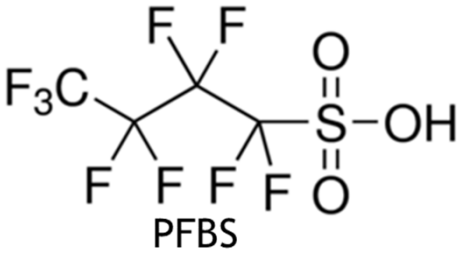
Method Selection



PFBA

Considerations:

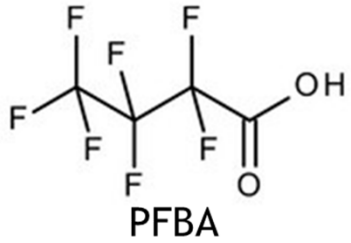
- EPA Method 537.1 most often selected by states
- EPA Method 533 will detect additional compounds
- Cost – 533 costs $20-40 more than 537.1
- Method detection limits differ
- PFBA not in Method 537.1
- Short or long list of analytes?
  - Cost savings
  - Limit scope to HB586 list



PFBS

Recommend: Select Method 533, complete list of analytes, subject to meeting NELAC Accreditation requirements

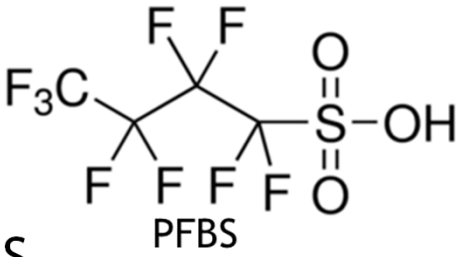
Method Selection – Source water



PFBA

Considerations:

- EPA Method 537.1 and 533 applicable only to drinking water
- Solid phase extraction followed by analysis with LC/MS/MS, isotope dilution, meeting requirements of Table B-15 of the DoD EL
- List of analytes – Same as EPA Method 533
- Method Reporting Limits – Same as EPA Method 533
- DoD accredited for the isotope dilution method by LC/MS/MS



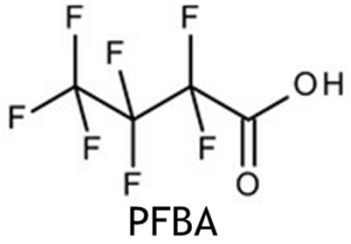
PFBS

Recommend:

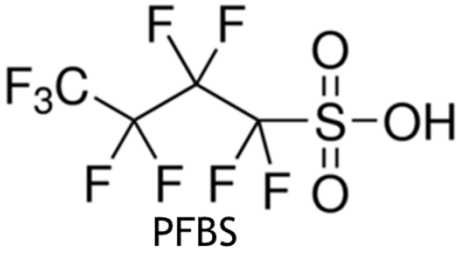
Method Selection

Does the subgroup recommend the Approach for:

1. Method Selection
2. Sample Collection
3. Repeat Samples
4. QA/QC Samples



PFBA



PFBS

Deliverable: Recommend a Virginia PFAS Sampling Study to the PFAS Workgroup

Does the Subgroup recommend the **Approach** outlined today?

Action Items Review

Are we clear about action items and due dates?

Public Comments

Have any Question, Comment or Suggestion, contact Us

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