

**Spokane River Regional Toxics Task Force
Technical Track Work Group
January 17, 2023 Meeting**



Current Study Status



Completion Expected Prior to June 30

Project	Scope
Expanded synoptic survey	Conduct updated mass balance assessment Assess significance of Springfield basin stormwater Define PCB concentration in artesian well
Mission Reach sediment/biofilm	High resolution sampling to identify source locations
Long term water column trend assessment (low and moderate flow)	SPMD deployment at existing trend sites Assess PCB concentration upstream of Kaiser
Long term fish tissue trend assessment	Fish tissue collection at existing trend sites
GE fingerprinting	Determine if GE groundwater plume is affecting Spokane River PCB concentration

3rd Round SPMD Water Column Sampling for 2022-2023 Trend Assessment



3rd Round Water Column Trend Assessment Sampling Background

- Task Force initiated long-term water column monitoring program in 2020 to support trend assessment
 - Annual average concentration estimated from month-long SPMD deployment for three different seasonal flow regimes
- Sampling for 2022-2023 has only been authorized for two seasonal flow periods
 - Results from 2023 would not be available by June, 2023 Task Force sunset
- TTWG has asked for preparation of scope for 3rd round of sampling

3rd Round Water Column Trend Assessment Sampling

Draft Scope Assumptions

- Maintain collection of grab sample PCB measurements
 - Initiated with 2022 monitoring
 - Supports parallel trend assessment using grab samples
- Maintain use of existing contractors, including SGS AXYS as PCB lab
 - Necessary to provide consistency with prior SPMD analyses
 - Structure contract to help ensure timely delivery of results?
- Ecology can review QAPP addendum within eight weeks
 - QAPP coordinator on vacation through February 10

3rd Round Water Column Trend Assessment Sampling

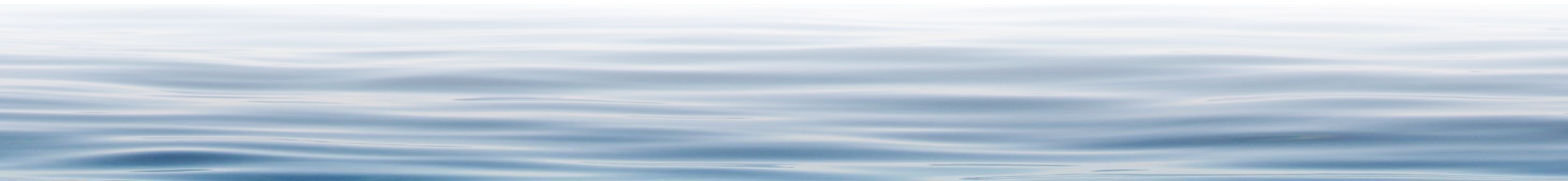
Draft Scope Assumptions

- Completion: December, 2023
- Budget: \$94,000 (45K pre-June 30, 49K post-June 30)

Deliverable	Start Date	Due date	Lead staff
QAPP			
Draft QAPP Addendum	February, 2023	March, 2023	David Dilks
Final QAPP	April, 2023	April, 2022	David Dilks
Field and laboratory work			
Spring high flow sampling	April, 2023	May, 2023	Shawn Hinz
Laboratory analyses	May, 2023	July, 2023	Sean Campbell
Laboratory data validation	July, 2023	August, 2023	Renn Lambert
Database			
Database entry and review	August, 2023	October, 2023	David Dilks
Data uploaded to EIM	October, 2023	November, 2023	David Dilks
Final report			
Draft report to Task Force	October, 2023	November, 2023	David Dilks
Final report on web	November, 2023	December, 2023	David Dilks

Item	Cost
Scopes of Work	\$6,000
Draft QAPP	\$3,000
Final QAPP	\$3,000
Field planning and coordination	\$2,000
SPMD preparation/rental	\$5,000
Field labor	\$21,000
Laboratory analyses	\$35,000
Data validation	\$4,000
SPMD data assessment	\$6,000
Reporting	\$6,000
Data uploading	\$3,000
Total	\$94,000

Monitoring Well/Water Level Paper Study to Determine Groundwater Flow Direction



Mission Reach Groundwater Flow Direction Study

Background

- The purpose of the Task Force is to identify and remove sources of PCBs to the Spokane River
- High PCB concentrations have been identified in the Mission Reach
 - No obvious sources exist for this contamination
- Recent historical assessment has identified areas of known and suspected PCB use in upland areas of the Mission Reach
- General understanding is that Mission Reach is a net losing segment
- Does a groundwater pathway exist between contaminated sites and the Mission Reach of the river?

Mission Reach Groundwater Flow Direction Study

Purpose

- Support development of a conceptual site model of groundwater flow direction near the Mission Reach
 - Leverage elevation data from existing monitoring wells

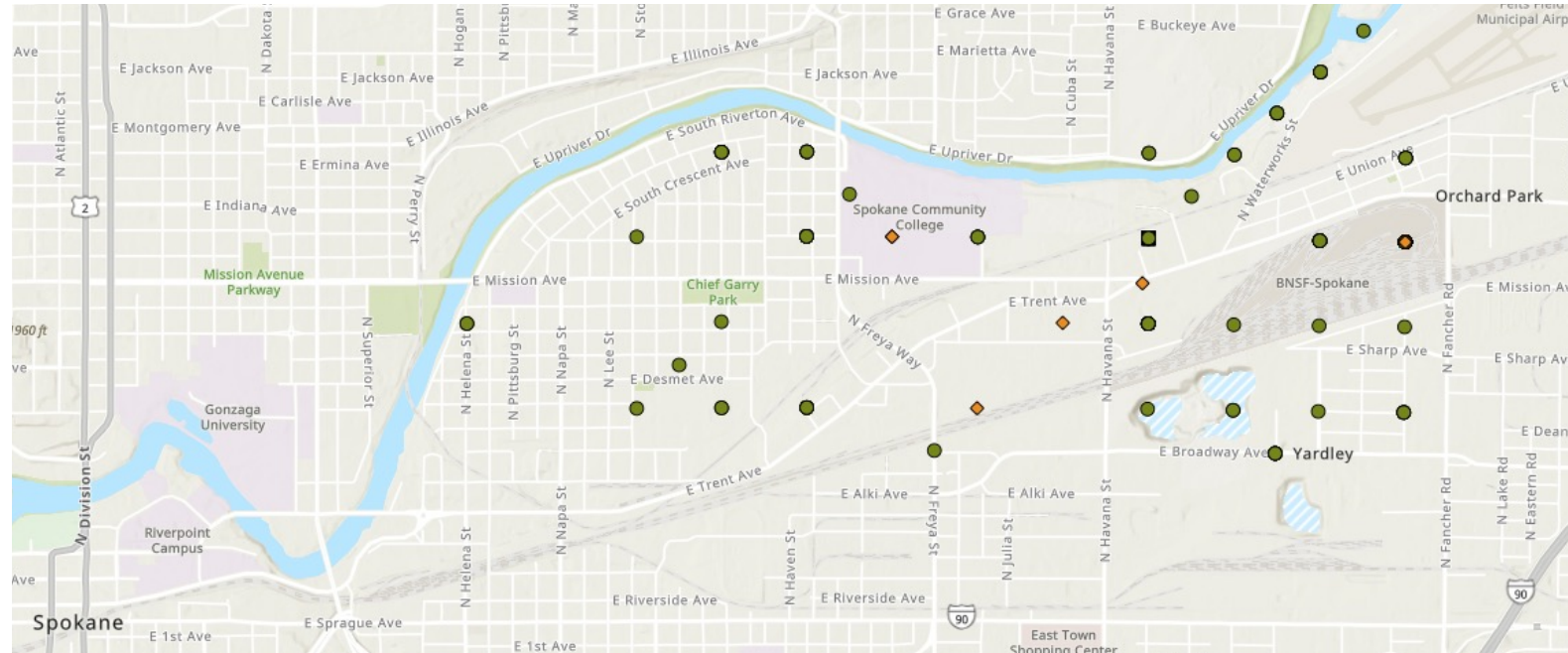
Mission Reach Groundwater Flow Direction Study Tasks

1. Identify existing monitoring well locations and associated reports
 2. Construct inventory and interactive map
 - Feasibility assessment
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3. Construct conceptual site model (or provide recommendations for filling data gaps)
 4. Reporting

Mission Reach Groundwater Flow Direction Study

Task 1: Identify Monitoring Well Locations and Reports

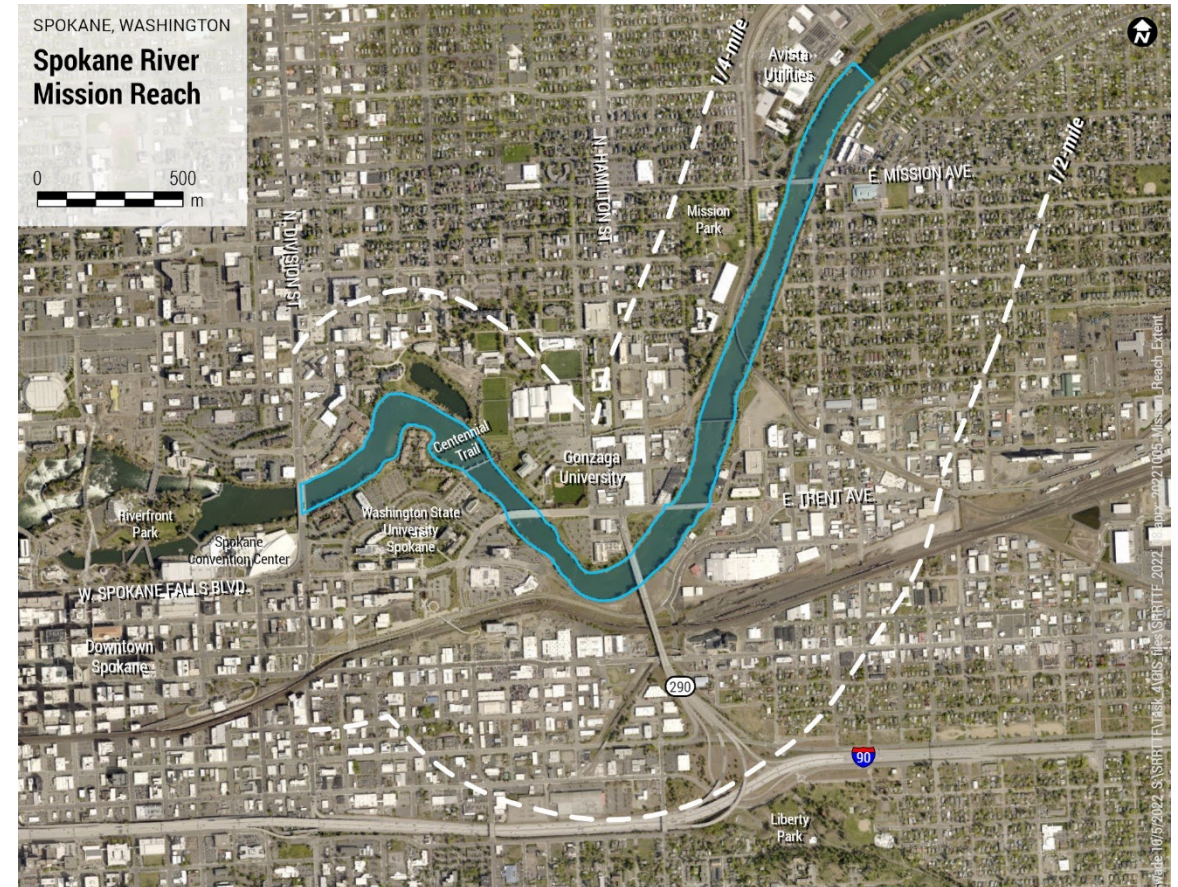
- Conduct a well search using online data sources to determine the existence of groundwater monitoring wells
- Expand spatial scope from what was done previously near GE site



Groundwater Flow Direction Study

Task 1: Identify Monitoring Well Locations and Reports

- Proposed spatial scope is consistent with that used for historical assessment



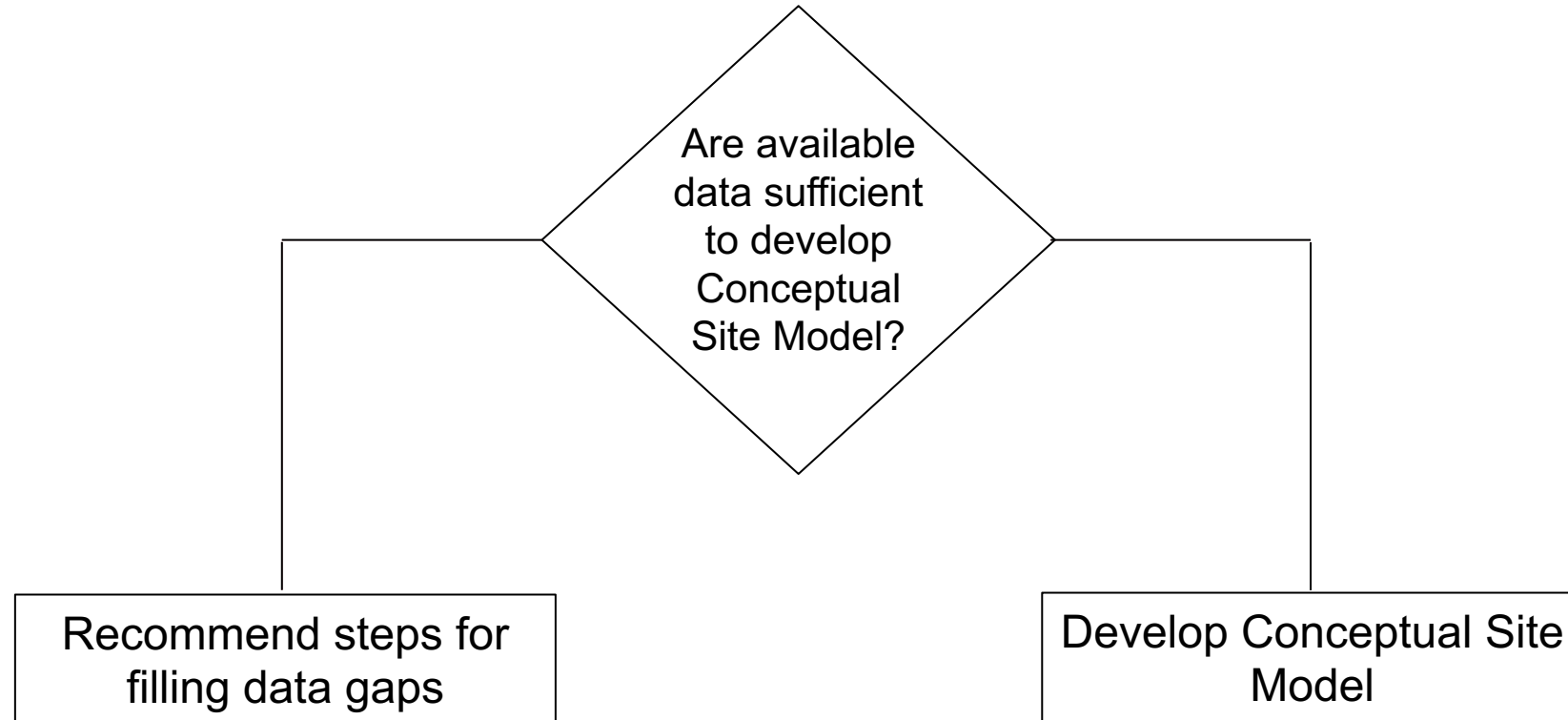
Mission Reach Groundwater Flow Direction Study

Task 2: Construct Inventory and Interactive Map

- Convert site addresses to surveyed monitoring well location coordinates
- Compile geologic information from boring logs and well construction information
- Construct Excel well database and interactive ArcGIS Online well map
- Perform feasibility assessment
 - Are available data sufficient to develop Conceptual Site Model?

Mission Reach Groundwater Flow Direction Study

Task 2 Decision Tree



Mission Reach Groundwater Flow Direction Study

Task 1 and 2 Schedule and Budget

Task	Schedule	Budget
1. Identify Monitoring Well Locations and Reports	February 15, 2023	\$9,300
2. Construct Inventory and Interactive Map	March 15, 2023	\$13,800
Total		\$23,100

Mission Reach Groundwater Flow Direction Study

Task 3: Construct Conceptual Site Model

- Results from Task 2 will be used to construct a Conceptual Site Model (CSM) that will identify the following:
 - Hydrostratigraphic units and other significant aquifer features within Mission Reach
 - Horizontal groundwater flow directions and gradients
 - Vertical groundwater flow direction and gradients from available clustered well locations
 - Locations of known or suspected upland sources of PCBs near Mission Reach relative to groundwater flow direction
 - Data gaps and areas that may require additional investigations and/or input to confirm initial evaluations

Mission Reach Groundwater Flow Direction Study

Task 3 and 4 Budget Options

- Range of options exist depending on path taken
 - Recommending focus on Mission Reach south of river

Task	No Model	Model of Mission Reach South of River	Model of Mission Reach North and South of River	Model of Mission Reach and Upstream to GE
3. Develop Conceptual Site Model	-	\$12,100	\$18,300	\$36,000
4. Reporting	\$5,000	\$8,800	\$13,200	\$15,000
Total	\$5,000	\$20,900	\$31,500	\$51,000

Mission Reach Groundwater Flow Direction Study

Discussion

- Questions?

Future Study Status



Project Spanning June 30

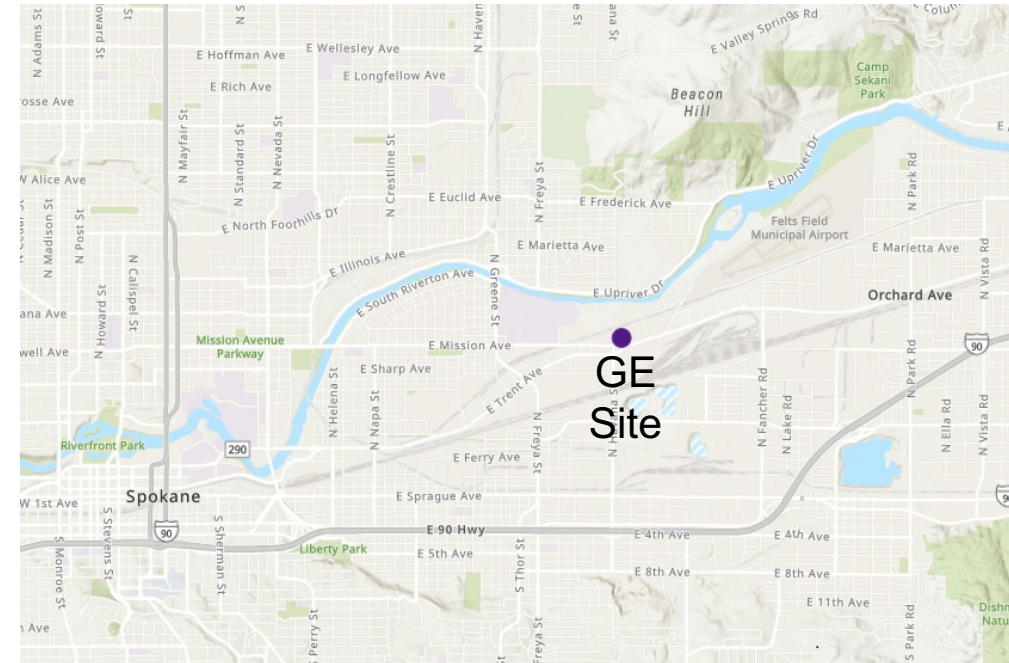
Project	Completed Pre-June 30	Completed Post-June
Long term water column trend assessment (high flow)	Scoping QAPP Field planning SPMD preparation/rental Field labor Laboratory analysis (conventional) \$45,000	Laboratory analysis (PCBs) Data validation SPMD data assessment Reporting Data upload to EIM \$49,000

Projects to be Scoped for Potential Initiation after June 30

- Spokane River/groundwater interface sampling near GE site
- Sampling of downgradient GE wells located on public property
- Spokane River/groundwater interface sampling in Mission Reach
- Sampling of groundwater seeps
- Additional canine detection work
- Additional biofilm sampling
- Dye survey to assess connectivity to the river near GE site

Spokane River/Groundwater Interface Sampling near GE Site

- GE has a Superfund NPL site located between Upriver Dam and Greene St.
- Task Force is currently sponsoring a fingerprinting study to assess whether the GE site is contributing PCB to the river
 - Indirect assessment of GE PCB load
- A better assessment of PCB load from GE site could be obtained by direct measurement of the extent of groundwater PCB concentration



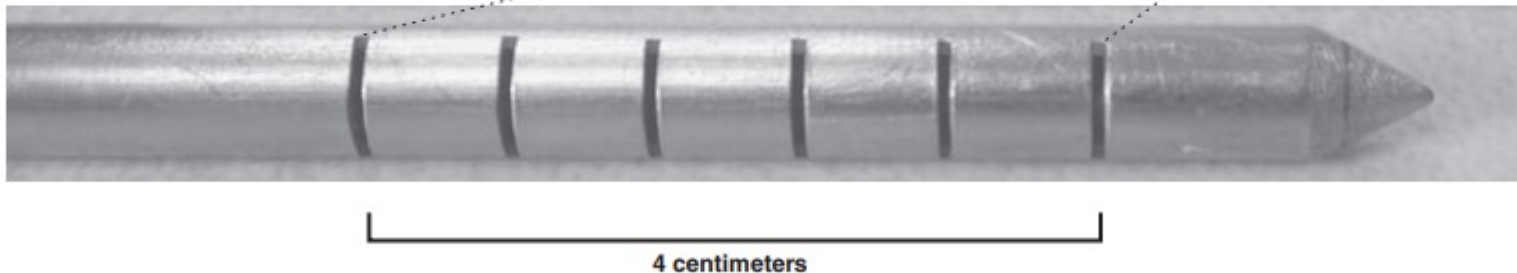
Spokane River/Groundwater Interface Sampling near GE Site

- Deploy temporary push-point samplers (aka Henry samplers) at multiple locations near surface water-groundwater interface
 - Installation of permanent wells infeasible due to regulatory requirements

A. Pushpoint sampler. Rod lengths used were 91 centimeters and 183 centimeters.



B. Point head detail. Screen is 4 centimeters wide. Tube diameter is 6.4 millimeters.



Spokane River/Groundwater Interface Sampling near GE Site

- Sample a sufficient number of stations to define the presence and extent of the GE plume near the river
 - Sample 10 to 20 locations from ~200' downstream to ~500' upstream of biofilm site



Sampling of Downgradient GE Wells Located on Public Property

- Groundwater monitoring conducted under current clean-up does not use Method 1668
 - MW-18 and MW-22 are located on public property
- Data from these wells would provide greater understanding of PCB concentration and fingerprint
- Scope
 - Sample MW-18 and MW-22 for PCBs



Dye Survey to Assess Connectivity to the River near GE site

- Connectivity between GE groundwater plume and Spokane River is currently inferred from well elevation data
- Connectivity could be more directly addressed via a dye survey
- Scope
 - Inject dye at upgradient well
 - Monitor for dye in river and/or downgradient wells

Spokane River/Groundwater Interface Sampling in Mission Reach

- Same concept as described above for GE site, applied to Mission Reach
- Scope
 - Sample 20 to 30 locations in vicinity of biofilm sites with elevated PCB concentrations



Sampling of Groundwater Seeps

- Ecology encountered some groundwater seeps when conducting the biofilm study
 - Sampling these seeps for PCB concentrations could identify potential groundwater
- Scope
 - Reconnaissance survey to identify presence of seeps
 - Sampling of identified seeps

Additional Canine Detection Work

- Previous deployment of Jasper on portion of Mission Reach showed promising results
- Scope
 - Deployment over a larger area

Additional Biofilm Sampling

- Previous biofilm monitoring has been instrumental in identifying elevated PCB concentrations in Spokane River
- Scope
 - Additional biofilm monitoring informed by results of 2022 monitoring

Projects to be Scoped for Potential Initiation after June 30

Project	Advocate
Spokane River/groundwater interface sampling near GE site	
Spokane River/groundwater interface sampling in Mission Reach	
Sampling of groundwater seeps	
Sampling of downgradient GE wells located on public property	
Additional canine detection work	
Additional biofilm sampling	
Dye survey to assess connectivity to the river near GE site	