

Exhibit A

Scope of Work (SOW)

Professional Services by San Francisco Estuary Institute (SFEI)

Period of 8/21/2020 - 9/1/2021

Scope of Work: Per- and Polyfluoroalkyl Substances Monitoring for Bay Area Publicly-Owned Treatment Works, Phase 1: Study design, coordination of sample collection, data quality assurance and reporting

Objective: San Francisco Estuary Institute (SFEI) will develop and implement a study to investigate per- and polyfluoroalkyl substances (PFAS) in matrices from Bay Area Publicly-Owned Treatment Works (POTWs) to inform the monitoring strategy and program decisions for the Regional Monitoring Program for Water Quality in San Francisco Bay (RMP) and address monitoring needs for the State Water Board. The study is currently envisioned as a two-phase study.

Phase 1 will analyze samples from a representative set of Bay Area POTWs to measure concentrations of PFAS in wastewater influent, effluent, biosolids, and reverse osmosis concentrate. Tasks to be undertaken by SFEI in Phase 1 consist of project management, study design, coordination of sample collection, data management and quality assurance, data upload, and reporting (described in Tasks 1 through 5 below). This Scope of Work does not include the cost of laboratory analysis of samples; BACWA is expected to develop a separate contract with a commercial laboratory to cover analytical costs.

Some of the management questions that will be explored via Phase 1 include the following:

- What are concentrations of PFAS entering POTWs (through influent) and discharged to the Bay or ocean (through effluent or reverse osmosis concentrate)?
- What are concentrations of PFAS in biosolids?
- Are there suggestive relationships between service population characteristics and levels of PFAS in influent? Do levels and patterns of PFAS in wastewater indicate unique and/or elevated sources of PFAS in some service areas?
- Have concentrations of specific PFAS in effluent changed relative to monitoring conducted in 2014 and earlier?
- Do specific PFAS concentrations (including estimate of total oxidizable precursors) increase or decrease during treatment? Are there clear differences in liquid/solid partitioning between secondary and advanced secondary facilities?

This Scope of Work describes only Phase 1 of the study. Phase 2 is expected to start immediately after the end of Phase I during the summer of 2021. Phase 2 monitoring, informed by Phase 1 results, is expected to include additional monitoring at select POTWs, and will be designed to explore specific research questions to inform management decisions.

Task 1: Project Management (Budget: \$1,800)

SFEI will provide a final workflow diagram for the completion of Tasks 2 through 5 of this Scope of Work, with key decision points noted, and an associated schedule.

SFEI will conduct project management activities, including:

- Supervise, coordinate, and monitor project progress and sub-contracts in conformance with best practices and other governing agency requirements;
- Notify BACWA of any changes in scope or budget as soon as possible and propose actions if necessary to correct these changes;
- Maintain communication with BACWA by being available by phone or e-mail and responding in a timely fashion;
- Maintain project files; and
- Provide quarterly invoices to BACWA.

Task 2: Sampling and Analysis Plan Development and Implementation (Budget: \$13,000)

By September 15, 2020, or 30 days from the issuance of the notice to proceed, SFEI will provide a draft sampling and analysis plan (SAP). The SAP will be developed in consultation with BACWA and the Water Boards to select a representative set of POTWs to monitor wastewater influent, effluent, biosolids, and reverse osmosis concentrate. SFEI will also support BACWA in selecting and contracting with a commercial laboratory with appropriate PFAS accreditation and using methods consistent with statewide investigation orders.

BACWA and the Water Boards will have the opportunity to provide comments on the draft SAP before it is finalized, and it is expected that final comments will be received within fourteen days of receiving the draft SAP. BACWA and the Water Boards will approve the final SAP before it is implemented. Delay in receiving approval for the SAP may delay implementation of monitoring activities.

At a minimum, the SAP will include the following elements:

- Identify specific POTWs that represent the range of POTWs in the Bay; this will include the largest facilities that account for the majority of wastewater flows to the Bay, as well as a range of medium and small facilities that discharge to the Bay. It is estimated that between 10-15 POTWs will be selected to participate in the study. Selected POTWs will be representative of geographic distribution, presence of various industries that are potential sources of PFAS, and different proportions of residential, commercial, and industry service populations. To support selection of POTWs, BACWA and all POTWs in Water Board Region 2 will promptly (within two weeks) provide answers to the POTW Information Questionnaire in the State Water Board's investigation orders. The POTW Questionnaire will be uploaded to GeoTracker by the individual POTWs.
- Detailed description of sampling design and instructions on how samples should be collected. Sample collection methods will be consistent with statewide investigation orders. Specification of when samples should be collected will also be provided to make

sure samples are representative of dry weather conditions and comparable within the sample set.

- Description of laboratory analyses to be conducted:
 - Targeted analysis of PFAS in influent, effluent, reverse osmosis concentrate, and biosolids from participating POTWs for PFAS consistent with statewide investigation orders.
 - Total oxidizable precursor (TOP) PFAS analysis in influent and biosolids to screen for the presence of PFAS precursors that are not captured in the targeted analysis.
- Essential quality assurance and quality control considerations. A project-specific Quality Assurance Project Plan will not be developed due to time constraints for initiating this study and budget limitations. Analytical results will be evaluated using Quality Assurance/Quality Control (QA/QC) criteria for PFAS specified in the Department of Defense (DoD) Quality Systems Manual (QSM) dated 2017, version 5.1 or later. PFAS sampling guidelines specified by the State Water Board, including description of products and materials that should be avoided to prevent PFAS contamination of samples, will also be included. Relevant field sampling QA/QC criteria for this study specified in the RMP QAPP, such as recommended number of field blanks and field duplicates per number of field samples, will be explicitly stated in the SAP. Likewise, the RMP QAPP process for data evaluations, including steps to address data that do not meeting QA/QC criteria will be followed and explicitly included in the SAP for the Water Boards to review and approve.

Guided by the SAP, SFEI will coordinate sample collection and handling procedures with the POTWs and the analytical laboratory, to ensure sampling is completed and quality control measures are met.

Schedule and Deliverables

- Questionnaire for BACWA POTWs regarding service population: Wednesday, August 26, 2020. Responses expected by Friday, September 4, 2020.
- Draft Sampling and Analysis Plan: Friday, September 25, 2020; Comments from BACWA and Water Boards expected by Friday, October 9, 2020.
- Final Sampling and Analysis Plan: Wednesday, October 28, 2020.
- Support Sample Collection: October 28 - November 30, 2020.

Task 3: Data Management and QA/QC Review (Budget: \$23,000)

It is expected that the laboratory results will be reported in a single batch for each matrix that includes analytical results from all participating facilities. Specific tasks required of SFEI include:

- Set up the EDD template for targeted analytical results and coordinate with the laboratory to populate the EDD template accurately according to standardized format.
- Provide additional data formatting as necessary for reporting.

- Review analytical results compared to quality control considerations specified in the SAP and QA/QC criteria specified in DoD Table B-15 of Quality Systems Manual (QSM), dated 2017, version 5.1 or later. Data results will not be modified, and data that do not meet QA/QC criteria will be flagged as described in the SAP.
- Prepare QA summary for reporting and data evaluation purposes that will be included in the monitoring report.

Schedule and Deliverables

- QA summary within 60 days of receiving data results from the analytical laboratory.

Task 4: Data and Report Upload to GeoTracker (Budget: \$4,200)

Within 60 days of receiving the final analytical laboratory report, SFEI will upload an Electronic Data Format (EDF) of the analytical results into the Water Board’s GeoTracker system on behalf of BACWA and participating POTWs. The budget is based on the assumption that site information for each participating facility is already in the GeoTracker system; additional site information may need to be added to the GeoTracker system, and will be done by the participating facility.

Within 90 days of the receipt of the final analytical laboratory report, SFEI will upload a monitoring report via GeoTracker’s ESI portal. One monitoring report will be developed for the Phase 1 study, which will be submitted on behalf of each facility. It is expected that each facility will provide SFEI with information about the sampling locations, flow measurements, and flow measurement devices used during sampling in a timely manner. SFEI will compile all reported data (analytical results, QA/QC analyses, any deviations from the SAP reported from each facility, and sampling locations and flow measurements reported by each facility) into one monitoring report.

Schedule and Deliverables.

- Analytical results uploaded to the GeoTracker system within 60 days of receiving the final laboratory analytical report.
- Monitoring report submitted to the GeoTracker system within 90 days of receiving final laboratory analytical report.

Task 5: Preliminary Data Analysis and Technical Memo (Budget: \$23,000)

SFEI will analyze data and present results addressing management questions to BACWA and the Water Boards. SFEI will also provide recommendations for Phase 2 monitoring informed by Phase 1 results. Results and recommendations will be summarized in a technical memo. Possible questions that may be answered during Phase 1 and possible Phase 2 monitoring strategies are shown in Table 1.

Table 1: Phase 2 monitoring strategies

Possible Phase 1 Result Questions	Possible Phase 2 Monitoring Strategy
What subset of POTWs warrant a second round of influent, effluent monitoring?	Conduct second-round monitoring at subset of POTWs, particularly the largest facilities, those with historic data (trends), and possibly additional medium or small facilities if patterns are different from large facilities.
Do variations in biosolid concentrations warrant additional monitoring and at more POTWs?	Conduct follow-up biosolids monitoring at subset or all POTWs.
Do data indicate a significant presence of precursors?	Conduct additional target, TOF, TOP, suspect screening analyses in influent, effluent, biosolids (Collaboration with UC Davis).
Do results indicate different PFAS patterns from different service populations? Do data indicate unusual analytes or patterns that indicate unique sources?	Investigate possible unique sources or uses in sewershed (target, TOP on influent) (Collaboration with specific POTWs).

Schedule and Deliverables

- Technical memo describing preliminary Phase 1 monitoring results and recommendations for Phase 2 monitoring strategies and identification of decisions points: second quarter of 2021. A final report will be provided at the completion of Phase 2 monitoring and is not included in this SOW.
- Revised scope of work that includes Phase 2 monitoring: one month after receiving comments on technical memo.

Table 2: Budget

Task	Description	Budget
1	Project Management	\$1,800
2	Sampling and Analysis Plan Development and Implementation	\$13,000
3	Data Management and QA/QC Review	\$23,000
4	Data and Report Upload to GeoTracker	\$4,200
5	Preliminary Data Analysis and Technical Memo	\$23,000
	Total	\$65,000