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2023-2024 Summary Report

6PPDQ in Highway Runoff and BMP Effectiveness
Seattle, Washington and Portland, Oregon

Prepared for
Washington State Department of Ecology

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Science + Planning + Design

Note:
Some pages in this document have been purposely skipped or blank pages inserted so that this document will print correctly when duplexed.

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Acronyms and Abbreviations

6PPD	N-(1,3-dimethylbutyl)-N'-phenyl-p-phenylenediamine
6PPDQ	N-(1,3-dimethylbutyl)-N′-phenyl-p-phenylenediamine-quinone
BMP	Best management practice
Ecology	Washington State Department of Ecology
FLPE	Fluorinated high density polyethylene
HDPE	High density polyethylene
I-205	Interstate 205
I-5	Interstate 5
KCEL	King County Environmental Laboratory
LC50	Lethal concentration 50
LCS	Laboratory control sample
MEL	Manchester Environmental Laboratory
MQO	Measurement quality objective
ODOT	Oregon Department of Transportation
PTFE	Polytetrafluoroethylene
QAPP	Quality assurance project plan
SCTF	Ship Canal Test Facility
SOP	Standard Operating Procedure
STTC	Stormwater Technology Testing Center
TWP	Tire wear particles
WSDOT	Washington State Department of Transportation
WY	Water year

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Introduction

This report presents the results of an exploratory study conducted in water years (WY) 2023 and 2024 to characterize 6PPDQuinone[1] (6PPDQ) in stormwater runoff from highways in the Pacific Northwest. The study also evaluated 6PPDQ removal by stormwater treatment technologies, how field sampling protocols and equipment may impact 6PPDQ recovery in stormwater samples, and differences in 6PPDQ quantification between two analytical laboratories. This project is funded by the Washington State Department of Ecology (Ecology).

Background

For over two decades, researchers in the Pacific Northwest of the United States have been studying urban runoff mortality syndrome in coho salmon (Scholz et al. 2011). Years of investigations have sought to identify the chemical(s) causing the mortality in coho (Peter et al. 2018, Tian et al. 2020, Tian et al. 2021).

In 2020, researchers identified a chemical in stormwater called 6PPDQ that forms from an antioxidant, 6PPD, which is used in tires to extend their lifespan. This chemical is acutely toxic to coho and, to a lesser degree, toxic to several other aquatic species including steelhead, char, and brook trout (Tian et al. 2021, 2022; Brinkmann et al. 2022; Hiki et al. 2021). During initial investigations, the lethal concentration 50 (LC50; concentration required to kill 50 percent of the test population) for juvenile coho salmon was identified as 95 nanograms per liter (ng/L) and for chinook salmon as greater than 67,307 ng/L (Lo et al. 2023). Subsequent studies have indicated that at life stages less than one year old coho LC50's may be as low as 41 ng/L (Lo et al. 2023). Urban roadway stormwater runoff has also shown acute toxicity for juvenile steelhead and chinook salmon but to a lesser degree than coho salmon (French et al. 2022). The toxicity of urban stormwater runoff for these species may be related to 6PPDQ or other chemicals.

A primary pathway of 6PPDQ transport to receiving waters is via stormwater runoff carrying tire wear particles (TWP) from roads and parking areas to surface waters (Tian et al. 2021). The parent chemical to 6PPDQ is 6PPD. 6PPD is added to rubber as an antiozonant, to extend longevity. When 6PPD is exposed to air, it reacts with ozone or oxygen, which is results in numerous transformation products, including 6PPDQ. It is still unclear how long it takes for all the 6PPD to fully migrate out of a tire or its wear particles. Recent studies suggest that, upon exposure to the atmosphere and oxidation, about 10 percent of 6PPD in tires transforms to 6PPDQ and that the remaining 90 percent is transformed into other chemical byproducts with unknown fates and toxicity (Hu et al. 2022, Seiwert 2022).

Given the ubiquitous use of tires and the toxicity of 6PPDQ, there is considerable regional interest in collecting more information on levels of 6PPDQ in roadway runoff, the ability of stormwater treatment technologies to remove 6PPDQ, and the appropriate methods to conduct stormwater sampling.

A common preferred method of characterizing chemical constituents, such as 6PPDQ, across a storm event is through the use of flow-weighted or time-weighted composite sampling. In flow-weighted

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[1] N-(1,3-dimethylbutyl)-N'-phenyl-p-phenylenediamine

sampling, flow rate is monitored to trigger collection of aliquots to represent known volumes of water, which generate a composite sample. Time-weighted sampling is defined by the collection of samples at set intervals (e.g., every 15 minutes). A common procedure for composite sampling is the deployment of an automated peristaltic sampler (autosampler). Autosamplers employ a combination of tubing, pump, and a large sampling container (carboy). Tubing is placed in the source water, routed through the peristaltic pump, and pumped water is collected in the carboy. The collected composite sample is then delivered to a laboratory for analysis.

Some stormwater pollutants can chemically adhere (sorb) to different materials, which may result in a decrease of that chemical in the sample analyzed by the laboratory. The loss of 6PPDQ due to sorption to various field equipment, for instance, is not yet well-characterized nor evaluated for in stormwater sampling protocols. Analysis at University of Washington Tacoma has found sorption to plastic, rubber, and silicone materials (Hu et al. 2023), but the study was focused on laboratory conditions and was not intended to accurately model field conditions and exposure kinetics. Conversely, materials which are reused from event to event, such as automated sampler tubing, may leach 6PPDQ.

Objectives

The project goals are to:

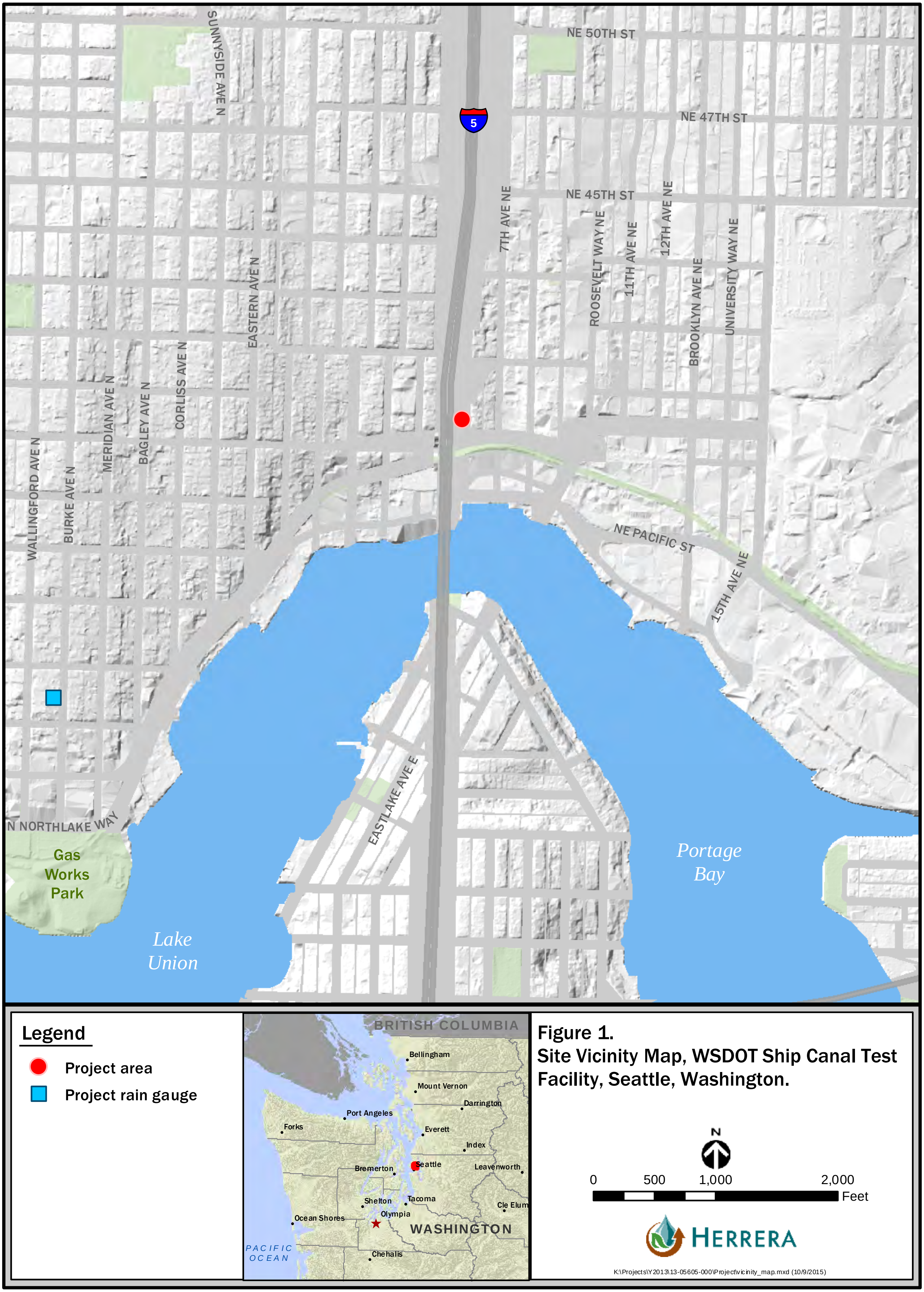
- Collect data that can inform refinement of a field protocol for collecting stormwater composite samples via automated sampler for 6PPDQ analysis.
- Collect storm event data to characterize 6PPDQ in stormwater runoff at the Ship Canal Test Facility (SCTF) from Interstate 5 (I-5) in Seattle, Washington (Figure 1) and the Stormwater Technology Testing Center (STTC) from Interstate 205 (I-205) in Portland, Oregon (Figure 2).
- Evaluate the ability of selected stormwater treatment devices to reduce 6PPDQ concentrations.
- Evaluate inter-laboratory differences in reported values of 6PPDQ.

To accomplish the above project goals, the following sampling and analytical objectives were identified:

- Analyze 6PPDQ concentrations and assess removal efficiency by testing runoff samples, treated and untreated, before and after stormwater makes its way through five evaluated stormwater treatment devices. Four of the stormwater treatment devices are installed at the SCTF and one is installed at the STTC. For each stormwater treatment device, a goal of ten paired treated and untreated stormwater grab samples will be collected over five storm events (two pairs of samples per device per storm) and will be used to both characterize 6PPDQ in untreated stormwater and measure treatment efficacy of stormwater devices. At STTC, a goal of ten additional samples of untreated stormwater will be collected directly from the gravity line over five storm events (two samples per storm) to further characterize 6PPDQ in untreated stormwater runoff.
- Analyze differences in 6PPDQ concentrations across split grab samples of untreated runoff that underwent different sample storage or handling procedures. Twenty grab samples shall be collected across two storm events at the SCTF (ten samples per storm) to ensure a wide range of 6PPDQ concentrations. Each grab sample will be split with a churn splitter into nine experimental

groups which cover variables including sample container material, holding time prior to transfer to amber glass containers, sample container headspace, and sample intake tubing. One of the nine experimental groups in each split shall be the control sample, which is collected directly into an amber glass sample container as specified in current draft 6PPDQ analytical methods (EPA 2023). 6PPDQ results from each of the 20 sample splits will be compared to the 6PPDQ concentrations in the control sample.

- Analyze differences in 6PPDQ concentrations reported by King County Environmental Laboratory (KCEL) and Manchester Environmental Laboratory (MEL) for 20 replicates of untreated runoff.



Legend

● Project area

🟦 Project rain gauge

Figure 1.
Site Vicinity Map, WSDOT Ship Canal Test Facility, Seattle, Washington.

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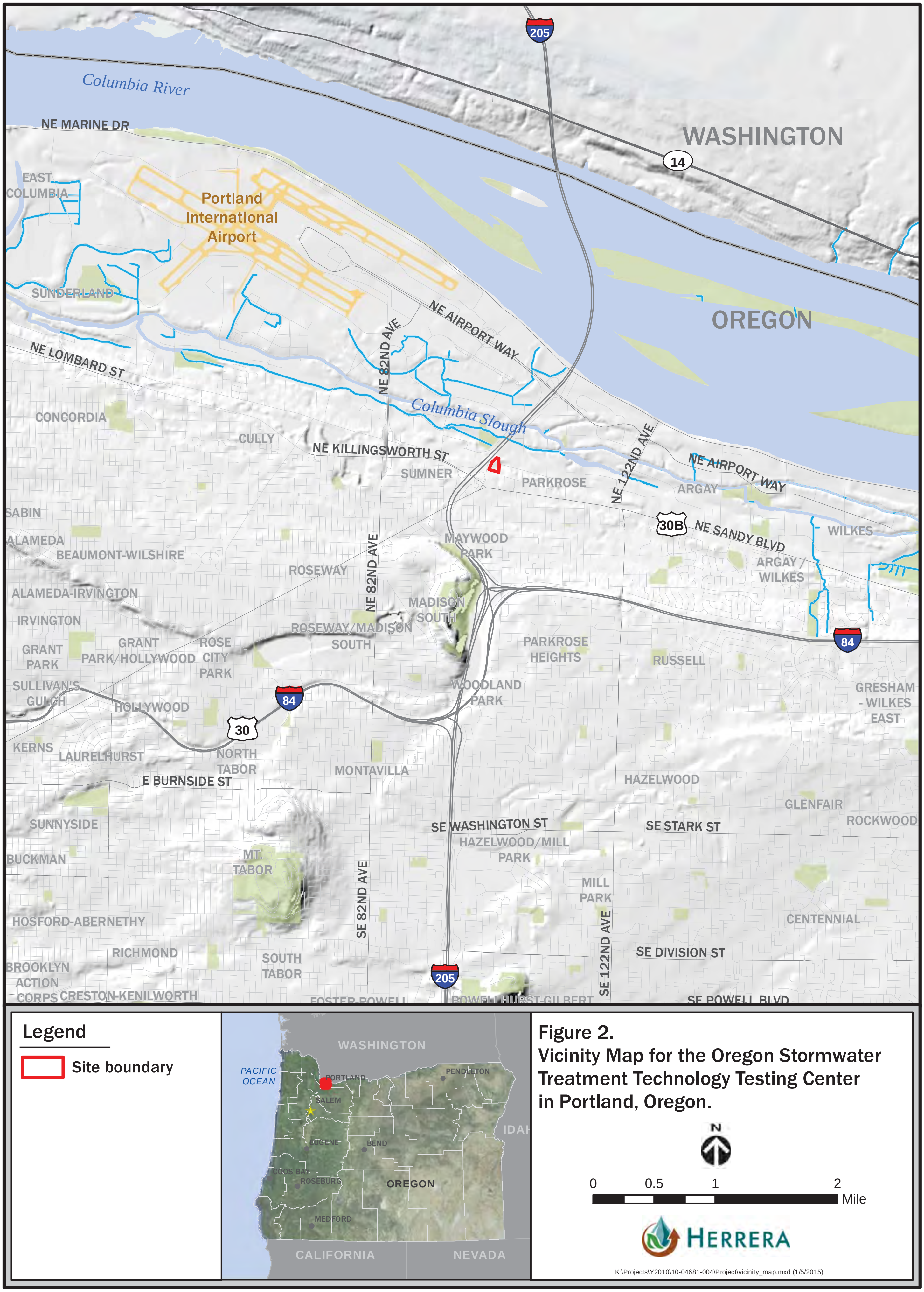

Figure 2.
Vicinity Map for the Oregon Stormwater Treatment Technology Testing Center in Portland, Oregon.

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Methods

The stormwater monitoring goals for this project were to collect up to ten paired influent and effluent grab samples at each of five proprietary BMPs installed at the SCTF in Seattle, Washington and STTC in Portland, Oregon across five storm events (two pairs of samples at each BMP per storm); and collect 20 sets of untreated highway runoff grab samples for various field protocol experimental groups across two storm events (ten sets per storm) at the SCTF. A quality assurance project plan (QAPP) describing the study design, methods, data validation, analysis, and reporting was prepared for the investigation in water year 2023 (Herrera 2023). A QAPP addendum was prepared to describe modifications including expansion of the monitoring period into water year 2024, BMP sampling at the STTC, and addition of a second round of field protocol sampling (Herrera 2024a).

This section briefly describes the field, data analysis, and laboratory procedures employed to achieve the project goals. Additional detail regarding methods and procedures are detailed in the QAPP and QAPP addendum (Herrera 2023; 2024a).

Field Procedures

Field sampling procedures for both BMP and field protocol sampling were generally consistent with the QAPP and Addendum (Herrera 2023; 2024a). For all study components, sampling was targeted toward wet-weather events with the following characteristics:

- Target storm depth: a minimum of 0.15 inches of precipitation over a 24-hour period.
- Antecedent conditions: a period of at least 6 hours preceding the event with less than 0.04 inch of precipitation.
- Minimum duration: target storms must have a duration of at least 1 hour.

Field sampling procedures and deviations from the QAPP are briefly described below.

Runoff Characterization and BMP Effectiveness

The highways contributing runoff to the SCTF and STTC test bays are similar urban interstates with annual average daily traffic of 197,000 (WSDOT 2024) and 161,000 (ODOT 2024), respectively. Highway runoff in these basins is mostly untreated and is conveyed through stormwater sewers before diversion directly to test bays at the SCTF or to a wet well at the STTC. Stormwater is then pumped from the STTC wet well to test bays or drained by gravity through the gravity lines. Stormwater grab samples were collected from five different proprietary BMPs installed at the SCTF and STTC. Table 1, below, describes the stormwater technologies installed in each test bay.

Table 1. Stormwater BMPs Tested at SCTF and STTC.

Test Bay	Description	Treatment Processes	Hydraulic Loading Rate (gpm/ft^2)[a]
SCTF-TB1	High flow rate biofilter	Settling, filtration, sorption, biological processing	3.1
SCTF-TB2	Membrane filter	Settling, separation, filtration, sorption	1.0
SCTF-TB2.5	Horizontal bed media filter	Filtration, sorption	7.1
SCTF-TB4	Cartridge-based media filter	Settling, filtration, sorption	1.5
STTC-TB1	High flow rate biofilter	Settling, filtration, sorption, biological processing	2.0

[a] Design loading rate as specified by BMP manufacturer.

gpm/ft^2: Gallons per minute per square foot.

Stormwater BMP grab sampling at the SCTF and STTC was conducted as follows:

- To collect the inlet samples, the bottle was dipped into the pipe at the entry point of each BMP as specified in the QAPP and Ecology SOP. If grab sample ports were installed (SCTF Bay 2.5), the sample port was opened for at least 10 seconds to allow stormwater to flow and clear any settled solids.
- To collect the treated outlet sample, the open bottle was placed beneath the water as it spilled over the outlet weir or pipe for each BMP as specified in the QAPP and Ecology SOP.
- Field duplicate samples were collected immediately after the primary field sample.
- A second set or paired influent and effluent samples were collected during each target storm event as described above. The first and second sets of paired samples were typically collected between one to five hours apart to cover a range of storm event conditions.

Untreated highway runoff samples from I-205 at the STTC were collected as follows:

- All three gravity line ball valves were opened to allow stormwater to flow through the wet well system for at least 10 minutes to clear any settled solids in the wet well or lines.
- The open sample bottle was placed into the stormwater flow at the end of the central gravity line (G2) hose where it discharges into the effluent basin. A second grab sample was collected between two to five hours after the first.

Field Protocol Evaluation

Field protocol sampling was conducted during two separate storm events, or rounds. During each round, ten bulk grab stormwater samples approximately 10 liters in volume were collected in a Teflon churn splitter throughout the duration of the storm event. During each of these ten grab sampling instances, or sample splits, the bulk stormwater volume was churned and split into nine discrete samples representing a unique experimental group. These experimental groups were selected to evaluate the performance of a variety of typical field sampling materials and procedures associated with automated composite sampling (e.g., sample intake tubing material, carboy size, and carboy holding time). Based on the preliminary results from the first round of field protocol sampling, the experimental groups were modified for the second round. These experimental groups are presented in Table 2, below, and include a control and field duplicate group. The control and field duplicate groups were collected at the beginning and end, respectively, of each sample split to assess heterogeneity of the sample volume and field churn mixing procedures. Other experimental groups were selected to isolate individual materials or evaluate the combined effect of multiple materials or procedures on 6PPDQ results.

Table 2. Field Protocol Study Experimental Groups.

Experimental Group	Sampling Round		Description
	1	2	
CONT	X	X	Control Group. Amber glass sample bottle filled directly from the churn splitter.
HDPE_24	X	X	HDPE 24 Hour Group. HDPE sample bottle filled directly from the churn splitter, held in the HDPE bottle for 24 hours, then transferred to an amber glass sample bottle.
HDPE_OLD		X	HDPE 24 Hour Used Bottle Group. Previously used decontaminated HDPE sample bottle filled directly from the churn splitter, held in the HDPE bottle for 24 hours, then transferred to an amber glass sample bottle.
HDPE_24_20L		X	HDPE 24 Hour Large Carboy Group. Previously used decontaminated 20-liter HDPE carboy filled with 2 liters of sample volume directly from the churn splitter, held in the carboy for 24 hours, then transferred to an amber glass sample bottle.
HDPE_FT	X		HDPE Full Time Group. HDPE sample bottle filled directly from the churn splitter and held in the HDPE bottle until analysis.
AUTO_OLD		X	Previously used decontaminated 1-liter HDPE bottle filled with 250-mililiters of sample volume by pumping from the churn splitter through 10-feet of PTFE tubing and 32.25 inches of silicone tubing that has been previously deployed for stormwater sampling using a peristaltic pump. Sample volume is held in the HDPE bottle for 24 hours then transferred to an amber glass sample bottle.
PTFE_TUB	X	X	PTFE Tubing Group. Amber glass sample bottle filled by pumping sample volume from the churn splitter through 10-feet of PTFE tubing and 1 foot of silicone tubing using a peristaltic pump.
PTFE_TUB_OLD		X	PTFE Used Tubing Group. Amber glass sample bottle filled by pumping sample volume from the churn splitter through 10-feet of PTFE tubing and 32.25 inches of silicone tubing that has been previously deployed for stormwater sampling using a peristaltic pump.
SILI_TUB	X		Silicone Tubing Group. Amber glass sample bottle filled by pumping sample volume from the churn splitter through 2 feet of silicone tubing using a peristaltic pump.
FLPE_24	X		FLPE 24 Hour Group. FLPE sample bottle filled directly from the churn splitter, held in the FLPE bottle for 24 hours, then transferred to an amber glass sample bottle.
FLPE_FT	X		FLPE Full Time Group. FLPE sample bottle filled directly from the churn splitter and held in the FLPE bottle until analysis.
LAB	X	X	Laboratory Split Group. Amber glass sample bottle filled directly from the churn splitter and delivered to Manchester Environmental Laboratory for analysis.
FD	X	X	Field Duplicate Group. Amber glass sample bottle filled directly from the churn splitter.

HDPE: High density polyethylene FLPE: Fluorinated high density polyethylene PTFE: Polytetrafluoroethylene

Untreated highway runoff samples from I-5 at the SCTF were collected for the field protocol evaluation as follows:

- All segments of tubing used in the experimental groups were backflushed with five liters of lab-provided DI water using a peristaltic pump. One pre-sample rinsate blank was then collected from each segment of tubing.
- The churn splitter was placed directly in the stream of stormwater to directly collect the full sample volume required.
- The sample volume was pre-mixed prior to collection of sample bottles by smoothly raising and lowering the churn paddle at a rate of approximately nine inches per second at least ten times.
- The sample bottles were filled while consistently churning the sample volume as described in the QAPP. The bottles were filled in the order described in the QAPP and QAPP Addendum. For the experimental groups with tubing sections, one end of the tubing segment was placed into the churn splitter and a peristaltic autosampler was used to fill the sample bottle.
- Upon collection of each set of samples, the churn splitter was rinsed with at least three times the target sample volume of source water. Sampling procedures were then repeated until all sample sets are collected.
- Upon collection of the final set of samples and while still wet, the churn splitter was rinsed with lab-provided DI water and returned to the laboratory for decontamination.
- All segments of tubing used in the experimental groups were backflushed with five liters of lab-provided DI water using a peristaltic pump. One post-sample rinsate blank was then collected from each segment of tubing.

The ninth sample set from experimental group AUTO_OLD (Table 2) during the second round of field protocol sampling was missed due to sampling error.

Data Analysis

To identify significant differences between control and experimental group 6PPDQ concentrations, a paired permutation test (Helsel and Hirsch, 2020) was used to evaluate whether the means of the groups are significantly different. Statistical significance in these tests was assessed based on an alpha level of 0.05. A significant difference between the mean concentrations of the experimental groups and the control group is indicated where the p-value is less than the alpha level of 0.05. R software packages (R Core Team 2023) were used to perform permutation tests and calculate p-values and mean differences.

Laboratory Procedures

Stormwater samples submitted to KCEL and MEL were analyzed for 6PPDQ via methods KCEL SOP #4077 and MEL SOP #730236V1.1, respectively (Appendix C). No laboratories were accredited for 6PPDQ analysis at the outset of this project, but Ecology’s Lab Accreditation Unit (LAU) signed an accreditation waiver for KCEL and MEL for analysis of samples associated with this project. MEL received accreditation in late 2023. Field protocol samples delivered to KCEL in HDPE or FLPE containers were transferred to amber glass containers as required by laboratory SOP either upon receipt or immediately prior to analysis depending on the experimental group.

The laboratories reported analytical results within 30 days of receipt of the samples as tabular electronic data deliverables to minimize data entry problems and facilitate data analysis. Reports provided sample and quality control data including all raw data and quality control results associated with the data. Reports included a case narrative summarizing any problems encountered in the analyses, corrective actions taken, changes to the referenced methods, and an explanation of data qualifiers.

Monitoring Events and Quality Assurance Review

Monitoring Events

The highway characterization and BMP performance monitoring objective of collecting 20 paired samples across five storm events was partially met with the following exceptions:

- 16 samples (8 influent, 8 effluent) were collected at SCTF Test Bay 2 over four storm events.
- 12 samples (6 influent, 6 effluent) were collected at SCTF Test Bay 4 over three storm events. Additional storms were not targeted at this test bay because monitoring at the associated stormwater BMP was suspended.
- 12 samples (6 influent, 6 effluent) were collected at STTC Test Bay 1 over three storm events. Because monitoring of the associated stormwater BMP was delayed, additional storms could not be sampled before the end of the wet season.
- No samples were collected at STTC Test Bay 2 due to significant delays in installation of the associated stormwater BMP.

The field protocol sampling objective of collecting ten split samples of each experimental group across two rounds was met except for one sample from the AUTO_OLD experimental group (Table 2) which was skipped due to sampling error. All sampling events with associated laboratory report ID are presented in Table 3 below.

Table 3. Stormwater Sampling Summary.

Sample Date	Lab Report ID	Analytical Lab	Number of Samples	Stations	Antecedent Dry Period (hr)	Total Storm Depth (in)	Total Storm Duration (hr)	Average Storm Intensity (in/hr)	Comment
Ship Canal Test Facility – Seattle, Washington									
2023-05-05	L81563	KCEL	9	TB2.5, TB4	266	0.60	13	0.046	Field duplicate at TB4-IN
2023-06-18	L81690	KCEL	84	SCTF Influent	35	0.22	13	0.017	Field protocol round 1
2023-06-18	2306047	MEL	10						
2023-10-24	L81678	KCEL	5	TB1	165	0.84	18	0.047	Field duplicate at TB1-IN
2023-11-01	L82372	KCEL	9	TB1, TB2.5	180	1.46	15	0.097	Field duplicate at TB25-IN
2023-11-06	L82371	KCEL	5	TB1	13	0.59	15	0.039	Field duplicate at TB1-IN
2023-11-21	L81678, L82371	KCEL	12	TB1, TB2, TB2.5	68	0.38	7	0.052	No duplicate collected
2023-12-19	L82954	KCEL	9	TB1, TB2	13	0.28	13	0.022	Field duplicate of TB2-IN
2024-01-08	L82954, L82955	KCEL	13	TB2, TB2.5, TB4	15	0.74	23	0.032	Field duplicate of TB25-IN
2024-01-18	L82955	KCEL	4	TB2.5	14	0.40	17	0.024	No duplicate collected
2024-01-24	L82955, L82956	KCEL	9	TB2, TB4	39	0.24	9	0.027	Field duplicate of TB4-IN
2024-02-28	L83306	KCEL	85	SCTF Influent	53	1.28	26	0.049	Field protocol round 2, one AUTO_OLD split missed
2024-02-28	2402033	MEL	10						
Stormwater Technology Testing Center – Portland, Oregon									
2023-06-18	L81564	KCEL	2	G2	213	0.99	16	0.062	Gravity line 2 samples
2023-08-31	L81565	KCEL	2	G2	1,738	0.39	10	0.039	Gravity line 2 samples
2024-03-25	L82959	KCEL	4	TB1	59	0.44	16	0.028	No duplicate collected
2024-03-27	L82960	KCEL	5	TB1	20	0.45	11	0.041	Field duplicate of TB1-IN
2024-04-25	L82961	KCEL	4	TB1	417	0.58	9	0.064	No duplicate collected

[a] Total sample count includes field duplicates and equipment rinsate blank samples.

KCEL = King County Environmental Laboratory

MEL = Manchester Environmental Laboratory

Quality Assurance

Measurement quality objectives (MQOs) establish the performance metrics and criteria for acceptance that provide the basis for evaluating data quality and usability. MQOs for precision and bias established in the QAPP are presented in Table 4 below.

Table 4. Measurement Quality Objectives.

Parameter	Lab	Reporting Limit	Method Detection Limit	Method Blank	Rinsate Blank	Laboratory or Field Duplicate RPD or Difference[a]	Matrix Spike Percent Recovery	Spike Blank Percent Recovery
6PPDQ	KCEL	10 ng/L	2 ng/L	<MDL	<RL	40% or ± 2 × RL	50-150	50–150
6PPDQ	MEL	1 ng/L	0.365 ng/L	<1/2 RL	<RL	40	40-160	50–150

[a] The relative percent difference must be less than or equal to the indicated percentage for values greater than five times the reporting limit. The absolute difference must be less than or equal to two times the reporting limit for values less than or equal to five times the reporting limit.

KCEL = King County Environmental Laboratory; MEL = Manchester Environmental Laboratory;

RPD = relative percent difference; RL = reporting limit; MDL = method detection limit; ng/L = nanograms per liter

Data from laboratory reports underwent a quality assurance audit, in accordance with the QAPP (Herrera 2023). All laboratory and field quality assurance samples were within project MQOs resulting in no data qualifiers. All results were found valid and acceptable for use.

Results

Highway Runoff Characterization

Concentrations of all untreated influent samples collected during each target storm event were used to calculate an average storm event concentration for each storm event. 6PPDQ concentrations were generally consistent between I-5 (SCTF) and I-205 (STTC) runoff during the monitoring period with median storm event concentrations of 658 and 765 ng/L, respectively (Table 5). 11 storm events were targeted at the SCTF including the two rounds of field protocol sampling compared to the five total storm events targeted at the STTC. Three of the target storm events were collected at STTC-TB1 while two were collected at STTC-G2. Although the median concentrations were similar, the SCTF had a greater range of observed storm event concentrations (421 to 1,040 ng/L) compared to STTC-TB1 (707 to 878 ng/L). Smaller range of event concentrations at the STTC may be due to the smaller sample size or the mixing effect in the facility's wet well.

Table 5. Storm Event 6PPDQ Concentrations in I-5 and I-205 Runoff.

Location	Storm Events	6PPDQ Concentrations (ng/L)[a]			
		Minimum	Median	Mean	Maximum
SCTF-TB1 through TB4 – Test Bays and Field Protocol Influent	11	421	658	714	1,040
STTC-TB1 – Test Bay 1 Influent	3	707	765	783	878
STTC-G2 – Gravity line 2 Influent	2	1,540	1,770	1,770	2,000

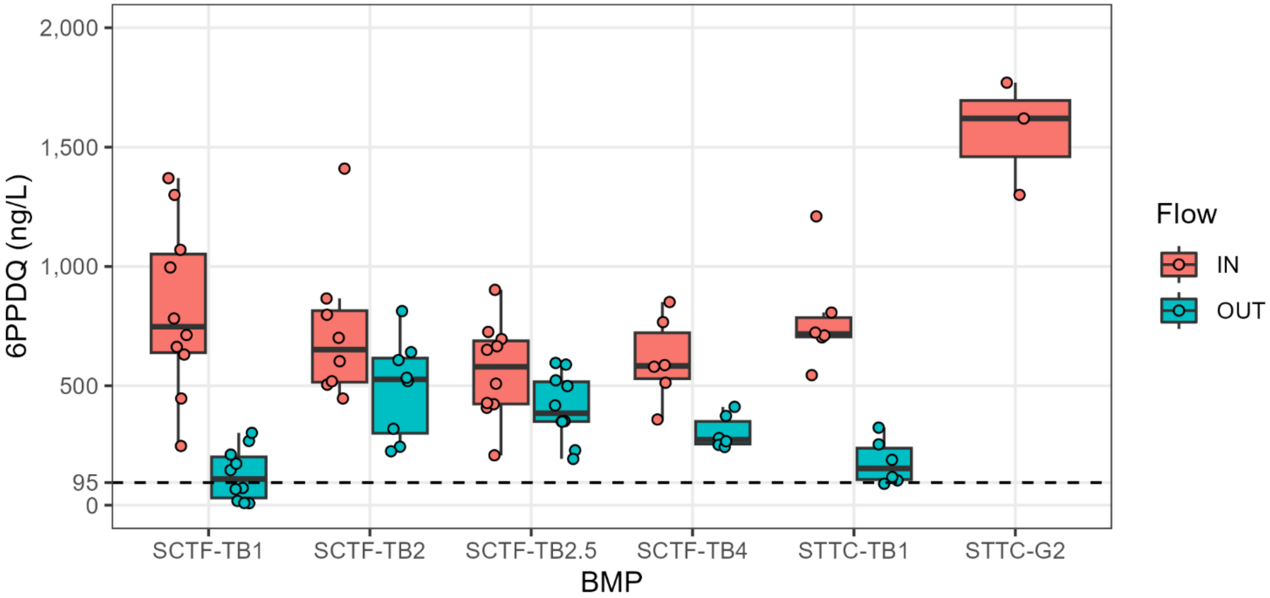
[a] Concentrations were averaged within each storm event across all influent samples collected before calculating summary statistics.

ng/L = nanograms per liter

Concentrations in individual samples collected from the STTC gravity line (STTC-G2) were all higher than the STTC-TB1 samples (Figure 3). Seasonal variation in 6PPDQ concentrations, which have not been well characterized, may explain these differences as the STTC-G2 samples were collected during the dry season in June and August 2023, compared to the STTC-TB1 samples which were collected in March and April 2024 and the SCTF samples which were mostly collected during the wet season (Table 3). Gravity lines at the STTC are also installed lower in the wet well than the pumped test bay influent lines and may include a higher portion of settled sediment from the wet well. Settled sediments in stormwater systems may act as a reservoir for 6PPDQ.

All test bay influent concentrations were above the coho salmon LC50 of 95 ng/L with a minimum single sample concentration of 209 ng/L. The first two sets of untreated I-5 runoff samples collected during the first round of field protocol sampling were below the LC50 with a minimum concentration of 68 ng/L but may be representative of base flow concentrations (from infiltration and inflow entering the upstream drainage system). All other individual samples collected during both rounds of field protocol sampling were above the LC50.

Figure 3. Influent and Effluent 6PPDQ Sample Concentrations at SCTF (I-5) and STTC (I-205).



Note: Dashed line at 95 ng/L represents the LC50 for juvenile coho salmon (Tian et al. 2022).

BMP Effectiveness

Out of 20 sets of paired influent and effluent samples across five proprietary BMPs, 19 sets of samples exhibited 6PPDQ reductions. One set of paired samples collected at SCTF-TB2 (Membrane Filter) on January 24, 2024, exhibited slight 6PPDQ export of 2.9 percent—increasing from 519 to 534 ng/L. Changes in 6PPDQ concentrations ranged from this slight export up to a 97.9 percent reduction, which was observed at SCTF-TB1 on December 19, 2023 (Table 6).

Table 6. Stormwater BMP Performance.

Location	Type of Treatment Technology	n[a]	6PPDQ Percent Reduction			Median 6PPDQ Concentration[b]	
			Min	Median	Max	Influent	Effluent
SCTF-TB1	High flow rate biofilter	10	59.4%	87.3%	97.9%	760	110
SCTF-TB2	Membrane filter	8	-2.9%	38.3%	59.4%	652	527
SCTF-TB2.5	Horizontal bed media filter	10	7.2%	17.9%	64.7%	580	385
SCTF-TB4	Cartridge-based media filter	6	19.7%	54.1%	68.5%	570	275
STTC-TB1	High flow rate biofilter	6	55.0%	81.2%	85.4%	713	154

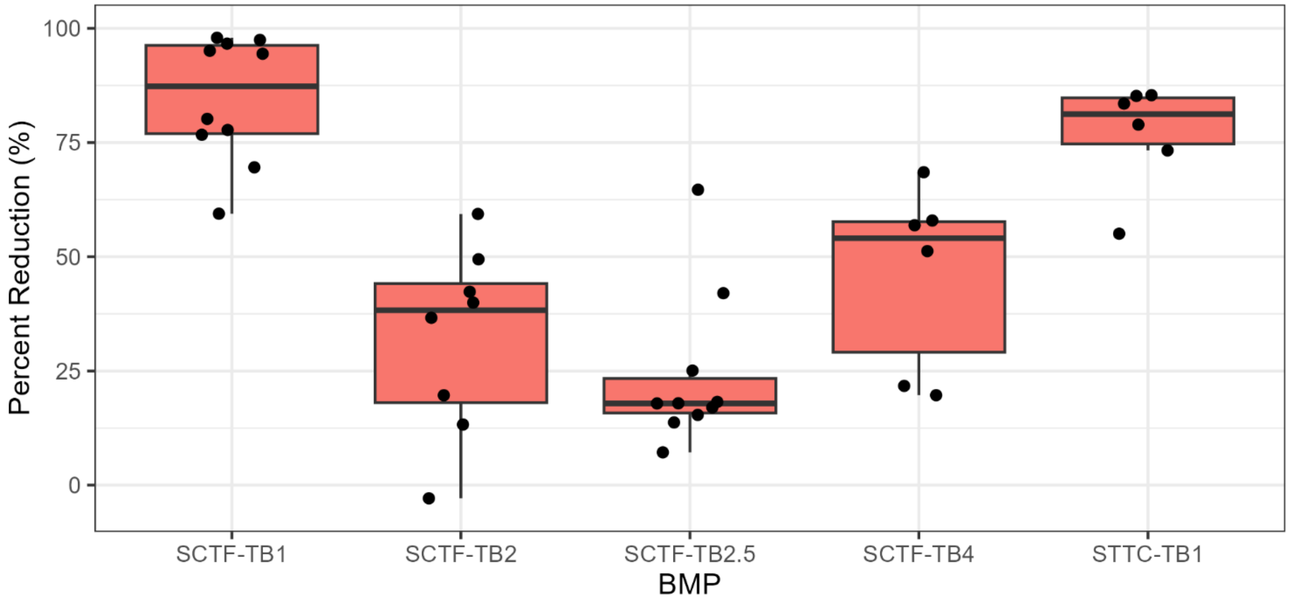
[a] Two sets of paired stormwater grab samples were collected from BMPs during each target storm event. The listed number of samples indicates the total number of paired samples collected. For example, 10 samples indicates that 10 influent samples paired with 10 effluent samples were collected at a BMP collected over the course of five storm events.

[b] Median 6PPDQ concentration from all samples collected presented in nanograms per liter.

Median pollutant reductions varied considerably between BMPs with the lowest reduction of 17.9 percent at SCTF-TB2.5 and the highest reduction of 87.3 percent at SCTF-TB1 (Table 6). While the pollutant reduction ranges of all BMPs overlapped except for SCTF-TB1 and SCTF-TB2, reductions at SCTF-TB1 and

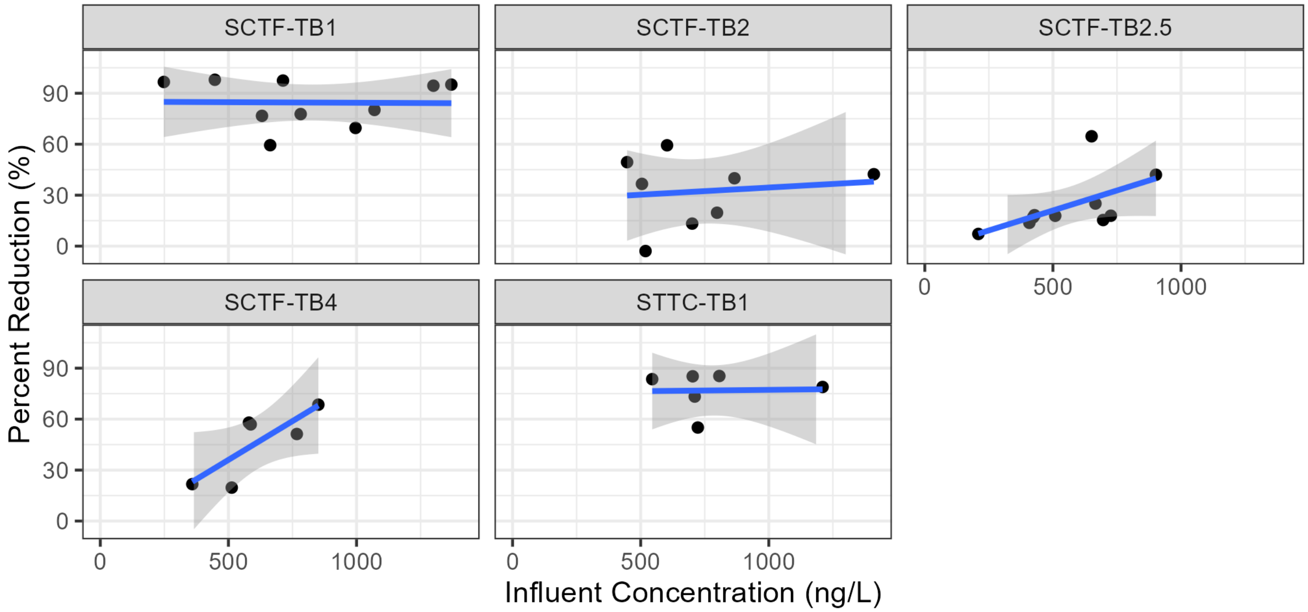
STTC-TB1 were generally higher than other BMPs and both had median reductions of over 80 percent (Figure 4). SCTF-TB1 was the only BMP to exhibit pollutant reductions of over 90 percent and did so in five out of ten pairs of samples with influent concentrations ranging from 248 to 1,370 ng/L. SCTF-TB1 and STTC-TB1 BMPs are both high flow rate biofilters. However, other variables may be impacting performance outside of the BMP type, including influent 6PPDQ concentrations or particle size distribution, flow rates, maintenance conditions, and storm characteristics.

Figure 4. 6PPDQ Reductions in Proprietary Stormwater BMPs.



High influent concentrations can be associated with higher pollutant reductions. For example, when effluent concentrations remain relatively stable while influent concentrations vary, pollutant reduction varies in response. Pollutant reductions and influent 6PPDQ concentrations are plotted for each BMP in Figure 5, below, with linear regression in blue. Pollutant reduction performance increased with increasing influent concentration at SCTF-TB2.5 and SCTF-TB4 indicating that the performance of these BMPs was influenced by influent concentration. Pollutant reductions at all other BMPs remained relatively stable with varying influent concentrations indicating that the performance of these BMPs was not influenced by the influent concentrations. Median influent 6PPDQ concentration at SCTF-TB1 and STTC-TB1 were both above 700 ng/L compared to 570 to 652 ng/L median influent concentrations at the other test bays. Based on the regression presented in Figure 5, SCTF-TB2.5 and SCTF-TB4 percent reductions would have likely fallen between 30 and 60 percent with influent concentrations of around 750 ng/L (comparable to SCTF-TB1 and STTC-TB1).

Figure 5. 6PPDQ Reductions in Proprietary Stormwater BMPs Regressed on Influent Concentration.



Impact of maintenance on BMP performance is difficult to quantify. Maintenance was conducted on BMPs in this study as needed when the unit clogged or prematurely bypassed. Specific maintenance activities conducted at each BMP in this study are detailed in Table 7, below. In general, frequency of BMP maintenance did not appear to have an impact on BMP performance. SCTF-TB1, which had the highest median 6PPDQ removal, was sampled between October and December 2023, and was only maintained on two occasions during this period. SCTF-TB2.5, which had the lowest median 6PPDQ removal, was sampled between May 2023 and January 2024, and was maintained on several occasions including full filter media replacement.

Table 7. BMP Maintenance During Monitoring Period.

Date	**Maintenance Summary**
SCTF-TB1	
2023-10-19	Clogged mulch layer replaced. Top couple inches of media loosened and mixed.
2023-11-17	Mulch layer replaced. Top couple inches of media loosened and mixed.
SCTF-TB2	
2023-11-06	Vactor cleanout of cartridge vault. New filter cartridges installed in vault.
2023-12-04	Replaced clogged ribbons in all filter cartridges.
2024-01-22	Replaced clogged ribbons in accessible filter cartridges. Some cartridges inaccessible due to freeze.
SCTF-TB2.5	
2023-02-17	Replaced media and reused pea gravel after rinsing.
2023-06-20	Replaced all filter media and gravel.
2023-06-26	Removed all media and cleaned metal screen which had become obstructed. Reinstalled old clean media.
2023-10-02	Washed and reinstalled pea gravel. Replaced upper few inches of media.
2023-10-19	Replaced all filter media.
2023-11-17	Replaced all filter media.
SCTF-TB4	
2023-06-16	Clogged media layer removed via vactor truck.
2023-11-17	New media installed in BMP filter vault.
STTC-TB1	
2024-03-08	Flushed mulch layer with clean water.

A variety of storm characteristics can influence pollutant concentrations in stormwater including antecedent dry period, storm intensity, and total precipitation. As these characteristics increase, pollutant concentrations are generally expected to increase as more sediment has accumulated on roadways and is then mobilized by the storm. Storm characteristics are plotted below with facility 6PPDQ influent concentrations (Figure 6) and with individual BMP performance (Figure 7). Although there were some trends visible in these plots, storm characteristics did not appear to have a substantial impact on either influent concentrations or BMP performance.

Figure 6. Facility 6PPDQ Concentrations and Storm Characteristics

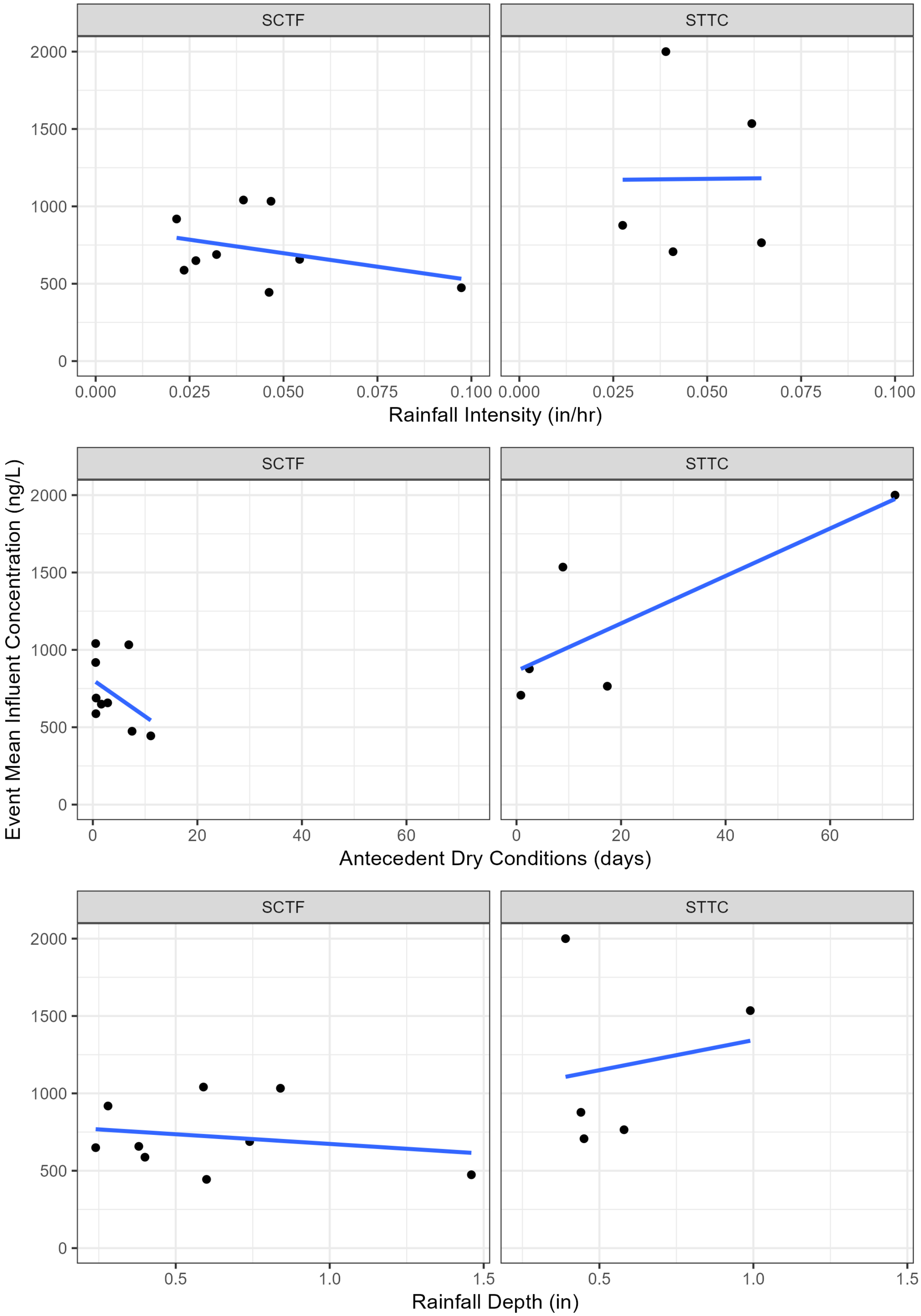
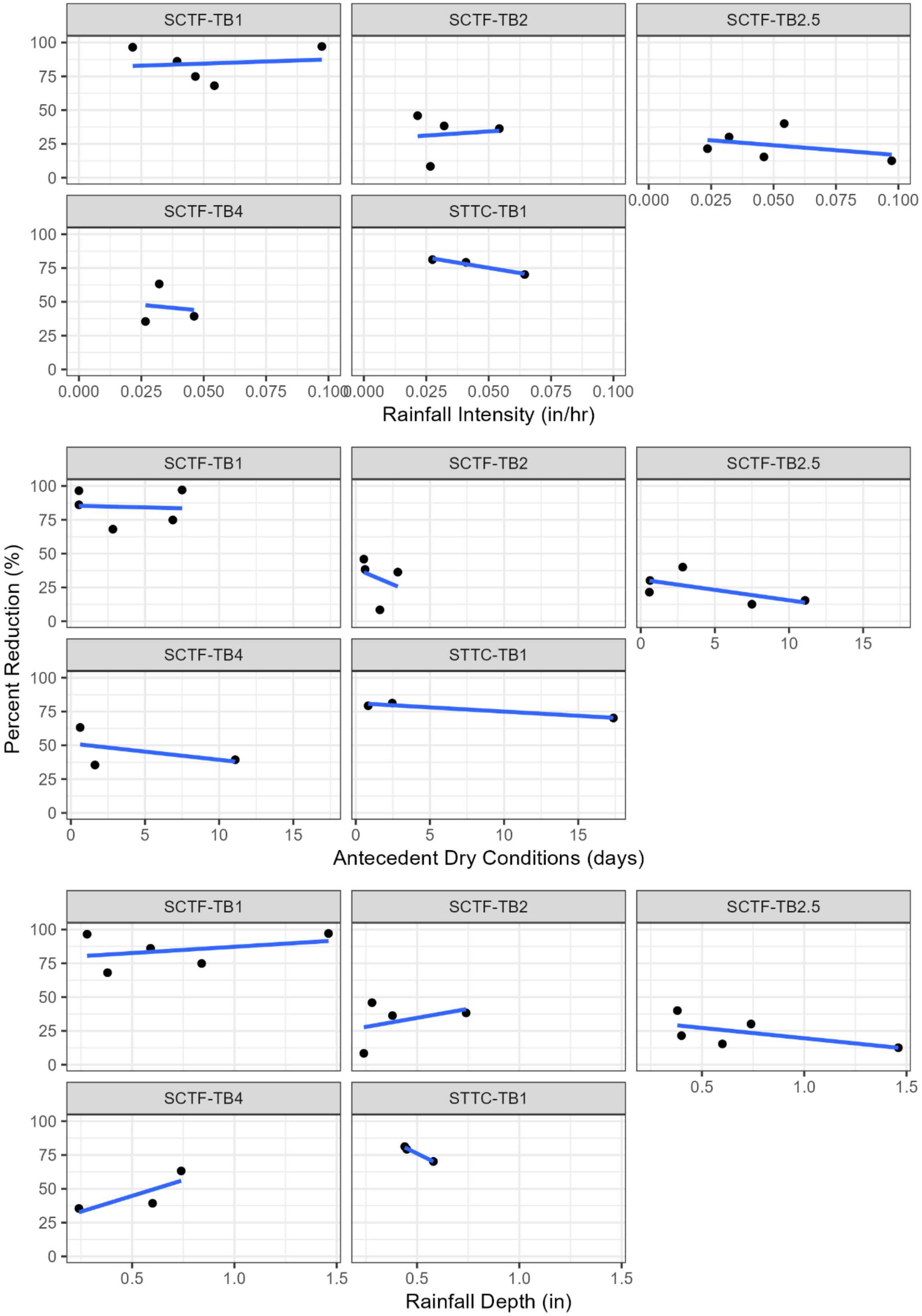


Figure 7. BMP 6PPDQ Removal Performance and Storm Characteristics

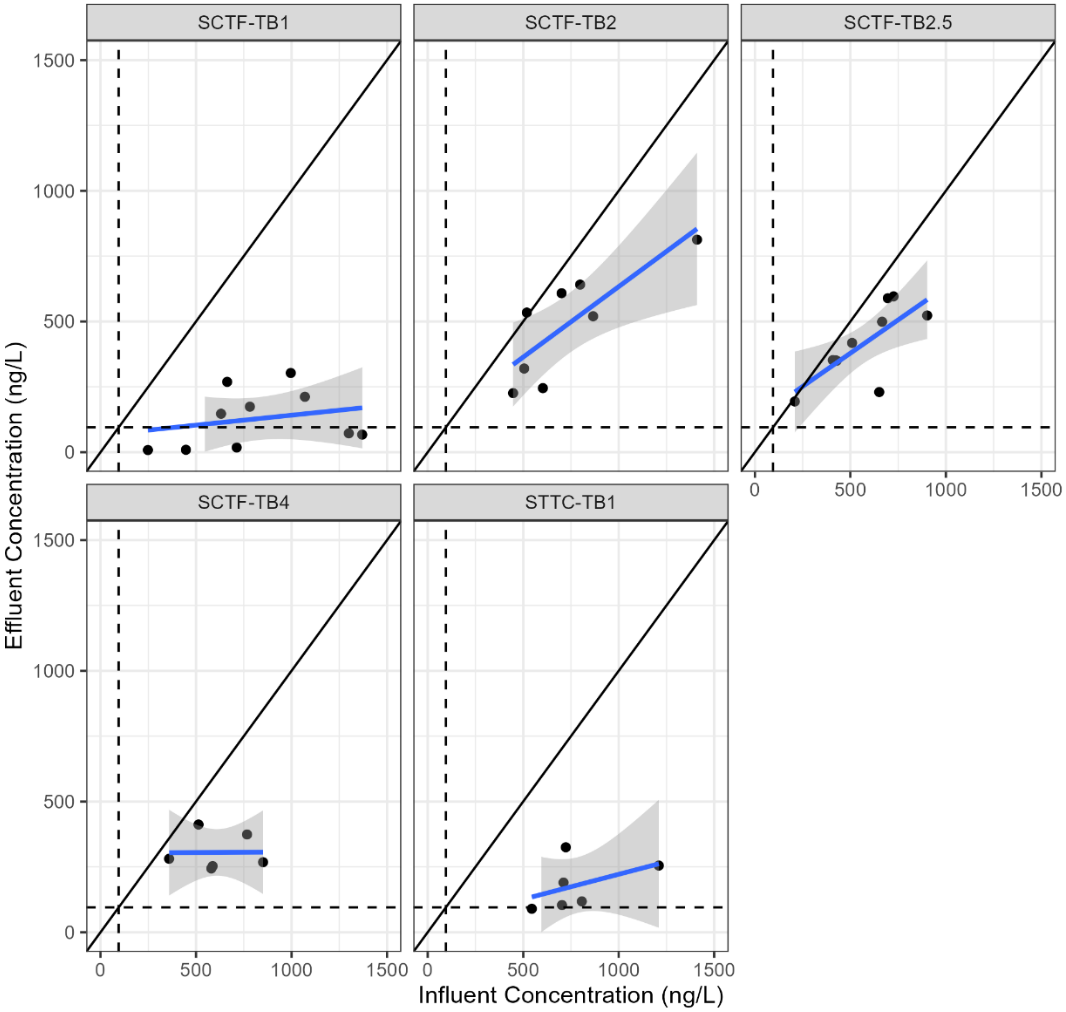


Effluent 6PPDQ concentrations, while typically much lower than influent concentrations, were generally above the juvenile coho salmon LC50 of 95 ng/L as shown in Figure 8. In agreement with calculated pollutant reductions, median effluent concentrations at SCTF-TB1 and STTC-TB1 (110 and 154 ng/L, respectively) were lower than the other proprietary BMPs which ranged from 275 to 527 ng/L (Table 6). Six out of the 40 total effluent samples collected exhibited concentrations below the LC50 as described below.

- Five effluent samples from SCTF-TB1 were below the LC50 ranging from 8.3 to 72.2 ng/L.
- One effluent sample from STTC-TB1 was below the LC50 with a concentration of 89.8 ng/L.

Three of these effluent concentrations below the LC50 were associated with lower influent concentrations of around 500 ng/L or lower (Figure 8). The remaining three were associated with influent concentrations ranging from around 700 to 1300 ng/L, all at SCTF-TB1. With the exception of SCTF-TB4, lower effluent concentrations were generally associated with lower influent concentrations at all BMPs as indicated by the positive slope of the linear regression (Figure 8).

Figure 8. Paired 6PPDQ Influent and Effluent Concentrations in Proprietary Stormwater BMPs.



Note: Dashed line at 95 ng/L represents the LC50 for juvenile coho salmon (Tian et al. 2022).

Field Protocol Evaluation

Field protocol sampling was conducted at the SCTF on June 18, 2023, and on February 28, 2024. 6PPDQ concentrations in the ten sets of control group (CONT) samples for both rounds are presented in Table 8, below.

Table 8. Field Protocol Sampling 6PPDQ Concentrations by Round and Split.

Event	Split Sample Number	Time	6PPDQ Concentration (ng/L)
Round 1 — 2023-06-18	1	15:10	67.8
	2	15:32	71
	3	16:02	855
	4	16:19	760
	5	16:48	547
	6	17:05	486
	7	18:35	370
	8	18:53	348
	9	19:09	360
	10	19:27	341
Round 2 — 2024-02-28	1	9:37	944
	2	10:00	944
	3	10:23	863
	4	10:49	737
	5	13:04	434
	6	14:08	648
	7	14:29	840
	8	14:52	1,190
	9	15:20	1,380
	10	15:47	1,260

ng/L: Nanograms per liter.

6PPDQ concentrations in CONT ranged from 68 to 855 ng/L and 434 to 1,380 ng/L during the first and second rounds, respectively. The storm on June 18, 2023, had a total depth of 0.22 inches over 13 hours for an average intensity of 0.017 inches per hour (Table 3). However, only around 0.03 inches of precipitation occurred during the approximately four and a half hour sampling period. The storm on February 28, 2024, had a total depth of 1.28 inches over 26 hours for an average intensity of 0.049 inches per hour (Table 3). Around 0.25 inches of precipitation occurred during the approximately six-hour sampling period. Antecedent dry periods for the sampled storms were 35 and 53 hours, respectively (Table 3).

The first two samples collected during the first round of sampling had the lowest concentrations of all untreated samples collected under this sampling program and may represent typical concentrations in base flow at the SCTF rather than stormwater concentrations. Concentrations peaked immediately after these two samples indicating that this event likely represents the first flush conditions. Sampling for the second round was conducted during a lull in precipitation between two more intense periods of rain and the 6PPDQ concentrations mirror this pattern with two peaks at the start and end of sampling.

Round One

Nine experimental groups were sampled on June 18, 2023, including the following:

- Control Group (CONT).
- PTFE Tubing Group (PTFE_TUB).
- Silicone Tubing Group (SILI_TUB).
- HDPE Bottle Full Time Group (HDPE_FT).
- HDPE Bottle 24 Hour Group (HDPE_24).
- FLPE Bottle Full Time Group (FLPE_FT).
- FLPE 24 Hour Group (FLPE_24).
- Laboratory Split Group (LAB).
- Field Duplicate Group (FD).

The first two sets of samples collected, as noted above, were likely representative of base flow conditions immediately before the first flush of stormwater (Figure 9) after which the 6PPDQ concentrations peaked and then gradually decreased. The pollutograph for the first round of field protocol sampling on June 18, 2023, is shown in Figure 10. The 6PPDQ concentrations of the experimental groups generally stay consistent with the control (CONT) and field duplicate groups throughout the sampling event except for the FLPE_FT and FLPE_24 groups which appear to have slightly lower concentrations than other groups, particularly during the middle of the sampling event (Figure 10). 6PPDQ concentrations for the control group during this round of sampling (ranging from 67.8 to 855 ng/L) were comparable to typical highway runoff 6PPDQ concentrations in this area (Tian et al. 2021) except for the first two samples which were below typical concentrations (Table 8).

Figure 9. Field Protocol Round One Storm Event Hyetograph.

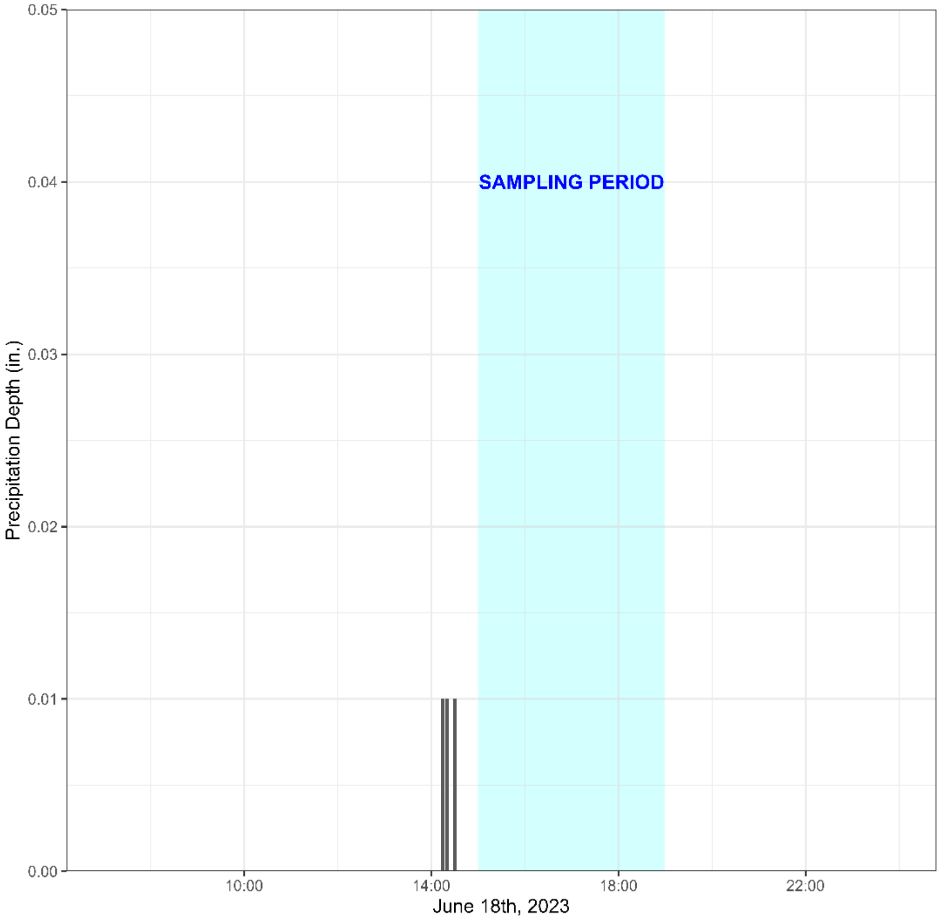
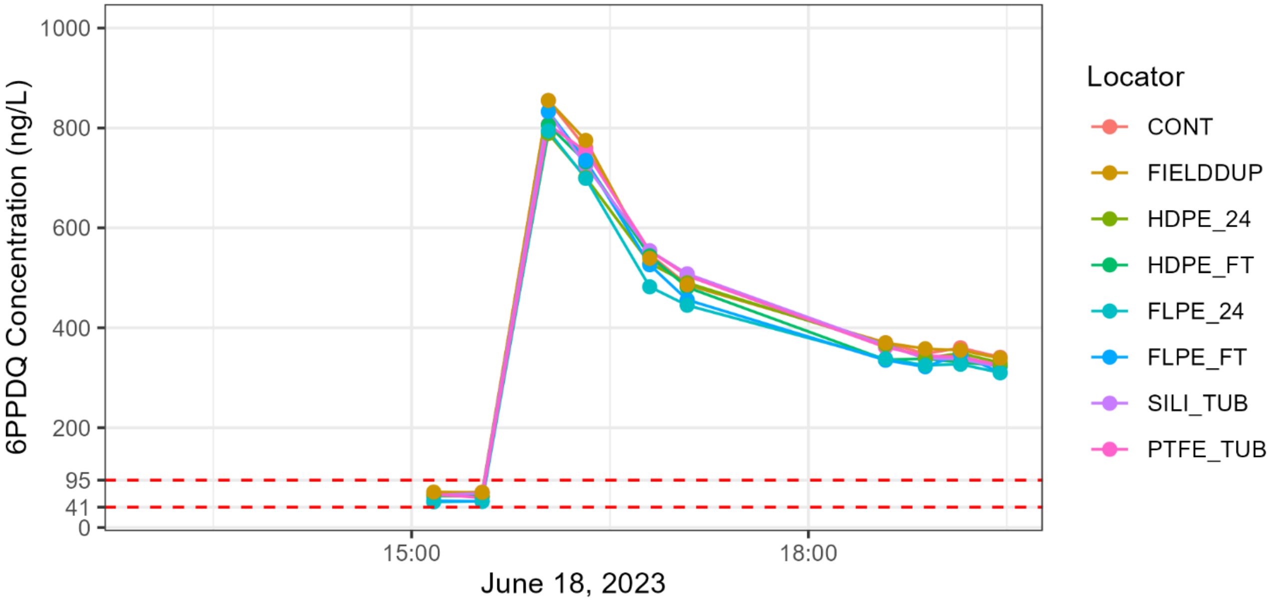


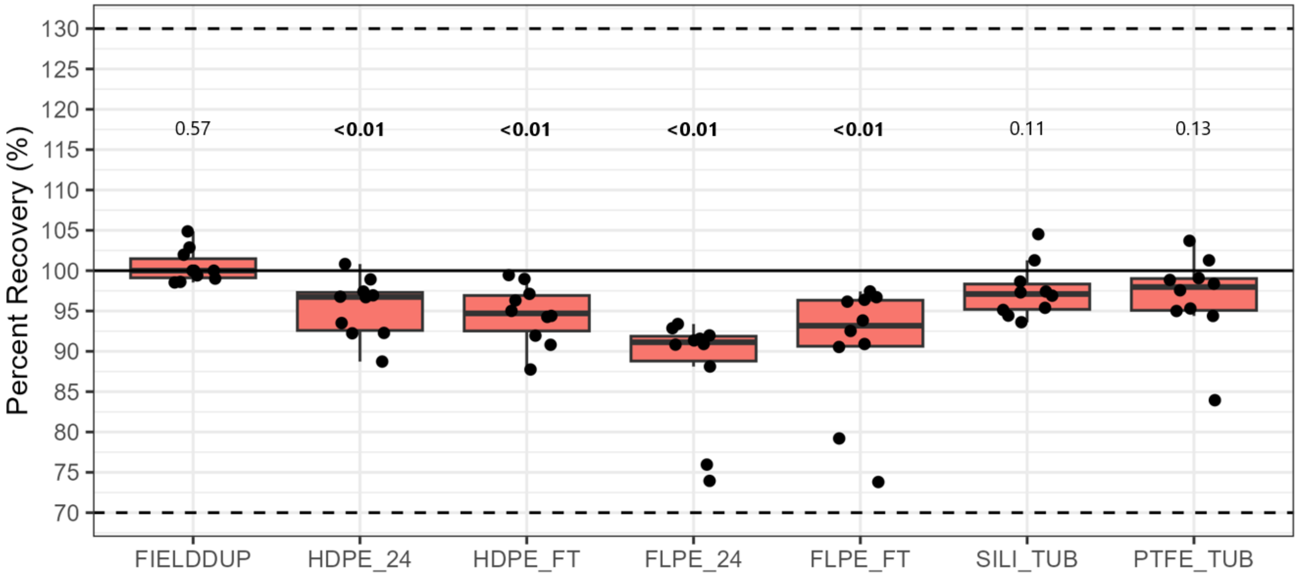
Figure 10. Field Protocol Round One Experimental Group Concentrations.



Note: Dashed line at 41 and 95 ng/L represents the LC50 for 3-week and 1-year juvenile coho salmon, respectively (Tian et al. 2022).

Percent recoveries of the experimental groups compared to the control group were calculated and are plotted in Figure 11. The field duplicate group recoveries were between 99 to 105 percent with a mean and median of 101 and 100 percent, respectively, indicating that sample heterogeneity or sampling methods were likely insignificant sources of differences in the percent recoveries of other experimental groups. The FLPE_24 and FLPE_FT groups exhibited the lowest percent recoveries with means of 88 and 91 percent, respectively, and the difference was statistically significant with a p-value of less than 0.01 (Table 9). In addition to the low mean recoveries, these FLPE groups each had two samples with recoveries below 80 percent which are the lowest of any experimental group in either round of field protocol monitoring. The HDPE_24 and HDPE_FT groups both exhibited mean recoveries of 95 percent and this difference was statistically significant with a p--value of less than 0.01 (Table 9). Mean percent recoveries of the two tubing experimental groups, PTFE_TUB and SILI_TUB, were 97 and 98 percent, respectively, but these differences were not statistically significant (Table 9).

Figure 11. Field Protocol Round One Experimental Group Recoveries.



Note: Permutation paired test p-values noted above respective experimental groups (Table 9).

Table 9. Field Protocol Tests Round One.

Test Group	Group Code	Mean Difference	Mean Recovery	Permutation Paired Test p-value
Field Duplicate	FD	0.5%	101%	0.57
Teflon Tubing	PTFE_TUB	-3.3%	97%	0.13
Silicone Tubing	SILI_TUB	-2.5%	98%	0.11
HDPE Bottle (24-hrs)	HDPE-24	**-4.6%**	**95%**	**<0.01**
HDPE Bottle (Full Time)	HDPE_FT	**-5.4%**	**95%**	**<0.01**
FLPE Bottle (24-hrs)	FLPE_24	**-11.9%**	**88%**	**<0.01**
FLPE Bottle (Full Time)	FLPE_FT	**-9.3%**	**91%**	**<0.01**

Bold indicates statistically significant difference between the experimental group and control group concentrations (p-values of less than 0.05).

HDPE = High density polyethylene; FLPE = Fluorinated high-density polyethylene

6PPDQ loss appears to have been exhibited in all experimental groups with mean percent recoveries below 100 percent. The lowest mean recoveries which represent the greatest losses were in the two FLPE groups. Similar to the FLPE groups, the HDPE groups had mean recoveries below 100 percent (95 percent for both HDPE groups), though higher than the FLPE groups, and the difference from the control group concentrations were statistically significant. The two tubing groups had mean percent recoveries of 97 to 98 percent and the differences were not statistically significant. However, these tubing groups both had relatively high maximum recoveries of around 105 percent and PTFE_TUB had a low outlier of less than 85 percent (Figure 11).

Round Two

Nine experimental groups were sampled on February 28, 2024, including the following:

- Control Group (CONT).
- PTFE Tubing Group (PTFE_TUB).
- PTFE Used Tubing Group (PTFE_TUB _OLD).
- HDPE Bottle 24 Hour Group (HDPE_24).
- HDPE 24 Hour Large Carboy Group (HDPE_24_20L).
- HDPE Used Bottle 24 Hour Group (HDPE_OLD).
- Autosampler Used Group (AUTO_OLD).
- Laboratory Split Group (LAB).
- Field Duplicate Group (FD).

Sampling was conducted between two peaks in runoff with the first several samples collected during the falling limb of a pulse of precipitation and the final samples collected during the rising limb of a second pulse of precipitation (Figure 12) which is mirrored in the event 6PPDQ concentrations. The pollutograph for the second round of field protocol sampling on February 28, 2024, is shown in Figure 13 below. The experimental groups generally stay consistent with the control (CONT) and field duplicate groups throughout the sampling event. The ninth set of the AUTO_OLD experimental group was missed due to sampling error. 6PPDQ concentrations for the control group during this round of sampling ranged from 434 to 1,380 ng/L which were higher than concentrations during the first round of field protocol sampling but are comparable to the range of typical highway runoff 6PPDQ concentrations in this area (Tian et al. 2021).

Figure 12. Field Protocol Round Two Storm Event Hyetograph.

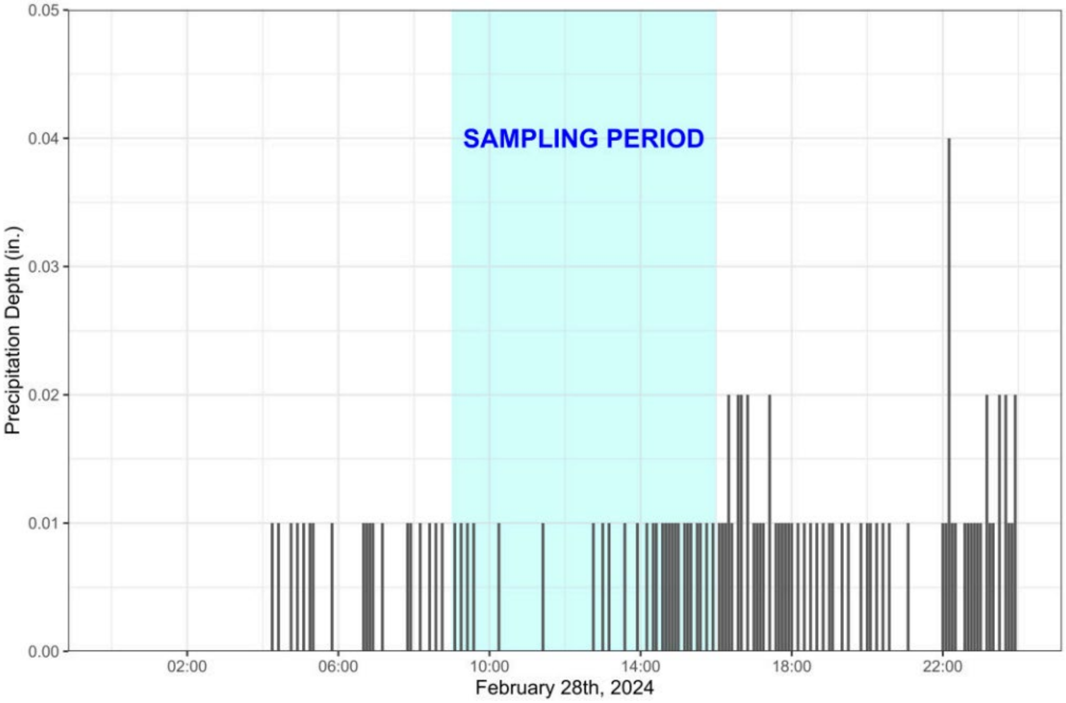
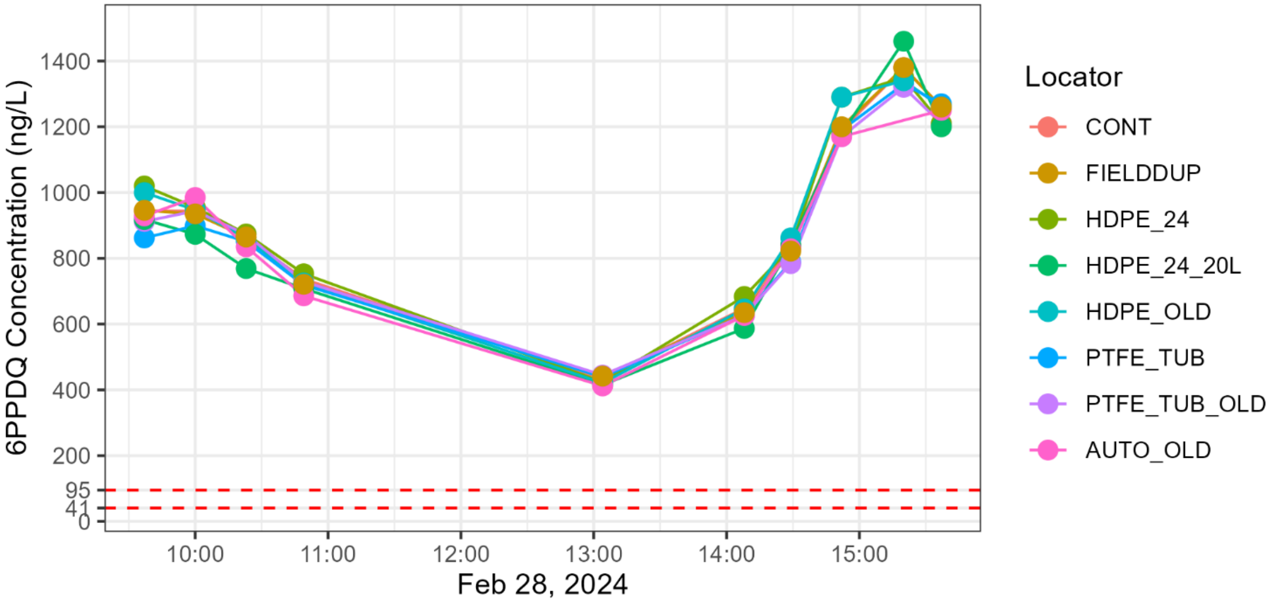


Figure 13. Field Protocol Round Two Experimental Group Concentrations.

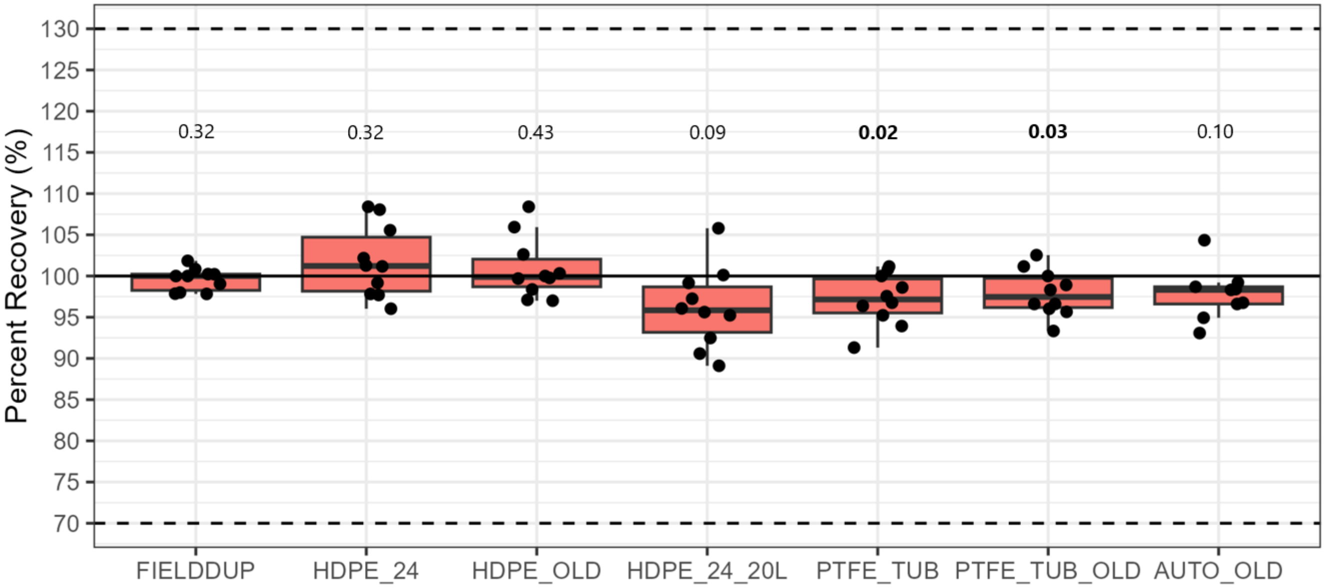


Note: Dashed line at 41 and 95 ng/L represents the LC50 for 3-week and 1-year juvenile coho salmon, respectively (Tian et al. 2022).

Percent recoveries of the experimental groups compared to the control group were calculated and plotted in Figure 14. The field duplicate group recoveries ranged from 98 to 102 percent with a mean and median of 100 percent, indicating that sample heterogeneity or sampling methods were likely insignificant sources of differences in the percent recoveries of other experimental groups. Mean percent recoveries were generally higher than the first round of field protocol monitoring and ranged from 96 to 102 percent for all experimental groups (Table 10). The PTFE_TUB and PTFE_TUB_OLD experimental groups exhibited mean percent recoveries of 97 and 98 percent, respectively, and were the only experimental groups with differences that were statistically significant from the control (Table 10). Experimental group HDPE_24_20L had the lowest mean percent recovery at 96 percent, but the difference was not statistically significant with the individual recoveries ranging from 88 to 107 percent. This range of percent recoveries for HDPE_24_20L was greater than any other experimental group during the second round indicating that increased headspace and HDPE surface area to volume ratio likely play a role in the differences in percent recovery compared to other HDPE groups.

The PTFE_TUB group, which was sampled during both rounds, exhibited the same mean percent recovery of 97 percent but the difference from the control group was statistically significant in the second round with a p-value of 0.02 versus 0.13 in the first round (Table 9 and Table 10). HDPE_24, which was also sampled during both rounds, exhibited greater percent recoveries (mean of 102 percent versus 95 percent in the first round) and the difference was not statistically significant in the second round with a p-value of 0.32 versus less than 0.01 in the first round. Differences in the results for these groups between the two sampling rounds indicates that additional variables such as 6PPDQ concentrations may impact the performance of field materials.

Figure 14. Field Protocol Round Two Experimental Group Recoveries.



Note: Permutation paired test p-values noted above respective experimental groups (Table 10).

Table 10. Field Protocol Tests Round Two.

Test Group	Group Code	Mean Difference	Mean Recovery	Permutation Paired Test p-value
Field Duplicate	FD	0.4%	100%	0.32
Teflon Tubing	PTFE_TUB	**2.8%**	**97%**	**0.02**
Used Teflon Tubing	PTFE_TUB_OLD	**2.1%**	**98%**	**0.03**
HDPE Bottle (24-hrs)	HDPE_24	-1.7%	102%	0.32
20L HDPE Bottle (24-hrs)	HDPE_24_20L	3.9%	96%	0.09
Used HDPE Bottle	HDPE_OLD	-0.9%	101%	0.43
Autosampler	AUTO_OLD	2.2%	98%	0.10

Bold indicates statistically significant difference between the experimental group and control group concentrations (p-values of less than 0.05).

HDPE = High density polyethylene

Most experimental groups in the second round exhibited some 6PPDQ loss on average, but notably the HDPE_24 and HDPE_OLD groups exhibited mean percent recoveries above 100 percent and maximum percent recoveries in both groups of up to 108 percent. Recoveries above 100 percent may partly be due to degradation of 6PPD into 6PPDQ in these experimental groups. The AUTO_OLD group is most comparable to typical composite stormwater sampling configurations and was extremely close to control group concentrations with a 98 percent recovery and a p-value of 0.10 (Table 10). AUTO_OLD recoveries ranged from approximately 93 to 105 percent with the majority falling between 95 to 100 percent (Figure 14).

Rinsate Blanks

A rinsate blank was collected before the first sample split and after the tenth and final sample split for all experimental groups that included tubing. Two experimental groups (PTFE_TUB and SILI_TUB) included tubing in the first round of sampling, and three experimental groups (PTFE_TUB, PTFE_TUB_OLD, and AUTO_OLD) included tubing the second round of sampling. Analytical results for the ten rinsate blanks are presented in Table 11, below.

Table 11. Field Protocol Sampling Rinsate Blank Results.

Experimental Group	Rinsate Blank 6PPDQ Concentration (ng/L)	
	Pre-Sampling	Post-Sampling
Field Protocol Sampling Round 1 – 2023-06-18		
PTFE_TUB	<2.0 U	<2.0 U
SILI_TUB	<2.0 U	<2.0 U
Field Protocol Sampling Round 2 – 2024-02-28		
PTFE_TUB	3.0 J	3.2 J
PTFE_TUB_OLD	3.3 J	6.3 J
AUTO_OLD	4.0 J	7.1 J

J: Result was detected at concentrations below the reporting limit of 10 ng/L and was qualified as estimated.

U: Result was undetected at the method detection limit of 2 ng/L.

ng/L: Nanograms per liter.

6PPDQ was not detected in all four rinsate blanks submitted with the first round of sampling at a detection limit of 2 ng/L. 6PPDQ was detected in all six rinsate blanks submitted with the second round of sampling at concentrations below the reporting limit of 10 ng/L ranging from 3.0 to 7.1 ng/L. The rinsate blank MQO (less than the reporting limit) was met in all rinsate blank samples (Table 4). Concentrations were slightly higher in the PTFE_TUB_OLD and AUTO_OLD groups which both included previously used segments of PTFE and silicone tubing. This indicates that these materials may leach trace amounts of 6PPDQ but are generally not of concern when compared to typical stormwater 6PPDQ concentrations.

Laboratory Split Evaluation

Samples collected during the two rounds of field protocol evaluation were also used to evaluate differences in 6PPDQ results between two laboratories, KCEL and MEL. Results from the control, field duplicate, and lab split experimental groups are plotted in Figure 15 and Figure 16. The difference between the laboratory results was statistically significant in the first round (permutation paired test p-value of less than 0.01) but was not statistically significant in the second round (p-value of 0.051).

Figure 15. Laboratory Split Round One Concentrations.

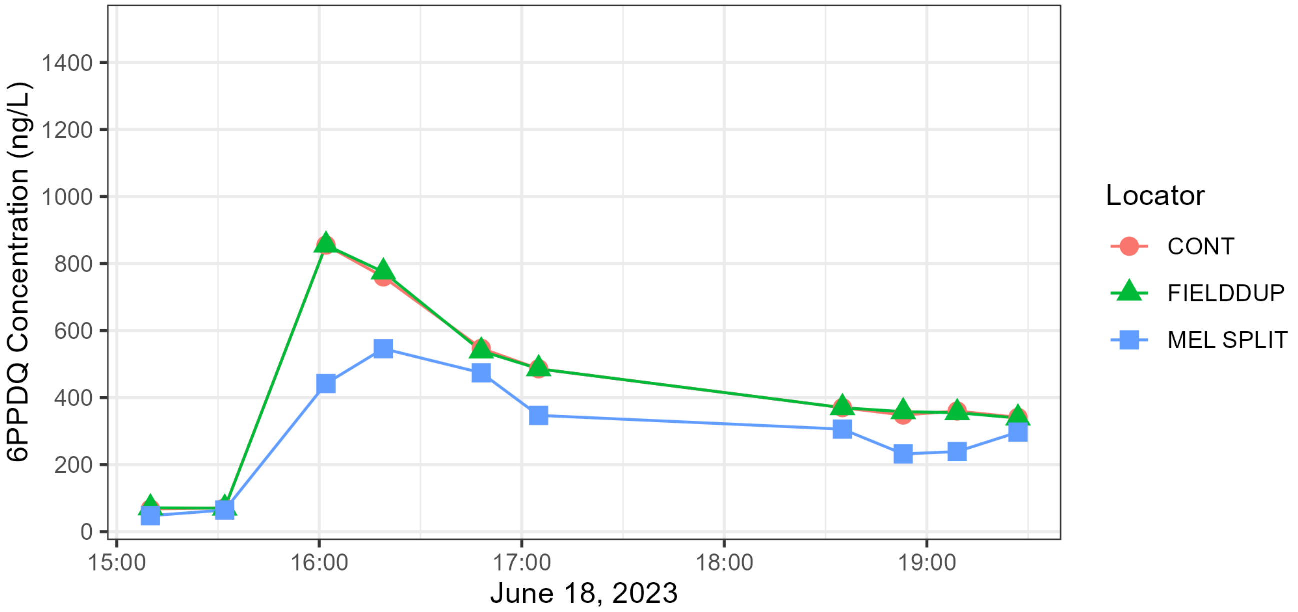
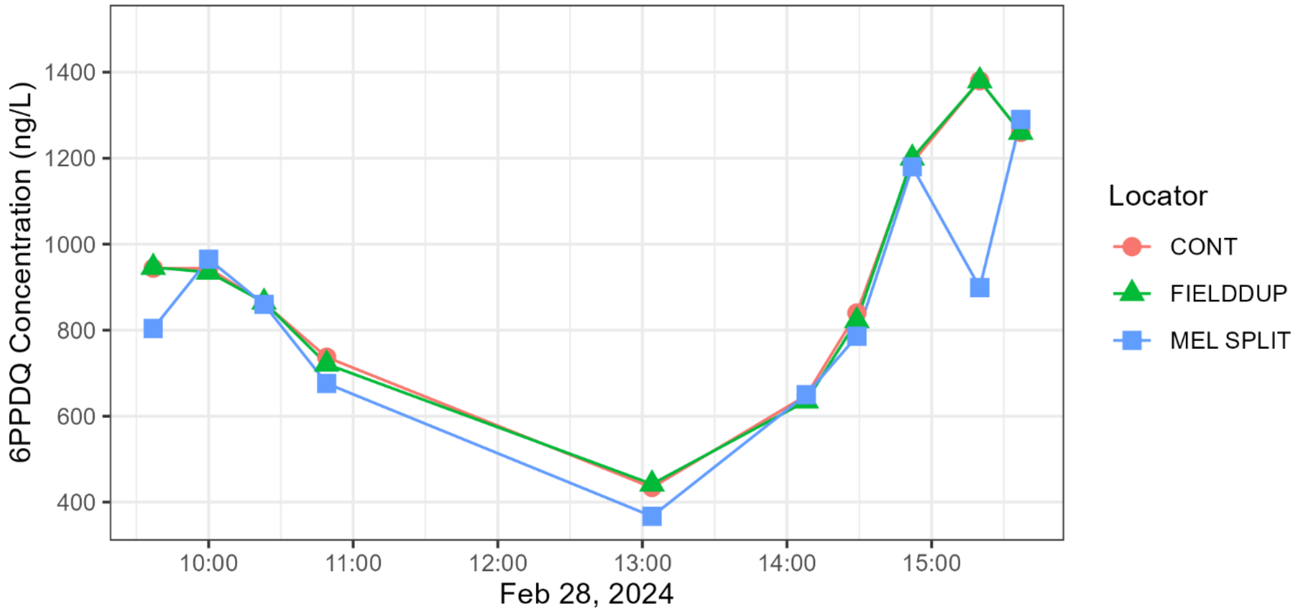


Figure 16. Laboratory Split Round Two Concentrations.



6PPDQ concentrations were generally lower in the MEL split sample, particularly during the first round of sampling and during the first and ninth splits of the second round (Figure 15 and Figure 16). Some discrepancies in results should be expected because an accredited analytical method had not been established at the time of this testing, so the two laboratories were using different analytical methods. The control and field duplicate samples were both analyzed with the same method at KCEL and exhibited relative percent differences (RPDs) of less than 5 percent for all 20 samples collected (Table 12). The MQOs established in the QAPP lists field and laboratory duplicate criteria as an RPD of 40 percent or less (Table 4). The MEL split sample RPDs were mostly above 10 percent and exceeded the 40 percent MQO on two occasions during the first round but were mostly below 10 percent and exceeded the 40 percent MQO on one occasion during the second round of sampling (Table 12).

Table 12. Laboratory Split Relative Percent Differences (Compared to CONT).

Sampling Round	**Sample Type**	**Relative Percent Difference by Sample Set**									
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
6/18/2023 – Round One	Field Duplicate	4.8	1.0	0.0	2.0	1.5	0.0	0.0	2.8	1.4	0.6
	Laboratory Split	34.6	9.6	**63.7**	32.8	14.3	33.4	18.9	40.0	**40.4**	13.8
2/28/2024 – Round Two	Field Duplicate	0.2	1.0	0.2	2.2	1.8	2.0	2.2	0.8	0.0	0.0
	Laboratory Split	16.0	2.2	0.3	8.6	16.7	0.3	6.6	0.8	**42.2**	2.4

Bold underlined indicates sample relative percent difference was above field and laboratory measurement quality objective of ≤40 percent.

Laboratory control samples (LCS) are a common laboratory quality control sample where a blank sample is spiked with a known quantity of a target parameter and then analyzed. The analytical result is then compared to the known spike amount and reported as a percentage of the spike amount (percent recovery). The MQO for LCS percent recoveries at KCEL and MEL was 50 to 150 percent (Table 4). During the first round of sampling where the LAB group concentrations were consistently lower than the CONT group, LCS recoveries ranged from 115 to 126 percent at KCEL compared to 82 to 93 percent at MEL (Table 13). This may indicate that, although the LCS recoveries were within project MQOs, there KCEL results were biased slightly high while MEL results were biased slightly low. During the second round of sampling where the LAB and CONT group concentrations were much more consistent with a few exceptions, median LCS recovery was 109 percent at KCEL and 108 percent at MEL (Table 13).

Table 13. Laboratory Split QC Sample Results.

Analytical Laboratory	Round 1 LCS Recovery			Round 2 LCS Recovery		
	Minimum	Median	Maximum	Minimum	Median	Maximum
KCEL	115	125	126	100	109	116
MEL	82	88	93	108	108	108

KCEL: King County Environmental Laboratory. LCS: Laboratory control sample. MEL: Manchester Environmental Laboratory.

Discussion and Conclusions

Highway Runoff Characterization

6PPDQ concentrations in untreated I-5 and I-205 runoff were characterized in this study with median concentrations of around 600 to 700 ng/L. During storm events, 6PPDQ concentrations typically exceed the juvenile coho salmon LC50 of 95 ng/L, often by over one order of magnitude. However, due to the limited scope of this investigation, there are areas of uncertainty that future investigations may address:

- The majority of the sampling was conducted in early WY2024, so longer-term investigations are needed to fully understand temporal patterns or relationships between storm characteristics such as antecedent dry period or storm intensity and 6PPDQ concentrations.
- Runoff samples were collected from two urban highways in the Pacific Northwest. Characterization of highway runoff outside of urban areas and from smaller urban arterials is needed to prioritize sources and pathways of 6PPDQ in coho salmon habitat.

BMP Performance

Proprietary BMPs tested in this monitoring program were able to consistently remove 6PPDQ from highway runoff but at varying degrees of effectiveness. High flow rate biofilters exhibited median 6PPDQ reductions of 81 and 87 percent, compared to median concentrations of 18, 38, and 54 percent for a horizontal bed media filter, membrane filter, and cartridge-based media filter, respectively. Effluent concentrations were below the coho salmon LC50 in several high flow rate biofilter samples, but median effluent concentrations for all BMPs were above the LC50.

The relatively high removal performance of the two biofilters tested in this study is consistent with predictions from previous studies including the Stormwater Treatment of Tire Contaminants Best Management Practices Effectiveness (Ecology 2022). The pollutant removal mechanisms with the highest potential to capture 6PPDQ included bioretention and sorption, particularly in media with high proportions of organic material. While proprietary stormwater BMP media blends include unique components and are not identical to the Ecology 60:40 bioretention soil mix, lab testing has shown that bioretention media can effectively reduce 6PPDQ concentrations to below detection levels (McIntyre & Kolodjiez, 2021). Likewise, stormwater filtration was identified as a mechanism with moderate potential which is supported by the median 38 percent reduction in the membrane filter BMP (Ecology 2022).

The horizontal bed media filter BMP installed in SCTF-TB2.5, which exhibited the lowest median pollutant reduction of 18 percent, may have performed poorly relative to the other BMPs due to the high manufacturer-specified design hydraulic loading rate and, to a lesser degree, lower influent 6PPDQ concentrations. Median influent 6PPDQ concentration at SCTF-TB2.5 was 580 ng/L compared to the range of 570 to 760 ng/L for all test bays (Table 6). The hydraulic loading rate for the SCTF-TB2.5 BMP was 7.1 gallons per minute per square foot (gpm/ft^2) compared to a range of 1.0 to 3.1 gpm/ft^2 for the four other BMPs tested (Table 1). This high design hydraulic loading rate means that there was minimal contact time with the filter media which may decrease the effectiveness of certain 6PPDQ treatment processes such as sorption.

Areas for future investigation include:

- Additional research on the effectiveness of specific treatment mechanisms for 6PPDQ rather than individual BMPs. Understanding of the effectiveness of these mechanisms will help guide proactive selection of stormwater BMPs to control 6PPDQ sources.
- Investigation into the relationship between 6PPDQ and other contaminant removal performance is not clearly understood. Additional grab or composite sampling paired with other parameters will help develop an understanding of relationships between 6PPDQ concentrations and other indicators such as the fine fraction of suspended solids.
- Investigation into the performance of other common BMPs such as wet ponds, bioswales, modified embankments, vaults, and street sweeping.

Field Sampling Protocols

The experimental groups tested in this study generally displayed minimal 6PPDQ losses when compared to similar laboratory sorption studies (Hu et al. 2023). The experimental group AUTO_OLD, which is intended to closely replicate actual field composite sampling materials and procedures, exhibited good recoveries ranging from approximately 93 to 105 percent and a mean recovery of 98 percent. A summary of findings from this study are presented in Table 14, below, and recommendations for field sampling procedures based off these results and preexisting laboratory studies are presented in the *6PPDQ Roadway Runoff Stormwater Composite Sampling Protocol Recommendations* memorandum (Herrera 2024b).

Table 14. Summary of Field Protocol Sampling Material Results.

Material	Findings	Appropriate for Sampling	
		Stormwater	Receiving Waters
HDPE – Bottle	HDPE experimental groups exhibited slightly different recoveries between the first and second rounds but were consistently within 95 to 110 percent. When additional variables were introduced including increased headspace and sample tubing, recoveries may decrease slightly but generally remain above 95 percent.	Yes	Unknown
FLPE – Bottle	Two FLPE experimental groups tested in the first round exhibited lower recoveries than the two comparable HDPE groups including two sample splits with recoveries of less than 80 percent. Mean recoveries for FLPE_24 and FLPE_FT were 88 and 91 percent, respectively, which are appropriate for stormwater sampling if necessary. However, other materials should be selected, if possible, for better performance.	No (glass or HDPE preferred)	Unknown
Amber Glass – Bottle	Amber glass grab sampling was selected as the control and field duplicate experimental groups because glass has shown low 6PPDQ sorption and is the sampling method described in the EPA draft method 1634.[a] 6PPDQ concentrations in these groups were generally highest indicating minimal 6PPDQ loss due to sorption or degradation.	Yes	Yes
Silicone – Tubing	Silicone sample intake tubing was tested in one experimental group during the first round of sampling and exhibited recoveries comparable to PTFE tubing with a mean recovery of 98 percent. PTFE tubing sample groups also included a small segment of silicone tubing, so it is unclear whether the PTFE recoveries were substantially impacted by these silicone tubing segments. Laboratory testing on 6PPDQ sorption to silicone indicates that the material should be avoided where possible. However, silicone tubing is typically used as a short 2-foot segment in the autosampler pump head, so exposure time is low and thus 6PPDQ loss minimal.	Yes (Limited quantities)	Unknown
PTFE & Silicone – Tubing	PTFE intake tubing with a small segment of silicone, which tubing represents typical tubing assemblies for peristaltic pump automated samplers, exhibited recoveries mostly above 95 percent.	Yes	Unknown

[a] From Hu et al. 2023 and EPA 2023.

FLPE: Fluorinated high density polyethylene; HDPE: High density polyethylene; PTFE: Polytetrafluoroethylene

Field duplicate RPDs were within five percent for all twenty splits collected during the field protocol sampling events (Table 12). In addition, mean percent recoveries of the field duplicate (FD) group were 101 and 100 percent during the first and second rounds, respectively (Table 9 and Table 10). These results indicate that sample volume heterogeneity and field procedures during the sampling events were likely not sources of significant variability in 6PPDQ results across the other experimental groups. Based on these consistent FD group results, we have high confidence that the differences between other experimental groups and the CONT group are due to the experimental groups' target materials and/or conditions.

The relatively poor performance of FLPE sample containers compared to HDPE was unexpected and may warrant additional investigation. FLPE containers are intended to provide additional barriers for adsorption and diffusion than HDPE containers, so additional interactions may be taking place. For example, degradation of 6PPD to 6PPDQ in FLPE containers may be slower and would explain the increase in recoveries from FLPE_24 to FLPE_FT compared to relatively consistent recoveries in HDPE_24 to HDPE_FT (Figure 11.).

Contact time between the sample volume and these typical materials has a considerable impact on 6PPDQ losses due to sorption (Hu et al. 2023). In this field study, three distinct contact times were assessed including incidental contact for PTFE and FLPE tubing, 24-hour contact to emulate FLPE and HDPE composite sample carboys, and full holding time (approximately seven to 14 days) contact with FLPE and HDPE sample bottles. Certain materials that have a high potential for 6PPDQ sorption, such as silicone (Hu et al. 2023), do not appear to meaningfully impact 6PPDQ concentrations during incidental contact. Vacuum samplers are an alternative to peristaltic pump autosamplers and do not require silicone pump tubing to operate, eliminating the risk of prolonged contact time and increased sorption. However, Vacuum samplers are typically more expensive, include additional materials that come into contact with the sample volume, and have longer contact times during aliquot volume dosing.

Potential areas of future study to improve field sampling methods and protocols include:

- Replication of this monitoring program in an urban stream or other receiving water with lower expected 6PPDQ concentrations. Contamination or sorption may be more pronounced when sampling water with lower concentrations, so a deeper understanding of whether sampling material impacts change with changing 6PPDQ concentration is necessary.
- Results for HDPE bottle groups, specifically HDPE_24, which was sampled in both rounds, exhibited losses in the first round but minor gains in the second round. While median percent recoveries for HDPE experimental groups were all 95 percent or greater, individual sample recoveries ranged from 88 to 109 percent, indicating additional sampling may be necessary to characterize variability of 6PPDQ gains and losses from HDPE materials in field conditions.

Laboratory Methodology

Laboratory split samples collected during the two rounds of field protocol sampling consistently exhibited concentrations that were notably different between labs. Particularly during the first round of sampling, MEL results were well below KCEL results with few exceptions with relative percent differences of up to 64 percent. LCS percent recoveries differed between the two laboratories. In the first round of monitoring, KCEL LCS recoveries ranged from 115 to 126 percent, and MEL LCS recovering ranged from 82 to 93 percent. LCS percent recoveries in the second round of monitoring were 100 to 116 percent and 108 percent at KCEL and MEL, respectively. Small differences in laboratory methods and QC performance may have resulted in slight high bias for KCEL results and slight low bias for MEL results. These QC differences were within laboratory criteria and established project MQOs. The differences in QC results were particularly pronounced during the first round of field protocol sampling which corresponds with the larger differences between the concentrations from the control and lab split groups. Additional investigation including inter-lab comparison using a standardized analytical method, such as the EPA Draft Method 1634 (EPA 2023), through multiple analytical batches may be necessary to determine whether these differences are the result of acceptable variability in laboratory QC performance.

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Appendix A

Field Monitoring Forms

HERRERA
Science + Planning + Design

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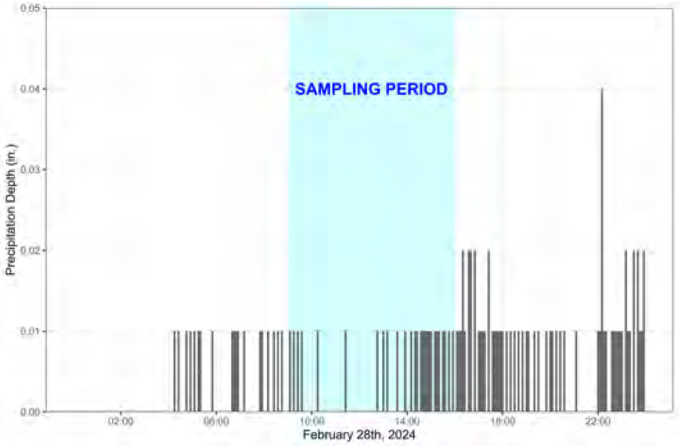
Exploratory Visit 2.5

Project	Miscellaneous
ID	425402
Survey Date	02/28/2024
User	David Garcia
Personnel:	Nicholas Harris Scott Shumway
Purpose of Visit	6-PPDq Field Protocol #2 Second round of sample collection for the 6PPD-q field protocol project. Sampling took place at the Ship Canal Test Facility (SCTF), located under the I-5 Ship Canal Bridge in the Wallingford neighborhood, Seattle, WA. Samples we're collected between 09:00 and 16:00 on 2024-02-29. All 10 sampling sets we're collected during this time. Sampling took place at one of the several testing bays within the SCTF, from a spigot previously upfitted for stormwater sample collection. Stormwater was flushed from spigot initially to flush out built up sediment upstream of spigot. Samples we're only collected during times of moderate to intense rainfall to ensure mainly stormwater was collected, not baseflow.
To Do for Next Visit?	No

Location 1

Location Name	
Coordinates	
Latitude	47.6561706
Longitude	-122.3218725
Time	07:00 AM
Time Zone	PST
Photos	

Initial set-up of the sample collection area



Rainfall from the sampling event

Cooler organization for sample collection

Carboy organization for sample collection

Unclogging of spigot prior to sampling (clogged with sediment build up)

Initial bottle set-up in cooler

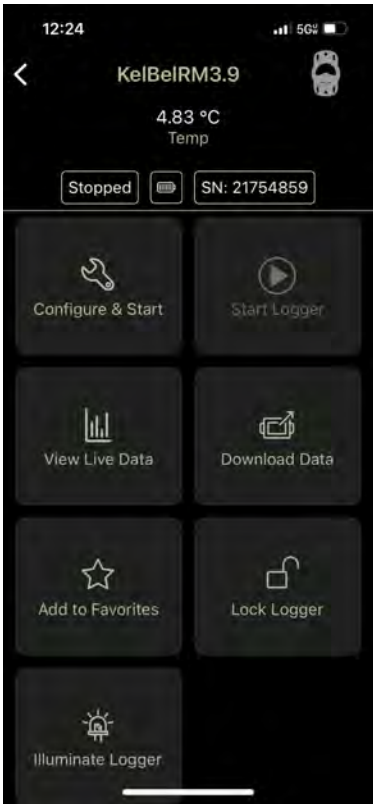

Churn splitter position for sampling


Initial rinsing of churn splitter using stormwater from sample source


Collection of sample from churn splitter (HDPE_20L_24)

Temporary carboy preservation

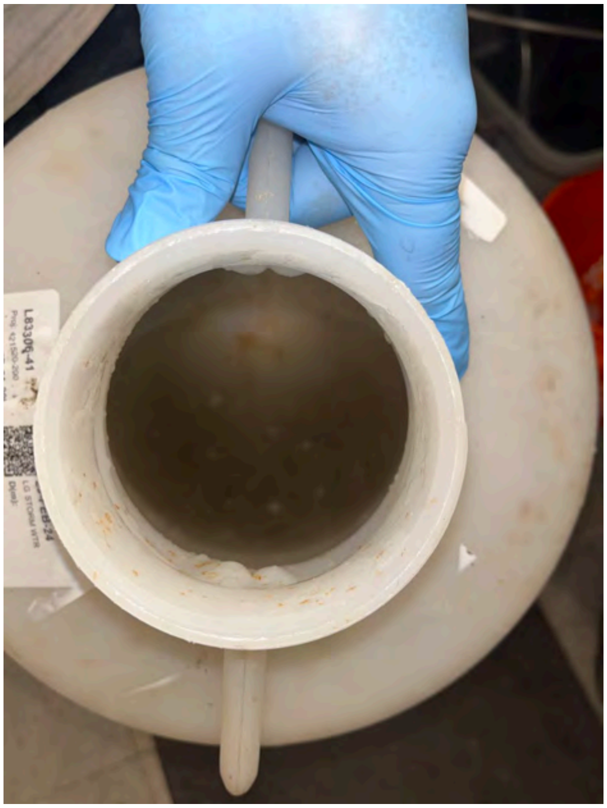
Temporary carboy preservation (ice cooled truck bed, with 2 tarps protecting carboys from direct sunlight)



Air temperature of carboy preservation @ 12:24 on 24-02-29, just before transfer to amber glass

Carboy agitation prior to transfer

Carboy agitation prior to transfer



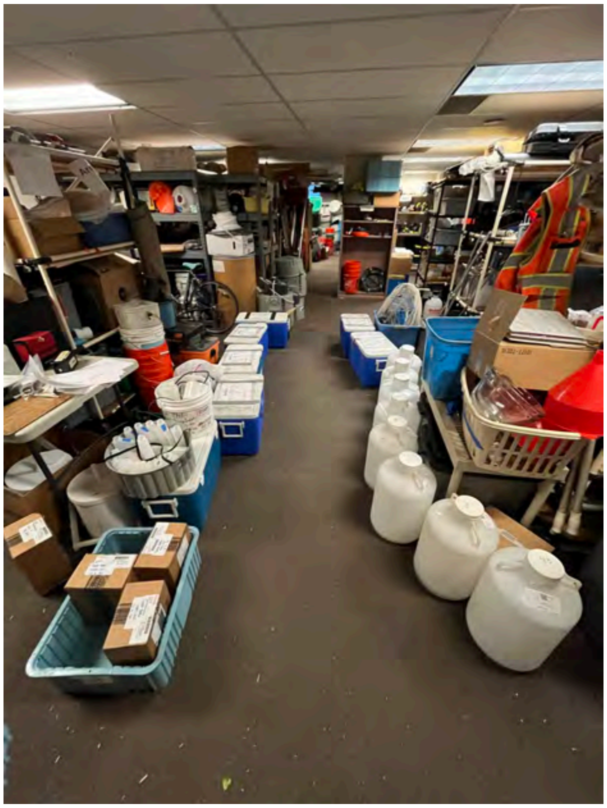
Homogenized sample after agitation, prior to transfer

Intermediary transfer vessels (sterile, 2L HDPE) to aid transfer of 20L carboy samples to amber glass

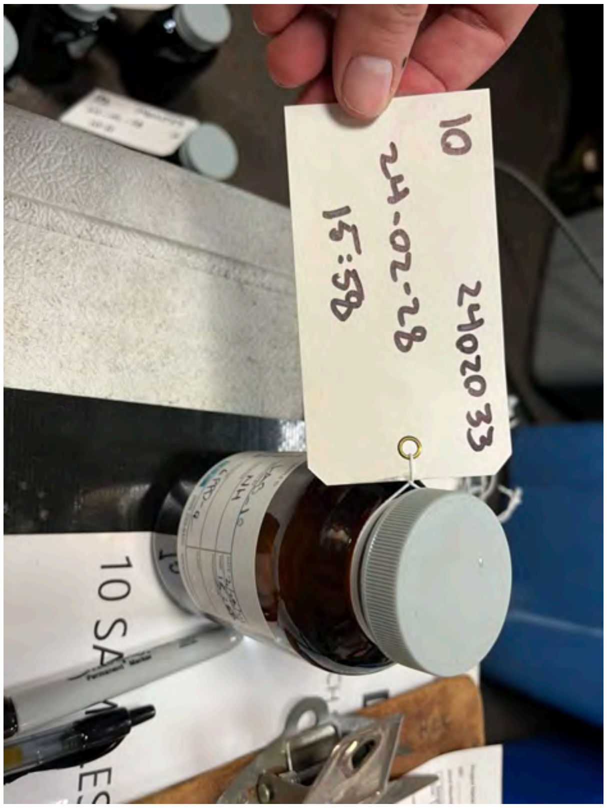
Transfer of sample from carboy to intermediary transfer vessel

Transfer of sample from carboy to intermediary transfer vessel

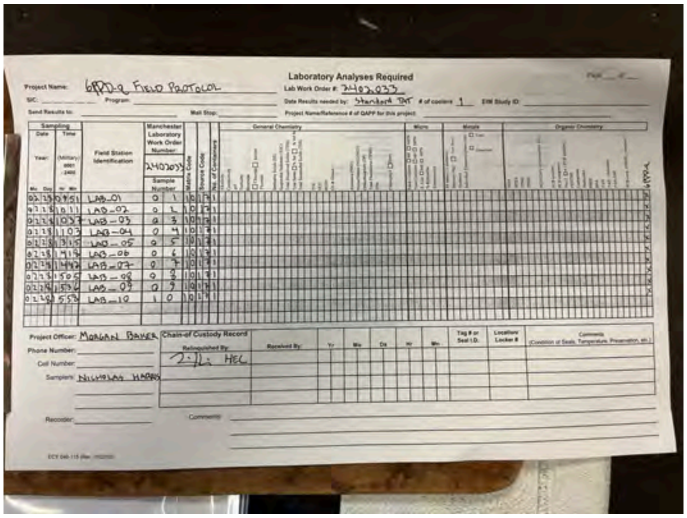
Transfer of sample from intermediary transfer vessel to amber glass bottle



Staging for transferring all 24 hour hold samples



MEL sample labeling



Laboratory Analyses Required

Project Name: 6PPD-q Field Protocol

Lab Work Order #: 2402033

Date Results needed by: Standard TAT # of coolers 1

Manchester Laboratory Work Order Number: 2402033

Date Mo Day	Time Hr Min	Field Station Identification	Sample Number	Matrix Code	Source Code	No. of Containers	6PPD-q
02 28	0951	LAB-01	01	10	17	1	X
02 28	1011	LAB-02	02	10	17	1	X
02 28	1037	LAB-03	03	10	17	1	X
02 28	1103	LAB-04	04	10	17	1	X
02 28	1315	LAB-05	05	10	17	1	X
02 28	1414	LAB-06	06	10	17	1	X
02 28	1442	LAB-07	07	10	17	1	X
02 28	1505	LAB-08	08	10	17	1	X
02 28	1536	LAB-09	09	10	17	1	X
02 28	1558	LAB-10	10	10	17	1	X

Project Officer: Morgan Baker

Phone Number:

Cell Number:

Samplers: Nicholas Harris

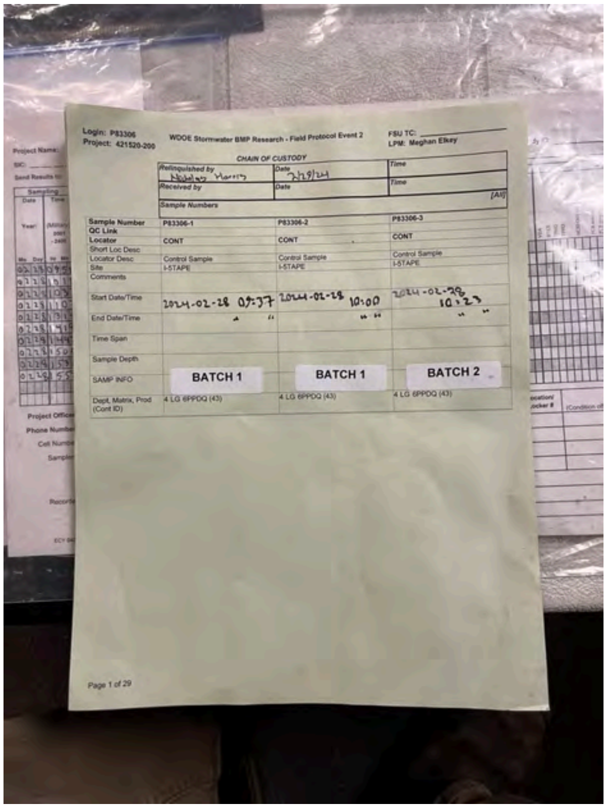
Recorder:

Chain-of-Custody Record

Relinquished By: 2·28 HEC

Comments:

MEL COC



Login: P83306
Project: 421520-200

WDOE Stormwater BMP Research - Field Protocol Event 2

FSU TC: ______
LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by Nicholas Harris	Date 2/29/24	Time
Received by	Date	Time
Sample Numbers		[All]

Sample Number	P83306-1	P83306-2	P83306-3
QC Link			
Locator	CONT	CONT	CONT
Short Loc Desc			
Locator Desc	Control Sample	Control Sample	Control Sample
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments			
Start Date/Time	2024-02-28 09:37	2024-02-28 10:00	2024-02-28 10:23
End Date/Time	" "	" "	" "
Time Span			
Sample Depth			
SAMP INFO	BATCH 1	BATCH 1	BATCH 2
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)

Page 1 of 29

KCEL COC

Notes	All 10 sampling sets were collected on 2024-02-28, between 09:30 and 16:30. A brief break was taken after sampling set #4 for was collected (~11:00) due to a lack of precipitation. Sampling resumed around 13:00 when precipitation intensity increased. Sampling resumed after this break until 16:00. All samples were collected except for one, AUTO_OLD from sampling set #9 due to a sample collection error Smaller bottles (non-20L carboy bottles) were kept in coolers with fresh ice. All carboys were kept in the bed of a field vehicle, covered with multiple tarps, protecting samples from sunlight. Samples were kept on ice and stayed under temperature (<6 deg. C) until transferred. All 24 hour hold samples (HDPE_OLD, HDPE_24, HDPE_20L_24, AUTO_OLD) were transferred into their associated 250-mL amber glass bottles on 2024-02-29, from 12:00 - 14:40. All carboys were agitated and transferred into an intermediate vessel (sterile, 2L HDPE), and finally transferred to the amber glass bottle. All other samples were transferred directly from original bottles to amber glass
Videos	None

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6PPD-Q CHARACTERIZATION MONITORING FORM

PROJECT: **6PPD-q Characterization and Protocol Dev.** PROJECT NO.: **23-08026-000**

CLIENT: **WA Dept of Ecology**

FIELD PERSONNEL: T. Clark LOCATION: STTC, Portland, OR

FLOW CONDITIONS: Constant DATE: June 18, 2023 TIME: 1125

WEATHER: Overcast with spotted storm cells

BMP ID:		
	Influent 1	**Effluent 1**
Sample ID:	L81564-1	
Sample Time:	1125 18-Jun-23	
QA Sample:		
Notes (below):		
	Influent 2	**Effluent 2**
Sample ID:	〃 -2	
Sample Time:	1634 18-Jun-23	
QA Sample:		
Notes (below):		

Notes:

flushed center line for 5 minute after opening valve

larger than planned gap btwn storm sample
two separate storms cells

6PPD-Q CHARACTERIZATION MONITORING FORM

PROJECT: **6PPD-q Characterization and Protocol Dev.** PROJECT NO.: **23-08026-000**

CLIENT: **WA Dept of Ecology**

FIELD PERSONNEL: **Clark** LOCATION: **Stormwater Treatment Technology**

FLOW CONDITIONS: DATE: **2023-08-31** TIME: **0915**

WEATHER: Overcast, steady light to moderate rain, lower 60s F

BMP ID: STTC-G2		
	Influent 1	**Effluent 1**
Sample ID:	P81565-1	NA
Sample Time:	0925	
QA Sample:		
Notes (below):		
	Influent 2	**Effluent 2**
Sample ID:	P81565-2	NA
Sample Time:	1157	
QA Sample:		
Notes (below):		

Notes:

Opened up central main gravity at 815 and allowed to purge for one hour before collecting sample

Initially, mainline out was very dark grey as accumulated sediment cleared through gravity line, but eventually turned to a more transparent grey. Small black-grey specks were evident in both collected samples

HERRERA

6PPD-Q CHARACTERIZATION MONITORING FORM

PROJECT: **6PPD-q Characterization and Protocol Dev.** PROJECT NO.: **23-08026-000**
CLIENT: **WA Dept of Ecology**
FIELD PERSONNEL: SN LOCATION: STTC-TB1
FLOW CONDITIONS: Rising DATE: 3/27/24 TIME:
WEATHER: Rain high40s- low 50s F

BMP ID: STTC-TB1		
	Influent 1	**Effluent 1**
Sample ID:	P82960-1	P82960-2
Sample Time:	07:24	07:24
QA Sample:		
Notes (below):		
	Influent 2	**Effluent 2**
Sample ID:	P82960-3	P82960-4
Sample Time:	08:42	08:42
QA Sample:	P82960-9 (DUPE)	
Notes (below):		

Notes:

1st samples collected during rising limb of hydrograph
2nd samples collected during falling limb of hydrograph

All samples collected during rising limb of storm.

Dupe collected at TB1-IN during 2nd set.

HERRERA

6PPD-Q CHARACTERIZATION MONITORING FORM

PROJECT: **6PPD-q Characterization and Protocol Dev.** PROJECT NO.: **23-08026-000**

CLIENT: **WA Dept of Ecology**

FIELD PERSONNEL: SN LOCATION: STTC TB1

FLOW CONDITIONS: Rising / Peak DATE: 3/25/24 TIME:

WEATHER: Rain to cloudy 40s

BMP ID: STTC-TB1

	Influent 1	**Effluent 1**
Sample ID:	P82959-1	P82959-2
Sample Time:	18:32	18:32
QA Sample:	NA	NA
Notes (below):		
	Influent 2	**Effluent 2** SN
Sample ID:	P82959-3	P82959-~~3~~4
Sample Time:	19:36	19:36
QA Sample:	NA	NA
Notes (below):		

Notes:

1st samples collected during rising limb
2nd samples collected during peak of Hydrograph

This was the first event sampled for this BMP at STTC

Login: P82959
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On STTC

FSU TC: ____________
LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by	***Date*** SN 3/28/24 ~~@1540~~	***Time*** 1540
Received by	***Date*** 3-28-24	***Time*** 1540
Sample Numbers		***[All]***

Sample Number	**P82959-1**	**P82959-2**
QC Link		
Locator	**STTC-TB1-IN**	**STTC-TB1-OUT**
Short Loc Desc		
Locator Desc	STTC-TB1 upstream sampling station	STTC-TB1 downstream sampling station
Site	I-5TAPE	I-5TAPE
Comments	First grab	First grab
Start Date/Time	SN 3~~4~~/25/24@18:32	SN 3~~4~~/25/24@1832
End Date/Time		
Time Span		
Sample Depth		
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)

Login: P82959
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On STTC

FSU TC: ____________________
LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by	***Date***	***Time***
Received by	***Date***	***Time***
Sample Numbers		***[All]***

Sample Number	**P82959-3**	**P82959-4**
QC Link		
Locator	**STTC-TB1-IN**	**STTC-TB1-OUT**
Short Loc Desc		
Locator Desc	STTC-TB1 upstream sampling station	STTC-TB1 downstream sampling station
Site	I-5TAPE	I-5TAPE
Comments	Second grab	Second grab
Start Date/Time	SW 3~~4~~/25/24 @ 1936	SW 3~~4~~/25/24 @ 1936
End Date/Time		
Time Span		
Sample Depth		
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)

Login: P82960
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On STTC

FSU TC: ____________________
LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by	*Date* 3/28/24	*Time* 1541
Received by	*Date* 3-28-24	*Time* 1541
Sample Numbers		*[All]*

Sample Number	**P82960-1**	**P82960-2**
QC Link		
Locator	**STTC-TB1-IN**	**STTC-TB1-OUT**
Short Loc Desc		
Locator Desc	STTC-TB1 upstream sampling station	STTC-TB1 downstream sampling station
Site	I-5TAPE	I-5TAPE
Comments	First grab	First grab
Start Date/Time	3/27/24 @ 0724	3/27/24 @ 0724
End Date/Time		
Time Span		
Sample Depth		
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)

Login: P82960
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On STTC

FSU TC: ____________________
LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by	***Date***	***Time***
Received by	***Date***	***Time***
Sample Numbers		***[All]***

Sample Number	**P82960-3**	**P82960-4**
QC Link		
Locator	**STTC-TB1-IN**	**STTC-TB1-OUT**
Short Loc Desc		
Locator Desc	STTC-TB1 upstream sampling station	STTC-TB1 downstream sampling station
Site	I-5TAPE	I-5TAPE
Comments	Second grab	Second grab
Start Date/Time	3/27/24 @ 0842	3/27/24 @ 0842
End Date/Time		
Time Span		
Sample Depth		
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)

Login: P82960
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On STTC

FSU TC: ____________________
LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by	***Date***	***Time***
Received by	***Date***	***Time***
Sample Numbers ***[All]***		

Sample Number	**P82960-9**
QC Link	
Locator	**FIELDDUP**
Short Loc Desc	
Locator Desc	FIELD DUPLICATE
Site	FLDQC
Comments	
Start Date/Time	3/27/24 @ 0842
End Date/Time	
Time Span	
Sample Depth	
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)

HERRERA

6PPD-Q CHARACTERIZATION MONITORING FORM

PROJECT: **6PPD-q Characterization and Protocol Dev.** PROJECT NO.: **23-08026-000**

CLIENT: **WA Dept of Ecology**

FIELD PERSONNEL: S Nilsson LOCATION: STTC-TB1

FLOW CONDITIONS: Falling DATE: 4/25/24 TIME: 1400-1900

WEATHER: Light rain

BMP ID: STTC-TB1-SVBF		
	Influent 1	**Effluent 1**
Sample ID:	P8296-1	P8296-3
Sample Time:	1645	1752
QA Sample:		
Notes (below):		
	Influent 2	**Effluent 2**
Sample ID:	P82961-2	P8296-4
Sample Time:	1645	1752
QA Sample:		
Notes (below):		

Notes:

Flows through main I-84 pipe still high, but entire test event squarely in falling limb.

Light rain throughout event but minimal additional runoff

Appendix B

Laboratory Reports

HERRERA
Science + Planning + Design

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King County

Department of Natural Resources and Parks
Water and Land Resources Division

Environmental Laboratory

LAB-NR0100
322 West Ewing Street
Seattle, WA 98119-1507
206-477-7200 Fax 206-684-2395
TTY Relay: 711

Date: May 30, 2023

To: Madison Bristol, Washington State Department of Ecology

Clark, Herrera Environmental Consultants

From: Meghan Elkey, King County Environmental Laboratory

Subject: BMP Stormwater Characterization – Herrera Add-on 6PPDQ Samples Data Summary, May 5, 2023

Stormwater samples were collected by Herrera Environmental Consultants on May 5, 2023. The samples were delivered to the King County Environmental Laboratory on the date of collection. The samples were given lab ID numbers L81563-3-6 and 9-13. The following QC summary is included for your information.

All samples received were analyzed as requested. The samples were analyzed in the Aquatic Toxicology unit of the laboratory. The data have passed all QA/QC checks for accuracy and completeness and may be used without qualification.

Please contact me if you have any questions about this report or need additional information.

Sincerely,

Meghan Elkey

Meghan Elkey
Laboratory Project Manager/Water Quality Planner III
King County Environmental Lab
(206)477-7154 or meghan.elkey@kingcounty.gov

King County Environmental Lab Analytical Report

	Project: 421520-200 Locator: SCTF-TB25-IN Descrip: SCTF-TB2.5 upstrea Sample: L81563-3 Matrix: LG STORM WTR ColDate: 5/5/23 6:09 **WET Weight Basis**					Project: 421520-200 Locator: SCTF-TB25-OUT Descrip: SCTF-TB2.5 downstr Sample: L81563-4 Matrix: LG STORM WTR ColDate: 5/5/23 6:09 **WET Weight Basis**					Project: 421520-200 Locator: SCTF-TB4-IN Descrip: SCTF-TB4 upstream Sample: L81563-5 Matrix: LG STORM WTR ColDate: 5/5/23 6:10 **WET Weight Basis**				
Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.408		0.002	0.01	ug/L	0.352		0.002	0.01	ug/L	0.359		0.002	0.01	ug/L

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200	Project:	421520-200
Locator:	SCTF-TB4-OUT	Locator:	SCTF-TB25-IN	Locator:	SCTF-TB25-OUT
Descrip:	SCTF-TB4 downstrea	Descrip:	SCTF-TB2.5 upstrea	Descrip:	SCTF-TB2.5 downstr
Sample:	L81563-6	Sample:	L81563-9	Sample:	L81563-10
Matrix:	LG STORM WTR	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
ColDate:	5/5/23 6:10	ColDate:	5/5/23 8:48	ColDate:	5/5/23 8:48
WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.281		0.002	0.01	ug/L	0.423		0.002	0.01	ug/L	0.351		0.002	0.01	ug/L

King County Environmental Lab Analytical Report

	Project:	421520-200	Project:	421520-200	Project:	421520-200
	Locator:	SCTF-TB4-IN	Locator:	SCTF-TB4-OUT	Locator:	SCTF-TB4-IN
	Descrip:	SCTF-TB4 upstream	Descrip:	SCTF-TB4 downstrea	Descrip:	SCTF-TB4 upstream
	Sample:	L81563-11	Sample:	L81563-12	Sample:	L81563-13
	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
	ColDate:	5/5/23 9:00	ColDate:	5/5/23 9:00	ColDate:	5/5/23 9:00
	WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.587		0.002	0.01	ug/L	0.253		0.002	0.01	ug/L	0.533		0.002	0.01	ug/L

King County Environmental Lab Analytical MATRIX Report

Owner: **SEEDPAK**
Matrix Class: **LIQUID**
User select: **WET Weight Basis**

				6ppd-quinone
LOCATOR	**PROJECT**	**SAMPLE**	**COLLECTED**	**ug/L**
SCTF-TB25-IN	421520-200	L81563-3	5/5/2023 6:09	0.408
SCTF-TB25-OUT	421520-200	L81563-4	5/5/2023 6:09	0.352
SCTF-TB4-IN	421520-200	L81563-5	5/5/2023 6:10	0.359
SCTF-TB4-OUT	421520-200	L81563-6	5/5/2023 6:10	0.281
SCTF-TB25-IN	421520-200	L81563-9	5/5/2023 8:48	0.423
SCTF-TB25-OUT	421520-200	L81563-10	5/5/2023 8:48	0.351
SCTF-TB4-IN	421520-200	L81563-11	5/5/2023 9:00	0.587
SCTF-TB4-OUT	421520-200	L81563-12	5/5/2023 9:00	0.253
SCTF-TB4-IN	421520-200	L81563-13	5/5/2023 9:00	0.533
* Not converted to dry weight basis				

If a parameter/analyte appears twice in the column header, it implies that they were analyzed by two different method codes

WG187763 6PPDQ by LCMS

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	QC Association	Comments
L81563-3	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	5/5/2023 6:09	5/9/2023 6:00	5/9/2023 10:00	WG187763-1,-2,-3,-4,-5,-6	
L81563-4	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	5/5/2023 6:09	5/9/2023 6:00	5/9/2023 10:00	WG187763-1,-2,-3,-4,-5,-6	
L81563-5	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	5/5/2023 6:10	5/9/2023 6:00	5/9/2023 10:00	WG187763-1,-2,-3,-4,-5,-6	
L81563-6	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	5/5/2023 6:10	5/9/2023 6:00	5/9/2023 10:00	WG187763-1,-2,-3,-4,-5,-6	
L81563-9	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	5/5/2023 8:48	5/9/2023 6:00	5/9/2023 10:00	WG187763-1,-2,-3,-4,-5,-6	
L81563-10	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	5/5/2023 8:48	5/9/2023 6:00	5/9/2023 10:00	WG187763-1,-2,-3,-4,-5,-6	
L81563-11	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	5/5/2023 9:00	5/9/2023 6:00	5/9/2023 10:00	WG187763-1,-2,-3,-4,-5,-6	
L81563-12	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	5/5/2023 9:00	5/9/2023 6:00	5/9/2023 10:00	WG187763-1,-2,-3,-4,-5,-6	
L81563-13	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	5/5/2023 9:00	5/9/2023 6:00	5/9/2023 10:00	WG187763-1,-2,-3,-4,-5,-6	
WG187763-1	MB		AQ6PPDQ-LCMS	OTHR WTR		5/9/2023 6:00	5/9/2023 10:00	WG187763-1,-2,-3,-4,-5,-6	
WG187763-2	SB		AQ6PPDQ-LCMS	OTHR WTR		5/9/2023 6:00	5/9/2023 10:00	WG187763-1,-2,-3,-4,-5,-6	WG187763-1
WG187763-3	MS		AQ6PPDQ-LCMS	STORM WTR		5/9/2023 6:00	5/9/2023 10:00	WG187763-1,-2,-3,-4,-5,-6	L81563-9
WG187763-4	MSD		AQ6PPDQ-LCMS	STORM WTR		5/9/2023 6:00	5/9/2023 10:00	WG187763-1,-2,-3,-4,-5,-6	WG187763-3 L81563-9
WG187763-5	LD		AQ6PPDQ-LCMS	STORM WTR		5/9/2023 6:00	5/9/2023 10:00	WG187763-1,-2,-3,-4,-5,-6	L81563-10
WG187763-6	CCC		AQ6PPDQ-LCMS	OTHR WTR		5/9/2023 6:00	5/9/2023 10:00	WG187763-1,-2,-3,-4,-5,-6	

Workgroup: WG187763 6PPDQ by LCMS

MB:WG187763-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
6ppd-quinone	0.002	0.01	ug/L		<MDL

SB:WG187763-2 MB:WG187763-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	True Value	SB Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	<MDL	1	0.212	106		50--150

MSD:WG187763-4 MS:WG187763-3 L81563-9 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	True Value	MS Value	% Rec.	Qual	Lab Limit	True Value	MSD Value	% Rec.	Qual	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	0.423	1	0.657	117		50--150	1	0.651	114		1		0--45

LD:WG187763-5 L81563-10 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	0.351	0.337	4		0--40

CCC:WG187763-6 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Continuing Calibration Check)

Parameter	MDL	RDL	Units	True Value	CCC Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.01	0.05	ug/L	1	1.04	104		80--120

Login: P81563
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On TAPE - Event 1

FSU TC: ____________
LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by Nicholas Harris	***Date*** 5/5/2023	***Time*** 1120
Received by	***Date*** 5-5-23	***Time*** 1120
Sample Numbers		***[All]***

Sample Number	**P81563-1**	**P81563-2**	**P81563-3**
QC Link			
Locator	**SCTF-TB2-IN**	**SCTF-TB2-OUT**	**SCTF-TB25-IN**
Short Loc Desc			
Locator Desc	SCTF-TB2 upstream sampling station	SCTF-TB2 downstream sampling station	SCTF-TB2.5 upstream sampling station
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments	First grab	First grab	First grab
Start Date/Time			2023-05-05 06:09
End Date/Time			2023-05-05 06:09
Time Span			—
Sample Depth			—
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)

Login: P81563 WDOE BMP - Herrera 6PPDQ Add-On TAPE - Event 1 **FSU TC:** ____________

Project: 421520-200 **LPM: Meghan Elkey**

Sample Number	**P81563-4**	**P81563-5**	**P81563-6**
QC Link			
Locator	**SCTF-TB25-OUT**	**SCTF-TB4-IN**	**SCTF-TB4-OUT**
Short Loc Desc			
Locator Desc	SCTF-TB2.5 downstream sampling station	SCTF-TB4 upstream sampling location	SCTF-TB4 downstream sampling location
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments	First grab	First grab	First grab
Start Date/Time	2023-05-05 06:09	2023-05-05 06:10	2023-05-05 06:10
End Date/Time	2023-05-05 06:09	2023-05-05 06:10	2023-05-05 06:10
Time Span	—	—	—
Sample Depth	—	—	—
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)

Login: P81563
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On TAPE - Event 1

FSU TC: ____________________
LPM: Meghan Elkey

Sample Number	**P81563-7**	**P81563-8**	**P81563-9**
QC Link			
Locator	**SCTF-TB2-IN**	**SCTF-TB2-OUT**	**SCTF-TB25-IN**
Short Loc Desc			
Locator Desc	SCTF-TB2 upstream sampling station	SCTF-TB2 downstream sampling station	SCTF-TB2.5 upstream sampling station
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments	Second grab	Second grab	Second grab
Start Date/Time			2023-05-05 08:48
End Date/Time			2023-05-05 08:48
Time Span			—
Sample Depth			—
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)

Login: P81563 **WDOE BMP - Herrera 6PPDQ Add-On TAPE - Event 1** **FSU TC:** ____________

Project: 421520-200 **LPM: Meghan Elkey**

Sample Number	**P81563-10**	**P81563-11**	**P81563-12**
QC Link			
Locator	**SCTF-TB25-OUT**	**SCTF-TB4-IN**	**SCTF-TB4-OUT**
Short Loc Desc			
Locator Desc	SCTF-TB2.5 downstream sampling station	SCTF-TB4 upstream sampling location	SCTF-TB4 downstream sampling location
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments	Second grab	Second grab	Second grab
Start Date/Time	2023-05-05 08:48	2023-05-05 09:00	2023-05-05 09:00
End Date/Time	2023-05-05 08:48	2023-05-05 09:00	2023-05-05 09:00
Time Span	—	—	—
Sample Depth	—	—	—
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)

Login: P81563
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On TAPE - Event 1

FSU TC: ____________
LPM: Meghan Elkey

Sample Number	**P81563-13**		
QC Link			
Locator	**FIELDDUP**		
Short Loc Desc			
Locator Desc	FIELD DUPLICATE		
Site	FLDQC		
Comments	TB4-IN		
Start Date/Time	2023-05-05 09:00		
End Date/Time	2023-05-05 09:00		
Time Span	—		
Sample Depth	—		
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)		

36,9-13

LIQUID SAMPLE RECEIPT RECORD

Login Number(s): 81563-(~~3-13~~)
Collect Date(s): 5-5-23
Project No.: 421520-200
Receive Date: 5-5-23
Sub-Contracting: Y / [✓ N]
Changes: [✓ Y] / N
List Product(s):
List Parameter(s):

SAMPLE RECEIPT CONDITIONS

CONDITION	Acceptable?	Comment ID	CONDITION	Acceptable?	Comment ID
Labels / Fieldsheets	[✓ Y] / N		Volumes	[✓ Y] / N	
Container	[✓ Y] / N		Holding Times	[✓ Y] / N	
Temperature (w/ ice)	[✓ Y] / N / NA		Delivery Location	[✓ Y] / N	

BOTTLE COUNT (#) AND DESCRIPTION and SAMPLE NUMBERS

#	Bottle Description: Sample Numbers
	40 mL clear vial (VOA):
	60 mL clear glass (PHYTO):
	60 mL CWM HDPE:
	125 mL AWM HDPE:
	125 mL CNM HDPE:
	125 mL CWM HDPE:
	125 mL GANM:
	125 mL GANM w/HCl
	250 mL AWM HDPE:
	250 mL CWM HDPE:
	250 mL CWM HDPE (MICRO):
9	250 mL GAWM: ~~3-13~~ 36,9-13
	250 mL GAWM w/ H2SO4:
	300 mL WDO (8 hour HT):
	500 mL AWM HDPE:
	500 mL CWM HDPE:
	500 mL CWM PP (MICRO):
	500 mL HDPE (METALS):
	500 mL HDPE, double-bagged (METALS):
	500 mL Teflon (Hg):
	500 mL Teflon, double-bagged (METALS):
	500 mL GANM / GAWM:
	500 mL Polystyrene Filtration Units (METALS):
	1L AWM HDPE:
	1L CWM HDPE:
	1L CWM PP (MICRO):
	1L GANM:
	1L GCWM:
	1L GAWM w/ H_2SO_4:
	2L CWM HDPE:
	Other:

COMMENTS / NOTIFICATIONS

FIELD PRESERVATION CHECKLIST (Circle and/or check applicable selections)

PRODUCT / Preservation	SM Action	Acceptable?	Corrective Action
BNA / pH 6 - 9 w/ H_2SO_4 or NaOH	√ field sheet for F. pH	Y / N	☐ Notify ORG
CN / pH > 12 w/ NaOH within 15 min	☐ Check pH	Y / N	☐ Deliver to CONV
NO23 pH < 2 w/ H_2SO_4	☐ Check pH	Y / N / NA	☐ Preserve by SM
CR(VI) / TOTCR(VI) / pH 9.3 - 9.7 w/ NaOH w/in 15 min	√ field sheet for pH	Y / N	☐ Deliver to CONV
ICP / HG-CVAA-M / pH < 2 w/ HNO_3	☐ Check pH	Y / N	☐ Preserve By SM
O&G / HEM / PHENOL / pH < 2 w/ H_2SO_4	Check documentation	Y / N	☐ Preserve by SM
PHYTOPLANKTON / Lugols	Visually inspect	Y / N	☐ Deliver to MICRO
TKN / COD pH < 2 w/ H_2SO_4 within 15 min	☐ Check pH	Y / N	☐ Preserve By SM
TOC / pH < 2 w/ HCl (NPDES only)	☐ Check pH	Y / N	☐ Preserve By SM
TOTSULFIDE / pH > 9 w/ NaOH, ZnAc	Check documentation	Y / N	☐ Deliver to CONV
WDO / FIXED	Visually inspect	Y / N	☐ Deliver to CONV
Other:			

ROUTINE SM PRESERVATION CHECKLIST (Circle and/or check applicable selections)

PRODUCT / Preservation	SM Action	Acceptable?	Corrective Action
Chlorinated Pesticides / pH 5 - 9 w/ H_2SO_4 or NaOH	√ field sheet for F. pH	Y / N	☐ Adjust pH
HG-CVAA-L-Teflon (T / D) / pH < 2 w/ ULTRA HCl	☐ Preserve & deliver	NA	NA
ICPMS / HG-CVAA-M (T / D) / pH < 2 w/ ULTRA HNO_3	☐ Preserve & deliver	NA	NA
TOC / pH < 2 w/ HCl	☐ Preserve & deliver	NA	NA
Other:			
Other:			

INTERFERENCE TEST (Circle and/or check applicable selections)

Product / Interference (SM Action)	Positive Test?	Treated	Corrective Action
BNA / Chlorine (Check documentation)	Y / N / not tested	Y / N	☐ Deliver to ORG
CN / Chlorine (Check documentation)	Y / N / not tested	Y / N	☐ Deliver to CONV
CN / Sulfide (Check field sheet for DF)	Y / N / not tested	Y / N	☐ Deliver to CONV
VOA / Chlorine (Check documentaion)	Y / N / not tested	Y / N	☐ Deliver to ORG
Other:			

HEADSPACE CHECK

PRODUCT (SM Action)	Check For	Acceptable?	Corrective Action
MICRO (Visually inspect)	Headspace (@ 1")	Y / N	☐ Notify MICRO
TOTSULFIDE (Visually inspect)	Headspace (< 1")	Y / N	☐ Notify CONV
VOA (Visually inspect)	Zero headspace	Y / N	☐ Notify ORG
WDO (Visually inspect)	Zero headspace	Y / N	☐ Notify CONV
Other:			

FIELD FILTRATION CHECKLIST (Circle and/or check applicable selections)

Product (SM Action)	Field Filtered	Field Blank	Corrective Action
ORTHOP (Check Field Sheet)	Y (within 15 min y / n) / N	Y / N	☐ Deliver to CONV
NO2 / NO3 / NO23 / NH3 / SI (Documentation)	Y (within 1 day y / n) / N	Y / N / NA	☐ Deliver to CONV
Dissolved Metals (Check Field Sheet)	Y (within 15 min y / n) / N	Y / N / NA	☐ Deliver to METALS
DOC (Deliver / Notify Unit)	Y (within 15 min or 1 day) / N	Y / N / NA	☐ Deliver to CONV
DCOD / CR(VI) (Deliver / Notify Unit)	Y (within 15 min y / n) / N	Y / N / NA	☐ Deliver to CONV
Other:			
Other:			

CC: ☐ AQUATOX, ☐ CONV, ☐ METALS, ☐ MICRO, ☐ ORG, ☐

NOTES

1. Deliver dissolved Hg-CVAF samples to METALS for filtration.
2. Deliver double-bagged metals samples to METALS for preservation.
3. Do not test pH for preserved BNA and TOTSULFIDE samples.
4. Deliver pH, WDO, and all MICRO samples ASAP to appropriate section for immediate processing.
5. Enter " Time Span" for composite samples during sample login.
6. Split algae sample into 60 mL clear glass if PHYTOQUAL is requested.

SM Signature:

Date / Time Completed: MAY 05 '23 11:30

King County

Department of Natural Resources and Parks
Water and Land Resources Division

Environmental Laboratory

LAB-NR0100
322 West Ewing Street
Seattle, WA 98119-1507
206-477-7200 Fax 206-684-2395
TTY Relay: 711

Date: July 18, 2023

To: Madison Bristol, Washington State Department of Ecology

Clark, Herrera Environmental Consultants

From: Meghan Elkey, King County Environmental Laboratory

Subject: BMP Stormwater Characterization – Herrera Add-on 6PPDQ Samples Data Summary, June 18, 2023

Stormwater samples were collected by Herrera Environmental Consultants on June 18, 2023. The samples were delivered to the King County Environmental Laboratory on June 20, 2023. The samples were given lab ID numbers L81690-1 to -84. The following QC summary is included for your information.

All samples received were analyzed as requested. The samples were analyzed in the Aquatic Toxicology unit of the laboratory. The data have passed all QA/QC checks for accuracy and completeness and may be used without qualification with the following exception:

The d5-6PPDQ surrogate associated with sample WG188627-3 (L81690-66 MS) exceeded QC acceptance criteria. The surrogate result for sample WG188627-3 is qualified with an asterisk (“*”) on the Lab QC Report to indicate QC criteria were not met.

Please contact me if you have any questions about this report or need additional information.

Sincerely,

Meghan Elkey

Meghan Elkey
Laboratory Project Manager/Water Quality Planner III
King County Environmental Lab
(206)477-7154 or meghan.elkey@kingcounty.gov

King County Environmental Lab Analytical Report

Project: 421520-200
Locator: CONT
Descrip: Control Sample
Sample: L81690-1
Matrix: LG STORM WTR
ColDate: 6/18/23 15:10
WET Weight Basis

Parameters	Value	Qual	MDL	RDL	Units
AQ KCEL SOP 4077: 6PPDQ by LCMS					
6ppd-quinone	0.0678		0.002	0.01	ug/L
ES NONE					
Sample Information					

Project: 421520-200
Locator: CONT
Descrip: Control Sample
Sample: L81690-2
Matrix: LG STORM WTR
ColDate: 6/18/23 15:32
WET Weight Basis

Parameters	Value	Qual	MDL	RDL	Units
AQ KCEL SOP 4077: 6PPDQ by LCMS					
6ppd-quinone	0.071		0.002	0.01	ug/L
ES NONE					
Sample Information					

Project: 421520-200
Locator: CONT
Descrip: Control Sample
Sample: L81690-3
Matrix: LG STORM WTR
ColDate: 6/18/23 16:02
WET Weight Basis

Parameters	Value	Qual	MDL	RDL	Units
AQ KCEL SOP 4077: 6PPDQ by LCMS					
6ppd-quinone	0.855		0.002	0.01	ug/L
ES NONE					
Sample Information					

King County Environmental Lab Analytical Report

Project: 421520-200
Locator: CONT
Descrip: Control Sample
Sample: L81690-4
Matrix: LG STORM WTR
ColDate: 6/18/23 16:19
WET Weight Basis

Project: 421520-200
Locator: CONT
Descrip: Control Sample
Sample: L81690-5
Matrix: LG STORM WTR
ColDate: 6/18/23 16:48
WET Weight Basis

Project: 421520-200
Locator: CONT
Descrip: Control Sample
Sample: L81690-6
Matrix: LG STORM WTR
ColDate: 6/18/23 17:05
WET Weight Basis

Parameters	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.76		0.002	0.01	ug/L	0.547		0.002	0.01	ug/L	0.486		0.002	0.01	ug/L
ES NONE															
Sample Information															

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200	Project:	421520-200
Locator:	CONT	Locator:	CONT	Locator:	CONT
Descrip:	Control Sample	Descrip:	Control Sample	Descrip:	Control Sample
Sample:	L81690-7	Sample:	L81690-8	Sample:	L81690-9
Matrix:	LG STORM WTR	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
ColDate:	6/18/23 18:35	ColDate:	6/18/23 18:53	ColDate:	6/18/23 19:09
WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.37		0.002	0.01	ug/L	0.348		0.002	0.01	ug/L	0.36		0.002	0.01	ug/L
ES NONE															
Sample Information															

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200	Project:	421520-200
Locator:	CONT	Locator:	PTFE_TUB	Locator:	PTFE_TUB
Descrip:	Control Sample	Descrip:	PTFE tubing	Descrip:	PTFE tubing
Sample:	L81690-10	Sample:	L81690-11	Sample:	L81690-12
Matrix:	LG STORM WTR	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
ColDate:	6/18/23 19:27	ColDate:	6/18/23 15:10	ColDate:	6/18/23 15:32
WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.341		0.002	0.01	ug/L	0.0667		0.002	0.01	ug/L	0.0596		0.002	0.01	ug/L
ES NONE															
Sample Information															

King County Environmental Lab Analytical Report

Project:	421520-200	421520-200	421520-200
Locator:	PTFE_TUB	PTFE_TUB	PTFE_TUB
Descrip:	PTFE tubing	PTFE tubing	PTFE tubing
Sample:	L81690-13	L81690-14	L81690-15
Matrix:	LG STORM WTR	LG STORM WTR	LG STORM WTR
ColDate:	6/18/23 16:02	6/18/23 16:19	6/18/23 16:48
	WET Weight Basis	**WET Weight Basis**	**WET Weight Basis**

Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.807		0.002	0.01	ug/L	0.753		0.002	0.01	ug/L	0.554		0.002	0.01	ug/L
ES NONE															
Sample Information															

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200	Project:	421520-200
Locator:	PTFE_TUB	Locator:	PTFE_TUB	Locator:	PTFE_TUB
Descrip:	PTFE tubing	Descrip:	PTFE tubing	Descrip:	PTFE tubing
Sample:	L81690-16	Sample:	L81690-17	Sample:	L81690-18
Matrix:	LG STORM WTR	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
ColDate:	6/18/23 17:05	ColDate:	6/18/23 18:35	ColDate:	6/18/23 18:53
WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.504		0.002	0.01	ug/L	0.361		0.002	0.01	ug/L	0.344		0.002	0.01	ug/L
ES NONE															
Sample Information															

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200	Project:	421520-200
Locator:	PTFE_TUB	Locator:	PTFE_TUB	Locator:	SILI_TUB
Descrip:	PTFE tubing	Descrip:	PTFE tubing	Descrip:	Silicone tubing
Sample:	L81690-19	Sample:	L81690-20	Sample:	L81690-21
Matrix:	LG STORM WTR	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
ColDate:	6/18/23 19:09	ColDate:	6/18/23 19:27	ColDate:	6/18/23 15:10
WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.342		0.002	0.01	ug/L	0.325		0.002	0.01	ug/L	0.0645		0.002	0.01	ug/L
ES NONE															
Sample Information															

King County Environmental Lab Analytical Report

Project: 421520-200
Locator: SILI_TUB
Descrip: Silicone tubing
Sample: L81690-22
Matrix: LG STORM WTR
ColDate: 6/18/23 15:32
WET Weight Basis

Parameters	Value	Qual	MDL	RDL	Units
AQ KCEL SOP 4077: 6PPDQ by LCMS					
6ppd-quinone	0.0688		0.002	0.01	ug/L
ES NONE					
Sample Information					

Project: 421520-200
Locator: SILI_TUB
Descrip: Silicone tubing
Sample: L81690-23
Matrix: LG STORM WTR
ColDate: 6/18/23 16:02
WET Weight Basis

Parameters	Value	Qual	MDL	RDL	Units
AQ KCEL SOP 4077: 6PPDQ by LCMS					
6ppd-quinone	0.832		0.002	0.01	ug/L
ES NONE					
Sample Information					

Project: 421520-200
Locator: SILI_TUB
Descrip: Silicone tubing
Sample: L81690-24
Matrix: LG STORM WTR
ColDate: 6/18/23 16:19
WET Weight Basis

Parameters	Value	Qual	MDL	RDL	Units
AQ KCEL SOP 4077: 6PPDQ by LCMS					
6ppd-quinone	0.725		0.002	0.01	ug/L
ES NONE					
Sample Information					

King County Environmental Lab Analytical Report

Project:	421520-200	421520-200	421520-200
Locator:	SILI_TUB	SILI_TUB	SILI_TUB
Descrip:	Silicone tubing	Silicone tubing	Silicone tubing
Sample:	L81690-25	L81690-26	L81690-27
Matrix:	LG STORM WTR	LG STORM WTR	LG STORM WTR
ColDate:	6/18/23 16:48	6/18/23 17:05	6/18/23 18:35
	WET Weight Basis	**WET Weight Basis**	**WET Weight Basis**

Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.554		0.002	0.01	ug/L	0.508		0.002	0.01	ug/L	0.365		0.002	0.01	ug/L
ES NONE															
Sample Information															

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200	Project:	421520-200
Locator:	SILI_TUB	Locator:	SILI_TUB	Locator:	SILI_TUB
Descrip:	Silicone tubing	Descrip:	Silicone tubing	Descrip:	Silicone tubing
Sample:	L81690-28	Sample:	L81690-29	Sample:	L81690-30
Matrix:	LG STORM WTR	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
ColDate:	6/18/23 18:53	ColDate:	6/18/23 19:09	ColDate:	6/18/23 19:27
WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.339		0.002	0.01	ug/L	0.337		0.002	0.01	ug/L	0.322		0.002	0.01	ug/L
ES NONE															

Sample Information

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200	Project:	421520-200
Locator:	HDPE_FT	Locator:	HDPE_FT	Locator:	HDPE_FT
Descrip:	HDPE bottle sample	Descrip:	HDPE bottle sample	Descrip:	HDPE bottle sample
Sample:	L81690-31	Sample:	L81690-32	Sample:	L81690-33
Matrix:	LG STORM WTR	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
ColDate:	6/18/23 15:10	ColDate:	6/18/23 15:32	ColDate:	6/18/23 16:02
WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.064		0.002	0.01	ug/L	0.0623		0.002	0.01	ug/L	0.806		0.002	0.01	ug/L
ES NONE															
Sample Information															

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200	Project:	421520-200
Locator:	HDPE_FT	Locator:	HDPE_FT	Locator:	HDPE_FT
Descrip:	HDPE bottle sample	Descrip:	HDPE bottle sample	Descrip:	HDPE bottle sample
Sample:	L81690-34	Sample:	L81690-35	Sample:	L81690-36
Matrix:	LG STORM WTR	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
ColDate:	6/18/23 16:19	ColDate:	6/18/23 16:48	ColDate:	6/18/23 17:05
WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.732		0.002	0.01	ug/L	0.544		0.002	0.01	ug/L	0.481		0.002	0.01	ug/L
ES NONE															
Sample Information															

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200	Project:	421520-200
Locator:	HDPE_FT	Locator:	HDPE_FT	Locator:	HDPE_FT
Descrip:	HDPE bottle sample	Descrip:	HDPE bottle sample	Descrip:	HDPE bottle sample
Sample:	L81690-37	Sample:	L81690-38	Sample:	L81690-39
Matrix:	LG STORM WTR	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
ColDate:	6/18/23 18:35	ColDate:	6/18/23 18:53	ColDate:	6/18/23 19:09
WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.336		0.002	0.01	ug/L	0.338		0.002	0.01	ug/L	0.331		0.002	0.01	ug/L
ES NONE															
Sample Information															

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200	Project:	421520-200
Locator:	HDPE_FT	Locator:	HDPE_24	Locator:	HDPE_24
Descrip:	HDPE bottle sample	Descrip:	HDPE carboy sample	Descrip:	HDPE carboy sample
Sample:	L81690-40	Sample:	L81690-41	Sample:	L81690-42
Matrix:	LG STORM WTR	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
ColDate:	6/18/23 19:27	ColDate:	6/18/23 15:10	ColDate:	6/18/23 15:32
WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.324		0.002	0.01	ug/L	0.0634		0.002	0.01	ug/L	0.063		0.002	0.01	ug/L
ES NONE															
Sample Information															

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200	Project:	421520-200
Locator:	HDPE_24	Locator:	HDPE_24	Locator:	HDPE_24
Descrip:	HDPE carboy sample	Descrip:	HDPE carboy sample	Descrip:	HDPE carboy sample
Sample:	L81690-43	Sample:	L81690-44	Sample:	L81690-45
Matrix:	LG STORM WTR	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
ColDate:	6/18/23 16:02	ColDate:	6/18/23 16:19	ColDate:	6/18/23 16:48
WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.789		0.002	0.01	ug/L	0.701		0.002	0.01	ug/L	0.529		0.002	0.01	ug/L
ES NONE															

Sample Information

King County Environmental Lab Analytical Report

	Project: 421520-200 Locator: HDPE_24 Descrip: HDPE carboy sample Sample: L81690-46 Matrix: LG STORM WTR ColDate: 6/18/23 17:05 **WET Weight Basis**					Project: 421520-200 Locator: HDPE_24 Descrip: HDPE carboy sample Sample: L81690-47 Matrix: LG STORM WTR ColDate: 6/18/23 18:35 **WET Weight Basis**					Project: 421520-200 Locator: HDPE_24 Descrip: HDPE carboy sample Sample: L81690-48 Matrix: LG STORM WTR ColDate: 6/18/23 18:53 **WET Weight Basis**				
Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.49		0.002	0.01	ug/L	0.366		0.002	0.01	ug/L	0.339		0.002	0.01	ug/L
ES NONE															
Sample Information															

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200	Project:	421520-200
Locator:	HDPE_24	Locator:	HDPE_24	Locator:	FLPE_FT
Descrip:	HDPE carboy sample	Descrip:	HDPE carboy sample	Descrip:	FLPE bottle sample
Sample:	L81690-49	Sample:	L81690-50	Sample:	L81690-51
Matrix:	LG STORM WTR	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
ColDate:	6/18/23 19:09	ColDate:	6/18/23 19:27	ColDate:	6/18/23 15:10
WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.349		0.002	0.01	ug/L	0.33		0.002	0.01	ug/L	0.0537		0.002	0.01	ug/L
ES NONE															

Sample Information

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200	Project:	421520-200
Locator:	FLPE_FT	Locator:	FLPE_FT	Locator:	FLPE_FT
Descrip:	FLPE bottle sample	Descrip:	FLPE bottle sample	Descrip:	FLPE bottle sample
Sample:	L81690-52	Sample:	L81690-53	Sample:	L81690-54
Matrix:	LG STORM WTR	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
ColDate:	6/18/23 15:32	ColDate:	6/18/23 16:02	ColDate:	6/18/23 16:19
WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.0524		0.002	0.01	ug/L	0.833		0.002	0.01	ug/L	0.735		0.002	0.01	ug/L
ES NONE															
Sample Information															

King County Environmental Lab Analytical Report

	Project: 421520-200 Locator: FLPE_FT Descrip: FLPE bottle sample Sample: L81690-55 Matrix: LG STORM WTR ColDate: 6/18/23 16:48 **WET Weight Basis**					Project: 421520-200 Locator: FLPE_FT Descrip: FLPE bottle sample Sample: L81690-56 Matrix: LG STORM WTR ColDate: 6/18/23 17:05 **WET Weight Basis**					Project: 421520-200 Locator: FLPE_FT Descrip: FLPE bottle sample Sample: L81690-57 Matrix: LG STORM WTR ColDate: 6/18/23 18:35 **WET Weight Basis**				
Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.526		0.002	0.01	ug/L	0.456		0.002	0.01	ug/L	0.335		0.002	0.01	ug/L
ES NONE															
Sample Information															

King County Environmental Lab Analytical Report

Project:	421520-200	421520-200	421520-200
Locator:	FLPE_FT	FLPE_FT	FLPE_FT
Descrip:	FLPE bottle sample	FLPE bottle sample	FLPE bottle sample
Sample:	L81690-58	L81690-59	L81690-60
Matrix:	LG STORM WTR	LG STORM WTR	LG STORM WTR
ColDate:	6/18/23 18:53	6/18/23 19:09	6/18/23 19:27
	WET Weight Basis	**WET Weight Basis**	**WET Weight Basis**

Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.322		0.002	0.01	ug/L	0.347		0.002	0.01	ug/L	0.31		0.002	0.01	ug/L
ES NONE															
Sample Information															

King County Environmental Lab Analytical Report

Project: 421520-200
Locator: FLPE_24
Descrip: FLPE carboy sample
Sample: L81690-61
Matrix: LG STORM WTR
ColDate: 6/18/23 15:10
WET Weight Basis

Parameters	Value	Qual	MDL	RDL	Units
AQ KCEL SOP 4077: 6PPDQ by LCMS					
6ppd-quinone	0.0515		0.002	0.01	ug/L
ES NONE					
Sample Information					

Project: 421520-200
Locator: FLPE_24
Descrip: FLPE carboy sample
Sample: L81690-62
Matrix: LG STORM WTR
ColDate: 6/18/23 15:32
WET Weight Basis

Parameters	Value	Qual	MDL	RDL	Units
AQ KCEL SOP 4077: 6PPDQ by LCMS					
6ppd-quinone	0.0525		0.002	0.01	ug/L
ES NONE					
Sample Information					

Project: 421520-200
Locator: FLPE_24
Descrip: FLPE carboy sample
Sample: L81690-63
Matrix: LG STORM WTR
ColDate: 6/18/23 16:02
WET Weight Basis

Parameters	Value	Qual	MDL	RDL	Units
AQ KCEL SOP 4077: 6PPDQ by LCMS					
6ppd-quinone	0.794		0.002	0.01	ug/L
ES NONE					
Sample Information					

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200	Project:	421520-200
Locator:	FLPE_24	Locator:	FLPE_24	Locator:	FLPE_24
Descrip:	FLPE carboy sample	Descrip:	FLPE carboy sample	Descrip:	FLPE carboy sample
Sample:	L81690-64	Sample:	L81690-65	Sample:	L81690-66
Matrix:	LG STORM WTR	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
ColDate:	6/18/23 16:19	ColDate:	6/18/23 16:48	ColDate:	6/18/23 17:05
WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.699		0.002	0.01	ug/L	0.482		0.002	0.01	ug/L	0.445		0.002	0.01	ug/L
ES NONE															
Sample Information															

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200	Project:	421520-200
Locator:	FLPE_24	Locator:	FLPE_24	Locator:	FLPE_24
Descrip:	FLPE carboy sample	Descrip:	FLPE carboy sample	Descrip:	FLPE carboy sample
Sample:	L81690-67	Sample:	L81690-68	Sample:	L81690-69
Matrix:	LG STORM WTR	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
ColDate:	6/18/23 18:35	ColDate:	6/18/23 18:53	ColDate:	6/18/23 19:09
WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.338		0.002	0.01	ug/L	0.325		0.002	0.01	ug/L	0.327		0.002	0.01	ug/L
ES NONE															
Sample Information															

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200	Project:	421520-200
Locator:	FLPE_24	Locator:	FIELDDUP	Locator:	FIELDDUP
Descrip:	FLPE carboy sample	Descrip:	FIELD DUPLICATE	Descrip:	FIELD DUPLICATE
Sample:	L81690-70	Sample:	L81690-71	Sample:	L81690-72
Matrix:	LG STORM WTR	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
ColDate:	6/18/23 19:27	ColDate:	6/18/23 15:10	ColDate:	6/18/23 15:32
WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.31		0.002	0.01	ug/L	0.0711		0.002	0.01	ug/L	0.0703		0.002	0.01	ug/L
ES NONE															
Sample Information															

King County Environmental Lab Analytical Report

Project:	421520-200	421520-200	421520-200
Locator:	FIELDDUP	FIELDDUP	FIELDDUP
Descrip:	FIELD DUPLICATE	FIELD DUPLICATE	FIELD DUPLICATE
Sample:	L81690-73	L81690-74	L81690-75
Matrix:	LG STORM WTR	LG STORM WTR	LG STORM WTR
ColDate:	6/18/23 16:02	6/18/23 16:19	6/18/23 16:48
	WET Weight Basis	**WET Weight Basis**	**WET Weight Basis**

Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.855		0.002	0.01	ug/L	0.775		0.002	0.01	ug/L	0.539		0.002	0.01	ug/L
ES NONE															
Sample Information															

King County Environmental Lab Analytical Report

Project:	421520-200	421520-200	421520-200
Locator:	FIELDDUP	FIELDDUP	FIELDDUP
Descrip:	FIELD DUPLICATE	FIELD DUPLICATE	FIELD DUPLICATE
Sample:	L81690-76	L81690-77	L81690-78
Matrix:	LG STORM WTR	LG STORM WTR	LG STORM WTR
ColDate:	6/18/23 17:05	6/18/23 18:35	6/18/23 18:53
	WET Weight Basis	**WET Weight Basis**	**WET Weight Basis**

Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.486		0.002	0.01	ug/L	0.37		0.002	0.01	ug/L	0.358		0.002	0.01	ug/L
ES NONE															
Sample Information															

King County Environmental Lab Analytical Report

	Project: 421520-200 Locator: FIELDDUP Descrip: FIELD DUPLICATE Sample: L81690-79 Matrix: LG STORM WTR ColDate: 6/18/23 19:09 **WET Weight Basis**					Project: 421520-200 Locator: FIELDDUP Descrip: FIELD DUPLICATE Sample: L81690-80 Matrix: LG STORM WTR ColDate: 6/18/23 19:27 **WET Weight Basis**					Project: 421520-200 Locator: EQUIPBLANK Descrip: EQUIPMENT BLANK Sample: L81690-81 Matrix: LN BLANK WTR ColDate: 6/18/23 13:50 **WET Weight Basis**				
Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.355		0.002	0.01	ug/L	0.339		0.002	0.01	ug/L		<MDL	0.002	0.01	ug/L
ES NONE															
Sample Information											Rinsate Blank - Teflon Pre				none

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200	Project:	421520-200
Locator:	EQUIPBLANK	Locator:	EQUIPBLANK	Locator:	EQUIPBLANK
Descrip:	EQUIPMENT BLANK	Descrip:	EQUIPMENT BLANK	Descrip:	EQUIPMENT BLANK
Sample:	L81690-82	Sample:	L81690-83	Sample:	L81690-84
Matrix:	LN BLANK WTR	Matrix:	LN BLANK WTR	Matrix:	LN BLANK WTR
ColDate:	6/18/23 13:50	ColDate:	6/18/23 19:35	ColDate:	6/18/23 19:35
WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone		<MDL	0.002	0.01	ug/L		<MDL	0.002	0.01	ug/L		<MDL	0.002	0.01	ug/L
ES NONE															
Sample Information	Rinsate Blank - Silicon Pre				none	Rinsate Blank - Teflon Post				none	Rinsate Blank - Silicon Post				none

King County Environmental Lab Analytical MATRIX Report

Owner: **SEEDPAK**
Matrix Class: **LIQUID**
User select: **WET Weight Basis**

				6ppd-quinone	Sample Information
LOCATOR	**PROJECT**	**SAMPLE**	**COLLECTED**	**ug/L**	**none**
CONT	421520-200	L81690-1	6/18/2023 15:10	0.0678	
CONT	421520-200	L81690-2	6/18/2023 15:32	0.071	
CONT	421520-200	L81690-3	6/18/2023 16:02	0.855	
CONT	421520-200	L81690-4	6/18/2023 16:19	0.76	
CONT	421520-200	L81690-5	6/18/2023 16:48	0.547	
CONT	421520-200	L81690-6	6/18/2023 17:05	0.486	
CONT	421520-200	L81690-7	6/18/2023 18:35	0.37	
CONT	421520-200	L81690-8	6/18/2023 18:53	0.348	
CONT	421520-200	L81690-9	6/18/2023 19:09	0.36	
CONT	421520-200	L81690-10	6/18/2023 19:27	0.341	
PTFE_TUB	421520-200	L81690-11	6/18/2023 15:10	0.0667	
PTFE_TUB	421520-200	L81690-12	6/18/2023 15:32	0.0596	
PTFE_TUB	421520-200	L81690-13	6/18/2023 16:02	0.807	
PTFE_TUB	421520-200	L81690-14	6/18/2023 16:19	0.753	
PTFE_TUB	421520-200	L81690-15	6/18/2023 16:48	0.554	
PTFE_TUB	421520-200	L81690-16	6/18/2023 17:05	0.504	
PTFE_TUB	421520-200	L81690-17	6/18/2023 18:35	0.361	
PTFE_TUB	421520-200	L81690-18	6/18/2023 18:53	0.344	
PTFE_TUB	421520-200	L81690-19	6/18/2023 19:09	0.342	
PTFE_TUB	421520-200	L81690-20	6/18/2023 19:27	0.325	
SILI_TUB	421520-200	L81690-21	6/18/2023 15:10	0.0645	
SILI_TUB	421520-200	L81690-22	6/18/2023 15:32	0.0688	
SILI_TUB	421520-200	L81690-23	6/18/2023 16:02	0.832	
SILI_TUB	421520-200	L81690-24	6/18/2023 16:19	0.725	
SILI_TUB	421520-200	L81690-25	6/18/2023 16:48	0.554	
SILI_TUB	421520-200	L81690-26	6/18/2023 17:05	0.508	
SILI_TUB	421520-200	L81690-27	6/18/2023 18:35	0.365	
SILI_TUB	421520-200	L81690-28	6/18/2023 18:53	0.339	
SILI_TUB	421520-200	L81690-29	6/18/2023 19:09	0.337	
SILI_TUB	421520-200	L81690-30	6/18/2023 19:27	0.322	
HDPE_FT	421520-200	L81690-31	6/18/2023 15:10	0.064	
HDPE_FT	421520-200	L81690-32	6/18/2023 15:32	0.0623	
HDPE_FT	421520-200	L81690-33	6/18/2023 16:02	0.806	

King County Environmental Lab Analytical MATRIX Report

Owner: **SEEDPAK**
Matrix Class: **LIQUID**
User select: **WET Weight Basis**

				6ppd-quinone	**Sample Information**
HDPE_FT	421520-200	L81690-34	6/18/2023 16:19	0.732	
HDPE_FT	421520-200	L81690-35	6/18/2023 16:48	0.544	
HDPE_FT	421520-200	L81690-36	6/18/2023 17:05	0.481	
HDPE_FT	421520-200	L81690-37	6/18/2023 18:35	0.336	
HDPE_FT	421520-200	L81690-38	6/18/2023 18:53	0.338	
HDPE_FT	421520-200	L81690-39	6/18/2023 19:09	0.331	
HDPE_FT	421520-200	L81690-40	6/18/2023 19:27	0.324	
HDPE_24	421520-200	L81690-41	6/18/2023 15:10	0.0634	
HDPE_24	421520-200	L81690-42	6/18/2023 15:32	0.063	
HDPE_24	421520-200	L81690-43	6/18/2023 16:02	0.789	
HDPE_24	421520-200	L81690-44	6/18/2023 16:19	0.701	
HDPE_24	421520-200	L81690-45	6/18/2023 16:48	0.529	
HDPE_24	421520-200	L81690-46	6/18/2023 17:05	0.49	
HDPE_24	421520-200	L81690-47	6/18/2023 18:35	0.366	
HDPE_24	421520-200	L81690-48	6/18/2023 18:53	0.339	
HDPE_24	421520-200	L81690-49	6/18/2023 19:09	0.349	
HDPE_24	421520-200	L81690-50	6/18/2023 19:27	0.33	
FLPE_FT	421520-200	L81690-51	6/18/2023 15:10	0.0537	
FLPE_FT	421520-200	L81690-52	6/18/2023 15:32	0.0524	
FLPE_FT	421520-200	L81690-53	6/18/2023 16:02	0.833	
FLPE_FT	421520-200	L81690-54	6/18/2023 16:19	0.735	
FLPE_FT	421520-200	L81690-55	6/18/2023 16:48	0.526	
FLPE_FT	421520-200	L81690-56	6/18/2023 17:05	0.456	
FLPE_FT	421520-200	L81690-57	6/18/2023 18:35	0.335	
FLPE_FT	421520-200	L81690-58	6/18/2023 18:53	0.322	
FLPE_FT	421520-200	L81690-59	6/18/2023 19:09	0.347	
FLPE_FT	421520-200	L81690-60	6/18/2023 19:27	0.31	
FLPE_24	421520-200	L81690-61	6/18/2023 15:10	0.0515	
FLPE_24	421520-200	L81690-62	6/18/2023 15:32	0.0525	
FLPE_24	421520-200	L81690-63	6/18/2023 16:02	0.794	
FLPE_24	421520-200	L81690-64	6/18/2023 16:19	0.699	
FLPE_24	421520-200	L81690-65	6/18/2023 16:48	0.482	
FLPE_24	421520-200	L81690-66	6/18/2023 17:05	0.445	
FLPE_24	421520-200	L81690-67	6/18/2023 18:35	0.338	

King County Environmental Lab Analytical MATRIX Report

Owner: **SEEDPAK**
Matrix Class: **LIQUID**
User select: **WET Weight Basis**

				6ppd-quinone	**Sample Information**
FLPE_24	421520-200	L81690-68	6/18/2023 18:53	0.325	
FLPE_24	421520-200	L81690-69	6/18/2023 19:09	0.327	
FLPE_24	421520-200	L81690-70	6/18/2023 19:27	0.31	
FIELDDUP	421520-200	L81690-71	6/18/2023 15:10	0.0711	
FIELDDUP	421520-200	L81690-72	6/18/2023 15:32	0.0703	
FIELDDUP	421520-200	L81690-73	6/18/2023 16:02	0.855	
FIELDDUP	421520-200	L81690-74	6/18/2023 16:19	0.775	
FIELDDUP	421520-200	L81690-75	6/18/2023 16:48	0.539	
FIELDDUP	421520-200	L81690-76	6/18/2023 17:05	0.486	
FIELDDUP	421520-200	L81690-77	6/18/2023 18:35	0.37	
FIELDDUP	421520-200	L81690-78	6/18/2023 18:53	0.358	
FIELDDUP	421520-200	L81690-79	6/18/2023 19:09	0.355	
FIELDDUP	421520-200	L81690-80	6/18/2023 19:27	0.339	
EQUIPBLANK	421520-200	L81690-81	6/18/2023 13:50		
EQUIPBLANK	421520-200	L81690-82	6/18/2023 13:50		
EQUIPBLANK	421520-200	L81690-83	6/18/2023 19:35		
EQUIPBLANK	421520-200	L81690-84	6/18/2023 19:35		
* Not converted to dry weight basis					
If a parameter/analyte appears twice in the column header, it implies that they were analyzed by two different method codes					

WG188625 6PPDQ by LCMS

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	QC Association	Comments
L81690-1	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 15:10	6/21/2023 12:30	6/22/2023 7:30	WG188625-1,-2,-3,-4,-5,-6	
L81690-2	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 15:32	6/21/2023 12:30	6/22/2023 7:30	WG188625-1,-2,-3,-4,-5,-6	
L81690-11	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 15:10	6/21/2023 12:30	6/22/2023 7:30	WG188625-1,-2,-3,-4,-5,-6	
L81690-12	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 15:32	6/21/2023 12:30	6/22/2023 7:30	WG188625-1,-2,-3,-4,-5,-6	
L81690-21	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 15:10	6/21/2023 12:30	6/22/2023 7:30	WG188625-1,-2,-3,-4,-5,-6	
L81690-22	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 15:32	6/21/2023 12:30	6/22/2023 7:30	WG188625-1,-2,-3,-4,-5,-6	
L81690-31	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 15:10	6/21/2023 12:30	6/22/2023 7:30	WG188625-1,-2,-3,-4,-5,-6	
L81690-32	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 15:32	6/21/2023 12:30	6/22/2023 7:30	WG188625-1,-2,-3,-4,-5,-6	
L81690-41	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 15:10	6/21/2023 12:30	6/22/2023 7:30	WG188625-1,-2,-3,-4,-5,-6	
L81690-42	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 15:32	6/21/2023 12:30	6/22/2023 7:30	WG188625-1,-2,-3,-4,-5,-6	
L81690-51	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 15:10	6/21/2023 12:30	6/22/2023 7:30	WG188625-1,-2,-3,-4,-5,-6	
L81690-52	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 15:32	6/21/2023 12:30	6/22/2023 7:30	WG188625-1,-2,-3,-4,-5,-6	
L81690-61	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 15:10	6/21/2023 12:30	6/22/2023 7:30	WG188625-1,-2,-3,-4,-5,-6	
L81690-62	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 15:32	6/21/2023 12:30	6/22/2023 7:30	WG188625-1,-2,-3,-4,-5,-6	
L81690-71	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 15:10	6/21/2023 12:30	6/22/2023 7:30	WG188625-1,-2,-3,-4,-5,-6	
L81690-72	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 15:32	6/21/2023 12:30	6/22/2023 7:30	WG188625-1,-2,-3,-4,-5,-6	
L81690-81	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	BLANK WTR	6/18/2023 13:50	6/21/2023 12:30	6/22/2023 7:30	WG188625-1,-2,-3,-4,-5,-6	
L81690-82	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	BLANK WTR	6/18/2023 13:50	6/21/2023 12:30	6/22/2023 7:30	WG188625-1,-2,-3,-4,-5,-6	
L81690-83	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	BLANK WTR	6/18/2023 19:35	6/21/2023 12:30	6/22/2023 7:30	WG188625-1,-2,-3,-4,-5,-6	
L81690-84	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	BLANK WTR	6/18/2023 19:35	6/21/2023 12:30	6/22/2023 7:30	WG188625-1,-2,-3,-4,-5,-6	
WG188625-1	MB		AQ6PPDQ-LCMS	OTHR WTR		6/21/2023 12:30	6/22/2023 7:30	WG188625-1,-2,-3,-4,-5,-6	

WG188625-2	SB		AQ6PPDQ-LCMS	OTHR WTR		6/21/2023 12:30	6/22/2023 7:30	WG188625-1,-2,-3,-4,-5,-6	WG188625-1
WG188625-3	MS		AQ6PPDQ-LCMS	OTHR WTR		6/21/2023 12:30	6/22/2023 7:30	WG188625-1,-2,-3,-4,-5,-6	L81690-84
WG188625-4	MSD		AQ6PPDQ-LCMS	OTHR WTR		6/21/2023 12:30	6/22/2023 7:30	WG188625-1,-2,-3,-4,-5,-6	WG188625-3 L81690-84
WG188625-5	LD		AQ6PPDQ-LCMS	STORM WTR		6/21/2023 12:30	6/22/2023 7:30	WG188625-1,-2,-3,-4,-5,-6	L81690-1
WG188625-6	CCC		AQ6PPDQ-LCMS	OTHR WTR		6/21/2023 12:30	6/22/2023 7:30	WG188625-1,-2,-3,-4,-5,-6	

WG188626 6PPDQ by LCMS

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	QC Association	Comments
L81690-3	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 16:02	6/22/2023 10:30	6/23/2023 9:00	WG188626-1,-2,-3,-4,-5,-6	
L81690-4	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 16:19	6/22/2023 10:30	6/23/2023 9:00	WG188626-1,-2,-3,-4,-5,-6	
L81690-13	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 16:02	6/22/2023 10:30	6/23/2023 9:00	WG188626-1,-2,-3,-4,-5,-6	
L81690-14	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 16:19	6/22/2023 10:30	6/23/2023 9:00	WG188626-1,-2,-3,-4,-5,-6	
L81690-23	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 16:02	6/22/2023 10:30	6/23/2023 9:00	WG188626-1,-2,-3,-4,-5,-6	
L81690-24	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 16:19	6/22/2023 10:30	6/23/2023 9:00	WG188626-1,-2,-3,-4,-5,-6	
L81690-33	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 16:02	6/22/2023 10:30	6/23/2023 9:00	WG188626-1,-2,-3,-4,-5,-6	
L81690-34	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 16:19	6/22/2023 10:30	6/23/2023 9:00	WG188626-1,-2,-3,-4,-5,-6	
L81690-43	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 16:02	6/22/2023 10:30	6/23/2023 9:00	WG188626-1,-2,-3,-4,-5,-6	
L81690-44	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 16:19	6/22/2023 10:30	6/23/2023 9:00	WG188626-1,-2,-3,-4,-5,-6	
L81690-53	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 16:02	6/22/2023 10:30	6/23/2023 9:00	WG188626-1,-2,-3,-4,-5,-6	
L81690-54	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 16:19	6/22/2023 10:30	6/23/2023 9:00	WG188626-1,-2,-3,-4,-5,-6	
L81690-63	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 16:02	6/22/2023 10:30	6/23/2023 9:00	WG188626-1,-2,-3,-4,-5,-6	
L81690-64	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 16:19	6/22/2023 10:30	6/23/2023 9:00	WG188626-1,-2,-3,-4,-5,-6	
L81690-73	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 16:02	6/22/2023 10:30	6/23/2023 9:00	WG188626-1,-2,-3,-4,-5,-6	

L81690-74	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 16:19	6/22/2023 10:30	6/23/2023 9:00	WG188626-1,-2,-3,-4,-5,-6	
WG188626-1	MB		AQ6PPDQ-LCMS	OTHR WTR		6/22/2023 10:30	6/23/2023 9:00	WG188626-1,-2,-3,-4,-5,-6	
WG188626-2	SB		AQ6PPDQ-LCMS	OTHR WTR		6/22/2023 10:30	6/23/2023 9:00	WG188626-1,-2,-3,-4,-5,-6	WG188626-1
WG188626-3	MS		AQ6PPDQ-LCMS	STORM WTR		6/22/2023 10:30	6/23/2023 9:00	WG188626-1,-2,-3,-4,-5,-6	L81690-53
WG188626-4	MSD		AQ6PPDQ-LCMS	STORM WTR		6/22/2023 10:30	6/23/2023 9:00	WG188626-1,-2,-3,-4,-5,-6	WG188626-3 L81690-53
WG188626-5	LD		AQ6PPDQ-LCMS	STORM WTR		6/22/2023 10:30	6/23/2023 9:00	WG188626-1,-2,-3,-4,-5,-6	L81690-3
WG188626-6	CCC		AQ6PPDQ-LCMS	OTHR WTR		6/22/2023 10:30	6/23/2023 9:00	WG188626-1,-2,-3,-4,-5,-6	

WG188627 6PPDQ by LCMS

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	QC Association	Comments
L81690-5	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 16:48	6/22/2023 17:00	6/23/2023 14:00	WG188627-1,-2,-3,-4,-5,-6	
L81690-6	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 17:05	6/22/2023 17:00	6/23/2023 14:00	WG188627-1,-2,-3,-4,-5,-6	
L81690-15	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 16:48	6/22/2023 17:00	6/23/2023 14:00	WG188627-1,-2,-3,-4,-5,-6	
L81690-16	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 17:05	6/22/2023 17:00	6/23/2023 14:00	WG188627-1,-2,-3,-4,-5,-6	
L81690-25	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 16:48	6/22/2023 17:00	6/23/2023 14:00	WG188627-1,-2,-3,-4,-5,-6	
L81690-26	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 17:05	6/22/2023 17:00	6/23/2023 14:00	WG188627-1,-2,-3,-4,-5,-6	
L81690-35	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 16:48	6/22/2023 17:00	6/23/2023 14:00	WG188627-1,-2,-3,-4,-5,-6	
L81690-36	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 17:05	6/22/2023 17:00	6/23/2023 14:00	WG188627-1,-2,-3,-4,-5,-6	
L81690-45	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 16:48	6/22/2023 17:00	6/23/2023 14:00	WG188627-1,-2,-3,-4,-5,-6	
L81690-46	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 17:05	6/22/2023 17:00	6/23/2023 14:00	WG188627-1,-2,-3,-4,-5,-6	
L81690-55	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 16:48	6/22/2023 17:00	6/23/2023 14:00	WG188627-1,-2,-3,-4,-5,-6	
L81690-56	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 17:05	6/22/2023 17:00	6/23/2023 14:00	WG188627-1,-2,-3,-4,-5,-6	
L81690-65	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 16:48	6/22/2023 17:00	6/23/2023 14:00	WG188627-1,-2,-3,-4,-5,-6	

L81690-66	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 17:05	6/22/2023 17:00	6/23/2023 14:00	WG188627-1,-2,-3,-4,-5,-6	
L81690-75	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 16:48	6/22/2023 17:00	6/23/2023 14:00	WG188627-1,-2,-3,-4,-5,-6	
L81690-76	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 17:05	6/22/2023 17:00	6/23/2023 14:00	WG188627-1,-2,-3,-4,-5,-6	
WG188627-1	MB		AQ6PPDQ-LCMS	OTHR WTR		6/22/2023 17:00	6/23/2023 14:00	WG188627-1,-2,-3,-4,-5,-6	
WG188627-2	SB		AQ6PPDQ-LCMS	OTHR WTR		6/22/2023 17:00	6/23/2023 14:00	WG188627-1,-2,-3,-4,-5,-6	WG188627-1
WG188627-3	MS		AQ6PPDQ-LCMS	STORM WTR		6/22/2023 17:00	6/23/2023 14:00	WG188627-1,-2,-3,-4,-5,-6	L81690-66
WG188627-4	MSD		AQ6PPDQ-LCMS	STORM WTR		6/22/2023 17:00	6/23/2023 14:00	WG188627-1,-2,-3,-4,-5,-6	WG188627-3 L81690-66
WG188627-5	LD		AQ6PPDQ-LCMS	STORM WTR		6/22/2023 17:00	6/23/2023 14:00	WG188627-1,-2,-3,-4,-5,-6	L81690-76
WG188627-6	CCC		AQ6PPDQ-LCMS	OTHR WTR		6/22/2023 17:00	6/23/2023 14:00	WG188627-1,-2,-3,-4,-5,-6	

WG188628 6PPDQ by LCMS

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	QC Association	Comments
L81690-7	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 18:35	6/23/2023 8:00	6/24/2023 8:30	WG188628-1,-2,-3,-4,-5,-6	
L81690-8	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 18:53	6/23/2023 8:00	6/24/2023 8:30	WG188628-1,-2,-3,-4,-5,-6	
L81690-17	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 18:35	6/23/2023 8:00	6/24/2023 8:30	WG188628-1,-2,-3,-4,-5,-6	
L81690-18	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 18:53	6/23/2023 8:00	6/24/2023 8:30	WG188628-1,-2,-3,-4,-5,-6	
L81690-27	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 18:35	6/23/2023 8:00	6/24/2023 8:30	WG188628-1,-2,-3,-4,-5,-6	
L81690-28	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 18:53	6/23/2023 8:00	6/24/2023 8:30	WG188628-1,-2,-3,-4,-5,-6	
L81690-37	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 18:35	6/23/2023 8:00	6/24/2023 8:30	WG188628-1,-2,-3,-4,-5,-6	
L81690-38	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 18:53	6/23/2023 8:00	6/24/2023 8:30	WG188628-1,-2,-3,-4,-5,-6	
L81690-47	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 18:35	6/23/2023 8:00	6/24/2023 8:30	WG188628-1,-2,-3,-4,-5,-6	
L81690-48	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 18:53	6/23/2023 8:00	6/24/2023 8:30	WG188628-1,-2,-3,-4,-5,-6	
L81690-57	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 18:35	6/23/2023 8:00	6/24/2023 8:30	WG188628-1,-2,-3,-4,-5,-6	

L81690-58	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 18:53	6/23/2023 8:00	6/24/2023 8:30	WG188628-1,-2,-3,-4,-5,-6	
L81690-67	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 18:35	6/23/2023 8:00	6/24/2023 8:30	WG188628-1,-2,-3,-4,-5,-6	
L81690-68	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 18:53	6/23/2023 8:00	6/24/2023 8:30	WG188628-1,-2,-3,-4,-5,-6	
L81690-77	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 18:35	6/23/2023 8:00	6/24/2023 8:30	WG188628-1,-2,-3,-4,-5,-6	
L81690-78	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 18:53	6/23/2023 8:00	6/24/2023 8:30	WG188628-1,-2,-3,-4,-5,-6	
WG188628-1	MB		AQ6PPDQ-LCMS	OTHR WTR		6/23/2023 8:00	6/24/2023 8:30	WG188628-1,-2,-3,-4,-5,-6	
WG188628-2	SB		AQ6PPDQ-LCMS	OTHR WTR		6/23/2023 8:00	6/24/2023 8:30	WG188628-1,-2,-3,-4,-5,-6	WG188628-1
WG188628-3	MS		AQ6PPDQ-LCMS	STORM WTR		6/23/2023 8:00	6/24/2023 8:30	WG188628-1,-2,-3,-4,-5,-6	L81690-77
WG188628-4	MSD		AQ6PPDQ-LCMS	STORM WTR		6/23/2023 8:00	6/24/2023 8:30	WG188628-1,-2,-3,-4,-5,-6	WG188628-3 L81690-77
WG188628-5	LD		AQ6PPDQ-LCMS	STORM WTR		6/23/2023 8:00	6/24/2023 8:30	WG188628-1,-2,-3,-4,-5,-6	L81690-57
WG188628-6	CCC		AQ6PPDQ-LCMS	OTHR WTR		6/23/2023 8:00	6/24/2023 8:30	WG188628-1,-2,-3,-4,-5,-6	

WG188629 6PPDQ by LCMS

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	QC Association	Comments
L81690-9	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 19:09	6/23/2023 12:30	6/24/2023 12:30	WG188629-1,-2,-3,-4,-5,-6	
L81690-10	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 19:27	6/23/2023 12:30	6/24/2023 12:30	WG188629-1,-2,-3,-4,-5,-6	
L81690-19	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 19:09	6/23/2023 12:30	6/24/2023 12:30	WG188629-1,-2,-3,-4,-5,-6	
L81690-20	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 19:27	6/23/2023 12:30	6/24/2023 12:30	WG188629-1,-2,-3,-4,-5,-6	
L81690-29	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 19:09	6/23/2023 12:30	6/24/2023 12:30	WG188629-1,-2,-3,-4,-5,-6	
L81690-30	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 19:27	6/23/2023 12:30	6/24/2023 12:30	WG188629-1,-2,-3,-4,-5,-6	
L81690-39	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 19:09	6/23/2023 12:30	6/24/2023 12:30	WG188629-1,-2,-3,-4,-5,-6	
L81690-40	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 19:27	6/23/2023 12:30	6/24/2023 12:30	WG188629-1,-2,-3,-4,-5,-6	
L81690-49	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 19:09	6/23/2023 12:30	6/24/2023 12:30	WG188629-1,-2,-3,-4,-5,-6	

L81690-50	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 19:27	6/23/2023 12:30	6/24/2023 12:30	WG188629-1,-2,-3,-4,-5,-6	
L81690-59	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 19:09	6/23/2023 12:30	6/24/2023 12:30	WG188629-1,-2,-3,-4,-5,-6	
L81690-60	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 19:27	6/23/2023 12:30	6/24/2023 12:30	WG188629-1,-2,-3,-4,-5,-6	
L81690-69	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 19:09	6/23/2023 12:30	6/24/2023 12:30	WG188629-1,-2,-3,-4,-5,-6	
L81690-70	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 19:27	6/23/2023 12:30	6/24/2023 12:30	WG188629-1,-2,-3,-4,-5,-6	
L81690-79	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 19:09	6/23/2023 12:30	6/24/2023 12:30	WG188629-1,-2,-3,-4,-5,-6	
L81690-80	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 19:27	6/23/2023 12:30	6/24/2023 12:30	WG188629-1,-2,-3,-4,-5,-6	
WG188629-1	MB		AQ6PPDQ-LCMS	BLANK WTR		6/23/2023 12:30	6/24/2023 12:30	WG188629-1,-2,-3,-4,-5,-6	
WG188629-2	SB		AQ6PPDQ-LCMS	BLANK WTR		6/23/2023 12:30	6/24/2023 12:30	WG188629-1,-2,-3,-4,-5,-6	WG188629-1
WG188629-3	MS		AQ6PPDQ-LCMS	STORM WTR		6/23/2023 12:30	6/24/2023 12:30	WG188629-1,-2,-3,-4,-5,-6	L81690-30
WG188629-4	MSD		AQ6PPDQ-LCMS	STORM WTR		6/23/2023 12:30	6/24/2023 12:30	WG188629-1,-2,-3,-4,-5,-6	WG188629-3 L81690-30
WG188629-5	LD		AQ6PPDQ-LCMS	STORM WTR		6/23/2023 12:30	6/24/2023 12:30	WG188629-1,-2,-3,-4,-5,-6	L81690-30
WG188629-6	CCC		AQ6PPDQ-LCMS	OTHR WTR		6/23/2023 12:30	6/24/2023 12:30	WG188629-1,-2,-3,-4,-5,-6	

Workgroup: WG188625 6PPDQ by LCMS

MB:WG188625-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
6ppd-quinone	0.002	0.01	ug/L		<MDL

SB:WG188625-2 MB:WG188625-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	True Value	SB Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	<MDL	0.2	0.229	115		50--150

MSD:WG188625-4 MS:WG188625-3 L81690-84 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	True Value	MS Value	% Rec.	Qual	Lab Limit	True Value	MSD Value	% Rec.	Qual	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	<MDL	0.2	0.257	128		50--150	0.2	0.256	128		0		0--45

LD:WG188625-5 L81690-1 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	0.0678	0.0688	1		0--40

CCC:WG188625-6 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Continuing Calibration Check)

Parameter	MDL	RDL	Units	True Value	CCC Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	0.2	0.197	99		80--120

Surrogate:	**d5-6PPDQ**
(Lab Limits)	**20--200**
L81690-1	65
L81690-2	65
L81690-11	63
L81690-12	62
L81690-21	63
L81690-22	59
L81690-31	59
L81690-32	61
L81690-41	59
L81690-42	59
L81690-51	54
L81690-52	57
L81690-61	57
L81690-62	54
L81690-71	53
L81690-72	54
L81690-81	52
L81690-82	54
L81690-83	53
L81690-84	55
WG188625-1	65
WG188625-2	65
WG188625-3	53
WG188625-4	54
WG188625-5	54
WG188625-6	79

Workgroup: WG188626 6PPDQ by LCMS

MB:WG188626-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
6ppd-quinone	0.002	0.01	ug/L		<MDL

SB:WG188626-2 MB:WG188626-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	True Value	SB Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	<MDL	0.2	0.251	126		50--150

MSD:WG188626-4 MS:WG188626-3 L81690-53 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	True Value	MS Value	% Rec.	Qual	Lab Limit	True Value	MSD Value	% Rec.	Qual	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	0.833	0.2	1.06	113		50--150	0.2	1.06	113		0		0--45

LD:WG188626-5 L81690-3 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	0.855	0.956	11		0--40

CCC:WG188626-6 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Continuing Calibration Check)

Parameter	MDL	RDL	Units	True Value	CCC Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.01	0.05	ug/L	1	1	100		80--120

Surrogate:	**d5-6PPDQ**
(Lab Limits)	**20--200**
L81690-3	55
L81690-4	56
L81690-13	56
L81690-14	54
L81690-23	54
L81690-24	56
L81690-33	55
L81690-34	54
L81690-43	53
L81690-44	54
L81690-53	52
L81690-54	52
L81690-63	50
L81690-64	52
L81690-73	50
L81690-74	48
WG188626-1	68
WG188626-2	65
WG188626-3	49
WG188626-4	49
WG188626-5	48
WG188626-6	80

Workgroup: WG188627 6PPDQ by LCMS

MB:WG188627-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
6ppd-quinone	0.002	0.01	ug/L		<MDL

SB:WG188627-2 MB:WG188627-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	True Value	SB Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	<MDL	0.2	0.249	125		50--150

MSD:WG188627-4 MS:WG188627-3 L81690-66 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	True Value	MS Value	% Rec.	Qual	Lab Limit	True Value	MSD Value	% Rec.	Qual	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	0.445	0.2	0.737	146		50--150	0.2	0.711	133		4		0--45

LD:WG188627-5 L81690-76 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	0.486	0.505	4		0--40

CCC:WG188627-6 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Continuing Calibration Check)

Parameter	MDL	RDL	Units	True Value	CCC Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	0.2	0.204	102		80--120

Surrogate:	**d5-6PPDQ**
(Lab Limits)	**20--200**
L81690-5	64
L81690-6	68
L81690-15	63
L81690-16	58
L81690-25	62
L81690-26	63
L81690-35	62
L81690-36	61
L81690-45	61
L81690-46	57
L81690-55	63
L81690-56	64
L81690-65	66
L81690-66	65
L81690-75	63
L81690-76	62
WG188627-1	71
WG188627-2	66
WG188627-3	11 *
WG188627-4	65
WG188627-5	61
WG188627-6	94

Workgroup: WG188628 6PPDQ by LCMS

MB:WG188628-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
6ppd-quinone	0.002	0.01	ug/L		<MDL

SB:WG188628-2 MB:WG188628-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	True Value	SB Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	<MDL	0.2	0.253	126		50--150

MSD:WG188628-4 MS:WG188628-3 L81690-77 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	True Value	MS Value	% Rec.	Qual	Lab Limit	True Value	MSD Value	% Rec.	Qual	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	0.37	0.2	0.594	112		50--150	0.2	0.611	120		3		0--45

LD:WG188628-5 L81690-57 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	0.335	0.354	5		0--40

CCC:WG188628-6 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Continuing Calibration Check)

Parameter	MDL	RDL	Units	True Value	CCC Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	0.2	0.2	100		80--120

Surrogate:	**d5-6PPDQ**
(Lab Limits)	**20--200**
L81690-7	68
L81690-8	68
L81690-17	69
L81690-18	69
L81690-27	67
L81690-28	67
L81690-37	69
L81690-38	69
L81690-47	68
L81690-48	68
L81690-57	68
L81690-58	67
L81690-67	63
L81690-68	70
L81690-77	67
L81690-78	65
WG188628-1	80
WG188628-2	77
WG188628-3	68
WG188628-4	67
WG188628-5	65
WG188628-6	91

Workgroup: WG188629 6PPDQ by LCMS

MB:WG188629-1 Matrix: BLANK WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
6ppd-quinone	0.002	0.01	ug/L		<MDL

SB:WG188629-2 MB:WG188629-1 Matrix: BLANK WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	True Value	SB Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	<MDL	0.2	0.244	122		50--150

MSD:WG188629-4 MS:WG188629-3 L81690-30 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	True Value	MS Value	% Rec.	Qual	Lab Limit	True Value	MSD Value	% Rec.	Qual	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	0.322	0.2	0.511	94		50--150	0.2	0.542	110		6		0--45

LD:WG188629-5 L81690-30 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	0.322	0.33	2		0--40

CCC:WG188629-6 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Continuing Calibration Check)

Parameter	MDL	RDL	Units	True Value	CCC Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.01	0.05	ug/L	1	0.971	97		80--120

Surrogate: (Lab Limits)	d5-6PPDQ 20--200
L81690-9	59
L81690-10	61
L81690-19	59
L81690-20	60
L81690-29	60
L81690-30	61
L81690-39	62
L81690-40	59
L81690-49	60
L81690-50	60
L81690-59	59
L81690-60	60
L81690-69	56

L81690-70	57
L81690-79	60
L81690-80	57
WG188629-1	58
WG188629-2	58
WG188629-3	59
WG188629-4	57
WG188629-5	62
WG188629-6	87

Login: P81690
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-on Field Protocol Sampling

FSU TC: ____________________
LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by Nicholas Harris	***Date*** 6/20/2023	***Time*** 12:00
Received by	***Date*** 6/20/23	***Time*** 12:00
Sample Numbers		***[All]***

Sample Number	**P81690-1**	**P81690-2**	**P81690-3**
QC Link			
Locator	**CONT**	**CONT**	**CONT**
Short Loc Desc			
Locator Desc	Control Sample	Control Sample	Control Sample
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments	Batch 1	Batch 1	Batch 2
Start Date/Time	2023-06-18 15:40	2023-06-18 15:37	16:02
End Date/Time			
Time Span			
Sample Depth			
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)

* All dates are 2023-06-18

Login: P81690
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-on Field Protocol Sampling

FSU TC: ____________
LPM: Meghan Elkey

Sample Number	**P81690-4**	**P81690-5**	**P81690-6**
QC Link			
Locator	**CONT**	**CONT**	**CONT**
Short Loc Desc			
Locator Desc	Control Sample	Control Sample	Control Sample
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments	Batch 2	Batch 3	Batch 3
Start Date/Time	16:19	16:48	17:05
End Date/Time			
Time Span			
Sample Depth			
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)

Login: P81690
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-on Field Protocol Sampling

FSU TC: ____________
LPM: Meghan Elkey

Sample Number	P81690-7	P81690-8	P81690-9
QC Link			
Locator	**CONT**	**CONT**	**CONT**
Short Loc Desc			
Locator Desc	Control Sample	Control Sample	Control Sample
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments	Batch 4	Batch 4	Batch 5
Start Date/Time	18:35	18:53	19:09
End Date/Time			
Time Span			
Sample Depth			
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)

Login: P81690
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-on Field Protocol Sampling

FSU TC: ____________
LPM: Meghan Elkey

Sample Number	P81690-10	P81690-11	P81690-12
QC Link			
Locator	CONT	PTFE_TUB	PTFE_TUB
Short Loc Desc			
Locator Desc	Control Sample	PTFE tubing	PTFE tubing
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments	Batch 5	Batch 1	Batch 1
Start Date/Time	19:27	15:10	15:32
End Date/Time			
Time Span			
Sample Depth			
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)

Login: P81690
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-on Field Protocol Sampling

FSU TC:
LPM: Meghan Elkey

Sample Number	**P81690-13**	**P81690-14**	**P81690-15**
QC Link			
Locator	**PTFE_TUB**	**PTFE_TUB**	**PTFE_TUB**
Short Loc Desc			
Locator Desc	PTFE tubing	PTFE tubing	PTFE tubing
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments	Batch 2	Batch 2	Batch 3
Start Date/Time	16:02	16:19	16:48
End Date/Time			
Time Span			
Sample Depth			
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)

Login: P81690 **WDOE BMP - Herrera 6PPDQ Add-on Field Protocol Sampling** **FSU TC:** ____________

Project: 421520-200 **LPM: Meghan Elkey**

Sample Number	**P81690-16**	**P81690-17**	**P81690-18**
QC Link			
Locator	**PTFE_TUB**	**PTFE_TUB**	**PTFE_TUB**
Short Loc Desc			
Locator Desc	PTFE tubing	PTFE tubing	PTFE tubing
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments	Batch 3	Batch 4	Batch 4
Start Date/Time	17:05	18:35	18:53
End Date/Time			
Time Span			
Sample Depth			
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)

Login: P81690 **WDOE BMP - Herrera 6PPDQ Add-on Field Protocol Sampling** **FSU TC:** ______________

Project: 421520-200 **LPM: Meghan Elkey**

Sample Number	**P81690-19**	**P81690-20**	**P81690-21**
QC Link			
Locator	**PTFE_TUB**	**PTFE_TUB**	**SILI_TUB**
Short Loc Desc			
Locator Desc	PTFE tubing	PTFE tubing	Silicone tubing
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments	Batch 5	Batch 5	Batch 1
Start Date/Time	19:09	19:27	15:10
End Date/Time			
Time Span			
Sample Depth			
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)

Login: P81690
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-on Field Protocol Sampling

FSU TC: ____________
LPM: Meghan Elkey

Sample Number	**P81690-22**	**P81690-23**	**P81690-24**
QC Link			
Locator	**SILI_TUB**	**SILI_TUB**	**SILI_TUB**
Short Loc Desc			
Locator Desc	Silicone tubing	Silicone tubing	Silicone tubing
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments	Batch 1	Batch 2	Batch 2
Start Date/Time	15:32	16:02	16:19
End Date/Time			
Time Span			
Sample Depth			
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)

Login: P81690 **WDOE BMP - Herrera 6PPDQ Add-on Field Protocol Sampling** **FSU TC:** ____________

Project: 421520-200 **LPM: Meghan Elkey**

Sample Number	**P81690-25**	**P81690-26**	**P81690-27**
QC Link			
Locator	**SILI_TUB**	**SILI_TUB**	**SILI_TUB**
Short Loc Desc			
Locator Desc	Silicone tubing	Silicone tubing	Silicone tubing
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments	Batch 3	Batch 3	Batch 4
Start Date/Time	16:48	17:05	18:35
End Date/Time			
Time Span			
Sample Depth			
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)

Login: P81690 **WDOE BMP - Herrera 6PPDQ Add-on Field Protocol Sampling** **FSU TC:** ____________

Project: 421520-200 **LPM: Meghan Elkey**

Sample Number	**P81690-28**	**P81690-29**	**P81690-30**
QC Link			
Locator	**SILI_TUB**	**SILI_TUB**	**SILI_TUB**
Short Loc Desc			
Locator Desc	Silicone tubing	Silicone tubing	Silicone tubing
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments	Batch 4	Batch 5	Batch 5
Start Date/Time	18:53	19:09	19:27
End Date/Time			
Time Span			
Sample Depth			
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)

Login: P81690 WDOE BMP - Herrera 6PPDQ Add-on Field Protocol Sampling FSU TC: ____________

Project: 421520-200 LPM: Meghan Elkey

Sample Number	P81690-31	P81690-32	P81690-33
QC Link			
Locator	HDPE_FT	HDPE_FT	HDPE_FT
Short Loc Desc			
Locator Desc	HDPE bottle sample	HDPE bottle sample	HDPE bottle sample
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments	Batch 1	Batch 1	Batch 2
Start Date/Time	15:10	15:32	16:02
End Date/Time			
Time Span			
Sample Depth			
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (39)	4 LG 6PPDQ (39)	4 LG 6PPDQ (39)

Login: P81690 **WDOE BMP - Herrera 6PPDQ Add-on Field Protocol Sampling** **FSU TC:** ____________

Project: 421520-200 **LPM: Meghan Elkey**

Sample Number	**P81690-34**	**P81690-35**	**P81690-36**
QC Link			
Locator	**HDPE_FT**	**HDPE_FT**	**HDPE_FT**
Short Loc Desc			
Locator Desc	HDPE bottle sample	HDPE bottle sample	HDPE bottle sample
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments	Batch 2	Batch 3	Batch 3
Start Date/Time	16:19	16:42	17:05
End Date/Time			
Time Span			
Sample Depth			
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (39)	4 LG 6PPDQ (39)	4 LG 6PPDQ (39)

Login: P81690 **WDOE BMP - Herrera 6PPDQ Add-on Field Protocol Sampling** **FSU TC:** ____________

Project: 421520-200 **LPM: Meghan Elkey**

Sample Number	**P81690-37**	**P81690-38**	**P81690-39**
QC Link			
Locator	**HDPE_FT**	**HDPE_FT**	**HDPE_FT**
Short Loc Desc			
Locator Desc	HDPE bottle sample	HDPE bottle sample	HDPE bottle sample
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments	Batch 4	Batch 4	Batch 5
Start Date/Time	18:35	18:53	19:09
End Date/Time			
Time Span			
Sample Depth			
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (39)	4 LG 6PPDQ (39)	4 LG 6PPDQ (39)

Login: P81690 **WDOE BMP - Herrera 6PPDQ Add-on Field Protocol Sampling** **FSU TC:** ____________

Project: 421520-200 **LPM: Meghan Elkey**

Sample Number	**P81690-40**	**P81690-41**	**P81690-42**
QC Link			
Locator	**HDPE_FT**	**HDPE_24**	**HDPE_24**
Short Loc Desc			
Locator Desc	HDPE bottle sample	HDPE carboy sample - 24 hours	HDPE carboy sample - 24 hours
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments	Batch 5	Batch 1	Batch 1
Start Date/Time	14:27	15:10	15:32
End Date/Time			
Time Span			
Sample Depth			
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (39)	4 LG 6PPDQ (39)	4 LG 6PPDQ (39)

Login: P81690 **WDOE BMP - Herrera 6PPDQ Add-on Field Protocol Sampling** **FSU TC:** ______________

Project: 421520-200 **LPM: Meghan Elkey**

Sample Number	**P81690-43**	**P81690-44**	**P81690-45**
QC Link			
Locator	**HDPE_24**	**HDPE_24**	**HDPE_24**
Short Loc Desc			
Locator Desc	HDPE carboy sample - 24 hours	HDPE carboy sample - 24 hours	HDPE carboy sample - 24 hours
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments	Batch 2	Batch 2	Batch 3
Start Date/Time	16:02	16:19	16:48
End Date/Time			
Time Span			
Sample Depth			
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (39)	4 LG 6PPDQ (39)	4 LG 6PPDQ (39)

Login: P81690 **WDOE BMP - Herrera 6PPDQ Add-on Field Protocol Sampling** **FSU TC:** ____________

Project: 421520-200 **LPM: Meghan Elkey**

Sample Number	**P81690-46**	**P81690-47**	**P81690-48**
QC Link			
Locator	**HDPE_24**	**HDPE_24**	**HDPE_24**
Short Loc Desc			
Locator Desc	HDPE carboy sample - 24 hours	HDPE carboy sample - 24 hours	HDPE carboy sample - 24 hours
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments	Batch 3	Batch 4	Batch 4
Start Date/Time	17:05	18:35	18:53
End Date/Time			
Time Span			
Sample Depth			
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (39)	4 LG 6PPDQ (39)	4 LG 6PPDQ (39)

Login: P81690
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-on Field Protocol Sampling

FSU TC: ____________
LPM: Meghan Elkey

Sample Number	**P81690-49**	**P81690-50**	**P81690-51**
QC Link			
Locator	**HDPE_24**	**HDPE_24**	**FLPE_FT**
Short Loc Desc			
Locator Desc	HDPE carboy sample - 24 hours	HDPE carboy sample - 24 hours	FLPE bottle sample
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments	Batch 5	Batch 5	Batch 1
Start Date/Time	19:09	19:27	15:10
End Date/Time			
Time Span			
Sample Depth			
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (39)	4 LG 6PPDQ (39)	4 LG 6PPDQ (2)

Login: P81690 **WDOE BMP - Herrera 6PPDQ Add-on Field Protocol Sampling** **FSU TC:** ____________

Project: 421520-200 **LPM: Meghan Elkey**

Sample Number	**P81690-52**	**P81690-53**	**P81690-54**
QC Link			
Locator	**FLPE_FT**	**FLPE_FT**	**FLPE_FT**
Short Loc Desc			
Locator Desc	FLPE bottle sample	FLPE bottle sample	FLPE bottle sample
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments	Batch 1	Batch 2	Batch 2
Start Date/Time	15:32	16:02	16:19
End Date/Time			
Time Span			
Sample Depth			
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (2)	4 LG 6PPDQ (2)	4 LG 6PPDQ (2)

Login: P81690 **WDOE BMP - Herrera 6PPDQ Add-on Field Protocol Sampling** **FSU TC:** ____________

Project: 421520-200 **LPM: Meghan Elkey**

Sample Number	**P81690-55**	**P81690-56**	**P81690-57**
QC Link			
Locator	**FLPE_FT**	**FLPE_FT**	**FLPE_FT**
Short Loc Desc			
Locator Desc	FLPE bottle sample	FLPE bottle sample	FLPE bottle sample
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments	Batch 3	Batch 3	Batch 4
Start Date/Time	16:48	17:05	18:35
End Date/Time			
Time Span			
Sample Depth			
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (2)	4 LG 6PPDQ (2)	4 LG 6PPDQ (2)

Login: P81690 **WDOE BMP - Herrera 6PPDQ Add-on Field Protocol Sampling** **FSU TC:** ________________

Project: 421520-200 **LPM: Meghan Elkey**

Sample Number	**P81690-58**	**P81690-59**	**P81690-60**
QC Link			
Locator	**FLPE_FT**	**FLPE_FT**	**FLPE_FT**
Short Loc Desc			
Locator Desc	FLPE bottle sample	FLPE bottle sample	FLPE bottle sample
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments	Batch 4	Batch 5	Batch 5
Start Date/Time	18:53	19:09	19:27
End Date/Time			
Time Span			
Sample Depth			
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (2)	4 LG 6PPDQ (2)	4 LG 6PPDQ (2)

Login: P81690 **WDOE BMP - Herrera 6PPDQ Add-on Field Protocol Sampling** **FSU TC:** ________

Project: 421520-200 **LPM: Meghan Elkey**

Sample Number	**P81690-61**	**P81690-62**	**P81690-63**
QC Link			
Locator	**FLPE_24**	**FLPE_24**	**FLPE_24**
Short Loc Desc			
Locator Desc	FLPE carboy sample - 24 hours	FLPE carboy sample - 24 hours	FLPE carboy sample - 24 hours
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments	Batch 1	Batch 1	Batch 2
Start Date/Time	15:10	15:32	16:02
End Date/Time			
Time Span			
Sample Depth			
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (2)	4 LG 6PPDQ (2)	4 LG 6PPDQ (2)

Login: P81690 **WDOE BMP - Herrera 6PPDQ Add-on Field Protocol Sampling** **FSU TC:** ____________

Project: 421520-200 **LPM: Meghan Elkey**

Sample Number	**P81690-64**	**P81690-65**	**P81690-66**
QC Link			
Locator	**FLPE_24**	**FLPE_24**	**FLPE_24**
Short Loc Desc			
Locator Desc	FLPE carboy sample - 24 hours	FLPE carboy sample - 24 hours	FLPE carboy sample - 24 hours
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments	Batch 2	Batch 3	Batch 3
Start Date/Time	16:19	16:48	17:05
End Date/Time			
Time Span			
Sample Depth			
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (2)	4 LG 6PPDQ (2)	4 LG 6PPDQ (2)

Login: P81690 **WDOE BMP - Herrera 6PPDQ Add-on Field Protocol Sampling** FSU TC: ____________________

Project: 421520-200 **LPM: Meghan Elkey**

Sample Number	**P81690-67**	**P81690-68**	**P81690-69**
QC Link			
Locator	**FLPE_24**	**FLPE_24**	**FLPE_24**
Short Loc Desc			
Locator Desc	FLPE carboy sample - 24 hours	FLPE carboy sample - 24 hours	FLPE carboy sample - 24 hours
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments	Batch 4	Batch 4	Batch 5
Start Date/Time	18:35	18:53	19:09
End Date/Time			
Time Span			
Sample Depth			
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (2)	4 LG 6PPDQ (2)	4 LG 6PPDQ (2)

Login: P81690 **WDOE BMP - Herrera 6PPDQ Add-on Field Protocol Sampling** **FSU TC:** ____________

Project: 421520-200 **LPM: Meghan Elkey**

Sample Number	**P81690-70**	**P81690-71**	**P81690-72**
QC Link			
Locator	**FLPE_24**	**FIELDDUP**	**FIELDDUP**
Short Loc Desc			
Locator Desc	FLPE carboy sample - 24 hours	FIELD DUPLICATE	FIELD DUPLICATE
Site	I-5TAPE	FLDQC	FLDQC
Comments	Batch 5	Batch 1	Batch 1
Start Date/Time	19:27	15:10	15:32
End Date/Time			
Time Span			
Sample Depth			
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (2)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)

Login: P81690 **WDOE BMP - Herrera 6PPDQ Add-on Field Protocol Sampling** **FSU TC:** ____________

Project: 421520-200 **LPM: Meghan Elkey**

Sample Number	**P81690-73**	**P81690-74**	**P81690-75**
QC Link			
Locator	**FIELDDUP**	**FIELDDUP**	**FIELDDUP**
Short Loc Desc			
Locator Desc	FIELD DUPLICATE	FIELD DUPLICATE	FIELD DUPLICATE
Site	FLDQC	FLDQC	FLDQC
Comments	Batch 2	Batch 2	Batch 3
Start Date/Time	16:02	16:19	16:48
End Date/Time			
Time Span			
Sample Depth			
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)

Login: P81690 **WDOE BMP - Herrera 6PPDQ Add-on Field Protocol Sampling** **FSU TC:** ____________

Project: 421520-200 **LPM: Meghan Elkey**

Sample Number	**P81690-76**	**P81690-77**	**P81690-78**
QC Link			
Locator	**FIELDDUP**	**FIELDDUP**	**FIELDDUP**
Short Loc Desc			
Locator Desc	FIELD DUPLICATE	FIELD DUPLICATE	FIELD DUPLICATE
Site	FLDQC	FLDQC	FLDQC
Comments	Batch 3	Batch 4	Batch 4
Start Date/Time	17:05	18:35	18:53
End Date/Time			
Time Span			
Sample Depth			
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)

Login: **P81690** **WDOE BMP - Herrera 6PPDQ Add-on Field Protocol Sampling** FSU TC: ____________

Project: **421520-200** LPM: Meghan Elkey

Sample Number	**P81690-79**	**P81690-80**	**P81690-81** - PRE - TEF
QC Link			
Locator	**FIELDDUP**	**FIELDDUP**	**EQUIPBLANK**
Short Loc Desc			EQUIPBLANK
Locator Desc	FIELD DUPLICATE	FIELD DUPLICATE	EQUIPMENT BLANK
Site	FLDQC	FLDQC	METRO
Comments	Batch 5	Batch 5	Rinsate blank Teflon Pre (Batch 1)
Start Date/Time	19:09	19:27	2023-06-18 13:50
End Date/Time			2023-06-18 13:52
Time Span			
Sample Depth			
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	4 LA 6PPDQ (43)

Login: P81690 **WDOE BMP - Herrera 6PPDQ Add-on Field Protocol Sampling** **FSU TC:** ____________________

Project: 421520-200 **LPM: Meghan Elkey**

Sample Number	**P81690-82** -PRE-SIL	**P81690-83**	**P81690-84**
QC Link			
Locator	**EQUIPBLANK**	**EQUIPBLANK**	**EQUIPBLANK**
Short Loc Desc	EQUIPBLANK	EQUIPBLANK	EQUIPBLANK
Locator Desc	EQUIPMENT BLANK	EQUIPMENT BLANK	EQUIPMENT BLANK
Site	METRO	METRO	METRO
Comments	Rinsate blank Silicon Pre (Batch 1)	Rinsate blank Teflon Post (Batch 1)	Rinsate blank Silicon Post (Batch 1)
Start Date/Time	2023-06-18 13:50	19:35	19:35
End Date/Time	2023-06-18 13:58		
Time Span			
Sample Depth			
Dept, Matrix, Prod (Cont ID)	4 LA 6PPDQ (43)	4 LA 6PPDQ (43)	4 LA 6PPDQ (43)

LIQUID SAMPLE RECEIPT RECORD

Login Number(s): 81690-(1-84)
Collect Date(s): 6-20-23 6-18-23
Project No.: 421520-200
Receive Date: 6-20-23
Sub-Contracting: Y / [✓ N]
Changes: Y / [✓ N]
List Product(s):
List Parameter(s):

SAMPLE RECEIPT CONDITIONS

CONDITION	Acceptable?	Comment ID	CONDITION	Acceptable?	Comment ID
Labels / Fieldsheets	[✓ Y] / N		Volumes	[✓ Y] / N	
Container	[✓ Y] / N		Holding Times	[✓ Y] / N	
Temperature (w/ ice)	[✓ Y] / N / NA		Delivery Location	[✓ Y] / N	

BOTTLE COUNT (#) AND DESCRIPTION and SAMPLE NUMBERS

#	Bottle Description: Sample Numbers
	40 mL clear vial (VOA):
	60 mL clear glass (PHYTO):
	60 mL CWM HDPE:
	125 mL AWM HDPE:
	125 mL CNM HDPE:
	125 mL CWM HDPE:
	125 mL GANM:
	125 mL GANM w/HCl
10	250 mL AWM HDPE: 31-40
10	250 mL NWM HDPE: 51-60 250mL CNM FLPE ME 6/20/23
	250 mL CWM HDPE (MICRO):
64	250 mL GAWM: 1-30, 41-50, 61-84
	250 mL GAWM w/ H2SO4:
	300 mL WDO (8 hour HT):
	500 mL AWM HDPE:
	500 mL CWM HDPE:
	500 mL CWM PP (MICRO):
	500 mL HDPE (METALS):
	500 mL HDPE, double-bagged (METALS):
	500 mL Teflon (Hg):
	500 mL Teflon, double-bagged (METALS):
	500 mL GANM / GAWM:
	500 mL Polystyrene Filtration Units (METALS):
	1L AWM HDPE:
	1L CWM HDPE:
	1L CWM PP (MICRO):
	1L GANM:
	1L GCWM:
	1L GAWM w/ H_2SO_4:
	2L CWM HDPE:
	Other:

COMMENTS / NOTIFICATIONS

FIELD PRESERVATION CHECKLIST (Circle and/or check applicable selections)

PRODUCT / Preservation	SM Action	Acceptable?	Corrective Action
BNA / pH 6 - 9 w/ H_2SO_4 or NaOH	√ field sheet for F. pH	Y / N	☐ Notify ORG
CN / pH > 12 w/ NaOH within 15 min	☐ Check pH	Y / N	☐ Deliver to CONV
NO23 pH < 2 w/ H_2SO_4	☐ Check pH	Y / N / NA	☐ Preserve by SM
CR(VI) / TOTCR(VI) / pH 9.3 - 9.7 w/ NaOH w/in 15 min	√ field sheet for pH	Y / N	☐ Deliver to CONV
ICP / HG-CVAA-M / pH < 2 w/ HNO_3	☐ Check pH	Y / N	☐ Preserve By SM
O&G / HEM / PHENOL / pH < 2 w/ H_2SO_4	Check documentation	Y / N	☐ Preserve by SM
PHYTOPLANKTON / Lugols	Visually inspect	Y / N	☐ Deliver to MICRO
TKN / COD pH < 2 w/ H_2SO_4 within 15 min	☐ Check pH	Y / N	☐ Preserve By SM
TOC / pH < 2 w/ HCl (NPDES only)	☐ Check pH	Y / N	☐ Preserve By SM
TOTSULFIDE / pH > 9 w/ NaOH, ZnAc	Check documentation	Y / N	☐ Deliver to CONV
WDO / FIXED	Visually inspect	Y / N	☐ Deliver to CONV
Other:			

ROUTINE SM PRESERVATION CHECKLIST (Circle and/or check applicable selections)

PRODUCT / Preservation	SM Action	Acceptable?	Corrective Action
Chlorinated Pesticides / pH 5 - 9 w/ H_2SO_4 or NaOH	√ field sheet for F. pH	Y / N	☐ Adjust pH
HG-CVAA-L-Teflon (T / D) / pH < 2 w/ ULTRA HCl	☐ Preserve & deliver	NA	NA
ICPMS / HG-CVAA-M (T / D) / pH < 2 w/ ULTRA HNO_3	☐ Preserve & deliver	NA	NA
TOC / pH < 2 w/ HCl	☐ Preserve & deliver	NA	NA
Other:			
Other:			

INTERFERENCE TEST (Circle and/or check applicable selections)

Product / Interference (SM Action)	Positive Test?	Treated	Corrective Action
BNA / Chlorine (Check documentation)	Y / N / not tested	Y / N	☐ Deliver to ORG
CN / Chlorine (Check documentation)	Y / N / not tested	Y / N	☐ Deliver to CONV
CN / Sulfide (Check field sheet for DF)	Y / N / not tested	Y / N	☐ Deliver to CONV
VOA / Chlorine (Check documentaion)	Y / N / not tested	Y / N	☐ Deliver to ORG
Other:			

HEADSPACE CHECK

PRODUCT (SM Action)	Check For	Acceptable?	Corrective Action
MICRO (Visually inspect)	Headspace (@ 1")	Y / N	☐ Notify MICRO
TOTSULFIDE (Visually inspect)	Headspace (< 1")	Y / N	☐ Notify CONV
VOA (Visually inspect)	Zero headspace	Y / N	☐ Notify ORG
WDO (Visually inspect)	Zero headspace	Y / N	☐ Notify CONV
Other:			

FIELD FILTRATION CHECKLIST (Circle and/or check applicable selections)

Product (SM Action)	Field Filtered	Field Blank	Corrective Action
ORTHOP (Check Field Sheet)	Y (within 15 min y / n) / N	Y / N	☐ Deliver to CONV
NO2 / NO3 / NO23 / NH3 / SI (Documentation)	Y (within 1 day y / n) / N	Y / N / NA	☐ Deliver to CONV
Dissolved Metals (Check Field Sheet)	Y (within 15 min y / n) / N	Y / N / NA	☐ Deliver to METALS
DOC (Deliver / Notify Unit)	Y (within 15 min or 1 day) / N	Y / N / NA	☐ Deliver to CONV
DCOD / CR(VI) (Deliver / Notify Unit)	Y (within 15 min y / n) / N	Y / N / NA	☐ Deliver to CONV
Other:			
Other:			

CC: ☐ AQUATOX, ☐ CONV, ☐ METALS, ☐ MICRO, ☐ ORG, ☐ ____________

NOTES

1. Deliver dissolved Hg-CVAF samples to METALS for filtration.
2. Deliver double-bagged metals samples to METALS for preservation.
3. Do not test pH for preserved BNA and TOTSULFIDE samples.
4. Deliver pH, WDO, and all MICRO samples ASAP to appropriate section for immediate processing.
5. Enter " Time Span" for composite samples during sample login.
6. Split algae sample into 60 mL clear glass if PHYTOQUAL is requested.

SM Signature:

Date / Time Completed: JUN 20 '23 12:55

DEPARTMENT OF ECOLOGY
Manchester Environmental Laboratory
7411 Beach Drive East ● Port Orchard, Washington 98366-8204

Case Narrative

July 19, 2023

To: Baker, Morgan

Project: 6PPD-q Characterization and Protocol

Work Order: 2306047

Subject: 6 PPD-Q by LC-MS/MS

From: Myrna Mandjikov

Sample Receipt

Enclosed are the 6PPDQ results for the samples received by MEL on June 20, 2023. All samples were received in acceptable condition unless noted in Analyst Comments. All samples were prepared and analyzed within holding times unless noted in Analyst Comments.

Analytical Methods

These samples were prepared, analyzed, and verified by MEL according to the submitted chain-of-custody and MEL's procedures. A Sample Correlation Table with batch summary is located in Appendix A. The samples were:

- extracted following a modification of method SW3535A.
- analyzed following MEL SOP730136.

Analyst Comments

None noted.

Sample Qualification

The samples were qualified according to MEL's procedures. The table in Appendix B summarizes the manual qualifiers added by MEL. All results reported below the method reporting limit (RL) were automatically qualified as estimates, but not included in Appendix B. The qualifiers are defined in Appendix C.

Sample Verification

All analyses met QC acceptance criteria except as noted in Appendix D. All analytes met linearity requirements unless noted in Appendix E.

Washington State Department of Ecology
Manchester Environmental Laboratory
Final Report for
6 PPD-Q by LC-MS/MS

Project: 6PPD-q Characterization and Protocol **Field ID: DUPE_1**

Work Order: 2306047
Project Officer: Baker, Morgan
Initial Vol: 256.31 mL
Final Vol: 10 mL

Lab ID #: 2306047-01
Collected: 6/18/2023
Prep Method: SW3535A
Analysis Method: SOP730136

Batch ID: B23G029
Prepared: 7/10/2023
Analyzed: 7/12/2023
Matrix: Water
Units: ng/L

CAS#	Analyte	Result	Dilution	Qualifier	LLOQ
2754428-18-5	**6PPD-quinone**	**47.8**	1		**0.975**

Surrogate Recovery:

CAS#	Analyte	Sample Result	Spike Level	% Rec.	% Rec. Limits
TBD	D5-6PPD-quinone	26.4	78.0	34	20-200

Authorized by: Myrna Mandjikov **Release Date:** 7/19/2023

Washington State Department of Ecology
Manchester Environmental Laboratory
Final Report for
6 PPD-Q by LC-MS/MS

Project: 6PPD-q Characterization and Protocol **Field ID: DUPE_2**

Work Order: 2306047
Project Officer: Baker, Morgan
Initial Vol: 264.73 mL
Final Vol: 10 mL

Lab ID #: 2306047-02
Collected: 6/18/2023
Prep Method: SW3535A
Analysis Method: SOP730136

Batch ID: B23G029
Prepared: 7/10/2023
Analyzed: 7/12/2023
Matrix: Water
Units: ng/L

CAS#	Analyte	Result	Dilution	Qualifier	LLOQ
2754428-18-5	**6PPD-quinone**	**64.5**	1		**0.944**

Surrogate Recovery:

CAS#	Analyte	Sample Result	Spike Level	% Rec.	% Rec. Limits
TBD	D5-6PPD-quinone	31.2	75.5	41	20-200

Authorized by: Myrna Mandjikov **Release Date:** 7/19/2023

Washington State Department of Ecology
Manchester Environmental Laboratory
Final Report for
6 PPD-Q by LC-MS/MS

Project: 6PPD-q Characterization and Protocol **Field ID: DUPE_3**

Work Order: 2306047
Project Officer: Baker, Morgan
Initial Vol: 346.62 mL
Final Vol: 10 mL

Lab ID #: 2306047-03
Collected: 6/18/2023
Prep Method: SW3535A
Analysis Method: SOP730136

Batch ID: B23G029
Prepared: 7/10/2023
Analyzed: 7/14/2023
Matrix: Water
Units: ng/L

CAS#	Analyte	Result	Dilution	Qualifier	LLOQ
2754428-18-5	**6PPD-quinone**	**442**	5		**3.61**

Surrogate Recovery:

CAS#	Analyte	Sample Result	Spike Level	% Rec.	% Rec. Limits
TBD	D5-6PPD-quinone	55.2	57.7	96	20-200

Authorized by: Myrna Mandjikov **Release Date:** 7/19/2023

Washington State Department of Ecology
Manchester Environmental Laboratory
Final Report for
6 PPD-Q by LC-MS/MS

Project: 6PPD-q Characterization and Protocol **Field ID: DUPE_4**

Work Order: 2306047
Project Officer: Baker, Morgan
Initial Vol: 248.12 mL
Final Vol: 10 mL

Lab ID #: 2306047-04
Collected: 6/18/2023
Prep Method: SW3535A
Analysis Method: SOP730136

Batch ID: B23G029
Prepared: 7/10/2023
Analyzed: 7/14/2023
Matrix: Water
Units: ng/L

CAS#	Analyte	Result	Dilution	Qualifier	LLOQ
2754428-18-5	**6PPD-quinone**	**546**	5		**5.04**

Surrogate Recovery:

CAS#	Analyte	Sample Result	Spike Level	% Rec.	% Rec. Limits
TBD	D5-6PPD-quinone	93.2	80.6	116	20-200

Authorized by: Myrna Mandjikov **Release Date:** 7/19/2023

Washington State Department of Ecology
Manchester Environmental Laboratory
Final Report for
6 PPD-Q by LC-MS/MS

Project: 6PPD-q Characterization and Protocol **Field ID: DUPE_5**

Work Order: 2306047
Project Officer: Baker, Morgan
Initial Vol: 247.83 mL
Final Vol: 10 mL

Lab ID #: 2306047-05
Collected: 6/18/2023
Prep Method: SW3535A
Analysis Method: SOP730136

Batch ID: B23G029
Prepared: 7/10/2023
Analyzed: 7/12/2023
Matrix: Water
Units: ng/L

CAS#	Analyte	Result	Dilution	Qualifier	LLOQ
2754428-18-5	**6PPD-quinone**	**474**	1		**1.01**

Surrogate Recovery:

CAS#	Analyte	Sample Result	Spike Level	% Rec.	% Rec. Limits
TBD	D5-6PPD-quinone	23.1	80.7	29	20-200

Authorized by: Myrna Mandjikov **Release Date:** 7/19/2023

Washington State Department of Ecology
Manchester Environmental Laboratory
Final Report for
6 PPD-Q by LC-MS/MS

Project: 6PPD-q Characterization and Protocol — Field ID: DUPE_6

Work Order: 2306047
Project Officer: Baker, Morgan
Initial Vol: 259.24 mL
Final Vol: 10 mL

Lab ID #: 2306047-06
Collected: 6/18/2023
Prep Method: SW3535A
Analysis Method: SOP730136

Batch ID: B23G029
Prepared: 7/10/2023
Analyzed: 7/14/2023
Matrix: Water
Units: ng/L

CAS#	Analyte	Result	Dilution	Qualifier	LLOQ
2754428-18-5	**6PPD-quinone**	**347**	5		**4.82**

Surrogate Recovery:

CAS#	Analyte	Sample Result	Spike Level	% Rec.	% Rec. Limits
TBD	D5-6PPD-quinone	87.6	77.1	114	20-200

Authorized by: Myrna Mandjikov **Release Date:** 7/19/2023

Washington State Department of Ecology
Manchester Environmental Laboratory
Final Report for
6 PPD-Q by LC-MS/MS

Project: 6PPD-q Characterization and Protocol **Field ID: DUPE_7**

Work Order: 2306047	**Lab ID #: 2306047-07**	**Batch ID: B23G029**
Project Officer: Baker, Morgan	**Collected: 6/18/2023**	**Prepared: 7/10/2023**
Initial Vol: 250.69 mL	**Prep Method: SW3535A**	**Analyzed: 7/12/2023**
Final Vol: 10 mL	**Analysis Method: SOP730136**	**Matrix: Water**
		Units: ng/L

CAS#	Analyte	Result	Dilution	Qualifier	LLOQ
2754428-18-5	**6PPD-quinone**	**306**	1		**0.997**

Surrogate Recovery:

CAS#	Analyte	Sample Result	Spike Level	% Rec.	% Rec. Limits
TBD	D5-6PPD-quinone	30.6	79.8	38	20-200

Authorized by: Myrna Mandjikov **Release Date:** 7/19/2023

Washington State Department of Ecology
Manchester Environmental Laboratory
Final Report for
6 PPD-Q by LC-MS/MS

Project: 6PPD-q Characterization and Protocol **Field ID: DUPE_8**

Work Order: 2306047	**Lab ID #: 2306047-08**	**Batch ID: B23G029**
Project Officer: Baker, Morgan	**Collected: 6/18/2023**	**Prepared: 7/10/2023**
Initial Vol: 263.07 mL	**Prep Method: SW3535A**	**Analyzed: 7/14/2023**
Final Vol: 10 mL	**Analysis Method: SOP730136**	**Matrix: Water**
		Units: ng/L

CAS#	Analyte	Result	Dilution	Qualifier	LLOQ
2754428-18-5	**6PPD-quinone**	**232**	5		**4.75**

Surrogate Recovery:

CAS#	Analyte	Sample Result	Spike Level	% Rec.	% Rec. Limits
TBD	D5-6PPD-quinone	71.2	76.0	94	20-200

Authorized by: Myrna Mandjikov **Release Date:** 7/19/2023

Washington State Department of Ecology
Manchester Environmental Laboratory
Final Report for
6 PPD-Q by LC-MS/MS

Project: 6PPD-q Characterization and Protocol **Field ID: DUPE_9**

Work Order: 2306047
Project Officer: Baker, Morgan
Initial Vol: 250.59 mL
Final Vol: 10 mL

Lab ID #: 2306047-09
Collected: 6/18/2023
Prep Method: SW3535A
Analysis Method: SOP730136

Batch ID: B23G029
Prepared: 7/10/2023
Analyzed: 7/12/2023
Matrix: Water
Units: ng/L

CAS#	Analyte	Result	Dilution	Qualifier	LLOQ
2754428-18-5	**6PPD-quinone**	**239**	1		**0.998**

Surrogate Recovery:

CAS#	Analyte	Sample Result	Spike Level	% Rec.	% Rec. Limits
TBD	D5-6PPD-quinone	18.9	79.8	24	20-200

Authorized by: Myrna Mandjikov **Release Date:** 7/19/2023

Washington State Department of Ecology
Manchester Environmental Laboratory
Final Report for
6 PPD-Q by LC-MS/MS

Project: 6PPD-q Characterization and Protocol **Field ID: DUPE_10**

Work Order: 2306047	**Lab ID #: 2306047-10**	**Batch ID: B23G029**
Project Officer: Baker, Morgan	**Collected: 6/18/2023**	**Prepared: 7/10/2023**
Initial Vol: 254.48 mL	**Prep Method: SW3535A**	**Analyzed: 7/12/2023**
Final Vol: 10 mL	**Analysis Method: SOP730136**	**Matrix: Water**
		Units: ng/L

CAS#	Analyte	Result	Dilution	Qualifier	LLOQ
2754428-18-5	**6PPD-quinone**	**297**	1		**0.982**

Surrogate Recovery:

CAS#	Analyte	Sample Result	Spike Level	% Rec.	% Rec. Limits
TBD	D5-6PPD-quinone	35.7	78.6	45	20-200

Authorized by: Myrna Mandjikov **Release Date:** 7/19/2023

Washington State Department of Ecology
Manchester Environmental Laboratory
Final Report for
6 PPD-Q by LC-MS/MS

Project: 6PPD-q Characterization and Protocol **QC Type : Method Blank**

Work Order: Batch QC
Project Officer: Baker, Morgan
Initial Vol: 250 mL
Final Vol: 10 mL

Lab ID #: B23G029-BLK1
Prep Method: SW3535A
Analysis Method: SOP730136
Source Field ID: B23G029-BLK1

Batch ID: B23G029
Prepared: 7/10/2023
Analyzed: 7/12/2023
Matrix: Water
Units: ng/L

CAS#	Analyte	Result	Qualifier	LLOQ
2754428-18-5	6PPD-quinone	1.00	U	1.00

Surrogate Recovery:

CAS#	Analyte	Sample Result	Spike Level	% Rec.	% Rec. Limits
TBD	D5-6PPD-quinone	44.3	80.0	55	20-200

Authorized by: Myrna Mandjikov **Release Date:** 7/19/2023

Washington State Department of Ecology
Manchester Environmental Laboratory
Final Report for
6 PPD-Q by LC-MS/MS

Project: 6PPD-q Characterization and Protocol

QC Type : LCS

Work Order: Batch QC	**Lab ID #: B23G029-BS1**	**Batch ID: B23G029**
Project Officer: Baker, Morgan	**Prep Method: SW3535A**	**Prepared: 7/10/2023**
Initial Vol: 250 mL	**Analysis Method: SOP730136**	**Analyzed: 7/12/2023**
Final Vol: 10 mL	**Source Field ID: B23G029-BS1**	**Matrix: Water**
		Units: %

Analyte	Result	Spike Level	LLOQ	%Rec	%Rec Limits
6PPD-quinone	74.1	80.0	1.00	93	50-150

Surrogate Recovery:

CAS#	Analyte	Sample Result	Spike Level	% Rec.	% Rec. Limits
TBD	D5-6PPD-quinone	38.4	80.0	48	20-200

Authorized by: Myrna Mandjikov **Release Date:** 7/19/2023

Washington State Department of Ecology
Manchester Environmental Laboratory
Final Report for
6 PPD-Q by LC-MS/MS

Project: 6PPD-q Characterization and Protocol

QC Type : LCS Dup

Work Order: Batch QC
Project Officer: Baker, Morgan
Initial Vol: 250 mL
Final Vol: 10 mL

Lab ID #: B23G029-BSD1
Prep Method: SW3535A
Analysis Method: SOP730136
Source Field ID: B23G029-BSD1

Batch ID: B23G029
Prepared: 7/10/2023
Analyzed: 7/12/2023
Matrix: Water
Units: %

Analyte	Sample Result	Spike Level	%Rec	RPD	%Rec Limits	RPD Limit
6PPD-quinone	65.4	80.0	82	12	50-150	40

Surrogate Recovery:

CAS#	Analyte	Sample Result	Spike Level	% Rec.	% Rec. Limits
TBD	D5-6PPD-quinone	25.5	80.0	32	20-200

Authorized by: Myrna Mandjikov

Release Date: 7/19/2023

Appendix A
Sample Correlation Table

Batch ID: B23G029 **Prep Method:** SW3535A

Prepared: 7/10/2023 **Analysis Method:** SOP730136

Field ID	MEL ID
DUPE_1	2306047-01
DUPE_2	2306047-02
DUPE_3	2306047-03
DUPE_4	2306047-04
DUPE_5	2306047-05
DUPE_6	2306047-06
DUPE_7	2306047-07
DUPE_8	2306047-08
DUPE_9	2306047-09
DUPE_10	2306047-10
Method Blank	B23G029-BLK1
LCS	B23G029-BS1
LCS Dup	B23G029-BSD1

Appendix B
Manual Qualification Table

WO: 2306047 **Analysis:**

No manual qualifiers were added to the samples or batch QC.

Appendix C
Data Qualifier Definitions

Code	**Definition**
E	Reported result is an estimate because it exceeds the calibration range.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
N	The analysis indicates the present of an analyte for which there is presumptive evidence to make a “tentative identification”.
NJ	The analysis indicates the presence of an analyte that has been “tentatively identified” and the associated numerical value represents its approximate concentration.
NAF	Not analyzed for.
NC	Not calculated.
REJ	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.
U	The analyte was not detected at or above the reported sample quantitation limit.
UJ	The analyte was not detected at or above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately measure the analyte in the sample.
bold	The analyte was present in the sample. (Visual aid to locate detected compounds on the analytical report.)

Appendix D
QC Exceptions Report

Lab ID	Analyte	Exception

No QC exceptions reported.

QC Exceptions determined using unrounded QC results but are reported as integers throughout this analytical report.

Appendix E
Initial Calibration Exceptions Report

Calibration ID: B3G1201 **Analysis:** 6PPDQ

LabNumber	Analyte	QC Exception

No ICAL exceptions.

King County

Department of Natural Resources and Parks
Water and Land Resources Division

Environmental Laboratory

LAB-NR0100
322 West Ewing Street
Seattle, WA 98119-1507
206-477-7200 Fax 206-684-2395
TTY Relay: 711

Date: July 13, 2023

To: Madison Bristol, Washington State Department of Ecology

Clark, Herrera Environmental Consultants

From: Meghan Elkey, King County Environmental Laboratory

Subject: BMP Stormwater Characterization – Herrera Add-on 6PPDQ Samples Data Summary, June 18, 2023

Stormwater samples were collected by Herrera Environmental Consultants on June 18, 2023. The samples were delivered to the King County Environmental Laboratory on June 20, 2023. The samples were given lab ID numbers L81564-1 and -2. The following QC summary is included for your information.

All samples received were analyzed as requested. The samples were analyzed in the Aquatic Toxicology unit of the laboratory. The data have passed all QA/QC checks for accuracy and completeness and may be used without qualification.

Please contact me if you have any questions about this report or need additional information.

Sincerely,

Meghan Elkey

Meghan Elkey
Laboratory Project Manager/Water Quality Planner III
King County Environmental Lab
(206)477-7154 or meghan.elkey@kingcounty.gov

King County Environmental Lab Analytical Report

	Project: 421520-200 Locator: STTC-G2 Descrip: STTC central gravi Sample: L81564-1 Matrix: LG STORM WTR ColDate: 6/18/23 11:25 **WET Weight Basis**					Project: 421520-200 Locator: STTC-G2 Descrip: STTC central gravi Sample: L81564-2 Matrix: LG STORM WTR ColDate: 6/18/23 16:34 **WET Weight Basis**				
Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS										
6ppd-quinone	1.77		0.002	0.01	ug/L	1.3		0.002	0.01	ug/L

King County Environmental Lab Analytical MATRIX Report

Owner:	**SEEDPAK**
Matrix Class:	**LIQUID**
User select:	**WET Weight Basis**

				6ppd-quinone
LOCATOR	**PROJECT**	**SAMPLE**	**COLLECTED**	**ug/L**
STTC-G2	421520-200	L81564-1	6/18/2023 11:25	1.77
STTC-G2	421520-200	L81564-2	6/18/2023 16:34	1.3

WG188630 6PPDQ by LCMS

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	QC Association	Comments
L81564-1	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 11:25	6/24/2023 12:00	6/25/2023 10:00	WG188630-1,-2,-3,-4,-5,-6	
L81564-2	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	6/18/2023 16:34	6/24/2023 12:00	6/25/2023 10:00	WG188630-1,-2,-3,-4,-5,-6	
WG188630-1	MB		AQ6PPDQ-LCMS	BLANK WTR		6/24/2023 12:00	6/25/2023 10:00	WG188630-1,-2,-3,-4,-5,-6	
WG188630-2	SB		AQ6PPDQ-LCMS	BLANK WTR		6/24/2023 12:00	6/25/2023 10:00	WG188630-1,-2,-3,-4,-5,-6	WG188630-1
WG188630-3	MS		AQ6PPDQ-LCMS	STORM WTR		6/24/2023 12:00	6/25/2023 10:00	WG188630-1,-2,-3,-4,-5,-6	L81564-2
WG188630-4	MSD		AQ6PPDQ-LCMS	STORM WTR		6/24/2023 12:00	6/25/2023 10:00	WG188630-1,-2,-3,-4,-5,-6	WG188630-3 L81564-2
WG188630-5	LD		AQ6PPDQ-LCMS	STORM WTR		6/24/2023 12:00	6/25/2023 10:00	WG188630-1,-2,-3,-4,-5,-6	L81564-1
WG188630-6	CCC		AQ6PPDQ-LCMS	OTHR WTR		6/24/2023 12:00	6/25/2023 10:00	WG188630-1,-2,-3,-4,-5,-6	

Workgroup: WG188630 6PPDQ by LCMS

MB:WG188630-1 Matrix: BLANK WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
6ppd-quinone	0.002	0.01	ug/L		<MDL

SB:WG188630-2 MB:WG188630-1 Matrix: BLANK WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	True Value	SB Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	<MDL	0.2	0.229	115		50--150

MSD:WG188630-4 MS:WG188630-3 L81564-2 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	True Value	MS Value	% Rec.	Qual	Lab Limit	True Value	MSD Value	% Rec.	Qual	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	1.3	0.2	1.58	139		50--150	0.2	1.57	134		1		0--45

LD:WG188630-5 L81564-1 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	1.77	1.79	1		0--40

CCC:WG188630-6 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Continuing Calibration Check)

Parameter	MDL	RDL	Units	True Value	CCC Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.01	0.05	ug/L	1	0.979	98		80--120

Surrogate:	d5-6PPDQ
(Lab Limits)	**20--200**
L81564-1	56
L81564-2	63
WG188630-1	70
WG188630-2	70
WG188630-3	63
WG188630-4	64
WG188630-5	56
WG188630-6	91

Login: P81564
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On STTC - Event 1

FSU TC: TC
LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by	*Date* June 19, 2023	*Time* 1250 (FEDEX)
Received by	*Date* 6-20-23	*Time* 9:10
Sample Numbers 1-2		*[All]*

Sample Number	P81564-1	P81564-2	
QC Link			
Locator	STTC-G2	STTC-G2	
Short Loc Desc			
Locator Desc	STTC central gravity line	STTC central gravity line	
Site	OTHER CITIES	OTHER CITIES	
Comments	First grab	Second grab	
Start Date/Time	June 18, 2023 1125	— 1634	
End Date/Time	—	—	
Time Span	—	—	
Sample Depth	—	—	
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	

LIQUID SAMPLE RECEIPT RECORD

Login Number(s): 81564-1,2
Project No.: 421520-200
Sub-Contracting: Y [✓ N]
List Product(s):
Collect Date(s): 6-18-23
Receive Date: 6-20-23
Changes: Y [✓ N]
List Parameter(s):

SAMPLE RECEIPT CONDITIONS

CONDITION	Acceptable?	Comment ID	CONDITION	Acceptable?	Comment ID
Labels / Fieldsheets	[✓ Y] / N		Volumes	[✓ Y] / N	
Container	[✓ Y] / N		Holding Times	[✓ Y] / N	
Temperature (w/ ice)	[✓ Y] / N / NA		Delivery Location	[✓ Y] / N	

BOTTLE COUNT (#) AND DESCRIPTION and SAMPLE NUMBERS

#	Bottle Description: Sample Numbers
	40 mL clear vial (VOA):
	60 mL clear glass (PHYTO):
	60 mL CWM HDPE:
	125 mL AWM HDPE:
	125 mL CNM HDPE:
	125 mL CWM HDPE:
	125 mL GANM:
	125 mL GANM w/HCl
	250 mL AWM HDPE:
	250 mL CWM HDPE:
	250 mL CWM HDPE (MICRO):
2	250 mL GAWM: 1,2
	250 mL GAWM w/ H2SO4:
	300 mL WDO (6 hour HT):
	500 mL AWM HDPE:
	500 mL CWM HDPE:
	500 mL CWM PP (MICRO):
	500 mL HDPE (METALS):
	500 mL HDPE, double-bagged (METALS):
	500 mL Teflon (Hg):
	500 mL Teflon, double-bagged (METALS):
	500 mL GANM / GAWM:
	500 mL Polystyrene Filtration Units (METALS):
	1L AWM HDPE:
	1L CWM HDPE:
	1L CWM PP (MICRO):
	1L GANM:
	1L GCWM:
	1L GAWM w/ H_2SO_4:
	2L CWM HDPE:
	Other:

COMMENTS / NOTIFICATIONS

FIELD PRESERVATION CHECKLIST (Circle and/or check applicable selections)

PRODUCT / Preservation	SM Action	Acceptable?	Corrective Action
BNA / pH 6 - 9 w/ H_2SO_4 or NaOH	√ field sheet for F. pH	Y / N	☐ Notify ORG
CN / pH > 12 w/ NaOH within 15 min	☐ Check pH	Y / N	☐ Deliver to CONV
NO23 pH < 2 w/ H_2SO_4	☐ Check pH	Y / N / NA	☐ Preserve by SM
CR(VI) / TOTCR(VI) / pH 9.3 - 9.7 w/ NaOH w/in 15 min	√ field sheet for pH	Y / N	☐ Deliver to CONV
ICP / HG-CVAA-M / pH < 2 w/ HNO_3	☐ Check pH	Y / N	☐ Preserve By SM
O&G / HEM / PHENOL / pH < 2 w/ H_2SO_4	Check documentation	Y / N	☐ Preserve by SM
PHYTOPLANKTON / Lugols	Visually inspect	Y / N	☐ Deliver to MICRO
TKN / COD pH < 2 w/ H_2SO_4 within 15 min	☐ Check pH	Y / N	☐ Preserve By SM
TOC / pH < 2 w/ HCl (NPDES only)	☐ Check pH	Y / N	☐ Preserve By SM
TOTSULFIDE / pH > 9 w/ NaOH, ZnAc	Check documentation	Y / N	☐ Deliver to CONV
WDO / FIXED	Visually inspect	Y / N	☐ Deliver to CONV
Other:			

ROUTINE SM PRESERVATION CHECKLIST (Circle and/or check applicable selections)

PRODUCT / Preservation	SM Action	Acceptable?	Corrective Action
Chlorinated Pesticides / pH 5 - 9 w/ H_2SO_4 or NaOH	√ field sheet for F. pH	Y / N	☐ Adjust pH
HG-CVAA-L-Teflon (T / D) / pH < 2 w/ ULTRA HCl	☐ Preserve & deliver	NA	NA
ICPMS / HG-CVAA-M (T / D) / pH < 2 w/ ULTRA HNO_3	☐ Preserve & deliver	NA	NA
TOC / pH < 2 w/ HCl	☐ Preserve & deliver	NA	NA
Other:			
Other:			

INTERFERENCE TEST (Circle and/or check applicable selections)

Product / Interference (SM Action)	Positive Test?	Treated	Corrective Action
BNA / Chlorine (Check documentation)	Y / N / not tested	Y / N	☐ Deliver to ORG
CN / Chlorine (Check documentation)	Y / N / not tested	Y / N	☐ Deliver to CONV
CN / Sulfide (Check field sheet for DF)	Y / N / not tested	Y / N	☐ Deliver to CONV
VOA / Chlorine (Check documentaion)	Y / N / not tested	Y / N	☐ Deliver to ORG
Other:			

HEADSPACE CHECK

PRODUCT (SM Action)	Check For	Acceptable?	Corrective Action
MICRO (Visually inspect)	Headspace (@ 1")	Y / N	☐ Notify MICRO
TOTSULFIDE (Visually inspect)	Headspace (< 1")	Y / N	☐ Notify CONV
VOA (Visually inspect)	Zero headspace	Y / N	☐ Notify ORG
WDO (Visually inspect)	Zero headspace	Y / N	☐ Notify CONV
Other:			

FIELD FILTRATION CHECKLIST (Circle and/or check applicable selections)

Product (SM Action)	Field Filtered	Field Blank	Corrective Action
ORTHOP (Check Field Sheet)	Y (within 15 min y / n) / N	Y / N	☐ Deliver to CONV
NO2 / NO3 / NO23 / NH3 / SI (Documentation)	Y (within 1 day y / n) / N	Y / N / NA	☐ Deliver to CONV
Dissolved Metals (Check Field Sheet)	Y (within 15 min y / n) / N	Y / N / NA	☐ Deliver to METALS
DOC (Deliver / Notify Unit)	Y (within 15 min or 1 day) / N	Y / N / NA	☐ Deliver to CONV
DCOD / CR(VI) (Deliver / Notify Unit)	Y (within 15 min y / n) / N	Y / N / NA	☐ Deliver to CONV
Other:			
Other:			

CC: ☐ AQUATOX, ☐ CONV, ☐ METALS, ☐ MICRO, ☐ ORG, ☐ ____________________

NOTES

1. Deliver dissolved Hg-CVAF samples to METALS for filtration.
2. Deliver double-bagged metals samples to METALS for preservation.
3. Do not test pH for preserved BNA and TOTSULFIDE samples.
4. Deliver pH, WDO, and all MICRO samples ASAP to appropriate section for immediate processing.
5. Enter " Time Span" for composite samples during sample login.
6. Split algae sample into 60 mL clear glass if PHYTOQUAL is requested.

SM Signature:

Date / Time Completed: JUN 20 '23 08:17

King County

Department of Natural Resources and Parks
Water and Land Resources Division

Environmental Laboratory

LAB-NR0100
322 West Ewing Street
Seattle, WA 98119-1507
206-477-7200 Fax 206-684-2395
TTY Relay: 711

Date: October 5, 2023

To: Madison Bristol, Washington State Department of Ecology

Clark, Herrera Environmental Consultants

From: Meghan Elkey, King County Environmental Laboratory

Subject: BMP Stormwater Characterization – Herrera Add-on 6PPDQ Samples Data Summary, August 31, 2023

Stormwater samples were collected by Herrera Environmental Consultants on August 31, 2023. The samples were delivered to the King County Environmental Laboratory on September 1, 2023. The samples were given lab ID numbers L81565-1 and -2. The following QC summary is included for your information.

All samples received were analyzed as requested. The samples were analyzed in the Aquatic Toxicology unit of the laboratory. The data have passed all QA/QC checks for accuracy and completeness and may be used without qualification.

Please contact me if you have any questions about this report or need additional information.

Sincerely,

Meghan Elkey

Meghan Elkey
Laboratory Project Manager/Water Quality Planner III
King County Environmental Lab
(206)477-7154 or meghan.elkey@kingcounty.gov

King County Environmental Lab Analytical Report

Project: 421520-200
Locator: STTC-G2
Descrip: STTC central gravi
Sample: L81565-1
Matrix: LG STORM WTR
ColDate: 8/31/23 9:25
WET Weight Basis

Project: 421520-200
Locator: STTC-G2
Descrip: STTC central gravi
Sample: L81565-2
Matrix: LG STORM WTR
ColDate: 8/31/23 11:57
WET Weight Basis

Parameters	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units
AQ KCEL SOP 4077: 6PPDQ by LCMS										
6ppd-quinone	2.38		0.002	0.01	ug/L	1.62		0.002	0.01	ug/L

King County Environmental Lab Analytical MATRIX Report

Owner: **SEEDPAK**
Matrix Class: **LIQUID**
User select: **WET Weight Basis**

				6ppd-quinone
LOCATOR	**PROJECT**	**SAMPLE**	**COLLECTED**	**ug/L**
STTC-G2	421520-200	L81565-1	8/31/2023 9:25	2.38
STTC-G2	421520-200	L81565-2	8/31/2023 11:57	1.62

WG190254 6PPDQ by LCMS

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	QC Association	Comments
L81565-1	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	8/31/2023 9:25	9/25/2023 8:00	9/25/2023 14:00	WG190254-1,-2,-3,-4,-5,-6	
L81565-2	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	8/31/2023 11:57	9/25/2023 8:00	9/25/2023 14:00	WG190254-1,-2,-3,-4,-5,-6	
L82562-1	422040-100	SWS Bioretention 6PPDQ	AQ6PPDQ-LCMS	STORM WTR	9/25/2023 0:00	9/25/2023 8:00	9/25/2023 14:00	WG190254-1,-2,-3,-4,-5,-6	
WG190254-1	MB		AQ6PPDQ-LCMS	OTHR WTR		9/25/2023 8:00	9/25/2023 14:00	WG190254-1,-2,-3,-4,-5,-6	
WG190254-2	SB		AQ6PPDQ-LCMS	OTHR WTR		9/25/2023 8:00	9/25/2023 14:00	WG190254-1,-2,-3,-4,-5,-6	WG190254-1
WG190254-3	MS		AQ6PPDQ-LCMS	STORM WTR		9/25/2023 8:00	9/25/2023 14:00	WG190254-1,-2,-3,-4,-5,-6	L81565-2
WG190254-4	MSD		AQ6PPDQ-LCMS	STORM WTR		9/25/2023 8:00	9/25/2023 14:00	WG190254-1,-2,-3,-4,-5,-6	WG190254-3 L81565-2
WG190254-5	LD		AQ6PPDQ-LCMS	STORM WTR		9/25/2023 8:00	9/25/2023 14:00	WG190254-1,-2,-3,-4,-5,-6	L81565-1
WG190254-6	CCC		AQ6PPDQ-LCMS	OTHR WTR		9/25/2023 8:00	9/25/2023 14:00	WG190254-1,-2,-3,-4,-5,-6	MED

Workgroup: WG190254 6PPDQ by LCMS

MB:WG190254-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
6ppd-quinone	0.002	0.01	ug/L		<MDL

SB:WG190254-2 MB:WG190254-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	True Value	SB Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	<MDL	0.2	0.242	121		50--150

MSD:WG190254-4 MS:WG190254-3 L81565-2 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	True Value	MS Value	% Rec.	Qual	Lab Limit	True Value	MSD Value	% Rec.	Qual	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	1.62	0.2	1.85	119		50--150	0.2	1.8	94		3		0--45

LD:WG190254-5 L81565-1 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	2.38	2.49	5		0--40

CCC:WG190254-6 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Continuing Calibration Check)

Parameter	MDL	RDL	Units	True Value	CCC Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.01	0.05	ug/L	1	0.976	98		80--120

Surrogate:	**d5-6PPDQ**
(Lab Limits)	**20--200**
L81565-1	47
L81565-2	62
L82562-1	71
WG190254-1	77
WG190254-2	75
WG190254-3	60
WG190254-4	58
WG190254-5	45
WG190254-6	79

Login: P81565
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On STTC - Event 2

FSU TC: T. Clark (HEC)
LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by	***Date*** 2023-08-31	***Time*** 1234
Received by	***Date*** 9/1/23	***Time*** 918
Sample Numbers 1-2 ***[All]***		

Sample Number	**P81565-1**	**P81565-2**	
QC Link			
Locator	**STTC-G2**	**STTC-G2**	
Short Loc Desc			
Locator Desc	STTC central gravity line	STTC central gravity line	
Site	OTHER CITIES	OTHER CITIES	
Comments	First grab	Second grab	
Start Date/Time	2023-08-31 0925	—— 1157	
End Date/Time	——	——	
Time Span			
Sample Depth			
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	

LIQUID SAMPLE RECEIPT RECORD

Login Number(s): 81565
Collect Date(s): 8/31/23
Project No.: 421520-200
Receive Date: 9/1/23
Sub-Contracting: Y [✓ N]
Changes: Y / [✓ N]
List Product(s):
List Parameter(s):

SAMPLE RECEIPT CONDITIONS

CONDITION	Acceptable?	Comment ID	CONDITION	Acceptable?	Comment ID
Labels / Fieldsheets	[✓ Y] / N		Volumes	[✓ Y] / N	
Container	[✓ Y] / N		Holding Times	[✓ Y] / N	
Temperature (w/ ice)	[✓ Y] / N / NA		Delivery Location	[✓ Y] / N	

BOTTLE COUNT (#) AND DESCRIPTION and SAMPLE NUMBERS

#	Bottle Description: Sample Numbers
	40 mL clear vial (VOA):
	60 mL clear glass (PHYTO):
	60 mL CWM HDPE:
	125 mL AWM HDPE:
	125 mL CNM HDPE:
	125 mL CWM HDPE:
	125 mL GANM:
	125 mL GANM w/HCl
	250 mL AWM HDPE:
	250 mL CWM HDPE:
	250 mL CWM HDPE (MICRO):
2	250 mL GAWM: -1, 2
	250 mL GAWM w/ H2SO4:
	300 mL WDO (8 hour HT):
	500 mL AWM HDPE:
	500 mL CWM HDPE:
	500 mL CWM PP (MICRO):
	500 mL HDPE (METALS):
	500 mL HDPE, double-bagged (METALS):
	500 mL Teflon (Hg):
	500 mL Teflon, double-bagged (METALS):
	500 mL GANM / GAWM:
	500 mL Polystyrene Filtration Units (METALS):
	1L AWM HDPE:
	1L CWM HDPE:
	1L CWM PP (MICRO):
	1L GANM:
	1L GCWM:
	1L GAWM w/ H_2SO_4:
	2L CWM HDPE:
	Other:

COMMENTS / NOTIFICATIONS

FIELD PRESERVATION CHECKLIST (Circle and/or check applicable selections)

PRODUCT / Preservation	SM Action	Acceptable?	Corrective Action
BNA / pH 6 - 9 w/ H_2SO_4 or NaOH	√ field sheet for F. pH	Y / N	☐ Notify ORG
CN / pH > 12 w/ NaOH within 15 min	☐ Check pH	Y / N	☐ Deliver to CONV
NO23 pH < 2 w/ H_2SO_4	☐ Check pH	Y / N / NA	☐ Preserve by SM
CR(VI) / TOTCR(VI) / pH 9.3 - 9.7 w/ NaOH w/in 15 min	√ field sheet for pH	Y / N	☐ Deliver to CONV
ICP / HG-CVAA-M / pH < 2 w/ HNO_3	☐ Check pH	Y / N	☐ Preserve By SM
O&G / HEM / PHENOL / pH < 2 w/ H_2SO_4	Check documentation	Y / N	☐ Preserve by SM
PHYTOPLANKTON / Lugols	Visually inspect	Y / N	☐ Deliver to MICRO
TKN / COD pH < 2 w/ H_2SO_4 within 15 min	☐ Check pH	Y / N	☐ Preserve By SM
TOC / pH < 2 w/ HCl (NPDES only)	☐ Check pH	Y / N	☐ Preserve By SM
TOTSULFIDE / pH > 9 w/ NaOH, ZnAc	Check documentation	Y / N	☐ Deliver to CONV
WDO / FIXED	Visually inspect	Y / N	☐ Deliver to CONV
Other:			

ROUTINE SM PRESERVATION CHECKLIST (Circle and/or check applicable selections)

PRODUCT / Preservation	SM Action	Acceptable?	Corrective Action
Chlorinated Pesticides / pH 5 - 9 w/ H_2SO_4 or NaOH	√ field sheet for F. pH	Y / N	☐ Adjust pH
HG-CVAA-L-Teflon (T / D) / pH < 2 w/ ULTRA HCl	☐ Preserve & deliver	NA	NA
ICPMS / HG-CVAA-M (T / D) / pH < 2 w/ ULTRA HNO_3	☐ Preserve & deliver	NA	NA
TOC / pH < 2 w/ HCl	☐ Preserve & deliver	NA	NA
Other:			
Other:			

INTERFERENCE TEST (Circle and/or check applicable selections)

Product / Interference (SM Action)	Positive Test?	Treated	Corrective Action
BNA / Chlorine (Check documentation)	Y / N / not tested	Y / N	☐ Deliver to ORG
CN / Chlorine (Check documentation)	Y / N / not tested	Y / N	☐ Deliver to CONV
CN / Sulfide (Check field sheet for DF)	Y / N / not tested	Y / N	☐ Deliver to CONV
VOA / Chlorine (Check documentaion)	Y / N / not tested	Y / N	☐ Deliver to ORG
Other:			

HEADSPACE CHECK

PRODUCT (SM Action)	Check For	Acceptable?	Corrective Action
MICRO (Visually inspect)	Headspace (@ 1")	Y / N	☐ Notify MICRO
TOTSULFIDE (Visually inspect)	Headspace (< 1")	Y / N	☐ Notify CONV
VOA (Visually inspect)	Zero headspace	Y / N	☐ Notify ORG
WDO (Visually inspect)	Zero headspace	Y / N	☐ Notify CONV
Other:			

FIELD FILTRATION CHECKLIST (Circle and/or check applicable selections)

Product (SM Action)	Field Filtered	Field Blank	Corrective Action
ORTHOP (Check Field Sheet)	Y (within 15 min y / n) / N	Y / N	☐ Deliver to CONV
NO2 / NO3 / NO23 / NH3 / SI (Documentation)	Y (within 1 day y / n) / N	Y / N / NA	☐ Deliver to CONV
Dissolved Metals (Check Field Sheet)	Y (within 15 min y / n) / N	Y / N / NA	☐ Deliver to METALS
DOC (Deliver / Notify Unit)	Y (within 15 min or 1 day) / N	Y / N / NA	☐ Deliver to CONV
DCOD / CR(VI) (Deliver / Notify Unit)	Y (within 15 min y / n) / N	Y / N / NA	☐ Deliver to CONV
Other:			
Other:			

CC: ☐ AQUATOX, ☐ CONV, ☐ METALS, ☐ MICRO, ☐ ORG, ☐ ____________

NOTES

1. Deliver dissolved Hg-CVAF samples to METALS for filtration.
2. Deliver double-bagged metals samples to METALS for preservation.
3. Do not test pH for preserved BNA and TOTSULFIDE samples.
4. Deliver pH, WDO, and all MICRO samples ASAP to appropriate section for immediate processing.
5. Enter " Time Span" for composite samples during sample login.
6. Split algae sample into 60 mL clear glass if PHYTOQUAL is requested.

SM Signature:

Date / Time Completed: SEP 01 '23 09:26

King County
Department of Natural Resources and Parks
Water and Land Resources Division
Environmental Laboratory
LAB-NR0100
322 West Ewing Street
Seattle, WA 98119-1507
206-477-7200 Fax 206-684-2395
TTY Relay: 711

Date: November 2, 2023

To: Madison Bristol, Washington State Department of Ecology

Clark, Herrera Environmental Consultants

From: Meghan Elkey, King County Environmental Laboratory

Subject: BMP Stormwater Characterization – Herrera Add-on 6PPDQ Samples Data Summary, October 24, 2023

Stormwater samples were collected by Herrera Environmental Consultants on October 24, 2023. The samples were delivered to the King County Environmental Laboratory on October 25, 2023. The samples were given lab ID numbers L81678-5, -6, -11, -12, and -13. The following QC summary is included for your information.

All samples received were analyzed as requested. The samples were analyzed in the Aquatic Toxicology unit of the laboratory. The data have passed all QA/QC checks for accuracy and completeness and may be used without qualification.

Please contact me if you have any questions about this report or need additional information.

Sincerely,

Meghan Elkey

Meghan Elkey
Laboratory Project Manager/Water Quality Planner III
King County Environmental Lab
(206)477-7154 or meghan.elkey@kingcounty.gov

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200	Project:	421520-200
Locator:	SCTF-TB1-IN	Locator:	SCTF-TB1-OUT	Locator:	SCTF-TB1-IN
Descrip:	SCTF-TB1 upstream	Descrip:	SCTF-TB1 downstrea	Descrip:	SCTF-TB1 upstream
Sample:	L81678-5	Sample:	L81678-6	Sample:	L81678-11
Matrix:	LG STORM WTR	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
ColDate:	10/24/23 18:15	ColDate:	10/24/23 18:15	ColDate:	10/24/23 19:44
WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.996		0.002	0.01	ug/L	0.303		0.002	0.01	ug/L	1.07		0.002	0.01	ug/L

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200
Locator:	SCTF-TB1-OUT	Locator:	FIELDDUP
Descrip:	SCTF-TB1 downstrea	Descrip:	FIELD DUPLICATE
Sample:	L81678-12	Sample:	L81678-13
Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
ColDate:	10/24/23 19:45	ColDate:	10/24/23 18:15
WET Weight Basis		**WET Weight Basis**	

Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS										
6ppd-quinone	0.212		0.002	0.01	ug/L	1.07		0.002	0.01	ug/L

King County Environmental Lab Analytical MATRIX Report

Owner: **SEEDPAK**
Matrix Class: **LIQUID**
User select: **WET Weight Basis**

LOCATOR	PROJECT	SAMPLE	COLLECTED	6ppd-quinone ug/L
SCTF-TB1-IN	421520-200	L81678-5	10/24/2023 18:15	0.996
SCTF-TB1-OUT	421520-200	L81678-6	10/24/2023 18:15	0.303
SCTF-TB1-IN	421520-200	L81678-11	10/24/2023 19:44	1.07
SCTF-TB1-OUT	421520-200	L81678-12	10/24/2023 19:45	0.212
FIELDDUP	421520-200	L81678-13	10/24/2023 18:15	1.07
* Not converted to dry weight basis				
If a parameter/analyte appears twice in the column header, it implies that they were analyzed by two different method codes				

WG190941 6PPDQ by LCMS

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	QC Association	Comments
L81678-5	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	10/24/2023 18:15	10/31/2023 9:00	10/31/2023 12:00	WG190941-1,-2,-3,-4,-5,-6	
L81678-6	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	10/24/2023 18:15	10/31/2023 9:00	10/31/2023 12:00	WG190941-1,-2,-3,-4,-5,-6	
L81678-11	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	10/24/2023 19:44	10/31/2023 9:00	10/31/2023 12:00	WG190941-1,-2,-3,-4,-5,-6	
L81678-12	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	10/24/2023 19:45	10/31/2023 9:00	10/31/2023 12:00	WG190941-1,-2,-3,-4,-5,-6	
L81678-13	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	10/24/2023 18:15	10/31/2023 9:00	10/31/2023 12:00	WG190941-1,-2,-3,-4,-5,-6	
WG190941-1	MB		AQ6PPDQ-LCMS	OTHR WTR		10/31/2023 9:00	10/31/2023 12:00	WG190941-1,-2,-3,-4,-5,-6	
WG190941-2	SB		AQ6PPDQ-LCMS	OTHR WTR		10/31/2023 9:00	10/31/2023 12:00	WG190941-1,-2,-3,-4,-5,-6	WG190941-1
WG190941-3	MS		AQ6PPDQ-LCMS	STORM WTR		10/31/2023 9:00	10/31/2023 12:00	WG190941-1,-2,-3,-4,-5,-6	L81678-6
WG190941-4	MSD		AQ6PPDQ-LCMS	STORM WTR		10/31/2023 9:00	10/31/2023 12:00	WG190941-1,-2,-3,-4,-5,-6	WG190941-3 L81678-6
WG190941-5	LD		AQ6PPDQ-LCMS	STORM WTR		10/31/2023 9:00	10/31/2023 12:00	WG190941-1,-2,-3,-4,-5,-6	L81678-11
WG190941-6	CCC		AQ6PPDQ-LCMS	OTHR WTR		10/31/2023 9:00	10/31/2023 12:00	WG190941-1,-2,-3,-4,-5,-6	MED

Workgroup: WG190941 6PPDQ by LCMS

MB:WG190941-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
6ppd-quinone	0.002	0.01	ug/L		<MDL

SB:WG190941-2 MB:WG190941-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	True Value	SB Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	<MDL	0.2	0.228	114		50--150

MSD:WG190941-4 MS:WG190941-3 L81678-6 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	True Value	MS Value	% Rec.	Qual	Lab Limit	True Value	MSD Value	% Rec.	Qual	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	0.303	0.2	0.543	120		50--150	0.2	0.525	111		3		0--45

LD:WG190941-5 L81678-11 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	1.07	1.06	1		0--40

CCC:WG190941-6 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Continuing Calibration Check)

Parameter	MDL	RDL	Units	True Value	CCC Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.01	0.05	ug/L	1	1.02	102		80--120

Surrogate:	**d5-6PPDQ**
(Lab Limits)	**20--200**
L81678-5	81
L81678-6	83
L81678-11	79
L81678-12	81
L81678-13	75
WG190941-1	76
WG190941-2	88
WG190941-3	82
WG190941-4	82
WG190941-5	74
WG190941-6	96

ogin: P81678

roject: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On TAPE Event 3

FSU TC: ____________________

LPM: Meghan Elkey

Sample Number	~~P81678-4~~	P81678-5	P81678-6
QC Link			
Locator	~~SCTF-TB25-OUT~~	SCTF-~~TB4~~ TB1-IN	SCTF-~~TB4~~ TB1-OUT
Short Loc Desc			
Locator Desc	~~SCTF-TB2.5 downstream sampling station~~	SCTF-TB4 upstream sampling location	SCTF-TB4 downstream sampling location
Site	~~I-5TAPE~~	I-5TAPE	I-5TAPE
Comments	~~First grab~~	First grab	First grab
Start Date/Time		10/24/23 18:15	10/24/23 18:15
End Date/Time		N/A	N/A
Time Span		0	0
Sample Depth		energy dispersion tub outfall pipe	outlet ~~energy dispersion tub~~ ~~out~~ pipe weir outfa
Dept, Matrix, Prod (Cont ID)	~~4 LG 6PPDQ (43)~~	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)
		sampled by Scott S.	sampled by Scott S.

All locators are TB1 not TB4. See attached e-mail.
ME 11/2/23

CHAIN OF CUSTODY

RELINQUISHED BY	Date	Time
Scott Shumway	10/25/23	12:01
RECEIVED BY	Date	Time
	10/25/23	12:01
Sample Numbers		
5, 6, 11, 12, 13		

ogin: P81678
roject: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On TAPE Event 3

FSU TC: ____________
LPM: Meghan Elkey

Sample Number	~~**P81678-10**~~	**P81678-11**	**P81678-12**
QC Link			
Locator	~~**SCTF-TB25-OUT**~~	**SCTF-~~TB4~~TB1-IN**	**SCTF-~~TB4~~TB1-OUT**
Short Loc Desc			
Locator Desc	~~SCTF-TB2.5 downstream sampling station~~	SCTF-TB4 upstream sampling location	SCTF-TB4 downstream sampling location
Site	~~I-5TAPE~~	I-5TAPE	I-5TAPE
Comments	~~Second grab~~	Second grab	Second grab
Start Date/Time		10/24/23 19:44	10/24/23 19:45
End Date/Time		N/A	N/A
Time Span		0	0
Sample Depth		energy dispersion tub outfall pipe	outlet pipe weir outfall
Dept, Matrix, Prod (Cont ID)	~~4 LG 6PPDQ (43)~~	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)
		Sampled by Dylan A.	Sampled by Dylan A.

Login: P81678 **WDOE BMP - Herrera 6PPDQ Add-On TAPE Event 3** **FSU TC:** ____________

Project: 421520-200 **LPM: Meghan Elkey**

Sample Number	**P81678-13**		
QC Link			
Locator	**FIELDDUP**		
Short Loc Desc			
Locator Desc	FIELD DUPLICATE		
Site	FLDQC		
Comments	sampled inlet, done at same time and place as inlet sample		
Start Date/Time	10/24/23 18:15		
End Date/Time	N/A		
Time Span	0		
Sample Depth	energy dispersion tub outfall pipe		
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)		

Sampled by Scott S.

Elkey, Meghan

From:	Tim Clark <tclark@herrerainc.com>
Sent:	Thursday, November 2, 2023 8:44 AM
To:	Elkey, Meghan
Subject:	Re: SCTF 10/24 6PPDQ sample question
Follow Up Flag:	Follow up
Flag Status:	Flagged

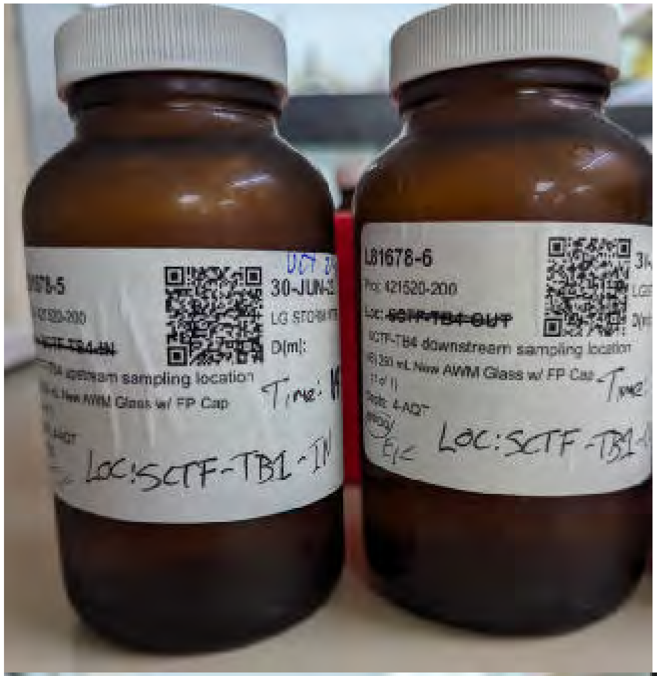
Good morning, Meghan.
Please use the Locator SCTF-TB1 for these samples.
I have advised that field staff to modify the COC of there are any adjustments to the sample information. Especially since the bottle labels can be smudged.
Sorry for any confusion,
Clark

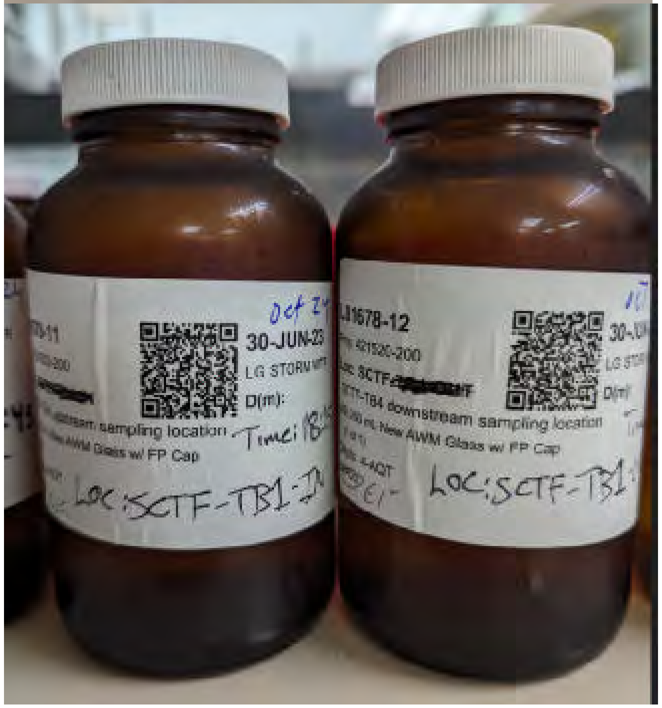
From: Elkey, Meghan <Meghan.Elkey@kingcounty.gov>
Sent: Thursday, November 2, 2023 8:32:54 AM
To: Tim Clark <tclark@herrerainc.com>
Subject: SCTF 10/24 6PPDQ sample question

Hi Clark,

There seems to be a discrepancy for the locators between the labels and field sheets for the SCTF 6PPDQ samples collected on 10/24. The labels have a handwritten locator of SCTF-TB1-IN and -OUT while the paperwork says SCTF-TB4-IN and -OUT.

Paperwork is attached, and here are the pics of the labels:


30-JUN-2
LG STORM
D(m):
upstream sampling location
New AWM Glass w/ FP Cap
Time:
LOC:SCTF-TB1-IN
L81678-6
Proj: 421520-200
SCTF-TB4 downstream sampling location
250 mL New AWM Glass w/ FP Cap
4-AQT
Time:
LOC:SCTF-TB1-


Oct 24
30-JUN-23
LG STORM
D(m):
upstream sampling location
New AWM Glass w/ FP Cap
Time:
LOC:SCTF-TB1-IN
L81678-12
421520-200
SCTF-TB4 downstream sampling location
250 mL New AWM Glass w/ FP Cap
4-AQT
30-JU
LOC:SCTF-TB1-

Please advise on which locator to assign to these samples.

Thank you,

Meghan Elkey (she/her/hers)
Laboratory Project Manager
King County Environmental Lab
322 W Ewing Street, Seattle, WA 98119
meghan.elkey@kingcounty.gov
(206) 477-7154

LIQUID SAMPLE RECEIPT RECORD

Login Number(s): 81678	Project No.: 421520-200	Sub-Contracting: Y / [✓ N]	List Product(s):
Collect Date(s): 10/24/23	Receive Date: 10/25/23	Changes: Y / [✓ N]	List Parameter(s):

SAMPLE RECEIPT CONDITIONS

CONDITION	Acceptable?	Comment ID	CONDITION	Acceptable?	Comment ID
Labels / Fieldsheets	[✓ Y] / N		Volumes	[✓ Y] / N	
Container	[✓ Y] / N		Holding Times	[✓ Y] / N	
Temperature (w/ ice)	[✓ Y] / N / NA		Delivery Location	[✓ Y] / N	

BOTTLE COUNT (#) AND DESCRIPTION and SAMPLE NUMBERS

#	Bottle Description: Sample Numbers
	40 mL clear vial (VOA):
	60 mL clear glass (PHYTO):
	60 mL CWM HDPE:
	125 mL AWM HDPE:
	125 mL CNM HDPE:
	125 mL CWM HDPE:
	125 mL GANM:
	125 mL GANM w/HCl
	250 mL AWM HDPE:
	250 mL CWM HDPE:
	250 mL CWM HDPE (MICRO):
	250 mL GAWM ~~w/ H_2SO_4~~: 5, 6, 11-13
	300 mL WDO (8 hour HT):
	500 mL AWM HDPE:
	500 mL CWM HDPE:
	500 mL CWM PP (MICRO):
	500 mL HDPE (METALS):
	500 mL HDPE, double-bagged (METALS):
	500 mL Teflon (Hg):
	500 mL Teflon, double-bagged (METALS):
	500 mL GANM / GAWM:
	500 mL Polystyrene Filtration Units (METALS):
	1L AWM HDPE:
	1L CWM HDPE:
	1L CWM PP (MICRO):
	1L GANM:
	1L GCWM:
	1L GAWM w/ H_2SO_4:
	2L CWM HDPE:
	Other:

COMMENTS / NOTIFICATIONS

FIELD PRESERVATION CHECKLIST (Circle and/or check applicable selections)

PRODUCT / Preservation	SM Action	Acceptable?	Corrective Action
BNA / pH 6 - 9 w/ H_2SO_4 or NaOH	√ field sheet for F. pH	Y / N	☐ Notify ORG
CN / pH > 12 w/ NaOH within 15 min	☐ Check pH	Y / N	☐ Deliver to CONV
NO23 pH < 2 w/ H_2SO_4	☐ Check pH	Y / N / NA	☐ Preserve by SM
CR(VI) / TOTCR(VI) / pH 9.3 - 9.7 w/ NaOH w/in 15 min	√ field sheet for pH	Y / N	☐ Deliver to CONV
ICP / HG-CVAA-M / pH < 2 w/ HNO_3	☐ Check pH	Y / N	☐ Preserve By SM
O&G / HEM / PHENOL / pH < 2 w/ H_2SO_4	Check documentation	Y / N	☐ Preserve by SM
PHYTOPLANKTON / Lugols	Visually inspect	Y / N	☐ Deliver to MICRO
TKN / COD pH < 2 w/ H_2SO_4 within 15 min	☐ Check pH	Y / N	☐ Preserve By SM
TOC / pH < 2 w/ HCl (NPDES only)	☐ Check pH	Y / N	☐ Preserve By SM
TOTSULFIDE / pH > 9 w/ NaOH, ZnAc	Check documentation	Y / N	☐ Deliver to CONV
WDO / FIXED	Visually inspect	Y / N	☐ Deliver to CONV
Other:			

ROUTINE SM PRESERVATION CHECKLIST (Circle and/or check applicable selections)

PRODUCT / Preservation	SM Action	Acceptable?	Corrective Action
Chlorinated Pesticides / pH 5 - 9 w/ H_2SO_4 or NaOH	√ field sheet for F. pH	Y / N	☐ Adjust pH
HG-CVAA-L-Teflon (T / D) / pH < 2 w/ ULTRA HCl	☐ Preserve & deliver	NA	NA
ICPMS (T / D) / pH < 2 w/ ULTRA HNO_3	☐ Preserve & deliver	NA	NA
TOC / pH < 2 w/ HCl	☐ Preserve & deliver	NA	NA
Other:			

INTERFERENCE TEST (Circle and/or check applicable selections)

Product / Interference (SM Action)	Positive Test?	Treated	Corrective Action
BNA / Chlorine (Check documentation)	Y / N / not tested	Y / N	☐ Deliver to ORG
CN / Chlorine (Check documentation)	Y / N / not tested	Y / N	☐ Deliver to CONV
CN / Sulfide (Check field sheet for DF)	Y / N / not tested	Y / N	☐ Deliver to CONV
VOA / Chlorine (Check documentaion)	Y / N / not tested	Y / N	☐ Deliver to ORG
Other:			

HEADSPACE CHECK

PRODUCT (SM Action)	Check For	Acceptable?	Corrective Action
MICRO (Visually inspect)	Headspace (@ 1")	Y / N	☐ Notify MICRO
TOTSULFIDE (Visually inspect)	Headspace (< 1")	Y / N	☐ Notify CONV
VOA (Visually inspect)	Zero headspace	Y / N	☐ Notify ORG
WDO (Visually inspect)	Zero headspace	Y / N	☐ Notify CONV
Other:			

FIELD FILTRATION CHECKLIST (Circle and/or check applicable selections)

Product (SM Action)	Field Filtered	Field Blank	Corrective Action
ORTHOP (Check Field Sheet)	Y (within 15 min y / n) / N	Y / N	☐ Deliver to CONV
NO2 / NO3 / NO23 / NH3 / SI (Documentation)	Y (within 1 day y / n) / N	Y / N / NA	☐ Deliver to CONV
Dissolved Metals (Check Field Sheet)	Y (within 15 min y / n) / N	Y / N / NA	☐ Deliver to METALS
DOC (Deliver / Notify Unit)	Y (within 15 min or 1 day) / N	Y / N / NA	☐ Deliver to CONV
DCOD / CR(VI) (Deliver / Notify Unit)	Y (within 15 min y / n) / N	Y / N / NA	☐ Deliver to CONV
Other:			
Other:			

CC: ☐ AQUATOX, ☐ CONV, ☐ METALS, ☐ MICRO, ☐ ORG, ☐ ____________

NOTES

1. Deliver dissolved Hg-CVAF samples to METALS for filtration.
2. Deliver double-bagged metals samples to METALS for preservation.
3. Do not test pH for preserved BNA and TOTSULFIDE samples.
4. Deliver pH, WDO, and all MICRO samples ASAP to appropriate section for immediate processing.
5. Enter " Time Span" for composite samples during sample login.
6. Split algae sample into 60 mL clear glass if PHYTOQUAL is requested.

SM Signature:

Date / Time Completed: OCT 25 '23 12:20

King County

Department of Natural Resources and Parks
Water and Land Resources Division

Environmental Laboratory

LAB-NR0100
322 West Ewing Street
Seattle, WA 98119-1507
206-477-7200 Fax 206-684-2395
TTY Relay: 711

Date: November 14, 2023

To: Madison Bristol, Washington State Department of Ecology

Clark, Herrera Environmental Consultants

From: Meghan Elkey, King County Environmental Laboratory

Subject: BMP Stormwater Characterization – Herrera Add-on 6PPDQ Samples Data Summary, November 1, 2023

Stormwater samples were collected by Herrera Environmental Consultants on November 1, 2023. The samples were delivered to the King County Environmental Laboratory on November 2, 2023. The samples were given lab ID numbers L82372-3 to -6 and -9 to -13. The following QC summary is included for your information.

All samples received were analyzed as requested. The samples were analyzed in the Aquatic Toxicology unit of the laboratory. The data have passed all QA/QC checks for accuracy and completeness and may be used without qualification.

Please contact me if you have any questions about this report or need additional information.

Sincerely,

Meghan Elkey

Meghan Elkey
Laboratory Project Manager/Water Quality Planner III
King County Environmental Lab
(206)477-7154 or meghan.elkey@kingcounty.gov

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200	Project:	421520-200
Locator:	SCTF-TB25-IN	Locator:	SCTF-TB25-OUT	Locator:	SCTF-TB1-IN
Descrip:	SCTF-TB2.5 upstrea	Descrip:	SCTF-TB2.5 downstr	Descrip:	SCTF-TB1 upstream
Sample:	L82372-3	Sample:	L82372-4	Sample:	L82372-5
Matrix:	LG STORM WTR	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
ColDate:	11/1/23 21:15	ColDate:	11/1/23 21:16	ColDate:	11/1/23 21:20
WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.209		0.002	0.01	ug/L	0.194		0.002	0.01	ug/L	0.248		0.002	0.01	ug/L

King County Environmental Lab Analytical Report

Project: 421520-200
Locator: SCTF-TB1-OUT
Descrip: SCTF-TB1 downstrea
Sample: L82372-6
Matrix: LG STORM WTR
ColDate: 11/1/23 21:20
WET Weight Basis

Project: 421520-200
Locator: SCTF-TB25-IN
Descrip: SCTF-TB2.5 upstrea
Sample: L82372-9
Matrix: LG STORM WTR
ColDate: 11/1/23 22:57
WET Weight Basis

Project: 421520-200
Locator: SCTF-TB25-OUT
Descrip: SCTF-TB2.5 downstr
Sample: L82372-10
Matrix: LG STORM WTR
ColDate: 11/1/23 22:58
WET Weight Basis

Parameters	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.0083	<RDL	0.002	0.01	ug/L	0.726		0.002	0.01	ug/L	0.596		0.002	0.01	ug/L

King County Environmental Lab Analytical Report

	Project:	421520-200	Project:	421520-200	Project:	421520-200
	Locator:	SCTF-TB1-IN	Locator:	SCTF-TB1-OUT	Locator:	FIELDDUP
	Descrip:	SCTF-TB1 upstream	Descrip:	SCTF-TB1 downstrea	Descrip:	FIELD DUPLICATE
	Sample:	L82372-11	Sample:	L82372-12	Sample:	L82372-13
	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
	ColDate:	11/1/23 22:55	ColDate:	11/1/23 22:56	ColDate:	11/1/23 21:15
	WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.713		0.002	0.01	ug/L	0.018		0.002	0.01	ug/L	0.211		0.002	0.01	ug/L

King County Environmental Lab Analytical MATRIX Report

Owner: **SEEDPAK**
Matrix Class: **LIQUID**
User select: **WET Weight Basis**

				6ppd-quinone
LOCATOR	**PROJECT**	**SAMPLE**	**COLLECTED**	**ug/L**
SCTF-TB25-IN	421520-200	L82372-3	11/1/2023 21:15	0.209
SCTF-TB25-OUT	421520-200	L82372-4	11/1/2023 21:16	0.194
SCTF-TB1-IN	421520-200	L82372-5	11/1/2023 21:20	0.248
SCTF-TB1-OUT	421520-200	L82372-6	11/1/2023 21:20	0.0083
SCTF-TB25-IN	421520-200	L82372-9	11/1/2023 22:57	0.726
SCTF-TB25-OUT	421520-200	L82372-10	11/1/2023 22:58	0.596
SCTF-TB1-IN	421520-200	L82372-11	11/1/2023 22:55	0.713
SCTF-TB1-OUT	421520-200	L82372-12	11/1/2023 22:56	0.018
FIELDDUP	421520-200	L82372-13	11/1/2023 21:15	0.211
* Not converted to dry weight basis				

If a parameter/analyte appears twice in the column header, it implies that they were analyzed by two different method codes

WG191053 6PPDQ by LCMS

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	QC Association	Comments
L82372-3	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	11/1/2023 21:15	11/6/2023 8:00	11/6/2023 11:00	WG191053-1,-2,-3,-4,-5,-6	
L82372-4	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	11/1/2023 21:16	11/6/2023 8:00	11/6/2023 11:00	WG191053-1,-2,-3,-4,-5,-6	
L82372-5	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	11/1/2023 21:20	11/6/2023 8:00	11/6/2023 11:00	WG191053-1,-2,-3,-4,-5,-6	
L82372-6	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	11/1/2023 21:20	11/6/2023 8:00	11/6/2023 11:00	WG191053-1,-2,-3,-4,-5,-6	
L82372-13	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	11/1/2023 21:15	11/6/2023 8:00	11/6/2023 11:00	WG191053-1,-2,-3,-4,-5,-6	
WG191053-1	MB		AQ6PPDQ-LCMS	OTHR WTR		11/6/2023 8:00	11/6/2023 11:00	WG191053-1,-2,-3,-4,-5,-6	
WG191053-2	SB		AQ6PPDQ-LCMS	OTHR WTR		11/6/2023 8:00	11/6/2023 11:00	WG191053-1,-2,-3,-4,-5,-6	WG191053-1
WG191053-3	MS		AQ6PPDQ-LCMS	STORM WTR		11/6/2023 8:00	11/6/2023 11:00	WG191053-1,-2,-3,-4,-5,-6	L82372-6
WG191053-4	MSD		AQ6PPDQ-LCMS	STORM WTR		11/6/2023 8:00	11/6/2023 11:00	WG191053-1,-2,-3,-4,-5,-6	WG191053-3 L82372-6
WG191053-5	LD		AQ6PPDQ-LCMS	STORM WTR		11/6/2023 8:00	11/6/2023 11:00	WG191053-1,-2,-3,-4,-5,-6	L82372-3
WG191053-6	CCC		AQ6PPDQ-LCMS	OTHR WTR		11/6/2023 8:00	11/6/2023 11:00	WG191053-1,-2,-3,-4,-5,-6	MED

WG191069 6PPDQ by LCMS

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	QC Association	Comments
L82372-9	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	11/1/2023 22:57	11/7/2023 8:00	11/7/2023 11:00	WG191069-1,-2,-3,-4,-5,-6	
L82372-10	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	11/1/2023 22:58	11/7/2023 8:00	11/7/2023 11:00	WG191069-1,-2,-3,-4,-5,-6	
L82372-11	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	11/1/2023 22:55	11/7/2023 8:00	11/7/2023 11:00	WG191069-1,-2,-3,-4,-5,-6	
L82372-12	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	11/1/2023 22:56	11/7/2023 8:00	11/7/2023 11:00	WG191069-1,-2,-3,-4,-5,-6	
WG191069-1	MB		AQ6PPDQ-LCMS	OTHR WTR		11/7/2023 8:00	11/7/2023 11:00	WG191069-1,-2,-3,-4,-5,-6	
WG191069-2	SB		AQ6PPDQ-LCMS	OTHR WTR		11/7/2023 8:00	11/7/2023 11:00	WG191069-1,-2,-3,-4,-5,-6	WG191069-1
WG191069-3	MS		AQ6PPDQ-LCMS	STORM WTR		11/7/2023 8:00	11/7/2023 11:00	WG191069-1,-2,-3,-4,-5,-6	L82372-12
WG191069-4	MSD		AQ6PPDQ-LCMS	STORM WTR		11/7/2023 8:00	11/7/2023 11:00	WG191069-1,-2,-3,-4,-5,-6	WG191069-3 L82372-12
WG191069-5	LD		AQ6PPDQ-LCMS	STORM WTR		11/7/2023 8:00	11/7/2023 11:00	WG191069-1,-2,-3,-4,-5,-6	L82372-10
WG191069-6	CCC		AQ6PPDQ-LCMS	OTHR WTR		11/7/2023 8:00	11/7/2023 11:00	WG191069-1,-2,-3,-4,-5,-6	

Workgroup: WG191053 6PPDQ by LCMS

MB:WG191053-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
6ppd-quinone	0.002	0.01	ug/L		<MDL

SB:WG191053-2 MB:WG191053-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	True Value	SB Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	<MDL	0.2	0.227	114		50--150

MSD:WG191053-4 MS:WG191053-3 L82372-6 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	True Value	MS Value	% Rec.	Qual	Lab Limit	True Value	MSD Value	% Rec.	Qual	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	0.0083	0.2	0.231	111		50--150	0.2	0.229	110		1		0--45

LD:WG191053-5 L82372-3 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	0.209	0.218	4		0--40

CCC:WG191053-6 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Continuing Calibration Check)

Parameter	MDL	RDL	Units	True Value	CCC Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.01	0.05	ug/L	1	1.02	102		80--120

Surrogate:	**d5-6PPDQ**
(Lab Limits)	**20--200**
L82372-3	83
L82372-4	75
L82372-5	77
L82372-6	80
L82372-13	77
WG191053-1	81
WG191053-2	80
WG191053-3	81
WG191053-4	82
WG191053-5	76
WG191053-6	99

Workgroup: WG191069 6PPDQ by LCMS

MB:WG191069-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
6ppd-quinone	0.002	0.01	ug/L		<MDL

SB:WG191069-2 MB:WG191069-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	True Value	SB Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	<MDL	0.2	0.221	111		50--150

MSD:WG191069-4 MS:WG191069-3 L82372-12 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	True Value	MS Value	% Rec.	Qual	Lab Limit	True Value	MSD Value	% Rec.	Qual	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	0.018	0.2	0.236	109		50--150	0.2	0.247	115		4		0--45

LD:WG191069-5 L82372-10 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	0.596	0.618	4		0--40

CCC:WG191069-6 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Continuing Calibration Check)

Parameter	MDL	RDL	Units	True Value	CCC Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.01	0.05	ug/L	1	0.987	99		80--120

Surrogate:	d5-6PPDQ
(Lab Limits)	**20--200**
L82372-9	77
L82372-10	71
L82372-11	75
L82372-12	89
WG191069-1	81
WG191069-2	77
WG191069-3	84
WG191069-4	85
WG191069-5	64
WG191069-6	103

Login: P82372
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On TAPE Event 5

FSU TC: ____________
LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by Scott Shumway	*Date* 11/02/23	*Time* 12:38
Received by	*Date* 11-2-23	*Time* 1238
Sample Numbers		*[All]*

Sample Number	~~**P82372-1**~~	~~**P82372-2**~~	**P82372-3**
QC Link			
Locator	~~**SCTF-TB2-IN**~~	~~**SCTF-TB2-OUT**~~	**SCTF-TB25-IN**
Short Loc Desc			
Locator Desc	~~SCTF-TB2 upstream sampling station~~	~~SCTF-TB2 downstream sampling station~~	SCTF-TB2.5 upstream sampling station
Site	~~I-5TAPE~~	~~I-5TAPE~~	I-5TAPE
Comments	~~First grab~~	~~First grab~~	First grab
Start Date/Time			11/01/23 21:15
End Date/Time			N/A
Time Span			0
Sample Depth			outfall pipe into energy dispersion tub
Dept, Matrix, Prod (Cont ID)	~~4 LG 6PPDQ (43)~~	~~4 LG 6PPDQ (43)~~	4 LG 6PPDQ (43)

Sampled by Scott S.

ogin: P82372

roject: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On TAPE Event 5

FSU TC: ____________

LPM: Meghan Elkey

Sample Number	**P82372-4**	**P82372-5**	**P82372-6**
QC Link			
Locator	**SCTF-TB25-OUT**	SCTF-TB1-IN ~~**SCTF-TB4-IN**~~	SCTF-TB1-OUT ~~**SCTF-TB4-OUT**~~
Short Loc Desc			
Locator Desc	SCTF-TB2.5 downstream sampling station	SCTF-~~TB4~~ TB1 upstream sampling location	SCTF-~~TB4~~ TB1 downstream sampling location
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments	First grab	First grab	First grab
Start Date/Time	11/01/23 21:16	11/01/23 21:20	11/01/23 21:20
End Date/Time	N/A	N/A	N/A
Time Span	0	0	0
Sample Depth	weir spillover of outlet pipe	outfall pipe into energy dispersion tub	weir spillover of outlet pipe
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)
	sampled by Scott S.	sampled by Scott S.	sampled by Scott S.

ogin: P82372
roject: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On TAPE Event 5

FSU TC: ____________

LPM: Meghan Elkey

Sample Number	~~P82372-7~~	~~P82372-8~~	P82372-9
QC Link			
Locator	~~SCTF-TB2-IN~~	~~SCTF-TB2-OUT~~	SCTF-TB25-IN
Short Loc Desc			
Locator Desc	~~SCTF-TB2 upstream sampling station~~	~~SCTF-TB2 downstream sampling station~~	SCTF-TB2.5 upstream sampling station
Site	~~I-5TAPE~~	~~I-5TAPE~~	I-5TAPE
Comments	~~Second grab~~	~~Second grab~~	Second grab
Start Date/Time			11/01/23 22:57
End Date/Time			N/A
Time Span			0
Sample Depth			outfall pipe into energy dispersion tub
Dept, Matrix, Prod (Cont ID)	~~4 LG 6PPDQ (43)~~	~~4 LG 6PPDQ (43)~~	4 LG 6PPDQ (43)

Sampled by Dylan A

ogin: P82372
roject: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On TAPE Event 5

FSU TC: ____________
LPM: Meghan Elkey

Sample Number	P82372-10	P82372-11	P82372-12
QC Link			
Locator	SCTF-TB25-OUT	SCTF-TB1-IN ~~SCTF-TB4-IN~~	SCTF-TB1-OUT ~~SCTF-TB4-OUT~~
~~Short Loc Desc~~			
Locator Desc	SCTF-TB2.5 downstream sampling station	SCTF-~~TB4~~ TB1 upstream sampling location	SCTF-~~TB4~~ TB1 downstream sampling location
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments	Second grab	Second grab	Second grab
Start Date/Time	11/01/23 22:58	11/01/23 22:55	11/01/23 22:56
End Date/Time	N/A	N/A	N/A
Time Span	0	0	0
Sample Depth	weir spillover of outlet pipe	outfall pipe into energy dispersion tub	weir spillover of outlet pipe
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)

Sampled by Dylan A

Sampled by Dylan A

Sampled by Dylan A

Login: P82372 **WDOE BMP - Herrera 6PPDQ Add-On TAPE Event 5** **FSU TC:** ____________

Project: 421520-200 **LPM: Meghan Elkey**

Sample Number	**P82372-13**		
QC Link			
Locator	**FIELDDUP**		
Short Loc Desc			
Locator Desc	FIELD DUPLICATE		
Site	FLDQC		
Comments	Field dup of SCTF-TB25-IN		
Start Date/Time	11/01/23 21:15		
End Date/Time	N/A		
Time Span	0		
Sample Depth	outfall pipe of energy dispersion tub		
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)		

sampled by Scott S.

LIQUID SAMPLE RECEIPT RECORD

Login Number(s): 82372-(3-6, 9-13)
Project No.: 421520-200
Sub-Contracting: Y / [✓ N]
List Product(s):
Collect Date(s): 11-1-23
Receive Date: 11-2-23
Changes: Y / N
List Parameter(s):

SAMPLE RECEIPT CONDITIONS

CONDITION	Acceptable?	Comment ID	CONDITION	Acceptable?	Comment ID
Labels / Fieldsheets	[✓ Y] / N		Volumes	[✓ Y] / N	
Container	[✓ Y] / N		Holding Times	[✓ Y] / N	
Temperature (w/ ice)	[✓ Y] / N / NA		Delivery Location	[✓ Y] / N	

BOTTLE COUNT (#) AND DESCRIPTION and SAMPLE NUMBERS

#	Bottle Description: Sample Numbers
	40 mL clear vial (VOA):
	60 mL clear glass (PHYTO):
	60 mL CWM HDPE:
	125 mL AWM HDPE:
	125 mL CNM HDPE:
	125 mL CWM HDPE:
	125 mL GANM:
	125 mL GANM w/HCl
	250 mL AWM HDPE:
	250 mL CWM HDPE:
	250 mL CWM HDPE (MICRO):
9	250 mL GAWM: 3-6, 9-13
	250 mL GAWM w/ H2SO4:
	300 mL WDO (8 hour HT):
	500 mL AWM HDPE:
	500 mL CWM HDPE:
	500 mL CWM PP (MICRO):
	500 mL HDPE (METALS):
	500 mL HDPE, double-bagged (METALS):
	500 mL Teflon (Hg):
	500 mL Teflon, double-bagged (METALS):
	500 mL GANM / GAWM:
	500 mL Polystyrene Filtration Units (METALS):
	1L AWM HDPE:
	1L CWM HDPE:
	1L CWM PP (MICRO):
	1L GANM:
	1L GCWM:
	1L GAWM w/ H_2SO_4:
	2L CWM HDPE:
	Other:

COMMENTS / NOTIFICATIONS

FIELD PRESERVATION CHECKLIST (Circle and/or check applicable selections)

PRODUCT / Preservation	SM Action	Acceptable?	Corrective Action
BNA / pH 6 - 9 w/ H_2SO_4 or NaOH	√ field sheet for F. pH	Y / N	☐ Notify ORG
CN / pH > 12 w/ NaOH within 15 min	☐ Check pH	Y / N	☐ Deliver to CONV
NO23 pH < 2 w/ H_2SO_4	☐ Check pH	Y / N / NA	☐ Preserve by SM
CR(VI) / TOTCR(VI) / pH 9.3 - 9.7 w/ NaOH w/in 15 min	√ field sheet for pH	Y / N	☐ Deliver to CONV
ICP / HG-CVAA-M / pH < 2 w/ HNO_3	☐ Check pH	Y / N	☐ Preserve By SM
O&G / HEM / PHENOL / pH < 2 w/ H_2SO_4	Check documentation	Y / N	☐ Preserve by SM
PHYTOPLANKTON / Lugols	Visually inspect	Y / N	☐ Deliver to MICRO
TKN / COD pH < 2 w/ H_2SO_4 within 15 min	☐ Check pH	Y / N	☐ Preserve By SM
TOC / pH < 2 w/ HCl (NPDES only)	☐ Check pH	Y / N	☐ Preserve By SM
TOTSULFIDE / pH > 9 w/ NaOH, ZnAc	Check documentation	Y / N	☐ Deliver to CONV
WDO / FIXED	Visually inspect	Y / N	☐ Deliver to CONV
Other:			

ROUTINE SM PRESERVATION CHECKLIST (Circle and/or check applicable selections)

PRODUCT / Preservation	SM Action	Acceptable?	Corrective Action
Chlorinated Pesticides / pH 5 - 9 w/ H_2SO_4 or NaOH	√ field sheet for F. pH	Y / N	☐ Adjust pH
HG-CVAA-L-Teflon (T / D) / pH < 2 w/ ULTRA HCl	☐ Preserve & deliver	NA	NA
ICPMS / HG-CVAA-M (T / D) / pH < 2 w/ ULTRA HNO_3	☐ Preserve & deliver	NA	NA
TOC / pH < 2 w/ HCl	☐ Preserve & deliver	NA	NA
Other:			
Other:			

INTERFERENCE TEST (Circle and/or check applicable selections)

Product / Interference (SM Action)	Positive Test?	Treated	Corrective Action
BNA / Chlorine (Check documentation)	Y / N / not tested	Y / N	☐ Deliver to ORG
CN / Chlorine (Check documentation)	Y / N / not tested	Y / N	☐ Deliver to CONV
CN / Sulfide (Check field sheet for DF)	Y / N / not tested	Y / N	☐ Deliver to CONV
VOA / Chlorine (Check documentaion)	Y / N / not tested	Y / N	☐ Deliver to ORG
Other:			

HEADSPACE CHECK

PRODUCT (SM Action)	Check For	Acceptable?	Corrective Action
MICRO (Visually inspect)	Headspace (@ 1")	Y / N	☐ Notify MICRO
TOTSULFIDE (Visually inspect)	Headspace (< 1")	Y / N	☐ Notify CONV
VOA (Visually inspect)	Zero headspace	Y / N	☐ Notify ORG
WDO (Visually inspect)	Zero headspace	Y / N	☐ Notify CONV
Other:			

FIELD FILTRATION CHECKLIST (Circle and/or check applicable selections)

Product (SM Action)	Field Filtered	Field Blank	Corrective Action
ORTHOP (Check Field Sheet)	Y (within 15 min y / n) / N	Y / N	☐ Deliver to CONV
NO2 / NO3 / NO23 / NH3 / SI (Documentation)	Y (within 1 day y / n) / N	Y / N / NA	☐ Deliver to CONV
Dissolved Metals (Check Field Sheet)	Y (within 15 min y / n) / N	Y / N / NA	☐ Deliver to METALS
DOC (Deliver / Notify Unit)	Y (within 15 min or 1 day) / N	Y / N / NA	☐ Deliver to CONV
DCOD / CR(VI) (Deliver / Notify Unit)	Y (within 15 min y / n) / N	Y / N / NA	☐ Deliver to CONV
Other:			
Other:			

CC: ☐ AQUATOX, ☐ CONV, ☐ METALS, ☐ MICRO, ☐ ORG, ☐ ________________

NOTES

1. Deliver dissolved Hg-CVAF samples to METALS for filtration.
2. Deliver double-bagged metals samples to METALS for preservation.
3. Do not test pH for preserved BNA and TOTSULFIDE samples.
4. Deliver pH, WDO, and all MICRO samples ASAP to appropriate section for immediate processing.
5. Enter "Time Span" for composite samples during sample login.
6. Split algae sample into 60 mL clear glass if PHYTOQUAL is requested.

NOV 02 '23 12:51

SM Signature: ____________________

Date / Time Completed: ____________________

King County

Department of Natural Resources and Parks
Water and Land Resources Division

Environmental Laboratory

LAB-NR0100
322 West Ewing Street
Seattle, WA 98119-1507
206-477-7200 Fax 206-684-2395
TTY Relay: 711

Date: November 14, 2023

To: Madison Bristol, Washington State Department of Ecology

Clark, Herrera Environmental Consultants

From: Meghan Elkey, King County Environmental Laboratory

Subject: BMP Stormwater Characterization – Herrera Add-on 6PPDQ Samples Data Summary, November 6, 2023

Stormwater samples were collected by Herrera Environmental Consultants on November 6, 2023. The samples were delivered to the King County Environmental Laboratory on November 7, 2023. The samples were given lab ID numbers L82371-5 to -6 and -11 to -13. The following QC summary is included for your information.

All samples received were analyzed as requested. The samples were analyzed in the Aquatic Toxicology unit of the laboratory. The data have passed all QA/QC checks for accuracy and completeness and may be used without qualification.

Please contact me if you have any questions about this report or need additional information.

Sincerely,

Meghan Elkey

Meghan Elkey
Laboratory Project Manager/Water Quality Planner III
King County Environmental Lab
(206)477-7154 or meghan.elkey@kingcounty.gov

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200	Project:	421520-200
Locator:	SCTF-TB1-IN	Locator:	SCTF-TB1-OUT	Locator:	SCTF-TB1-IN
Descrip:	SCTF-TB1 upstream	Descrip:	SCTF-TB1 downstrea	Descrip:	SCTF-TB1 upstream
Sample:	L82371-5	Sample:	L82371-6	Sample:	L82371-11
Matrix:	LG STORM WTR	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
ColDate:	11/6/23 13:05	ColDate:	11/6/23 13:06	ColDate:	11/6/23 15:03
WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.782		0.002	0.01	ug/L	0.174		0.002	0.01	ug/L	1.3		0.002	0.01	ug/L

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200
Locator:	SCTF-TB1-OUT	Locator:	FIELDDUP
Descrip:	SCTF-TB1 downstrea	Descrip:	FIELD DUPLICATE
Sample:	L82371-12	Sample:	L82371-13
Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
ColDate:	11/6/23 15:04	ColDate:	11/6/23 13:05
WET Weight Basis		**WET Weight Basis**	

Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS										
6ppd-quinone	0.0722		0.002	0.01	ug/L	0.833		0.002	0.01	ug/L

King County Environmental Lab Analytical MATRIX Report

Owner: **SEEDPAK**
Matrix Class: **LIQUID**
User select: **WET Weight Basis**

				6ppd-quinone
LOCATOR	**PROJECT**	**SAMPLE**	**COLLECTED**	**ug/L**
SCTF-TB1-IN	421520-200	L82371-5	11/6/2023 13:05	0.782
SCTF-TB1-OUT	421520-200	L82371-6	11/6/2023 13:06	0.174
SCTF-TB1-IN	421520-200	L82371-11	11/6/2023 15:03	1.3
SCTF-TB1-OUT	421520-200	L82371-12	11/6/2023 15:04	0.0722
FIELDDUP	421520-200	L82371-13	11/6/2023 13:05	0.833
* Not converted to dry weight basis				

If a parameter/analyte appears twice in the column header, it implies that they were analyzed by two different method codes

WG191124 6PPDQ by LCMS

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	QC Association	Comments
L82371-5	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	11/6/2023 13:05	11/8/2023 13:00	11/8/2023 15:30	WG191124-1,-2,-3,-4,-5,-6	
L82371-6	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	11/6/2023 13:06	11/8/2023 13:00	11/8/2023 15:30	WG191124-1,-2,-3,-4,-5,-6	
L82371-11	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	11/6/2023 15:03	11/8/2023 13:00	11/8/2023 15:30	WG191124-1,-2,-3,-4,-5,-6	
L82371-12	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	11/6/2023 15:04	11/8/2023 13:00	11/8/2023 15:30	WG191124-1,-2,-3,-4,-5,-6	
L82371-13	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	11/6/2023 13:05	11/8/2023 13:00	11/8/2023 15:30	WG191124-1,-2,-3,-4,-5,-6	
L82827-1	422040-100	SWS Bioretention 6PPDQ	AQ6PPDQ-LCMS	OTHR WTR	11/6/2023 0:00	11/8/2023 13:00	11/8/2023 15:30	WG191124-1,-2,-3,-4,-5,-6	
WG191124-1	MB		AQ6PPDQ-LCMS	OTHR WTR		11/8/2023 13:00	11/8/2023 15:30	WG191124-1,-2,-3,-4,-5,-6	
WG191124-2	SB		AQ6PPDQ-LCMS	OTHR WTR		11/8/2023 13:00	11/8/2023 15:30	WG191124-1,-2,-3,-4,-5,-6	WG191124-1
WG191124-3	MS		AQ6PPDQ-LCMS	STORM WTR		11/8/2023 13:00	11/8/2023 15:30	WG191124-1,-2,-3,-4,-5,-6	L82371-6
WG191124-4	MSD		AQ6PPDQ-LCMS	STORM WTR		11/8/2023 13:00	11/8/2023 15:30	WG191124-1,-2,-3,-4,-5,-6	WG191124-3 L82371-6
WG191124-5	LD		AQ6PPDQ-LCMS	STORM WTR		11/8/2023 13:00	11/8/2023 15:30	WG191124-1,-2,-3,-4,-5,-6	L82371-5
WG191124-6	CCC		AQ6PPDQ-LCMS	OTHR WTR		11/8/2023 13:00	11/8/2023 15:30	WG191124-1,-2,-3,-4,-5,-6	MED

Workgroup: WG191124 6PPDQ by LCMS

MB:WG191124-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
6ppd-quinone	0.002	0.01	ug/L		<MDL

SB:WG191124-2 MB:WG191124-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	True Value	SB Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	<MDL	0.2	0.21	105		50--150

MSD:WG191124-4 MS:WG191124-3 L82371-6 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	True Value	MS Value	% Rec.	Qual	Lab Limit	True Value	MSD Value	% Rec.	Qual	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	0.174	0.2	0.41	118		50--150	0.2	0.398	112		3		0--45

LD:WG191124-5 L82371-5 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	0.782	0.788	1		0--40

CCC:WG191124-6 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Continuing Calibration Check)

Parameter	MDL	RDL	Units	True Value	CCC Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.01	0.05	ug/L	1	0.964	96		80--120

Surrogate:	**d5-6PPDQ**
(Lab Limits)	**20--200**
L82371-5	74
L82371-6	87
L82371-11	70
L82371-12	83
L82371-13	65
L82827-1	92
WG191124-1	80
WG191124-2	83
WG191124-3	76
WG191124-4	78
WG191124-5	68
WG191124-6	100

Login: P82371
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On TAPE Event 4

FSU TC: ____________________
LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by Scott Shumway	***Date*** 11/7/23	***Time*** 11:09
Received by	***Date*** 11-7-23	***Time*** 1100
Sample Numbers ***[All]***		

Sample Number	**P82371-1**	**P82371-2**	**P82371-3**
QC Link			
Locator	**SCTF-TB2-IN**	**SCTF-TB2-OUT**	**SCTF-TB25-IN**
Short Loc Desc			
Locator Desc	SCTF-TB2 upstream sampling station	SCTF-TB2 downstream sampling station	SCTF-TB2.5 upstream sampling station
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments	First grab	First grab	First grab
Start Date/Time			
End Date/Time			
Time Span			
Sample Depth			
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)

Login: P82371
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On TAPE Event 4

FSU TC: ____________
LPM: Meghan Elkey

Sample Number	~~P82371-4~~	P82371-5	P82371-6
QC Link		SCTF-TB1-IN	SCTF-TB1-OUT
Locator	~~SCTF-TB25-OUT~~	~~SCTF-TB4-IN~~	~~SCTF-TB4-OUT~~
Short Loc Desc			
Locator Desc	~~SCTF-TB2.5 downstream sampling station~~	SCTF-~~TB4~~ TB1 upstream sampling location	SCTF-~~TB4~~ TB1 downstream sampling location
Site	~~I-5TAPE~~	I-5TAPE	I-5TAPE
Comments	~~First grab~~	First grab	First grab
Start Date/Time		11/6/23 13:05	11/6/23 13:06
End Date/Time		N/A	N/A
Time Span		0	0
Sample Depth		outfall pipe of energy dispersion tub	weir outfall of outlet pipe
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)

Sampled by Scott S.

Sampled by Scott S

Login: P82371
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On TAPE Event 4

FSU TC: ____________________
LPM: Meghan Elkey

Sample Number	**P82371-7**	**P82371-8**	**P82371-9**
QC Link			
Locator	~~**SCTF-TB2-IN**~~	~~**SCTF-TB2-OUT**~~	~~**SCTF-TB25-IN**~~
Short Loc Desc			
Locator Desc	~~SCTF-TB2 upstream sampling station~~	~~SCTF-TB2 downstream sampling station~~	~~SCTF-TB2.5 upstream sampling station~~
Site	~~I-5TAPE~~	~~I-5TAPE~~	~~I-5TAPE~~
Comments	~~Second grab~~	~~Second grab~~	~~Second grab~~
Start Date/Time			
End Date/Time			
Time Span			
Sample Depth			
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)

Login: P82371 **WDOE BMP - Herrera 6PPDQ Add-On TAPE Event 4** FSU TC: ____________

Project: 421520-200 LPM: Meghan Elkey

Sample Number	P82371-10	P82371-11	P82371-12
QC Link			
Locator	SCTF-TB25-OUT	SCTF-TB1-IN ~~SCTF-TB4-IN~~	SCTF-TB1-OUT ~~SCTF-TB4-OUT~~
Short Loc Desc			
Locator Desc	SCTF-TB2.5 downstream sampling station	SCTF-~~TB4~~ TB1 upstream sampling location	SCTF-~~TB4~~ TB1 downstream sampling location
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments	Second grab	Second grab	Second grab
Start Date/Time		11/6/23 15:03	11/6/23 15:04
End Date/Time		N/A	N/A
Time Span		0	0
Sample Depth		outfall pipe of energy dispersion tub	weir outfall of outlet pipe
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)

Sampled by Scott S Sampled by Scott S

Login: P82371
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On TAPE Event 4

FSU TC: ______________
LPM: Meghan Elkey

Sample Number	**P82371-13**		
QC Link			
Locator	**FIELDDUP**		
Short Loc Desc			
Locator Desc	FIELD DUPLICATE		
Site	FLDQC		
Comments	Field duplicate of first grab of SCTF-TB1-IN		
Start Date/Time	11/6/23 13:05		
End Date/Time	N/A		
Time Span	0		
Sample Depth	outfall pipe of energy dispersion tub		
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)		

Sampled by
Scott S.

LIQUID SAMPLE RECEIPT RECORD

Login Number(s): 82371-(5,6,11-13)
Project No.: 421520-200
Collect Date(s): 11-6-23
Receive Date: 11-7-23
Sub-Contracting: Y / [✓ N]
List Product(s):
Changes: Y / N
List Parameter(s):

SAMPLE RECEIPT CONDITIONS

CONDITION	Acceptable?	Comment ID	CONDITION	Acceptable?	Comment ID
Labels / Fieldsheets	[✓ Y] / N		Volumes	[✓ Y] / N	
Container	[✓ Y] / N		Holding Times	[✓ Y] / N	
Temperature (w/ ice)	[✓ Y] / N / NA		Delivery Location	[✓ Y] / N	

BOTTLE COUNT (#) AND DESCRIPTION and SAMPLE NUMBERS

#	Bottle Description: Sample Numbers
	40 mL clear vial (VOA):
	60 mL clear glass (PHYTO):
	60 mL CWM HDPE:
	125 mL AWM HDPE:
	125 mL CNM HDPE:
	125 mL CWM HDPE:
	125 mL GANM:
	125 mL GANM w/HCl
	250 mL AWM HDPE:
	250 mL CWM HDPE:
	250 mL CWM HDPE (MICRO):
5	250 mL GAWM: 5,6,11-13
	250 mL GAWM w/ H2SO4:
	300 mL WDO (8 hour HT):
	500 mL AWM HDPE:
	500 mL CWM HDPE:
	500 mL CWM PP (MICRO):
	500 mL HDPE (METALS):
	500 mL HDPE, double-bagged (METALS):
	500 mL Teflon (Hg):
	500 mL Teflon, double-bagged (METALS):
	500 mL GANM / GAWM:
	500 mL Polystyrene Filtration Units (METALS):
	1L AWM HDPE:
	1L CWM HDPE:
	1L CWM PP (MICRO):
	1L GANM:
	1L GCWM:
	1L GAWM w/ H_2SO_4:
	2L CWM HDPE:
	Other:

COMMENTS / NOTIFICATIONS

FIELD PRESERVATION CHECKLIST (Circle and/or check applicable selections)

PRODUCT / Preservation	SM Action	Acceptable?	Corrective Action
BNA / pH 6 - 9 w/ H_2SO_4 or NaOH	√ field sheet for F. pH	Y / N	☐ Notify ORG
CN / pH > 12 w/ NaOH within 15 min	☐ Check pH	Y / N	☐ Deliver to CONV
NO23 pH < 2 w/ H_2SO_4	☐ Check pH	Y / N / NA	☐ Preserve by SM
CR(VI) / TOTCR(VI) / pH 9.3 - 9.7 w/ NaOH w/in 15 min	√ field sheet for pH	Y / N	☐ Deliver to CONV
ICP / HG-CVAA-M / pH < 2 w/ HNO_3	☐ Check pH	Y / N	☐ Preserve By SM
O&G / HEM / PHENOL / pH < 2 w/ H_2SO_4	Check documentation	Y / N	☐ Preserve by SM
PHYTOPLANKTON / Lugols	Visually inspect	Y / N	☐ Deliver to MICRO
TKN / COD pH < 2 w/ H_2SO_4 within 15 min	☐ Check pH	Y / N	☐ Preserve By SM
TOC / pH < 2 w/ HCl (NPDES only)	☐ Check pH	Y / N	☐ Preserve By SM
TOTSULFIDE / pH > 9 w/ NaOH, ZnAc	Check documentation	Y / N	☐ Deliver to CONV
WDO / FIXED	Visually inspect	Y / N	☐ Deliver to CONV
Other:			

ROUTINE SM PRESERVATION CHECKLIST (Circle and/or check applicable selections)

PRODUCT / Preservation	SM Action	Acceptable?	Corrective Action
Chlorinated Pesticides / pH 5 - 9 w/ H_2SO_4 or NaOH	√ field sheet for F. pH	Y / N	☐ Adjust pH
HG-CVAA-L-Teflon (T / D) / pH < 2 w/ ULTRA HCl	☐ Preserve & deliver	NA	NA
ICPMS / HG-CVAA-M (T / D) / pH < 2 w/ ULTRA HNO_3	☐ Preserve & deliver	NA	NA
TOC / pH < 2 w/ HCl	☐ Preserve & deliver	NA	NA
Other:			
Other:			

INTERFERENCE TEST (Circle and/or check applicable selections)

Product / Interference (SM Action)	Positive Test?	Treated	Corrective Action
BNA / Chlorine (Check documentation)	Y / N / not tested	Y / N	☐ Deliver to ORG
CN / Chlorine (Check documentation)	Y / N / not tested	Y / N	☐ Deliver to CONV
CN / Sulfide (Check field sheet for DF)	Y / N / not tested	Y / N	☐ Deliver to CONV
VOA / Chlorine (Check documentaion)	Y / N / not tested	Y / N	☐ Deliver to ORG
Other:			

HEADSPACE CHECK

PRODUCT (SM Action)	Check For	Acceptable?	Corrective Action
MICRO (Visually inspect)	Headspace (@ 1")	Y / N	☐ Notify MICRO
TOTSULFIDE (Visually inspect)	Headspace (< 1")	Y / N	☐ Notify CONV
VOA (Visually inspect)	Zero headspace	Y / N	☐ Notify ORG
WDO (Visually inspect)	Zero headspace	Y / N	☐ Notify CONV
Other:			

FIELD FILTRATION CHECKLIST (Circle and/or check applicable selections)

Product (SM Action)	Field Filtered	Field Blank	Corrective Action
ORTHOP (Check Field Sheet)	Y (within 15 min y / n) / N	Y / N	☐ Deliver to CONV
NO2 / NO3 / NO23 / NH3 / SI (Documentation)	Y (within 1 day y / n) / N	Y / N / NA	☐ Deliver to CONV
Dissolved Metals (Check Field Sheet)	Y (within 15 min y / n) / N	Y / N / NA	☐ Deliver to METALS
DOC (Deliver / Notify Unit)	Y (within 15 min or 1 day) / N	Y / N / NA	☐ Deliver to CONV
DCOD / CR(VI) (Deliver / Notify Unit)	Y (within 15 min y / n) / N	Y / N / NA	☐ Deliver to CONV
Other:			
Other:			

CC: ☐ AQUATOX, ☐ CONV, ☐ METALS, ☐ MICRO, ☐ ORG, ☐ ____________________

NOTES

1. Deliver dissolved Hg-CVAF samples to METALS for filtration.
2. Deliver double-bagged metals samples to METALS for preservation.
3. Do not test pH for preserved BNA and TOTSULFIDE samples.
4. Deliver pH, WDO, and all MICRO samples ASAP to appropriate section for immediate processing.
5. Enter " Time Span" for composite samples during sample login.
6. Split algae sample into 60 mL clear glass if PHYTOQUAL is requested.

SM Signature: ____________________

Date / Time Completed: NOV 07 '23 11:17

King County
Department of Natural Resources and Parks
Water and Land Resources Division
Environmental Laboratory
LAB-NR0100
322 West Ewing Street
Seattle, WA 98119-1507
206-477-7200 Fax 206-684-2395
TTY Relay: 711

Date:	December 1, 2023
To:	Madison Bristol, Washington State Department of Ecology
	Clark, Herrera Environmental Consultants
From:	Meghan Elkey, King County Environmental Laboratory
Subject:	BMP Stormwater Characterization – Herrera Add-on 6PPDQ Samples Data Summary, November 21, 2023

Stormwater samples were collected by Herrera Environmental Consultants on November 21, 2023. The samples were delivered to the King County Environmental Laboratory on November 22, 2023. The samples were given lab ID numbers L81678-1 to -4, -7 to -10 and L82371-3, -4, -9 and -10. The following QC summary is included for your information.

All samples received were analyzed as requested. The samples were analyzed in the Aquatic Toxicology unit of the laboratory. The data have passed all QA/QC checks for accuracy and completeness and may be used without qualification.

Please contact me if you have any questions about this report or need additional information.

Sincerely,

Meghan Elkey

Meghan Elkey
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King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200	Project:	421520-200
Locator:	SCTF-TB2-IN	Locator:	SCTF-TB2-OUT	Locator:	SCTF-TB1-IN
Descrip:	SCTF-TB2 upstream	Descrip:	SCTF-TB2 downstrea	Descrip:	SCTF-TB1 upstream
Sample:	L81678-1	Sample:	L81678-2	Sample:	L81678-3
Matrix:	LG STORM WTR	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
ColDate:	11/21/23 20:30	ColDate:	11/21/23 20:30	ColDate:	11/21/23 20:30
WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.603		0.002	0.01	ug/L	0.245		0.002	0.01	ug/L	0.631		0.002	0.01	ug/L

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200	Project:	421520-200
Locator:	SCTF-TB1-OUT	Locator:	SCTF-TB2-IN	Locator:	SCTF-TB2-OUT
Descrip:	SCTF-TB1 downstrea	Descrip:	SCTF-TB2 upstream	Descrip:	SCTF-TB2 downstrea
Sample:	L81678-4	Sample:	L81678-7	Sample:	L81678-8
Matrix:	LG STORM WTR	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
ColDate:	11/21/23 20:30	ColDate:	11/21/23 21:27	ColDate:	11/21/23 21:27
WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.147		0.002	0.01	ug/L	0.701		0.002	0.01	ug/L	0.608		0.002	0.01	ug/L

King County Environmental Lab Analytical Report

	Project: 421520-200 Locator: SCTF-TB1-IN Descrip: SCTF-TB1 upstream Sample: L81678-9 Matrix: LG STORM WTR ColDate: 11/21/23 21:25 **WET Weight Basis**					Project: 421520-200 Locator: SCTF-TB1-OUT Descrip: SCTF-TB1 downstrea Sample: L81678-10 Matrix: LG STORM WTR ColDate: 11/21/23 21:25 **WET Weight Basis**					Project: 421520-200 Locator: SCTF-TB25-IN Descrip: SCTF-TB2.5 upstrea Sample: L82371-3 Matrix: LG STORM WTR ColDate: 11/21/23 20:30 **WET Weight Basis**				
Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.663		0.002	0.01	ug/L	0.269		0.002	0.01	ug/L	0.651		0.002	0.01	ug/L

King County Environmental Lab Analytical Report

Project: 421520-200
Locator: SCTF-TB25-OUT
Descrip: SCTF-TB2.5 downstr
Sample: L82371-4
Matrix: LG STORM WTR
ColDate: 11/21/23 20:30
WET Weight Basis

Project: 421520-200
Locator: SCTF-TB25-IN
Descrip: SCTF-TB2.5 upstrea
Sample: L82371-9
Matrix: LG STORM WTR
ColDate: 11/21/23 21:29
WET Weight Basis

Project: 421520-200
Locator: SCTF-TB25-OUT
Descrip: SCTF-TB2.5 downstr
Sample: L82371-10
Matrix: LG STORM WTR
ColDate: 11/21/23 21:29
WET Weight Basis

Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.23		0.002	0.01	ug/L	0.696		0.002	0.01	ug/L	0.589		0.002	0.01	ug/L

King County Environmental Lab Analytical MATRIX Report

Owner: **SEEDPAK**
Matrix Class: **LIQUID**
User select: **WET Weight Basis**

LOCATOR	PROJECT	SAMPLE	COLLECTED	6ppd-quinone ug/L
SCTF-TB2-IN	421520-200	L81678-1	11/21/2023 20:30	0.603
SCTF-TB2-OUT	421520-200	L81678-2	11/21/2023 20:30	0.245
SCTF-TB1-IN	421520-200	L81678-3	11/21/2023 20:30	0.631
SCTF-TB1-OUT	421520-200	L81678-4	11/21/2023 20:30	0.147
SCTF-TB2-IN	421520-200	L81678-7	11/21/2023 21:27	0.701
SCTF-TB2-OUT	421520-200	L81678-8	11/21/2023 21:27	0.608
SCTF-TB1-IN	421520-200	L81678-9	11/21/2023 21:25	0.663
SCTF-TB1-OUT	421520-200	L81678-10	11/21/2023 21:25	0.269
SCTF-TB25-IN	421520-200	L82371-3	11/21/2023 20:30	0.651
SCTF-TB25-OUT	421520-200	L82371-4	11/21/2023 20:30	0.23
SCTF-TB25-IN	421520-200	L82371-9	11/21/2023 21:29	0.696
SCTF-TB25-OUT	421520-200	L82371-10	11/21/2023 21:29	0.589
* Not converted to dry weight basis				

If a parameter/analyte appears twice in the column header, it implies that they were analyzed by two different method codes

WG191393 6PPDQ by LCMS

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	QC Association	Comments
L81678-1	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	11/21/2023 20:30	11/27/2023 8:30	11/27/2023 11:00	WG191393-1,-2,-3,-4,-5,-6	
L81678-2	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	11/21/2023 20:30	11/27/2023 8:30	11/27/2023 11:00	WG191393-1,-2,-3,-4,-5,-6	
L81678-3	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	11/21/2023 20:30	11/27/2023 8:30	11/27/2023 11:00	WG191393-1,-2,-3,-4,-5,-6	
L81678-4	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	11/21/2023 20:30	11/27/2023 8:30	11/27/2023 11:00	WG191393-1,-2,-3,-4,-5,-6	
L81678-7	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	11/21/2023 21:27	11/27/2023 8:30	11/27/2023 11:00	WG191393-1,-2,-3,-4,-5,-6	
L81678-8	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	11/21/2023 21:27	11/27/2023 8:30	11/27/2023 11:00	WG191393-1,-2,-3,-4,-5,-6	
L81678-9	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	11/21/2023 21:25	11/27/2023 8:30	11/27/2023 11:00	WG191393-1,-2,-3,-4,-5,-6	
L81678-10	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	11/21/2023 21:25	11/27/2023 8:30	11/27/2023 11:00	WG191393-1,-2,-3,-4,-5,-6	
L82371-3	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	11/21/2023 20:30	11/27/2023 8:30	11/27/2023 11:00	WG191393-1,-2,-3,-4,-5,-6	
L82371-4	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	11/21/2023 20:30	11/27/2023 8:30	11/27/2023 11:00	WG191393-1,-2,-3,-4,-5,-6	
L82371-9	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	11/21/2023 21:29	11/27/2023 8:30	11/27/2023 11:00	WG191393-1,-2,-3,-4,-5,-6	
L82371-10	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	11/21/2023 21:29	11/27/2023 8:30	11/27/2023 11:00	WG191393-1,-2,-3,-4,-5,-6	
WG191393-1	MB		AQ6PPDQ-LCMS	OTHR WTR		11/27/2023 8:30	11/27/2023 11:00	WG191393-1,-2,-3,-4,-5,-6	
WG191393-2	SB		AQ6PPDQ-LCMS	OTHR WTR		11/27/2023 8:30	11/27/2023 11:00	WG191393-1,-2,-3,-4,-5,-6	WG191393-1
WG191393-3	MS		AQ6PPDQ-LCMS	STORM WTR		11/27/2023 8:30	11/27/2023 11:00	WG191393-1,-2,-3,-4,-5,-6	L82371-10
WG191393-4	MSD		AQ6PPDQ-LCMS	STORM WTR		11/27/2023 8:30	11/27/2023 11:00	WG191393-1,-2,-3,-4,-5,-6	WG191393-3 L82371-10
WG191393-5	LD		AQ6PPDQ-LCMS	STORM WTR		11/27/2023 8:30	11/27/2023 11:00	WG191393-1,-2,-3,-4,-5,-6	L82371-3
WG191393-6	CCC		AQ6PPDQ-LCMS	OTHR WTR		11/27/2023 8:30	11/27/2023 11:00	WG191393-1,-2,-3,-4,-5,-6	MED

Workgroup: WG191393 6PPDQ by LCMS

MB:WG191393-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
6ppd-quinone	0.002	0.01	ug/L		<MDL

SB:WG191393-2 MB:WG191393-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	True Value	SB Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	<MDL	0.2	0.215	108		50--150

MSD:WG191393-4 MS:WG191393-3 L82371-10 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	True Value	MS Value	% Rec.	Qual	Lab Limit	True Value	MSD Value	% Rec.	Qual	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	0.589	0.2	0.764	87		50--150	0.2	0.754	83		1		0--45

LD:WG191393-5 L82371-3 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	0.651	0.657	1		0--40

CCC:WG191393-6 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Continuing Calibration Check)

Parameter	MDL	RDL	Units	True Value	CCC Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.01	0.05	ug/L	1	1.02	102		80--120

Surrogate:	**d5-6PPDQ**
(Lab Limits)	**20--200**
L81678-1	75
L81678-2	78
L81678-3	72
L81678-4	79
L81678-7	73
L81678-8	72
L81678-9	69
L81678-10	76
L82371-3	73
L82371-4	75
L82371-9	67
L82371-10	71
WG191393-1	86
WG191393-2	82
WG191393-3	68
WG191393-4	73
WG191393-5	67
WG191393-6	91

Login: P81678
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On TAPE Event 3

FSU TC: ____________
LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by Nicholas Harry	***Date*** 2023-11-22	***Time*** 09:10
Received by	***Date*** 11/22/23	***Time*** 9:10
Sample Numbers		***[All]***

Sample Number	**P81678-1**	**P81678-2**	**P81678-3**
QC Link			
Locator	**SCTF-TB2-IN**	**SCTF-TB2-OUT**	**SCTF-~~TB25~~-IN** TB1
Short Loc Desc			
Locator Desc	SCTF-TB2 upstream sampling station	SCTF-TB2 downstream sampling station	SCTF-~~TB2.5~~ TB1 upstream sampling station
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments	First grab	First grab	First grab
Start Date/Time	23-11-~~22~~ 21 20:30	→	→
End Date/Time	23-11-~~22~~ 21 20:30	→	→
Time Span	0 mins	→	→
Sample Depth			
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)

* All samples from "first grab" taken @ 20:30 on 23-11-~~22~~ 21

Sample Number	P81678-4	P82371-3	P82371-4
QC Link			
Locator	SCTF-TB1-OUT	SCTF-TB25-IN	SCTF-TB25-OUT
Short Loc Desc			
Locator Desc	SCTF-TB1 down	~~sampling station~~	SCTF-TB25 downstream sampling station
Site	I-5TAPE	I-5TAPE	I-5 TAPE
Comments	First grab	First Grab	First Grab
Start Date/Time	23-11-~~22~~21 20:30	→	→
End Date/Time	23-11-~~22~~ 21 20:30	→	→
Time Span	0 mins	→	→
Dept, Matrix, Prod	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	4 LG 6 PPDQ (43)

Login: P81678
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On TAPE Event 3

FSU TC: ____________
LPM: Meghan Elkey

Sample Number	**P81678-7**	**P81678-8**	**P81678-9**
QC Link			
Locator	**SCTF-TB2-IN**	**SCTF-TB2-OUT**	**SCTF-~~TB25~~TB1-IN**
Short Loc Desc			
Locator Desc	SCTF-TB2 upstream sampling station	SCTF-TB2 downstream sampling station	SCTF-~~TB25~~TB1 upstream sampling station
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments	Second grab	Second grab	Second grab
Start Date/Time	23-11-21 21:27	23-11-21 21:27	23-11-21 21:25
End Date/Time	" "	" "	" "
Time Span	0 mins	→	→
Sample Depth			
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)

Sample Number	P81678-10	P82371-9	P82371-10
QC Link			
Locator	SCTF-TB1-OUT	SCTF-TB25-IN	SCTF-TB25-OUT
Short Loc Desc			
Locator Desc	SCTF-TB1 downstream sampling station	SCTF-TB25 upstream sampling station	SCTF-TB25 downstream sampling station
Site	I-5 TAPE	I-5 TAPE	I-5 TAPE
Comments	second grab	second grab	second grab
Start Date/Time	23-11-21 21:25	23-11-21 21:29	23-11-21 21:29
End Date/Time	" "	" "	" "
Time Span	0 mins	→	→
Dept. Matrix, Prod	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)

LIQUID SAMPLE RECEIPT RECORD

Login Number(s): 81678
Collect Date(s): 11/21/23
Project No.: 421520-200
Receive Date: 11/22/23
Sub-Contracting: Y / [✓ N]
Changes: Y / [✓ N]
List Product(s):
List Parameter(s):

SAMPLE RECEIPT CONDITIONS

CONDITION	Acceptable?	Comment ID	CONDITION	Acceptable?	Comment ID
Labels / Fieldsheets	[✓ Y] / N		Volumes	[✓ Y] / N	
Container	[✓ Y] / N		Holding Times	[✓ Y] / N	
Temperature (w/ ice)	[✓ Y] / N / NA		Delivery Location	[✓ Y] / N	

BOTTLE COUNT (#) AND DESCRIPTION and SAMPLE NUMBERS

#	Bottle Description: Sample Numbers
	40 mL clear vial (VOA):
	60 mL clear glass (PHYTO):
	60 mL CWM HDPE:
	125 mL AWM HDPE:
	125 mL CNM HDPE:
	125 mL CWM HDPE:
	125 mL GANM:
	125 mL GANM w/HCl
	250 mL AWM HDPE:
	250 mL CWM HDPE:
	250 mL CWM HDPE (MICRO):
8	250 mL GAWM: 1-4, 7-10
	250 mL GAWM w/ H2SO4:
	300 mL WDO (8 hour HT):
	500 mL AWM HDPE:
	500 mL CWM HDPE:
	500 mL CWM PP (MICRO):
	500 mL HDPE (METALS):
	500 mL HDPE, double-bagged (METALS):
	500 mL Teflon (Hg):
	500 mL Teflon, double-bagged (METALS):
	500 mL GANM / GAWM:
	500 mL Polystyrene Filtration Units (METALS):
	1L AWM HDPE:
	1L CWM HDPE:
	1L CWM PP (MICRO):
	1L GANM:
	1L GCWM:
	1L GAWM w/ H_2SO_4:
	2L CWM HDPE:
	Other:

COMMENTS / NOTIFICATIONS

FIELD PRESERVATION CHECKLIST (Circle and/or check applicable selections)

PRODUCT / Preservation	SM Action	Acceptable?	Corrective Action
BNA / pH 6 - 9 w/ H_2SO_4 or NaOH	√ field sheet for F. pH	Y / N	☐ Notify ORG
CN / pH > 12 w/ NaOH within 15 min	☐ Check pH	Y / N	☐ Deliver to CONV
NO23 pH < 2 w/ H_2SO_4	☐ Check pH	Y / N / NA	☐ Preserve by SM
CR(VI) / TOTCR(VI) / pH 9.3 - 9.7 w/ NaOH w/in 15 min	√ field sheet for pH	Y / N	☐ Deliver to CONV
ICP / HG-CVAA-M / pH < 2 w/ HNO_3	☐ Check pH	Y / N	☐ Preserve By SM
O&G / HEM / PHENOL / pH < 2 w/ H_2SO_4	Check documentation	Y / N	☐ Preserve by SM
PHYTOPLANKTON / Lugols	Visually inspect	Y / N	☐ Deliver to MICRO
TKN / COD pH < 2 w/ H_2SO_4 within 15 min	☐ Check pH	Y / N	☐ Preserve By SM
TOC / pH < 2 w/ HCl (NPDES only)	☐ Check pH	Y / N	☐ Preserve By SM
TOTSULFIDE / pH > 9 w/ NaOH, ZnAc	Check documentation	Y / N	☐ Deliver to CONV
WDO / FIXED	Visually inspect	Y / N	☐ Deliver to CONV
Other:			

ROUTINE SM PRESERVATION CHECKLIST (Circle and/or check applicable selections)

PRODUCT / Preservation	SM Action	Acceptable?	Corrective Action
Chlorinated Pesticides / pH 5 - 9 w/ H_2SO_4 or NaOH	√ field sheet for F. pH	Y / N	☐ Adjust pH
HG-CVAA-L-Teflon (T / D) / pH < 2 w/ ULTRA HCl	☐ Preserve & deliver	NA	NA
ICPMS / HG-CVAA-M (T / D) / pH < 2 w/ ULTRA HNO_3	☐ Preserve & deliver	NA	NA
TOC / pH < 2 w/ HCl	☐ Preserve & deliver	NA	NA
Other:			
Other:			

INTERFERENCE TEST (Circle and/or check applicable selections)

Product / Interference (SM Action)	Positive Test?	Treated	Corrective Action
BNA / Chlorine (Check documentation)	Y / N / not tested	Y / N	☐ Deliver to ORG
CN / Chlorine (Check documentation)	Y / N / not tested	Y / N	☐ Deliver to CONV
CN / Sulfide (Check field sheet for DF)	Y / N / not tested	Y / N	☐ Deliver to CONV
VOA / Chlorine (Check documentaion)	Y / N / not tested	Y / N	☐ Deliver to ORG
Other:			

HEADSPACE CHECK

PRODUCT (SM Action)	Check For	Acceptable?	Corrective Action
MICRO (Visually inspect)	Headspace (@ 1")	Y / N	☐ Notify MICRO
TOTSULFIDE (Visually inspect)	Headspace (< 1")	Y / N	☐ Notify CONV
VOA (Visually inspect)	Zero headspace	Y / N	☐ Notify ORG
WDO (Visually inspect)	Zero headspace	Y / N	☐ Notify CONV
Other:			

FIELD FILTRATION CHECKLIST (Circle and/or check applicable selections)

Product (SM Action)	Field Filtered	Field Blank	Corrective Action
ORTHOP (Check Field Sheet)	Y (within 15 min y / n) / N	Y / N	☐ Deliver to CONV
NO2 / NO3 / NO23 / NH3 / SI (Documentation)	Y (within 1 day y / n) / N	Y / N / NA	☐ Deliver to CONV
Dissolved Metals (Check Field Sheet)	Y (within 15 min y / n) / N	Y / N / NA	☐ Deliver to METALS
DOC (Deliver / Notify Unit)	Y (within 15 min or 1 day) / N	Y / N / NA	☐ Deliver to CONV
DCOD / CR(VI) (Deliver / Notify Unit)	Y (within 15 min y / n) / N	Y / N / NA	☐ Deliver to CONV
Other:			
Other:			

CC: ☐ AQUATOX, ☐ CONV, ☐ METALS, ☐ MICRO, ☐ ORG, ☐ ____________

NOTES

1. Deliver dissolved Hg-CVAF samples to METALS for filtration.
2. Deliver double-bagged metals samples to METALS for preservation.
3. Do not test pH for preserved BNA and TOTSULFIDE samples.
4. Deliver pH, WDO, and all MICRO samples ASAP to appropriate section for immediate processing.
5. Enter " Time Span" for composite samples during sample login.
6. Split algae sample into 60 mL clear glass if PHYTOQUAL is requested.

SM Signature: ____________

Date / Time Completed: NOV 22 '23 09:28

roject: 421520-200

LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by	*Date*	*Time*
Received by	*Date*	*Time*
Sample Numbers		*[All,*

ample Number	**L82371-3**	**L82371-4**	**L82371-9**
C Link			
ocator	**SCTF-TB25-IN**	**SCTF-TB25-OUT**	**SCTF-TB25-IN**
hort Loc Desc			
ocator Desc	SCTF-TB2.5 upstream sampling station	SCTF-TB2.5 downstream sampling station	SCTF-TB2.5 upstream sampling station
ite	I-5TAPE	I-5TAPE	I-5TAPE
omments	First grab	First grab	second grab
tart Date/Time	11-21-2023 08:30 PM	11-21-2023 08:30 PM	11-21-2023 09:29 PM
nd Date/Time			
ime Span			
ample Depth			
ept, Matrix, Prod ont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)

roject: 421520-200 **LPM: Meghan Elkey**

ample Number	**L82371-10**		
C Link			
ocator	**SCTF-TB25-OUT**		
hort Loc Desc			
ocator Desc	SCTF-TB2.5 downstream sampling station		
ite	I-5TAPE		
omments	First grab		
tart Date/Time	11-21-2023 09:29 PM		
nd Date/Time			
ime Span			
ample Depth			
ept, Matrix, Prod Cont ID)	4 LG 6PPDQ (43)		

LIQUID SAMPLE RECEIPT RECORD

Login Number(s): 82371-	**Project No.:** 421520-200	**Sub-Contracting:** Y / [✓ N]	**List Product(s):**
Collect Date(s): 11/21/23	**Receive Date:** 11/22/23	**Changes:** Y / [✓ N]	**List Parameter(s):**

SAMPLE RECEIPT CONDITIONS

CONDITION	Acceptable?	Comment ID	CONDITION	Acceptable?	Comment ID
Labels / Fieldsheets	[✓ Y] / N		Volumes	[✓ Y] / N	
Container	[✓ Y] / N		Holding Times	[✓ Y] / N	
Temperature (w/ ice)	[✓ Y] / N / NA		Delivery Location	[✓ Y] / N	

BOTTLE COUNT (#) AND DESCRIPTION and SAMPLE NUMBERS

#	Bottle Description: Sample Numbers
	40 mL clear vial (VOA):
	60 mL clear glass (PHYTO):
	60 mL CWM HDPE:
	125 mL AWM HDPE:
	125 mL CNM HDPE:
	125 mL CWM HDPE:
	125 mL GANM:
	125 mL GANM w/HCl
	250 mL AWM HDPE:
	250 mL CWM HDPE:
	250 mL CWM HDPE (MICRO):
4	250 mL GAWM: 3, 4, 9, 10
	250 mL GAWM w/ H2SO4:
	300 mL WDO (8 hour HT):
	500 mL AWM HDPE:
	500 mL CWM HDPE:
	500 mL CWM PP (MICRO):
	500 mL HDPE (METALS):
	500 mL HDPE, double-bagged (METALS):
	500 mL Teflon (Hg):
	500 mL Teflon, double-bagged (METALS):
	500 mL GANM / GAWM:
	500 mL Polystyrene Filtration Units (METALS):
	1L AWM HDPE:
	1L CWM HDPE:
	1L CWM PP (MICRO):
	1L GANM:
	1L GCWM:
	1L GAWM w/ H_2SO_4:
	2L CWM HDPE:
	Other:

COMMENTS / NOTIFICATIONS

FIELD PRESERVATION CHECKLIST (Circle and/or check applicable selections)

PRODUCT / Preservation	SM Action	Acceptable?	Corrective Action
BNA / pH 6 - 9 w/ H_2SO_4 or NaOH	√ field sheet for F. pH	Y / N	☐ Notify ORG
CN / pH > 12 w/ NaOH within 15 min	☐ Check pH	Y / N	☐ Deliver to CONV
NO23 pH < 2 w/ H_2SO_4	☐ Check pH	Y / N / NA	☐ Preserve by SM
CR(VI) / TOTCR(VI) / pH 9.3 - 9.7 w/ NaOH w/in 15 min	√ field sheet for pH	Y / N	☐ Deliver to CONV
ICP / HG-CVAA-M / pH < 2 w/ HNO_3	☐ Check pH	Y / N	☐ Preserve By SM
O&G / HEM / PHENOL / pH < 2 w/ H_2SO_4	Check documentation	Y / N	☐ Preserve by SM
PHYTOPLANKTON / Lugols	Visually inspect	Y / N	☐ Deliver to MICRO
TKN / COD pH < 2 w/ H_2SO_4 within 15 min	☐ Check pH	Y / N	☐ Preserve By SM
TOC / pH < 2 w/ HCl (NPDES only)	☐ Check pH	Y / N	☐ Preserve By SM
TOTSULFIDE / pH > 9 w/ NaOH, ZnAc	Check documentation	Y / N	☐ Deliver to CONV
WDO / FIXED	Visually inspect	Y / N	☐ Deliver to CONV
Other:			

ROUTINE SM PRESERVATION CHECKLIST (Circle and/or check applicable selections)

PRODUCT / Preservation	SM Action	Acceptable?	Corrective Action
Chlorinated Pesticides / pH 5 - 9 w/ H_2SO_4 or NaOH	√ field sheet for F. pH	Y / N	☐ Adjust pH
HG-CVAA-L-Teflon (T / D) / pH < 2 w/ ULTRA HCl	☐ Preserve & deliver	NA	NA
ICPMS / HG-CVAA-M (T / D) / pH < 2 w/ ULTRA HNO_3	☐ Preserve & deliver	NA	NA
TOC / pH < 2 w/ HCl	☐ Preserve & deliver	NA	NA
Other:			
Other:			

INTERFERENCE TEST (Circle and/or check applicable selections)

Product / Interference (SM Action)	Positive Test?	Treated	Corrective Action
BNA / Chlorine (Check documentation)	Y / N / not tested	Y / N	☐ Deliver to ORG
CN / Chlorine (Check documentation)	Y / N / not tested	Y / N	☐ Deliver to CONV
CN / Sulfide (Check field sheet for DF)	Y / N / not tested	Y / N	☐ Deliver to CONV
VOA / Chlorine (Check documentaion)	Y / N / not tested	Y / N	☐ Deliver to ORG
Other:			

HEADSPACE CHECK

PRODUCT (SM Action)	Check For	Acceptable?	Corrective Action
MICRO (Visually inspect)	Headspace (@ 1")	Y / N	☐ Notify MICRO
TOTSULFIDE (Visually inspect)	Headspace (< 1")	Y / N	☐ Notify CONV
VOA (Visually inspect)	Zero headspace	Y / N	☐ Notify ORG
WDO (Visually inspect)	Zero headspace	Y / N	☐ Notify CONV
Other:			

FIELD FILTRATION CHECKLIST (Circle and/or check applicable selections)

Product (SM Action)	Field Filtered	Field Blank	Corrective Action
ORTHOP (Check Field Sheet)	Y (within 15 min y / n) / N	Y / N	☐ Deliver to CONV
NO2 / NO3 / NO23 / NH3 / SI (Documentation)	Y (within 1 day y / n) / N	Y / N / NA	☐ Deliver to CONV
Dissolved Metals (Check Field Sheet)	Y (within 15 min y / n) / N	Y / N / NA	☐ Deliver to METALS
DOC (Deliver / Notify Unit)	Y (within 15 min or 1 day) / N	Y / N / NA	☐ Deliver to CONV
DCOD / CR(VI) (Deliver / Notify Unit)	Y (within 15 min y / n) / N	Y / N / NA	☐ Deliver to CONV
Other:			
Other:			

CC: ☐ AQUATOX, ☐ CONV, ☐ METALS, ☐ MICRO, ☐ ORG, ☐ ____________

NOTES

1. Deliver dissolved Hg-CVAF samples to METALS for filtration.
2. Deliver double-bagged metals samples to METALS for preservation.
3. Do not test pH for preserved BNA and TOTSULFIDE samples.
4. Deliver pH, WDO, and all MICRO samples ASAP to appropriate section for immediate processing.
5. Enter " Time Span" for composite samples during sample login.
6. Split algae sample into 60 mL clear glass if PHYTOQUAL is requested.

SM Signature: ____________

Date / Time Completed: NOV 22 '23 09:29

King County

Department of Natural Resources and Parks
Water and Land Resources Division

Environmental Laboratory

LAB-NR0100
322 West Ewing Street
Seattle, WA 98119-1507
206-477-7200 Fax 206-684-2395
TTY Relay: 711

Date: December 29, 2023

To: Madison Bristol, Washington State Department of Ecology

Clark, Herrera Environmental Consultants

From: Meghan Elkey, King County Environmental Laboratory

Subject: BMP Stormwater Characterization – Herrera Add-on 6PPDQ Samples Data Summary, December 19, 2023

Stormwater samples were collected by Herrera Environmental Consultants on December 19, 2023. The samples were delivered to the King County Environmental Laboratory on the date of sample collection. The samples were assigned lab ID numbers L82954-1 to -8 and -17. The following QC summary is included for your information.

All samples received were analyzed as requested. The samples were analyzed in the Aquatic Toxicology unit of the laboratory. The data have passed all QA/QC checks for accuracy and completeness and may be used without qualification.

Please contact me if you have any questions about this report or need additional information.

Sincerely,

Meghan Elkey

Meghan Elkey
Laboratory Project Manager/Water Quality Planner III
King County Environmental Lab
(206)477-7154 or meghan.elkey@kingcounty.gov

King County Environmental Lab Analytical Report

	Project: 421520-200 Locator: SCTF-TB1-IN Descrip: SCTF-TB1 upstream Sample: L82954-1 Matrix: LG STORM WTR ColDate: 12/19/23 11:55 **WET Weight Basis**					Project: 421520-200 Locator: SCTF-TB1-OUT Descrip: SCTF-TB1 downstrea Sample: L82954-2 Matrix: LG STORM WTR ColDate: 12/19/23 11:56 **WET Weight Basis**					Project: 421520-200 Locator: SCTF-TB1-IN Descrip: SCTF-TB1 upstream Sample: L82954-3 Matrix: LG STORM WTR ColDate: 12/19/23 13:15 **WET Weight Basis**				
Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.447		0.002	0.01	ug/L	0.0092	<RDL	0.002	0.01	ug/L	1.37		0.002	0.01	ug/L

King County Environmental Lab Analytical Report

	Project: 421520-200 Locator: SCTF-TB1-OUT Descrip: SCTF-TB1 downstrea Sample: L82954-4 Matrix: LG STORM WTR ColDate: 12/19/23 13:16 **WET Weight Basis**					Project: 421520-200 Locator: SCTF-TB2-IN Descrip: SCTF-TB2 upstream Sample: L82954-5 Matrix: LG STORM WTR ColDate: 12/19/23 11:57 **WET Weight Basis**					Project: 421520-200 Locator: SCTF-TB2-OUT Descrip: SCTF-TB2 downstrea Sample: L82954-6 Matrix: LG STORM WTR ColDate: 12/19/23 11:58 **WET Weight Basis**				
Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.0672		0.002	0.01	ug/L	0.447		0.002	0.01	ug/L	0.226		0.002	0.01	ug/L

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200	Project:	421520-200
Locator:	SCTF-TB2-IN	Locator:	SCTF-TB2-OUT	Locator:	FIELDDUP
Descrip:	SCTF-TB2 upstream	Descrip:	SCTF-TB2 downstrea	Descrip:	FIELD DUPLICATE
Sample:	L82954-7	Sample:	L82954-8	Sample:	L82954-17
Matrix:	LG STORM WTR	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
ColDate:	12/19/23 13:16	ColDate:	12/19/23 13:16	ColDate:	12/19/23 13:16
WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	1.41		0.002	0.01	ug/L	0.813		0.002	0.01	ug/L	1.3		0.002	0.01	ug/L

King County Environmental Lab Analytical MATRIX Report

Owner: **SEEDPAK**
Matrix Class: **LIQUID**
User select: **WET Weight Basis**

LOCATOR	PROJECT	SAMPLE	COLLECTED	6ppd-quinone ug/L
SCTF-TB1-IN	421520-200	L82954-1	12/19/2023 11:55	0.447
SCTF-TB1-OUT	421520-200	L82954-2	12/19/2023 11:56	0.0092
SCTF-TB1-IN	421520-200	L82954-3	12/19/2023 13:15	1.37
SCTF-TB1-OUT	421520-200	L82954-4	12/19/2023 13:16	0.0672
SCTF-TB2-IN	421520-200	L82954-5	12/19/2023 11:57	0.447
SCTF-TB2-OUT	421520-200	L82954-6	12/19/2023 11:58	0.226
SCTF-TB2-IN	421520-200	L82954-7	12/19/2023 13:16	1.41
SCTF-TB2-OUT	421520-200	L82954-8	12/19/2023 13:16	0.813
FIELDDUP	421520-200	L82954-17	12/19/2023 13:16	1.3
* Not converted to dry weight basis				

If a parameter/analyte appears twice in the column header, it implies that they were analyzed by two different method codes

WG191820 6PPDQ by LCMS

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	QC Association	Comments
L82954-1	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	12/19/2023 11:55	12/21/2023 7:00	12/21/2023 10:30	WG191820-1,-2,-3,-4,-5,-6	
L82954-2	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	12/19/2023 11:56	12/21/2023 7:00	12/21/2023 10:30	WG191820-1,-2,-3,-4,-5,-6	
L82954-3	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	12/19/2023 13:15	12/21/2023 7:00	12/21/2023 10:30	WG191820-1,-2,-3,-4,-5,-6	
L82954-4	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	12/19/2023 13:16	12/21/2023 7:00	12/21/2023 10:30	WG191820-1,-2,-3,-4,-5,-6	
L82954-5	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	12/19/2023 11:57	12/21/2023 7:00	12/21/2023 10:30	WG191820-1,-2,-3,-4,-5,-6	
L82954-6	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	12/19/2023 11:58	12/21/2023 7:00	12/21/2023 10:30	WG191820-1,-2,-3,-4,-5,-6	
L82954-7	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	12/19/2023 13:16	12/21/2023 7:00	12/21/2023 10:30	WG191820-1,-2,-3,-4,-5,-6	
L82954-8	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	12/19/2023 13:16	12/21/2023 7:00	12/21/2023 10:30	WG191820-1,-2,-3,-4,-5,-6	
L82954-17	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	12/19/2023 13:16	12/21/2023 7:00	12/21/2023 10:30	WG191820-1,-2,-3,-4,-5,-6	
WG191820-1	MB		AQ6PPDQ-LCMS	OTHR WTR		12/21/2023 7:00	12/21/2023 10:30	WG191820-1,-2,-3,-4,-5,-6	
WG191820-2	SB		AQ6PPDQ-LCMS	OTHR WTR		12/21/2023 7:00	12/21/2023 10:30	WG191820-1,-2,-3,-4,-5,-6	WG191820-1
WG191820-3	MS		AQ6PPDQ-LCMS	STORM WTR		12/21/2023 7:00	12/21/2023 10:30	WG191820-1,-2,-3,-4,-5,-6	L82954-2
WG191820-4	MSD		AQ6PPDQ-LCMS	STORM WTR		12/21/2023 7:00	12/21/2023 10:30	WG191820-1,-2,-3,-4,-5,-6	WG191820-3 L82954-2
WG191820-5	LD		AQ6PPDQ-LCMS	STORM WTR		12/21/2023 7:00	12/21/2023 10:30	WG191820-1,-2,-3,-4,-5,-6	L82954-8
WG191820-6	CCC		AQ6PPDQ-LCMS	OTHR WTR		12/21/2023 7:00	12/21/2023 10:30	WG191820-1,-2,-3,-4,-5,-6	MED

Workgroup: WG191820 6PPDQ by LCMS

MB:WG191820-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
6ppd-quinone	0.002	0.01	ug/L		<MDL

SB:WG191820-2 MB:WG191820-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	True Value	SB Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	<MDL	0.2	0.198	99		50--150

MSD:WG191820-4 MS:WG191820-3 L82954-2 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	True Value	MS Value	% Rec.	Qual	Lab Limit	True Value	MSD Value	% Rec.	Qual	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	0.0092	0.2	0.204	97		50--150	0.2	0.202	96		1		0--45

LD:WG191820-5 L82954-8 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	0.813	0.835	3		0--40

CCC:WG191820-6 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Continuing Calibration Check)

Parameter	MDL	RDL	Units	True Value	CCC Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.01	0.05	ug/L	1	0.892	89		80--120

Surrogate:	**d5-6PPDQ**
(Lab Limits)	**20--200**
L82954-1	65
L82954-2	66
L82954-3	58
L82954-4	65
L82954-5	62
L82954-6	63
L82954-7	55
L82954-8	57
L82954-17	51
WG191820-1	70
WG191820-2	68
WG191820-3	62
WG191820-4	63
WG191820-5	58
WG191820-6	74

Login: P82954
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On TAPE

FSU TC: ____________
LPM: Meghan Elkey

CHAIN OF CUSTODY

signed on last page

Relinquished by Scott Shumway	*Date* 12/19/23	*Time* 15:40
Received by	*Date*	*Time*
Sample Numbers [All]		

Sample Number	**P82954-1**	**P82954-2**	
QC Link			
Locator	**SCTF-TB1-IN**	**SCTF-TB1-OUT**	
Short Loc Desc	outfall of energy dis. tub	outfall of outlet weir	
Locator Desc	SCTF-TB1 upstream sampling station	SCTF-TB1 downstream sampling station	
Site	I-5TAPE	I-5TAPE	
Comments	First grab	First grab	
Start Date/Time	12/19/23 11:55	12/19/23 11:56	
End Date/Time	N/A	N/A	
Time Span	0	0	
Sample Depth	N/A	N/A	
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	

Login: P82954
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On TAPE

FSU TC: ____________________
LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by Scott Shumway	*Date* 12/19/23	*Time* 13:40
Received by	*Date*	*Time*
Sample Numbers		*[All]*

Sample Number	**P82954-3**	**P82954-4**	
QC Link			
Locator	**SCTF-TB1-IN**	**SCTF-TB1-OUT**	
Short Loc Desc	outfall of energy dis. tub	outfall of outlet weir	
Locator Desc	SCTF-TB1 upstream sampling station	SCTF-TB1 downstream sampling station	
Site	I-5TAPE	I-5TAPE	
Comments	Second grab	Second grab	
Start Date/Time	12/19/23 13:15	12/19/23 13:16	
End Date/Time	N/A	N/A	
Time Span	0	0	
Sample Depth	N/A	N/A	
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	

Login: P82954
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On TAPE

FSU TC: ____________
LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by Scott Shumway	***Date*** 12/19/23	***Time*** 15:40
Received by	***Date***	***Time***
Sample Numbers		***[All]***

Sample Number	**P82954-5**	**P82954-6**	
QC Link			
Locator	**SCTF-TB2-IN**	**SCTF-TB2-OUT**	
Short Loc Desc	inlet energy dispersion tab	outfall of outlet weir	
Locator Desc	SCTF-TB2 upstream sampling station	SCTF-TB2 downstream sampling station	
Site	I-5TAPE	I-5TAPE	
Comments	First grab	First grab	
Start Date/Time	12/19/23 11:57	12/19/23 11:58	
End Date/Time	N/A	N/A	
Time Span	0	0	
Sample Depth	N/A	N/A	
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	

Login: P82954
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On TAPE

FSU TC: ____________
LPM: Meghan Elkey

CHAIN OF COUSTODY

Relinquished by Scott Shumway	***Date*** 12/19/23	***Time*** 15:40
Received by	***Date***	***Time***
Sample Numbers		***[All]***

Sample Number	**P82954-7**	**P82954-8**	
QC Link			
Locator	**SCTF-TB2-IN**	**SCTF-TB2-OUT**	
Short Loc Desc	outfall into energy dis. tub	outfall of outlet weir	
Locator Desc	SCTF-TB2 upstream sampling station	SCTF-TB2 downstream sampling station	
Site	I-5TAPE	I-5TAPE	
Comments	Second grab	Second grab	
Start Date/Time	12/19/23 13:16	12/19/23 13:16	
End Date/Time	N/A	N/A	
Time Span	0	0	
Sample Depth	N/A	N/A	
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	

Login: P82954
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On TAPE

FSU TC: ____________________
LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by Scott Shumway	*Date* 12/19/23	*Time* 15:40
Received by	*Date* 12-19-23	*Time* 15:40
Sample Numbers		*[All]*

Sample Number	**P82954-17**		
QC Link			
Locator	**FIELDDUP**		
Short Loc Desc	TB2-IN upstream station		
Locator Desc	FIELD DUPLICATE		
Site	FLDQC		
Comments	duplicate of TB2-IN second grab		
Start Date/Time	12/19/23 13:16		
End Date/Time	N/A		
Time Span	0		
Sample Depth	N/A		
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)		

LIQUID SAMPLE RECEIPT RECORD

Login Number(s): 82954-(1-8,17)	**Project No.:** 421520-200	**Sub-Contracting:** Y / [✓ N]	**List Product(s):**
Collect Date(s): 12-19-23	**Receive Date:** 12-19-23	**Changes:** Y / [✓ N]	**List Parameter(s):**

SAMPLE RECEIPT CONDITIONS

CONDITION	Acceptable?	Comment ID	CONDITION	Acceptable?	Comment ID
Labels / Fieldsheets	[✓ Y] / N		Volumes	[✓ Y] / N	
Container	[✓ Y] / N		Holding Times	[✓ Y] / N	
Temperature (w/ ice)	[✓ Y] / N / NA		Delivery Location	[✓ Y] / N	

BOTTLE COUNT (#) AND DESCRIPTION and SAMPLE NUMBERS

#	Bottle Description: Sample Numbers
	40 mL clear vial (VOA):
	60 mL clear glass (PHYTO):
	60 mL CWM HDPE:
	125 mL AWM HDPE:
	125 mL CNM HDPE:
	125 mL CWM HDPE:
	125 mL GANM:
	125 mL GANM w/HCl
	250 mL AWM HDPE:
	250 mL CWM HDPE:
	250 mL CWM HDPE (MICRO):
9	250 mL GAWM: 1-8,17
	250 mL GAWM w/ H2SO4:
	300 mL WDO (8 hour HT):
	500 mL AWM HDPE:
	500 mL CWM HDPE:
	500 mL CWM PP (MICRO):
	500 mL HDPE (METALS):
	500 mL HDPE, double-bagged (METALS):
	500 mL Teflon (Hg):
	500 mL Teflon, double-bagged (METALS):
	500 mL GANM / GAWM:
	500 mL Polystyrene Filtration Units (METALS):
	1L AWM HDPE:
	1L CWM HDPE:
	1L CWM PP (MICRO):
	1L GANM:
	1L GCWM:
	1L GAWM w/ H_2SO_4:
	2L CWM HDPE:
	Other:

COMMENTS / NOTIFICATIONS

FIELD PRESERVATION CHECKLIST (Circle and/or check applicable selections)

PRODUCT / Preservation	SM Action	Acceptable?	Corrective Action
BNA / pH 6 - 9 w/ H_2SO_4 or NaOH	√ field sheet for F. pH	Y / N	☐ Notify ORG
CN / pH > 12 w/ NaOH within 15 min	☐ Check pH	Y / N	☐ Deliver to CONV
NO23 pH < 2 w/ H_2SO_4	☐ Check pH	Y / N / NA	☐ Preserve by SM
CR(VI) / TOTCR(VI) / pH 9.3 - 9.7 w/ NaOH w/in 15 min	√ field sheet for pH	Y / N	☐ Deliver to CONV
ICP / HG-CVAA-M / pH < 2 w/ HNO_3	☐ Check pH	Y / N	☐ Preserve By SM
O&G / HEM / PHENOL / pH < 2 w/ H_2SO_4	Check documentation	Y / N	☐ Preserve by SM
PHYTOPLANKTON / Lugols	Visually inspect	Y / N	☐ Deliver to MICRO
TKN / COD pH < 2 w/ H_2SO_4 within 15 min	☐ Check pH	Y / N	☐ Preserve By SM
TOC / pH < 2 w/ HCl (NPDES only)	☐ Check pH	Y / N	☐ Preserve By SM
TOTSULFIDE / pH > 9 w/ NaOH, ZnAc	Check documentation	Y / N	☐ Deliver to CONV
WDO / FIXED	Visually inspect	Y / N	☐ Deliver to CONV
Other:			

ROUTINE SM PRESERVATION CHECKLIST (Circle and/or check applicable selections)

PRODUCT / Preservation	SM Action	Acceptable?	Corrective Action
Chlorinated Pesticides / pH 5 - 9 w/ H_2SO_4 or NaOH	√ field sheet for F. pH	Y / N	☐ Adjust pH
HG-CVAA-L-Teflon (T / D) / pH < 2 w/ ULTRA HCl	☐ Preserve & deliver	NA	NA
ICPMS / HG-CVAA-M (T / D) / pH < 2 w/ ULTRA HNO_3	☐ Preserve & deliver	NA	NA
TOC / pH < 2 w/ HCl	☐ Preserve & deliver	NA	NA
Other:			
Other:			

INTERFERENCE TEST (Circle and/or check applicable selections)

Product / Interference (SM Action)	Positive Test?	Treated	Corrective Action
BNA / Chlorine (Check documentation)	Y / N / not tested	Y / N	☐ Deliver to ORG
CN / Chlorine (Check documentation)	Y / N / not tested	Y / N	☐ Deliver to CONV
CN / Sulfide (Check field sheet for DF)	Y / N / not tested	Y / N	☐ Deliver to CONV
VOA / Chlorine (Check documentaion)	Y / N / not tested	Y / N	☐ Deliver to ORG
Other:			

HEADSPACE CHECK

PRODUCT (SM Action)	Check For	Acceptable?	Corrective Action
MICRO (Visually inspect)	Headspace (@ 1")	Y / N	☐ Notify MICRO
TOTSULFIDE (Visually inspect)	Headspace (< 1")	Y / N	☐ Notify CONV
VOA (Visually inspect)	Zero headspace	Y / N	☐ Notify ORG
WDO (Visually inspect)	Zero headspace	Y / N	☐ Notify CONV
Other:			

FIELD FILTRATION CHECKLIST (Circle and/or check applicable selections)

Product (SM Action)	Field Filtered	Field Blank	Corrective Action
ORTHOP (Check Field Sheet)	Y (within 15 min y / n) / N	Y / N	☐ Deliver to CONV
NO2 / NO3 / NO23 / NH3 / SI (Documentation)	Y (within 1 day y / n) / N	Y / N / NA	☐ Deliver to CONV
Dissolved Metals (Check Field Sheet)	Y (within 15 min y / n) / N	Y / N / NA	☐ Deliver to METALS
DOC (Deliver / Notify Unit)	Y (within 15 min or 1 day) / N	Y / N / NA	☐ Deliver to CONV
DCOD / CR(VI) (Deliver / Notify Unit)	Y (within 15 min y / n) / N	Y / N / NA	☐ Deliver to CONV
Other:			
Other:			

CC: ☐ AQUATOX, ☐ CONV, ☐ METALS, ☐ MICRO, ☐ ORG, ☐ ____________

NOTES

1. Deliver dissolved Hg-CVAF samples to METALS for filtration.
2. Deliver double-bagged metals samples to METALS for preservation.
3. Do not test pH for preserved BNA and TOTSULFIDE samples.
4. Deliver pH, WDO, and all MICRO samples ASAP to appropriate section for immediate processing.
5. Enter " Time Spen" for composite samples during sample login.
6. Split algae sample into 60 mL clear glass if PHYTOQUAL is requested.

DEC 19 '23 15:05

SM Signature: ____________

Date / Time Completed: ____________

King County

Department of Natural Resources and Parks
Water and Land Resources Division

Environmental Laboratory

LAB-NR0100
322 West Ewing Street
Seattle, WA 98119-1507
206-477-7200 Fax 206-684-2395
TTY Relay: 711

Date: January 16, 2024

To: Madison Bristol, Washington State Department of Ecology

Clark, Herrera Environmental Consultants

From: Meghan Elkey, King County Environmental Laboratory

Subject: BMP Stormwater Characterization – Herrera Add-on 6PPDQ Samples Data Summary, January 8, 2024

Stormwater samples were collected by Herrera Environmental Consultants on January 8, 2024. The samples were delivered to the King County Environmental Laboratory on January 9, 2024. The samples were assigned lab ID numbers L82954-9 to -14 and L82955-5 to -8 and -17. The following QC summary is included for your information.

All samples received were analyzed as requested. The samples were analyzed in the Aquatic Toxicology unit of the laboratory. The data have passed all QA/QC checks for accuracy and completeness and may be used without qualification.

Please contact me if you have any questions about this report or need additional information.

Sincerely,

Meghan Elkey

Meghan Elkey
Laboratory Project Manager/Water Quality Planner III
King County Environmental Lab
(206)477-7154 or meghan.elkey@kingcounty.gov

King County Environmental Lab Analytical Report

Project: 421520-200
Locator: SCTF-TB25-IN
Descrip: SCTF-TB2.5 upstrea
Sample: L82954-9
Matrix: LG STORM WTR
ColDate: 1/8/24 21:28
WET Weight Basis

Project: 421520-200
Locator: SCTF-TB25-OUT
Descrip: SCTF-TB2.5 downstr
Sample: L82954-10
Matrix: LG STORM WTR
ColDate: 1/8/24 21:29
WET Weight Basis

Project: 421520-200
Locator: SCTF-TB25-IN
Descrip: SCTF-TB2.5 upstrea
Sample: L82954-11
Matrix: LG STORM WTR
ColDate: 1/8/24 22:32
WET Weight Basis

Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.428		0.002	0.01	ug/L	0.35		0.002	0.01	ug/L	0.902		0.002	0.01	ug/L

King County Environmental Lab Analytical Report

Project: 421520-200
Locator: SCTF-TB25-OUT
Descrip: SCTF-TB2.5 downstr
Sample: L82954-12
Matrix: LG STORM WTR
ColDate: 1/8/24 22:32
WET Weight Basis

Project: 421520-200
Locator: SCTF-TB4-IN
Descrip: SCTF-TB4 upstream
Sample: L82954-13
Matrix: LG STORM WTR
ColDate: 1/8/24 21:35
WET Weight Basis

Project: 421520-200
Locator: SCTF-TB4-OUT
Descrip: SCTF-TB4 downstrea
Sample: L82954-14
Matrix: LG STORM WTR
ColDate: 1/8/24 21:34
WET Weight Basis

Parameters	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.523		0.002	0.01	ug/L	0.58		0.002	0.01	ug/L	0.244		0.002	0.01	ug/L

King County Environmental Lab Analytical Report

Project: 421520-200
Locator: SCTF-TB2-IN
Descrip: SCTF-TB2 upstream
Sample: L82955-5
Matrix: LG STORM WTR
ColDate: 1/8/24 21:31
WET Weight Basis

Project: 421520-200
Locator: SCTF-TB2-OUT
Descrip: SCTF-TB2 downstrea
Sample: L82955-6
Matrix: LG STORM WTR
ColDate: 1/8/24 21:32
WET Weight Basis

Project: 421520-200
Locator: SCTF-TB2-IN
Descrip: SCTF-TB2 upstream
Sample: L82955-7
Matrix: LG STORM WTR
ColDate: 1/8/24 22:34
WET Weight Basis

Parameters	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.505		0.002	0.01	ug/L	0.32		0.002	0.01	ug/L	0.866		0.002	0.01	ug/L

King County Environmental Lab Analytical Report

	Project: 421520-200 Locator: SCTF-TB2-OUT Descrip: SCTF-TB2 downstrea Sample: L82955-8 Matrix: LG STORM WTR ColDate: 1/8/24 22:34 **WET Weight Basis**					Project: 421520-200 Locator: FIELDDUP Descrip: FIELD DUPLICATE Sample: L82955-17 Matrix: LG STORM WTR ColDate: 1/8/24 22:32 **WET Weight Basis**				
Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS										
6ppd-quinone	0.52		0.002	0.01	ug/L	0.887		0.002	0.01	ug/L

King County Environmental Lab Analytical MATRIX Report

Owner: **SEEDPAK**
Matrix Class: **LIQUID**
User select: **WET Weight Basis**

				6ppd-quinone
LOCATOR	**PROJECT**	**SAMPLE**	**COLLECTED**	**ug/L**
SCTF-TB25-IN	421520-200	L82954-9	1/8/2024 21:28	0.428
SCTF-TB25-OUT	421520-200	L82954-10	1/8/2024 21:29	0.35
SCTF-TB25-IN	421520-200	L82954-11	1/8/2024 22:32	0.902
SCTF-TB25-OUT	421520-200	L82954-12	1/8/2024 22:32	0.523
SCTF-TB4-IN	421520-200	L82954-13	1/8/2024 21:35	0.58
SCTF-TB4-OUT	421520-200	L82954-14	1/8/2024 21:34	0.244
SCTF-TB2-IN	421520-200	L82955-5	1/8/2024 21:31	0.505
SCTF-TB2-OUT	421520-200	L82955-6	1/8/2024 21:32	0.32
SCTF-TB2-IN	421520-200	L82955-7	1/8/2024 22:34	0.866
SCTF-TB2-OUT	421520-200	L82955-8	1/8/2024 22:34	0.52
FIELDDUP	421520-200	L82955-17	1/8/2024 22:32	0.887
* Not converted to dry weight basis				

If a parameter/analyte appears twice in the column header, it implies that they were analyzed by two different method codes

WG192078 6PPDQ by LCMS

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	QC Association	Comments
L82954-9	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	1/8/2024 21:28	1/10/2024 7:30	1/10/2024 10:30	WG192078-1,-2,-3,-4,-5,-6	
L82954-10	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	1/8/2024 21:29	1/10/2024 7:30	1/10/2024 10:30	WG192078-1,-2,-3,-4,-5,-6	
L82954-11	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	1/8/2024 22:32	1/10/2024 7:30	1/10/2024 10:30	WG192078-1,-2,-3,-4,-5,-6	
L82954-12	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	1/8/2024 22:32	1/10/2024 7:30	1/10/2024 10:30	WG192078-1,-2,-3,-4,-5,-6	
L82954-13	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	1/8/2024 21:35	1/10/2024 7:30	1/10/2024 10:30	WG192078-1,-2,-3,-4,-5,-6	
L82954-14	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	1/8/2024 21:34	1/10/2024 7:30	1/10/2024 10:30	WG192078-1,-2,-3,-4,-5,-6	
L82954-15	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	1/8/2024 22:30	1/10/2024 7:30	1/10/2024 10:30	WG192078-1,-2,-3,-4,-5,-6	
L82954-16	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	1/8/2024 22:30	1/10/2024 7:30	1/10/2024 10:30	WG192078-1,-2,-3,-4,-5,-6	
L82955-5	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	1/8/2024 21:31	1/10/2024 7:30	1/10/2024 10:30	WG192078-1,-2,-3,-4,-5,-6	
L82955-6	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	1/8/2024 21:32	1/10/2024 7:30	1/10/2024 10:30	WG192078-1,-2,-3,-4,-5,-6	
L82955-7	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	1/8/2024 22:34	1/10/2024 7:30	1/10/2024 10:30	WG192078-1,-2,-3,-4,-5,-6	
L82955-8	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	1/8/2024 22:34	1/10/2024 7:30	1/10/2024 10:30	WG192078-1,-2,-3,-4,-5,-6	
L82955-17	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	1/8/2024 22:32	1/10/2024 7:30	1/10/2024 10:30	WG192078-1,-2,-3,-4,-5,-6	
WG192078-1	MB		AQ6PPDQ-LCMS	OTHR WTR		1/10/2024 7:30	1/10/2024 10:30	WG192078-1,-2,-3,-4,-5,-6	
WG192078-2	SB		AQ6PPDQ-LCMS	OTHR WTR		1/10/2024 7:30	1/10/2024 10:30	WG192078-1,-2,-3,-4,-5,-6	WG192078-1
WG192078-3	MS		AQ6PPDQ-LCMS	STORM WTR		1/10/2024 7:30	1/10/2024 10:30	WG192078-1,-2,-3,-4,-5,-6	L82955-8
WG192078-4	MSD		AQ6PPDQ-LCMS	STORM WTR		1/10/2024 7:30	1/10/2024 10:30	WG192078-1,-2,-3,-4,-5,-6	WG192078-3 L82955-8
WG192078-5	LD		AQ6PPDQ-LCMS	STORM WTR		1/10/2024 7:30	1/10/2024 10:30	WG192078-1,-2,-3,-4,-5,-6	L82955-7
WG192078-6	CCC		AQ6PPDQ-LCMS	OTHR WTR		1/10/2024 7:30	1/10/2024 10:30	WG192078-1,-2,-3,-4,-5,-6	MED

Workgroup: WG192078 6PPDQ by LCMS

MB:WG192078-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
6ppd-quinone	0.002	0.01	ug/L		<MDL

SB:WG192078-2 MB:WG192078-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	True Value	SB Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	<MDL	0.2	0.223	111		50--150

MSD:WG192078-4 MS:WG192078-3 L82955-8 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	True Value	MS Value	% Rec.	Qual	Lab Limit	True Value	MSD Value	% Rec.	Qual	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	0.52	0.2	0.72	100		50--150	0.2	0.68	80		6		0--45

LD:WG192078-5 L82955-7 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	0.866	0.877	1		0--40

CCC:WG192078-6 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Continuing Calibration Check)

Parameter	MDL	RDL	Units	True Value	CCC Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.01	0.05	ug/L	1	1.03	103		80--120

Surrogate:	**d5-6PPDQ**
(Lab Limits)	**20--200**
L82954-9	76
L82954-10	74
L82954-11	73
L82954-12	72
L82954-13	71
L82954-14	76
L82954-15	71
L82954-16	75
L82955-5	67
L82955-6	68
L82955-7	68
L82955-8	56
L82955-17	71
WG192078-1	81
WG192078-2	75
WG192078-3	61
WG192078-4	58
WG192078-5	63
WG192078-6	93

Login: P82954
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On TAPE

FSU TC: ____________
LPM: Meghan Elkey

CHAIN OF CUSTODY

signed on last pages too

Relinquished by Scott Shumway	*Date* 12/19/23	*Time* 15:40
Received by	*Date* 12-19-23	*Time* 1540
Sample Numbers		*[All]*

Sample Number	**P82954-1**	**P82954-2**	
QC Link			
Locator	**SCTF-TB1-IN**	**SCTF-TB1-OUT**	
Short Loc Desc	outfall of energy dis. tub	outfall of outlet weir	
Locator Desc	SCTF-TB1 upstream sampling station	SCTF-TB1 downstream sampling station	
Site	I-5TAPE	I-5TAPE	
Comments	First grab	First grab	
Start Date/Time	12/19/23 11:55	12/19/23 11:56	
End Date/Time	N/A	N/A	
Time Span	0	0	
Sample Depth	N/A	N/A	
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	

Login: P82954
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On TAPE

FSU TC: ____________
LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by Scott Shumway	***Date*** 12/19/23	***Time*** 13:40
Received by	***Date***	***Time***
Sample Numbers		***[All]***

Sample Number	**P82954-3**	**P82954-4**	
QC Link			
Locator	**SCTF-TB1-IN**	**SCTF-TB1-OUT**	
Short Loc Desc	outfall of energy dis. tub	outfall of outlet weir	
Locator Desc	SCTF-TB1 upstream sampling station	SCTF-TB1 downstream sampling station	
Site	I-5TAPE	I-5TAPE	
Comments	Second grab	Second grab	
Start Date/Time	12/19/23 13:15	12/19/23 13:16	
End Date/Time	N/A	N/A	
Time Span	0	0	
Sample Depth	N/A	N/A	
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	

Login: P82954
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On TAPE

FSU TC:
LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by Scott Shumway	*Date* 12/19/23	*Time* 15:40
Received by	*Date*	*Time*
Sample Numbers		*[All]*

Sample Number	**P82954-5**	**P82954-6**	
QC Link			
Locator	**SCTF-TB2-IN**	**SCTF-TB2-OUT**	
Short Loc Desc	inlet energy dispersion tub	outfall of outlet weir	
Locator Desc	SCTF-TB2 upstream sampling station	SCTF-TB2 downstream sampling station	
Site	I-5TAPE	I-5TAPE	
Comments	First grab	First grab	
Start Date/Time	12/19/23 11:57	12/19/23 11:58	
End Date/Time	N/A	N/A	
Time Span	0	0	
Sample Depth	N/A	N/A	
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	

Login: P82954
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On TAPE

FSU TC: ____________
LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by Scott Shumway	*Date* 12/19/23	*Time* 15:40
Received by	*Date*	*Time*
Sample Numbers		*[All]*

Sample Number	**P82954-7**	**P82954-8**	
QC Link			
Locator	**SCTF-TB2-IN**	**SCTF-TB2-OUT**	
Short Loc Desc	outfall into energy dis. tub	outfall of outlet weir	
Locator Desc	SCTF-TB2 upstream sampling station	SCTF-TB2 downstream sampling station	
Site	I-5TAPE	I-5TAPE	
Comments	Second grab	Second grab	
Start Date/Time	12/19/23 13:16	12/19/23 13:16	
End Date/Time	N/A	N/A	
Time Span	0	0	
Sample Depth	N/A	N/A	
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	

Login: P82954
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On TAPE

FSU TC: ____________
LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by Scott Shumway	*Date* 1/9/24	*Time* 12:09
Received by	*Date* 1-9-24	*Time* 1209
Sample Numbers		*[All]*

Sample Number	**P82954-9**	**P82954-10**	
QC Link			
Locator	**SCTF-TB25-IN**	**SCTF-TB25-OUT**	
Short Loc Desc			
Locator Desc	SCTF-TB2.5 upstream sampling station	SCTF-TB2.5 downstream sampling station	
Site	I-5TAPE	I-5TAPE	
Comments	First grab	First grab	
Start Date/Time	1/8/24 21:28	1/8/24 21:2[illegible]9	
End Date/Time	N/A	N/A	
Time Span	0	0	
Sample Depth	N/A	N/A	
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	

Login: P82954
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On TAPE

FSU TC: ____________________
LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by	***Date***	***Time***
Received by	***Date***	***Time***
Sample Numbers		***[All]***

Sample Number	**P82954-11**	**P82954-12**	
QC Link			
Locator	**SCTF-TB25-IN**	**SCTF-TB25-OUT**	
Short Loc Desc			
Locator Desc	SCTF-TB2.5 upstream sampling station	SCTF-TB2.5 downstream sampling station	
Site	I-5TAPE	I-5TAPE	
Comments	Second grab	Second grab	
Start Date/Time	1/8/24 22:32	1/8/24 22:32	
End Date/Time	N/A	N/A	
Time Span	0	0	
Sample Depth	N/A	N/A	
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	

Login: P82954
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On TAPE

FSU TC: ____________
LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by	***Date***	***Time***
Received by	***Date***	***Time***
Sample Numbers		***[All]***

Sample Number	**P82954-13**	**P82954-14**	
QC Link			
Locator	**SCTF-TB4-IN**	**SCTF-TB4-OUT**	
Short Loc Desc			
Locator Desc	SCTF-TB4 upstream sampling location	SCTF-TB4 downstream sampling location	
Site	I-5TAPE	I-5TAPE	
Comments	First grab	First grab	
Start Date/Time	1/8/24 21:35	1/8/24 21:34	
End Date/Time	N/A	N/A	
Time Span	0	0	
Sample Depth	N/A	N/A	
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	

Login: P82954
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On TAPE

FSU TC: ____________________
LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by	***Date***	***Time***
Received by	***Date***	***Time***
Sample Numbers		***[All]***

Sample Number	**P82954-15**	**P82954-16**	
QC Link			
Locator	**SCTF-TB4-IN**	**SCTF-TB4-OUT**	
Short Loc Desc			
Locator Desc	SCTF-TB4 upstream sampling location	SCTF-TB4 downstream sampling location	
Site	I-5TAPE	I-5TAPE	
Comments	Second grab	Second grab	
Start Date/Time	1/8/24 22:30	1/8/24 22:30	
End Date/Time	N/A	N/A	
Time Span	0	0	
Sample Depth	N/A	N/A	
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	

Login: P82954
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On TAPE

FSU TC: ____________________
LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by Scott Shumway	*Date* 12/19/23	*Time* 15:40
Received by	*Date* 12-19-23	*Time* 15:40
Sample Numbers		*[All]*

Sample Number	P82954-17		
QC Link			
Locator	**FIELDDUP**		
Short Loc Desc	TB2-IN upstream station		
Locator Desc	FIELD DUPLICATE		
Site	FLDQC		
Comments	duplicate of TB2-IN second grab		
Start Date/Time	12/19/23 13:16		
End Date/Time	N/A		
Time Span	0		
Sample Depth	N/A		
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)		

LIQUID SAMPLE RECEIPT RECORD

Login Number(s): 82954-(1-8,17)
Project No.: 421520-200
Sub-Contracting: Y / [✓ N]
List Product(s):

Collect Date(s): 12-19-23
Receive Date: 12-19-23
Changes: Y / [✓ N]
List Parameter(s):

SAMPLE RECEIPT CONDITIONS

CONDITION	Acceptable?	Comment ID	CONDITION	Acceptable?	Comment ID
Labels / Fieldsheets	[✓ Y] / N		Volumes	[✓ Y] / N	
Container	[✓ Y] / N		Holding Times	[✓ Y] / N	
Temperature (w/ ice)	[✓ Y] / N / NA		Delivery Location	[✓ Y] / N	

BOTTLE COUNT (#) AND DESCRIPTION and SAMPLE NUMBERS

#	Bottle Description: Sample Numbers
	40 mL clear vial (VOA):
	60 mL clear glass (PHYTO):
	60 mL CWM HDPE:
	125 mL AWM HDPE:
	125 mL CNM HDPE:
	125 mL CWM HDPE:
	125 mL GANM:
	125 mL GANM w/HCl
	250 mL AWM HDPE:
	250 mL CWM HDPE:
	250 mL CWM HDPE (MICRO):
9	250 mL GAWM: 1-8,17
	250 mL GAWM w/ H2SO4:
	300 mL WDO (8 hour HT):
	500 mL AWM HDPE:
	500 mL CWM HDPE:
	500 mL CWM PP (MICRO):
	500 mL HDPE (METALS):
	500 mL HDPE, double-bagged (METALS):
	500 mL Teflon (Hg):
	500 mL Teflon, double-bagged (METALS):
	500 mL GANM / GAWM:
	500 mL Polystyrene Filtration Units (METALS):
	1L AWM HDPE:
	1L CWM HDPE:
	1L CWM PP (MICRO):
	1L GANM:
	1L GCWM:
	1L GAWM w/ H_2SO_4:
	2L CWM HDPE:
	Other:

COMMENTS / NOTIFICATIONS

FIELD PRESERVATION CHECKLIST (Circle and/or check applicable selections)

PRODUCT / Preservation	SM Action	Acceptable?	Corrective Action
BNA / pH 6 - 9 w/ H_2SO_4 or NaOH	√ field sheet for F. pH	Y / N	☐ Notify ORG
CN / pH > 12 w/ NaOH within 15 min	☐ Check pH	Y / N	☐ Deliver to CONV
NO23 pH < 2 w/ H_2SO_4	☐ Check pH	Y / N / NA	☐ Preserve by SM
CR(VI) / TOTCR(VI) / pH 9.3 - 9.7 w/ NaOH w/in 15 min	√ field sheet for pH	Y / N	☐ Deliver to CONV
ICP / HG-CVAA-M / pH < 2 w/ HNO_3	☐ Check pH	Y / N	☐ Preserve By SM
O&G / HEM / PHENOL / pH < 2 w/ H_2SO_4	Check documentation	Y / N	☐ Preserve by SM
PHYTOPLANKTON / Lugols	Visually inspect	Y / N	☐ Deliver to MICRO
TKN / COD pH < 2 w/ H_2SO_4 within 15 min	☐ Check pH	Y / N	☐ Preserve By SM
TOC / pH < 2 w/ HCl (NPDES only)	☐ Check pH	Y / N	☐ Preserve By SM
TOTSULFIDE / pH > 9 w/ NaOH, ZnAc	Check documentation	Y / N	☐ Deliver to CONV
WDO / FIXED	Visually inspect	Y / N	☐ Deliver to CONV
Other:			

ROUTINE SM PRESERVATION CHECKLIST (Circle and/or check applicable selections)

PRODUCT / Preservation	SM Action	Acceptable?	Corrective Action
Chlorinated Pesticides / pH 5 - 9 w/ H_2SO_4 or NaOH	√ field sheet for F. pH	Y / N	☐ Adjust pH
HG-CVAA-L-Teflon (T / D) / pH < 2 w/ ULTRA HCl	☐ Preserve & deliver	NA	NA
ICPMS / HG-CVAA-M (T / D) / pH < 2 w/ ULTRA HNO_3	☐ Preserve & deliver	NA	NA
TOC / pH < 2 w/ HCl	☐ Preserve & deliver	NA	NA
Other:			
Other:			

INTERFERENCE TEST (Circle and/or check applicable selections)

Product / Interference (SM Action)	Positive Test?	Treated	Corrective Action
BNA / Chlorine (Check documentation)	Y / N / not tested	Y / N	☐ Deliver to ORG
CN / Chlorine (Check documentation)	Y / N / not tested	Y / N	☐ Deliver to CONV
CN / Sulfide (Check field sheet for DF)	Y / N / not tested	Y / N	☐ Deliver to CONV
VOA / Chlorine (Check documentaion)	Y / N / not tested	Y / N	☐ Deliver to ORG
Other:			

HEADSPACE CHECK

PRODUCT (SM Action)	Check For	Acceptable?	Corrective Action
MICRO (Visually inspect)	Headspace (@ 1")	Y / N	☐ Notify MICRO
TOTSULFIDE (Visually inspect)	Headspace (< 1")	Y / N	☐ Notify CONV
VOA (Visually inspect)	Zero headspace	Y / N	☐ Notify ORG
WDO (Visually inspect)	Zero headspace	Y / N	☐ Notify CONV
Other:			

FIELD FILTRATION CHECKLIST (Circle and/or check applicable selections)

Product (SM Action)	Field Filtered	Field Blank	Corrective Action
ORTHOP (Check Field Sheet)	Y (within 15 min y / n) / N	Y / N	☐ Deliver to CONV
NO2 / NO3 / NO23 / NH3 / SI (Documentation)	Y (within 1 day y / n) / N	Y / N / NA	☐ Deliver to CONV
Dissolved Metals (Check Field Sheet)	Y (within 15 min y / n) / N	Y / N / NA	☐ Deliver to METALS
DOC (Deliver / Notify Unit)	Y (within 15 min or 1 day) / N	Y / N / NA	☐ Deliver to CONV
DCOD / CR(VI) (Deliver / Notify Unit)	Y (within 15 min y / n) / N	Y / N / NA	☐ Deliver to CONV
Other:			
Other:			

CC: ☐ AQUATOX, ☐ CONV, ☐ METALS, ☐ MICRO, ☐ ORG, ☐ ____________

NOTES

1. Deliver dissolved Hg-CVAF samples to METALS for filtration.
2. Deliver double-bagged metals samples to METALS for preservation.
3. Do not test pH for preserved BNA and TOTSULFIDE samples.
4. Deliver pH, WDO, and all MICRO samples ASAP to appropriate section for immediate processing.
5. Enter " Time Span" for composite samples during sample login.
6. Split algae sample into 60 mL clear glass if PHYTOQUAL is requested.

DEC 19 '23 15:25

SM Signature: ____________

Date / Time Completed: ____________

LIQUID SAMPLE RECEIPT RECORD

Login Number(s): 82954-(9-16)
Project No.: 421520-200
Sub-Contracting: Y / [✓ N]
List Product(s):
Collect Date(s): 1-8-24
Receive Date: 1-9-24
Changes: Y / [✓ N]
List Parameter(s):

SAMPLE RECEIPT CONDITIONS

CONDITION	Acceptable?	Comment ID	CONDITION	Acceptable?	Comment ID
Labels / Fieldsheets	[✓ Y] / N		Volumes	[✓ Y] / N	
Container	[✓ Y] / N		Holding Times	[✓ Y] / N	
Temperature (w/ ice)	[✓ Y] / N / NA		Delivery Location	[✓ Y] / N	

BOTTLE COUNT (#) AND DESCRIPTION and SAMPLE NUMBERS

#	Bottle Description: Sample Numbers
	40 mL clear vial (VOA):
	60 mL clear glass (PHYTO):
	60 mL CWM HDPE:
	125 mL AWM HDPE:
	125 mL CNM HDPE:
	125 mL CWM HDPE:
	125 mL GANM:
	125 mL GANM w/HCl
	250 mL AWM HDPE:
	250 mL CWM HDPE:
	250 mL CWM HDPE (MICRO):
8	250 mL GAWM: 9-16
	250 mL GAWM w/ H2SO4:
	300 mL WDO (8 hour HT):
	500 mL AWM HDPE:
	500 mL CWM HDPE:
	500 mL CWM PP (MICRO):
	500 mL HDPE (METALS):
	500 mL HDPE, double-bagged (METALS):
	500 mL Teflon (Hg):
	500 mL Teflon, double-bagged (METALS):
	500 mL GANM / GAWM:
	500 mL Polystyrene Filtration Units (METALS):
	1L AWM HDPE:
	1L CWM HDPE:
	1L CWM PP (MICRO):
	1L GANM:
	1L GCWM:
	1L GAWM w/ H_2SO_4:
	2L CWM HDPE:
	Other:

COMMENTS / NOTIFICATIONS

FIELD PRESERVATION CHECKLIST (Circle and/or check applicable selections)

PRODUCT / Preservation	SM Action	Acceptable?	Corrective Action
BNA / pH 6 - 9 w/ H_2SO_4 or NaOH	√ field sheet for F. pH	Y / N	☐ Notify ORG
CN / pH > 12 w/ NaOH within 15 min	☐ Check pH	Y / N	☐ Deliver to CONV
NO23 pH < 2 w/ H_2SO_4	☐ Check pH	Y / N / NA	☐ Preserve by SM
CR(VI) / TOTCR(VI) / pH 9.3 - 9.7 w/ NaOH w/in 15 min	√ field sheet for pH	Y / N	☐ Deliver to CONV
ICP / HG-CVAA-M / pH < 2 w/ HNO_3	☐ Check pH	Y / N	☐ Preserve By SM
O&G / HEM / PHENOL / pH < 2 w/ H_2SO_4	Check documentation	Y / N	☐ Preserve by SM
PHYTOPLANKTON / Lugols	Visually inspect	Y / N	☐ Deliver to MICRO
TKN / COD pH < 2 w/ H_2SO_4 within 15 min	☐ Check pH	Y / N	☐ Preserve By SM
TOC / pH < 2 w/ HCl (NPDES only)	☐ Check pH	Y / N	☐ Preserve By SM
TOTSULFIDE / pH > 9 w/ NaOH, ZnAc	Check documentation	Y / N	☐ Deliver to CONV
WDO / FIXED	Visually inspect	Y / N	☐ Deliver to CONV
Other:			

ROUTINE SM PRESERVATION CHECKLIST (Circle and/or check applicable selections)

PRODUCT / Preservation	SM Action	Acceptable?	Corrective Action
Chlorinated Pesticides / pH 5 - 9 w/ H_2SO_4 or NaOH	√ field sheet for F. pH	Y / N	☐ Adjust pH
HG-CVAA-L-Teflon (T / D) / pH < 2 w/ ULTRA HCl	☐ Preserve & deliver	NA	NA
ICPMS / HG-CVAA-M (T / D) / pH < 2 w/ ULTRA HNO_3	☐ Preserve & deliver	NA	NA
TOC / pH < 2 w/ HCl	☐ Preserve & deliver	NA	NA
Other:			
Other:			

INTERFERENCE TEST (Circle and/or check applicable selections)

Product / Interference (SM Action)	Positive Test?	Treated	Corrective Action
BNA / Chlorine (Check documentation)	Y / N / not tested	Y / N	☐ Deliver to ORG
CN / Chlorine (Check documentation)	Y / N / not tested	Y / N	☐ Deliver to CONV
CN / Sulfide (Check field sheet for DF)	Y / N / not tested	Y / N	☐ Deliver to CONV
VOA / Chlorine (Check documentaion)	Y / N / not tested	Y / N	☐ Deliver to ORG
Other:			

HEADSPACE CHECK

PRODUCT (SM Action)	Check For	Acceptable?	Corrective Action
MICRO (Visually inspect)	Headspace (@ 1")	Y / N	☐ Notify MICRO
TOTSULFIDE (Visually inspect)	Headspace (< 1")	Y / N	☐ Notify CONV
VOA (Visually inspect)	Zero headspace	Y / N	☐ Notify ORG
WDO (Visually inspect)	Zero headspace	Y / N	☐ Notify CONV
Other:			

FIELD FILTRATION CHECKLIST (Circle and/or check applicable selections)

Product (SM Action)	Field Filtered	Field Blank	Corrective Action
ORTHOP (Check Field Sheet)	Y (within 15 min y / n) / N	Y / N	☐ Deliver to CONV
NO2 / NO3 / NO23 / NH3 / SI (Documentation)	Y (within 1 day y / n) / N	Y / N / NA	☐ Deliver to CONV
Dissolved Metals (Check Field Sheet)	Y (within 15 min y / n) / N	Y / N / NA	☐ Deliver to METALS
DOC (Deliver / Notify Unit)	Y (within 15 min or 1 day) / N	Y / N / NA	☐ Deliver to CONV
DCOD / CR(VI) (Deliver / Notify Unit)	Y (within 15 min y / n) / N	Y / N / NA	☐ Deliver to CONV
Other:			
Other:			

CC: ☐ AQUATOX, ☐ CONV, ☐ METALS, ☐ MICRO, ☐ ORG, ☐ ____________

NOTES

1. Deliver dissolved Hg-CVAF samples to METALS for filtration.
2. Deliver double-bagged metals samples to METALS for preservation.
3. Do not test pH for preserved BNA and TOTSULFIDE samples.
4. Deliver pH, WDO, and all MICRO samples ASAP to appropriate section for immediate processing.
5. Enter " Time Span" for composite samples during sample login.
6. Split algae sample into 60 mL clear glass if PHYTOQUAL is requested.

SM Signature: ____________

Date / Time Completed: JAN 09 '24 12:23

Login: P82955
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On TAPE

FSU TC: ____________________
LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by Scott Shumway	***Date*** 1/9/24	***Time*** 12:10
Received by	***Date*** 1-9-24	***Time*** 1210
Sample Numbers		***[All]***

Sample Number	**P82955-5**	**P82955-6**	
QC Link			
Locator	**SCTF-TB2-IN**	**SCTF-TB2-OUT**	
Short Loc Desc			
Locator Desc	SCTF-TB2 upstream sampling station	SCTF-TB2 downstream sampling station	
Site	I-5TAPE	I-5TAPE	
Comments	First grab	First grab	
Start Date/Time	1/8/24 21:31	1/8/24 21:32	
End Date/Time			
Time Span			
Sample Depth			
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	

Login: P82955
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On TAPE

FSU TC: ____________

LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by	***Date***	***Time***
Received by	***Date***	***Time***
Sample Numbers		***[All]***

Sample Number	**P82955-7**	**P82955-8**	
QC Link			
Locator	**SCTF-TB2-IN**	**SCTF-TB2-OUT**	
Short Loc Desc			
Locator Desc	SCTF-TB2 upstream sampling station	SCTF-TB2 downstream sampling station	
Site	I-5TAPE	I-5TAPE	
Comments	Second grab	Second grab	
Start Date/Time	1/8/24 22:34	1/8/24 22:34	
End Date/Time	N/A	N/A	
Time Span	0	0	
Sample Depth	N/A	N/A	
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	

Login: P82955
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On TAPE

FSU TC: ____________
LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by	***Date***	***Time***
Received by	***Date***	***Time***
Sample Numbers		***[All]***

Sample Number	**P82955-17**		
QC Link			
Locator	**FIELDDUP**		
Short Loc Desc			
Locator Desc	FIELD DUPLICATE		
Site	FLDQC		
Comments	duplicate grab of inlet second grab		
Start Date/Time	1/8/24 22:32		
End Date/Time	N/A		
Time Span	0		
Sample Depth	N/A		
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)		

LIQUID SAMPLE RECEIPT RECORD

Login Number(s): 82955-(5-8,17)

Collect Date(s): 1-8-24

Project No.: 421520-200

Receive Date: 1-9-24

Sub-Contracting: Y / [✓ N]

Changes: Y [✓ N]

List Product(s):

List Parameter(s):

SAMPLE RECEIPT CONDITIONS

CONDITION	Acceptable?	Comment ID	CONDITION	Acceptable?	Comment ID
Labels / Fieldsheets	[✓ Y] / N		Volumes	[✓ Y] / N	
Container	[✓ Y] / N		Holding Times	[✓ Y] / N	
Temperature (w/ ice)	[✓ Y] / N / NA		Delivery Location	[✓ Y] / N	

BOTTLE COUNT (#) AND DESCRIPTION and SAMPLE NUMBERS

#	Bottle Description: Sample Numbers
	40 mL clear vial (VOA):
	60 mL clear glass (PHYTO):
	60 mL CWM HDPE:
	125 mL AWM HDPE:
	125 mL CNM HDPE:
	125 mL CWM HDPE:
	125 mL GANM:
	125 mL GANM w/HCl
	250 mL AWM HDPE:
	250 mL CWM HDPE:
	250 mL CWM HDPE (MICRO):
5	250 mL GAWM: 5-8,17
	250 mL GAWM w/ H2SO4:
	300 mL WDO (8 hour HT):
	500 mL AWM HDPE:
	500 mL CWM HDPE:
	500 mL CWM PP (MICRO):
	500 mL HDPE (METALS):
	500 mL HDPE, double-bagged (METALS):
	500 mL Teflon (Hg):
	500 mL Teflon, double-bagged (METALS):
	500 mL GANM / GAWM:
	500 mL Polystyrene Filtration Units (METALS):
	1L AWM HDPE:
	1L CWM HDPE:
	1L CWM PP (MICRO):
	1L GANM:
	1L GCWM:
	1L GAWM w/ H_2SO_4:
	2L CWM HDPE:
	Other:

COMMENTS / NOTIFICATIONS

FIELD PRESERVATION CHECKLIST (Circle and/or check applicable selections)

PRODUCT / Preservation	SM Action	Acceptable?	Corrective Action
BNA / pH 6 - 9 w/ H_2SO_4 or NaOH	√ field sheet for F. pH	Y / N	☐ Notify ORG
CN / pH > 12 w/ NaOH within 15 min	☐ Check pH	Y / N	☐ Deliver to CONV
NO23 pH < 2 w/ H_2SO_4	☐ Check pH	Y / N / NA	☐ Preserve by SM
CR(VI) / TOTCR(VI) / pH 9.3 - 9.7 w/ NaOH w/in 15 min	√ field sheet for pH	Y / N	☐ Deliver to CONV
ICP / HG-CVAA-M / pH < 2 w/ HNO_3	☐ Check pH	Y / N	☐ Preserve By SM
O&G / HEM / PHENOL / pH < 2 w/ H_2SO_4	Check documentation	Y / N	☐ Preserve by SM
PHYTOPLANKTON / Lugols	Visually inspect	Y / N	☐ Deliver to MICRO
TKN / COD pH < 2 w/ H_2SO_4 within 15 min	☐ Check pH	Y / N	☐ Preserve By SM
TOC / pH < 2 w/ HCl (NPDES only)	☐ Check pH	Y / N	☐ Preserve By SM
TOTSULFIDE / pH > 9 w/ NaOH, ZnAc	Check documentation	Y / N	☐ Deliver to CONV
WDO / FIXED	Visually inspect	Y / N	☐ Deliver to CONV
Other:			

ROUTINE SM PRESERVATION CHECKLIST (Circle and/or check applicable selections)

PRODUCT / Preservation	SM Action	Acceptable?	Corrective Action
Chlorinated Pesticides / pH 5 - 9 w/ H_2SO_4 or NaOH	√ field sheet for F. pH	Y / N	☐ Adjust pH
HG-CVAA-L-Teflon (T / D) / pH < 2 w/ ULTRA HCl	☐ Preserve & deliver	NA	NA
ICPMS / HG-CVAA-M (T / D) / pH < 2 w/ ULTRA HNO_3	☐ Preserve & deliver	NA	NA
TOC / pH < 2 w/ HCl	☐ Preserve & deliver	NA	NA
Other:			
Other:			

INTERFERENCE TEST (Circle and/or check applicable selections)

Product / Interference (SM Action)	Positive Test?	Treated	Corrective Action
BNA / Chlorine (Check documentation)	Y / N / not tested	Y / N	☐ Deliver to ORG
CN / Chlorine (Check documentation)	Y / N / not tested	Y / N	☐ Deliver to CONV
CN / Sulfide (Check field sheet for DF)	Y / N / not tested	Y / N	☐ Deliver to CONV
VOA / Chlorine (Check documentaion)	Y / N / not tested	Y / N	☐ Deliver to ORG
Other:			

HEADSPACE CHECK

PRODUCT (SM Action)	Check For	Acceptable?	Corrective Action
MICRO (Visually inspect)	Headspace (@ 1")	Y / N	☐ Notify MICRO
TOTSULFIDE (Visually inspect)	Headspace (< 1")	Y / N	☐ Notify CONV
VOA (Visually inspect)	Zero headspace	Y / N	☐ Notify ORG
WDO (Visually inspect)	Zero headspace	Y / N	☐ Notify CONV
Other:			

FIELD FILTRATION CHECKLIST (Circle and/or check applicable selections)

Product (SM Action)	Field Filtered	Field Blank	Corrective Action
ORTHOP (Check Field Sheet)	Y (within 15 min y / n) / N	Y / N	☐ Deliver to CONV
NO2 / NO3 / NO23 / NH3 / SI (Documentation)	Y (within 1 day y / n) / N	Y / N / NA	☐ Deliver to CONV
Dissolved Metals (Check Field Sheet)	Y (within 15 min y / n) / N	Y / N / NA	☐ Deliver to METALS
DOC (Deliver / Notify Unit)	Y (within 15 min or 1 day) / N	Y / N / NA	☐ Deliver to CONV
DCOD / CR(VI) (Deliver / Notify Unit)	Y (within 15 min y / n) / N	Y / N / NA	☐ Deliver to CONV
Other:			
Other:			

CC: ☐ AQUATOX, ☐ CONV, ☐ METALS, ☐ MICRO, ☐ ORG, ☐ ____________

NOTES

1. Deliver dissolved Hg-CVAF samples to METALS for filtration.
2. Deliver double-bagged metals samples to METALS for preservation.
3. Do not test pH for preserved BNA and TOTSULFIDE samples.
4. Deliver pH, WDO, and all MICRO samples ASAP to appropriate section for immediate processing.
5. Enter " Time Span" for composite samples during sample login.
6. Split algae sample into 60 mL clear glass if PHYTOQUAL is requested.

SM Signature: ____________________

Date / Time Completed: JAN 09 '24 12:25

King County

Department of Natural Resources and Parks
Water and Land Resources Division

Environmental Laboratory

LAB-NR0100
322 West Ewing Street
Seattle, WA 98119-1507
206-477-7200 Fax 206-684-2395
TTY Relay: 711

Date: January 23, 2024

To: Madison Bristol, Washington State Department of Ecology

Clark, Herrera Environmental Consultants

From: Meghan Elkey, King County Environmental Laboratory

Subject: BMP Stormwater Characterization – Herrera Add-on 6PPDQ Samples Data Summary, January 18, 2024

Stormwater samples were collected by Herrera Environmental Consultants on January 18, 2024. The samples were delivered to the King County Environmental Laboratory on the date of sample collection. The samples were assigned lab ID numbers L82955-9 to -12. The following QC summary is included for your information.

All samples received were analyzed as requested. The samples were analyzed in the Aquatic Toxicology unit of the laboratory. The data have passed all QA/QC checks for accuracy and completeness and may be used without qualification.

Please contact me if you have any questions about this report or need additional information.

Sincerely,

Meghan Elkey

Meghan Elkey
Laboratory Project Manager/Water Quality Planner III
King County Environmental Lab
(206)477-7154 or meghan.elkey@kingcounty.gov

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200	Project:	421520-200
Locator:	SCTF-TB25-IN	Locator:	SCTF-TB25-OUT	Locator:	SCTF-TB25-IN
Descrip:	SCTF-TB2.5 upstrea	Descrip:	SCTF-TB2.5 downstr	Descrip:	SCTF-TB2.5 upstrea
Sample:	L82955-9	Sample:	L82955-10	Sample:	L82955-11
Matrix:	LG STORM WTR	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
ColDate:	1/18/24 14:00	ColDate:	1/18/24 14:00	ColDate:	1/18/24 15:00
WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.509		0.002	0.01	ug/L	0.418		0.002	0.01	ug/L	0.666		0.002	0.01	ug/L

King County Environmental Lab Analytical Report

Project: 421520-200
Locator: SCTF-TB25-OUT
Descrip: SCTF-TB2.5 downstr
Sample: L82955-12
Matrix: LG STORM WTR
ColDate: 1/18/24 15:00
WET Weight Basis

Parameters	Value	Qual	MDL	RDL	Units
AQ KCEL SOP 4077: 6PPDQ by LCMS					
6ppd-quinone	0.499		0.002	0.01	ug/L

King County Environmental Lab Analytical MATRIX Report

Owner: **SEEDPAK**
Matrix Class: **LIQUID**
User select: **WET Weight Basis**

				6ppd-quinone
LOCATOR	**PROJECT**	**SAMPLE**	**COLLECTED**	**ug/L**
SCTF-TB25-IN	421520-200	L82955-9	1/18/2024 14:00	0.509
SCTF-TB25-OUT	421520-200	L82955-10	1/18/2024 14:00	0.418
SCTF-TB25-IN	421520-200	L82955-11	1/18/2024 15:00	0.666
SCTF-TB25-OUT	421520-200	L82955-12	1/18/2024 15:00	0.499
* Not converted to dry weight basis				

If a parameter/analyte appears twice in the column header, it implies that they were analyzed by two different method codes

WG192221 6PPDQ by LCMS

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	QC Association	Comments
L82955-9	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	1/18/2024 14:00	1/19/2024 7:20	1/19/2024 10:00	WG192221-1,-2,-3,-4,-5,-6	
L82955-10	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	1/18/2024 14:00	1/19/2024 7:20	1/19/2024 10:00	WG192221-1,-2,-3,-4,-5,-6	
L82955-11	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	1/18/2024 15:00	1/19/2024 7:20	1/19/2024 10:00	WG192221-1,-2,-3,-4,-5,-6	
L82955-12	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	1/18/2024 15:00	1/19/2024 7:20	1/19/2024 10:00	WG192221-1,-2,-3,-4,-5,-6	
WG192221-1	MB		AQ6PPDQ-LCMS	OTHR WTR		1/19/2024 7:20	1/19/2024 10:00	WG192221-1,-2,-3,-4,-5,-6	
WG192221-2	SB		AQ6PPDQ-LCMS	OTHR WTR		1/19/2024 7:20	1/19/2024 10:00	WG192221-1,-2,-3,-4,-5,-6	WG192221-1
WG192221-3	MS		AQ6PPDQ-LCMS	STORM WTR		1/19/2024 7:20	1/19/2024 10:00	WG192221-1,-2,-3,-4,-5,-6	L82955-10
WG192221-4	MSD		AQ6PPDQ-LCMS	STORM WTR		1/19/2024 7:20	1/19/2024 10:00	WG192221-1,-2,-3,-4,-5,-6	WG192221-3 L82955-10
WG192221-5	LD		AQ6PPDQ-LCMS	STORM WTR		1/19/2024 7:20	1/19/2024 10:00	WG192221-1,-2,-3,-4,-5,-6	L82955-9
WG192221-6	CCC		AQ6PPDQ-LCMS	OTHR WTR		1/19/2024 7:20	1/19/2024 10:00	WG192221-1,-2,-3,-4,-5,-6	MED

Workgroup: WG192221 6PPDQ by LCMS

MB:WG192221-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
6ppd-quinone	0.002	0.01	ug/L		<MDL

SB:WG192221-2 MB:WG192221-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	True Value	SB Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	<MDL	0.2	0.205	102		50--150

MSD:WG192221-4 MS:WG192221-3 L82955-10 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	True Value	MS Value	% Rec.	Qual	Lab Limit	True Value	MSD Value	% Rec.	Qual	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	0.418	0.2	0.622	102		50--150	0.2	0.622	102		0		0--45

LD:WG192221-5 L82955-9 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	0.509	0.521	2		0--40

CCC:WG192221-6 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Continuing Calibration Check)

Parameter	MDL	RDL	Units	True Value	CCC Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.01	0.05	ug/L	1	1.03	103		80--120

Surrogate:	d5-6PPDQ
(Lab Limits)	**20--200**
L82955-9	57
L82955-10	59
L82955-11	56
L82955-12	58
WG192221-1	65
WG192221-2	56
WG192221-3	58
WG192221-4	60
WG192221-5	57
WG192221-6	72

Login: P82955
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On TAPE

FSU TC: ____________________
LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by Scott Shumway	*Date* 1/9/24	*Time* 12:10
Received by	*Date* 1-9-24	*Time* 12:10
Sample Numbers		*[All]*

Sample Number	**P82955-5**	**P82955-6**	
QC Link			
Locator	**SCTF-TB2-IN**	**SCTF-TB2-OUT**	
Short Loc Desc			
Locator Desc	SCTF-TB2 upstream sampling station	SCTF-TB2 downstream sampling station	
Site	I-5TAPE	I-5TAPE	
Comments	First grab	First grab	
Start Date/Time	1/8/24 21:31	1/8/24 21:32	
End Date/Time			
Time Span			
Sample Depth			
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	

Login: P82955 WDOE BMP - Herrera 6PPDQ Add-On TAPE **FSU TC:** ______

Project: 421520-200 **LPM: Meghan Elkey**

CHAIN OF CUSTODY

Relinquished by	*Date*	*Time*
Received by	*Date*	*Time*
Sample Numbers		*[All]*

Sample Number	**P82955-7**	**P82955-8**	
QC Link			
Locator	**SCTF-TB2-IN**	**SCTF-TB2-OUT**	
Short Loc Desc			
Locator Desc	SCTF-TB2 upstream sampling station	SCTF-TB2 downstream sampling station	
Site	I-5TAPE	I-5TAPE	
Comments	Second grab	Second grab	
Start Date/Time	1/8/24 22:34	1/8/24 22:34	
End Date/Time	N/A	N/A	
Time Span	0	0	
Sample Depth	N/A	N/A	
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	

Login: P82955
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On TAPE

FSU TC: ____________
LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by Nick Brtsk	***Date*** 1/18/24	***Time*** 15:21
Received by	***Date*** 1/18/24	***Time*** 15:21
Sample Numbers		***[All]***

Sample Number	**P82955-9**	**P82955-10**	
QC Link			
Locator	**SCTF-TB25-IN**	**SCTF-TB25-OUT**	
Short Loc Desc			
Locator Desc	SCTF-TB2.5 upstream sampling station	SCTF-TB2.5 downstream sampling station	
Site	I-5TAPE	I-5TAPE	
Comments	First grab	First grab	
Start Date/Time	1/18/24 14:00	1/18/24 14:00	
End Date/Time	NA	NA	
Time Span	0	0	
Sample Depth	NA	NA	
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	

Login: P82955
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On TAPE

FSU TC: ____________
LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by Nick Bartish	*Date* 1/18/24	*Time* 15:21
Received by	*Date* 1/18/24	*Time* 15:21
Sample Numbers		*[All]*

Sample Number	**P82955-11**	**P82955-12**	
QC Link			
Locator	**SCTF-TB25-IN**	**SCTF-TB25-OUT**	
Short Loc Desc			
Locator Desc	SCTF-TB2.5 upstream sampling station	SCTF-TB2.5 downstream sampling station	
Site	I-5TAPE	I-5TAPE	
Comments	Second grab	Second grab	
Start Date/Time	1/18/24 15:00	1/18/24 15:00	
End Date/Time	NA	NA	
Time Span	0	0	
Sample Depth	NA	NA	
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	

Login: P82955
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On TAPE

FSU TC: ____________________
LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by	***Date***	***Time***
Received by	***Date***	***Time***
Sample Numbers		***[All]***

Sample Number	**P82955-17**		
QC Link			
Locator	**FIELDDUP**		
Short Loc Desc			
Locator Desc	FIELD DUPLICATE		
Site	FLDQC		
Comments	duplicate grab of inlet second grab		
Start Date/Time	1/8/24 22:32		
End Date/Time	N/A		
Time Span	0		
Sample Depth	N/A		
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)		

LIQUID SAMPLE RECEIPT RECORD

Login Number(s): 82955-(5-8,17)
Collect Date(s): 1-8-24
Project No.: 421520-200
Receive Date: 1-9-24
Sub-Contracting: Y / [✓ N]
Changes: Y [✓ N]
List Product(s):
List Parameter(s):

SAMPLE RECEIPT CONDITIONS

CONDITION	Acceptable?	Comment ID	CONDITION	Acceptable?	Comment ID
Labels / Fieldsheets	[✓ Y] / N		Volumes	[✓ Y] / N	
Container	[✓ Y] / N		Holding Times	[✓ Y] / N	
Temperature (w/ ice)	[✓ Y] / N / NA		Delivery Location	[✓ Y] / N	

BOTTLE COUNT (#) AND DESCRIPTION and SAMPLE NUMBERS

#	Bottle Description: Sample Numbers
	40 mL clear vial (VOA):
	60 mL clear glass (PHYTO):
	60 mL CWM HDPE:
	125 mL AWM HDPE:
	125 mL CNM HDPE:
	125 mL CWM HDPE:
	125 mL GANM:
	125 mL GANM w/HCl
	250 mL AWM HDPE:
	250 mL CWM HDPE:
	250 mL CWM HDPE (MICRO):
5	250 mL GAWM: 5-8,17
	250 mL GAWM w/ H2SO4:
	300 mL WDO (8 hour HT):
	500 mL AWM HDPE:
	500 mL CWM HDPE:
	500 mL CWM PP (MICRO):
	500 mL HDPE (METALS):
	500 mL HDPE, double-bagged (METALS):
	500 mL Teflon (Hg):
	500 mL Teflon, double-bagged (METALS):
	500 mL GANM / GAWM:
	500 mL Polystyrene Filtration Units (METALS):
	1L AWM HDPE:
	1L CWM HDPE:
	1L CWM PP (MICRO):
	1L GANM:
	1L GCWM:
	1L GAWM w/ H_2SO_4:
	2L CWM HDPE:
	Other:

COMMENTS / NOTIFICATIONS

FIELD PRESERVATION CHECKLIST (Circle and/or check applicable selections)

PRODUCT / Preservation	SM Action	Acceptable?	Corrective Action
BNA / pH 6 - 9 w/ H_2SO_4 or NaOH	√ field sheet for F. pH	Y / N	☐ Notify ORG
CN / pH > 12 w/ NaOH within 15 min	☐ Check pH	Y / N	☐ Deliver to CONV
NO23 pH < 2 w/ H_2SO_4	☐ Check pH	Y / N / NA	☐ Preserve by SM
CR(VI) / TOTCR(VI) / pH 9.3 - 9.7 w/ NaOH w/in 15 min	√ field sheet for pH	Y / N	☐ Deliver to CONV
ICP / HG-CVAA-M / pH < 2 w/ HNO_3	☐ Check pH	Y / N	☐ Preserve By SM
O&G / HEM / PHENOL / pH < 2 w/ H_2SO_4	Check documentation	Y / N	☐ Preserve by SM
PHYTOPLANKTON / Lugols	Visually inspect	Y / N	☐ Deliver to MICRO
TKN / COD pH < 2 w/ H_2SO_4 within 15 min	☐ Check pH	Y / N	☐ Preserve By SM
TOC / pH < 2 w/ HCl (NPDES only)	☐ Check pH	Y / N	☐ Preserve By SM
TOTSULFIDE / pH > 9 w/ NaOH, ZnAc	Check documentation	Y / N	☐ Deliver to CONV
WDO / FIXED	Visually inspect	Y / N	☐ Deliver to CONV
Other:			

ROUTINE SM PRESERVATION CHECKLIST (Circle and/or check applicable selections)

PRODUCT / Preservation	SM Action	Acceptable?	Corrective Action
Chlorinated Pesticides / pH 5 - 9 w/ H_2SO_4 or NaOH	√ field sheet for F. pH	Y / N	☐ Adjust pH
HG-CVAA-L-Teflon (T / D) / pH < 2 w/ ULTRA HCl	☐ Preserve & deliver	NA	NA
ICPMS / HG-CVAA-M (T / D) / pH < 2 w/ ULTRA HNO_3	☐ Preserve & deliver	NA	NA
TOC / pH < 2 w/ HCl	☐ Preserve & deliver	NA	NA
Other:			
Other:			

INTERFERENCE TEST (Circle and/or check applicable selections)

Product / Interference (SM Action)	Positive Test?	Treated	Corrective Action
BNA / Chlorine (Check documentation)	Y / N / not tested	Y / N	☐ Deliver to ORG
CN / Chlorine (Check documentation)	Y / N / not tested	Y / N	☐ Deliver to CONV
CN / Sulfide (Check field sheet for DF)	Y / N / not tested	Y / N	☐ Deliver to CONV
VOA / Chlorine (Check documentaion)	Y / N / not tested	Y / N	☐ Deliver to ORG
Other:			

HEADSPACE CHECK

PRODUCT (SM Action)	Check For	Acceptable?	Corrective Action
MICRO (Visually inspect)	Headspace (@ 1")	Y / N	☐ Notify MICRO
TOTSULFIDE (Visually inspect)	Headspace (< 1")	Y / N	☐ Notify CONV
VOA (Visually inspect)	Zero headspace	Y / N	☐ Notify ORG
WDO (Visually inspect)	Zero headspace	Y / N	☐ Notify CONV
Other:			

FIELD FILTRATION CHECKLIST (Circle and/or check applicable selections)

Product (SM Action)	Field Filtered	Field Blank	Corrective Action
ORTHOP (Check Field Sheet)	Y (within 15 min y / n) / N	Y / N	☐ Deliver to CONV
NO2 / NO3 / NO23 / NH3 / SI (Documentation)	Y (within 1 day y / n) / N	Y / N / NA	☐ Deliver to CONV
Dissolved Metals (Check Field Sheet)	Y (within 15 min y / n) / N	Y / N / NA	☐ Deliver to METALS
DOC (Deliver / Notify Unit)	Y (within 15 min or 1 day) / N	Y / N / NA	☐ Deliver to CONV
DCOD / CR(VI) (Deliver / Notify Unit)	Y (within 15 min y / n) / N	Y / N / NA	☐ Deliver to CONV
Other:			
Other:			

CC: ☐ AQUATOX, ☐ CONV, ☐ METALS, ☐ MICRO, ☐ ORG, ☐ ____________

NOTES

1. Deliver dissolved Hg-CVAF samples to METALS for filtration.
2. Deliver double-bagged metals samples to METALS for preservation.
3. Do not test pH of preserved BNA and TOTSULFIDE samples.
4. Deliver pH, WDO, and all MICRO samples ASAP to appropriate section for immediate processing.
5. Enter " Time Span" for composite samples during sample login.
6. Split algae sample into 60 mL clear glass if PHYTOQUAL is requested.

SM Signature: ____________

Date / Time Completed: JAN 09 '24 12:25

LIQUID SAMPLE RECEIPT RECORD

Login Number(s): 82955	Project No.: M21520	Sub-Contracting: Y / [✓ N]	List Product(s):
Collect Date(s): 1/18/24	Receive Date: 1/18/24	Changes: Y / [✓ N]	List Parameter(s):

SAMPLE RECEIPT CONDITIONS

CONDITION	Acceptable?	Comment ID	CONDITION	Acceptable?	Comment ID
Labels / Fieldsheets	[✓ Y] / N		Volumes	[✓ Y] / N	
Container	[✓ Y] / N		Holding Times	[✓ Y] / N	
Temperature (w/ ice)	[✓ Y] / N / NA		Delivery Location	[✓ Y] / N	

BOTTLE COUNT (#) AND DESCRIPTION and SAMPLE NUMBERS

#	Bottle Description: Sample Numbers
	40 mL clear vial (VOA):
	60 mL clear glass (PHYTO):
	60 mL CWM HDPE:
	125 mL AWM HDPE:
	125 mL CNM HDPE:
	125 mL CWM HDPE:
	125 mL GANM:
	125 mL GANM w/HCl
	250 mL AWM HDPE:
	250 mL CWM HDPE:
	250 mL CWM HDPE (MICRO):
4	250 mL GAWM: 9-12
	250 mL GAWM w/ H2SO4:
	300 mL WDO (8 hour HT):
	500 mL AWM HDPE:
	500 mL CWM HDPE:
	500 mL CWM PP (MICRO):
	500 mL HDPE (METALS):
	500 mL HDPE, double-bagged (METALS):
	500 mL Teflon (Hg):
	500 mL Teflon, double-bagged (METALS):
	500 mL GANM / GAWM:
	500 mL Polystyrene Filtration Units (METALS):
	1L AWM HDPE:
	1L CWM HDPE:
	1L CWM PP (MICRO):
	1L GANM:
	1L GCWM:
	1L GAWM w/ H_2SO_4:
	2L CWM HDPE:
	Other:

COMMENTS / NOTIFICATIONS

FIELD PRESERVATION CHECKLIST (Circle and/or check applicable selections)

PRODUCT / Preservation	SM Action	Acceptable?	Corrective Action
BNA / pH 6 - 9 w/ H_2SO_4 or NaOH	√ field sheet for F. pH	Y / N	☐ Notify ORG
CN / pH > 12 w/ NaOH within 15 min	☐ Check pH	Y / N	☐ Deliver to CONV
NO23 pH < 2 w/ H_2SO_4	☐ Check pH	Y / N / NA	☐ Preserve by SM
CR(VI) / TOTCR(VI) / pH 9.3 - 9.7 w/ NaOH w/in 15 min	√ field sheet for pH	Y / N	☐ Deliver to CONV
ICP / HG-CVAA-M / pH < 2 w/ HNO_3	☐ Check pH	Y / N	☐ Preserve By SM
O&G / HEM / PHENOL / pH < 2 w/ H_2SO_4	Check documentation	Y / N	☐ Preserve by SM
PHYTOPLANKTON / Lugols	Visually inspect	Y / N	☐ Deliver to MICRO
TKN / COD pH < 2 w/ H_2SO_4 within 15 min	☐ Check pH	Y / N	☐ Preserve By SM
TOC / pH < 2 w/ HCl (NPDES only)	☐ Check pH	Y / N	☐ Preserve By SM
TOTSULFIDE / pH > 9 w/ NaOH, ZnAc	Check documentation	Y / N	☐ Deliver to CONV
WDO / FIXED	Visually inspect	Y / N	☐ Deliver to CONV
Other:			

ROUTINE SM PRESERVATION CHECKLIST (Circle and/or check applicable selections)

PRODUCT / Preservation	SM Action	Acceptable?	Corrective Action
Chlorinated Pesticides / pH 5 - 9 w/ H_2SO_4 or NaOH	√ field sheet for F. pH	Y / N	☐ Adjust pH
HG-CVAA-L-Teflon (T / D) / pH < 2 w/ ULTRA HCl	☐ Preserve & deliver	NA	NA
ICPMS / HG-CVAA-M (T / D) / pH < 2 w/ ULTRA HNO_3	☐ Preserve & deliver	NA	NA
TOC / pH < 2 w/ HCl	☐ Preserve & deliver	NA	NA
Other:			
Other:			

INTERFERENCE TEST (Circle and/or check applicable selections)

Product / Interference (SM Action)	Positive Test?	Treated	Corrective Action
BNA / Chlorine (Check documentation)	Y / N / not tested	Y / N	☐ Deliver to ORG
CN / Chlorine (Check documentation)	Y / N / not tested	Y / N	☐ Deliver to CONV
CN / Sulfide (Check field sheet for DF)	Y / N / not tested	Y / N	☐ Deliver to CONV
VOA / Chlorine (Check documentaion)	Y / N / not tested	Y / N	☐ Deliver to ORG
Other:			

HEADSPACE CHECK

PRODUCT (SM Action)	Check For	Acceptable?	Corrective Action
MICRO (Visually inspect)	Headspace (@ 1")	Y / N	☐ Notify MICRO
TOTSULFIDE (Visually inspect)	Headspace (< 1")	Y / N	☐ Notify CONV
VOA (Visually inspect)	Zero headspace	Y / N	☐ Notify ORG
WDO (Visually inspect)	Zero headspace	Y / N	☐ Notify CONV
Other:			

FIELD FILTRATION CHECKLIST (Circle and/or check applicable selections)

Product (SM Action)	Field Filtered	Field Blank	Corrective Action
ORTHOP (Check Field Sheet)	Y (within 15 min y / n) / N	Y / N	☐ Deliver to CONV
NO2 / NO3 / NO23 / NH3 / SI (Documentation)	Y (within 1 day y / n) / N	Y / N / NA	☐ Deliver to CONV
Dissolved Metals (Check Field Sheet)	Y (within 15 min y / n) / N	Y / N / NA	☐ Deliver to METALS
DOC (Deliver / Notify Unit)	Y (within 15 min or 1 day) / N	Y / N / NA	☐ Deliver to CONV
DCOD / CR(VI) (Deliver / Notify Unit)	Y (within 15 min y / n) / N	Y / N / NA	☐ Deliver to CONV
Other:			
Other:			

CC: ☐ AQUATOX, ☐ CONV, ☐ METALS, ☐ MICRO, ☐ ORG, ☐ ____________

NOTES

1. Deliver dissolved Hg-CVAF samples to METALS for filtration.
2. Deliver double-bagged metals samples to METALS for preservation.
3. Do not test pH for preserved BNA and TOTSULFIDE samples.
4. Deliver pH, WDO, and all MICRO samples ASAP to appropriate section for immediete processing.
5. Enter " Time Span" for composite samples during sample login.
6. Split algae sample into 60 mL clear glass if PHYTOQUAL is requested.

SM Signature:

Date / Time Completed: ____________________

JAN 18 '24 15:31

King County

Department of Natural Resources and Parks
Water and Land Resources Division

Environmental Laboratory

LAB-NR0100
322 West Ewing Street
Seattle, WA 98119-1507
206-477-7200 Fax 206-684-2395
TTY Relay: 711

Date: January 26, 2024

To: Madison Bristol, Washington State Department of Ecology

Clark, Herrera Environmental Consultants

From: Meghan Elkey, King County Environmental Laboratory

Subject: BMP Stormwater Characterization – Herrera Add-on 6PPDQ Samples Data Summary, January 24, 2024

Stormwater samples were collected by Herrera Environmental Consultants on January 24, 2024. The samples were delivered to the King County Environmental Laboratory on the date of sample collection. The samples were assigned lab ID numbers L82955-13 to -16 and L82954-1 to -4 and -9. The following QC summary is included for your information.

All samples received were analyzed as requested. The samples were analyzed in the Aquatic Toxicology unit of the laboratory. The data have passed all QA/QC checks for accuracy and completeness and may be used without qualification.

Please contact me if you have any questions about this report or need additional information.

Sincerely,

Meghan Elkey

Meghan Elkey
Laboratory Project Manager/Water Quality Planner III
King County Environmental Lab
(206)477-7154 or meghan.elkey@kingcounty.gov

King County Environmental Lab Analytical Report

	Project: 421520-200 Locator: SCTF-TB4-IN Descrip: SCTF-TB4 upstream Sample: L82955-13 Matrix: LG STORM WTR ColDate: 1/24/24 7:58 **WET Weight Basis**					Project: 421520-200 Locator: SCTF-TB4-OUT Descrip: SCTF-TB4 downstrea Sample: L82955-14 Matrix: LG STORM WTR ColDate: 1/24/24 7:59 **WET Weight Basis**					Project: 421520-200 Locator: SCTF-TB4-IN Descrip: SCTF-TB4 upstream Sample: L82955-15 Matrix: LG STORM WTR ColDate: 1/24/24 9:07 **WET Weight Basis**				
Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.767		0.002	0.01	ug/L	0.374		0.002	0.01	ug/L	0.513		0.002	0.01	ug/L

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200	Project:	421520-200
Locator:	SCTF-TB4-OUT	Locator:	SCTF-TB2-IN	Locator:	SCTF-TB2-OUT
Descrip:	SCTF-TB4 downstrea	Descrip:	SCTF-TB2 upstream	Descrip:	SCTF-TB2 downstrea
Sample:	L82955-16	Sample:	L82956-1	Sample:	L82956-2
Matrix:	LG STORM WTR	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
ColDate:	1/24/24 9:08	ColDate:	1/24/24 7:55	ColDate:	1/24/24 7:56
WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.412		0.002	0.01	ug/L	0.798		0.002	0.01	ug/L	0.641		0.002	0.01	ug/L

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200	Project:	421520-200
Locator:	SCTF-TB2-IN	Locator:	SCTF-TB2-OUT	Locator:	FIELDDUP
Descrip:	SCTF-TB2 upstream	Descrip:	SCTF-TB2 downstrea	Descrip:	FIELD DUPLICATE
Sample:	L82956-3	Sample:	L82956-4	Sample:	L82956-9
Matrix:	LG STORM WTR	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
ColDate:	1/24/24 9:04	ColDate:	1/24/24 9:05	ColDate:	1/24/24 9:07
WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.519		0.002	0.01	ug/L	0.534		0.002	0.01	ug/L	0.546		0.002	0.01	ug/L

King County Environmental Lab Analytical MATRIX Report

Owner: **SEEDPAK**
Matrix Class: **LIQUID**
User select: **WET Weight Basis**

LOCATOR	PROJECT	SAMPLE	COLLECTED	6ppd-quinone ug/L
SCTF-TB4-IN	421520-200	L82955-13	1/24/2024 7:58	0.767
SCTF-TB4-OUT	421520-200	L82955-14	1/24/2024 7:59	0.374
SCTF-TB4-IN	421520-200	L82955-15	1/24/2024 9:07	0.513
SCTF-TB4-OUT	421520-200	L82955-16	1/24/2024 9:08	0.412
SCTF-TB2-IN	421520-200	L82956-1	1/24/2024 7:55	0.798
SCTF-TB2-OUT	421520-200	L82956-2	1/24/2024 7:56	0.641
SCTF-TB2-IN	421520-200	L82956-3	1/24/2024 9:04	0.519
SCTF-TB2-OUT	421520-200	L82956-4	1/24/2024 9:05	0.534
FIELDDUP	421520-200	L82956-9	1/24/2024 9:07	0.546
* Not converted to dry weight basis				

If a parameter/analyte appears twice in the column header, it implies that they were analyzed by two different method codes

WG192300 6PPDQ by LCMS

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	QC Association	Comments
L82955-13	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	1/24/2024 7:58	1/25/2024 7:00	1/25/2024 10:30	WG192300-1,-2,-3,-4,-5,-6	
L82955-14	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	1/24/2024 7:59	1/25/2024 7:00	1/25/2024 10:30	WG192300-1,-2,-3,-4,-5,-6	
L82955-15	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	1/24/2024 9:07	1/25/2024 7:00	1/25/2024 10:30	WG192300-1,-2,-3,-4,-5,-6	
L82955-16	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	1/24/2024 9:08	1/25/2024 7:00	1/25/2024 10:30	WG192300-1,-2,-3,-4,-5,-6	
L82956-1	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	1/24/2024 7:55	1/25/2024 7:00	1/25/2024 10:30	WG192300-1,-2,-3,-4,-5,-6	
L82956-2	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	1/24/2024 7:56	1/25/2024 7:00	1/25/2024 10:30	WG192300-1,-2,-3,-4,-5,-6	
L82956-3	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	1/24/2024 9:04	1/25/2024 7:00	1/25/2024 10:30	WG192300-1,-2,-3,-4,-5,-6	
L82956-4	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	1/24/2024 9:05	1/25/2024 7:00	1/25/2024 10:30	WG192300-1,-2,-3,-4,-5,-6	
L82956-9	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	1/24/2024 9:07	1/25/2024 7:00	1/25/2024 10:30	WG192300-1,-2,-3,-4,-5,-6	
WG192300-1	MB		AQ6PPDQ-LCMS	OTHR WTR		1/25/2024 7:00	1/25/2024 10:30	WG192300-1,-2,-3,-4,-5,-6	
WG192300-2	SB		AQ6PPDQ-LCMS	OTHR WTR		1/25/2024 7:00	1/25/2024 10:30	WG192300-1,-2,-3,-4,-5,-6	WG192300-1
WG192300-3	MS		AQ6PPDQ-LCMS	STORM WTR		1/25/2024 7:00	1/25/2024 10:30	WG192300-1,-2,-3,-4,-5,-6	L82955-16
WG192300-4	MSD		AQ6PPDQ-LCMS	STORM WTR		1/25/2024 7:00	1/25/2024 10:30	WG192300-1,-2,-3,-4,-5,-6	WG192300-3 L82955-16
WG192300-5	LD		AQ6PPDQ-LCMS	STORM WTR		1/25/2024 7:00	1/25/2024 10:30	WG192300-1,-2,-3,-4,-5,-6	L82956-3
WG192300-6	CCC		AQ6PPDQ-LCMS	OTHR WTR		1/25/2024 7:00	1/25/2024 10:30	WG192300-1,-2,-3,-4,-5,-6	MED

Workgroup: WG192300 6PPDQ by LCMS

MB:WG192300-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
6ppd-quinone	0.002	0.01	ug/L		<MDL

SB:WG192300-2 MB:WG192300-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	True Value	SB Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	<MDL	0.2	0.21	105		50--150

MSD:WG192300-4 MS:WG192300-3 L82955-16 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	True Value	MS Value	% Rec.	Qual	Lab Limit	True Value	MSD Value	% Rec.	Qual	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	0.412	0.2	0.613	101		50--150	0.2	0.618	103		1		0--45

LD:WG192300-5 L82956-3 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	0.519	0.52	0		0--40

CCC:WG192300-6 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Continuing Calibration Check)

Parameter	MDL	RDL	Units	True Value	CCC Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.01	0.05	ug/L	1	1.03	103		80--120

Surrogate:	**d5-6PPDQ**
(Lab Limits)	**20--200**
L82955-13	74
L82955-14	73
L82955-15	77
L82955-16	79
L82956-1	71
L82956-2	73
L82956-3	78
L82956-4	76
L82956-9	72
WG192300-1	83
WG192300-2	83
WG192300-3	74
WG192300-4	73
WG192300-5	74
WG192300-6	99

Login: P82955
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On TAPE

FSU TC: ____________________
LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by Scott Shumway	***Date*** 1/9/24	***Time*** 12:10
Received by	***Date*** 1-9-24	***Time*** 1210
Sample Numbers ***[All]***		

Sample Number	**P82955-5**	**P82955-6**	
QC Link			
Locator	**SCTF-TB2-IN**	**SCTF-TB2-OUT**	
Short Loc Desc			
Locator Desc	SCTF-TB2 upstream sampling station	SCTF-TB2 downstream sampling station	
Site	I-5TAPE	I-5TAPE	
Comments	First grab	First grab	
Start Date/Time	1/8/24 21:31	1/8/24 21:32	
End Date/Time			
Time Span			
Sample Depth			
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	

Login: P82955
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On TAPE

FSU TC: ______________
LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by	*Date*	*Time*
Received by	*Date*	*Time*
Sample Numbers		*[All]*

Sample Number	P82955-7	P82955-8	
QC Link			
Locator	SCTF-TB2-IN	SCTF-TB2-OUT	
Short Loc Desc			
Locator Desc	SCTF-TB2 upstream sampling station	SCTF-TB2 downstream sampling station	
Site	I-5TAPE	I-5TAPE	
Comments	Second grab	Second grab	
Start Date/Time	1/8/24 22:34	1/8/24 22:34	
End Date/Time	N/A	N/A	
Time Span	0	0	
Sample Depth	N/A	N/A	
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	

Login: P82955
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On TAPE

FSU TC: ____________
LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by Nick Brtst	***Date*** 1/18/24	***Time*** 15:21
Received by	***Date*** 1/18/24	***Time*** 15:21
Sample Numbers		***[All]***

Sample Number	**P82955-9**	**P82955-10**	
QC Link			
Locator	**SCTF-TB25-IN**	**SCTF-TB25-OUT**	
Short Loc Desc			
Locator Desc	SCTF-TB2.5 upstream sampling station	SCTF-TB2.5 downstream sampling station	
Site	I-5TAPE	I-5TAPE	
Comments	First grab	First grab	
Start Date/Time	1/18/24 14:00	1/18/24 14:00	
End Date/Time	NA	NA	
Time Span	0	0	
Sample Depth	NA	NA	
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	

Login: P82955
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On TAPE

FSU TC: ____________
LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by Nick Bartish	*Date* 1/18/24	*Time* 15:21
Received by	*Date* 1/18/24	*Time* 15:21
Sample Numbers		*[All]*

Sample Number	**P82955-11**	**P82955-12**	
QC Link			
Locator	**SCTF-TB25-IN**	**SCTF-TB25-OUT**	
Short Loc Desc			
Locator Desc	SCTF-TB2.5 upstream sampling station	SCTF-TB2.5 downstream sampling station	
Site	I-5TAPE	I-5TAPE	
Comments	Second grab	Second grab	
Start Date/Time	1/18/24 15:00	1/18/24 15:00	
End Date/Time	NA	NA	
Time Span	0	0	
Sample Depth	NA	NA	
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	

Login: P82955
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On TAPE

FSU TC: ____________________
LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by	***Date***	***Time***
Received by	***Date***	***Time***
Sample Numbers		***[All]***

Sample Number	**P82955-17**		
QC Link			
Locator	**FIELDDUP**		
Short Loc Desc			
Locator Desc	FIELD DUPLICATE		
Site	FLDQC		
Comments	duplicate grab of inlet second grab		
Start Date/Time	1/8/24 22:32		
End Date/Time	N/A		
Time Span	0		
Sample Depth	N/A		
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)		

Login: P82955
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On TAPE

FSU TC: ____________
LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by Scott Shumway	*Date* 1/24/24	*Time* 14:12
Received by	*Date* 1/24/24	*Time* 14 12
Sample Numbers		*[All]*

Sample Number	P82955-13	P82955-14	
QC Link			
Locator	**SCTF-TB4-IN**	**SCTF-TB4-OUT**	
Short Loc Desc			
Locator Desc	SCTF-TB4 upstream sampling location	SCTF-TB4 downstream sampling location	
Site	I-5TAPE	I-5TAPE	
Comments	First grab	First grab	
Start Date/Time	1/24/24 7:58	1/24/24 7:59	
End Date/Time	N/A	N/A	
Time Span	0	0	
Sample Depth	N/A	N/A	
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	

Login: P82955
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On TAPE

FSU TC: ____________
LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by	***Date***	***Time***
Received by	***Date***	***Time***
Sample Numbers		***[All]***

Sample Number	**P82955-15**	**P82955-16**	
QC Link			
Locator	**SCTF-TB4-IN**	**SCTF-TB4-OUT**	
Short Loc Desc			
Locator Desc	SCTF-TB4 upstream sampling location	SCTF-TB4 downstream sampling location	
Site	I-5TAPE	I-5TAPE	
Comments	Second grab	Second grab	
Start Date/Time	1/24/24 9:07	1/24/24 9:08	
End Date/Time	N/A	N/A	
Time Span	0	0	
Sample Depth	N/A	N/A	
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	

LIQUID SAMPLE RECEIPT RECORD

Login Number(s): 82955-(5-8,17)
Project No.: 421520-200
Sub-Contracting: Y / [✓ N]
List Product(s):
Collect Date(s): 1-8-24
Receive Date: 1-9-24
Changes: Y [✓ N]
List Parameter(s):

SAMPLE RECEIPT CONDITIONS

CONDITION	Acceptable?	Comment ID	CONDITION	Acceptable?	Comment ID
Labels / Fieldsheets	[✓ Y] / N		Volumes	[✓ Y] / N	
Container	[✓ Y] / N		Holding Times	[✓ Y] / N	
Temperature (w/ ice)	[✓ Y] / N / NA		Delivery Location	[✓ Y] / N	

BOTTLE COUNT (#) AND DESCRIPTION and SAMPLE NUMBERS

#	Bottle Description: Sample Numbers
	40 mL clear vial (VOA):
	60 mL clear glass (PHYTO):
	60 mL CWM HDPE:
	125 mL AWM HDPE:
	125 mL CNM HDPE:
	125 mL CWM HDPE:
	125 mL GANM:
	125 mL GANM w/HCl
	250 mL AWM HDPE:
	250 mL CWM HDPE:
	250 mL CWM HDPE (MICRO):
5	250 mL GAWM: 5-8,17
	250 mL GAWM w/ H2SO4:
	300 mL WDO (8 hour HT):
	500 mL AWM HDPE:
	500 mL CWM HDPE:
	500 mL CWM PP (MICRO):
	500 mL HDPE (METALS):
	500 mL HDPE, double-bagged (METALS):
	500 mL Teflon (Hg):
	500 mL Teflon, double-bagged (METALS):
	500 mL GANM / GAWM:
	500 mL Polystyrene Filtration Units (METALS):
	1L AWM HDPE:
	1L CWM HDPE:
	1L CWM PP (MICRO):
	1L GANM:
	1L GCWM:
	1L GAWM w/ H_2SO_4:
	2L CWM HDPE:
	Other:

COMMENTS / NOTIFICATIONS

FIELD PRESERVATION CHECKLIST (Circle and/or check applicable selections)

PRODUCT / Preservation	SM Action	Acceptable?	Corrective Action
BNA / pH 6 - 9 w/ H_2SO_4 or NaOH	√ field sheet for F. pH	Y / N	☐ Notify ORG
CN / pH > 12 w/ NaOH within 15 min	☐ Check pH	Y / N	☐ Deliver to CONV
NO23 pH < 2 w/ H_2SO_4	☐ Check pH	Y / N / NA	☐ Preserve by SM
CR(VI) / TOTCR(VI) / pH 9.3 - 9.7 w/ NaOH w/in 15 min	√ field sheet for pH	Y / N	☐ Deliver to CONV
ICP / HG-CVAA-M / pH < 2 w/ HNO_3	☐ Check pH	Y / N	☐ Preserve By SM
O&G / HEM / PHENOL / pH < 2 w/ H_2SO_4	Check documentation	Y / N	☐ Preserve by SM
PHYTOPLANKTON / Lugols	Visually inspect	Y / N	☐ Deliver to MICRO
TKN / COD pH < 2 w/ H_2SO_4 within 15 min	☐ Check pH	Y / N	☐ Preserve By SM
TOC / pH < 2 w/ HCl (NPDES only)	☐ Check pH	Y / N	☐ Preserve By SM
TOTSULFIDE / pH > 9 w/ NaOH, ZnAc	Check documentation	Y / N	☐ Deliver to CONV
WDO / FIXED	Visually inspect	Y / N	☐ Deliver to CONV
Other:			

ROUTINE SM PRESERVATION CHECKLIST (Circle and/or check applicable selections)

PRODUCT / Preservation	SM Action	Acceptable?	Corrective Action
Chlorinated Pesticides / pH 5 - 9 w/ H_2SO_4 or NaOH	√ field sheet for F. pH	Y / N	☐ Adjust pH
HG-CVAA-L-Teflon (T / D) / pH < 2 w/ ULTRA HCl	☐ Preserve & deliver	NA	NA
ICPMS / HG-CVAA-M (T / D) / pH < 2 w/ ULTRA HNO_3	☐ Preserve & deliver	NA	NA
TOC / pH < 2 w/ HCl	☐ Preserve & deliver	NA	NA
Other:			
Other:			

INTERFERENCE TEST (Circle and/or check applicable selections)

Product / Interference (SM Action)	Positive Test?	Treated	Corrective Action
BNA / Chlorine (Check documentation)	Y / N / not tested	Y / N	☐ Deliver to ORG
CN / Chlorine (Check documentation)	Y / N / not tested	Y / N	☐ Deliver to CONV
CN / Sulfide (Check field sheet for DF)	Y / N / not tested	Y / N	☐ Deliver to CONV
VOA / Chlorine (Check documentaion)	Y / N / not tested	Y / N	☐ Deliver to ORG
Other:			

HEADSPACE CHECK

PRODUCT (SM Action)	Check For	Acceptable?	Corrective Action
MICRO (Visually inspect)	Headspace (@ 1")	Y / N	☐ Notify MICRO
TOTSULFIDE (Visually inspect)	Headspace (< 1")	Y / N	☐ Notify CONV
VOA (Visually inspect)	Zero headspace	Y / N	☐ Notify ORG
WDO (Visually inspect)	Zero headspace	Y / N	☐ Notify CONV
Other:			

FIELD FILTRATION CHECKLIST (Circle and/or check applicable selections)

Product (SM Action)	Field Filtered	Field Blank	Corrective Action
ORTHOP (Check Field Sheet)	Y (within 15 min y / n) / N	Y / N	☐ Deliver to CONV
NO2 / NO3 / NO23 / NH3 / SI (Documentation)	Y (within 1 day y / n) / N	Y / N / NA	☐ Deliver to CONV
Dissolved Metals (Check Field Sheet)	Y (within 15 min y / n) / N	Y / N / NA	☐ Deliver to METALS
DOC (Deliver / Notify Unit)	Y (within 15 min or 1 day) / N	Y / N / NA	☐ Deliver to CONV
DCOD / CR(VI) (Deliver / Notify Unit)	Y (within 15 min y / n) / N	Y / N / NA	☐ Deliver to CONV
Other:			
Other:			

CC: ☐ AQUATOX, ☐ CONV, ☐ METALS, ☐ MICRO, ☐ ORG, ☐ ____________

NOTES

1. Deliver dissolved Hg-CVAF samples to METALS for filtration.
2. Deliver double-bagged metals samples to METALS for preservation.
3. Do not test pH for preserved BNA and TOTSULFIDE samples.
4. Deliver pH, WDO, and all MICRO samples ASAP to appropriate section for immediate processing.
5. Enter " Time Span" for composite samples during sample login.
6. Split algae sample into 60 mL clear glass if PHYTOQUAL is requested.

SM Signature:

Date / Time Completed: JAN 09 '24 12:25

LIQUID SAMPLE RECEIPT RECORD

Login Number(s): 82955
Collect Date(s): 1/18/24
Project No.: M21520
Receive Date: 1/18/24
Sub-Contracting: Y / [✓ N]
Changes: Y / [✓ N]
List Product(s):
List Parameter(s):

SAMPLE RECEIPT CONDITIONS

CONDITION	Acceptable?	Comment ID	CONDITION	Acceptable?	Comment ID
Labels / Fieldsheets	[✓ Y] / N		Volumes	[✓ Y] / N	
Container	[✓ Y] / N		Holding Times	[✓ Y] / N	
Temperature (w/ ice)	[✓ Y] / N / NA		Delivery Location	[✓ Y] / N	

BOTTLE COUNT (#) AND DESCRIPTION and SAMPLE NUMBERS

#	Bottle Description: Sample Numbers
	40 mL clear vial (VOA):
	60 mL clear glass (PHYTO):
	60 mL CWM HDPE:
	125 mL AWM HDPE:
	125 mL CNM HDPE:
	125 mL CWM HDPE:
	125 mL GANM:
	125 mL GANM w/HCl
	250 mL AWM HDPE:
	250 mL CWM HDPE:
	250 mL CWM HDPE (MICRO):
4	250 mL GAWM: 9-12
	250 mL GAWM w/ H2SO4:
	300 mL WDO (8 hour HT):
	500 mL AWM HDPE:
	500 mL CWM HDPE:
	500 mL CWM PP (MICRO):
	500 mL HDPE (METALS):
	500 mL HDPE, double-bagged (METALS):
	500 mL Teflon (Hg):
	500 mL Teflon, double-bagged (METALS):
	500 mL GANM / GAWM:
	500 mL Polystyrene Filtration Units (METALS):
	1L AWM HDPE:
	1L CWM HDPE:
	1L CWM PP (MICRO):
	1L GANM:
	1L GCWM:
	1L GAWM w/ H_2SO_4:
	2L CWM HDPE:
	Other:

COMMENTS / NOTIFICATIONS

FIELD PRESERVATION CHECKLIST (Circle and/or check applicable selections)

PRODUCT / Preservation	SM Action	Acceptable?	Corrective Action
BNA / pH 6 - 9 w/ H_2SO_4 or NaOH	√ field sheet for F. pH	Y / N	☐ Notify ORG
CN / pH > 12 w/ NaOH within 15 min	☐ Check pH	Y / N	☐ Deliver to CONV
NO23 pH < 2 w/ H_2SO_4	☐ Check pH	Y / N / NA	☐ Preserve by SM
CR(VI) / TOTCR(VI) / pH 9.3 - 9.7 w/ NaOH w/in 15 min	√ field sheet for pH	Y / N	☐ Deliver to CONV
ICP / HG-CVAA-M / pH < 2 w/ HNO_3	☐ Check pH	Y / N	☐ Preserve By SM
O&G / HEM / PHENOL / pH < 2 w/ H_2SO_4	Check documentation	Y / N	☐ Preserve by SM
PHYTOPLANKTON / Lugols	Visually inspect	Y / N	☐ Deliver to MICRO
TKN / COD pH < 2 w/ H_2SO_4 within 15 min	☐ Check pH	Y / N	☐ Preserve By SM
TOC / pH < 2 w/ HCl (NPDES only)	☐ Check pH	Y / N	☐ Preserve By SM
TOTSULFIDE / pH > 9 w/ NaOH, ZnAc	Check documentation	Y / N	☐ Deliver to CONV
WDO / FIXED	Visually inspect	Y / N	☐ Deliver to CONV
Other:			

ROUTINE SM PRESERVATION CHECKLIST (Circle and/or check applicable selections)

PRODUCT / Preservation	SM Action	Acceptable?	Corrective Action
Chlorinated Pesticides / pH 5 - 9 w/ H_2SO_4 or NaOH	√ field sheet for F. pH	Y / N	☐ Adjust pH
HG-CVAA-L-Teflon (T / D) / pH < 2 w/ ULTRA HCl	☐ Preserve & deliver	NA	NA
ICPMS / HG-CVAA-M (T / D) / pH < 2 w/ ULTRA HNO_3	☐ Preserve & deliver	NA	NA
TOC / pH < 2 w/ HCl	☐ Preserve & deliver	NA	NA
Other:			
Other:			

INTERFERENCE TEST (Circle and/or check applicable selections)

Product / Interference (SM Action)	Positive Test?	Treated	Corrective Action
BNA / Chlorine (Check documentation)	Y / N / not tested	Y / N	☐ Deliver to ORG
CN / Chlorine (Check documentation)	Y / N / not tested	Y / N	☐ Deliver to CONV
CN / Sulfide (Check field sheet for DF)	Y / N / not tested	Y / N	☐ Deliver to CONV
VOA / Chlorine (Check documentaion)	Y / N / not tested	Y / N	☐ Deliver to ORG
Other:			

HEADSPACE CHECK

PRODUCT (SM Action)	Check For	Acceptable?	Corrective Action
MICRO (Visually inspect)	Headspace (@ 1")	Y / N	☐ Notify MICRO
TOTSULFIDE (Visually inspect)	Headspace (< 1")	Y / N	☐ Notify CONV
VOA (Visually inspect)	Zero headspace	Y / N	☐ Notify ORG
WDO (Visually inspect)	Zero headspace	Y / N	☐ Notify CONV
Other:			

FIELD FILTRATION CHECKLIST (Circle and/or check applicable selections)

Product (SM Action)	Field Filtered	Field Blank	Corrective Action
ORTHOP (Check Field Sheet)	Y (within 15 min y / n) / N	Y / N	☐ Deliver to CONV
NO2 / NO3 / NO23 / NH3 / Si (Documentation)	Y (within 1 day y / n) / N	Y / N / NA	☐ Deliver to CONV
Dissolved Metals (Check Field Sheet)	Y (within 15 min y / n) / N	Y / N / NA	☐ Deliver to METALS
DOC (Deliver / Notify Unit)	Y (within 15 min or 1 day) / N	Y / N / NA	☐ Deliver to CONV
DCOD / CR(VI) (Deliver / Notify Unit)	Y (within 15 min y / n) / N	Y / N / NA	☐ Deliver to CONV
Other:			
Other:			

CC: ☐ AQUATOX, ☐ CONV, ☐ METALS, ☐ MICRO, ☐ ORG, ☐ ____________

NOTES

1. Deliver dissolved Hg-CVAF samples to METALS for filtration.
2. Deliver double-bagged metals samples to METALS for preservation.
3. Do not test pH for preserved BNA and TOTSULFIDE samples.
4. Deliver pH, WDO, and all MICRO samples ASAP to appropriate section for immediate processing.
5. Enter " Time Span" for composite samples during sample login.
6. Split algae sample into 60 mL clear glass if PHYTOQUAL is requested.

SM Signature:

Date / Time Completed:

JAN 18 '24 15:[illegible]

LIQUID SAMPLE RECEIPT RECORD

Login Number(s): 82955
Collect Date(s): 1/24/24
Project No.: 421520-200
Receive Date: 1/24/24
Sub-Contracting: Y / [✓ N]
Changes: Y / [✓ N]
List Product(s):
List Parameter(s):

SAMPLE RECEIPT CONDITIONS

CONDITION	Acceptable?	Comment ID	CONDITION	Acceptable?	Comment ID
Labels / Fieldsheets	[✓ Y] / N		Volumes	[✓ Y] / N	
Container	[✓ Y] / N		Holding Times	[✓ Y] / N	
Temperature (w/ ice)	[✓ Y] / N / NA		Delivery Location	[✓ Y] / N	

BOTTLE COUNT (#) AND DESCRIPTION and SAMPLE NUMBERS

#	Bottle Description: Sample Numbers
	40 mL clear vial (VOA):
	60 mL clear glass (PHYTO):
	60 mL CWM HDPE:
	125 mL AWM HDPE:
	125 mL CNM HDPE:
	125 mL CWM HDPE:
	125 mL GANM:
	125 mL GANM w/HCl
4	250 mL AWM HDPE: 13 - 16
	250 mL CWM HDPE:
	250 mL CWM HDPE (MICRO):
	250 mL GAWM:
	250 mL GAWM w/ H2SO4:
	300 mL WDO (8 hour HT):
	500 mL AWM HDPE:
	500 mL CWM HDPE:
	500 mL CWM PP (MICRO):
	500 mL HDPE (METALS):
	500 mL HDPE, double-bagged (METALS):
	500 mL Teflon (Hg):
	500 mL Teflon, double-bagged (METALS):
	500 mL GANM / GAWM:
	500 mL Polystyrene Filtration Units (METALS):
	1L AWM HDPE:
	1L CWM HDPE:
	1L CWM PP (MICRO):
	1L GANM:
	1L GCWM:
	1L GAWM w/ H_2SO_4:
	2L CWM HDPE:
	Other:

COMMENTS / NOTIFICATIONS

FIELD PRESERVATION CHECKLIST (Circle and/or check applicable selections)

PRODUCT / Preservation	SM Action	Acceptable?	Corrective Action
BNA / pH 6 - 9 w/ H_2SO_4 or NaOH	√ field sheet for F. pH	Y / N	☐ Notify ORG
CN / pH > 12 w/ NaOH within 15 min	☐ Check pH	Y / N	☐ Deliver to CONV
NO23 pH < 2 w/ H_2SO_4	☐ Check pH	Y / N / NA	☐ Preserve by SM
CR(VI) / TOTCR(VI) / pH 9.3 - 9.7 w/ NaOH w/in 15 min	√ field sheet for pH	Y / N	☐ Deliver to CONV
ICP / HG-CVAA-M / pH < 2 w/ HNO_3	☐ Check pH	Y / N	☐ Preserve By SM
O&G / HEM / PHENOL / pH < 2 w/ H_2SO_4	Check documentation	Y / N	☐ Preserve by SM
PHYTOPLANKTON / Lugols	Visually inspect	Y / N	☐ Deliver to MICRO
TKN / COD pH < 2 w/ H_2SO_4 within 15 min	☐ Check pH	Y / N	☐ Preserve By SM
TOC / pH < 2 w/ HCl (NPDES only)	☐ Check pH	Y / N	☐ Preserve By SM
TOTSULFIDE / pH > 9 w/ NaOH, ZnAc	Check documentation	Y / N	☐ Deliver to CONV
WDO / FIXED	Visually inspect	Y / N	☐ Deliver to CONV
Other:			

ROUTINE SM PRESERVATION CHECKLIST (Circle and/or check applicable selections)

PRODUCT / Preservation	SM Action	Acceptable?	Corrective Action
Chlorinated Pesticides / pH 5 - 9 w/ H_2SO_4 or NaOH	√ field sheet for F. pH	Y / N	☐ Adjust pH
HG-CVAA-L-Teflon (T / D) / pH < 2 w/ ULTRA HCl	☐ Preserve & deliver	NA	NA
ICPMS / HG-CVAA-M (T / D) / pH < 2 w/ ULTRA HNO_3	☐ Preserve & deliver	NA	NA
TOC / pH < 2 w/ HCl	☐ Preserve & deliver	NA	NA
Other:			
Other:			

INTERFERENCE TEST (Circle and/or check applicable selections)

Product / Interference (SM Action)	Positive Test?	Treated	Corrective Action
BNA / Chlorine (Check documentation)	Y / N / not tested	Y / N	☐ Deliver to ORG
CN / Chlorine (Check documentation)	Y / N / not tested	Y / N	☐ Deliver to CONV
CN / Sulfide (Check field sheet for DF)	Y / N / not tested	Y / N	☐ Deliver to CONV
VOA / Chlorine (Check documentation)	Y / N / not tested	Y / N	☐ Deliver to ORG
Other:			

HEADSPACE CHECK

PRODUCT (SM Action)	Check For	Acceptable?	Corrective Action
MICRO (Visually inspect)	Headspace (@ 1")	Y / N	☐ Notify MICRO
TOTSULFIDE (Visually inspect)	Headspace (< 1")	Y / N	☐ Notify CONV
VOA (Visually inspect)	Zero headspace	Y / N	☐ Notify ORG
WDO (Visually inspect)	Zero headspace	Y / N	☐ Notify CONV
Other:			

FIELD FILTRATION CHECKLIST (Circle and/or check applicable selections)

Product (SM Action)	Field Filtered	Field Blank	Corrective Action
ORTHOP (Check Field Sheet)	Y (within 15 min y / n) / N	Y / N	☐ Deliver to CONV
NO2 / NO3 / NO23 / NH3 / SI (Documentation)	Y (within 1 day y / n) / N	Y / N / NA	☐ Deliver to CONV
Dissolved Metals (Check Field Sheet)	Y (within 15 min y / n) / N	Y / N / NA	☐ Deliver to METALS
DOC (Deliver / Notify Unit)	Y (within 15 min or 1 day) / N	Y / N / NA	☐ Deliver to CONV
DCOD / CR(VI) (Deliver / Notify Unit)	Y (within 15 min y / n) / N	Y / N / NA	☐ Deliver to CONV
Other:			
Other:			

CC: ☐ AQUATOX, ☐ CONV, ☐ METALS, ☐ MICRO, ☐ ORG, ☐ ____________

NOTES

1. Deliver dissolved Hg-CVAF samples to METALS for filtration.
2. Deliver double-bagged metals samples to METALS for preservation.
3. Do not test pH for preserved BNA and TOTSULFIDE samples.
4. Deliver pH, WDO, and all MICRO samples ASAP to appropriate section for immediate processing.
5. Enter " Time Span" for composite samples during sample login.
6. Split algae sample into 60 mL clear glass if PHYTOQUAL is requested.

SM Signature:

Date / Time Completed: JAN 24 '24 14:19

Login: P82956
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On TAPE

FSU TC: ______________________
LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by Scott Shumway	*Date* 1/24/24	*Time* 14:13
Received by	*Date* 1/24/24	*Time* 14 13
Sample Numbers *[All]*		

Sample Number	**P82956-1**	**P82956-2**	
QC Link			
Locator	**SCTF-TB2-IN**	**SCTF-TB2-OUT**	
Short Loc Desc			
Locator Desc	SCTF-TB2 upstream sampling station	SCTF-TB2 downstream sampling station	
Site	I-5TAPE	I-5TAPE	
Comments	First grab	First grab	
Start Date/Time	1/24/24 7:55	1/24/24 7:56	
End Date/Time	N/A	N/A	
Time Span	0	0	
Sample Depth	N/A	N/A	
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	

Login: P82956
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On TAPE

FSU TC: ____________

LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by	***Date***	***Time***
Received by	***Date***	***Time***
Sample Numbers		***[All]***

Sample Number	**P82956-3**	**P82956-4**	
QC Link			
Locator	**SCTF-TB2-IN**	**SCTF-TB2-OUT**	
Short Loc Desc			
Locator Desc	SCTF-TB2 upstream sampling station	SCTF-TB2 downstream sampling station	
Site	I-5TAPE	I-5TAPE	
Comments	Second grab	Second grab	
Start Date/Time	1/24/24 9:04	1/24/24 9:05	
End Date/Time	N/A	N/A	
Time Span	0	0	
Sample Depth	N/A	N/A	
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	

Login: P82956
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On TAPE

FSU TC: ______________
LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by	*Date*	*Time*
Received by	*Date*	*Time*
Sample Numbers		*[All]*

Sample Number	P82956-9		
QC Link			
Locator	FIELDDUP		
Short Loc Desc			
Locator Desc	FIELD DUPLICATE		
Site	FLDQC		
Comments	Field dup of inlet second grab TB4	Reference sample is L82955-15 ME 1/25/24	
Start Date/Time	1/24/24 9:07		
End Date/Time	N/A		
Time Span	0		
Sample Depth	N/A		
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)		

LIQUID SAMPLE RECEIPT RECORD

Login Number(s): 82956	**Project No.:** 421580-200	**Sub-Contracting:** Y / [✓ N]	**List Product(s):**
Collect Date(s): 1/24/24	**Receive Date:** 1/24/24	**Changes:** Y / [✓ N]	**List Parameter(s):**

SAMPLE RECEIPT CONDITIONS

CONDITION	Acceptable?	Comment ID	CONDITION	Acceptable?	Comment ID
Labels / Fieldsheets	[✓ Y] / N		Volumes	[✓ Y] / N	
Container	[✓ Y] / N		Holding Times	[✓ Y] / N	
Temperature (w/ ice)	[✓ Y] / N / NA		Delivery Location	[✓ Y] / N	

BOTTLE COUNT (#) AND DESCRIPTION and SAMPLE NUMBERS

#	Bottle Description: Sample Numbers
	40 mL clear vial (VOA):
	60 mL clear glass (PHYTO):
	60 mL CWM HDPE:
	125 mL AWM HDPE:
	125 mL CNM HDPE:
	125 mL CWM HDPE:
	125 mL GANM:
	125 mL GANM w/HCl
5	250 mL AWM HDPE: 1-4, 9
	250 mL CWM HDPE:
	250 mL CWM HDPE (MICRO):
	250 mL GAWM:
	250 mL GAWM w/ H2SO4:
	300 mL WDO (8 hour HT):
	500 mL AWM HDPE:
	500 mL CWM HDPE:
	500 mL CWM PP (MICRO):
	500 mL HDPE (METALS):
	500 mL HDPE, double-bagged (METALS):
	500 mL Teflon (Hg):
	500 mL Teflon, double-bagged (METALS):
	500 mL GANM / GAWM:
	500 mL Polystyrene Filtration Units (METALS):
	1L AWM HDPE:
	1L CWM HDPE:
	1L CWM PP (MICRO):
	1L GANM:
	1L GCWM:
	1L GAWM w/ H_2SO_4:
	2L CWM HDPE:
	Other:

COMMENTS / NOTIFICATIONS

FIELD PRESERVATION CHECKLIST (Circle and/or check applicable selections)

PRODUCT / Preservation	SM Action	Acceptable?	Corrective Action
BNA / pH 6 - 9 w/ H_2SO_4 or NaOH	√ field sheet for F. pH	Y / N	☐ Notify ORG
CN / pH > 12 w/ NaOH within 15 min	☐ Check pH	Y / N	☐ Deliver to CONV
NO23 pH < 2 w/ H_2SO_4	☐ Check pH	Y / N / NA	☐ Preserve by SM
CR(VI) / TOTCR(VI) / pH 9.3 - 9.7 w/ NaOH w/in 15 min	√ field sheet for pH	Y / N	☐ Deliver to CONV
ICP / HG-CVAA-M / pH < 2 w/ HNO_3	☐ Check pH	Y / N	☐ Preserve By SM
O&G / HEM / PHENOL / pH < 2 w/ H_2SO_4	Check documentation	Y / N	☐ Preserve by SM
PHYTOPLANKTON / Lugols	Visually inspect	Y / N	☐ Deliver to MICRO
TKN / COD pH < 2 w/ H_2SO_4 within 15 min	☐ Check pH	Y / N	☐ Preserve By SM
TOC / pH < 2 w/ HCl (NPDES only)	☐ Check pH	Y / N	☐ Preserve By SM
TOTSULFIDE / pH > 9 w/ NaOH, ZnAc	Check documentation	Y / N	☐ Deliver to CONV
WDO / FIXED	Visually inspect	Y / N	☐ Deliver to CONV
Other:			

ROUTINE SM PRESERVATION CHECKLIST (Circle and/or check applicable selections)

PRODUCT / Preservation	SM Action	Acceptable?	Corrective Action
Chlorinated Pesticides / pH 5 - 9 w/ H_2SO_4 or NaOH	√ field sheet for F. pH	Y / N	☐ Adjust pH
HG-CVAA-L-Teflon (T / D) / pH < 2 w/ ULTRA HCl	☐ Preserve & deliver	NA	NA
ICPMS / HG-CVAA-M (T / D) / pH < 2 w/ ULTRA HNO_3	☐ Preserve & deliver	NA	NA
TOC / pH < 2 w/ HCl	☐ Preserve & deliver	NA	NA
Other:			
Other:			

INTERFERENCE TEST (Circle and/or check applicable selections)

Product / Interference (SM Action)	Positive Test?	Treated	Corrective Action
BNA / Chlorine (Check documentation)	Y / N / not tested	Y / N	☐ Deliver to ORG
CN / Chlorine (Check documentation)	Y / N / not tested	Y / N	☐ Deliver to CONV
CN / Sulfide (Check field sheet for DF)	Y / N / not tested	Y / N	☐ Deliver to CONV
VOA / Chlorine (Check documentaion)	Y / N / not tested	Y / N	☐ Deliver to ORG
Other:			

HEADSPACE CHECK

PRODUCT (SM Action)	Check For	Acceptable?	Corrective Action
MICRO (Visually inspect)	Headspace (@ 1")	Y / N	☐ Notify MICRO
TOTSULFIDE (Visually inspect)	Headspace (< 1")	Y / N	☐ Notify CONV
VOA (Visually inspect)	Zero headspace	Y / N	☐ Notify ORG
WDO (Visually inspect)	Zero headspace	Y / N	☐ Notify CONV
Other:			

FIELD FILTRATION CHECKLIST (Circle and/or check applicable selections)

Product (SM Action)	Field Filtered	Field Blank	Corrective Action
ORTHOP (Check Field Sheet)	Y (within 15 min y / n) / N	Y / N	☐ Deliver to CONV
NO2 / NO3 / NO23 / NH3 / SI (Documentation)	Y (within 1 day y / n) / N	Y / N / NA	☐ Deliver to CONV
Dissolved Metals (Check Field Sheet)	Y (within 15 min y / n) / N	Y / N / NA	☐ Deliver to METALS
DOC (Deliver / Notify Unit)	Y (within 15 min or 1 day) / N	Y / N / NA	☐ Deliver to CONV
DCOD / CR(VI) (Deliver / Notify Unit)	Y (within 15 min y / n) / N	Y / N / NA	☐ Deliver to CONV
Other:			
Other:			

CC: ☐ AQUATOX, ☐ CONV, ☐ METALS, ☐ MICRO, ☐ ORG, ☐ ____________

NOTES

1. Deliver dissolved Hg-CVAF samples to METALS for filtration.
2. Deliver double-bagged metals samples to METALS for preservation.
3. Do not test pH for preserved BNA and TOTSULFIDE samples.
4. Deliver pH, WDO, and all MICRO samples ASAP to appropriate section for immediate processing.
5. Enter " Time Span" for composite samples during sample login.
6. Split algae sample into 60 mL clear glass if PHYTOQUAL is requested.

SM Signature: ____________

Date / Time Completed: JAN 24 '24 14:21

King County
Department of Natural Resources and Parks
Water and Land Resources Division
Environmental Laboratory
LAB-NR0100
322 West Ewing Street
Seattle, WA 98119-1507
206-477-7200 Fax 206-684-2395
TTY Relay: 711

Date: March 22, 2024

To: Madison Bristol, Washington State Department of Ecology

Clark, Herrera Environmental Consultants

From: Meghan Elkey, King County Environmental Laboratory

Subject: BMP Stormwater Characterization – Herrera Add-on 6PPDQ Samples Data Summary, February 28, 2024

Stormwater samples were collected by Herrera Environmental Consultants on February 28, 2024. The samples were delivered to the King County Environmental Laboratory on February 29, 2024. The samples were assigned lab ID numbers L83306-1-68 and -70-86. The following QC summary is included for your information.

All samples received were analyzed as requested. The samples were analyzed in the Aquatic Toxicology unit of the laboratory. The data have passed all QA/QC checks for accuracy and completeness and may be used without qualification.

All equipment blank samples (L83306-81 to -86) were reextracted and reanalyzed to confirm reported sample results.

Please contact me if you have any questions about this report or need additional information.

Sincerely,

Meghan Elkey

Meghan Elkey
Laboratory Project Manager/Water Quality Planner III
King County Environmental Lab
(206)477-7154 or meghan.elkey@kingcounty.gov

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200	Project:	421520-200
Locator:	CONT	Locator:	CONT	Locator:	CONT
Descrip:	Control Sample	Descrip:	Control Sample	Descrip:	Control Sample
Sample:	L83306-1	Sample:	L83306-2	Sample:	L83306-3
Matrix:	LG STORM WTR	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
ColDate:	2/28/24 9:37	ColDate:	2/28/24 10:00	ColDate:	2/28/24 10:23
WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.944		0.002	0.01	ug/L	0.944		0.002	0.01	ug/L	0.863		0.002	0.01	ug/L
ES NONE															
Sample Information															

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200	Project:	421520-200
Locator:	CONT	Locator:	CONT	Locator:	CONT
Descrip:	Control Sample	Descrip:	Control Sample	Descrip:	Control Sample
Sample:	L83306-4	Sample:	L83306-5	Sample:	L83306-6
Matrix:	LG STORM WTR	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
ColDate:	2/28/24 10:49	ColDate:	2/28/24 13:04	ColDate:	2/28/24 14:08
WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.737		0.002	0.01	ug/L	0.434		0.002	0.01	ug/L	0.648		0.002	0.01	ug/L
ES NONE															
Sample Information															

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200	Project:	421520-200
Locator:	CONT	Locator:	CONT	Locator:	CONT
Descrip:	Control Sample	Descrip:	Control Sample	Descrip:	Control Sample
Sample:	L83306-7	Sample:	L83306-8	Sample:	L83306-9
Matrix:	LG STORM WTR	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
ColDate:	2/28/24 14:29	ColDate:	2/28/24 14:52	ColDate:	2/28/24 15:20
WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.84		0.002	0.01	ug/L	1.19		0.002	0.01	ug/L	1.38		0.002	0.01	ug/L
ES NONE															
Sample Information															

King County Environmental Lab Analytical Report

	Project: 421520-200 Locator: CONT Descrip: Control Sample Sample: L83306-10 Matrix: LG STORM WTR ColDate: 2/28/24 15:47 **WET Weight Basis**					Project: 421520-200 Locator: PTFE_TUB Descrip: PTFE tubing Sample: L83306-11 Matrix: LG STORM WTR ColDate: 2/28/24 9:39 **WET Weight Basis**					Project: 421520-200 Locator: PTFE_TUB Descrip: PTFE tubing Sample: L83306-12 Matrix: LG STORM WTR ColDate: 2/28/24 10:01 **WET Weight Basis**				
Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	1.26		0.002	0.01	ug/L	0.862		0.002	0.01	ug/L	0.899		0.002	0.01	ug/L
ES NONE															
Sample Information															

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200	Project:	421520-200
Locator:	PTFE_TUB	Locator:	PTFE_TUB	Locator:	PTFE_TUB
Descrip:	PTFE tubing	Descrip:	PTFE tubing	Descrip:	PTFE tubing
Sample:	L83306-13	Sample:	L83306-14	Sample:	L83306-15
Matrix:	LG STORM WTR	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
ColDate:	2/28/24 10:25	ColDate:	2/28/24 10:50	ColDate:	2/28/24 13:07
WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.851		0.002	0.01	ug/L	0.719		0.002	0.01	ug/L	0.439		0.002	0.01	ug/L
ES NONE															
Sample Information															

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200	Project:	421520-200
Locator:	PTFE_TUB	Locator:	PTFE_TUB	Locator:	PTFE_TUB
Descrip:	PTFE tubing	Descrip:	PTFE tubing	Descrip:	PTFE tubing
Sample:	L83306-16	Sample:	L83306-17	Sample:	L83306-18
Matrix:	LG STORM WTR	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
ColDate:	2/28/24 14:09	ColDate:	2/28/24 14:30	ColDate:	2/28/24 14:54
WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.627		0.002	0.01	ug/L	0.789		0.002	0.01	ug/L	1.19		0.002	0.01	ug/L
ES NONE															
Sample Information															

King County Environmental Lab Analytical Report

Project:	421520-200	421520-200	421520-200
Locator:	PTFE_TUB	PTFE_TUB	PTFE_TUB_OLD
Descrip:	PTFE tubing	PTFE tubing	PTFE Tubing - Old
Sample:	L83306-19	L83306-20	L83306-21
Matrix:	LG STORM WTR	LG STORM WTR	LG STORM WTR
ColDate:	2/28/24 15:22	2/28/24 15:49	2/28/24 9:41
	WET Weight Basis	**WET Weight Basis**	**WET Weight Basis**

Parameters	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	1.33		0.002	0.01	ug/L	1.27		0.002	0.01	ug/L	0.912		0.002	0.01	ug/L
ES NONE															
Sample Information															

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200	Project:	421520-200
Locator:	PTFE_TUB_OLD	Locator:	PTFE_TUB_OLD	Locator:	PTFE_TUB_OLD
Descrip:	PTFE Tubing - Old	Descrip:	PTFE Tubing - Old	Descrip:	PTFE Tubing - Old
Sample:	L83306-22	Sample:	L83306-23	Sample:	L83306-24
Matrix:	LG STORM WTR	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
ColDate:	2/28/24 10:03	ColDate:	2/28/24 10:27	ColDate:	2/28/24 10:52
WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.944		0.002	0.01	ug/L	0.873		0.002	0.01	ug/L	0.729		0.002	0.01	ug/L
ES NONE															
Sample Information															

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200	Project:	421520-200
Locator:	PTFE_TUB_OLD	Locator:	PTFE_TUB_OLD	Locator:	PTFE_TUB_OLD
Descrip:	PTFE Tubing - Old	Descrip:	PTFE Tubing - Old	Descrip:	PTFE Tubing - Old
Sample:	L83306-25	Sample:	L83306-26	Sample:	L83306-27
Matrix:	LG STORM WTR	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
ColDate:	2/28/24 13:08	ColDate:	2/28/24 14:11	ColDate:	2/28/24 14:32
WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.445		0.002	0.01	ug/L	0.626		0.002	0.01	ug/L	0.784		0.002	0.01	ug/L
ES NONE															
Sample Information															

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200	Project:	421520-200
Locator:	PTFE_TUB_OLD	Locator:	PTFE_TUB_OLD	Locator:	PTFE_TUB_OLD
Descrip:	PTFE Tubing - Old	Descrip:	PTFE Tubing - Old	Descrip:	PTFE Tubing - Old
Sample:	L83306-28	Sample:	L83306-29	Sample:	L83306-30
Matrix:	LG STORM WTR	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
ColDate:	2/28/24 14:55	ColDate:	2/28/24 15:24	ColDate:	2/28/24 15:50
WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	1.17		0.002	0.01	ug/L	1.32		0.002	0.01	ug/L	1.21		0.002	0.01	ug/L
ES NONE															
Sample Information															

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200	Project:	421520-200
Locator:	HDPE_24	Locator:	HDPE_24	Locator:	HDPE_24
Descrip:	HDPE - 24 hours	Descrip:	HDPE - 24 hours	Descrip:	HDPE - 24 hours
Sample:	L83306-31	Sample:	L83306-32	Sample:	L83306-33
Matrix:	LG STORM WTR	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
ColDate:	2/28/24 9:43	ColDate:	2/28/24 10:04	ColDate:	2/28/24 10:28
WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	1.02		0.002	0.01	ug/L	0.955		0.002	0.01	ug/L	0.874		0.002	0.01	ug/L
ES NONE															
Sample Information															

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200	Project:	421520-200
Locator:	HDPE_24	Locator:	HDPE_24	Locator:	HDPE_24
Descrip:	HDPE - 24 hours	Descrip:	HDPE - 24 hours	Descrip:	HDPE - 24 hours
Sample:	L83306-34	Sample:	L83306-35	Sample:	L83306-36
Matrix:	LG STORM WTR	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
ColDate:	2/28/24 10:54	ColDate:	2/28/24 13:09	ColDate:	2/28/24 14:12
WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.753		0.002	0.01	ug/L	0.424		0.002	0.01	ug/L	0.684		0.002	0.01	ug/L
ES NONE															
Sample Information															

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200	Project:	421520-200
Locator:	HDPE_24	Locator:	HDPE_24	Locator:	HDPE_24
Descrip:	HDPE - 24 hours	Descrip:	HDPE - 24 hours	Descrip:	HDPE - 24 hours
Sample:	L83306-37	Sample:	L83306-38	Sample:	L83306-39
Matrix:	LG STORM WTR	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
ColDate:	2/28/24 14:34	ColDate:	2/28/24 14:57	ColDate:	2/28/24 15:28
WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.833		0.002	0.01	ug/L	1.29		0.002	0.01	ug/L	1.35		0.002	0.01	ug/L
ES NONE															
Sample Information															

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200	Project:	421520-200
Locator:	HDPE_24	Locator:	HDPE_24_20L	Locator:	HDPE_24_20L
Descrip:	HDPE - 24 hours	Descrip:	HDPE - 24 hours -	Descrip:	HDPE - 24 hours -
Sample:	L83306-40	Sample:	L83306-41	Sample:	L83306-42
Matrix:	LG STORM WTR	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
ColDate:	2/28/24 15:52	ColDate:	2/28/24 9:44	ColDate:	2/28/24 10:05
WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	1.21		0.002	0.01	ug/L	0.918		0.002	0.01	ug/L	0.873		0.002	0.01	ug/L
ES NONE															
Sample Information															

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200	Project:	421520-200
Locator:	HDPE_24_20L	Locator:	HDPE_24_20L	Locator:	HDPE_24_20L
Descrip:	HDPE - 24 hours -	Descrip:	HDPE - 24 hours -	Descrip:	HDPE - 24 hours -
Sample:	L83306-43	Sample:	L83306-44	Sample:	L83306-45
Matrix:	LG STORM WTR	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
ColDate:	2/28/24 10:30	ColDate:	2/28/24 10:55	ColDate:	2/28/24 13:10
WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.769		0.002	0.01	ug/L	0.708		0.002	0.01	ug/L	0.415		0.002	0.01	ug/L
ES NONE															
Sample Information															

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200	Project:	421520-200
Locator:	HDPE_24_20L	Locator:	HDPE_24_20L	Locator:	HDPE_24_20L
Descrip:	HDPE - 24 hours -	Descrip:	HDPE - 24 hours -	Descrip:	HDPE - 24 hours -
Sample:	L83306-46	Sample:	L83306-47	Sample:	L83306-48
Matrix:	LG STORM WTR	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
ColDate:	2/28/24 14:13	ColDate:	2/28/24 14:36	ColDate:	2/28/24 14:59
WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.587		0.002	0.01	ug/L	0.841		0.002	0.01	ug/L	1.18		0.002	0.01	ug/L
ES NONE															
Sample Information															

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200	Project:	421520-200
Locator:	HDPE_24_20L	Locator:	HDPE_24_20L	Locator:	HDPE_OLD
Descrip:	HDPE - 24 hours -	Descrip:	HDPE - 24 hours -	Descrip:	HDPE - Old
Sample:	L83306-49	Sample:	L83306-50	Sample:	L83306-51
Matrix:	LG STORM WTR	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
ColDate:	2/28/24 15:30	ColDate:	2/28/24 15:53	ColDate:	2/28/24 9:47
WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	1.46		0.002	0.01	ug/L	1.2		0.002	0.01	ug/L	1		0.002	0.01	ug/L
ES NONE															
Sample Information															

King County Environmental Lab Analytical Report

Project: 421520-200
Locator: HDPE_OLD
Descrip: HDPE - Old
Sample: L83306-52
Matrix: LG STORM WTR
ColDate: 2/28/24 10:08
WET Weight Basis

Project: 421520-200
Locator: HDPE_OLD
Descrip: HDPE - Old
Sample: L83306-53
Matrix: LG STORM WTR
ColDate: 2/28/24 10:33
WET Weight Basis

Project: 421520-200
Locator: HDPE_OLD
Descrip: HDPE - Old
Sample: L83306-54
Matrix: LG STORM WTR
ColDate: 2/28/24 10:58
WET Weight Basis

Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.947		0.002	0.01	ug/L	0.861		0.002	0.01	ug/L	0.725		0.002	0.01	ug/L
ES NONE															
Sample Information															

King County Environmental Lab Analytical Report

	Project: 421520-200 Locator: HDPE_OLD Descrip: HDPE - Old Sample: L83306-55 Matrix: LG STORM WTR ColDate: 2/28/24 13:13 **WET Weight Basis**					Project: 421520-200 Locator: HDPE_OLD Descrip: HDPE - Old Sample: L83306-56 Matrix: LG STORM WTR ColDate: 2/28/24 14:16 **WET Weight Basis**					Project: 421520-200 Locator: HDPE_OLD Descrip: HDPE - Old Sample: L83306-57 Matrix: LG STORM WTR ColDate: 2/28/24 14:40 **WET Weight Basis**				
Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.421		0.002	0.01	ug/L	0.646		0.002	0.01	ug/L	0.862		0.002	0.01	ug/L
ES NONE															
Sample Information															

King County Environmental Lab Analytical Report

Project: 421520-200
Locator: HDPE_OLD
Descrip: HDPE - Old
Sample: L83306-58
Matrix: LG STORM WTR
ColDate: 2/28/24 15:02
WET Weight Basis

Project: 421520-200
Locator: HDPE_OLD
Descrip: HDPE - Old
Sample: L83306-59
Matrix: LG STORM WTR
ColDate: 2/28/24 15:34
WET Weight Basis

Project: 421520-200
Locator: HDPE_OLD
Descrip: HDPE - Old
Sample: L83306-60
Matrix: LG STORM WTR
ColDate: 2/28/24 15:56
WET Weight Basis

Parameters	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	1.29		0.002	0.01	ug/L	1.34		0.002	0.01	ug/L	1.26		0.002	0.01	ug/L
ES NONE															
Sample Information															

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200	Project:	421520-200
Locator:	AUTO_OLD	Locator:	AUTO_OLD	Locator:	AUTO_OLD
Descrip:	Auto - Old	Descrip:	Auto - Old	Descrip:	Auto - Old
Sample:	L83306-61	Sample:	L83306-62	Sample:	L83306-63
Matrix:	LG STORM WTR	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
ColDate:	2/28/24 9:48	ColDate:	2/28/24 10:09	ColDate:	2/28/24 10:35
WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.929		0.002	0.01	ug/L	0.985		0.002	0.01	ug/L	0.835		0.002	0.01	ug/L
ES NONE															
Sample Information															

King County Environmental Lab Analytical Report

	Project: 421520-200 Locator: AUTO_OLD Descrip: Auto - Old Sample: L83306-64 Matrix: LG STORM WTR ColDate: 2/28/24 11:00 **WET Weight Basis**					Project: 421520-200 Locator: AUTO_OLD Descrip: Auto - Old Sample: L83306-65 Matrix: LG STORM WTR ColDate: 2/28/24 13:14 **WET Weight Basis**					Project: 421520-200 Locator: AUTO_OLD Descrip: Auto - Old Sample: L83306-66 Matrix: LG STORM WTR ColDate: 2/28/24 14:17 **WET Weight Basis**				
Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.686		0.002	0.01	ug/L	0.412		0.002	0.01	ug/L	0.626		0.002	0.01	ug/L
ES NONE															
Sample Information															

King County Environmental Lab Analytical Report

	Project:	421520-200				Project:	421520-200				Project:	421520-200			
	Locator:	AUTO_OLD				Locator:	AUTO_OLD				Locator:	AUTO_OLD			
	Descrip:	Auto - Old				Descrip:	Auto - Old				Descrip:	Auto - Old			
	Sample:	L83306-67				Sample:	L83306-68				Sample:	L83306-70			
	Matrix:	LG STORM WTR				Matrix:	LG STORM WTR				Matrix:	LG STORM WTR			
	ColDate:	2/28/24 14:40				ColDate:	2/28/24 15:03				ColDate:	2/28/24 15:37			
	WET Weight Basis					**WET Weight Basis**					**WET Weight Basis**				
Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.829		0.002	0.01	ug/L	1.17		0.002	0.01	ug/L	1.25		0.002	0.01	ug/L
ES NONE															
Sample Information															

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200	Project:	421520-200
Locator:	FIELDDUP	Locator:	FIELDDUP	Locator:	FIELDDUP
Descrip:	FIELD DUPLICATE	Descrip:	FIELD DUPLICATE	Descrip:	FIELD DUPLICATE
Sample:	L83306-71	Sample:	L83306-72	Sample:	L83306-73
Matrix:	LG STORM WTR	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
ColDate:	2/28/24 9:53	ColDate:	2/28/24 10:13	ColDate:	2/28/24 10:38
WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.946		0.002	0.01	ug/L	0.935		0.002	0.01	ug/L	0.865		0.002	0.01	ug/L
ES NONE															
Sample Information															

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200	Project:	421520-200
Locator:	FIELDDUP	Locator:	FIELDDUP	Locator:	FIELDDUP
Descrip:	FIELD DUPLICATE	Descrip:	FIELD DUPLICATE	Descrip:	FIELD DUPLICATE
Sample:	L83306-74	Sample:	L83306-75	Sample:	L83306-76
Matrix:	LG STORM WTR	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
ColDate:	2/28/24 11:04	ColDate:	2/28/24 13:18	ColDate:	2/28/24 14:26
WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.721		0.002	0.01	ug/L	0.442		0.002	0.01	ug/L	0.635		0.002	0.01	ug/L
ES NONE															
Sample Information															

King County Environmental Lab Analytical Report

Project: 421520-200
Locator: FIELDDUP
Descrip: FIELD DUPLICATE
Sample: L83306-77
Matrix: LG STORM WTR
ColDate: 2/28/24 14:43
WET Weight Basis

Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS					
6ppd-quinone	0.822		0.002	0.01	ug/L
ES NONE					
Sample Information					

Project: 421520-200
Locator: FIELDDUP
Descrip: FIELD DUPLICATE
Sample: L83306-78
Matrix: LG STORM WTR
ColDate: 2/28/24 15:06
WET Weight Basis

Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS					
6ppd-quinone	1.2		0.002	0.01	ug/L
ES NONE					
Sample Information					

Project: 421520-200
Locator: FIELDDUP
Descrip: FIELD DUPLICATE
Sample: L83306-79
Matrix: LG STORM WTR
ColDate: 2/28/24 15:38
WET Weight Basis

Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS					
6ppd-quinone	1.38		0.002	0.01	ug/L
ES NONE					
Sample Information					

King County Environmental Lab Analytical Report

Project: 421520-200
Locator: FIELDDUP
Descrip: FIELD DUPLICATE
Sample: L83306-80
Matrix: LG STORM WTR
ColDate: 2/28/24 15:59
WET Weight Basis

Project: 421520-200
Locator: EQUIPBLANK
Descrip: EQUIPMENT BLANK
Sample: L83306-81
Matrix: LN BLANK WTR
ColDate: 2/28/24 8:52
WET Weight Basis

Project: 421520-200
Locator: EQUIPBLANK
Descrip: EQUIPMENT BLANK
Sample: L83306-82
Matrix: LN BLANK WTR
ColDate: 2/28/24 8:52
WET Weight Basis

Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	1.26		0.002	0.01	ug/L	0.003	<RDL	0.002	0.01	ug/L	0.0033	<RDL	0.002	0.01	ug/L
ES NONE															
Sample Information						Rinsate Blank - PTFE Pre				none	Rinsate Blank - PTFE_OLD Pre				none

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200	Project:	421520-200
Locator:	EQUIPBLANK	Locator:	EQUIPBLANK	Locator:	EQUIPBLANK
Descrip:	EQUIPMENT BLANK	Descrip:	EQUIPMENT BLANK	Descrip:	EQUIPMENT BLANK
Sample:	L83306-83	Sample:	L83306-84	Sample:	L83306-85
Matrix:	LN BLANK WTR	Matrix:	LN BLANK WTR	Matrix:	LN BLANK WTR
ColDate:	2/28/24 8:52	ColDate:	2/28/24 16:11	ColDate:	2/28/24 16:04
WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.004	<RDL	0.002	0.01	ug/L	0.0032	<RDL	0.002	0.01	ug/L	0.0063	<RDL	0.002	0.01	ug/L
ES NONE															
Sample Information	Rinsate Blank - CHURN Pre				none	Rinsate Blank - PTFE Post				none	Rinsate Blank - PTFE_OLD Post				none

King County Environmental Lab Analytical Report

Project: 421520-200
Locator: EQUIPBLANK
Descrip: EQUIPMENT BLANK
Sample: L83306-86
Matrix: LN BLANK WTR
ColDate: 2/28/24 16:13
WET Weight Basis

Parameters	Value	Qual	MDL	RDL	Units
AQ KCEL SOP 4077: 6PPDQ by LCMS					
6ppd-quinone	0.0071	<RDL	0.002	0.01	ug/L
ES NONE					
Sample Information	Rinsate Blank - CHURN Post				none

King County Environmental Lab Analytical MATRIX Report

Owner: **SEEDPAK**
Matrix Class: **LIQUID**
User select: **WET Weight Basis**

				6ppd-quinone	Sample Information
LOCATOR	**PROJECT**	**SAMPLE**	**COLLECTED**	**ug/L**	**none**
CONT	421520-200	L83306-1	2/28/2024 9:37	0.944	
CONT	421520-200	L83306-2	2/28/2024 10:00	0.944	
CONT	421520-200	L83306-3	2/28/2024 10:23	0.863	
CONT	421520-200	L83306-4	2/28/2024 10:49	0.737	
CONT	421520-200	L83306-5	2/28/2024 13:04	0.434	
CONT	421520-200	L83306-6	2/28/2024 14:08	0.648	
CONT	421520-200	L83306-7	2/28/2024 14:29	0.84	
CONT	421520-200	L83306-8	2/28/2024 14:52	1.19	
CONT	421520-200	L83306-9	2/28/2024 15:20	1.38	
CONT	421520-200	L83306-10	2/28/2024 15:47	1.26	
PTFE_TUB	421520-200	L83306-11	2/28/2024 9:39	0.862	
PTFE_TUB	421520-200	L83306-12	2/28/2024 10:01	0.899	
PTFE_TUB	421520-200	L83306-13	2/28/2024 10:25	0.851	
PTFE_TUB	421520-200	L83306-14	2/28/2024 10:50	0.719	
PTFE_TUB	421520-200	L83306-15	2/28/2024 13:07	0.439	
PTFE_TUB	421520-200	L83306-16	2/28/2024 14:09	0.627	
PTFE_TUB	421520-200	L83306-17	2/28/2024 14:30	0.789	
PTFE_TUB	421520-200	L83306-18	2/28/2024 14:54	1.19	
PTFE_TUB	421520-200	L83306-19	2/28/2024 15:22	1.33	
PTFE_TUB	421520-200	L83306-20	2/28/2024 15:49	1.27	
PTFE_TUB_OLD	421520-200	L83306-21	2/28/2024 9:41	0.912	
PTFE_TUB_OLD	421520-200	L83306-22	2/28/2024 10:03	0.944	
PTFE_TUB_OLD	421520-200	L83306-23	2/28/2024 10:27	0.873	
PTFE_TUB_OLD	421520-200	L83306-24	2/28/2024 10:52	0.729	
PTFE_TUB_OLD	421520-200	L83306-25	2/28/2024 13:08	0.445	
PTFE_TUB_OLD	421520-200	L83306-26	2/28/2024 14:11	0.626	
PTFE_TUB_OLD	421520-200	L83306-27	2/28/2024 14:32	0.784	
PTFE_TUB_OLD	421520-200	L83306-28	2/28/2024 14:55	1.17	
PTFE_TUB_OLD	421520-200	L83306-29	2/28/2024 15:24	1.32	
PTFE_TUB_OLD	421520-200	L83306-30	2/28/2024 15:50	1.21	
HDPE_24	421520-200	L83306-31	2/28/2024 9:43	1.02	
HDPE_24	421520-200	L83306-32	2/28/2024 10:04	0.955	
HDPE_24	421520-200	L83306-33	2/28/2024 10:28	0.874	

King County Environmental Lab Analytical MATRIX Report

Owner: **SEEDPAK**
Matrix Class: **LIQUID**
User select: **WET Weight Basis**

				6ppd-quinone	Sample Information
HDPE_24	421520-200	L83306-34	2/28/2024 10:54	0.753	
HDPE_24	421520-200	L83306-35	2/28/2024 13:09	0.424	
HDPE_24	421520-200	L83306-36	2/28/2024 14:12	0.684	
HDPE_24	421520-200	L83306-37	2/28/2024 14:34	0.833	
HDPE_24	421520-200	L83306-38	2/28/2024 14:57	1.29	
HDPE_24	421520-200	L83306-39	2/28/2024 15:28	1.35	
HDPE_24	421520-200	L83306-40	2/28/2024 15:52	1.21	
HDPE_24_20L	421520-200	L83306-41	2/28/2024 9:44	0.918	
HDPE_24_20L	421520-200	L83306-42	2/28/2024 10:05	0.873	
HDPE_24_20L	421520-200	L83306-43	2/28/2024 10:30	0.769	
HDPE_24_20L	421520-200	L83306-44	2/28/2024 10:55	0.708	
HDPE_24_20L	421520-200	L83306-45	2/28/2024 13:10	0.415	
HDPE_24_20L	421520-200	L83306-46	2/28/2024 14:13	0.587	
HDPE_24_20L	421520-200	L83306-47	2/28/2024 14:36	0.841	
HDPE_24_20L	421520-200	L83306-48	2/28/2024 14:59	1.18	
HDPE_24_20L	421520-200	L83306-49	2/28/2024 15:30	1.46	
HDPE_24_20L	421520-200	L83306-50	2/28/2024 15:53	1.2	
HDPE_OLD	421520-200	L83306-51	2/28/2024 9:47	1	
HDPE_OLD	421520-200	L83306-52	2/28/2024 10:08	0.947	
HDPE_OLD	421520-200	L83306-53	2/28/2024 10:33	0.861	
HDPE_OLD	421520-200	L83306-54	2/28/2024 10:58	0.725	
HDPE_OLD	421520-200	L83306-55	2/28/2024 13:13	0.421	
HDPE_OLD	421520-200	L83306-56	2/28/2024 14:16	0.646	
HDPE_OLD	421520-200	L83306-57	2/28/2024 14:40	0.862	
HDPE_OLD	421520-200	L83306-58	2/28/2024 15:02	1.29	
HDPE_OLD	421520-200	L83306-59	2/28/2024 15:34	1.34	
HDPE_OLD	421520-200	L83306-60	2/28/2024 15:56	1.26	
AUTO_OLD	421520-200	L83306-61	2/28/2024 9:48	0.929	
AUTO_OLD	421520-200	L83306-62	2/28/2024 10:09	0.985	
AUTO_OLD	421520-200	L83306-63	2/28/2024 10:35	0.835	
AUTO_OLD	421520-200	L83306-64	2/28/2024 11:00	0.686	
AUTO_OLD	421520-200	L83306-65	2/28/2024 13:14	0.412	
AUTO_OLD	421520-200	L83306-66	2/28/2024 14:17	0.626	
AUTO_OLD	421520-200	L83306-67	2/28/2024 14:40	0.829	

King County Environmental Lab Analytical MATRIX Report

Owner: **SEEDPAK**
Matrix Class: **LIQUID**
User select: **WET Weight Basis**

				6ppd-quinone	Sample Information
AUTO_OLD	421520-200	L83306-68	2/28/2024 15:03	1.17	
AUTO_OLD	421520-200	L83306-70	2/28/2024 15:37	1.25	
FIELDDUP	421520-200	L83306-71	2/28/2024 9:53	0.946	
FIELDDUP	421520-200	L83306-72	2/28/2024 10:13	0.935	
FIELDDUP	421520-200	L83306-73	2/28/2024 10:38	0.865	
FIELDDUP	421520-200	L83306-74	2/28/2024 11:04	0.721	
FIELDDUP	421520-200	L83306-75	2/28/2024 13:18	0.442	
FIELDDUP	421520-200	L83306-76	2/28/2024 14:26	0.635	
FIELDDUP	421520-200	L83306-77	2/28/2024 14:43	0.822	
FIELDDUP	421520-200	L83306-78	2/28/2024 15:06	1.2	
FIELDDUP	421520-200	L83306-79	2/28/2024 15:38	1.38	
FIELDDUP	421520-200	L83306-80	2/28/2024 15:59	1.26	
EQUIPBLANK	421520-200	L83306-81	2/28/2024 8:52	0.003	
EQUIPBLANK	421520-200	L83306-82	2/28/2024 8:52	0.0033	
EQUIPBLANK	421520-200	L83306-83	2/28/2024 8:52	0.004	
EQUIPBLANK	421520-200	L83306-84	2/28/2024 16:11	0.0032	
EQUIPBLANK	421520-200	L83306-85	2/28/2024 16:04	0.0063	
EQUIPBLANK	421520-200	L83306-86	2/28/2024 16:13	0.0071	
* Not converted to dry weight basis					

If a parameter/analyte appears twice in the column header, it implies that they were analyzed by two different method codes

WG192905 6PPDQ by LCMS

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	QC Association	Comments
L83306-1	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 9:37	3/1/2024 8:00	3/5/2024 13:00	WG192905-1,-2,-3,-4,-5,-6	
L83306-2	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 10:00	3/1/2024 8:00	3/5/2024 13:00	WG192905-1,-2,-3,-4,-5,-6	
L83306-11	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 9:39	3/1/2024 8:00	3/5/2024 13:00	WG192905-1,-2,-3,-4,-5,-6	
L83306-12	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 10:01	3/1/2024 8:00	3/5/2024 13:00	WG192905-1,-2,-3,-4,-5,-6	
L83306-21	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 9:41	3/1/2024 8:00	3/5/2024 13:00	WG192905-1,-2,-3,-4,-5,-6	
L83306-22	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 10:03	3/1/2024 8:00	3/5/2024 13:00	WG192905-1,-2,-3,-4,-5,-6	
L83306-31	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 9:43	3/1/2024 8:00	3/5/2024 13:00	WG192905-1,-2,-3,-4,-5,-6	
L83306-32	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 10:04	3/1/2024 8:00	3/5/2024 13:00	WG192905-1,-2,-3,-4,-5,-6	
L83306-41	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 9:44	3/1/2024 8:00	3/5/2024 13:00	WG192905-1,-2,-3,-4,-5,-6	
L83306-42	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 10:05	3/1/2024 8:00	3/5/2024 13:00	WG192905-1,-2,-3,-4,-5,-6	
L83306-51	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 9:47	3/1/2024 8:00	3/5/2024 13:00	WG192905-1,-2,-3,-4,-5,-6	
L83306-52	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 10:08	3/1/2024 8:00	3/5/2024 13:00	WG192905-1,-2,-3,-4,-5,-6	
L83306-61	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 9:48	3/1/2024 8:00	3/5/2024 13:00	WG192905-1,-2,-3,-4,-5,-6	
L83306-62	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 10:09	3/1/2024 8:00	3/5/2024 13:00	WG192905-1,-2,-3,-4,-5,-6	
L83306-71	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 9:53	3/1/2024 8:00	3/5/2024 13:00	WG192905-1,-2,-3,-4,-5,-6	
L83306-72	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 10:13	3/1/2024 8:00	3/5/2024 13:00	WG192905-1,-2,-3,-4,-5,-6	
WG192905-1	MB		AQ6PPDQ-LCMS	OTHR WTR		3/1/2024 8:00	3/5/2024 13:00	WG192905-1,-2,-3,-4,-5,-6	
WG192905-2	SB		AQ6PPDQ-LCMS	OTHR WTR		3/1/2024 8:00	3/5/2024 13:00	WG192905-1,-2,-3,-4,-5,-6	WG192905-1
WG192905-3	MS		AQ6PPDQ-LCMS	STORM WTR		3/1/2024 8:00	3/5/2024 13:00	WG192905-1,-2,-3,-4,-5,-6	L83306-32
WG192905-4	MSD		AQ6PPDQ-LCMS	STORM WTR		3/1/2024 8:00	3/5/2024 13:00	WG192905-1,-2,-3,-4,-5,-6	WG192905-3 L83306-32
WG192905-5	LD		AQ6PPDQ-LCMS	STORM WTR		3/1/2024 8:00	3/5/2024 13:00	WG192905-1,-2,-3,-4,-5,-6	L83306-1

WG192905-6	CCC		AQ6PPDQ-LCMS	OTHR WTR		3/1/2024 8:00	3/5/2024 13:00	WG192905-1,-2,-3,-4,-5,-6	MED

WG192906 6PPDQ by LCMS

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	QC Association	Comments
L83306-3	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 10:23	3/1/2024 14:00	3/5/2024 17:30	WG192906-1,-2,-3,-4,-5,-6	
L83306-4	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 10:49	3/1/2024 14:00	3/5/2024 17:30	WG192906-1,-2,-3,-4,-5,-6	
L83306-13	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 10:25	3/1/2024 14:00	3/5/2024 17:30	WG192906-1,-2,-3,-4,-5,-6	
L83306-14	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 10:50	3/1/2024 14:00	3/5/2024 17:30	WG192906-1,-2,-3,-4,-5,-6	
L83306-23	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 10:27	3/1/2024 14:00	3/5/2024 17:30	WG192906-1,-2,-3,-4,-5,-6	
L83306-24	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 10:52	3/1/2024 14:00	3/5/2024 17:30	WG192906-1,-2,-3,-4,-5,-6	
L83306-33	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 10:28	3/1/2024 14:00	3/5/2024 17:30	WG192906-1,-2,-3,-4,-5,-6	
L83306-34	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 10:54	3/1/2024 14:00	3/5/2024 17:30	WG192906-1,-2,-3,-4,-5,-6	
L83306-43	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 10:30	3/1/2024 14:00	3/5/2024 17:30	WG192906-1,-2,-3,-4,-5,-6	
L83306-44	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 10:55	3/1/2024 14:00	3/5/2024 17:30	WG192906-1,-2,-3,-4,-5,-6	
L83306-53	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 10:33	3/1/2024 14:00	3/5/2024 17:30	WG192906-1,-2,-3,-4,-5,-6	
L83306-54	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 10:58	3/1/2024 14:00	3/5/2024 17:30	WG192906-1,-2,-3,-4,-5,-6	
L83306-63	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 10:35	3/1/2024 14:00	3/5/2024 17:30	WG192906-1,-2,-3,-4,-5,-6	
L83306-64	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 11:00	3/1/2024 14:00	3/5/2024 17:30	WG192906-1,-2,-3,-4,-5,-6	
L83306-73	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 10:38	3/1/2024 14:00	3/5/2024 17:30	WG192906-1,-2,-3,-4,-5,-6	
L83306-74	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 11:04	3/1/2024 14:00	3/5/2024 17:30	WG192906-1,-2,-3,-4,-5,-6	
WG192906-1	MB		AQ6PPDQ-LCMS	OTHR WTR		3/1/2024 14:00	3/5/2024 17:30	WG192906-1,-2,-3,-4,-5,-6	
WG192906-2	SB		AQ6PPDQ-LCMS	OTHR WTR		3/1/2024 14:00	3/5/2024 17:30	WG192906-1,-2,-3,-4,-5,-6	WG192906-1
WG192906-3	MS		AQ6PPDQ-LCMS	STORM WTR		3/1/2024 14:00	3/5/2024 17:30	WG192906-1,-2,-3,-4,-5,-6	L83306-64

WG192906-4	MSD		AQ6PPDQ-LCMS	STORM WTR		3/1/2024 14:00	3/5/2024 17:30	WG192906-1,-2,-3,-4,-5,-6	WG192906-3 L83306-64
WG192906-5	LD		AQ6PPDQ-LCMS	STORM WTR		3/1/2024 14:00	3/5/2024 17:30	WG192906-1,-2,-3,-4,-5,-6	L83306-33
WG192906-6	CCC		AQ6PPDQ-LCMS	OTHR WTR		3/1/2024 14:00	3/5/2024 17:30	WG192906-1,-2,-3,-4,-5,-6	MED

WG192907 6PPDQ by LCMS

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	QC Association	Comments
L83306-5	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 13:04	3/2/2024 12:00	3/6/2024 11:30	WG192907-1,-2,-3,-4,-5,-6	
L83306-6	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 14:08	3/2/2024 12:00	3/6/2024 11:30	WG192907-1,-2,-3,-4,-5,-6	
L83306-15	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 13:07	3/2/2024 12:00	3/6/2024 11:30	WG192907-1,-2,-3,-4,-5,-6	
L83306-16	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 14:09	3/2/2024 12:00	3/6/2024 11:30	WG192907-1,-2,-3,-4,-5,-6	
L83306-25	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 13:08	3/2/2024 12:00	3/6/2024 11:30	WG192907-1,-2,-3,-4,-5,-6	
L83306-26	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 14:11	3/2/2024 12:00	3/6/2024 11:30	WG192907-1,-2,-3,-4,-5,-6	
L83306-35	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 13:09	3/2/2024 12:00	3/6/2024 11:30	WG192907-1,-2,-3,-4,-5,-6	
L83306-36	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 14:12	3/2/2024 12:00	3/6/2024 11:30	WG192907-1,-2,-3,-4,-5,-6	
L83306-45	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 13:10	3/2/2024 12:00	3/6/2024 11:30	WG192907-1,-2,-3,-4,-5,-6	
L83306-46	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 14:13	3/2/2024 12:00	3/6/2024 11:30	WG192907-1,-2,-3,-4,-5,-6	
L83306-55	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 13:13	3/2/2024 12:00	3/6/2024 11:30	WG192907-1,-2,-3,-4,-5,-6	
L83306-56	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 14:16	3/2/2024 12:00	3/6/2024 11:30	WG192907-1,-2,-3,-4,-5,-6	
L83306-65	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 13:14	3/2/2024 12:00	3/6/2024 11:30	WG192907-1,-2,-3,-4,-5,-6	
L83306-66	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 14:17	3/2/2024 12:00	3/6/2024 11:30	WG192907-1,-2,-3,-4,-5,-6	
L83306-75	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 13:18	3/2/2024 12:00	3/6/2024 11:30	WG192907-1,-2,-3,-4,-5,-6	
L83306-76	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 14:26	3/2/2024 12:00	3/6/2024 11:30	WG192907-1,-2,-3,-4,-5,-6	
WG192907-1	MB		AQ6PPDQ-LCMS	OTHR WTR		3/2/2024 12:00	3/6/2024 11:30	WG192907-1,-2,-3,-4,-5,-6	

WG192907-2	SB		AQ6PPDQ-LCMS	OTHR WTR		3/2/2024 12:00	3/6/2024 11:30	WG192907-1,-2,-3,-4,-5,-6	WG192907-1
WG192907-3	MS		AQ6PPDQ-LCMS	STORM WTR		3/2/2024 12:00	3/6/2024 11:30	WG192907-1,-2,-3,-4,-5,-6	L83306-45
WG192907-4	MSD		AQ6PPDQ-LCMS	STORM WTR		3/2/2024 12:00	3/6/2024 11:30	WG192907-1,-2,-3,-4,-5,-6	WG192907-3 L83306-45
WG192907-5	LD		AQ6PPDQ-LCMS	STORM WTR		3/2/2024 12:00	3/6/2024 11:30	WG192907-1,-2,-3,-4,-5,-6	L83306-16
WG192907-6	CCC		AQ6PPDQ-LCMS	OTHR WTR		3/2/2024 12:00	3/6/2024 11:30	WG192907-1,-2,-3,-4,-5,-6	MED

WG192908 6PPDQ by LCMS

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	QC Association	Comments
L83306-7	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 14:29	3/3/2024 11:00	3/6/2024 15:10	WG192908-1,-2,-3,-4,-5,-6	
L83306-8	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 14:52	3/3/2024 11:00	3/6/2024 15:10	WG192908-1,-2,-3,-4,-5,-6	
L83306-17	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 14:30	3/3/2024 11:00	3/6/2024 15:10	WG192908-1,-2,-3,-4,-5,-6	
L83306-18	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 14:54	3/3/2024 11:00	3/6/2024 15:10	WG192908-1,-2,-3,-4,-5,-6	
L83306-27	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 14:32	3/3/2024 11:00	3/6/2024 15:10	WG192908-1,-2,-3,-4,-5,-6	
L83306-28	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 14:55	3/3/2024 11:00	3/6/2024 15:10	WG192908-1,-2,-3,-4,-5,-6	
L83306-37	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 14:34	3/3/2024 11:00	3/6/2024 15:10	WG192908-1,-2,-3,-4,-5,-6	
L83306-38	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 14:57	3/3/2024 11:00	3/6/2024 15:10	WG192908-1,-2,-3,-4,-5,-6	
L83306-47	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 14:36	3/3/2024 11:00	3/6/2024 15:10	WG192908-1,-2,-3,-4,-5,-6	
L83306-48	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 14:59	3/3/2024 11:00	3/6/2024 15:10	WG192908-1,-2,-3,-4,-5,-6	
L83306-57	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 14:40	3/3/2024 11:00	3/6/2024 15:10	WG192908-1,-2,-3,-4,-5,-6	
L83306-58	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 15:02	3/3/2024 11:00	3/6/2024 15:10	WG192908-1,-2,-3,-4,-5,-6	
L83306-67	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 14:40	3/3/2024 11:00	3/6/2024 15:10	WG192908-1,-2,-3,-4,-5,-6	
L83306-68	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 15:03	3/3/2024 11:00	3/6/2024 15:10	WG192908-1,-2,-3,-4,-5,-6	
L83306-77	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 14:43	3/3/2024 11:00	3/6/2024 15:10	WG192908-1,-2,-3,-4,-5,-6	

L83306-78	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 15:06	3/3/2024 11:00	3/6/2024 15:10	WG192908-1,-2,-3,-4,-5,-6	
WG192908-1	MB		AQ6PPDQ-LCMS	OTHR WTR		3/3/2024 11:00	3/6/2024 15:10	WG192908-1,-2,-3,-4,-5,-6	
WG192908-2	SB		AQ6PPDQ-LCMS	OTHR WTR		3/3/2024 11:00	3/6/2024 15:10	WG192908-1,-2,-3,-4,-5,-6	WG192908-1
WG192908-3	MS		AQ6PPDQ-LCMS	STORM WTR		3/3/2024 11:00	3/6/2024 15:10	WG192908-1,-2,-3,-4,-5,-6	L83306-57
WG192908-4	MSD		AQ6PPDQ-LCMS	STORM WTR		3/3/2024 11:00	3/6/2024 15:10	WG192908-1,-2,-3,-4,-5,-6	WG192908-3 L83306-57
WG192908-5	LD		AQ6PPDQ-LCMS	STORM WTR		3/3/2024 11:00	3/6/2024 15:10	WG192908-1,-2,-3,-4,-5,-6	L83306-77
WG192908-6	CCC		AQ6PPDQ-LCMS	OTHR WTR		3/3/2024 11:00	3/6/2024 15:10	WG192908-1,-2,-3,-4,-5,-6	MED

WG192909 6PPDQ by LCMS

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	QC Association	Comments
L83306-9	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 15:20	3/4/2024 7:30	3/5/2024 9:45	WG192909-1,-2,-3,-4,-5,-6	
L83306-10	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 15:47	3/4/2024 7:30	3/5/2024 9:45	WG192909-1,-2,-3,-4,-5,-6	
L83306-19	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 15:22	3/4/2024 7:30	3/5/2024 9:45	WG192909-1,-2,-3,-4,-5,-6	
L83306-20	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 15:49	3/4/2024 7:30	3/5/2024 9:45	WG192909-1,-2,-3,-4,-5,-6	
L83306-29	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 15:24	3/4/2024 7:30	3/5/2024 9:45	WG192909-1,-2,-3,-4,-5,-6	
L83306-30	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 15:50	3/4/2024 7:30	3/5/2024 9:45	WG192909-1,-2,-3,-4,-5,-6	
L83306-39	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 15:28	3/4/2024 7:30	3/5/2024 9:45	WG192909-1,-2,-3,-4,-5,-6	
L83306-40	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 15:52	3/4/2024 7:30	3/5/2024 9:45	WG192909-1,-2,-3,-4,-5,-6	
L83306-49	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 15:30	3/4/2024 7:30	3/5/2024 9:45	WG192909-1,-2,-3,-4,-5,-6	
L83306-50	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 15:53	3/4/2024 7:30	3/5/2024 9:45	WG192909-1,-2,-3,-4,-5,-6	
L83306-59	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 15:34	3/4/2024 7:30	3/5/2024 9:45	WG192909-1,-2,-3,-4,-5,-6	
L83306-60	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 15:56	3/4/2024 7:30	3/5/2024 9:45	WG192909-1,-2,-3,-4,-5,-6	
L83306-70	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 15:37	3/4/2024 7:30	3/5/2024 9:45	WG192909-1,-2,-3,-4,-5,-6	

L83306-79	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 15:38	3/4/2024 7:30	3/5/2024 9:45	WG192909-1,-2,-3,-4,-5,-6	
L83306-80	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	2/28/2024 15:59	3/4/2024 7:30	3/5/2024 9:45	WG192909-1,-2,-3,-4,-5,-6	
WG192909-1	MB		AQ6PPDQ-LCMS	OTHR WTR		3/4/2024 7:30	3/5/2024 9:45	WG192909-1,-2,-3,-4,-5,-6	
WG192909-2	SB		AQ6PPDQ-LCMS	OTHR WTR		3/4/2024 7:30	3/5/2024 9:45	WG192909-1,-2,-3,-4,-5,-6	WG192909-1
WG192909-3	MS		AQ6PPDQ-LCMS	STORM WTR		3/4/2024 7:30	3/5/2024 9:45	WG192909-1,-2,-3,-4,-5,-6	L83306-39
WG192909-4	MSD		AQ6PPDQ-LCMS	STORM WTR		3/4/2024 7:30	3/5/2024 9:45	WG192909-1,-2,-3,-4,-5,-6	WG192909-3 L83306-39
WG192909-5	LD		AQ6PPDQ-LCMS	STORM WTR		3/4/2024 7:30	3/5/2024 9:45	WG192909-1,-2,-3,-4,-5,-6	L83306-19
WG192909-6	CCC		AQ6PPDQ-LCMS	OTHR WTR		3/4/2024 7:30	3/5/2024 9:45	WG192909-1,-2,-3,-4,-5,-6	MED

WG192910 6PPDQ by LCMS

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	QC Association	Comments
L83306-81	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	BLANK WTR	2/28/2024 8:52	3/5/2024 10:30	3/6/2024 8:30	WG192910-1,-2,-3,-4,-5,-6	
L83306-82	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	BLANK WTR	2/28/2024 8:52	3/5/2024 10:30	3/6/2024 8:30	WG192910-1,-2,-3,-4,-5,-6	
L83306-83	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	BLANK WTR	2/28/2024 8:52	3/5/2024 10:30	3/6/2024 8:30	WG192910-1,-2,-3,-4,-5,-6	
L83306-84	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	BLANK WTR	2/28/2024 16:11	3/5/2024 10:30	3/6/2024 8:30	WG192910-1,-2,-3,-4,-5,-6	
L83306-85	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	BLANK WTR	2/28/2024 16:04	3/5/2024 10:30	3/6/2024 8:30	WG192910-1,-2,-3,-4,-5,-6	
L83306-86	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	BLANK WTR	2/28/2024 16:13	3/5/2024 10:30	3/6/2024 8:30	WG192910-1,-2,-3,-4,-5,-6	
WG192910-1	MB		AQ6PPDQ-LCMS	OTHR WTR		3/5/2024 10:30	3/6/2024 8:30	WG192910-1,-2,-3,-4,-5,-6	
WG192910-2	SB		AQ6PPDQ-LCMS	OTHR WTR		3/5/2024 10:30	3/6/2024 8:30	WG192910-1,-2,-3,-4,-5,-6	WG192910-1
WG192910-3	MS		AQ6PPDQ-LCMS	BLANK WTR		3/5/2024 10:30	3/6/2024 8:30	WG192910-1,-2,-3,-4,-5,-6	L83306-86
WG192910-4	MSD		AQ6PPDQ-LCMS	BLANK WTR		3/5/2024 10:30	3/6/2024 8:30	WG192910-1,-2,-3,-4,-5,-6	WG192910-3 L83306-86
WG192910-5	LD		AQ6PPDQ-LCMS	BLANK WTR		3/5/2024 10:30	3/6/2024 8:30	WG192910-1,-2,-3,-4,-5,-6	L83306-81
WG192910-6	CCC		AQ6PPDQ-LCMS	OTHR WTR		3/5/2024 10:30	3/6/2024 8:30	WG192910-1,-2,-3,-4,-5,-6	MED

Workgroup: WG192905 6PPDQ by LCMS

MB:WG192905-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
6ppd-quinone	0.002	0.01	ug/L		<MDL

SB:WG192905-2 MB:WG192905-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	True Value	SB Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	<MDL	0.2	0.221	110		50--150

MSD:WG192905-4 MS:WG192905-3 L83306-32 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	True Value	MS Value	% Rec.	Qual	Lab Limit	True Value	MSD Value	% Rec.	Qual	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	0.955	0.2	1.11	75		50--150	0.2	1.1	72		1		0--45

LD:WG192905-5 L83306-1 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	0.944	0.915	3		0--40

CCC:WG192905-6 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Continuing Calibration Check)

Parameter	MDL	RDL	Units	True Value	CCC Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.01	0.05	ug/L	1	1	100		80--120

Surrogate:	**d5-6PPDQ**
(Lab Limits)	**20--200**
L83306-1	78
L83306-2	75
L83306-11	76
L83306-12	76
L83306-21	75
L83306-22	79
L83306-31	59
L83306-32	56
L83306-41	61
L83306-42	66
L83306-51	66
L83306-52	68
L83306-61	67
L83306-62	60
L83306-71	76
L83306-72	76
WG192905-1	80
WG192905-2	80
WG192905-3	67
WG192905-4	69
WG192905-5	75
WG192905-6	101

Workgroup: WG192906 6PPDQ by LCMS

MB:WG192906-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
6ppd-quinone	0.002	0.01	ug/L		<MDL

SB:WG192906-2 MB:WG192906-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	True Value	SB Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	<MDL	0.2	0.231	116		50--150

MSD:WG192906-4 MS:WG192906-3 L83306-64 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	True Value	MS Value	% Rec.	Qual	Lab Limit	True Value	MSD Value	% Rec.	Qual	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	0.686	0.2	0.856	85		50--150	0.2	0.863	88		1		0--45

LD:WG192906-5 L83306-33 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	0.874	0.908	4		0--40

CCC:WG192906-6 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Continuing Calibration Check)

Parameter	MDL	RDL	Units	True Value	CCC Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.01	0.05	ug/L	1	1.01	101		80--120

Surrogate:	**d5-6PPDQ**
(Lab Limits)	**20--200**
L83306-3	75
L83306-4	74
L83306-13	69
L83306-14	73
L83306-23	71
L83306-24	70
L83306-33	69
L83306-34	71
L83306-43	69
L83306-44	66
L83306-53	73
L83306-54	72
L83306-63	69
L83306-64	74
L83306-73	73
L83306-74	72
WG192906-1	71
WG192906-2	83
WG192906-3	77
WG192906-4	75
WG192906-5	67
WG192906-6	100

Workgroup: WG192907 6PPDQ by LCMS

MB:WG192907-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
6ppd-quinone	0.002	0.01	ug/L		<MDL

SB:WG192907-2 MB:WG192907-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	True Value	SB Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	<MDL	0.2	0.202	101		50--150

MSD:WG192907-4 MS:WG192907-3 L83306-45 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	True Value	MS Value	% Rec.	Qual	Lab Limit	True Value	MSD Value	% Rec.	Qual	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	0.415	0.2	0.584	84		50--150	0.2	0.573	79		2		0--45

LD:WG192907-5 L83306-16 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	0.627	0.625	0		0--40

CCC:WG192907-6 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Continuing Calibration Check)

Parameter	MDL	RDL	Units	True Value	CCC Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.01	0.05	ug/L	1	1.03	103		80--120

Surrogate:	**d5-6PPDQ**
(Lab Limits)	**20--200**
L83306-5	68
L83306-6	60
L83306-15	69
L83306-16	64
L83306-25	72
L83306-26	64
L83306-35	67
L83306-36	59
L83306-45	68
L83306-46	61
L83306-55	66
L83306-56	57
L83306-65	65
L83306-66	58
L83306-75	68
L83306-76	67
WG192907-1	63
WG192907-2	69
WG192907-3	67
WG192907-4	73
WG192907-5	59
WG192907-6	88

Workgroup: WG192908 6PPDQ by LCMS

MB:WG192908-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
6ppd-quinone	0.002	0.01	ug/L		<MDL

SB:WG192908-2 MB:WG192908-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	True Value	SB Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	<MDL	0.2	0.201	100		50--150

MSD:WG192908-4 MS:WG192908-3 L83306-57 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	True Value	MS Value	% Rec.	Qual	Lab Limit	True Value	MSD Value	% Rec.	Qual	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	0.862	0.2	1.03	84		50--150	0.2	1.02	81		0		0--45

LD:WG192908-5 L83306-77 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	0.822	0.798	3		0--40

CCC:WG192908-6 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Continuing Calibration Check)

Parameter	MDL	RDL	Units	True Value	CCC Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.01	0.05	ug/L	1	1.04	104		80--120

Surrogate:	**d5-6PPDQ**
(Lab Limits)	**20--200**
L83306-7	61
L83306-8	61
L83306-17	65
L83306-18	63
L83306-27	67
L83306-28	62
L83306-37	58
L83306-38	54
L83306-47	56
L83306-48	58
L83306-57	58
L83306-58	55
L83306-67	55
L83306-68	55
L83306-77	64
L83306-78	60
WG192908-1	61
WG192908-2	64
WG192908-3	55
WG192908-4	58
WG192908-5	59
WG192908-6	85

Workgroup: WG192909 6PPDQ by LCMS

MB:WG192909-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
6ppd-quinone	0.002	0.01	ug/L		<MDL

SB:WG192909-2 MB:WG192909-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	True Value	SB Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	<MDL	0.2	0.213	107		50--150

MSD:WG192909-4 MS:WG192909-3 L83306-39 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	True Value	MS Value	% Rec.	Qual	Lab Limit	True Value	MSD Value	% Rec.	Qual	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	1.35	0.2	1.57	106		50--150	0.2	1.51	75		4		0--45

LD:WG192909-5 L83306-19 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	1.33	1.32	0		0--40

CCC:WG192909-6 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Continuing Calibration Check)

Parameter	MDL	RDL	Units	True Value	CCC Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.01	0.05	ug/L	1	1.02	102		80--120

Surrogate:	**d5-6PPDQ**
(Lab Limits)	**20--200**
L83306-9	64
L83306-10	66
L83306-19	64
L83306-20	63
L83306-29	62
L83306-30	68
L83306-39	66
L83306-40	66
L83306-49	68
L83306-50	62
L83306-59	68
L83306-60	68
L83306-70	63
L83306-79	65
L83306-80	63
WG192909-1	65
WG192909-2	62
WG192909-3	66
WG192909-4	67
WG192909-5	68
WG192909-6	103

Workgroup: WG192910 6PPDQ by LCMS

MB:WG192910-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
6ppd-quinone	0.002	0.01	ug/L		<MDL

SB:WG192910-2 MB:WG192910-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	True Value	SB Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	<MDL	0.2	0.225	113		50--150

MSD:WG192910-4 MS:WG192910-3 L83306-86 Matrix: BLANK WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	True Value	MS Value	% Rec.	Qual	Lab Limit	True Value	MSD Value	% Rec.	Qual	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	0.0071	0.2	0.234	113		50--150	0.2	0.227	110		3		0--45

LD:WG192910-5 L83306-81 Matrix: BLANK WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	0.003	0.0026			0--40

CCC:WG192910-6 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Continuing Calibration Check)

Parameter	MDL	RDL	Units	True Value	CCC Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.01	0.05	ug/L	1	1.02	102		80--120

Surrogate:	d5-6PPDQ
(Lab Limits)	**20--200**
L83306-81	76
L83306-82	75
L83306-83	69
L83306-84	67
L83306-85	67
L83306-86	69
WG192910-1	73
WG192910-2	73
WG192910-3	68
WG192910-4	73
WG192910-5	73
WG192910-6	98

Login: P83306
Project: 421520-200

WDOE Stormwater BMP Research - Field Protocol Event 2

FSU TC: ____________
LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by Nicholas Harris	*Date* 2/29/24	*Time* 1640
Received by	*Date* 2-29-24	*Time* 1640
Sample Numbers		*[All]*

Sample Number	**P83306-1**	**P83306-2**	**P83306-3**
QC Link			
Locator	**CONT**	**CONT**	**CONT**
Short Loc Desc			
Locator Desc	Control Sample	Control Sample	Control Sample
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments			
Start Date/Time	2024-02-28 09:37	2024-02-28 10:00	2024-02-28 10:23
End Date/Time	" "	" "	" "
Time Span			
Sample Depth			
SAMP INFO	**BATCH 1**	**BATCH 1**	**BATCH 2**
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)

Login: P83306
Project: 421520-200

WDOE Stormwater BMP Research - Field Protocol Event 2

FSU TC: ________________
LPM: Meghan Elkey

Sample Number	**P83306-4**	**P83306-5**	**P83306-6**
QC Link			
Locator	**CONT**	**CONT**	**CONT**
Short Loc Desc			
Locator Desc	Control Sample	Control Sample	Control Sample
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments			
Start Date/Time	2024-02-28 10:49	2024-02-28 13:04	2024-02-28 14:08
End Date/Time	" "		
Time Span			
Sample Depth			
SAMP INFO	**BATCH 2**	**BATCH 3**	**BATCH 3**
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)

Login: P83306 **WDOE Stormwater BMP Research - Field Protocol Event 2** **FSU TC:** ______________

Project: 421520-200 **LPM: Meghan Elkey**

Sample Number	**P83306-7**	**P83306-8**	**P83306-9**
QC Link			
Locator	**CONT**	**CONT**	**CONT**
Short Loc Desc			
Locator Desc	Control Sample	Control Sample	Control Sample
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments			
Start Date/Time	2024-02-28 14:29	2024-02-28 14:52	2024-02-28 15:20
End Date/Time			
Time Span			
Sample Depth			
SAMP INFO	**BATCH 4**	**BATCH 4**	**BATCH 5**
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)

Login: P83306 **WDOE Stormwater BMP Research - Field Protocol Event 2** **FSU TC:** ______

Project: 421520-200 **LPM: Meghan Elkey**

Sample Number	**P83306-10**	**P83306-11**	**P83306-12**
QC Link			
Locator	**CONT**	**PTFE_TUB**	**PTFE_TUB**
Short Loc Desc			
Locator Desc	Control Sample	PTFE tubing	PTFE tubing
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments			
Start Date/Time	2024-02-28 15:47	2024-02-28 09:39	2024-02-28 10:01
End Date/Time		" "	" "
Time Span			
Sample Depth			
SAMP INFO	**BATCH 5**	**BATCH 1**	**BATCH 1**
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)

Login: P83306 **WDOE Stormwater BMP Research - Field Protocol Event 2** **FSU TC:** ____________

Project: 421520-200 **LPM:** Meghan Elkey

Sample Number	**P83306-13**	**P83306-14**	**P83306-15**
QC Link			
Locator	**PTFE_TUB**	**PTFE_TUB**	**PTFE_TUB**
Short Loc Desc			
Locator Desc	PTFE tubing	PTFE tubing	PTFE tubing
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments			
Start Date/Time	2024-02-28 10:25	2024-02-28 10:50	2024-02-28 13:07
End Date/Time	〃 〃	〃 〃	
Time Span			
Sample Depth			
SAMP INFO	**BATCH 2**	**BATCH 2**	**BATCH 3**
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)

Login: P83306 **WDOE Stormwater BMP Research - Field Protocol Event 2** **FSU TC:** ____________

Project: 421520-200 **LPM: Meghan Elkey**

Sample Number	**P83306-16**	**P83306-17**	**P83306-18**
QC Link			
Locator	**PTFE_TUB**	**PTFE_TUB**	**PTFE_TUB**
Short Loc Desc			
Locator Desc	PTFE tubing	PTFE tubing	PTFE tubing
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments			
Start Date/Time	2024-02-28 14:09	2024-02-28 14:30	2024-02-28 14:54
End Date/Time			
Time Span			
Sample Depth			
SAMP INFO	**BATCH 3**	**BATCH 4**	**BATCH 4**
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)

Login: P83306 **WDOE Stormwater BMP Research - Field Protocol Event 2** **FSU TC:** ____________

Project: 421520-200 **LPM: Meghan Elkey**

Sample Number	**P83306-19**	**P83306-20**	**P83306-21**
QC Link			
Locator	**PTFE_TUB**	**PTFE_TUB**	**PTFE_TUB_OLD**
Short Loc Desc			
Locator Desc	PTFE tubing	PTFE tubing	PTFE Tubing - Old
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments			
Start Date/Time	2024-02-28 15:22	2024-02-28 15:49	2024-02-28 09:41
End Date/Time			" "
Time Span			
Sample Depth			
SAMP INFO	**BATCH 5**	**BATCH 5**	**BATCH 1**
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)

Login: P83306 **WDOE Stormwater BMP Research - Field Protocol Event 2** **FSU TC:** ______________

Project: 421520-200 **LPM: Meghan Elkey**

Sample Number	**P83306-22**	**P83306-23**	**P83306-24**
QC Link			
Locator	**PTFE_TUB_OLD**	**PTFE_TUB_OLD**	**PTFE_TUB_OLD**
Short Loc Desc			
Locator Desc	PTFE Tubing - Old	PTFE Tubing - Old	PTFE Tubing - Old
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments			
Start Date/Time	2024-02-28 10:03	2024-02-28 10:27	2024-02-28 10:52
End Date/Time	" "	" "	" "
Time Span			
Sample Depth			
SAMP INFO	**BATCH 1**	**BATCH 2**	**BATCH 2**
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)

Login: P83306 **WDOE Stormwater BMP Research - Field Protocol Event 2** **FSU TC:**

Project: 421520-200 **LPM: Meghan Elkey**

Sample Number	**P83306-25**	**P83306-26**	**P83306-27**
QC Link			
Locator	**PTFE_TUB_OLD**	**PTFE_TUB_OLD**	**PTFE_TUB_OLD**
Short Loc Desc			
Locator Desc	PTFE Tubing - Old	PTFE Tubing - Old	PTFE Tubing - Old
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments			
Start Date/Time	2024-02-28 13:08	2024-02-28 14:11	2024-02-28 14:32
End Date/Time			
Time Span			
Sample Depth			
SAMP INFO	**BATCH 3**	**BATCH 3**	**BATCH 4**
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)

Login: P83306 **WDOE Stormwater BMP Research - Field Protocol Event 2** **FSU TC:** ____________

Project: 421520-200 **LPM: Meghan Elkey**

Sample Number	**P83306-28**	**P83306-29**	**P83306-30**
QC Link			
Locator	**PTFE_TUB_OLD**	**PTFE_TUB_OLD**	**PTFE_TUB_OLD**
Short Loc Desc			
Locator Desc	PTFE Tubing - Old	PTFE Tubing - Old	PTFE Tubing - Old
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments			
Start Date/Time	2024-02-28 14:55	2024-02-28 15:24	2024-02-28 15:50
End Date/Time			
Time Span			
Sample Depth			
SAMP INFO	**BATCH 4**	**BATCH 5**	**BATCH 5**
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)

Login: P83306
Project: 421520-200

WDOE Stormwater BMP Research - Field Protocol Event 2

FSU TC: ____________________
LPM: Meghan Elkey

Sample Number	**P83306-31**	**P83306-32**	**P83306-33**
QC Link			
Locator	**HDPE_24**	**HDPE_24**	**HDPE_24**
Short Loc Desc			
Locator Desc	HDPE - 24 hours	HDPE - 24 hours	HDPE - 24 hours
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments			
Start Date/Time	2024-02-28 09:43	2024-02-28 10:04	2024-02-28 10:28
End Date/Time	" "	" "	" "
Time Span			
Sample Depth			
SAMP INFO	**BATCH 1**	**BATCH 1**	**BATCH 2**
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (39)	4 LG 6PPDQ (39)	4 LG 6PPDQ (39)

Login: P83306
Project: 421520-200

WDOE Stormwater BMP Research - Field Protocol Event 2

FSU TC: ____________
LPM: Meghan Elkey

Sample Number	**P83306-34**	**P83306-35**	**P83306-36**
QC Link			
Locator	**HDPE_24**	**HDPE_24**	**HDPE_24**
Short Loc Desc			
Locator Desc	HDPE - 24 hours	HDPE - 24 hours	HDPE - 24 hours
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments			
Start Date/Time	2024-02-28 10:54	2024-02-28 13:09	2024-02-28 14:12
End Date/Time			
Time Span			
Sample Depth			
SAMP INFO	**BATCH 2**	**BATCH 3**	**BATCH 3**
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (39)	4 LG 6PPDQ (39)	4 LG 6PPDQ (39)

Login: P83306 **WDOE Stormwater BMP Research - Field Protocol Event 2** **FSU TC:** ____________

Project: 421520-200 **LPM: Meghan Elkey**

Sample Number	**P83306-37**	**P83306-38**	**P83306-39**
QC Link			
Locator	**HDPE_24**	**HDPE_24**	**HDPE_24**
Short Loc Desc			
Locator Desc	HDPE - 24 hours	HDPE - 24 hours	HDPE - 24 hours
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments	2024-02-28 14:34	2024-02-28 14:57	2024-02-28 15:28
Start Date/Time			
End Date/Time			
Time Span			
Sample Depth			
SAMP INFO	**BATCH 4**	**BATCH 4**	**BATCH 5**
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (39)	4 LG 6PPDQ (39)	4 LG 6PPDQ (39)

Login: P83306 **WDOE Stormwater BMP Research - Field Protocol Event 2** **FSU TC:** ____________

Project: 421520-200 **LPM: Meghan Elkey**

Sample Number	**P83306-40**	**P83306-41**	**P83306-42**
QC Link			
Locator	**HDPE_24**	**HDPE_24_20L**	**HDPE_24_20L**
Short Loc Desc			
Locator Desc	HDPE - 24 hours	HDPE - 24 hours - 20L	HDPE - 24 hours - 20L
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments		20L carboy	20L carboy
Start Date/Time	2024-02-28 15:52	2024.02.28 09:44	2024-02-28 10:05
End Date/Time			
Time Span			
Sample Depth			
SAMP INFO	**BATCH 5**	**BATCH 1**	**BATCH 1**
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (39)	4 LG 6PPDQ (2)	4 LG 6PPDQ (2)

Login: P83306

Project: 421520-200

WDOE Stormwater BMP Research - Field Protocol Event 2

FSU TC: ____________

LPM: Meghan Elkey

Sample Number	**P83306-43**	**P83306-44**	**P83306-45**
QC Link			
Locator	**HDPE_24_20L**	**HDPE_24_20L**	**HDPE_24_20L**
Short Loc Desc			
Locator Desc	HDPE - 24 hours - 20L	HDPE - 24 hours - 20L	HDPE - 24 hours - 20L
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments	20L carboy	20L carboy	20L carboy
Start Date/Time	2024-02-28 10:30	2024-02-28 10:55	2024-02-28 13:10
End Date/Time	" "	" "	
Time Span			
Sample Depth			
SAMP INFO	**BATCH 2**	**BATCH 2**	**BATCH 3**
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (2)	4 LG 6PPDQ (2)	4 LG 6PPDQ (2)

Login: P83306
Project: 421520-200

WDOE Stormwater BMP Research - Field Protocol Event 2

FSU TC: ____________________
LPM: Meghan Elkey

Sample Number	**P83306-46**	**P83306-47**	**P83306-48**
QC Link			
Locator	**HDPE_24_20L**	**HDPE_24_20L**	**HDPE_24_20L**
Short Loc Desc			
Locator Desc	HDPE - 24 hours - 20L	HDPE - 24 hours - 20L	HDPE - 24 hours - 20L
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments	20L carboy	20L carboy	20L carboy
Start Date/Time	2024-02-28 14:13	2024-02-28 @ 14:36	2024-02-28 14:59
End Date/Time			
Time Span			
Sample Depth			
SAMP INFO	**BATCH 3**	**BATCH 4**	**BATCH 4**
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (2)	4 LG 6PPDQ (2)	4 LG 6PPDQ (2)

Login: P83306 **WDOE Stormwater BMP Research - Field Protocol Event 2** **FSU TC:** ____________

Project: 421520-200 **LPM: Meghan Elkey**

Sample Number	**P83306-49**	**P83306-50**	**P83306-51**
QC Link			
Locator	**HDPE_24_20L**	**HDPE_24_20L**	**HDPE_OLD**
Short Loc Desc			
Locator Desc	HDPE - 24 hours - 20L	HDPE - 24 hours - 20L	HDPE - Old
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments	20L carboy	20L carboy	Used 250mL AWM HDPE, acid washed
Start Date/Time	2024-02-28 15:30	2024-02-28 15:53	2024-02-28 09:47
End Date/Time			" "
Time Span			
Sample Depth			
SAMP INFO	**BATCH 5**	**BATCH 5**	**BATCH 1**
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (2)	4 LG 6PPDQ (2)	4 LG 6PPDQ (2)

Login: P83306 **WDOE Stormwater BMP Research - Field Protocol Event 2** **FSU TC:** ____________

Project: 421520-200 **LPM: Meghan Elkey**

Sample Number	**P83306-52**	**P83306-53**	**P83306-54**
QC Link			
Locator	**HDPE_OLD**	**HDPE_OLD**	**HDPE_OLD**
Short Loc Desc			
Locator Desc	HDPE - Old	HDPE - Old	HDPE - Old
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments	Used 250mL AWM HDPE, acid washed	Used 250mL AWM HDPE, acid washed	Used 250mL AWM HDPE, acid washed
Start Date/Time	2024-02-28 10:08	2024-02-28 10:33	2024-02-28 11:58
End Date/Time	" "	" "	" "
Time Span			
Sample Depth			
SAMP INFO	**BATCH 1**	**BATCH 2**	**BATCH 2**
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (2)	4 LG 6PPDQ (2)	4 LG 6PPDQ (2)

Login: P83306 **WDOE Stormwater BMP Research - Field Protocol Event 2** **FSU TC:** ____________

Project: 421520-200 **LPM: Meghan Elkey**

Sample Number	**P83306-55**	**P83306-56**	**P83306-57**
QC Link			
Locator	**HDPE_OLD**	**HDPE_OLD**	**HDPE_OLD**
Short Loc Desc			
Locator Desc	HDPE - Old	HDPE - Old	HDPE - Old
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments	Used 250mL AWM HDPE, acid washed	Used 250mL AWM HDPE, acid washed	Used 250mL AWM HDPE, acid washed
Start Date/Time	2024-02-28 13:13	2024-02-28 14:16	2024-02-28 14:40
End Date/Time	" "	" "	
Time Span			
Sample Depth			
SAMP INFO	**BATCH 3**	**BATCH 3**	**BATCH 4**
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (2)	4 LG 6PPDQ (2)	4 LG 6PPDQ (2)

Login: P83306 WDOE Stormwater BMP Research - Field Protocol Event 2 FSU TC: ____________

Project: 421520-200 LPM: Meghan Elkey

Sample Number	**P83306-58**	**P83306-59**	**P83306-60**
QC Link			
Locator	**HDPE_OLD**	**HDPE_OLD**	**HDPE_OLD**
Short Loc Desc			
Locator Desc	HDPE - Old	HDPE - Old	HDPE - Old
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments	Used 250mL AWM HDPE, acid washed	Used 250mL AWM HDPE, acid washed	Used 250mL AWM HDPE, acid washed
Start Date/Time	2024-02-28 15:02	2024-02-28 15:34	2024-02-28 15:56
End Date/Time			
Time Span			
Sample Depth			
SAMP INFO	**BATCH 4**	**BATCH 5**	**BATCH 5**
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (2)	4 LG 6PPDQ (2)	4 LG 6PPDQ (2)

Login: P83306
Project: 421520-200

WDOE Stormwater BMP Research - Field Protocol Event 2

FSU TC: ____________________
LPM: Meghan Elkey

Sample Number	**P83306-61**	**P83306-62**	**P83306-63**
QC Link			
Locator	**AUTO_OLD**	**AUTO_OLD**	**AUTO_OLD**
Short Loc Desc			
Locator Desc	Auto - Old	Auto - Old	Auto - Old
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments	Used 1L CWM HDPE, acid washed	Used 1L CWM HDPE, acid washed	Used 1L CWM HDPE, acid washed
Start Date/Time	2024-02-28 09:48	2024-02-28 10:09	2024-02-28 10:35
End Date/Time	" "	" "	" "
Time Span			
Sample Depth			
SAMP INFO	**BATCH 1**	**BATCH 1**	**BATCH 2**
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (6)	4 LG 6PPDQ (6)	4 LG 6PPDQ (6)

Login: P83306 **WDOE Stormwater BMP Research - Field Protocol Event 2** **FSU TC:** ____________

Project: 421520-200 **LPM: Meghan Elkey**

Sample Number	**P83306-64**	**P83306-65**	**P83306-66**
QC Link			
Locator	**AUTO_OLD**	**AUTO_OLD**	**AUTO_OLD**
Short Loc Desc			
Locator Desc	Auto - Old	Auto - Old	Auto - Old
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments	Used 1L CWM HDPE, acid washed	Used 1L CWM HDPE, acid washed	Used 1L CWM HDPE, acid washed
Start Date/Time	2024-02-28 11:00	2024-02-28 13:14	2024-02-28 14:17
End Date/Time	" "		
Time Span			
Sample Depth			
SAMP INFO	**BATCH 2**	**BATCH 3**	**BATCH 3**
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (6)	4 LG 6PPDQ (6)	4 LG 6PPDQ (6)

Login: P83306 **WDOE Stormwater BMP Research - Field Protocol Event 2** **FSU TC:** ____________

Project: 421520-200

LPM: Meghan Elkey

Sample Number	**P83306-67**	**P83306-68**	**P83306-69**
QC Link			
Locator	**AUTO_OLD**	**AUTO_OLD**	**AUTO_OLD**
Short Loc Desc			
Locator Desc	Auto - Old	Auto - Old	Auto - Old
Site	I-5TAPE	I-5TAPE	I-5TAPE
Comments	Used 1L CWM HDPE, acid washed	Used 1L CWM HDPE, acid washed	Used 1L CWM HDPE, acid washed
Start Date/Time	2024-02-28 14:40	2024-02-28 15:03	
End Date/Time			
Time Span			
Sample Depth			
SAMP INFO	**BATCH 4**	**BATCH 4**	**BATCH 5**
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (6)	4 LG 6PPDQ (6)	4 LG 6PPDQ (6)

Login: P83306
Project: 421520-200

WDOE Stormwater BMP Research - Field Protocol Event 2

FSU TC: ____________
LPM: Meghan Elkey

Sample Number	**P83306-70**	**P83306-71**	**P83306-72**
QC Link			
Locator	**AUTO_OLD**	**FIELDDUP**	**FIELDDUP**
Short Loc Desc			
Locator Desc	Auto - Old	FIELD DUPLICATE	FIELD DUPLICATE
Site	I-5TAPE	FLDQC	FLDQC
Comments	Used 1L CWM HDPE, acid washed		
Start Date/Time	2024-02-28 15:57	2024-02-28 09:53	2024-02-28 14:13
End Date/Time		" "	" "
Time Span			
Sample Depth			
SAMP INFO	**BATCH 5**	**BATCH 1**	**BATCH 1**
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (6)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)

Login: P83306 **WDOE Stormwater BMP Research - Field Protocol Event 2** **FSU TC:** ____________

Project: 421520-200 **LPM:** Meghan Elkey

Sample Number	**P83306-73**	**P83306-74**	**P83306-75**
QC Link			
Locator	**FIELDDUP**	**FIELDDUP**	**FIELDDUP**
Short Loc Desc			
Locator Desc	FIELD DUPLICATE	FIELD DUPLICATE	FIELD DUPLICATE
Site	FLDQC	FLDQC	FLDQC
Comments			
Start Date/Time	2024-02-28 10:38	2024-02-28 11:04	2024-02-28 13:18
End Date/Time	" "	" "	
Time Span			
Sample Depth			
SAMP INFO	**BATCH 2**	**BATCH 2**	**BATCH 3**
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)

Login: P83306

Project: 421520-200

WDOE Stormwater BMP Research - Field Protocol Event 2

FSU TC: ____________

LPM: Meghan Elkey

Sample Number	**P83306-76**	**P83306-77**	**P83306-78**
QC Link			
Locator	**FIELDDUP**	**FIELDDUP**	**FIELDDUP**
Short Loc Desc			
Locator Desc	FIELD DUPLICATE	FIELD DUPLICATE	FIELD DUPLICATE
Site	FLDQC	FLDQC	FLDQC
Comments			
Start Date/Time	2024-02-28 14:20	2024-02-28 14:43	2024-02-28 15:06
End Date/Time			
Time Span			
Sample Depth			
SAMP INFO	**BATCH 3**	**BATCH 4**	**BATCH 4**
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)

Login: P83306 **WDOE Stormwater BMP Research - Field Protocol Event 2** **FSU TC:** ____________

Project: 421520-200 **LPM: Meghan Elkey**

Sample Number	**P83306-79**	**P83306-80**	**P83306-81**
QC Link			
Locator	**FIELDDUP**	**FIELDDUP**	**EQUIPBLANK**
Short Loc Desc			EQUIPBLANK
Locator Desc	FIELD DUPLICATE	FIELD DUPLICATE	EQUIPMENT BLANK
Site	FLDQC	FLDQC	METRO
Comments			Rinsates: BATCH 6
Start Date/Time	2024-02-28 15:38	2024-02-28 15:59	2024-02-28 08:52
End Date/Time			08:58
Time Span			
Sample Depth			
SAMP INFO	**BATCH 5**	**BATCH 5**	Pre or Post: Pre Tubing type: PTFE
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	4 LN 6PPDQ (43)

* Please run
all 6 rinsates
in separate
batch (BATCH #6)

Login: P83306 **WDOE Stormwater BMP Research - Field Protocol Event 2** **FSU TC:** ______

Project: 421520-200 **LPM: Meghan Elkey**

Sample Number	P83306-82	P83306-83	P83306-84
QC Link			
Locator	**EQUIPBLANK**	**EQUIPBLANK**	**EQUIPBLANK**
Short Loc Desc	EQUIPBLANK	EQUIPBLANK	EQUIPBLANK
Locator Desc	EQUIPMENT BLANK	EQUIPMENT BLANK	EQUIPMENT BLANK
Site	METRO	METRO	METRO
Comments		Pre-sampling Churn Blank	
Start Date/Time	2024-02-28 08:52	" " 08:52	2024-02-28 16:11
End Date/Time	09:09	09:12	
Time Span			
Sample Depth			
SAMP INFO	Pre or Post: Pre Tubing type: PTFE_OLD	~~Pre or Post~~: Pre-CHURN ~~Tubing type~~	Pre or Post: Post Tubing type: PTFE
Dept, Matrix, Prod (Cont ID)	4 LN 6PPDQ (43)	4 LN 6PPDQ (43)	4 LN 6PPDQ (43)

Login: P83306 **WDOE Stormwater BMP Research - Field Protocol Event 2** **FSU TC:** ____________

Project: 421520-200 **LPM: Meghan Elkey**

Sample Number	**P83306-85**	**P83306-86**	
QC Link			
Locator	**EQUIPBLANK**	**EQUIPBLANK**	
Short Loc Desc	EQUIPBLANK	EQUIPBLANK	
Locator Desc	EQUIPMENT BLANK	EQUIPMENT BLANK	
Site	METRO	METRO	
Comments		Post sampling churn blank	
Start Date/Time	2024-02-29 16:04	2024-02-29 16:13	
End Date/Time			
Time Span			
Sample Depth			
SAMP INFO	Pre or Post: Post Tubing type: PTFE_OLD	Pre or Post: Post ~~Tubing type~~: CHURN	
Dept, Matrix, Prod (Cont ID)	4 LN 6PPDQ (43)	4 LN 6PPDQ (43)	

1-68,70-86

LIQUID SAMPLE RECEIPT RECORD

Login Number(s): 83306-(1-86)	**Project No.:** 421520-200	**Sub-Contracting:** Y / [✓ N]	**List Product(s):**
Collect Date(s): 2-28-24	**Receive Date:** ~~2-28~~ 2-29-24	**Changes:** Y / [✓ N]	**List Parameter(s):**

SAMPLE RECEIPT CONDITIONS

CONDITION	Acceptable?	Comment ID	CONDITION	Acceptable?	Comment ID
Labels / Fieldsheets	[✓ Y] / N		Volumes	[✓ Y] / N	
Container	[✓ Y] / N		Holding Times	[✓ Y] / N	
Temperature (w/ ice)	[✓ Y] / N / NA		Delivery Location	[✓ Y] / N	

BOTTLE COUNT (#) AND DESCRIPTION and SAMPLE NUMBERS

#	Bottle Description: Sample Numbers
	40 mL clear vial (VOA):
	60 mL clear glass (PHYTO):
	60 mL CWM HDPE:
	125 mL AWM HDPE:
	125 mL CNM HDPE:
	125 mL CWM HDPE:
	125 mL GANM:
	125 mL GANM w/HCl
	250 mL AWM HDPE:
	250 mL CWM HDPE:
	250 mL CWM HDPE (MICRO):
85	250 mL GAWM: 1-68,70-86
	250 mL GAWM w/ H2SO4:
	300 mL WDO (8 hour HT):
	500 mL AWM HDPE:
	500 mL CWM HDPE:
	500 mL CWM PP (MICRO):
	500 mL HDPE (METALS):
	500 mL HDPE, double-bagged (METALS):
	500 mL Teflon (Hg):
	500 mL Teflon, double-bagged (METALS):
	500 mL GANM / GAWM:
	500 mL Polystyrene Filtration Units (METALS):
	1L AWM HDPE:
	1L CWM HDPE:
	1L CWM PP (MICRO):
	1L GANM:
	1L GCWM:
	1L GAWM w/ H_2SO_4:
	2L CWM HDPE:
	Other:

COMMENTS / NOTIFICATIONS

-69 missing

FIELD PRESERVATION CHECKLIST (Circle and/or check applicable selections)

PRODUCT / Preservation	SM Action	Acceptable?	Corrective Action
BNA / pH 6 - 9 w/ H_2SO_4 or NaOH	√ field sheet for F. pH	Y / N	☐ Notify ORG
CN / pH > 12 w/ NaOH within 15 min	☐ Check pH	Y / N	☐ Deliver to CONV
NO23 pH < 2 w/ H_2SO_4	☐ Check pH	Y / N / NA	☐ Preserve by SM
CR(VI) / TOTCR(VI) / pH 9.3 - 9.7 w/ NaOH w/in 15 min	√ field sheet for pH	Y / N	☐ Deliver to CONV
ICP / HG-CVAA-M / pH < 2 w/ HNO_3	☐ Check pH	Y / N	☐ Preserve By SM
O&G / HEM / PHENOL / pH < 2 w/ H_2SO_4	Check documentation	Y / N	☐ Preserve by SM
PHYTOPLANKTON / Lugols	Visually inspect	Y / N	☐ Deliver to MICRO
TKN / COD pH < 2 w/ H_2SO_4 within 15 min	☐ Check pH	Y / N	☐ Preserve By SM
TOC / pH < 2 w/ HCl (NPDES only)	☐ Check pH	Y / N	☐ Preserve By SM
TOTSULFIDE / pH > 9 w/ NaOH, ZnAc	Check documentation	Y / N	☐ Deliver to CONV
WDO / FIXED	Visually inspect	Y / N	☐ Deliver to CONV
Other:			

ROUTINE SM PRESERVATION CHECKLIST (Circle and/or check applicable selections)

PRODUCT / Preservation	SM Action	Acceptable?	Corrective Action
Chlorinated Pesticides / pH 5 - 9 w/ H_2SO_4 or NaOH	√ field sheet for F. pH	Y / N	☐ Adjust pH
HG-CVAA-L-Teflon (T / D) / pH < 2 w/ ULTRA HCl	☐ Preserve & deliver	NA	NA
ICPMS / HG-CVAA-M (T / D) / pH < 2 w/ ULTRA HNO_3	☐ Preserve & deliver	NA	NA
TOC / pH < 2 w/ HCl	☐ Preserve & deliver	NA	NA
Other:			
Other:			

INTERFERENCE TEST (Circle and/or check applicable selections)

Product / Interference (SM Action)	Positive Test?	Treated	Corrective Action
BNA / Chlorine (Check documentation)	Y / N / not tested	Y / N	☐ Deliver to ORG
CN / Chlorine (Check documentation)	Y / N / not tested	Y / N	☐ Deliver to CONV
CN / Sulfide (Check field sheet for DF)	Y / N / not tested	Y / N	☐ Deliver to CONV
VOA / Chlorine (Check documentaion)	Y / N / not tested	Y / N	☐ Deliver to ORG
Other:			

HEADSPACE CHECK

PRODUCT (SM Action)	Check For	Acceptable?	Corrective Action
MICRO (Visually inspect)	Headspace (@ 1")	Y / N	☐ Notify MICRO
TOTSULFIDE (Visually inspect)	Headspace (< 1")	Y / N	☐ Notify CONV
VOA (Visually inspect)	Zero headspace	Y / N	☐ Notify ORG
WDO (Visually inspect)	Zero headspace	Y / N	☐ Notify CONV
Other:			

FIELD FILTRATION CHECKLIST (Circle and/or check applicable selections)

Product (SM Action)	Field Filtered	Field Blank	Corrective Action
ORTHOP (Check Field Sheet)	Y (within 15 min y / n) / N	Y / N	☐ Deliver to CONV
NO2 / NO3 / NO23 / NH3 / SI (Documentation)	Y (within 1 day y / n) / N	Y / N / NA	☐ Deliver to CONV
Dissolved Metals (Check Field Sheet)	Y (within 15 min y / n) / N	Y / N / NA	☐ Deliver to METALS
DOC (Deliver / Notify Unit)	Y (within 15 min or 1 day) / N	Y / N / NA	☐ Deliver to CONV
DCOD / CR(VI) (Deliver / Notify Unit)	Y (within 15 min y / n) / N	Y / N / NA	☐ Deliver to CONV
Other:			
Other:			

CC: ☐ AQUATOX, ☐ CONV, ☐ METALS, ☐ MICRO, ☐ ORG, ☐ ____________

NOTES

1. Deliver dissolved Hg-CVAF samples to METALS for filtration.
2. Deliver double-bagged metals samples to METALS for preservation.
3. Do not test pH for preserved BNA and TOTSULFIDE samples.
4. Deliver pH, WDO, and all MICRO samples ASAP to appropriate section for immediate processing.
5. Enter " Time Span" for composite samples during sample login.
6. Split algae sample into 60 mL clear glass if PHYTOQUAL is requested.

SM Signature:

Date / Time Completed: FEB 29 '24 17:10

Study_ID	Location_ID	Study_Specific_Location_ID	Field_Collection_Type	Field_Collector	Field_Collection_Start_Date	Field_Collection_Start_Time	Field_Collection_End_Date
		LAB_01	Sample		2/28/2024	9:51:00	
		LAB_01	QC Surrogate		2/28/2024	9:51:00	
		LAB_02	Sample		2/28/2024	10:11:00	
		LAB_02	QC Surrogate		2/28/2024	10:11:00	
		LAB_03	Sample		2/28/2024	10:37:00	
		LAB_03	QC Surrogate		2/28/2024	10:37:00	
		LAB_04	Sample		2/28/2024	11:03:00	
		LAB_04	QC Surrogate		2/28/2024	11:03:00	
		LAB_05	Sample		2/28/2024	13:15:00	
		LAB_05	QC Surrogate		2/28/2024	13:15:00	
		LAB_06	Sample		2/28/2024	14:18:00	
		LAB_06	QC Surrogate		2/28/2024	14:18:00	
		LAB_07	Sample		2/28/2024	14:42:00	
		LAB_07	QC Surrogate		2/28/2024	14:42:00	
		LAB_08	Sample		2/28/2024	15:05:00	
		LAB_08	QC Surrogate		2/28/2024	15:05:00	
		LAB_09	Sample		2/28/2024	15:36:00	
		LAB_09	QC Surrogate		2/28/2024	15:36:00	
		LAB_10	Sample		2/28/2024	15:58:00	
		LAB_10	QC Surrogate		2/28/2024	15:58:00	
			QC Surrogate				
			QC Surrogate				
			QC Surrogate				
			QC Blank				
			QC				
			QC				

Field_Collection_End_Time	Field_Collection_Comment	Field_Collection_Area	Field_Collection_Area_Units	Field_Collection_Reference_Point	Field_Collection_Upper_Depth

Field_Collection_Lower_Depth	Field_Collection_Depth_Units	Well_Water_Level_Measuring_Point_or_TOC_ID	Sample_ID	Sample_Field_Replicate_ID	Sample_Replicate_Flag	Sample_Sub_ID
			2402033-01			
			2402033-01			
			2402033-02			
			2402033-02			
			2402033-03			
			2402033-03			
			2402033-04			
			2402033-04			
			2402033-05			
			2402033-05			
			2402033-06			
			2402033-06			
			2402033-07			
			2402033-07			
			2402033-08			
			2402033-08			
			2402033-09			
			2402033-09			
			2402033-10			
			2402033-10			
			B24C004-BSD1			
			B24C004-BS1			
			B24C004-BLK1			
			B24C004-BLK1			
			B24C004-BSD1			
			B24C004-BS1			

Sample_Composite_Flag	Storm_Event_Qualifier	Sample_Matrix	Sample_Source	Sample_Use	Sample_Collection_Method	Sample_Preparation_Method	Sample_Method_Other
		Water	17 - Surface Runoff/Pond (Gene			SW3535A	
		Water	17 - Surface Runoff/Pond (Gene			SW3535A	
		Water	17 - Surface Runoff/Pond (Gene			SW3535A	
		Water	17 - Surface Runoff/Pond (Gene			SW3535A	
		Water	17 - Surface Runoff/Pond (Gene			SW3535A	
		Water	17 - Surface Runoff/Pond (Gene			SW3535A	
		Water	17 - Surface Runoff/Pond (Gene			SW3535A	
		Water	17 - Surface Runoff/Pond (Gene			SW3535A	
		Water	17 - Surface Runoff/Pond (Gene			SW3535A	
		Water	17 - Surface Runoff/Pond (Gene			SW3535A	
		Water	17 - Surface Runoff/Pond (Gene			SW3535A	
		Water	17 - Surface Runoff/Pond (Gene			SW3535A	
		Water	17 - Surface Runoff/Pond (Gene			SW3535A	
		Water	17 - Surface Runoff/Pond (Gene			SW3535A	
		Water	17 - Surface Runoff/Pond (Gene			SW3535A	
		Water	17 - Surface Runoff/Pond (Gene			SW3535A	
		Water	17 - Surface Runoff/Pond (Gene			SW3535A	
		Water	17 - Surface Runoff/Pond (Gene			SW3535A	
		Water	17 - Surface Runoff/Pond (Gene			SW3535A	
		Water	17 - Surface Runoff/Pond (Gene			SW3535A	
		Water				SW3535A	
		Water				SW3535A	
		Water				SW3535A	
		Water				SW3535A	
		Water				SW3535A	
		Water				SW3535A	

Sample_Taxon_Name	Sample_Taxon_TSN	Sample_Tissue_Type	Sample_Percent_Sorted	Result_Parameter_Name	Result_Parameter_CAS_Number	Lab_Analysis_Date
				6PPD-quinone	2754428-18-5	3/8/2024
				D5-6PPD-quinone	TBD	3/8/2024
				6PPD-quinone	2754428-18-5	3/8/2024
				D5-6PPD-quinone	TBD	3/8/2024
				6PPD-quinone	2754428-18-5	3/8/2024
				D5-6PPD-quinone	TBD	3/8/2024
				6PPD-quinone	2754428-18-5	3/8/2024
				D5-6PPD-quinone	TBD	3/8/2024
				6PPD-quinone	2754428-18-5	3/8/2024
				D5-6PPD-quinone	TBD	3/8/2024
				6PPD-quinone	2754428-18-5	3/8/2024
				D5-6PPD-quinone	TBD	3/8/2024
				6PPD-quinone	2754428-18-5	3/8/2024
				D5-6PPD-quinone	TBD	3/8/2024
				6PPD-quinone	2754428-18-5	3/8/2024
				D5-6PPD-quinone	TBD	3/8/2024
				6PPD-quinone	2754428-18-5	3/8/2024
				D5-6PPD-quinone	TBD	3/8/2024
				6PPD-quinone	2754428-18-5	3/8/2024
				D5-6PPD-quinone	TBD	3/8/2024
				D5-6PPD-quinone	TBD	3/8/2024
				D5-6PPD-quinone	TBD	3/8/2024
				D5-6PPD-quinone	TBD	3/8/2024
				6PPD-quinone	2754428-18-5	3/8/2024
				6PPD-quinone	2754428-18-5	3/8/2024
				6PPD-quinone	2754428-18-5	3/8/2024

Lab_Analysis_Date_Accuracy	Lab_Analysis_Time	Result_Value	Result_Value_Units	Result_Reporting_Limit	Result_Reporting_Limit_Type	Result_Detection_Limit	Result_Detection_Limit_Type
D	15:14:00	804	ng/L	1.01	LLOQ	0.47	MDL
D	15:14:00	64	%				
D	15:24:00	965	ng/L	0.977	LLOQ	0.455	MDL
D	15:24:00	75	%				
D	15:35:00	860	ng/L	0.965	LLOQ	0.45	MDL
D	15:35:00	72	%				
D	15:46:00	676	ng/L	0.962	LLOQ	0.448	MDL
D	15:46:00	63	%				
D	15:57:00	367	ng/L	0.965	LLOQ	0.45	MDL
D	15:57:00	86	%				
D	16:19:00	650	ng/L	1.03	LLOQ	0.479	MDL
D	16:19:00	79	%				
D	16:30:00	786	ng/L	1.01	LLOQ	0.472	MDL
D	16:30:00	73	%				
D	16:40:00	1180	ng/L	0.965	LLOQ	0.45	MDL
D	16:40:00	83	%				
D	16:51:00	899	ng/L	0.977	LLOQ	0.455	MDL
D	16:51:00	79	%				
D	17:02:00	1290	ng/L	0.962	LLOQ	0.448	MDL
D	17:02:00	80	%				
D	15:03:00	73	%				
D	14:52:00	54	%				
D	14:41:00	66	%				
D	14:41:00	1	ng/L	1	LLOQ	0.466	MDL
D	15:03:00	108	%	1	LLOQ	0.466	MDL
D	14:52:00	108	%	1	LLOQ	0.466	MDL

Result_Data_Qualifier	Fraction_Analyzed	Field_Filtered_Flag	Result_Basis	Digestion_Method	Water_Level_Accuracy	Result_Method	Result_Comment	Result_Additional_Comment
	Total					SOP730136		
	Total					SOP730136		
	Total					SOP730136		
	Total					SOP730136		
	Total					SOP730136		
	Total					SOP730136		
	Total					SOP730136		
	Total					SOP730136		
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	Total					SOP730136		
	Total					SOP730136		
	Total					SOP730136		
	Total					SOP730136		
U	Total					SOP730136		
	Total					SOP730136		
	Total					SOP730136		

Result_Lab_Replicate_ID	Result_Lab_Name	Result_Validation_Level	Result_Taxon_Name	Result_Taxon_TSN	Result_Taxon_Unidentified_Species
	Ecology Manchester Environmental Laboratory				
	Ecology Manchester Environmental Laboratory				
	Ecology Manchester Environmental Laboratory				
	Ecology Manchester Environmental Laboratory				
	Ecology Manchester Environmental Laboratory				
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	Ecology Manchester Environmental Laboratory				
	Ecology Manchester Environmental Laboratory				
	Ecology Manchester Environmental Laboratory				

Result_Taxon_Life_Stage	QC_Blank_Type	QC_Blank_Censor_Factor	Lab_Batch_ID	Lab_GC_Column_ID	MEL_Client	MEL_Client_Email	MEL_Project_Name
		Uncensored	B24C004		Baker, Morgan	mbak461@ecy.wa.gov	6PPD-q Characterization and Protocol
		Uncensored	B24C004		Baker, Morgan	mbak461@ecy.wa.gov	6PPD-q Characterization and Protocol
		Uncensored	B24C004		Baker, Morgan	mbak461@ecy.wa.gov	6PPD-q Characterization and Protocol
		Uncensored	B24C004		Baker, Morgan	mbak461@ecy.wa.gov	6PPD-q Characterization and Protocol
		Uncensored	B24C004		Baker, Morgan	mbak461@ecy.wa.gov	6PPD-q Characterization and Protocol
		Uncensored	B24C004		Baker, Morgan	mbak461@ecy.wa.gov	6PPD-q Characterization and Protocol
		Uncensored	B24C004		Baker, Morgan	mbak461@ecy.wa.gov	6PPD-q Characterization and Protocol
		Uncensored	B24C004		Baker, Morgan	mbak461@ecy.wa.gov	6PPD-q Characterization and Protocol
		Uncensored	B24C004		Baker, Morgan	mbak461@ecy.wa.gov	6PPD-q Characterization and Protocol
		Uncensored	B24C004		Baker, Morgan	mbak461@ecy.wa.gov	6PPD-q Characterization and Protocol
		Uncensored	B24C004		Baker, Morgan	mbak461@ecy.wa.gov	6PPD-q Characterization and Protocol
		Uncensored	B24C004		Baker, Morgan	mbak461@ecy.wa.gov	6PPD-q Characterization and Protocol
		Uncensored	B24C004		Baker, Morgan	mbak461@ecy.wa.gov	6PPD-q Characterization and Protocol
		Uncensored	B24C004		Baker, Morgan	mbak461@ecy.wa.gov	6PPD-q Characterization and Protocol
		Uncensored	B24C004		Baker, Morgan	mbak461@ecy.wa.gov	6PPD-q Characterization and Protocol
		Uncensored	B24C004		Baker, Morgan	mbak461@ecy.wa.gov	6PPD-q Characterization and Protocol
		Uncensored	B24C004		Baker, Morgan	mbak461@ecy.wa.gov	6PPD-q Characterization and Protocol
		Uncensored	B24C004		Baker, Morgan	mbak461@ecy.wa.gov	6PPD-q Characterization and Protocol
		Uncensored	B24C004		Baker, Morgan	mbak461@ecy.wa.gov	6PPD-q Characterization and Protocol
		Uncensored	B24C004		Baker, Morgan	mbak461@ecy.wa.gov	6PPD-q Characterization and Protocol
	QC	Uncensored	B24C004		Baker, Morgan	mbak461@ecy.wa.gov	6PPD-q Characterization and Protocol
	QC	Uncensored	B24C004		Baker, Morgan	mbak461@ecy.wa.gov	6PPD-q Characterization and Protocol
	Method Blank		B24C004		Baker, Morgan	mbak461@ecy.wa.gov	6PPD-q Characterization and Protocol
	Method Blank		B24C004		Baker, Morgan	mbak461@ecy.wa.gov	6PPD-q Characterization and Protocol
	QC	Uncensored	B24C004		Baker, Morgan	mbak461@ecy.wa.gov	6PPD-q Characterization and Protocol
	QC	Uncensored	B24C004		Baker, Morgan	mbak461@ecy.wa.gov	6PPD-q Characterization and Protocol

MEL_Analysis_Code	MEL_Date_Extracted	MEL_Dilution	MEL_Result_Type	MEL_QC_Type	MEL_Sample_Source_ID	MEL_Spiked_Amount	MEL_Spike_Result_Amount
6PPDQ	3/4/2024	1	R				
6PPDQ	3/4/2024	1	S			80.6	51.6
6PPDQ	3/4/2024	1	R				
6PPDQ	3/4/2024	1	S			78.1	58.8
6PPDQ	3/4/2024	1	R				
6PPDQ	3/4/2024	1	S			77.2	55.4
6PPDQ	3/4/2024	1	R				
6PPDQ	3/4/2024	1	S			76.9	48.5
6PPDQ	3/4/2024	1	R				
6PPDQ	3/4/2024	1	S			77.2	66.5
6PPDQ	3/4/2024	1	R				
6PPDQ	3/4/2024	1	S			82.3	65
6PPDQ	3/4/2024	1	R				
6PPDQ	3/4/2024	1	S			81	59.5
6PPDQ	3/4/2024	1	R				
6PPDQ	3/4/2024	1	S			77.2	64.1
6PPDQ	3/4/2024	1	R				
6PPDQ	3/4/2024	1	S			78.1	61.9
6PPDQ	3/4/2024	1	R				
6PPDQ	3/4/2024	1	S			76.9	61.6
6PPDQ	3/4/2024	1	S	BSD1		80	58.1
6PPDQ	3/4/2024	1	S	BS1		80	42.8
6PPDQ	3/4/2024	1	S	BLK1		80	52.6
6PPDQ	3/4/2024	1	R	BLK1			
6PPDQ	3/4/2024	1	R	BSD1		80	86.3
6PPDQ	3/4/2024	1	R	BS1		80	86.8

MEL_Spike_Units_Of_Measure	MEL_RPD	MEL_QC_RPD_Limit	MEL_QC_Lower_Limit	MEL_QC_Upper_Limit	MEL_Work_ID	MEL_QC_Name
					2402033	
ng/L			20	200	2402033	
					2402033	
ng/L			20	200	2402033	
					2402033	
ng/L			20	200	2402033	
					2402033	
ng/L			20	200	2402033	
					2402033	
ng/L			20	200	2402033	
					2402033	
ng/L			20	200	2402033	
					2402033	
ng/L			20	200	2402033	
					2402033	
ng/L			20	200	2402033	
					2402033	
ng/L			20	200	2402033	
					2402033	
ng/L			20	200	2402033	
ng/L			20	200	2402033	
ng/L			20	200	2402033	
ng/L			20	200	2402033	
					2402033	Method Blank
ng/L	0.6	40	50	150	2402033	LCS Dup
ng/L			50	150	2402033	LCS

King County

Department of Natural Resources and Parks
Water and Land Resources Division

Environmental Laboratory

LAB-NR0100
322 West Ewing Street
Seattle, WA 98119-1507
206-477-7200 Fax 206-684-2395
TTY Relay: 711

Date: April 12, 2024

To: Madison Bristol, Washington State Department of Ecology

Clark, Herrera Environmental Consultants

From: Meghan Elkey, King County Environmental Laboratory

Subject: BMP Stormwater Characterization – Herrera Add-on 6PPDQ Samples Data Summary, March 25, 2024

Stormwater samples were collected by Herrera Environmental Consultants on March 25, 2024. The samples were delivered to the King County Environmental Laboratory on March 28, 2024. The samples were assigned lab ID numbers L82959-1 to -4. The following QC summary is included for your information.

All samples received were analyzed as requested. The samples were analyzed in the Aquatic Toxicology unit of the laboratory. The data have passed all QA/QC checks for accuracy and completeness and may be used without qualification.

Please contact me if you have any questions about this report or need additional information.

Sincerely,

Meghan Elkey

Meghan Elkey
Laboratory Project Manager/Water Quality Planner III
King County Environmental Lab
(206)477-7154 or meghan.elkey@kingcounty.gov

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200	Project:	421520-200
Locator:	STTC-TB1-IN	Locator:	STTC-TB1-OUT	Locator:	STTC-TB1-IN
Descrip:	STTC-TB1 upstream	Descrip:	STTC-TB1 downstrea	Descrip:	STTC-TB1 upstream
Sample:	L82959-1	Sample:	L82959-2	Sample:	L82959-3
Matrix:	LG STORM WTR	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
ColDate:	3/25/24 18:32	ColDate:	3/25/24 18:32	ColDate:	3/25/24 19:36
WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units	Value	Qual	MDL	RDL	Units
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.545		0.002	0.01	ug/L	0.0898		0.002	0.01	ug/L	1.21		0.002	0.01	ug/L

King County Environmental Lab Analytical Report

Project: 421520-200
Locator: STTC-TB1-OUT
Descrip: STTC-TB1 downstrea
Sample: L82959-4
Matrix: LG STORM WTR
ColDate: 3/25/24 19:36

WET Weight Basis

Parameters	Value	Qual	MDL	RDL	Units
AQ KCEL SOP 4077: 6PPDQ by LCMS					
6ppd-quinone	0.255		0.002	0.01	ug/L

King County Environmental Lab Analytical MATRIX Report

Owner: **SEEDPAK**
Matrix Class: **LIQUID**
User select: **WET Weight Basis**

				6ppd-quinone
LOCATOR	**PROJECT**	**SAMPLE**	**COLLECTED**	**ug/L**
STTC-TB1-IN	421520-200	L82959-1	3/25/2024 18:32	0.545
STTC-TB1-OUT	421520-200	L82959-2	3/25/2024 18:32	0.0898
STTC-TB1-IN	421520-200	L82959-3	3/25/2024 19:36	1.21
STTC-TB1-OUT	421520-200	L82959-4	3/25/2024 19:36	0.255
* Not converted to dry weight basis				

If a parameter/analyte appears twice in the column header, it implies that they were analyzed by two different method codes

WG193317 6PPDQ by LCMS

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	QC Association	Comments
L82959-1	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	3/25/2024 18:32	3/29/2024 7:50	3/29/2024 11:20	WG193317-1,-2,-3,-4,-5,-6	
L82959-2	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	3/25/2024 18:32	3/29/2024 7:50	3/29/2024 11:20	WG193317-1,-2,-3,-4,-5,-6	
L82959-3	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	3/25/2024 19:36	3/29/2024 7:50	3/29/2024 11:20	WG193317-1,-2,-3,-4,-5,-6	
L82959-4	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	3/25/2024 19:36	3/29/2024 7:50	3/29/2024 11:20	WG193317-1,-2,-3,-4,-5,-6	
L82960-1	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	3/27/2024 7:24	3/29/2024 7:50	3/29/2024 11:20	WG193317-1,-2,-3,-4,-5,-6	
L82960-2	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	3/27/2024 7:24	3/29/2024 7:50	3/29/2024 11:20	WG193317-1,-2,-3,-4,-5,-6	
L82960-3	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	3/27/2024 8:42	3/29/2024 7:50	3/29/2024 11:20	WG193317-1,-2,-3,-4,-5,-6	
L82960-4	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	3/27/2024 8:42	3/29/2024 7:50	3/29/2024 11:20	WG193317-1,-2,-3,-4,-5,-6	
L82960-9	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	3/27/2024 8:42	3/29/2024 7:50	3/29/2024 11:20	WG193317-1,-2,-3,-4,-5,-6	
WG193317-1	MB		AQ6PPDQ-LCMS	OTHR WTR		3/29/2024 7:50	3/29/2024 11:20	WG193317-1,-2,-3,-4,-5,-6	
WG193317-2	SB		AQ6PPDQ-LCMS	OTHR WTR		3/29/2024 7:50	3/29/2024 11:20	WG193317-1,-2,-3,-4,-5,-6	WG193317-1
WG193317-3	MS		AQ6PPDQ-LCMS	STORM WTR		3/29/2024 7:50	3/29/2024 11:20	WG193317-1,-2,-3,-4,-5,-6	L82960-2
WG193317-4	MSD		AQ6PPDQ-LCMS	STORM WTR		3/29/2024 7:50	3/29/2024 11:20	WG193317-1,-2,-3,-4,-5,-6	WG193317-3 L82960-2
WG193317-5	LD		AQ6PPDQ-LCMS	STORM WTR		3/29/2024 7:50	3/29/2024 11:20	WG193317-1,-2,-3,-4,-5,-6	L82959-2
WG193317-6	CCC		AQ6PPDQ-LCMS	OTHR WTR		3/29/2024 7:50	3/29/2024 11:20	WG193317-1,-2,-3,-4,-5,-6	MED

Workgroup: WG193317 6PPDQ by LCMS

MB:WG193317-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
6ppd-quinone	0.002	0.01	ug/L		<MDL

SB:WG193317-2 MB:WG193317-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	True Value	SB Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	<MDL	0.2	0.221	110		50--150

MSD:WG193317-4 MS:WG193317-3 L82960-2 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	True Value	MS Value	% Rec.	Qual	Lab Limit	True Value	MSD Value	% Rec.	Qual	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	0.104	0.2	0.319	108		50--150	0.2	0.322	109		1		0--45

LD:WG193317-5 L82959-2 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	0.0898	0.0845	6		0--40

CCC:WG193317-6 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Continuing Calibration Check)

Parameter	MDL	RDL	Units	True Value	CCC Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.01	0.05	ug/L	1	0.999	100		80--120

Surrogate:	**d5-6PPDQ**
(Lab Limits)	**20--200**
L82959-1	71
L82959-2	71
L82959-3	63
L82959-4	65
L82960-1	65
L82960-2	77
L82960-3	71
L82960-4	80
L82960-9	76
WG193317-1	63
WG193317-2	74
WG193317-3	77
WG193317-4	77
WG193317-5	78
WG193317-6	100

Login: P82959
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On STTC

FSU TC: ____________________
LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by	***Date*** SN 3/28/24 ~~@1540~~	***Time*** 1540
Received by	***Date*** 3-28-24	***Time*** 1540
Sample Numbers		***[All]***

Sample Number	**P82959-1**	**P82959-2**	
QC Link			
Locator	**STTC-TB1-IN**	**STTC-TB1-OUT**	
Short Loc Desc			
Locator Desc	STTC-TB1 upstream sampling station	STTC-TB1 downstream sampling station	
Site	I-5TAPE	I-5TAPE	
Comments	First grab	First grab	
Start Date/Time	SN 3~~4~~/25/24@18:32	SN 3~~4~~/25/24@1832	
End Date/Time			
Time Span			
Sample Depth			
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	

Login: P82959
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On STTC

FSU TC: ____________________
LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by	*Date*	*Time*
Received by	*Date*	*Time*
Sample Numbers		*[All]*

Sample Number	**P82959-3**	**P82959-4**	
QC Link			
Locator	**STTC-TB1-IN**	**STTC-TB1-OUT**	
Short Loc Desc			
Locator Desc	STTC-TB1 upstream sampling station	STTC-TB1 downstream sampling station	
Site	I-5TAPE	I-5TAPE	
Comments	Second grab	Second grab	
Start Date/Time	SW 3~~4~~/25/24 @ 1936	SW 3~~4~~/25/24 @ 1936	
End Date/Time			
Time Span			
Sample Depth			
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	

LIQUID SAMPLE RECEIPT RECORD

Login Number(s): 82959-(1-4)
Project No.: 421520-200
Sub-Contracting: Y / [✓ N]
List Product(s):
Collect Date(s): 3-25-24
Receive Date: 3-28-24
Changes: Y / [✓ N]
List Parameter(s):

SAMPLE RECEIPT CONDITIONS

CONDITION	Acceptable?	Comment ID	CONDITION	Acceptable?	Comment ID
Labels / Fieldsheets	[✓ Y] / N		Volumes	[✓ Y] / N	
Container	[✓ Y] / N		Holding Times	[✓ Y] / N	
Temperature (w/ ice)	[✓ Y] / N / NA		Delivery Location	[✓ Y] / N	

BOTTLE COUNT (#) AND DESCRIPTION and SAMPLE NUMBERS

#	Bottle Description: Sample Numbers
	40 mL clear vial (VOA):
	60 mL clear glass (PHYTO):
	60 mL CWM HDPE:
	125 mL AWM HDPE:
	125 mL CNM HDPE:
	125 mL CWM HDPE:
	125 mL GANM:
	125 mL GANM w/HCl
	250 mL AWM HDPE:
	250 mL CWM HDPE:
	250 mL CWM HDPE (MICRO):
4	250 mL GAWM: 1-4
	250 mL GAWM w/ H2SO4:
	300 mL WDO (8 hour HT):
	500 mL AWM HDPE:
	500 mL CWM HDPE:
	500 mL CWM PP (MICRO):
	500 mL HDPE (METALS):
	500 mL HDPE, double-bagged (METALS):
	500 mL Teflon (Hg):
	500 mL Teflon, double-bagged (METALS):
	500 mL GANM / GAWM:
	500 mL Polystyrene Filtration Units (METALS):
	1L AWM HDPE:
	1L CWM HDPE:
	1L CWM PP (MICRO):
	1L GANM:
	1L GCWM:
	1L GAWM w/ H_2SO_4:
	2L CWM HDPE:
	Other:

COMMENTS / NOTIFICATIONS

FIELD PRESERVATION CHECKLIST (Circle and/or check applicable selections)

PRODUCT / Preservation	SM Action	Acceptable?	Corrective Action
BNA / pH 5 - 9 w/ H_2SO_4 or NaOH	√ field sheet for F. pH	Y / N	☐ Notify ORG
CN / pH > 12 w/ NaOH within 15 min	☐ Check pH	Y / N	☐ Deliver to CONV
NO23 pH < 2 w/ H_2SO_4	☐ Check pH	Y / N / NA	☐ Preserve by SM
CR(VI) / TOTCR(VI) / pH 9.3 - 9.7 w/ NaOH w/in 15 min	√ field sheet for pH	Y / N	☐ Deliver to CONV
ICP / HG-CVAA-M / pH < 2 w/ HNO_3	☐ Check pH	Y / N	☐ Preserve By SM
O&G / HEM / PHENOL / pH < 2 w/ H_2SO_4	Check documentation	Y / N	☐ Preserve by SM
PHYTOPLANKTON / Lugols	Visually inspect	Y / N	☐ Deliver to MICRO
TKN / COD pH < 2 w/ H_2SO_4 within 15 min	☐ Check pH	Y / N	☐ Preserve By SM
TOC / pH < 2 w/ HCl (NPDES only)	☐ Check pH	Y / N	☐ Preserve By SM
TOTSULFIDE / pH > 9 w/ NaOH, ZnAc	Check documentation	Y / N	☐ Deliver to CONV
WDO / FIXED	Visually inspect	Y / N	☐ Deliver to CONV
Other:			

ROUTINE SM PRESERVATION CHECKLIST (Circle and/or check applicable selections)

PRODUCT / Preservation	SM Action	Acceptable?	Corrective Action
Chlorinated Pesticides / pH 5 - 9 w/ H_2SO_4 or NaOH	√ field sheet for F. pH	Y / N	☐ Adjust pH
HG-CVAA-L-Teflon (T / D) / pH < 2 w/ ULTRA HCl	☐ Preserve & deliver	NA	NA
ICPMS / HG-CVAA-M (T / D) / pH < 2 w/ ULTRA HNO_3	☐ Preserve & deliver	NA	NA
TOC / pH < 2 w/ HCl	☐ Preserve & deliver	NA	NA
Other:			
Other:			

INTERFERENCE TEST (Circle and/or check applicable selections)

Product / Interference (SM Action)	Positive Test?	Treated	Corrective Action
BNA / Chlorine (Check documentation)	Y / N / not tested	Y / N	☐ Deliver to ORG
CN / Chlorine (Check documentation)	Y / N / not tested	Y / N	☐ Deliver to CONV
CN / Sulfide (Check field sheet for DF)	Y / N / not tested	Y / N	☐ Deliver to CONV
VOA / Chlorine (Check documentaion)	Y / N / not tested	Y / N	☐ Deliver to ORG
Other:			

HEADSPACE CHECK

PRODUCT (SM Action)	Check For	Acceptable?	Corrective Action
MICRO (Visually inspect)	Headspace (@ 1")	Y / N	☐ Notify MICRO
TOTSULFIDE (Visually inspect)	Headspace (< 1")	Y / N	☐ Notify CONV
VOA (Visually inspect)	Zero headspace	Y / N	☐ Notify ORG
WDO (Visually inspect)	Zero headspace	Y / N	☐ Notify CONV
Other:			

FIELD FILTRATION CHECKLIST (Circle and/or check applicable selections)

Product (SM Action)	Field Filtered	Field Blank	Corrective Action
ORTHOP (Check Field Sheet)	Y (within 15 min y / n) / N	Y / N	☐ Deliver to CONV
NO2 / NO3 / NO23 / NH3 / SI (Documentation)	Y (within 1 day y / n) / N	Y / N / NA	☐ Deliver to CONV
Dissolved Metals (Check Field Sheet)	Y (within 15 min y / n) / N	Y / N / NA	☐ Deliver to METALS
DOC (Deliver / Notify Unit)	Y (within 15 min or 1 day) / N	Y / N / NA	☐ Deliver to CONV
DCOD / CR(VI) (Deliver / Notify Unit)	Y (within 15 min y / n) / N	Y / N / NA	☐ Deliver to CONV
Other:			
Other:			

CC: ☐ AQUATOX, ☐ CONV, ☐ METALS, ☐ MICRO, ☐ ORG, ☐ ____

NOTES

1. Deliver dissolved Hg-CVAF samples to METALS for filtration.
2. Deliver double-bagged metals samples to METALS for preservation.
3. Do not test pH for preserved BNA and TOTSULFIDE samples.
4. Deliver pH, WDO, and all MICRO samples ASAP to appropriate section for immediate processing.
5. Enter " Time Span" for composite samples during sample login.
6. Split algae sample into 60 mL clear glass if PHYTOQUAL is requested.

SM Signature:

Date / Time Completed: MAR 28 '24 15:49

King County

Department of Natural Resources and Parks
Water and Land Resources Division

Environmental Laboratory

LAB-NR0100
322 West Ewing Street
Seattle, WA 98119-1507
206-477-7200 Fax 206-684-2395
TTY Relay: 711

Date: April 12, 2024

To: Madison Bristol, Washington State Department of Ecology

Clark, Herrera Environmental Consultants

From: Meghan Elkey, King County Environmental Laboratory

Subject: BMP Stormwater Characterization – Herrera Add-on 6PPDQ Samples Data Summary, March 27, 2024

Stormwater samples were collected by Herrera Environmental Consultants on March 27, 2024. The samples were delivered to the King County Environmental Laboratory on March 28, 2024. The samples were assigned lab ID numbers L82960-1 to -4 and -9. The following QC summary is included for your information.

All samples received were analyzed as requested. The samples were analyzed in the Aquatic Toxicology unit of the laboratory. The data have passed all QA/QC checks for accuracy and completeness and may be used without qualification.

Please contact me if you have any questions about this report or need additional information.

Sincerely,

Meghan Elkey

Meghan Elkey
Laboratory Project Manager/Water Quality Planner III
King County Environmental Lab
(206)477-7154 or meghan.elkey@kingcounty.gov

King County Environmental Lab Analytical Report

Project: 421520-200
Locator: STTC-TB1-IN
Descrip: STTC-TB1 upstream
Sample: L82960-1
Matrix: LG STORM WTR
ColDate: 3/27/24 7:24
WET Weight Basis

Parameters	Value	Qual	MDL	RDL	Units
AQ KCEL SOP 4077: 6PPDQ by LCMS					
6ppd-quinone	0.703		0.002	0.01	ug/L

Project: 421520-200
Locator: STTC-TB1-OUT
Descrip: STTC-TB1 downstrea
Sample: L82960-2
Matrix: LG STORM WTR
ColDate: 3/27/24 7:24
WET Weight Basis

Parameters	Value	Qual	MDL	RDL	Units
AQ KCEL SOP 4077: 6PPDQ by LCMS					
6ppd-quinone	0.104		0.002	0.01	ug/L

Project: 421520-200
Locator: STTC-TB1-IN
Descrip: STTC-TB1 upstream
Sample: L82960-3
Matrix: LG STORM WTR
ColDate: 3/27/24 8:42
WET Weight Basis

Parameters	Value	Qual	MDL	RDL	Units
AQ KCEL SOP 4077: 6PPDQ by LCMS					
6ppd-quinone	0.711		0.002	0.01	ug/L

King County Environmental Lab Analytical Report

	Project: 421520-200 Locator: STTC-TB1-OUT Descrip: STTC-TB1 downstrea Sample: L82960-4 Matrix: LG STORM WTR ColDate: 3/27/24 8:42 **WET Weight Basis**					Project: 421520-200 Locator: FIELDDUP Descrip: FIELD DUPLICATE Sample: L82960-9 Matrix: LG STORM WTR ColDate: 3/27/24 8:42 **WET Weight Basis**				
Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS										
6ppd-quinone	0.19		0.002	0.01	ug/L	0.68		0.002	0.01	ug/L

King County Environmental Lab Analytical MATRIX Report

Owner: **SEEDPAK**
Matrix Class: **LIQUID**
User select: **WET Weight Basis**

				6ppd-quinone
LOCATOR	**PROJECT**	**SAMPLE**	**COLLECTED**	**ug/L**
STTC-TB1-IN	421520-200	L82960-1	3/27/2024 7:24	0.703
STTC-TB1-OUT	421520-200	L82960-2	3/27/2024 7:24	0.104
STTC-TB1-IN	421520-200	L82960-3	3/27/2024 8:42	0.711
STTC-TB1-OUT	421520-200	L82960-4	3/27/2024 8:42	0.19
FIELDDUP	421520-200	L82960-9	3/27/2024 8:42	0.68
* Not converted to dry weight basis				

If a parameter/analyte appears twice in the column header, it implies that they were analyzed by two different method codes

WG193317 6PPDQ by LCMS

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	QC Association	Comments
L82959-1	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	3/25/2024 18:32	3/29/2024 7:50	3/29/2024 11:20	WG193317-1,-2,-3,-4,-5,-6	
L82959-2	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	3/25/2024 18:32	3/29/2024 7:50	3/29/2024 11:20	WG193317-1,-2,-3,-4,-5,-6	
L82959-3	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	3/25/2024 19:36	3/29/2024 7:50	3/29/2024 11:20	WG193317-1,-2,-3,-4,-5,-6	
L82959-4	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	3/25/2024 19:36	3/29/2024 7:50	3/29/2024 11:20	WG193317-1,-2,-3,-4,-5,-6	
L82960-1	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	3/27/2024 7:24	3/29/2024 7:50	3/29/2024 11:20	WG193317-1,-2,-3,-4,-5,-6	
L82960-2	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	3/27/2024 7:24	3/29/2024 7:50	3/29/2024 11:20	WG193317-1,-2,-3,-4,-5,-6	
L82960-3	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	3/27/2024 8:42	3/29/2024 7:50	3/29/2024 11:20	WG193317-1,-2,-3,-4,-5,-6	
L82960-4	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	3/27/2024 8:42	3/29/2024 7:50	3/29/2024 11:20	WG193317-1,-2,-3,-4,-5,-6	
L82960-9	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	3/27/2024 8:42	3/29/2024 7:50	3/29/2024 11:20	WG193317-1,-2,-3,-4,-5,-6	
WG193317-1	MB		AQ6PPDQ-LCMS	OTHR WTR		3/29/2024 7:50	3/29/2024 11:20	WG193317-1,-2,-3,-4,-5,-6	
WG193317-2	SB		AQ6PPDQ-LCMS	OTHR WTR		3/29/2024 7:50	3/29/2024 11:20	WG193317-1,-2,-3,-4,-5,-6	WG193317-1
WG193317-3	MS		AQ6PPDQ-LCMS	STORM WTR		3/29/2024 7:50	3/29/2024 11:20	WG193317-1,-2,-3,-4,-5,-6	L82960-2
WG193317-4	MSD		AQ6PPDQ-LCMS	STORM WTR		3/29/2024 7:50	3/29/2024 11:20	WG193317-1,-2,-3,-4,-5,-6	WG193317-3 L82960-2
WG193317-5	LD		AQ6PPDQ-LCMS	STORM WTR		3/29/2024 7:50	3/29/2024 11:20	WG193317-1,-2,-3,-4,-5,-6	L82959-2
WG193317-6	CCC		AQ6PPDQ-LCMS	OTHR WTR		3/29/2024 7:50	3/29/2024 11:20	WG193317-1,-2,-3,-4,-5,-6	MED

Workgroup: WG193317 6PPDQ by LCMS

MB:WG193317-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
6ppd-quinone	0.002	0.01	ug/L		<MDL

SB:WG193317-2 MB:WG193317-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	True Value	SB Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	<MDL	0.2	0.221	110		50--150

MSD:WG193317-4 MS:WG193317-3 L82960-2 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	True Value	MS Value	% Rec.	Qual	Lab Limit	True Value	MSD Value	% Rec.	Qual	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	0.104	0.2	0.319	108		50--150	0.2	0.322	109		1		0--45

LD:WG193317-5 L82959-2 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	0.0898	0.0845	6		0--40

CCC:WG193317-6 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Continuing Calibration Check)

Parameter	MDL	RDL	Units	True Value	CCC Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.01	0.05	ug/L	1	0.999	100		80--120

Surrogate:	**d5-6PPDQ**
(Lab Limits)	**20--200**
L82959-1	71
L82959-2	71
L82959-3	63
L82959-4	65
L82960-1	65
L82960-2	77
L82960-3	71
L82960-4	80
L82960-9	76
WG193317-1	63
WG193317-2	74
WG193317-3	77
WG193317-4	77
WG193317-5	78
WG193317-6	100

Login: P82960
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On STTC

FSU TC: ______________

LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by	***Date*** 3/28/24	***Time*** 1541
Received by	***Date*** 3-28-24	***Time*** 1541
Sample Numbers		***[All]***

Sample Number	**P82960-1**	**P82960-2**	
QC Link			
Locator	**STTC-TB1-IN**	**STTC-TB1-OUT**	
Short Loc Desc			
Locator Desc	STTC-TB1 upstream sampling station	STTC-TB1 downstream sampling station	
Site	I-5TAPE	I-5TAPE	
Comments	First grab	First grab	
Start Date/Time	3/27/24 @ 0724	3/27/24@0724	
End Date/Time			
Time Span			
Sample Depth			
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	

Login: P82960
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On STTC

FSU TC: ______________________
LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by	***Date***	***Time***
Received by	***Date***	***Time***
Sample Numbers		***[All]***

Sample Number	**P82960-3**	**P82960-4**	
QC Link			
Locator	**STTC-TB1-IN**	**STTC-TB1-OUT**	
Short Loc Desc			
Locator Desc	STTC-TB1 upstream sampling station	STTC-TB1 downstream sampling station	
Site	I-5TAPE	I-5TAPE	
Comments	Second grab	Second grab	
Start Date/Time	3/27/24 @0842	3/27/24 @0842	
End Date/Time			
Time Span			
Sample Depth			
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)	

Login: P82960
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On STTC

FSU TC: ____________________
LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by	***Date***	***Time***
Received by	***Date***	***Time***
Sample Numbers ***[All]***		

Sample Number	**P82960-9**		
QC Link			
Locator	**FIELDDUP**		
Short Loc Desc			
Locator Desc	FIELD DUPLICATE		
Site	FLDQC		
Comments			
Start Date/Time	3/27/24 @ 0842		
End Date/Time			
Time Span			
Sample Depth			
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)		

LIQUID SAMPLE RECEIPT RECORD

Login Number(s): 82960-(1-4,9)
Collect Date(s): 3-27-24
Project No.: 421520-200
Receive Date: 3-28-24
Sub-Contracting: Y [✓ N]
Changes: Y / [✓ N]
List Product(s):
List Parameter(s):

SAMPLE RECEIPT CONDITIONS

CONDITION	Acceptable?	Comment ID	CONDITION	Acceptable?	Comment ID
Labels / Fieldsheets	[✓ Y] / N		Volumes	[✓ Y] / N	
Container	[✓ Y] / N		Holding Times	[✓ Y] / N	
Temperature (w/ ice)	[✓ Y] / N / NA		Delivery Location	[✓ Y] / N	

BOTTLE COUNT (#) AND DESCRIPTION and SAMPLE NUMBERS

#	Bottle Description: Sample Numbers
	40 mL clear vial (VOA):
	60 mL clear glass (PHYTO):
	60 mL CWM HDPE:
	125 mL AWM HDPE:
	125 mL CNM HDPE:
	125 mL CWM HDPE:
	125 mL GANM:
	125 mL GANM w/HCl
	250 mL AWM HDPE:
	250 mL CWM HDPE:
	250 mL CWM HDPE (MICRO):
5	250 mL GAWM: 1-4,9
	250 mL GAWM w/ H2SO4:
	300 mL WDO (8 hour HT):
	500 mL AWM HDPE:
	500 mL CWM HDPE:
	500 mL CWM PP (MICRO):
	500 mL HDPE (METALS):
	500 mL HDPE, double-bagged (METALS):
	500 mL Teflon (Hg):
	500 mL Teflon, double-bagged (METALS):
	500 mL GANM / GAWM:
	500 mL Polystyrene Filtration Units (METALS):
	1L AWM HDPE:
	1L CWM HDPE:
	1L CWM PP (MICRO):
	1L GANM:
	1L GCWM:
	1L GAWM w/ H_2SO_4:
	2L CWM HDPE:
	Other:

COMMENTS / NOTIFICATIONS

FIELD PRESERVATION CHECKLIST (Circle and/or check applicable selections)

PRODUCT / Preservation	SM Action	Acceptable?	Corrective Action
BNA / pH 6 - 9 w/ H_2SO_4 or NaOH	√ field sheet for F. pH	Y / N	☐ Notify ORG
CN / pH > 12 w/ NaOH within 15 min	☐ Check pH	Y / N	☐ Deliver to CONV
NO23 pH < 2 w/ H_2SO_4	☐ Check pH	Y / N / NA	☐ Preserve by SM
CR(VI) / TOTCR(VI) / pH 9.3 - 9.7 w/ NaOH w/in 15 min	√ field sheet for pH	Y / N	☐ Deliver to CONV
ICP / HG-CVAA-M / pH < 2 w/ HNO_3	☐ Check pH	Y / N	☐ Preserve By SM
O&G / HEM / PHENOL / pH < 2 w/ H_2SO_4	Check documentation	Y / N	☐ Preserve by SM
PHYTOPLANKTON / Lugols	Visually inspect	Y / N	☐ Deliver to MICRO
TKN / COD pH < 2 w/ H_2SO_4 within 15 min	☐ Check pH	Y / N	☐ Preserve By SM
TOC / pH < 2 w/ HCl (NPDES only)	☐ Check pH	Y / N	☐ Preserve By SM
TOTSULFIDE / pH > 9 w/ NaOH, ZnAc	Check documentation	Y / N	☐ Deliver to CONV
WDO / FIXED	Visually inspect	Y / N	☐ Deliver to CONV
Other:			

ROUTINE SM PRESERVATION CHECKLIST (Circle and/or check applicable selections)

PRODUCT / Preservation	SM Action	Acceptable?	Corrective Action
Chlorinated Pesticides / pH 5 - 9 w/ H_2SO_4 or NaOH	√ field sheet for F. pH	Y / N	☐ Adjust pH
HG-CVAA-L-Teflon (T / D) / pH < 2 w/ ULTRA HCl	☐ Preserve & deliver	NA	NA
ICPMS / HG-CVAA-M (T / D) / pH < 2 w/ ULTRA HNO_3	☐ Preserve & deliver	NA	NA
TOC / pH < 2 w/ HCl	☐ Preserve & deliver	NA	NA
Other:			
Other:			

INTERFERENCE TEST (Circle and/or check applicable selections)

Product / Interference (SM Action)	Positive Test?	Treated	Corrective Action
BNA / Chlorine (Check documentation)	Y / N / not tested	Y / N	☐ Deliver to ORG
CN / Chlorine (Check documentation)	Y / N / not tested	Y / N	☐ Deliver to CONV
CN / Sulfide (Check field sheet for DF)	Y / N / not tested	Y / N	☐ Deliver to CONV
VOA / Chlorine (Check documentaion)	Y / N / not tested	Y / N	☐ Deliver to ORG
Other:			

HEADSPACE CHECK

PRODUCT (SM Action)	Check For	Acceptable?	Corrective Action
MICRO (Visually inspect)	Headspace (@ 1")	Y / N	☐ Notify MICRO
TOTSULFIDE (Visually inspect)	Headspace (< 1")	Y / N	☐ Notify CONV
VOA (Visually inspect)	Zero headspace	Y / N	☐ Notify ORG
WDO (Visually inspect)	Zero headspace	Y / N	☐ Notify CONV
Other:			

FIELD FILTRATION CHECKLIST (Circle and/or check applicable selections)

Product (SM Action)	Field Filtered	Field Blank	Corrective Action
ORTHOP (Check Field Sheet)	Y (within 15 min y / n) / N	Y / N	☐ Deliver to CONV
NO2 / NO3 / NO23 / NH3 / SI (Documentation)	Y (within 1 day y / n) / N	Y / N / NA	☐ Deliver to CONV
Dissolved Metals (Check Field Sheet)	Y (within 15 min y / n) / N	Y / N / NA	☐ Deliver to METALS
DOC (Deliver / Notify Unit)	Y (within 15 min or 1 day) / N	Y / N / NA	☐ Deliver to CONV
DCOD / CR(VI) (Deliver / Notify Unit)	Y (within 15 min y / n) / N	Y / N / NA	☐ Deliver to CONV
Other:			
Other:			

CC: ☐ AQUATOX, ☐ CONV, ☐ METALS, ☐ MICRO, ☐ ORG, ☐

NOTES

1. Deliver dissolved Hg-CVAF samples to METALS for filtration.
2. Deliver double-bagged metals samples to METALS for preservation.
3. Do not test pH for preserved BNA and TOTSULFIDE samples.
4. Deliver pH, WDO, and all MICRO samples ASAP to appropriate section for immediate processing.
5. Enter " Time Span" for composite samples during sample login.
6. Split algae sample into 60 mL clear glass if PHYTOQUAL is requested.

SM Signature:

Date / Time Completed: MAR 28 '24 15:52

King County

Department of Natural Resources and Parks
Water and Land Resources Division

Environmental Laboratory

LAB-NR0100
322 West Ewing Street
Seattle, WA 98119-1507
206-477-7200 Fax 206-684-2395
TTY Relay: 711

Date: May 9, 2024

To: Madison Bristol, Washington State Department of Ecology

Clark, Herrera Environmental Consultants

From: Meghan Elkey, King County Environmental Laboratory

Subject: BMP Stormwater Characterization – Herrera Add-on 6PPDQ Samples Data Summary, April 25, 2024

Stormwater samples were collected by Herrera Environmental Consultants on April 25, 2024. The samples were delivered to the King County Environmental Laboratory on April 30, 2024. The samples were assigned lab ID numbers L82961-1 to -4. The following QC summary is included for your information.

All samples received were analyzed as requested. The samples were analyzed in the Aquatic Toxicology unit of the laboratory. The data have passed all QA/QC checks for accuracy and completeness and may be used without qualification.

Please contact me if you have any questions about this report or need additional information.

Sincerely,

Meghan Elkey

Meghan Elkey
Laboratory Project Manager/Water Quality Planner III
King County Environmental Lab
(206)477-7154 or meghan.elkey@kingcounty.gov

King County Environmental Lab Analytical Report

Project:	421520-200	Project:	421520-200	Project:	421520-200
Locator:	STTC-TB1-IN	Locator:	STTC-TB1-OUT	Locator:	STTC-TB1-IN
Descrip:	STTC-TB1 upstream	Descrip:	STTC-TB1 downstrea	Descrip:	STTC-TB1 upstream
Sample:	L82961-1	Sample:	L82961-2	Sample:	L82961-3
Matrix:	LG STORM WTR	Matrix:	LG STORM WTR	Matrix:	LG STORM WTR
ColDate:	4/25/24 16:45	ColDate:	4/25/24 16:45	ColDate:	4/25/24 17:52
WET Weight Basis		**WET Weight Basis**		**WET Weight Basis**	

Parameters	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**	**Value**	**Qual**	**MDL**	**RDL**	**Units**
AQ KCEL SOP 4077: 6PPDQ by LCMS															
6ppd-quinone	0.807		0.002	0.01	ug/L	0.118		0.002	0.01	ug/L	0.723		0.002	0.01	ug/L

King County Environmental Lab Analytical Report

Project: 421520-200
Locator: STTC-TB1-OUT
Descrip: STTC-TB1 downstrea
Sample: L82961-4
Matrix: LG STORM WTR
ColDate: 4/25/24 17:52
WET Weight Basis

Parameters	Value	Qual	MDL	RDL	Units
AQ KCEL SOP 4077: 6PPDQ by LCMS					
6ppd-quinone	0.325		0.002	0.01	ug/L

King County Environmental Lab Analytical MATRIX Report

Owner: **SEEDPAK**
Matrix Class: **LIQUID**
User select: **WET Weight Basis**

				6ppd-quinone
LOCATOR	**PROJECT**	**SAMPLE**	**COLLECTED**	**ug/L**
STTC-TB1-IN	421520-200	L82961-1	4/25/2024 16:45	0.807
STTC-TB1-OUT	421520-200	L82961-2	4/25/2024 16:45	0.118
STTC-TB1-IN	421520-200	L82961-3	4/25/2024 17:52	0.723
STTC-TB1-OUT	421520-200	L82961-4	4/25/2024 17:52	0.325
* Not converted to dry weight basis				

If a parameter/analyte appears twice in the column header, it implies that they were analyzed by two different method codes

WG193736 6PPDQ by LCMS

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	QC Association	Comments
L82961-1	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	4/25/2024 16:45	4/30/2024 10:00	5/1/2024 8:00	WG193736-1,-2,-3,-4,-5,-6,-7	
L82961-2	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	4/25/2024 16:45	4/30/2024 10:00	5/1/2024 8:00	WG193736-1,-2,-3,-4,-5,-6,-7	
L82961-3	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	4/25/2024 17:52	4/30/2024 10:00	5/1/2024 8:00	WG193736-1,-2,-3,-4,-5,-6,-7	
L82961-4	421520-200	WDOE Stormwater BMP Research	AQ6PPDQ-LCMS	STORM WTR	4/25/2024 17:52	4/30/2024 10:00	5/1/2024 8:00	WG193736-1,-2,-3,-4,-5,-6,-7	
WG193736-1	MB		AQ6PPDQ-LCMS	OTHR WTR		4/30/2024 10:00	5/1/2024 8:00	WG193736-1,-2,-3,-4,-5,-6,-7	
WG193736-2	SB		AQ6PPDQ-LCMS	OTHR WTR		4/30/2024 10:00	5/1/2024 8:00	WG193736-1,-2,-3,-4,-5,-6,-7	WG193736-1
WG193736-3	MS		AQ6PPDQ-LCMS	STORM WTR		4/30/2024 10:00	5/1/2024 8:00	WG193736-1,-2,-3,-4,-5,-6,-7	L82961-4
WG193736-4	MSD		AQ6PPDQ-LCMS	STORM WTR		4/30/2024 10:00	5/1/2024 8:00	WG193736-1,-2,-3,-4,-5,-6,-7	WG193736-3 L82961-4
WG193736-5	LD		AQ6PPDQ-LCMS	STORM WTR		4/30/2024 10:00	5/1/2024 8:00	WG193736-1,-2,-3,-4,-5,-6,-7	L82961-2
WG193736-6	CCC		AQ6PPDQ-LCMS	OTHR WTR		4/30/2024 10:00	5/1/2024 8:00	WG193736-1,-2,-3,-4,-5,-6,-7	MED
WG193736-7	MDLCK		AQ6PPDQ-LCMS	OTHR WTR		4/30/2024 10:00	5/1/2024 8:00	WG193736-1,-2,-3,-4,-5,-6,-7	

Workgroup: WG193736 6PPDQ by LCMS

MB:WG193736-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
6ppd-quinone	0.002	0.01	ug/L		<MDL

SB:WG193736-2 MB:WG193736-1 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	True Value	SB Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	<MDL	0.2	0.212	106		50--150

MSD:WG193736-4 MS:WG193736-3 L82961-4 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	True Value	MS Value	% Rec.	Qual	Lab Limit	True Value	MSD Value	% Rec.	Qual	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	0.325	0.2	0.536	105		50--150	0.2	0.532	103		1		0--45

LD:WG193736-5 L82961-2 Matrix: STORM WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project:421520-200 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	Lab Limit
6ppd-quinone	0.002	0.01	ug/L	0.118	0.121	3		0--40

CCC:WG193736-6 Matrix: OTHR WTR Listtype:AQ6PPDQ-LCMS Method:KCEL SOP 4077: 6PPDQ by LCMS Project: Pkey:STD
(Continuing Calibration Check)

Parameter	MDL	RDL	Units	True Value	CCC Value	% Rec.	Qual	Lab Limit
6ppd-quinone	0.01	0.05	ug/L	1	0.987	99		80--120

Surrogate:	**d5-6PPDQ**
(Lab Limits)	**20--200**
L82961-1	66
L82961-2	74
L82961-3	65
L82961-4	70
WG193736-1	72
WG193736-2	73
WG193736-3	70
WG193736-4	72
WG193736-5	71
WG193736-6	96

Login: P82961
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On STTC

FSU TC: ______________
LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by	*Date* 4/29/24	*Time* 1540
Received by	*Date* 4/30/24	*Time* 9:40
Sample Numbers		*[All]*

Sample Number	**P82961-1**	**P82961-2**
QC Link		
Locator	**STTC-TB1-IN**	**STTC-TB1-OUT**
Short Loc Desc		
Locator Desc	STTC-TB1 upstream sampling station	STTC-TB1 downstream sampling station
Site	I-5TAPE	I-5TAPE
Comments	First grab	First grab
Start Date/Time	4/25/24 @ 1645	4/25/24 @ 1645
End Date/Time		
Time Span		
Sample Depth		
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)

Login: P82961
Project: 421520-200

WDOE BMP - Herrera 6PPDQ Add-On STTC

FSU TC: ____________
LPM: Meghan Elkey

CHAIN OF CUSTODY

Relinquished by	*Date* 4/29/24	*Time* 1540
Received by	*Date*	*Time*
Sample Numbers		*[All]*

Sample Number	**P82961-3**	**P82961-4**
QC Link		
Locator	**STTC-TB1-IN**	**STTC-TB1-OUT**
Short Loc Desc		
Locator Desc	STTC-TB1 upstream sampling station	STTC-TB1 downstream sampling station
Site	I-5TAPE	I-5TAPE
Comments	Second grab	Second grab
Start Date/Time	4/25/24 @1752	4/25/24 @1752
End Date/Time		
Time Span		
Sample Depth		
Dept, Matrix, Prod (Cont ID)	4 LG 6PPDQ (43)	4 LG 6PPDQ (43)

LIQUID SAMPLE RECEIPT RECORD

Login Number(s): 82961
Collect Date(s): ~~4/29/24~~ 4/25/24
Project No.: 421520-200
Receive Date: 4/30/24
Sub-Contracting: Y / [✓ N]
Changes: Y / [✓ N]
List Product(s):
List Parameter(s):

SAMPLE RECEIPT CONDITIONS

CONDITION	Acceptable?	Comment ID	CONDITION	Acceptable?	Comment ID
Labels / Fieldsheets	[✓ Y] / N		Volumes	[✓ Y] / N	
Container	[✓ Y] / N		Holding Times	[✓ Y] / N	
Temperature (w/ ice)	[✓ Y] / N / NA		Delivery Location	[✓ Y] / N	

BOTTLE COUNT (#) AND DESCRIPTION and SAMPLE NUMBERS

#	Bottle Description: Sample Numbers
	40 mL clear vial (VOA):
	60 mL clear glass (PHYTO):
	60 mL CWM HDPE:
	125 mL AWM HDPE:
	125 mL CNM HDPE:
	125 mL CWM HDPE:
	125 mL GANM:
	125 mL GANM w/HCl
	250 mL AWM HDPE:
	250 mL CWM HDPE:
	250 mL CWM HDPE (MICRO):
4	250 mL GAWM: 1-4
	250 mL GAWM w/ H2SO4:
	300 mL WDO (8 hour HT):
	500 mL AWM HDPE:
	500 mL CWM HDPE:
	500 mL CWM PP (MICRO):
	500 mL HDPE (METALS):
	500 mL HDPE, double-bagged (METALS):
	500 mL Teflon (Hg):
	500 mL Teflon, double-bagged (METALS):
	500 mL GANM / GAWM:
	500 mL Polystyrene Filtration Units (METALS):
	1L AWM HDPE:
	1L CWM HDPE:
	1L CWM PP (MICRO):
	1L GANM:
	1L GCWM:
	1L GAWM w/ H_2SO_4:
	2L CWM HDPE:
	Other:

COMMENTS / NOTIFICATIONS

FIELD PRESERVATION CHECKLIST (Circle and/or check applicable selections)

PRODUCT / Preservation	SM Action	Acceptable?	Corrective Action
BNA / pH 6 - 9 w/ H_2SO_4 or NaOH	√ field sheet for F. pH	Y / N	☐ Notify ORG
CN / pH > 12 w/ NaOH within 15 min	☐ Check pH	Y / N	☐ Deliver to CONV
NO23 pH < 2 w/ H_2SO_4	☐ Check pH	Y / N / NA	☐ Preserve by SM
CR(VI) / TOTCR(VI) / pH 9.3 - 9.7 w/ NaOH w/in 15 min	√ field sheet for pH	Y / N	☐ Deliver to CONV
ICP / HG-CVAA-M / pH < 2 w/ HNO_3	☐ Check pH	Y / N	☐ Preserve By SM
O&G / HEM / PHENOL / pH < 2 w/ H_2SO_4	Check documentation	Y / N	☐ Preserve by SM
PHYTOPLANKTON / Lugols	Visually inspect	Y / N	☐ Deliver to MICRO
TKN / COD pH < 2 w/ H_2SO_4 within 15 min	☐ Check pH	Y / N	☐ Preserve By SM
TOC / pH < 2 w/ HCl (NPDES only)	☐ Check pH	Y / N	☐ Preserve By SM
TOTSULFIDE / pH > 9 w/ NaOH, ZnAc	Check documentation	Y / N	☐ Deliver to CONV
WDO / FIXED	Visually inspect	Y / N	☐ Deliver to CONV
Other:			

ROUTINE SM PRESERVATION CHECKLIST (Circle and/or check applicable selections)

PRODUCT / Preservation	SM Action	Acceptable?	Corrective Action
Chlorinated Pesticides / pH 5 - 9 w/ H_2SO_4 or NaOH	√ field sheet for F. pH	Y / N	☐ Adjust pH
HG-CVAA-L-Teflon (T / D) / pH < 2 w/ ULTRA HCl	☐ Preserve & deliver	NA	NA
ICPMS / HG-CVAA-M (T / D) / pH < 2 w/ ULTRA HNO_3	☐ Preserve & deliver	NA	NA
TOC / pH < 2 w/ HCl	☐ Preserve & deliver	NA	NA
Other:			
Other:			

INTERFERENCE TEST (Circle and/or check applicable selections)

Product / Interference (SM Action)	Positive Test?	Treated	Corrective Action
BNA / Chlorine (Check documentation)	Y / N / not tested	Y / N	☐ Deliver to ORG
CN / Chlorine (Check documentation)	Y / N / not tested	Y / N	☐ Deliver to CONV
CN / Sulfide (Check field sheet for DF)	Y / N / not tested	Y / N	☐ Deliver to CONV
VOA / Chlorine (Check documentaion)	Y / N / not tested	Y / N	☐ Deliver to ORG
Other:			

HEADSPACE CHECK

PRODUCT (SM Action)	Check For	Acceptable?	Corrective Action
MICRO (Visually inspect)	Headspace (@ 1")	Y / N	☐ Notify MICRO
TOTSULFIDE (Visually inspect)	Headspace (< 1")	Y / N	☐ Notify CONV
VOA (Visually inspect)	Zero headspace	Y / N	☐ Notify ORG
WDO (Visually inspect)	Zero headspace	Y / N	☐ Notify CONV
Other:			

FIELD FILTRATION CHECKLIST (Circle and/or check applicable selections)

Product (SM Action)	Field Filtered	Field Blank	Corrective Action
ORTHOP (Check Field Sheet)	Y (within 15 min y / n) / N	Y / N	☐ Deliver to CONV
NO2 / NO3 / NO23 / NH3 / SI (Documentation)	Y (within 1 day y / n) / N	Y / N / NA	☐ Deliver to CONV
Dissolved Metals (Check Field Sheet)	Y (within 15 min y / n) / N	Y / N / NA	☐ Deliver to METALS
DOC (Deliver / Notify Unit)	Y (within 15 min or 1 day) / N	Y / N / NA	☐ Deliver to CONV
DCOD / CR(VI) (Deliver / Notify Unit)	Y (within 15 min y / n) / N	Y / N / NA	☐ Deliver to CONV
Other:			
Other:			

CC: ☐ AQUATOX, ☐ CONV, ☐ METALS, ☐ MICRO, ☐ ORG, ☐ ____________

NOTES

1. Deliver dissolved Hg-CVAF samples to METALS for filtration.
2. Deliver double-bagged metals samples to METALS for preservation.
3. Do not test pH for preserved BNA and TOTSULFIDE samples.
4. Deliver pH, WDO, and all MICRO samples ASAP to appropriate section for immediate processing.
5. Enter " Time Span" for composite samples during sample login.
6. Split algae sample into 60 mL clear glass if PHYTOQUAL is requested.

SM Signature:

Date / Time Completed: APR 30 '24 09:46

Appendix C

Laboratory Analytical SOPs

HERRERA
Science + Planning + Design

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Standard Operating Procedure MEL730136, Version 1.2

Extraction and Analysis of 6PPD-Quinone

Approved or Recertified 06/03/2023

Publication Information

The Washington State Department of Ecology develops Standard Operating Procedures (SOPs) to document agency practices related to sampling, field and laboratory analysis, and other aspects of the agency's technical operations.

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Date- 6/2/2023

Laboratory Director Approval – Dean Momohara

Date- 6/2/2023

Please note that the Washington State Department of Ecology's Manchester Environmental Laboratory (MEL) Standard Operating Procedures (SOPs) are adapted from published methods. They are intended for internal use only and are specific to the equipment, personnel, and samples analyzed at Manchester Laboratory. Our SOPs are not intended for use in other laboratories nor do they supplant official published methods. Distribution of these SOPs does not constitute an endorsement of a particular procedure or method.

Any reference to specific equipment, manufacturer, or supplies is for descriptive purposes only and does not constitute an endorsement of a particular product or service by the author or by the Department of Ecology.

Although the lab follows the SOP in most instances, there may be instances in which the lab uses an alternative methodology or procedure. Deviations to standard procedures will be recorded in pertinent laboratory logbooks and comments sections of the laboratory information management system (LIMS) and ultimately in the case narrative for laboratory reports.

SOP Revision History

Revision Date	Revision History	Summary of changes	Sections	Reviser(s)
12/07/2022	New	Not Applicable	All	Joan Protasio
3/17/2023	1.1	The following changes were made: Section 5.3.5 – added a stipulation that none of the components of a standard solution can be expired Section 6.6.2.1 - added "A minimum frequency of annually." CAS Registry number added to table A01.	5.3.5 6.6.2.1 Table A01	Christina Frans
5/31/2023	1.2	Added explanation for diluted sample concentration calculation and added on column concentration equations.	7.3.2.3	Christina Frans

1.0 Purpose and Scope

1.1 This document is Manchester Environmental Laboratory (MEL) Standard Operating Procedure (SOP) for the preparation and analysis of 6PPD-Quinone in water.

2.0 Applicability

2.1 This SOP is applicable for 6PPD-Quinone in water. Other analytes and matrices may be added if they meet the minimum QC requirements as outlined in this document.

2.2 Analyte identifications are confirmed by retention time, a precursor ion, a product quantifier ion, at least 1 product qualifier ion, and the ratio between these two product ions.

3.0 Definitions

3.1 Acronyms

3.1.1	Ecology	Washington State Department of Ecology
3.1.2	EPA	U.S. Environmental Protection Agency
3.1.3	MEL	Manchester Environmental Laboratory
3.1.4	CAS	Chemical Abstracts Service Number
3.1.5	Element	MEL's Laboratory Information Management System (LIMS)
3.1.6	LLOQ	Lower Level Of Quantitation
3.1.7	MRL	Method Reporting Limit
3.1.8	RPD	Relative Percent Difference
3.1.9	RSD	Relative Standard Deviation
3.1.10	RF	Response Factor
3.1.11	COD or R^2	Coefficient of Determination
3.1.12	SS	Surrogate Standard
3.1.13	EIS	Extracted Internal Standard
3.1.14	IIS	Injected Internal Standard
3.1.15	LC/HPLC	High Performance Liquid Chromatograph
3.1.16	MS/MS	Triple Quadrupole Mass Spectrometer
3.1.17	SPE	Solid Phase Extraction

3.2 Definitions

3.2.1 Analyte: An element, ion, compound, or chemical moiety (pH, alkalinity) which is to be determined. The definition can be expanded to include organisms, e.g., fecal coliform, Klebsiella.

3.2.2 Calibration: The process of establishing the relationship between the response of a measurement system and the concentration of the parameter being measured.

3.2.3 Continuing Calibration Verification Standard (CCV): A quality control (QC) sample analyzed prior to samples to check for acceptable bias in the measurement system. The CCV is usually a midpoint calibration standard that is re-run at an established frequency during the course of an analytical run.

3.2.4 Control limits: Statistical warning and action limits calculated based on control charts. Warning limits are generally set at +/- 2 standard deviations from the mean, action limits at +/- 3 standard deviations from the mean.

3.2.5 Duplicate samples (DUP): Two samples taken from and representative of the same population. The sample and its duplicate are carried through the steps of sampling and analytical procedures in an identical manner. Duplicate samples are used to assess variability of all method activities including sampling and analysis.

3.2.6 Initial Calibration Verification Standard (ICV): A QC sample prepared independently of calibration standards and analyzed along with the samples to check for acceptable bias in the measurement system. The ICV is analyzed prior to the analysis of any samples and is obtained from a second source whenever available.

3.2.7 Laboratory Control Sample (LCS): A sample of known composition prepared using contaminant-free water or an inert solid that is spiked with analytes of interest at the midpoint of the calibration curve or at the level of concern. It is prepared and analyzed in the same batch of regular samples using the same sample preparation method, reagents, and analytical methods employed for regular samples.

3.2.8 Laboratory Control Sample Duplicate (LCSD): An additional replicate of the LCS following the sample preparation and analytical testing as the original LCS.

3.2.9 Lower Limit of Quantitation (LLOQ): The lowest point of quantitation, which, in most cases, is the lowest concentration in the calibration curve.

3.2.10 Matrix Spike (MS): A QC sample prepared by adding a known amount of the target analyte(s) to an aliquot of a sample to check for bias due to interference or matrix effects (Ecology, 2004).

3.2.11 Matrix Spike Duplicate (MSD): An additional replicate of the matrix spike sample following the same sample preparation and analytical testing as the original sample. MSDs are used to document the precision and bias of a method for a specific sample matrix.

3.2.12 Method: A formalized group of procedures and techniques for performing an activity (e.g., sampling, chemical analysis, data analysis), systematically presented in the order in which they are to be executed.

3.2.13 Method blank (MB): A blank prepared to represent the sample matrix, prepared and analyzed with a batch of samples. A method blank will contain all reagents used in the preparation of a sample, and the same preparation process is used for the method blank and samples.

3.2.14 Method Detection Limit (MDL): The MDL is defined in 40CFR-136-B 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.

3.2.15 Precision: The extent of random variability among replicate measurements of the same property; a data quality indicator.

3.2.16 Quality assurance (QA): A set of activities designed to establish and document the reliability and usability of measurement data.

3.2.17 Quality Assurance Project Plan (QAPP): A document that describes the objectives of a project, and the processes and activities necessary to develop data that will support those objectives.

3.2.18 Quality control (QC): The routine application of measurement and statistical procedures to assess the accuracy of measurement data.

3.2.19 Standard Operating Procedure (SOP): A document which describes in detail a reproducible and repeatable organized activity.

3.2.20 Surrogate: For environmental chemistry, a surrogate is a substance with properties similar to those of the target analyte(s). Surrogates are unlikely to be native to environmental samples. They are added to environmental samples for quality control purposes, to track extraction efficiency and/or measure analyte recovery. Deuterated organic compounds are examples of surrogates commonly used in organic compound analysis.

4.0 Personnel Qualifications/Responsibilities

4.1 The analysis in this method is restricted to use by or under the supervision of chemists experienced in the use of liquid chromatography mass spectrometry/mass spectrometry (LC/MS/MS) and the interpretation of chromatograms and mass spectra.

4.2 Training in this procedure with experienced personnel and completion of the training checklist and IDCs are recommended.

4.3 This analysis is typically performed by a Chemist 3 or Chemist 4.

5.0 Equipment, Reagents, and Supplies

5.1 Equipment

5.1.1 Liquid chromatography triple quadrupole mass spectrometer system (LC-QQQ). This system contains an octopole guide to focus the ions toward quadrupole 1 which is MS1, this is for the precursor ions. The second quadrupole is really a hexapole used as a collision cell. A hexapole is used here because it improves focusing like a quadrupole and ion transmission like an octopole. The third quadrupole is MS2; this is for the product ions.

5.1.2 LC - a system with gradient programming, injection control and interface to a mass spectrometer. Agilent model 6460A/1260 HPLC system capable of performing gradient adjustments at a constant flow rate or equivalent.

5.1.3 Agilent model 6460 Triple Quadrupole Mass Spectrometer (LC-QQQ) with an electrospray Ion Source using jet stream technology (ESIJT) - capable of scanning from 50 to 300 m/z every 0.5 sec or less or equivalent.

5.1.4 Agilent MassHunter data acquisition and processing system - capable of controlling the LC-QQQ and the continuous acquisition of all mass spectra and ions obtained throughout the duration of the chromatographic program.

5.1.5 Analytical column – Reverse phase LC column 100 mm x 2.1 mm ID with 2.6 um Biphenyl 100 Å packing capable of baseline separation of the target compounds (Phenomenex 00D-4622-AN or equivalent).

5.2 Reagents

5.2.1 Milli-Q water – 18 megohms or better, free of organic contaminants.

5.2.2 Methanol - HPLC grade or equivalent.

5.2.3 Acetonitrile- HPLC grade or equivalent.

5.2.4 Hexane- Pesticide grade or equivalent.

5.2.5 Formic Acid – ACS grade or equivalent.

5.2.6 Organic reagent (Acetonitrile with 0.1% Formic Acid) – Add 1mL Formic Acid to a final volume of 1L of Acetonitrile. Reagent can be purchased premade.

5.2.7 Aqueous reagent (Water with 0.1% Formic Acid) – Add 1mL Formic Acid to a final volume of 1L of Milli-Q water. Reagent can be purchased premade.

5.3 Standards

5.3.1 Internal Standards:

5.3.1.1 D5-6PPD-Quinone: HPC Standards 688151 or equivalent. Store according to vendor specifications.

5.3.1.2 13C6-6PPD-Quinone: Cambridge Isotopes CLM-12293-S or equivalent. Store according to vendor specifications.

5.3.1.3 Note: D5-6PPD-Quinone and 13C6-6PPD-Quinone can be used as either the EIS or IIS as long as it is consistent with the preparation batch and the instrument calibration. Currently D5-6PPD-Quinone is used as the EIS and 13C6-6PPD-Quinone is used as the IIS.

5.3.1.4 EIS/ SS Spike: Dilute EIS to 200 ng/mL with Acetonitrile. 100 uL of EIS Spike is added to a sample with a final extract volume of 10 mL.

5.3.1.5 IIS Spike: Dilute IIS to 20 ng/mL with Acetonitrile. 1 uL of IIS Spike is added by the LC autosampler for 10 uL of sample.

5.3.2 6PPD-Quinone Stock: Certified standard stock solutions from certified standard vendors (HPC Standards 688152, Cambridge Isotopes ULM-12288-S, or equivalent). Store according to vendor specifications.

5.3.2.1 6PPD-Quinone Intermediate Stock: Dilute 6PPD-Quinone Stock to 1000 ng/mL with Acetonitrile.

5.3.2.2 Matrix Spike: Dilute 6PPD-Quinone Stock to 200 ng/mL with Acetonitrile.

5.3.2.3 LLOQ Spike: Dilute Matrix Spike to 2.5 ng/mL with Acetonitrile.

5.3.2.4 ICAL Standards: Dilute in acetonitrile the 6PPD-Quinone Intermediate Stock, Matrix Spike, or LLOQ spike to the calibration concentrations and add EIS Spike to a final concentration of 2 ng/mL. The suggested ICAL concentrations are 0.025, 0.1, 0.5, 1, 2, 5, 10, 25, 50, and 100 ng/mL.

5.3.2.5 CCV: Use the equivalent ICAL standard. Suggested concentration is 2 ng/mL.

5.3.2.6 ICV: Prepared the same as the ICAL standard but with a different vendor. Suggested concentration is 2 ng/mL.

5.3.3 Standard concentrations can differ from those stated in this SOP. Document all standard preparations in the standards section of Element.

5.3.4 Store certified standard stocks as recommended by the vendor.

5.3.5 All intermediates, spikes, ICAL, ICV, and CCV standards are stored refrigerated. The maximum expiration is one year from the date of preparation provided none of the components are expired.

5.4 Supplies

5.4.1 SPE Cartridge: Waters Oasis HLB 6cc (200mg) SPE cartridge (WAT 106202) or Bakerbond Speedisk H2O-Philic DVB (8072-07) or equivalent

5.4.2 Vacuum manifold: 12 or 24 port Supelco Visiprep or 6 port vacuum manifold & reservoir apparatus for Speedisk or equivalent.

5.4.3 Transfer tubing for HLB 6cc SPE cartridges.

5.4.4 Syringes – assorted sizes for the preparation of standards and spiking to samples.

5.4.5 2mL autosampler vials with crimp-top caps or screw-caps.

5.4.6 15 mL sample vials

5.4.7 Class A volumetric flasks of various sizes.

6.0 Summary of Method

6.1 This SOP describes procedures for the extraction and the qualitative and quantitative analysis of 6PPD-Quinone by triple quadrupole mass spectrometry.

6.2 This method uses reverse phase high performance liquid chromatographic, electrospray ionization with jet stream technology (ESIJT), and triple quadrupole mass spectrometric (LC-QQQ) conditions. Detection is achieved using positive ESIJT and a triple quadrupole mass spectrometer. Quantitative analysis is performed using Isotopic Dilution.

6.3 250 mL water samples are spiked with isotopically labeled 6PPD-Quinone (EIS). The necessary QC samples are also spiked with the target analyte(s) at this time. The samples are then extracted using SPE.

6.4 Interferences

6.4.1 Method interferences may be caused by contaminants in solvents, reagents, glassware and other sample processing apparatus that lead to discrete artifacts or elevated baselines in liquid chromatograms. All reagents and apparatus must be routinely demonstrated to be free from interferences under the conditions of the analysis by running laboratory method blanks. To minimize interference from sample matrix, this method is best utilized with samples of known matrix and interferences.

6.4.2 Raw LC-MS/MS data from all blanks, samples, and spikes must be evaluated for interferences. Determine if the source of interference is in the preparation and/or cleanup of the samples and take corrective action to eliminate the problem.

6.4.3 Cross contamination may occur when a sample containing a low concentration of analytes is analyzed immediately following a sample containing relatively high concentrations of analytes. After analysis of a sample containing high concentrations of analytes, one or more laboratory method blanks should be analyzed.

6.4.4 Matrix interference may be caused by contaminants that are present in the sample. The extent of matrix interference will vary considerably from sample to sample, depending on the source sampled. Positive identifications must be confirmed by retention times, precursor ions, product ions, and product ion ratios. Samples can exhibit matrix suppression so extracting a subsample or dilution of the extract may be necessary to minimize the matrix interference.

6.5 Sample Collection, Preservation, Storage, and Holding Times

6.5.1 Grab samples are collected in 250 mL bottles. Conventional sampling practices should be followed.

6.5.2 At this time, no preservative has been established for 6PPD-Quinone. For now, unpreserved samples will be used.

6.5.3 Samples must be stored at a temperature above freezing and up to 6°C from collection until analysis.

6.5.4 No hold time has been established for this analyte. For now, a 28 day hold time for samples will be used.

6.5.5 The extract hold time will be 40 days after extraction.

6.6 Calibration and Standardization

6.6.1 Instrument Tune

6.6.1.1 Perform a check tune prior to an initial calibration to monitor the instrument status. The check tune requirements are set by the manufacturer and are noted on the check tune report.

6.6.1.2 If there are more than 10 parameters out of spec or MS2 abundance for 2122 ion is less than 15000, check the tune solution and spray nozzle and/or adjust the failing tune parameter in manual tune. Perform another check tune. If this one fails, then instrument maintenance and/or a full autotune are required.

6.6.1.3 All check tunes are accessible via the MassHunter acquisition software.

6.6.2 ICAL

6.6.2.1 Prepare calibration standards at a minimum of six concentration levels for each analyte of interest. The lowest standard represents analyte concentrations at or below the LLOQ.

6.6.2.1.1 Initial calibrations are preformed prior to analyzing samples and are repeated as needed when calibration verification is no longer within criteria or at a minimum frequency of annually.

6.6.2.2 Analyze each calibration standard using the MassHunter Software. Calculations are performed by the instrument's software. MassHunter Software has many options for calibration curves which may be used.

6.6.2.3 All analytes must meet or exceed one of the following calibration model criteria:

6.6.2.3.1 Average Response Factor:
Minimum 5 ICAL points and %RSD $\leq$ 20%

Average RF equation: $y = x/RF$

Where y = Instrument Target Concentration/ Instrument IS Concentration
x = Target Response/ IS Response
RF = Average Response Factor

6.6.2.3.2 Linear curve:
Minimum 5 ICAL points and $R^2 \geq 0.99$;

Linear Equation: $y = ax + b$

Where y = Instrument Target Concentration/ Instrument IS Concentration
x = Target Response/ IS Response
a = Slope of the regression line
b = y-intercept of the regression line

6.6.2.3.3 Quadratic curve:
Minimum 6 ICAL points and $R^2 \geq 0.99$

Quadratic Equation: $y = ax^2 + bx + c$

Where y = Instrument Target Concentration/ Instrument IS Concentration
x = Target Response/ IS Response
a, b, c = quadratic coefficients

6.6.2.4 Most curve fitting programs will use some form of least squares minimization to adjust the coefficients of the polynomial (a, b, and c, above) to obtain the polynomial that best fits the data. The "goodness of fit" of the polynomial equation is evaluated by calculating the coefficient of determination (COD). Under ideal conditions, with a "perfect" fit of the model to the data, the coefficient of the determination will equal 1.0. In order to be an acceptable non-linear calibration, the COD must be greater than or equal to 0.99. (See SW-846 method 8000D section 11.5.3.2).

6.6.2.4.1 If data of lesser quality will satisfy project-specific data needs, then less stringent criteria may be employed, provided that they are documented and approved in a project-specific QAPP.

6.6.3 Initial Calibration Verification (ICV).

6.6.3.1 The initial calibration curve for each target analyte must be checked immediately with a standard from a source different from that used for the initial calibration. This standard must be made using stock standards prepared independently from those used for calibration. Preferably an alternate vendor is used. If an alternate vendor is not available, a different lot number from the same vendor may be used.

6.6.3.2 Analyze the ICV standard directly after calibration. The ICV is used to verify the stock after every new calibration curve that is analyzed.

6.6.3.3 The analyte recoveries should be within +/- 30% of their expected concentration. If the ICV does not meet quality criteria, the instrument may be recalibrated. If the ICV failed due to problems other than calibration, remake the standard and reanalyze. If the ICV passes, continue the sequence. If it fails, abort the sequence, determine the problem, and recalibrate the instrument. On a case by case basis, per client and supervisor approval, samples associated with an ICV not meeting acceptance limits can be reported so long as they are addressed in the case narrative and qualified as estimates.

6.6.4 Back Calculation (Residuals)

6.6.4.1 Re-calculate each ICAL concentration level using the updated calibration curve. The percent difference between the calculated concentration and the expected concentration for each analyte at that level should not be more than 30%; except for the lowest standard used in the curve, where analytes are allowed to be within 50%. If these requirements are not met, the ICAL for those analytes fails and should be reanalyzed. If the ICAL cannot be reanalyzed, all results for any analyte with a high percent difference must be qualified as estimated. If an analyte fails with a high percent difference, any detections will be qualified as estimated. If the low standard does not meet these criteria and low reporting limits are not required, the reporting limit may be raised to that of the next lowest standard which does meet the criteria.

6.6.5 Continuing Calibration Verification.

6.6.5.1 Analyze a CCV standard at a minimum of every 12 hours. The CCV analyzed is a mid level standard and should be prepared from the same source as calibration standards. The acceptance range is +/- 30%. If a CCV does not meet quality criteria, recalibrate the instrument and reanalyze the samples. On a case by case basis, samples associated with a CCV not meeting acceptance limits can be reported so long as they are qualified as estimates.

7.0 Procedure

7.1 Sample Preparation:

7.1.1 Spike samples and QC samples with EIS spike and matrix spike as needed.

7.1.2 Place a SPE cartridge on the vacuum manifold for each sample and QC.

7.1.3 Condition the SPE cartridges by adding about 5 mL of Acetonitrile to each and allow it to flow through at a vacuum flow rate of 2.5 – 3.0 mL/minute.

7.1.4 Then condition with about 10 mL of Milli-Q water and allow it to pass through. Before the cartridge goes dry, load the sample at a vacuum flow rate of 2.5 – 3.0 mL/minute.

7.1.5 Rinse the sample bottle with about 10 mL of Milli-Q water and load the rinse through the SPE cartridge.

7.1.6 Rinse the SPE cartridge with about 5 mL of 1:1 Methanol:Water and then 5 mL of Hexane.

7.1.7 Increase the vacuum to maximum for at least 5 minutes to dry the SPE cartridge.

7.1.8 Remove from vacuum and add a 15mL vial under each SPE cartridge to collect eluent.

7.1.9 Add 5mL of Acetonitrile to the sample bottle. Cap and shake well to extract any analytes from the inside glass surface. Add this to the top of the SPE cartridge and elute.

7.1.10 Elute with an additional 5 mL of Acetonitrile.

7.1.11 Bring to a final volume of 10 mL.

7.2 Sample Analysis:

7.2.1 Instrument run setup.

7.2.1.1 Start the instrument.

7.2.1.1.1 If the system has been turned off, turn on the computer, mass detector, autosampler, pump and degas unit.

7.2.1.1.2 Start Triple Quadrupole (MassHunter) software. Ensure that all systems are communicating and status lights are yellow or green.

7.2.1.1.3 Load the current analysis method.

7.2.1.1.4 If needed, perform routine maintenance. See Appendix D for maintenance information.

7.2.1.2 Run a check tune if running an initial calibration.

7.2.1.2.1 Prior to running an autotune or check tune, let the pump equilibrate for approximately 20 minutes. Check background spectra in tune. Check abundance of ions in the tune. See Section 6.6.1 for more information.

7.2.1.3 Prepare the sample vials for the sequence.

7.2.1.3.1 Transfer samples, batch QC, and necessary QC standards into autosampler vials.

7.2.1.3.2 The IIS Spike standard is added by the autosampler program during the injection sequence. Fill the vial that holds the IIS spike solution with a fresh aliquot each day.

7.2.1.3.3 Load vials for analysis onto the autosampler tray.

7.2.1.4 Setting up a Worklist.

7.2.1.4.1 Go to the Worklist tab to show the worklist spreadsheet.

7.2.1.4.2 Enter Sample name, Sample position, Comment, Method, and Data file. Other settings in the worklist can just stay at the default setting.

7.2.1.4.3 If the instrument has been idle, add at least 3 conditioning runs to the beginning of the sequence. This helps the retention times stabilize.

7.2.1.4.4 Typical ICAL sequence run:

If instrument has been idle, minumum 3 conditioning injections
ICAL Standards – minimum of 5 standards for linear calibration and minimum 6 standards for quadratic calibration. (See section 5.3.2.4 for suggested concentrations.)
ICV (See section 5.3.2.6 for suggested concentration.)

7.2.1.4.5 Typical Sample sequence run:

If instrument has been idle, minumum 3 conditioning injections
CCV (See Section 5.3.2.5 for suggested concentration.)
MB
LCS
LCSD
Samples (up to 12 hours from CCV run)

7.2.1.4.6 At the end of the sequence, add 2 solvent rinse runs.

7.2.1.4.7 Run the Worklist.

7.2.2 Process the sample results using the MassHunter Quantitative Analysis.

7.2.2.1 Any samples outside of the criteria outlined in Section 6.6 (Calibration and Standardization) and Section 9.0 (Quality Control and Quality Assurance) may need to be rerun and reanalyzed.

7.2.2.2 Dilute samples with concentrations exceeding the linear range to approximately the middle of the curve and reanalyze.

7.2.2.3 Screening samples: Because the targets are calculated with an EIS, it may be necessary to prepare samples with a smaller initial volume for the analyte to be within calibration range without diluting out the EIS. If high concentrations are expected, it may be necessary to screen a dilution of the sample prior to sample preparation.

7.2.3 Calculations

7.2.3.1 Qualitative Identification of Target Compounds

7.2.3.1.1 Target compound identification is made by precursor and product ions as well as retention time matching. The precursor ions are mass filtered in MS1 then they enter the collision cell where the ions collide. The ions are filtered again in MS2 and then product ions are detected. This process eliminates much interference which aides in compound identification since we are looking for compounds that begin at one mass and are then broken into certain ions with a specific ratio. Sample compound and a current laboratory-generated standard must be present and compared.

7.2.3.1.2 Using available software, search for each target compound in the established retention time window. Examine chromatograms and determine if a positive identification is present.

7.2.3.1.3 Examine baseline and peak integration to insure proper area integration. If the compound is present but not properly integrated then manually integrate the peak. See SOP 730127 Proper Manual Peak Integration.

7.2.3.1.4 Examine transition and all product ions for confirmation ions to further validate the compound identification.

7.2.3.1.5 If there is evidence of retention time shift, use relative retention to the surrogate or internal standard along with confirming ions to validate the identification.

7.2.3.1.6 Technical Acceptance Criteria are determined by qualitative analysis of ion retention times, transition ions (precursor and product ions), chromatography, and ion abundance ratios.

7.2.3.1.7 The relative retention times (RRTs) must be within ±0.03 RRT units of the standard RRT. Use professional judgment when there is a question if 0.03 RRT units may be too broad or too narrow. Document when reporting results outside of criteria including rationale.

7.2.3.1.8 Verify the presence of product ions and check their corresponding ratios of the analyte in the sample. Compare product ion ratios in samples against a current laboratory-generated standard (i.e., the ion ratios from the associated calibration standard). The ion ratio acceptance criteria for this method are set at +/- 30%. The relative response ratio is calculated by dividing the qualifier ion area by the quantifier ion area.

7.2.3.2 Quantitative analysis of target analytes:

7.2.3.2.1 When a compound has been identified, the quantification of that compound will be based on the integrated abundance from the primary product ion (also called the quantifying ion). The initial calibration (see Section 6.6.2) is used for the determination of the extract concentration.

7.2.3.2.2 As this is an isotope dilution method, calculation of the on column concentration when a sample is diluted is taken into account by the response of the extracted internal standard. The EIS is added to the sample prior to extraction therefore, it is also diluted by the same factor as all other analytes. A separate dilution factor is not required in the calculation of the target analyte, 6PPD-Q (see equation in Section 7.2.3.2.3). The surrogate compound is calculated using the injected internal standard (IIS) and is not calculated in the same way as 6PPD-Q (see equation in Section 7.2.3.2.4)

7.2.3.2.3 For 6PPD-Q:

$$\mathrm{C_I} = \frac{(\mathrm{Area_n})(\mathrm{M}_{EIS})}{(\mathrm{Area_{EIS}})(\overline{RF}\ )}$$

Where: $\mathrm{C_I}$ = On column Concentration (ng/mL)
$\mathrm{Area_n}$ = The measured area of 6PPD-Q
$\mathrm{Area_{EIS}}$ = The measured area for the EIS
M_{EIS} = The Concentration of the EIS added (ng/mL)
$\overline{RF}$ = Average response factor

7.2.3.2.4 And for the SS analyte:

$$C_I = \frac{(Area_{SS})(M_{IIS})}{(Area_{IIS})(\overline{RF_s})}$$

Where: C_I = Final Concentration (ng/mL)
$Area_{SS}$ = The measured area of D5-6PPD-Q
$Area_{IIS}$ = The measured area of 13C6-6PPD-Q
M_{IIS} = The concentration of the IIS added (ng/mL)
$\overline{RF_s}$ = Average response factor

7.2.3.3 Calculate the concentration of each identified analyte in the sample as follows:

$$\mathrm{C_F} = \frac{\mathrm{C_I(v_F)(D)}}{\mathrm{v_I}}$$

Where: C_F = Final Concentration (ng/L)
C_I = On Column Concentration (ng/mL)
V_F = Final Volume of Extract (mL)
D = Dilution Factor (only used for surrogate)
V_I = Initial Volume of Sample (mL)

Results are reported as nanograms/liter (ng/L).

7.2.3.4 Laboratory Control Sample (LCS) recoveries are calculated as follows:

$$LCS\ Recovery(\%) = \frac{\mathrm{MCSS}}{\mathrm{SCA}} \times 100$$

Where: MCSS = Measured Concentration of Spiked Sample

SCA = Spike Concentration Added

7.2.3.5 If a Laboratory Control Sample and Laboratory Control Sample Duplicate (LCS/LCSD) pair was analyzed, calculate the Relative Percent Difference (RPD) of each compound as follows:

$$\mathrm{RPD}=\left[\frac{|\mathrm{LCS\text{-}LCSD}|}{(\mathrm{LCS+LCSD})/2}\right]\times 100$$

Where: LCS = Laboratory Control Sample Recovery

LCSD = Laboratory Control Sample Duplicate Recovery

7.2.3.6 Matrix Spike (MS) recoveries are calculated as follows:

$$\text{MSR}=\left[\frac{\text{MCSS-MSSC}}{\text{SCA}}\right]\times 100$$

Where: MCSS = Measured Concentration of Spiked Sample

MSSC = Measured Source Sample Concentration

SCA = Spike Concentration Added

MSR% = Matrix Spike Recovery %

7.2.3.7 If a Matrix Spike and Matrix Spike Duplicate (MS/MSD) pair was analyzed, calculate the RPD of each compound as follows:

$$\text{RPD}=\left[\frac{|\text{MSR-MSDR}|}{(\text{MSR+MSDR})/2}\right]\times 100$$

Where: MSR = Matrix Spike Recovery

MSDR = Matrix Spike Duplicate Recovery

8.0 Records Management

8.1 Retain raw data for 7 years following reporting. The data PDF reports are stored in Element. Raw data are also stored on the instrument computer or in a designated area for 7 years.

8.2 Instrument and/or sample preparation logbooks are kept next to the instrument or with the Chemist performing the analysis.

8.2.1 When the logbooks are full, they are given to the MEL QA Coordinator for filing and secure storage.

8.2.2 Logbooks used to document instrument maintenance or routine documentation of a single piece of equipment are retained for 10 years after the retirement of the instrument/equipment.

8.2.3 Logbooks used to document procedures, such as preparation/extraction, preservation, etc. not tied to specific to equipment, or that are used to document quality control of more than one piece of equipment, are retained for 10 years after submission to QAC for secure storage.

8.3 The LCMSMS Data Review Checklist can be found in MEL’s Sharepoint page under Organics – Documents – Data Review. The checklist lists what reports and data should be included with the work order package.

8.4 MassHunter generates the following reports: Sequence Logs, Tune Reports, ICAL Reports, and Quantitation Reports.

8.5 Element generates the following reports: Sample Preparation Batch, Sequence Report, Review Reports, and Final Reports.

8.6 If necessary, the Corrective Action Form (CAF) can be found in MEL’s Sharepoint page under Organics – Forms.

9.0 Quality Control and Quality Assurance

9.1 Refer to client's QAPP for special QA/QC protocols.

9.2 Samples are qualified following data qualification SOP 730121 guidelines.

9.3 Internal Standards:

9.3.1 Each sample run is spiked with the IIS to a concentration of 2 ng/mL by the instrument. The EIS is added during preparation of the samples and calibration standards.

9.3.2 CCV: Reanalysis is necessary for any CCV standard in which the IIS peak area varies by more than +/- 50% from the IIS area obtained during the initial calibration.

9.3.3 Samples: Reanalysis is necessary for any sample in which the IIS peak area varies by more than +/- 50% from the IIS area of the associated CCV standard. If reanalysis confirms this variance in signal, all the analytes associated with that internal standard must be qualified following data qualification SOP 730121 guidelines.

9.3.3.1 Sample Dilution: Instead of reanalysis at the original LLOQ, reanalysis of the sample at a dilution may minimize the IIS failure by lessening matrix interference. Use professional judgment to decide the best way to report the results.

9.4 Method Blank:

9.4.1 A Method Blank (MB) must be prepared with each extraction batch of 20 or fewer samples.

9.4.2 The blanks must be free from contamination at a concentration at or below the LLOQ.

9.4.2.1 If the MB fails to meet quality criteria, the analyst determines whether to qualify the data, reanalyze, or re-extract the samples depending on severity of contamination and project objectives. At a minimum, the reanalysis includes the MB and the affected samples.

9.4.2.2 If low reporting limits are not required, the RL may be raised, per client approval.

9.4.2.3 On a case by case basis, per client or supervisor approval, samples associated with a MB not meeting acceptance limits can be reported so long as they are addressed in the case narrative and qualified following data qualification SOP 730121 guidelines.

9.5 Laboratory Control Sample:

9.5.1 Laboratory Control Sample and Laboratory Control Sample Duplicate (LCS/LCSD) must be prepared with each extraction batch of 20 or fewer samples.

9.5.2 The LCS/LCSD recoveries should fall within laboratory control limits which are based on statistical control charts. New analytes are set at 50%-150% recovery until control charting the limits are possible.

9.5.3 The duplicate RPD should be less than or equal to 40%.

9.5.4 LCS outside criteria are typically reanalyzed to confirm results. The associated samples may need to be re-extracted if hold time and extra sample volume permits.

9.5.5 On a case by case basis, per client or supervisor approval, samples associated with an LCS not meeting acceptance limits can be reported so long as they are addressed in the case narrative and qualified following data qualification SOP 730121 guidelines.

9.6 Matrix Spike:

9.6.1 If requested by the client, Matrix Spike Sample and Matrix Spike Sample Duplicate (MS/MSD) are prepared with an extraction batch of 20 or fewer samples.

9.6.2 The MS/MSD recoveries should fall within laboratory control limits which are based on statistical control charts. New analytes are set at 50%-150% recovery until control charting the limits are possible.

9.6.3 The duplicate RPD should be less than or equal to 40%.

9.6.4 MS/MSD samples are typically not re-prepared or re-analyzed unless obvious preparation or analysis errors occurred or the results are grossly outside criteria.

9.6.5 For results outside of the acceptance limit, qualify the source sample analytes as estimates following data qualification SOP 730121 guidelines. All other anomalies are dealt with on a case-by-case basis and referred to the supervisor.

9.7 Sample Duplicate:

9.7.1 A DUP is analyzed if requested by the client.

9.7.2 The duplicate RPD should be less than or equal to 40%.

9.7.3 DUP samples are typically not re-prepared or re-analyzed unless obvious preparation or analysis errors occurred.

9.7.4 If the RPD fails due to heterogeneity or matrix interference, qualify the failing analytes in the source sample following data qualification SOP 730121 guidelines. All other anomalies are dealt with on a case-by-case basis and referred to the supervisor.

9.8 Surrogates:

9.8.1 The EIS is used as the surrogate. The recovery limits are 20-200%.

9.9 Investigate samples not meeting control limits to determine the root cause of QC failure(s) by checking calculation errors, standard solution degradation, contamination, and instrument performance. If applicable, make the necessary adjustments and reanalyze the sample. If the limits are met, report results from the reanalyzed sample. If the limits are still not met, re-extract if hold time and extra sample volume permits; otherwise, qualify that sample data following data qualification SOP 730121 guidelines.

9.10 Lower Level of Quantitation:

9.10.1 LLOQs are analyzed annually.

9.10.2 See SOP 770044 Method Detection Limits and Lower Limits of Quantitation/Reporting Limits.

9.11 Method Detection Limits

9.11.1 Perform an MDL study for all projects supporting the Clean Water Act or if needed for client specific projects as stated in its QAPP.

9.11.2 See SOP 770044: Method Detection Limits and Lower Limits of Quantitation/Reporting Limits.

9.12 Initial Demonstration of Capability (IDC)

9.12.1 See SOP: 770032 Personnel Training.

9.12.2 IDCs are performed when:

9.12.2.1 There are new personnel responsible for analysis or sample preparation.

9.12.2.2 There is a major change in hardware.

9.12.2.3 There is a major change in sample preparation.

9.12.2.4 There is a major change to the instrument method.

9.12.2.5 New analytes are added to the method.

9.12.3 Blind Sample IDC

9.12.3.1 Performed annually.

9.12.3.2 Another chemist (not the primary chemist for the analysis) prepares an unknown spike sample and sends the concentration information to the QAC.

9.12.3.3 The primary chemist will analyze this spike sample.

9.12.3.4 The blind sample measured concentration should be within LCS control limits.

9.13 Document the preparation of standards in Element standard preparation module.

9.14 Document the preparation of samples in Element and the preparation log book.

9.15 Document all instrument problems in the instrument log book.

9.16 Print and store the sequence in the instrument log book.

10.0 Safety

10.1 The toxicity or carcinogenicity of each reagent used in this method has not been precisely defined; however, each chemical compound must be treated as a potential health hazard. Accordingly, exposure to these chemicals must be reduced to the lowest possible level.

10.2 The analysts should be familiar with the location and proper use of the fume hoods, eye washes, safety showers, and fire extinguishers. In addition, the analysts must wear protective clothing at all times, including safety glasses, goggles, or a face shield.

10.3 Fume hoods must be utilized whenever possible to avoid potential exposure to organic solvents.

10.4 Work with solvents or chemicals may be performed only when at least one other person is in the area.

10.5 Follow all safety guidelines outlined in the Laboratory Health and Safety Manual and Chemical Hygiene Plan.

10.6 Waste Management/Pollution Prevention

10.6.1 Dispose of laboratory-generated waste and waste sample in accordance with the Manchester Laboratory Dangerous Waste Disposal Manual.

11.0 References

11.1 EPA SW-846 Update IV Method 8000D: Determinative Chromatographic Separations, Revision 5 March 2018

11.2 40 CFR Part 136, Appendix B, "Definition and Procedure for the Determination of Method Detection Limit", Revision 2, 8/28/17

11.3 40 CFR Part 136.6: Method modifications and analytical requirements.

11.4 40 CFR Part 136.7: Quality assurance and quality control.

11.5 Tian, et al. A Ubiquitous Tire Rubber–Derived Chemical Induces Acute Mortality in Coho Salmon. Science 2021, 371(6525), 185–189.

11.6 Quantitation of Toxic Tire Degradant 6PPD-Quinone in Surface Water, Agilent Technologies, Inc. 2021, 5994-3754EN

11.7 Agilent 6400Series QQQ LC/MS Techniques and Operation Course Number R1893A Volume I Student Manual, Data Acquisition B.02.01; Qual B.2 SP3; Quant B.03.01. 2009 Agilent Technologies, Inc.

11.8 Maintaining Your Agilent LC and LC/MS Systems. Agilent.

11.9 Manchester Environmental Laboratory Quality Assurance Manual, Washington State Department of Ecology.

11.10 Chemical Hygiene Plan, US EPA Region 10 Laboratory.

11.11 Dangerous Waste Disposal Manual, US EPA Region 10 Laboratory and Washington State Dept. of Ecology.

11.12 Laboratory Health and Safety Manual for US EPA Region 10 Laboratory and Washington Department of Ecology Laboratory.

11.13 MEL SOP 730121: Data Qualification of Organic Sample Results.

11.14 MEL SOP 730127: Proper Manual Peak Integration

11.15 MEL SOP 770044: Method Detection Limits and Lower Limits of Quantitation/Reporting Limits

11.16 MEL SOP 770032 SOP for Personnel Training

Appendix A: Compound List and Transitions

Table A01

Analyte	CAS	Quantitation Transition	Qualifier Transition	Ion Polarity
6PPD-quinone	2754428-18-5	299.1 → 215.1	299.1 -> 241.1 299.1 -> 187.1	Positive
D5-6PPD-quinone (EIS/Surrogate)	NULL	304.1 → 220.1	304.1 -> 246.1	Positive
13C6-6PPD-Quinone (IIS)	NULL	305.1 → 221.1	305.1 -> 247.1	Positive

Note 1: This table has the current compound list for this method. Depending on demand, compounds may be added or removed. Additional compounds require further requirements (see Section 9).
Note 2: This table has the current transitions used for this analysis. Alternate transitions may be used as long as they are consistent with the ICAL used for calculations.

Appendix B: Retention Times and IS Associations

Table B01

Analyte	Retention Time	Associated IS
6PPD-quinone	7.34	D5-6PPD-quinone (EIS)
D5-6PPD-quinone (EIS/Surrogate)	7.33	13C6-6PPD-Quinone (IIS)
13C6-6PPD-Quinone (IIS)	7.34	NA

Note 1: Retention Times are approximate and can change depending on instrument conditions.
Note 2: The role of the D5-6PPD-quinone and 13C6-6PPD-Quinone may be switched. See section 5.3.1.

Appendix C: Instrument Method

Method Name: 6PPDQ_2022A.m

Method Path: C:\MassHunter\methods\CURRENT METHODS\6PPDQ_2022A.m

MS QQQ Mass Spectrometer Model G6460A Settings:

Table C01: MS Settings

Parameter	Setting
Ion Source	AJS ESI
Stop Mode	No Limit/As Pump
Time Filter	On
LC->Waste Pre Row	N/A
Tune File	C:\MassHunter\Tune\QQQ\G6460A\atunes.TUNE.XML
Stop Time (min)	No limit
Time Filter Width (min)	0.05
LC->Waste Post Row	N/A

Table C02: MS Time Segments

Index	Start Time (min)	Scan Type	Ion Mode	Div Valve	Delta EMV (+)	Store	Cycle Time (ms)	Triggered?	MRM Repeats
1	0.4	Dynamic MRM	ESI+ Agilent Jet Stream	To MS	400	Yes	500	No	3

Table C03: MS Scan Segments

Cpd Name	Prec Ion	MS1 Res	Prod Ion	MS2 Res	Frag (V)	CE (V)	Cell Acc (V)	Ret Time (min)	Ret Window	Polarity
6PPD-quinone	299.1	Unit/Enh (6490)	256.1	Unit/Enh (6490)	140	20	4	7.3	3	Positive
6PPD-quinone	299.1	Unit/Enh (6490)	241.1	Unit/Enh (6490)	105	32	4	7.3	3	Positive
6PPD-quinone	299.1	Unit/Enh (6490)	215.1	Unit/Enh (6490)	105	16	4	7.3	3	Positive
6PPD-quinone	299.1	Unit/Enh (6490)	187.1	Unit/Enh (6490)	105	32	4	7.3	3	Positive
6PPD-quinone	299.1	Unit/Enh (6490)	170.1	Unit/Enh (6490)	120	30	4	7.3	3	Positive
D5-6PPDQuinone	304.1	Unit/Enh (6490)	246.1	Unit/Enh (6490)	110	36	4	7.3	3	Positive
D5-6PPDQuinone	304.1	Unit/Enh (6490)	220.1	Unit/Enh (6490)	110	20	4	7.3	3	Positive
13C6-6PPDQuinone	305.1	Unit/Enh (6490)	247.1	Unit/Enh (6490)	110	36	4	7.3	3	Positive
13C6-6PPDQuinone	305.1	Unit/Enh (6490)	221.1	Unit/Enh (6490)	110	20	4	7.3	3	Positive

Table C04: MS Scan Parameters

Data Stg	Threshold
Centroid	0

Table C05: MS Source Parameters

Parameter	Value (+)	Value (-)
Gas Temp (°C)	300	300
Gas Flow (l/min)	10	10
Nebulizer (psi)	40	40
Sheath Gas Heater	375	375
Sheath Gas Flow	11	11
Capillary (V)	2500	0
V Charging	0	0

Table C06: MS Chromatograms

Chrom Type	Label	Offset	Y-Range
TIC	TIC	0	1500000

Sampler Model G1329B:

Table C07: Sampler Settings

Parameter	Setting
Auxiliary: Draw Speed	200 µL/min
Auxiliary: Eject Speed	100 µL/min
Auxiliary: Draw Position Offset	5.0 mm
Injection Mode	Standard injection
Injection Volume	5.00 µL
Enable Overlapped Injection	No
Stoptime Mode	As pump/No limit
Posttime Mode	Off
Pretreatment Step 1: Wash	Wash needle in location "Vial 92" 1 times
Pretreatment Step 2: Draw	Draw 1 µL from location "Vial 91" with default speed using default offset
Pretreatment Step 3: Wash	Wash needle in location "Vial 92" 1 times
Pretreatment Step 4: Draw	Draw 10 µL from sample with default speed using default offset
Pretreatment Step 5: Inject	Inject

Note 1: A vial of Methanol is in location “Vial 92” of the sample tray.
Note 2: A vial of the IIS solution is in location “Vial 91” of the sample tray.

Table C08: Column Comp. Settings

Parameter	Setting
Valve Position	Position 1 (Port 1 -> 2)
Left Temperature Control Mode	Temperature Set
Left Temperature	40.0 °C
Enable Analysis Left Temperature On	Yes
Enable Analysis Left Temperature Value	0.8 °C
Right Temperature Control Mode	Combined
Enable Analysis Right Temperature On	Yes
Enable Analysis Right Temperature Value	0.8 °C
Stop Time Mode	As pump/injector
Post Time Mode	Off

Binary Pump Model G1312B:

Table C09: Binary Pump Settings

Parameter	Setting
Flow	0.400 mL/min
Use Solvent Types	No
Low Pressure Limit	0.00 bar
High Pressure Limit	590.00 bar
Maximum Flow Gradient	100.000 mL/min²
Automatic Stroke Calculation A	Yes
Automatic Stroke Calculation B	Yes
Compressibility Mode A	Compressibility Value Set
Compressibility A	50 10e-6/bar
Compressibility Mode B	Compressibility Value Set
Compressibility B	115 10e-6/bar
Stop Time Mode	Time set
Stop Time	10.5 min
Post Time Mode	Time set
Post Time	4.00 min

Table C10: Binary Pump Solvent Composition

Solvent Composition	Channel	Name 1	Selected	Used	Percent
1	A	H2O (0.1% formic)	Ch. 1	Yes	90.0 %
2	B	ACN (0.1% formic)	Ch. 1	Yes	10.0 %

Table C11: Binary Pump Timetable

Timetable	Time	A	B	Flow	Pressure
1	0.50 min	90.0 %	10.0 %	0.400 mL/min	590.00 bar
2	5.00 min	15.0 %	85.0 %	0.400 mL/min	590.00 bar
3	10.00 min	0.0 %	100.0 %	0.400 mL/min	590.00 bar
4	10.50 min	0.0 %	100.0 %	0.400 mL/min	590.00 bar

Appendix D: Routine Maintenance

Routine Maintenance Schedule:

Daily Maintenance:

1. Change the needle wash solvents.
2. Replace IIS vial.
3. Check solvent eluent levels.
4. Check column pressure. If it has significantly changed for no reason, reload the method, check for leaks, line kinks, pump bypass valve closure, and solvent eluent levels.

Weekly:

1. Check and drain rough pump reservoir mist filter.
2. Run a check tune.

Monitor:

1. Rough Vac number: (1.8-2.2 torr is normal)
2. Slope. (1-3 is normal)
3. High Vac number (2.7-3.3X 10^{-5} torr is normal)
4. Collision cell gas on (3.0-6.0X 10^{-6} torr is normal)
5. Collision cell gas off

As Required:

1. Clean the source and capillary inlet:
    a. If instrument has been on, then set to standby, turn source gas and sheath gas to 0, and cool source before cleaning.
    b. Open ESIJT source door cover, rinse and wipe down interior of the spray chamber with isopropyl alcohol or methanol.
    c. If several analytes lose sensitivity, check capillary cover for discolor, polish the capillary cover with aluminum oxide power and then sonicate in water or a mixture of water and acetonitrile or methanol or isopropyl alcohol.

2. Solvent Eluents:
    a. If necessary, Refill or Change the eluent.
    b. Prime the pumps when eluent is refilled, changed, or the system has been idle.
        i. Open the pump bypass valve and increase flow.
        ii. Increase the % of the solvent bottle being primed. Allow the solvent to flow until no bubbles can be seen going through the lines.
        iii. Decrease flow and close valve after pump is primed.

3. Reboot PC.

4. Check Software Center for updates.

STANDARD OPERATING PROCEDURE

for

6PPD-quinone by LCMS/MS

SOP # 4077 v0

Date of Implementation: 11/30/2022

Supersedes SOP#: New

Approved by:

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1.0 INTRODUCTION

6PPD-quinone is formed by the degradation of the ubiquitous tire-rubber stabilizer 6PPD (N-1,3-dimethylbutyl-N'-phenyl-*p*-phenylenediamine). This degradation product has been shown to have toxic effects in juvenile coho salmon (Tian et al, 2021).

The present method is based on analysis using a high performance liquid chromatograph (HPLC) coupled to a triple quadrupole mass spectrometer (QQQ) equipped with an electrospray ionization source, collectively referred to as a LCMSMS system. A quadrupole consists of four parallel hyperbolic rods through which selected ions are filtered. Precursor ions are filtered through the first quadrupole before reaching a collision cell (sometimes called a second quadrupole) where they are fragmented into product ions. The fragment ions are then sent to the third quadrupole for a second filtering stage, enabling the user to isolate specific precursor to product ion transitions. In multiple reaction monitoring (MRM) mode a specific precursor ion and two or more of its product ions can be monitored.

For the present method 6PPD-quinone and its isotopically labeled internal standard, D_5-6PPD-quinone, are measured. A precursor ion and three of its products are monitored in positive MRM mode (Hunt et al, 2021). One ion is used as the quantifier, and the other two are used as qualifier ions. The presence and ratio of these ions (qualifier ratio), is used to confirm compound identification. Quantification is performed by comparing the response of the quantifier product ion for 6PPD-quinone to that of the isotopically labelled internal standard.

This method is based on an application note from Agilent using the same LCMSMS system: "Quantitation of Toxic Tire Degradant 6PPD-Quinone in Surface Water: Using direct injection on an Agilent 6470 triple quadrupole LC/MS"

2.0 SCOPE AND APPLICATION

The present method is intended for freshwater and surface water samples, including stormwater. Although it may be applicable to other sample matrices, specific sample preparation steps for those matrices are not included here.

3.0 OTHER APPLICABLE SOPs

The SOPs for procedures which are required within this protocol but are also independent procedures are cited below:

Pipette Calibration Checks - KCEL SOP #4054

4.0 SAMPLE CONTAINERS, PRESERVATION AND STORAGE

1. The preferred sample container is a 250 mL amber glass bottle.
2. Upon receipt by the Aquatox section the samples are kept refrigerated at 4°C in the dark until further processing.

3. The holding time is up to 28 days at 4°C.
4. Once fully prepped for LCMSMS analysis, samples should be run immediately if possible. If necessary, prepped samples may be stored at 4°C for up to 2 weeks prior to analysis.

5.0 EQUIPMENT

1. Agilent 1290 Infinity II LC system. Includes temperature controlled autosampler, microvacuum degasser, quaternary pump, thermostatted column compartment, column switching valve, and analytical column (Agilent InfinityLab Poroshell 120 EC-C18, 2.1x 50mm, 1.9um, p/n 699675-902, Agilent Technologies, Inc).
2. Agilent Technologies 6470 Triple Quadrupole Mass Spectrometer with Agilent Jet Stream Electrospray Ionization Source. Includes MassHunter Workstation Software Version B.10 .00.
3. Ultra pure compressed nitrogen gas for QQQ collision cell (Praxair UN1066)
4. Nitrogen gas from generator at 80-100 psi for QQQ source (Peak NM32LA)
5. Refrigerator (4°C) / Freezer (-20°C +/- 5°C)
6. Vortex mixer
7. Vacuum manifold (Supelco)

6.0 SUPPLIES

1. 2 mL amber glass autosampler vials with caps (Agilent 5182-0716 and 5185-5820)
2. Oasis HLB 6cc (200 mg) SPE cartridges (Waters, 106202)
3. Glass test tubes, 16 x 100 mm (Fisher 14-961-29)
4. Pipettors and disposable tips measuring 1-10 µL, 10-100 µL and 100-1000 µL (Eppendorf)

7.0 REAGENTS

1. Milli-Q water – reverse osmosis water additionally filtered through a Super-Q filtration system.
2. Acetonitrile, HPLC grade (Acros Organics 61001-0040). Store at room temperature in flammables cabinet.
3. D_5-6PPD-quinone, extracted internal standard/surrogate, 100 ug/mL (HPC Standards 688151). Store at 4°C.
4. 6PPD-quinone standard, 100 ug/mL (HPC Standards 688152). Store at 4°C.
5. 6PPD-quinone second source standard, 100 ug/mL (Cambridge Isotope Laboratories, ULM-12288-S)

6. Ammonium acetate (Fisher A114-50)
7. Methanol HPLC grade (J.T Baker 9093-03)
8. ESI-L low concentration tuning mix (Agilent G1969-85000). Store at 4°C.

8.0 SOLUTIONS

1. HPLC mobile phase A: 1 mM ammomium acetate in Milli-Q water. To prepare: add 200 uL of 5 M ammonium acetate stock solution to 1 L MilliQ, or scale appropriately for volume needed. 5 M ammonium acetate stock is prepared with 7.708 g ammonium acetate in 20 mL MilliQ water).
2. HPLC mobile phase B: Acetonitrile

9.0 DEFINITIONS

Standard: Solution with a known concentration of analyte. Different dilutions of the standard are used in conjunction with the Internal Standard to construct a calibration curve from which the concentration in the sample is determined.

Internal Standard (ISTD): A pure compound that is added to all standard solutions and samples in a known amount and used to measure the relative response of the other method analytes that are components of the same solution. In this case, the internal standard is an extracted internal standard, added at the beginning of sample preparation and taken through all extraction steps.

Surrogate: A compound with properties very similar to those of the target analyte which is unlikely to be present naturally in the sample. The surrogate is added at the beginning of sample preparation and taken through all extraction steps.

Initial Calibration Verification Standard (ICV): Also called a Quality Control Standard (QCS) A standard of the target analyte obtained from a second source and prepared separately from the calibration standards.

Continuing Calibration Verificaton Standard (CCV): Also called a Continuing Calibration Check (CCC). A calibrator (usually mid-point) run at established frequency during a run. If no standard curve is run, then a CCV must also be run at the beginning of the run.

Method Blank (MB): MilliQ water processed exactly as a sample. The method blank is used to determine if the method analytes of other interferences are present in the laboratory environment, the reagents, or the apparatus.

Spike Blank (SB): MilliQ water spiked with a known amount of 6PPD-quinone and processed exactly as a sample. The spike blank is used to verify method performance for accuracy.

Matrix Spike (MS): Sample spiked with a known amount of 6PPD-quinone and processed exactly as a sample. The purpose of the matrix spike is to determine whether the matrix contributes bias to the analytical results.

Matrix Spike Duplicate (MSD): a duplicate of the sample used to prepare the Matrix Spike, spiked and analyzed identically to the Matrix Spike. The Matrix Spike Duplicate is used to assess the method precision when the method analytes are rarely found at concentrations greater than the MDL.

Relative Percent Difference (RPD): This calculation is based on the MS and MSD and provides information on the method precision: RPD = ([MS-MSD]/((MS+MSD)/2)) x 100.

Relative Standard Deviation (RSD): The standard deviation of three or more results divided by the mean of the results. See the QA Manual for more information.

Laboratory Duplicate (LD): Duplicate of a sample, processed exactly as the sample. The Laboratory Duplicate is used to assess method precision when the analyte is expected to be found at concentrations above the MDL. An RPD can also be calculated for the sample and LD following the same equation as for the MS/MSD RPD (substituting Sample and LD for MS and MSD).

Method Detection Limit (MDL): The minimum measured concentration of a substance that can be reported with 99% confidence that the measured concentration is distinguishable from method blank results. Determined as directed in 40 CFR 136 Appendix B, revision 2. See the QA Manual Appendix E for more information.

Lower Limit of Quantitation (LLOQ): The lowest point of quantitation, in this case, the lowest concentration in the calibration curve. See the QA Manual Appendix E for more information.

Precursor Ion: An ion that can be identified by its *m/z* value, prior to fragmentation in the collision cell

Product Ion: An ion that can be identified by its *m/z* value, following fragmentation in the collision cell

Qualifier Ion Ratio: Expected Qualifier Ion response as percentage of Quantifier Ion.

LIMS Prep Date: Date/time the sample is prepped for analysis.

LIMS Analysis Date: Date/time of a LC/MSMS run.

Batch: A set of no more than 20 samples of the same matrix, prepared and processed together using the same procedures and reagents.

10.0 PROCEDURE

Note: 6PPD-quinone in environmental samples and standards may be toxic. Use adequate precautions, including gloves, lab coat and eye-protection when handling.

10.1 Standard Preparation

Stock standards. Standard comes as a 100 ug/mL solution in acetonitrile. Store at 4°C for up to one year.

Primary standard. Prepare a 1000 ng/mL solution of the 6PPD-quinone standard by adding 10 ul of stock standard to 990 uL acetonitrile. Store in 2 mL amber glass vial at 4°C for up to one year.

Calibration standards. Prepare at minimum 6 calibration levels using the primary standard and methanol. Add internal standard/surrogate to each calibrator to a concentration of 5 ng/mL. Suggested calibration standard concentrations are 0.01, 0.05, 0.1, 0.5, 1, 5 ng/mL, with 10 ng/mL included for stormwater runoff samples.

Stock internal standard/surrogate. The internal standard comes as a 100 ug/mL solution in acetonitrile. Store at 4°C for up to one year.

Primary Internal standard (ISTD)/Surrogate. Prepare a working internal standard of 1000 ng/mL D_5-6PPD-quinone by adding 10 uL internal standard stock to 990 uL acetonitrile. Add 5 uL of this ISTD to 995 uL calibrator for a final ISTD concentration of 5 ng/mL.

Initial calibration verification (ICV) standard – second source. The second source also comes as 100 ug/mL in acetonitrile. Prepare a 1000 ng/mL working standard by adding 10 uL of the tock to 990 uL acetonitrile. Prepare desired calibration level using methanol.

10.2 Sample Preparation Using Solid Phase Extraction (SPE):

10.2.1 Measure desired volume of sample into a glass beaker. 50 mL is the preferred volume.
10.2.2 For the sample designated for matrix spike and matrix spike duplicate, prepare two additional beakers.
10.2.3 For the sample designated for a lab duplicate, prepare one additional beaker.
10.2.4 Use the same volume of MilliQ water to prepare method blank and spike blank.
10.2.5 Spike the spike blank, matrix spike, and matrix spike duplicate with 10 ul of the 6PPDq primary standard for a final concentration of 0.2 ng/mL.
10.2.6 Add internal standard/surrogate to ALL samples in a batch, including quality control (QC). Add 50 uL of the primary ISTD stock to 50 mL sample/QC volume. This will yield a SPE extract concentration of 5 ng/mL.

10.2.7 Place the required number of SPE cartridges (Oasis HLB 6cc 200 mg) in the vacuum manifold ports. Block any empty ports with stoppers.

10.2.8 Condition cartridges with 2x10 mL methanol and then 2x10 mL MilliQ water. Do not let the cartridges become dry after the conditioning.

10.2.9 Pour a sample into the cartridge, slowly drawning down under weak vacuum, repeating until all sample has passed through the cartridge. Do not let the cartridge run dry while adding the sample.

10.2.10 Rinse sample container with 10 ml of MilliQ water and filter this through the SPE cartridge. Repeat once.

10.2.11 Dry cartridge under vacuum for 5 minutes.

10.2.12 Place labeled glass test tubes in manifold to collect eluent.

10.2.13 6PPD-quinone is eluted from the solid phase with 10 mL of 100% methanol.

10.2.14 Verify that volume in each collection tube is 10 mL. Add additional methanol to bring the volume to 10 mL if needed.

10.2.15 Vortex and pipet 1 mL of extract into a 2 mL glass autosampler vials and analyze.

10.2.16 If the sample cannot be analyzed immediately, it should be stored in the refrigerator at 4°C up to 2 weeks if necessary.

10.3 QC Sample Preparation

Five QC samples are prepared routinely with each batch of samples and carried through all the extraction steps:

QC sample preparation for 6PPD-quinone

QC Sample	**LIMS Name**	**Prepared in**	**Concentration** (ng/mL)
Method Blank	MB	MilliQ water	0
Spike Blank	SB	MilliQ water	0.2
Matrix Spike	MS	Sample matrix	0.2
Matrix Spike Duplicate	MSD	Sample matrix	0.2
Laboratory Duplicate	LD	Sample matrix	variable

10.4 MassHunter acquisition method

10.4.1. Acquisition Method (6ppdqSURR)

A. Sampler

Injection Mode	Injection with needle wash
Injection Volume	10 µL
Stoptime	As pump/No limit
Posttime	1.5 min
Draw Speed	200 µL/min
Eject Speed	400 µL/min
Draw Position Offset	0.0 mm

B. Quatarnary Pump

Flow	0.6 mL/min
Solvent Composition: A	H_2O with ammonium acetate
Solvent Composition: B	Acetonitrile
Low Pressure Limit	0.00 bar
High Pressure Limit	800.00 bar
Stoptime	5.7 min
Posttime	1.5 min
Automatic Stroke Calculation A	Yes
Automatic Stroke Calculation B	Yes
Compressibility A	100 x 10^{-6}/bar
Compressibility B	115 x 10^{-6}/bar
Maximum Flow Gradient	100.000 mL/min/min

Timetable

	Time (min)	**A (%)**	**B (%)**	**Flow (mL/min)**	**Max. Pressure Limit (bar)**
1	0.0	70	30	0.6	800
2	0.5	70	30	0.6	800
3	4.7	30	70	0.6	800
4	4.8	0	100	0.6	800

C. Column Compartment

Temperature	40.0°C
Enable Analysis	When temperature is within ± 0.50°C
Stoptime	As pump/injector
Posttime	1.5 min

D. QQQ

Tune File	atunes.Tune.xml
Stop Time	No Limit/As Pump
Ion Source	AJS ESI
Time filtering	Peak width 0.07 min

Time Segments

Index	Start Time (min)	Scan Type	Div Valve	Delta EMV (+)	Delta EMV (-)	Store
1	0	MRM	To Waste	0	0	No
2	3.5	MRM	To MS	600	0	Yes
3	5	MRM	To Waste	0	0	No

Time Segment 2, Scan Segments

Compound Name	ISTD	Precursor Ion	MS1 Res	Product Ion	MS2 Res	Dwell	Frag-mentor	Collision Energy	Cell Accel Voltage	Polarity
6PPDq		299.2	Unit	241.1	Unit	100	105	32	4	Positive
6PPDq		299.2	Unit	215.1	Unit	100	105	16	5	Positive
6PPDq		299.2	Unit	187.1	Unit	100	105	32	5	Positive
D5-6PPDq	yes	304.2	Unit	246.1	Unit	100	110	36	4	Positive
D5-6PPDq	yes	304.2	Unit	220.1	Unit	100	110	20	4	Positive
D5-6PPDq	yes	304.2	Unit	192.1	Unit	100	110	36	5	Positive

Source Parameters

Gas Temp	300°C
Gas Flow	10 L/min
Nebulizer	40 psi
Sheath gas temp	375°C
Sheath gas flow	11 L/min
Capillary voltage	Positive 2500 V
Nozzle voltage	500V

10.5 Calibration

10.5.1 Initial Calibration

The method is initially calibrated at a minimum of six non-zero concentrations to build a calibration curve. If high levels of 6PPD-quinone are expected, the curve may be extended. Internal standard calibration using an extracted internal standard/surrogate is applied to this method. A typical calibration curve contains the following concentrations: 0.01, 0.05, 0.1, 0.5, 1, 5 ng/mL (see Section 10.1). An acceptable calibration curve will have a correlation coefficient of no less than 0.99 and each calibration point must be within 20% of the target concentration when compared to the calibration curve. A quadratic curve fit including (but not forcing) the origin and a 1/x weighting is used. The 6PPD-quinone transition of 299.1>241.1 is used for quantification.

10.5.2 Initial Calibration Verification

A second source calibration verification standard (ICV) is analyzed after the initial calibration, and with each new lot of the primary standard. The results must be within +/- 15% of the target concentration. If this is not met, the calibration verification is reanalyzed. If it still fails to pass, the primary standard is remade and measured as described above until the verification run passes, or the batch of standard is determined to be faulty and new standard is ordered.

10.5.3 Continuing Calibration Verification

For each instrument run, a continuing calibration verification standard (CCV) at mid-concentration can be analyzed in place of the full calibration curve as long as the recovery of 6PPD-quinone is within +/- 20% of the target concentration. The calibration verification standard is re-analyzed after every 10 samples and at the end of the run. Its recovery must be within +/- 20% of the target concentration; otherwise, the analysis is stopped, and corrective action, such as recalibration of the instrument, is taken to meet the acceptance criteria. A calibration blank is also analyzed at the start of each instrument run to verify that the system background is clean. The calibration blank must be <MDL. If it is not, steps must be taken to determine what is causing the interference, and it must be addressed before samples can be processed.

10.6 Retention Time Window

Retention time windows are established once the instrument method has been developed. In MassHunter Quantitative Analysis, Outlier Setup Tasks, Retention Time settings are used to define the range of acceptable retention times for the peak. Using percent (rather than minutes) allows for easy updating of retention times as these might slightly shift over time. The default range of +/- 5% is appropriate for the current method. Under current conditions retention times (in minutes) are as follows:

6PPD-quinone: 4.517
D_5-6PPD-quinone: 4.492

10.7 Qualifier Ion Ratio

Qualifier ion ratios are established during method development. This ratio of the qualifier ion response as a percentage of quantifier ion response is called “relative response” in the

MassHunter software. Under current conditions the relative response for method analytes are as follows:

6PPD-quinone: 299.2 > 215.1, 138.0; 299.2>187.1, 111.1.

D5-6PPD-quinone: 304.1> 216.1, 278.7; 304.1>192.1, 235.4

Acceptable deviation from this value, termed "uncertainty" in MassHunter, is set at 30%.

10.8 Sample Analysis

A. Prepare Instrument

1. Turn on temperature control for sample compartment.
2. Note pressures for nitrogen cylinder and nitrogen generator in daily maintenance log.
3. Clean QQQ source with 50% isopropyl/water.
4. Launch MassHunter Acquisition software.
5. If performing autotune or checktune, refer to Section 11.1.
6. Check/fill mobile phase reservoirs as needed and update volume of mobile phases.
7. Select method for MS2 scan background check at 50% B (e.g. Background6ppdq.m).
8. Turn on system components (autosampler, pump, column compartment, QQQ). In the pump menu (right click on pump icon to display), select "prepare pump" from the drop down menu, then click the "purge" option to purge the lines of bottles for Solvent A (50%) and Solvent B (50%) for 2-3 minutes at 3 mL/min.
9. After purge program finishes, run 70% A and 30% B at 0.6 mL/min to stabilize.
10. Select 6PPDq method (6ppdqISTDSURR.m) and run worklist.

B. Prepare and run Worklist

1. Open an existing Worklist to use as template and Save As with current date name (e.g. yymmddppdqsurr.wkl).
2. Open Worklist, Runtime Parameters and add new data directory (e.g. yymmddppdqsurr).
3. Update all fields including the path for autotsaving to the I drive (I:\InstrumentData\Agilent LC-MS\Data\yymmddppdqsurr) and save.
4. Load autosampler according to order specified in Worklist. Note: samples in the tray on the left are designated P1, tray on the right by P2; followed by letter (A-F) indicating row and number (1-11) indicating vial position in row. For example, the vial in the first position on the left would be P1-A1, and the last position in the left hand tray would be P1-F11. First position in right hand tray: P2-A1, last position P2-F11.
5. Run Worklist.
6. Make appropriate notes in the instrument's daily maintenance log (Appendix A).

C. Analyze Data and Report

1. Launch QQQ Quantitation.
2. Create new batch. Name batch as yymmddppdqsurr.bin.
3. Add samples to the batch (all samples in yymmddppdqsurr directory).
4. Open Method – from existing batch, select prior batch.
5. Exit editor – apply method to batch.
6. Analyze batch and save.

7. In Method edit window, update/average RT and qualifier ratio.
8. Exit editor - apply method to batch.
9. Analyze batch and save.
10. Report – generate batch report using the custom report template 6PPDQrev.m.
11. Export data to Excel using the export command in MassHunter and save in the LCMS interface folder on the lab's instrument drive (I:\InstrumentData\Agilent LC-MS\Interface\). File must be named with just the WG# so it will be recognized by the interface. Be sure samples are named only with L# (samples) or WG# (QC samples).

11.0 QUALITY CONTROL

11.1 QQQ maintenance and mass calibration

The autotune calibration is performed at least once every two months and after preventative maintenance, any major change to the instrument, or if a checktune fails. A checktune is performed when running an initial calibration using the positive polarity. Checktune requirements are set in the check tune report by the manufacturer. Acceptable results are displayed in green, failed parameters are flagged in yellow. If a checktune fails in more than 10 parameters, or if the abundance of the highest mass is below 15000, verify tune mix volume is sufficient and visually inspect to confirm nebulizer spray is steady and conical. Rerun the checktune. If checktune fails again, run an autotune.

1. Check calibrant level
2. Go to Tuning context, Autotune tab, check Positive mode
3. With LC off or To Waste, start Autotune or Checktune

Optionally, the instrument's performance can be visualized beforehand by going to Manual tab, LC to Waste, MS2 profile or MS2 scan, Calibrant delivery checked → Acquire.

Electronic copies of all tune results (autotunes and checktunes) are automatically saved in the Tunes folder MassHunter\Tunes\QQQ\6470A\date.

11.2 Calibration QC

The acceptance limits for the initial calibration and continuing calibration verifications are listed in Section 10.5.

11.3 Initial Demonstration of Capability (IDC)

An IDC study is needed when a new method is established, when a new instrument is brought online, after major instrument maintenance, or when a new analyst starts using the method. The following need to be completed prior to analyzing any field samples:

11.3.1 Demonstrate low system background by analyzing the MB immediately following the highest calibration standard. This MB must be <MDL.

11.3.2 Demonstrate acceptable precision by analyzing 7 replicates of the SB. The RPD of the replicates must be within 20%.

11.3.3 Demonstrate acceptable accuracy by analyzing 7 replicates of the SB (may be the same as those used in 11.3.2). The average recovery must be +/- 30% of the true value.

11.4 Routine QC Samples Frequency and Limits

The following table lists the QC samples to be analyzed with each preparation batch and their acceptance limits:

QC Sample	**Required Frequency**	**Acceptance Limits***
Method Blank	1 per batch of 20 or fewer samples	<MDL
Spike Blank	1 per batch of 20 or fewer samples	50-150% recovery
Matrix Spike	1 per batch of 20 or fewer samples	50-150% recovery
Matrix Spike duplicate	1 per batch of 20 or fewer samples	50-150% recovery and ≤ 45% RPD
Lab duplicate	1 per batch of 20 or fewer samples	≤ 40% RPD

**The acceptance limits will be updated once enough data has been generated for control charting determination of method-specific limits.*

In addition to the discrete QC samples, the response of the extracted internal standard (ISTD)/Surrogate is monitored. This response in each sample must be 20-200% of the average response of the ISTD/Surrogate in the calibrators from the calibration curve used in quantifying that batch.

12.0 RECORDKEEPING, REPORTING AND DATA MANAGEMENT

12.1 LIMS data entry and reporting

1. Create a workgroup (WG) in LIMS:
    - Add samples and QC samples.
2. Load data via Excel interface:
    - Open Excel AQT Data Entry.
    - Select Assay, AQ6PPDQ and enter WG number, preparation and run dates/times, and concentration factor.
    - An excel spreadsheet will open with all the fields populated. The interface will alert you if any samples or QC are missing. The concentration factor needs to be changed from 5 to 1 for the Continuing Calibration Check since this standard check does not go through SPE. Verify data looks correct. Send Data to LIMS using the tab at the top of the page.
    - A copy of this spreadsheet is saved on the instrument drive under InstrumentData\Agilent LC-MS\Interface\Sent2Lims.
3. LIMS QC and reporting:
    - In LIMS select Sample Data from the options at the top of the screen. Select Process Queue from the drop down menu and type “QC” in the blank.
    - Select the QC samples by checking the box at the left. Run QC. LIMS will calculate % recoveries and RPDs where applicable.

- From the Reports tab at the top of the screen choose Lab Review Report. Save the Lab Review Report as PDF for Docusign.
- From the Reports tab choose QC Report. Save the QC Report as PDF for Docusign.
- The Surrogate report needs to be opened separately from the lab's Reports folder. When QC Calc is performed in LIMS, a surrogate report file is created in the Report folder with the WG number as the file name. Open this file in the Excel interface and format using AQT formatting option. Save this file and include in the Docusign packet.
- Approve and move workgroup in LIMS after Docusign peer review of data package.

All test data, procedures and notes made during testing are entered into worksheets, organized by preparation and analysis batches and referenced with a WG number for LIMS. Note that all chromatograms for every sample/calibrator/QCsample are stored on the hard drive of the instrument computer - D:\MassHunter\Data\YYMMDDppdqsurr and on the lab's network drive - I:\InstrumentData\Agilent LC-MS\Data\YYMMDD6ppdqsurr.

Electronic data packages include the following: QC summary, sample log sheet, SPE log sheet, MassHunter batch table, MassHunter calibration curve, LIMS Lab Review Report, LIMS QC Report, LIMS surrogate report, and custom MassHunter report with chromatograms. The data packets undergo an electronic QA review by another analyst and the unit supervisor using Docusign. While the policy for storage of electronic records is being developed, all records are kept in the secure location according to King County records management requirements on the Aqua Toxicology section of the Common drive: K:\aquatox\Docusign\Completed\6PPDqsigned.

13.0 SAFETY AND HAZARDOUS WASTE

6PPD-quinone in environmental samples and standards may be toxic. Use adequate personal protection equipment, such as a lab coat, gloves, and safety glasses.

Used autosampler vials, disposable pipets and pipet tips are discarded into the solid waste. Used mobile phase is collected in a sealed 5 gal container equipped with an air filter, that is later transferred to a disposable container and disposed as hazardous liquid waste. This is tracked daily in a notebook kept by the instrument and those daily records are transferred monthly to a multitab Excel spreadsheet on the Common drive in the lab-wide hazardous waste disposal stream: K:\safety\Hazardous Waste Program\ Disposal\YYYY\ disp data. The waste associated with this SOP would be recorded under the tab “AQT HPLC Liquid Waste”.

14.0 TRAINING

This method is intended to be used by operators familiar with the general concepts and procedures used for LCMSMS analysis, including basic chemistry and lab skills such as making solutions. Training will involve the trainee reading the SOP and related references, and watching the full method as demonstration by a trained analyst. The trainee will then work through the method with the assistance of the trained analyst until they are comfortable with all aspects of the method. The trainee will also complete a full IDC study which satifies all requirements listed in Section 11.3 before they can run samples independently. Once the trainee has accomplished this, they will sign a docusign form attesting to the completion of training. This form will be signed by the analyst who oversaw the training and by the AQT Supervisor. The signed docusign form will be kept on the Common drive under aquatox\training records.

15.0 REFERENCES

Hunt K, Hindle R, Anumol T. Quantitation of toxin tire degradant 6PPD-quinine in surface water using direct injection on an Agilent 6470 triple quadrupole LC/MS, Agilent Application Note, July 13, 2021.

Tian et al, 2021. A ubiquitous tire rubber-derived chemical induces acute mortatility in coho salmon, *Science*, 371(6525): 185-189.

APPENDIX A

QQQ Maintenance Checklist - Daily

DATE					
Degasser	Check status				
Rough Pump	Check oil level				
	Rough vacuum				
	Quiet cover fan				
Turbo Pump	High vacuum				
Liquid Nitrogen	Pressure				
Collision Cell	Nitrogen (PSI)				
Source	Cleaning				
	Check nebulizer spray				
	Inspect nebulizer tip				
	Chamber current (ESI or MMI) > 0.25 uA				
	Capillary current (ESI or MMI) > 20 nA				
Mobile Phase/Pump	Prepare mobile phases				
	Set solvent levels				
	Check/empty waste				
	Prime pump				
	Column pressure (@ equil) mainpass				
	Column pressure (@ equil) bypass				
Autosampler	Flush pump solvent level				
	Flush pump prime				
	Reset				
Tuning	Check calibrant level				
	New calibrant (if low)				
	Checktune				
	Autotune				
	Tune EMV				
MS2 Scan	Background check				
System	Suitability test mix				
	Carryover check				
PC	Defragment hard drive				
	Reboot				
Initials					

APPENDIX B

2023 initial MDL study for 6ppd-quinone

All MDL samples were spiked to 2X the estimated MDL.

Estimated MDL for this method is 0.01 ng/mL in extract, 0.002 ng/mL final.

MDL spike = 0.02 ng/mL in extract, 0.004 ng/mL final.

	6ppd-q conc (ng/mL)		
date	extract	final	method blank
11/3/2023	0.0247	0.0049	<MDL
	0.0254	0.0051	<MDL
	0.0266	0.0052	<MDL
11/6/2023	0.0251	0.0050	<MDL
	0.0253	0.0051	<MDL
11/7/2023	0.0214	0.0043	<MDL
	0.0186	0.0037	<MDL
	0.0200	0.0040	<MDL
S	0.002953	0.000541	
calc MDL	**0.008852**	**0.001622**	

Calculated MDL based on extract is 0.0089 ng/mL (close to estimate of 0.01 ng/mL).
Calculated MDL based on final value is 0.0016 ng/mL (close to estimate of 0.002 ng/mL).

calc MDL = t * S
t = 2.998 for 8 samples
S = standard deviation

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401 5TH AVE
SEATTLE, WA 98104
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Elizabeth Frame elizabeth.frame@kingcounty.gov King County Environmental Laboratory Security Level: Email, Account Authentication (None)	DocuSigned by: Elizabeth Frame 55664BFF157F4EE... Signature Adoption: Pre-selected Style Using IP Address: 198.49.222.20	Sent: 12/5/2023 1:28:56 PM Viewed: 12/5/2023 1:30:00 PM Signed: 12/5/2023 1:30:52 PM
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Francis Sweeney francis.sweeney@kingcounty.gov Lab Supervisor King County Environmental Laboratory Security Level: Email, Account Authentication (None)	DocuSigned by: Francis Sweeney 38D36CF1DA4B4EB... Signature Adoption: Pre-selected Style Using IP Address: 146.129.145.143	Sent: 12/5/2023 1:30:54 PM Viewed: 12/5/2023 1:32:15 PM Signed: 12/5/2023 1:32:27 PM
Electronic Record and Signature Disclosure: Not Offered via DocuSign		
Arina Podnozova apodnozova@kingcounty.gov KCEL Quality Assurance Officer King County Environmental Lab Security Level: Email, Account Authentication (None)	DocuSigned by: Arina Podnozova 3B839BC87D66431... Signature Adoption: Pre-selected Style Using IP Address: 198.49.222.20	Sent: 12/5/2023 1:32:29 PM Viewed: 12/5/2023 1:35:12 PM Signed: 12/5/2023 1:35:18 PM
Electronic Record and Signature Disclosure: Not Offered via DocuSign		

In Person Signer Events	Signature	Timestamp

Editor Delivery Events	Status	Timestamp

Agent Delivery Events	Status	Timestamp

Intermediary Delivery Events	Status	Timestamp

Certified Delivery Events	Status	Timestamp

Carbon Copy Events	Status	Timestamp

Witness Events	Signature	Timestamp

Notary Events	Signature	Timestamp

Envelope Summary Events	Status	Timestamps
Envelope Sent	Hashed/Encrypted	12/5/2023 1:28:56 PM
Certified Delivered	Security Checked	12/5/2023 1:35:12 PM
Signing Complete	Security Checked	12/5/2023 1:35:18 PM
Completed	Security Checked	12/5/2023 1:35:18 PM

Payment Events	Status	Timestamps