

**Appendix A**

**Photographs**





**Photograph 1. Outfall SWM01 (1040-3), Ridgemont Drive.**



**Photograph 2. Outfall SWM02 (847-1), Home Depot on Abbott Road.**



**Photograph 3. Outfall SWM03 (1224-1), Fairweather Loop off Sylvan Drive.**



**Photograph 4. Outfall SWM04 (1224-2), Fairweather Loop off Sylvan Drive.**



**Photograph 5. Outfall SWM05 (207-1), East 56<sup>th</sup> Avenue at Save School.**



**Photograph 6. Outfall SWM06 (314-22), Maplewood Street off of Northern Lights Boulevard.**



**Photograph 7. Outfall SWM07 (484-1), New Seward Highway at Chester Creek.**



**Photograph 8. Outfall SWM08 (86-1), New Seward Highway at Chester Creek.**



**Photograph 9. Outfall SWM09 (499-1), Anchorage Football Stadium & Ben Boeke Ice Arena.**



**Photograph 10. Outfall SWM10 (525-2), Eagle Street at Chester Creek.**

## **Appendix B**

### **Laboratory Data Packages & Chain of Custodies**





## **Appendix B1**

### **Laboratory Data Package Storm Event #1**





## Laboratory Report of Analysis

To: Kinnetic Laboratories, Inc.  
704 W 2nd Avenue  
Anchorage, AK 99501  
(907)276-6178

Report Number: **1164486**

Client Project: **5078 MOA Stormwater Management**

Dear Mark Savoie,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Forest at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,  
SGS North America Inc.

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Forest Taylor  
Project Manager  
Forest.Taylor@sgs.com

Date

Print Date: 09/19/2016 10:35:05AM

**Case Narrative**

SGS Client: **Kinnetic Laboratories, Inc.**  
 SGS Project: **1164486**  
 Project Name/Site: **5078 MOA Stormwater Management**  
 Project Contact: **Mark Savoie**

Refer to sample receipt form for information on sample condition.

**SWM02-01 (1164486002) PS**

8270D SIM - PAH surrogate recovery for terphenyl-d14 (55.9%) do not meet QC criteria. Sample analyzed twice with results confirmation.

**SWM02-01 Dup (1164486005) PS**

8270D SIM - PAH surrogate recovery for terphenyl-d14 (51.6%) does not meet DoD control limits. However, this recovery is within SGS in-house control limits.

**SWM05-01 (1164486008) PS**

8270D SIM - PAH surrogate recovery for terphenyl-d14 (32%) do not meet QC criteria.

**SWM07-01 (1164486010) PS**

8270D SIM - PAH surrogate recovery for terphenyl-d14 (23.6%) and 2-fluorobiphenyl (49.5%) do not meet QC criteria.

**SWM09-01 (1164486013) PS**

8270D SIM - PAH surrogate recovery for terphenyl-d14 (40.6%) does not meet DoD control limits. However, this recovery is within SGS in-house control limits.

**SWM02-01 MS (1164486003) BMS**

8270D SIM - PAH BMS recovery for several analytes does not meet QC criteria. Refer to the LCS for accuracy requirements.  
 8270D SIM - PAH surrogate recovery for terphenyl-d14 (49%) do not meet QC criteria. Sample analyzed twice with results confirmation.

**SWM02-01 MSD (1164486004) BMSD**

8270D SIM - PAH BMSD recovery for several analytes does not meet QC criteria. Refer to the LCS for accuracy requirements.  
 8270D SIM - PAH BMSD RPD for several analytes does not meet QC criteria. Results for this analyte are considered estimated in the parent sample.  
 8270D SIM - PAH surrogate recovery for terphenyl-d14 (40.2%) and 2-fluorobiphenyl (48.4%) do not meet QC criteria. Sample analyzed twice with results confirmation.

**1164512001DUP (1343357) DUP**

2540D - Total Suspended Solids - Sample duplicate RPD was outside of acceptance limits. Sample and duplicate reanalyzed for confirmation with valid QC. Results confirmed that sample is non homogeneous. Refer to LCS/LCSD RPD for batch precision.

**1168399001DUP (1343382) DUP**

2540D - Total Suspended Solids - Sample duplicate RPD was outside of acceptance limits. Sample and duplicate reanalyzed for confirmation with valid QC. Results confirmed that sample is non homogeneous. Refer to LCS/LCSD RPD for batch precision.

**LCS for HBN 1741317 [VXX/29314 (1343747) LCS**

8260B - LCS recovery for 1,1,2-Trichloroethane (122%) and 1,3- Dichloropropane (121%) was outside of QC criteria. These analytes were not detected above the LOQ in the associated samples.

**LCSD for HBN 1741317 [VXX/2931 (1343748) LCSD**

8260B - LCSD recovery for several analytes was outside of QC criteria. These analytes were not detected above the LOQ in the associated samples.

### Case Narrative

SGS Client: **Kinnetic Laboratories, Inc.**  
SGS Project: **1164486**  
Project Name/Site: **5078 MOA Stormwater Management**  
Project Contact: **Mark Savoie**

#### **1164486002MS (1343508) MS**

8270D SIM - PAH MS recovery for several analytes does not meet QC criteria. Refer to the LCS for accuracy requirements.

8270D SIM - PAH surrogate recovery for terphenyl-d14 (49%) do not meet QC criteria. Sample analyzed twice with results confirmation.

#### **1164749001(1345209MS) (1345210) MS**

200.8 - Metals MS recovery for calcium (60%) does not meet QC criteria. Sample concentration is 4 times greater than the spike level.

#### **1164486002MSD (1343509) MSD**

8270D SIM - PAH MSD recovery for several analytes does not meet QC criteria. Refer to the LCS for accuracy requirements.

8270D SIM - PAH MSD RPD for several analytes does not meet QC criteria. Results for this analyte are considered estimated in the parent sample.

8270D SIM - PAH surrogate recovery for terphenyl-d14 (40.2%) and 2-fluorobiphenyl (48.4%) do not meet QC criteria. Sample analyzed twice with results confirmation.

\*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

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### Report of Manual Integrations

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Analytical Batch</u>	<u>Analyte</u>	<u>Reason</u>
<b>EPA 625M SIM (PAH)</b>				
1164486002	SWM02-01	XMS9560	Benzo(a)Anthracene	RP
1164486002	SWM02-01	XMS9560	Benzo[k]fluoranthene	RP
1164486005	SWM02-01 Dup	XMS9560	Benzo(a)Anthracene	RP
1164486005	SWM02-01 Dup	XMS9560	Benzo[k]fluoranthene	RP
1164486008	SWM05-01	XMS9560	Chrysene	SP
1164486010	SWM07-01	XMS9560	Chrysene	BLC

#### Manual Integration Reason Code Descriptions

Code	Description
O	Original Chromatogram
M	Modified Chromatogram
SS	Skimmed surrogate
BLG	Closed baseline gap
RP	Reassign peak name
PIR	Pattern integration required
IT	Included tail
SP	Split peak
RSP	Removed split peak
FPS	Forced peak start/stop
BLC	Baseline correction
PNF	Peak not found by software

All DRO/RRO analysis are integrated per SOP.

## Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8021B, 8082A, 8260B, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
D	The analyte concentration is the result of a dilution.
DF	Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
F	Indicates value that is greater than or equal to the DL
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
JL	The analyte was positively identified, but the quantitation is a low estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
M	A matrix effect was present.
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
Q	QC parameter out of acceptance range.
R	Rejected
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

**Note:** Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.



### Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
SWM01-01	1164486001	08/04/2016	08/04/2016	Water (Surface, Eff., Ground)
SWM02-01	1164486002	08/04/2016	08/04/2016	Water (Surface, Eff., Ground)
SWM02-01 MS	1164486003	08/04/2016	08/04/2016	Water (Surface, Eff., Ground)
SWM02-01 MSD	1164486004	08/04/2016	08/04/2016	Water (Surface, Eff., Ground)
SWM02-01 Dup	1164486005	08/04/2016	08/04/2016	Water (Surface, Eff., Ground)
SWM03-01	1164486006	08/04/2016	08/04/2016	Water (Surface, Eff., Ground)
SWM04-01	1164486007	08/04/2016	08/04/2016	Water (Surface, Eff., Ground)
SWM05-01	1164486008	08/04/2016	08/04/2016	Water (Surface, Eff., Ground)
SWM06-01	1164486009	08/04/2016	08/04/2016	Water (Surface, Eff., Ground)
SWM07-01	1164486010	08/04/2016	08/04/2016	Water (Surface, Eff., Ground)
SWM08-01	1164486011	08/04/2016	08/04/2016	Water (Surface, Eff., Ground)
SWM08-01 Dup	1164486012	08/04/2016	08/04/2016	Water (Surface, Eff., Ground)
SWM09-01	1164486013	08/04/2016	08/04/2016	Water (Surface, Eff., Ground)
SWM10-01	1164486014	08/04/2016	08/04/2016	Water (Surface, Eff., Ground)
SWM01-01	1164486015	08/04/2016	08/04/2016	Water (Surface, Eff., Ground)
SWM02-01	1164486016	08/04/2016	08/04/2016	Water (Surface, Eff., Ground)
SWM02-01 Dup	1164486017	08/04/2016	08/04/2016	Water (Surface, Eff., Ground)
SWM03-01	1164486018	08/04/2016	08/04/2016	Water (Surface, Eff., Ground)
SWM04-01	1164486019	08/04/2016	08/04/2016	Water (Surface, Eff., Ground)
SWM05-01	1164486020	08/04/2016	08/04/2016	Water (Surface, Eff., Ground)
SWM06-01	1164486021	08/04/2016	08/04/2016	Water (Surface, Eff., Ground)
SWM07-01	1164486022	08/04/2016	08/04/2016	Water (Surface, Eff., Ground)
SWM08-01	1164486023	08/04/2016	08/04/2016	Water (Surface, Eff., Ground)
SWM08-01 Dup	1164486024	08/04/2016	08/04/2016	Water (Surface, Eff., Ground)
SWM09-01	1164486025	08/04/2016	08/04/2016	Water (Surface, Eff., Ground)
SWM10-01	1164486026	08/04/2016	08/04/2016	Water (Surface, Eff., Ground)
Trip Blank	1164486027	08/04/2016	08/04/2016	Water (Surface, Eff., Ground)

<u>Method</u>	<u>Method Description</u>
EPA 602/624	602 Aromatics by 624 (W)
EPA 625M SIM (PAH)	625 Semi-Volatiles GC/MS Liq/Liq ext.
SM21 5210B	Biochemical Oxygen Demand SM21 5210B
SM21 9222D	Fecal Coliform (MF)
SM21 2340B	Hardness as CaCO3 by ICP-MS
EP200.8	Metals in Drinking Water by ICP-MS DISSO
EP200.8	Metals in Water by 200.8 ICP-MS
SM21 2540D	Total Suspended Solids SM20 2540D

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### Detectable Results Summary

Client Sample ID: **SWM01-01**

Lab Sample ID: 1164486001

**Metals by ICP/MS**

Parameter	Result	Units
Calcium	6510	ug/L
Hardness as CaCO3	20.5	mg/L
Magnesium	1030	ug/L
Biochemical Oxygen Demand	5.83	mg/L
Fecal Coliform	1900	col/100mL
Total Suspended Solids	12.2	mg/L

**Microbiology Laboratory**

**Waters Department**

Client Sample ID: **SWM02-01**

Lab Sample ID: 1164486002

**Metals by ICP/MS**

Parameter	Result	Units
Calcium	14500	ug/L
Hardness as CaCO3	46.8	mg/L
Magnesium	2540	ug/L
Fecal Coliform	118	col/100mL
Benzo[a]pyrene	0.0245	ug/L
Benzo[b]Fluoranthene	0.0937	ug/L
Chrysene	0.0948	ug/L
Fluoranthene	0.130	ug/L
Pyrene	0.0975	ug/L
Total Suspended Solids	14.2	mg/L

**Microbiology Laboratory**

**Polynuclear Aromatics GC/MS**

**Waters Department**

Client Sample ID: **SWM02-01 Dup**

Lab Sample ID: 1164486005

**Metals by ICP/MS**

Parameter	Result	Units
Calcium	15000	ug/L
Hardness as CaCO3	48.4	mg/L
Magnesium	2680	ug/L
Fecal Coliform	128	col/100mL
Benzo[a]pyrene	0.0247	ug/L
Benzo[b]Fluoranthene	0.0912	ug/L
Chrysene	0.0900	ug/L
Fluoranthene	0.122	ug/L
Pyrene	0.0912	ug/L
Total Suspended Solids	10.8	mg/L

**Microbiology Laboratory**

**Polynuclear Aromatics GC/MS**

**Waters Department**

Client Sample ID: **SWM03-01**

Lab Sample ID: 1164486006

**Metals by ICP/MS**

Parameter	Result	Units
Calcium	13100	ug/L
Hardness as CaCO3	53.4	mg/L
Magnesium	5000	ug/L
Fecal Coliform	330	col/100mL
Total Suspended Solids	4.06	mg/L

**Microbiology Laboratory**

**Waters Department**

### Detectable Results Summary

Client Sample ID: **SWM04-01**

Lab Sample ID: 1164486007

**Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Calcium	8130	ug/L
Hardness as CaCO3	29.9	mg/L
Magnesium	2340	ug/L

**Microbiology Laboratory**

Biochemical Oxygen Demand	2.17	mg/L
Fecal Coliform	4100	col/100mL

**Waters Department**

Total Suspended Solids	9.64	mg/L
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Client Sample ID: **SWM05-01**

Lab Sample ID: 1164486008

**Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Calcium	11800	ug/L
Hardness as CaCO3	42.4	mg/L
Magnesium	3140	ug/L

**Microbiology Laboratory**

Biochemical Oxygen Demand	4.11	mg/L
Fecal Coliform	13000	col/100mL

**Waters Department**

Total Suspended Solids	21.6	mg/L
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Client Sample ID: **SWM06-01**

Lab Sample ID: 1164486009

**Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Calcium	7900	ug/L
Hardness as CaCO3	28.8	mg/L
Magnesium	2190	ug/L

**Microbiology Laboratory**

Biochemical Oxygen Demand	2.26	mg/L
Fecal Coliform	34200	col/100mL

**Waters Department**

Total Suspended Solids	11.6	mg/L
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Client Sample ID: **SWM07-01**

Lab Sample ID: 1164486010

**Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Calcium	5970	ug/L
Hardness as CaCO3	19.8	mg/L
Magnesium	1200	ug/L

**Microbiology Laboratory**

Biochemical Oxygen Demand	3.95	mg/L
Fecal Coliform	3900	col/100mL

**Waters Department**

Total Suspended Solids	14.2	mg/L
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Client Sample ID: **SWM08-01**

Lab Sample ID: 1164486011

**Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Calcium	9860	ug/L
Hardness as CaCO3	33.5	mg/L
Magnesium	2150	ug/L

**Microbiology Laboratory**

Biochemical Oxygen Demand	2.38	mg/L
Fecal Coliform	4100	col/100mL

**Waters Department**

Total Suspended Solids	9.37	mg/L
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### Detectable Results Summary

Client Sample ID: **SWM08-01 Dup**

Lab Sample ID: 1164486012

**Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Calcium	9880	ug/L
Hardness as CaCO3	33.3	mg/L
Magnesium	2100	ug/L

**Microbiology Laboratory**

Biochemical Oxygen Demand	2.53	mg/L
Fecal Coliform	3500	col/100mL
Total Suspended Solids	11.3	mg/L

**Waters Department**

Client Sample ID: **SWM09-01**

Lab Sample ID: 1164486013

**Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Calcium	18400	ug/L
Hardness as CaCO3	62.7	mg/L
Magnesium	4090	ug/L

**Microbiology Laboratory**

Biochemical Oxygen Demand	2.70	mg/L
Fecal Coliform	7300	col/100mL

**Polynuclear Aromatics GC/MS**

**Waters Department**

Fluoranthene	0.0749	ug/L
Total Suspended Solids	28.0	mg/L

Client Sample ID: **SWM10-01**

Lab Sample ID: 1164486014

**Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Calcium	23500	ug/L
Hardness as CaCO3	81.8	mg/L
Magnesium	5650	ug/L

**Microbiology Laboratory**

**Waters Department**

Fecal Coliform	230	col/100mL
Total Suspended Solids	2.33	mg/L

Client Sample ID: **SWM01-01**

Lab Sample ID: 1164486015

**Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Copper	6.25	ug/L

Client Sample ID: **SWM02-01**

Lab Sample ID: 1164486016

**Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Copper	3.35	ug/L

Client Sample ID: **SWM02-01 Dup**

Lab Sample ID: 1164486017

**Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Copper	3.20	ug/L

Client Sample ID: **SWM03-01**

Lab Sample ID: 1164486018

**Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Copper	2.57	ug/L

Client Sample ID: **SWM04-01**

Lab Sample ID: 1164486019

**Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Copper	4.05	ug/L

Client Sample ID: **SWM05-01**

Lab Sample ID: 1164486020

**Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Copper	9.98	ug/L

### Detectable Results Summary

Client Sample ID: <b>SWM06-01</b>			
Lab Sample ID: 1164486021	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Dissolved Metals by ICP/MS</b>	Copper	4.53	ug/L
Client Sample ID: <b>SWM07-01</b>			
Lab Sample ID: 1164486022	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Dissolved Metals by ICP/MS</b>	Copper	10.5	ug/L
Client Sample ID: <b>SWM08-01</b>			
Lab Sample ID: 1164486023	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Dissolved Metals by ICP/MS</b>	Copper	3.95	ug/L
Client Sample ID: <b>SWM08-01 Dup</b>			
Lab Sample ID: 1164486024	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Dissolved Metals by ICP/MS</b>	Copper	5.28	ug/L
Client Sample ID: <b>SWM09-01</b>			
Lab Sample ID: 1164486025	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Dissolved Metals by ICP/MS</b>	Copper	2.75	ug/L
Client Sample ID: <b>SWM10-01</b>			
Lab Sample ID: 1164486026	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Dissolved Metals by ICP/MS</b>	Copper	1.13	ug/L

Print Date: 09/19/2016 10:35:11AM



Results of **SWM01-01**

Client Sample ID: **SWM01-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164486001  
Lab Project ID: 1164486

Collection Date: 08/04/16 12:50  
Received Date: 08/04/16 16:53  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Calcium	6510	500	150	ug/L	1		08/18/16 18:25
Magnesium	1030	50.0	15.0	ug/L	1		08/18/16 18:25

**Batch Information**

Analytical Batch: MMS9497  
Analytical Method: EP200.8  
Analyst: EAB  
Analytical Date/Time: 08/18/16 18:25  
Container ID: 1164486001-B

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Hardness as CaCO3	20.5	5.00	5.00	mg/L	1		08/18/16 18:25

**Batch Information**

Analytical Batch: MMS9497  
Analytical Method: SM21 2340B  
Analyst: EAB  
Analytical Date/Time: 08/18/16 18:25  
Container ID: 1164486001-B

Print Date: 09/19/2016 10:35:13AM



Results of **SWM01-01**

Client Sample ID: **SWM01-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164486001  
Lab Project ID: 1164486

Collection Date: 08/04/16 12:50  
Received Date: 08/04/16 16:53  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	5.83	2.00	2.00	mg/L	1		08/05/16 17:00

**Batch Information**

Analytical Batch: BOD5518  
Analytical Method: SM21 5210B  
Analyst: K.W  
Analytical Date/Time: 08/05/16 17:00  
Container ID: 1164486001-D

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	1900	100	100	col/100mL	1		08/04/16 19:21

**Batch Information**

Analytical Batch: BTF15026  
Analytical Method: SM21 9222D  
Analyst: ACF  
Analytical Date/Time: 08/04/16 19:21  
Container ID: 1164486001-A

Print Date: 09/19/2016 10:35:13AM



Results of **SWM01-01**

Client Sample ID: **SWM01-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164486001  
Lab Project ID: 1164486

Collection Date: 08/04/16 12:50  
Received Date: 08/04/16 16:53  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	12.2	2.60	0.805	mg/L	1		08/08/16 12:04

**Batch Information**

Analytical Batch: STS5140  
Analytical Method: SM21 2540D  
Analyst: LLP  
Analytical Date/Time: 08/08/16 12:04  
Container ID: 1164486001-C

Print Date: 09/19/2016 10:35:13AM





Results of **SWM02-01**

Client Sample ID: **SWM02-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164486002  
Lab Project ID: 1164486

Collection Date: 08/04/16 13:16  
Received Date: 08/04/16 16:53  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Calcium	14500	500	150	ug/L	1		08/18/16 18:28
Magnesium	2540	50.0	15.0	ug/L	1		08/18/16 18:28

**Batch Information**

Analytical Batch: MMS9497  
Analytical Method: EP200.8  
Analyst: EAB  
Analytical Date/Time: 08/18/16 18:28  
Container ID: 1164486002-G

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Hardness as CaCO3	46.8	5.00	5.00	mg/L	1		08/18/16 18:28

**Batch Information**

Analytical Batch: MMS9497  
Analytical Method: SM21 2340B  
Analyst: EAB  
Analytical Date/Time: 08/18/16 18:28  
Container ID: 1164486002-G

Print Date: 09/19/2016 10:35:13AM



Results of **SWM02-01**

Client Sample ID: **SWM02-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164486002  
Lab Project ID: 1164486

Collection Date: 08/04/16 13:16  
Received Date: 08/04/16 16:53  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		08/05/16 17:00

**Batch Information**

Analytical Batch: BOD5518  
Analytical Method: SM21 5210B  
Analyst: K.W  
Analytical Date/Time: 08/05/16 17:00  
Container ID: 1164486002-I

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	118	2.00	2.00	col/100mL	1		08/04/16 19:21

**Batch Information**

Analytical Batch: BTF15026  
Analytical Method: SM21 9222D  
Analyst: ACF  
Analytical Date/Time: 08/04/16 19:21  
Container ID: 1164486002-A

Print Date: 09/19/2016 10:35:13AM



### Results of SWM02-01

Client Sample ID: **SWM02-01**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1164486002  
 Lab Project ID: 1164486

Collection Date: 08/04/16 13:16  
 Received Date: 08/04/16 16:53  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

### Results by Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0538 U	0.0538	0.0161	ug/L	1		08/22/16 18:49
Acenaphthylene	0.0538 U	0.0538	0.0161	ug/L	1		08/22/16 18:49
Anthracene	0.0538 U	0.0538	0.0161	ug/L	1		08/22/16 18:49
Benzo(a)Anthracene	0.0538 U	0.0538	0.0161	ug/L	1		08/22/16 18:49
Benzo[a]pyrene	0.0245	0.0215	0.0161	ug/L	1		08/22/16 18:49
Benzo[b]Fluoranthene	0.0937	0.0538	0.0161	ug/L	1		08/22/16 18:49
Benzo[g,h,i]perylene	0.0538 U	0.0538	0.0161	ug/L	1		08/22/16 18:49
Benzo[k]fluoranthene	0.0538 U	0.0538	0.0161	ug/L	1		08/22/16 18:49
Chrysene	0.0948	0.0538	0.0161	ug/L	1		08/22/16 18:49
Dibenzo[a,h]anthracene	0.0215 U	0.0215	0.0161	ug/L	1		08/22/16 18:49
Fluoranthene	0.130	0.0538	0.0161	ug/L	1		08/22/16 18:49
Fluorene	0.0538 U	0.0538	0.0161	ug/L	1		08/22/16 18:49
Indeno[1,2,3-c,d] pyrene	0.0538 U	0.0538	0.0161	ug/L	1		08/22/16 18:49
Naphthalene	0.108 U	0.108	0.0333	ug/L	1		08/22/16 18:49
Phenanthrene	0.0538 U	0.0538	0.0161	ug/L	1		08/22/16 18:49
Pyrene	0.0975	0.0538	0.0161	ug/L	1		08/22/16 18:49
<b>Surrogates</b>							
2-Fluorobiphenyl (surr)	67.6	53-106		%	1		08/22/16 18:49
Terphenyl-d14 (surr)	55.9 *	58-132		%	1		08/22/16 18:49

### Batch Information

Analytical Batch: XMS9560  
 Analytical Method: EPA 625M SIM (PAH)  
 Analyst: BRV  
 Analytical Date/Time: 08/22/16 18:49  
 Container ID: 1164486002-E

Print Date: 09/19/2016 10:35:13AM



Results of **SWM02-01**

Client Sample ID: **SWM02-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164486002  
Lab Project ID: 1164486

Collection Date: 08/04/16 13:16  
Received Date: 08/04/16 16:53  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/05/16 20:05
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/05/16 20:05
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/05/16 20:05
Benzene	0.400 U	0.400	0.120	ug/L	1		08/05/16 20:05
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/05/16 20:05
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		08/05/16 20:05
o-Xylene	1.00 U	1.00	0.310	ug/L	1		08/05/16 20:05
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		08/05/16 20:05
Toluene	1.00 U	1.00	0.310	ug/L	1		08/05/16 20:05
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	106	81-118		%	1		08/05/16 20:05
4-Bromofluorobenzene (surr)	104	85-114		%	1		08/05/16 20:05
Toluene-d8 (surr)	102	89-112		%	1		08/05/16 20:05

**Batch Information**

Analytical Batch: VMS16050  
Analytical Method: EPA 602/624  
Analyst: TJT  
Analytical Date/Time: 08/05/16 20:05  
Container ID: 1164486002-B

Print Date: 09/19/2016 10:35:13AM



**Results of SWM02-01**

Client Sample ID: **SWM02-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164486002  
Lab Project ID: 1164486

Collection Date: 08/04/16 13:16  
Received Date: 08/04/16 16:53  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	14.2	1.69	0.525	mg/L	1		08/08/16 12:04

**Batch Information**

Analytical Batch: STS5140  
Analytical Method: SM21 2540D  
Analyst: LLP  
Analytical Date/Time: 08/08/16 12:04  
Container ID: 1164486002-H

Print Date: 09/19/2016 10:35:13AM



**Results of SWM02-01 Dup**

Client Sample ID: **SWM02-01 Dup**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164486005  
Lab Project ID: 1164486

Collection Date: 08/04/16 13:16  
Received Date: 08/04/16 16:53  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Calcium	15000	500	150	ug/L	1		08/18/16 18:22
Magnesium	2680	50.0	15.0	ug/L	1		08/18/16 18:22

**Batch Information**

Analytical Batch: MMS9497  
Analytical Method: EP200.8  
Analyst: EAB  
Analytical Date/Time: 08/18/16 18:22  
Container ID: 1164486005-G

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Hardness as CaCO3	48.4	5.00	5.00	mg/L	1		08/18/16 18:22

**Batch Information**

Analytical Batch: MMS9497  
Analytical Method: SM21 2340B  
Analyst: EAB  
Analytical Date/Time: 08/18/16 18:22  
Container ID: 1164486005-G

Print Date: 09/19/2016 10:35:13AM



**Results of SWM02-01 Dup**

Client Sample ID: **SWM02-01 Dup**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164486005  
Lab Project ID: 1164486

Collection Date: 08/04/16 13:16  
Received Date: 08/04/16 16:53  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		08/05/16 17:00

**Batch Information**

Analytical Batch: BOD5518  
Analytical Method: SM21 5210B  
Analyst: K.W  
Analytical Date/Time: 08/05/16 17:00  
Container ID: 1164486005-I

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	128	1.67	1.67	col/100mL	1		08/04/16 19:21

**Batch Information**

Analytical Batch: BTF15026  
Analytical Method: SM21 9222D  
Analyst: ACF  
Analytical Date/Time: 08/04/16 19:21  
Container ID: 1164486005-A

Print Date: 09/19/2016 10:35:13AM



### Results of SWM02-01 Dup

Client Sample ID: **SWM02-01 Dup**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1164486005  
 Lab Project ID: 1164486

Collection Date: 08/04/16 13:16  
 Received Date: 08/04/16 16:53  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

### Results by Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0532 U	0.0532	0.0160	ug/L	1		08/22/16 19:56
Acenaphthylene	0.0532 U	0.0532	0.0160	ug/L	1		08/22/16 19:56
Anthracene	0.0532 U	0.0532	0.0160	ug/L	1		08/22/16 19:56
Benzo(a)Anthracene	0.0532 U	0.0532	0.0160	ug/L	1		08/22/16 19:56
Benzo[a]pyrene	0.0247	0.0213	0.0160	ug/L	1		08/22/16 19:56
Benzo[b]Fluoranthene	0.0912	0.0532	0.0160	ug/L	1		08/22/16 19:56
Benzo[g,h,i]perylene	0.0532 U	0.0532	0.0160	ug/L	1		08/22/16 19:56
Benzo[k]fluoranthene	0.0532 U	0.0532	0.0160	ug/L	1		08/22/16 19:56
Chrysene	0.0900	0.0532	0.0160	ug/L	1		08/22/16 19:56
Dibenzo[a,h]anthracene	0.0213 U	0.0213	0.0160	ug/L	1		08/22/16 19:56
Fluoranthene	0.122	0.0532	0.0160	ug/L	1		08/22/16 19:56
Fluorene	0.0532 U	0.0532	0.0160	ug/L	1		08/22/16 19:56
Indeno[1,2,3-c,d] pyrene	0.0532 U	0.0532	0.0160	ug/L	1		08/22/16 19:56
Naphthalene	0.106 U	0.106	0.0330	ug/L	1		08/22/16 19:56
Phenanthrene	0.0532 U	0.0532	0.0160	ug/L	1		08/22/16 19:56
Pyrene	0.0912	0.0532	0.0160	ug/L	1		08/22/16 19:56
<b>Surrogates</b>							
2-Fluorobiphenyl (surr)	61.6	53-106		%	1		08/22/16 19:56
Terphenyl-d14 (surr)	51.6 *	58-132		%	1		08/22/16 19:56

### Batch Information

Analytical Batch: XMS9560  
 Analytical Method: EPA 625M SIM (PAH)  
 Analyst: BRV  
 Analytical Date/Time: 08/22/16 19:56  
 Container ID: 1164486005-E

Print Date: 09/19/2016 10:35:13AM





Results of SWM02-01 Dup

Client Sample ID: SWM02-01 Dup
Client Project ID: 5078 MOA Stormwater Management
Lab Sample ID: 1164486005
Lab Project ID: 1164486

Collection Date: 08/04/16 13:16
Received Date: 08/04/16 16:53
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, Benzene, Chlorobenzene, Ethylbenzene, o-Xylene, P & M -Xylene, Toluene, and Surrogates (1,2-Dichloroethane-D4, 4-Bromofluorobenzene, Toluene-d8).

Batch Information

Analytical Batch: VMS16055
Analytical Method: EPA 602/624
Analyst: TJT
Analytical Date/Time: 08/08/16 15:54
Container ID: 1164486005-C



**Results of SWM02-01 Dup**

Client Sample ID: **SWM02-01 Dup**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164486005  
Lab Project ID: 1164486

Collection Date: 08/04/16 13:16  
Received Date: 08/04/16 16:53  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	10.8	2.78	0.861	mg/L	1		08/08/16 12:04

**Batch Information**

Analytical Batch: STS5140  
Analytical Method: SM21 2540D  
Analyst: LLP  
Analytical Date/Time: 08/08/16 12:04  
Container ID: 1164486005-H

Print Date: 09/19/2016 10:35:13AM



Results of **SWM03-01**

Client Sample ID: **SWM03-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164486006  
Lab Project ID: 1164486

Collection Date: 08/04/16 14:20  
Received Date: 08/04/16 16:53  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Calcium	13100	500	150	ug/L	1		08/18/16 18:16
Magnesium	5000	50.0	15.0	ug/L	1		08/18/16 18:16

**Batch Information**

Analytical Batch: MMS9497  
Analytical Method: EP200.8  
Analyst: EAB  
Analytical Date/Time: 08/18/16 18:16  
Container ID: 1164486006-B

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Hardness as CaCO3	53.4	5.00	5.00	mg/L	1		08/18/16 18:16

**Batch Information**

Analytical Batch: MMS9497  
Analytical Method: SM21 2340B  
Analyst: EAB  
Analytical Date/Time: 08/18/16 18:16  
Container ID: 1164486006-B

Print Date: 09/19/2016 10:35:13AM



Results of **SWM03-01**

Client Sample ID: **SWM03-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164486006  
Lab Project ID: 1164486

Collection Date: 08/04/16 14:20  
Received Date: 08/04/16 16:53  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		08/05/16 17:00

**Batch Information**

Analytical Batch: BOD5518  
Analytical Method: SM21 5210B  
Analyst: K.W  
Analytical Date/Time: 08/05/16 17:00  
Container ID: 1164486006-D

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	330	10.0	10.0	col/100mL	1		08/04/16 19:21

**Batch Information**

Analytical Batch: BTF15026  
Analytical Method: SM21 9222D  
Analyst: ACF  
Analytical Date/Time: 08/04/16 19:21  
Container ID: 1164486006-A

Print Date: 09/19/2016 10:35:13AM

## Results of SWM03-01

Client Sample ID: **SWM03-01**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1164486006  
 Lab Project ID: 1164486

Collection Date: 08/04/16 14:20  
 Received Date: 08/04/16 16:53  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

## Results by Waters Department

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	4.06	1.56	0.484	mg/L	1		08/08/16 12:04

## Batch Information

Analytical Batch: STS5140  
 Analytical Method: SM21 2540D  
 Analyst: LLP  
 Analytical Date/Time: 08/08/16 12:04  
 Container ID: 1164486006-C

Print Date: 09/19/2016 10:35:13AM



Results of **SWM04-01**

Client Sample ID: **SWM04-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164486007  
Lab Project ID: 1164486

Collection Date: 08/04/16 14:27  
Received Date: 08/04/16 16:53  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Calcium	8130	500	150	ug/L	1		08/18/16 17:46
Magnesium	2340	50.0	15.0	ug/L	1		08/18/16 17:46

**Batch Information**

Analytical Batch: MMS9497  
Analytical Method: EP200.8  
Analyst: EAB  
Analytical Date/Time: 08/18/16 17:46  
Container ID: 1164486007-B

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Hardness as CaCO3	29.9	5.00	5.00	mg/L	1		08/18/16 17:46

**Batch Information**

Analytical Batch: MMS9497  
Analytical Method: SM21 2340B  
Analyst: EAB  
Analytical Date/Time: 08/18/16 17:46  
Container ID: 1164486007-B

Print Date: 09/19/2016 10:35:13AM



Results of **SWM04-01**

Client Sample ID: **SWM04-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164486007  
Lab Project ID: 1164486

Collection Date: 08/04/16 14:27  
Received Date: 08/04/16 16:53  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.17	2.00	2.00	mg/L	1		08/05/16 17:00

**Batch Information**

Analytical Batch: BOD5518  
Analytical Method: SM21 5210B  
Analyst: K.W  
Analytical Date/Time: 08/05/16 17:00  
Container ID: 1164486007-D

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	4100	100	100	col/100mL	1		08/04/16 19:21

**Batch Information**

Analytical Batch: BTF15026  
Analytical Method: SM21 9222D  
Analyst: ACF  
Analytical Date/Time: 08/04/16 19:21  
Container ID: 1164486007-A

Print Date: 09/19/2016 10:35:13AM



Results of **SWM04-01**

Client Sample ID: **SWM04-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164486007  
Lab Project ID: 1164486

Collection Date: 08/04/16 14:27  
Received Date: 08/04/16 16:53  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	9.64	1.82	0.564	mg/L	1		08/08/16 12:04

**Batch Information**

Analytical Batch: STS5140  
Analytical Method: SM21 2540D  
Analyst: LLP  
Analytical Date/Time: 08/08/16 12:04  
Container ID: 1164486007-C

Print Date: 09/19/2016 10:35:13AM





Results of **SWM05-01**

Client Sample ID: **SWM05-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164486008  
Lab Project ID: 1164486

Collection Date: 08/04/16 14:44  
Received Date: 08/04/16 16:53  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Calcium	11800	500	150	ug/L	1		08/18/16 18:01
Magnesium	3140	50.0	15.0	ug/L	1		08/18/16 18:01

**Batch Information**

Analytical Batch: MMS9497  
Analytical Method: EP200.8  
Analyst: EAB  
Analytical Date/Time: 08/18/16 18:01  
Container ID: 1164486008-G

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Hardness as CaCO3	42.4	5.00	5.00	mg/L	1		08/18/16 18:01

**Batch Information**

Analytical Batch: MMS9497  
Analytical Method: SM21 2340B  
Analyst: EAB  
Analytical Date/Time: 08/18/16 18:01  
Container ID: 1164486008-G

Print Date: 09/19/2016 10:35:13AM



Results of **SWM05-01**

Client Sample ID: **SWM05-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164486008  
Lab Project ID: 1164486

Collection Date: 08/04/16 14:44  
Received Date: 08/04/16 16:53  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	4.11	2.00	2.00	mg/L	1		08/05/16 17:00

**Batch Information**

Analytical Batch: BOD5518  
Analytical Method: SM21 5210B  
Analyst: K.W  
Analytical Date/Time: 08/05/16 17:00  
Container ID: 1164486008-I

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	13000	100	100	col/100mL	1		08/04/16 19:21

**Batch Information**

Analytical Batch: BTF15026  
Analytical Method: SM21 9222D  
Analyst: ACF  
Analytical Date/Time: 08/04/16 19:21  
Container ID: 1164486008-A

Print Date: 09/19/2016 10:35:13AM



Results of **SWM05-01**

Client Sample ID: **SWM05-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164486008  
Lab Project ID: 1164486

Collection Date: 08/04/16 14:44  
Received Date: 08/04/16 16:53  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0515 U	0.0515	0.0155	ug/L	1		08/22/16 20:19
Acenaphthylene	0.0515 U	0.0515	0.0155	ug/L	1		08/22/16 20:19
Anthracene	0.0515 U	0.0515	0.0155	ug/L	1		08/22/16 20:19
Benzo(a)Anthracene	0.0515 U	0.0515	0.0155	ug/L	1		08/22/16 20:19
Benzo[a]pyrene	0.0206 U	0.0206	0.0155	ug/L	1		08/22/16 20:19
Benzo[b]Fluoranthene	0.0515 U	0.0515	0.0155	ug/L	1		08/22/16 20:19
Benzo[g,h,i]perylene	0.0515 U	0.0515	0.0155	ug/L	1		08/22/16 20:19
Benzo[k]fluoranthene	0.0515 U	0.0515	0.0155	ug/L	1		08/22/16 20:19
Chrysene	0.0515 U	0.0515	0.0155	ug/L	1		08/22/16 20:19
Dibenzo[a,h]anthracene	0.0206 U	0.0206	0.0155	ug/L	1		08/22/16 20:19
Fluoranthene	0.0515 U	0.0515	0.0155	ug/L	1		08/22/16 20:19
Fluorene	0.0515 U	0.0515	0.0155	ug/L	1		08/22/16 20:19
Indeno[1,2,3-c,d] pyrene	0.0515 U	0.0515	0.0155	ug/L	1		08/22/16 20:19
Naphthalene	0.103 U	0.103	0.0320	ug/L	1		08/22/16 20:19
Phenanthrene	0.0515 U	0.0515	0.0155	ug/L	1		08/22/16 20:19
Pyrene	0.0515 U	0.0515	0.0155	ug/L	1		08/22/16 20:19
<b>Surrogates</b>							
2-Fluorobiphenyl (surr)	58.2	53-106		%	1		08/22/16 20:19
Terphenyl-d14 (surr)	32 *	58-132		%	1		08/22/16 20:19

**Batch Information**

Analytical Batch: XMS9560  
Analytical Method: EPA 625M SIM (PAH)  
Analyst: BRV  
Analytical Date/Time: 08/22/16 20:19  
Container ID: 1164486008-E



Results of **SWM05-01**

Client Sample ID: **SWM05-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164486008  
Lab Project ID: 1164486

Collection Date: 08/04/16 14:44  
Received Date: 08/04/16 16:53  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/08/16 16:11
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/08/16 16:11
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/08/16 16:11
Benzene	0.400 U	0.400	0.120	ug/L	1		08/08/16 16:11
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/08/16 16:11
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		08/08/16 16:11
o-Xylene	1.00 U	1.00	0.310	ug/L	1		08/08/16 16:11
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		08/08/16 16:11
Toluene	1.00 U	1.00	0.310	ug/L	1		08/08/16 16:11
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	100	81-118		%	1		08/08/16 16:11
4-Bromofluorobenzene (surr)	102	85-114		%	1		08/08/16 16:11
Toluene-d8 (surr)	107	89-112		%	1		08/08/16 16:11

**Batch Information**

Analytical Batch: VMS16055  
Analytical Method: EPA 602/624  
Analyst: TJT  
Analytical Date/Time: 08/08/16 16:11  
Container ID: 1164486008-C

## Results of SWM05-01

Client Sample ID: **SWM05-01**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1164486008  
 Lab Project ID: 1164486

Collection Date: 08/04/16 14:44  
 Received Date: 08/04/16 16:53  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

## Results by Waters Department

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	21.6	3.23	1.00	mg/L	1		08/08/16 12:04

## Batch Information

Analytical Batch: STS5140  
 Analytical Method: SM21 2540D  
 Analyst: LLP  
 Analytical Date/Time: 08/08/16 12:04  
 Container ID: 1164486008-H

Print Date: 09/19/2016 10:35:13AM



Results of **SWM06-01**

Client Sample ID: **SWM06-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164486009  
Lab Project ID: 1164486

Collection Date: 08/04/16 15:12  
Received Date: 08/04/16 16:53  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Calcium	7900	500	150	ug/L	1		08/18/16 18:04
Magnesium	2190	50.0	15.0	ug/L	1		08/18/16 18:04

**Batch Information**

Analytical Batch: MMS9497  
Analytical Method: EP200.8  
Analyst: EAB  
Analytical Date/Time: 08/18/16 18:04  
Container ID: 1164486009-B

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Hardness as CaCO3	28.8	5.00	5.00	mg/L	1		08/18/16 18:04

**Batch Information**

Analytical Batch: MMS9497  
Analytical Method: SM21 2340B  
Analyst: EAB  
Analytical Date/Time: 08/18/16 18:04  
Container ID: 1164486009-B

Print Date: 09/19/2016 10:35:13AM



Results of **SWM06-01**

Client Sample ID: **SWM06-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164486009  
Lab Project ID: 1164486

Collection Date: 08/04/16 15:12  
Received Date: 08/04/16 16:53  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.26	2.00	2.00	mg/L	1		08/05/16 17:00

**Batch Information**

Analytical Batch: BOD5518  
Analytical Method: SM21 5210B  
Analyst: K.W  
Analytical Date/Time: 08/05/16 17:00  
Container ID: 1164486009-D

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	34200	100	100	col/100mL	1		08/04/16 19:21

**Batch Information**

Analytical Batch: BTF15026  
Analytical Method: SM21 9222D  
Analyst: ACF  
Analytical Date/Time: 08/04/16 19:21  
Container ID: 1164486009-A

Print Date: 09/19/2016 10:35:13AM

## Results of SWM06-01

Client Sample ID: **SWM06-01**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1164486009  
 Lab Project ID: 1164486

Collection Date: 08/04/16 15:12  
 Received Date: 08/04/16 16:53  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

## Results by Waters Department

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	11.6	2.22	0.689	mg/L	1		08/08/16 12:04

## Batch Information

Analytical Batch: STS5140  
 Analytical Method: SM21 2540D  
 Analyst: LLP  
 Analytical Date/Time: 08/08/16 12:04  
 Container ID: 1164486009-C

Print Date: 09/19/2016 10:35:13AM





Results of **SWM07-01**

Client Sample ID: **SWM07-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164486010  
Lab Project ID: 1164486

Collection Date: 08/04/16 15:32  
Received Date: 08/04/16 16:53  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Calcium	5970	500	150	ug/L	1		08/18/16 17:52
Magnesium	1200	50.0	15.0	ug/L	1		08/18/16 17:52

**Batch Information**

Analytical Batch: MMS9497  
Analytical Method: EP200.8  
Analyst: EAB  
Analytical Date/Time: 08/18/16 17:52  
Container ID: 1164486010-G

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Hardness as CaCO3	19.8	5.00	5.00	mg/L	1		08/18/16 17:52

**Batch Information**

Analytical Batch: MMS9497  
Analytical Method: SM21 2340B  
Analyst: EAB  
Analytical Date/Time: 08/18/16 17:52  
Container ID: 1164486010-G

Print Date: 09/19/2016 10:35:13AM



Results of **SWM07-01**

Client Sample ID: **SWM07-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164486010  
Lab Project ID: 1164486

Collection Date: 08/04/16 15:32  
Received Date: 08/04/16 16:53  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	3.95	2.00	2.00	mg/L	1		08/05/16 17:00

**Batch Information**

Analytical Batch: BOD5518  
Analytical Method: SM21 5210B  
Analyst: K.W  
Analytical Date/Time: 08/05/16 17:00  
Container ID: 1164486010-I

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	3900	100	100	col/100mL	1		08/04/16 19:21

**Batch Information**

Analytical Batch: BTF15026  
Analytical Method: SM21 9222D  
Analyst: ACF  
Analytical Date/Time: 08/04/16 19:21  
Container ID: 1164486010-A

Print Date: 09/19/2016 10:35:13AM



Results of SWM07-01

Client Sample ID: SWM07-01
Client Project ID: 5078 MOA Stormwater Management
Lab Sample ID: 1164486010
Lab Project ID: 1164486

Collection Date: 08/04/16 15:32
Received Date: 08/04/16 16:53
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their detection results.

Batch Information

Analytical Batch: XMS9560
Analytical Method: EPA 625M SIM (PAH)
Analyst: BRV
Analytical Date/Time: 08/22/16 20:41
Container ID: 1164486010-E



Results of **SWM07-01**

Client Sample ID: **SWM07-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164486010  
Lab Project ID: 1164486

Collection Date: 08/04/16 15:32  
Received Date: 08/04/16 16:53  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/05/16 20:55
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/05/16 20:55
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/05/16 20:55
Benzene	0.400 U	0.400	0.120	ug/L	1		08/05/16 20:55
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/05/16 20:55
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		08/05/16 20:55
o-Xylene	1.00 U	1.00	0.310	ug/L	1		08/05/16 20:55
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		08/05/16 20:55
Toluene	1.00 U	1.00	0.310	ug/L	1		08/05/16 20:55
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	106	81-118		%	1		08/05/16 20:55
4-Bromofluorobenzene (surr)	105	85-114		%	1		08/05/16 20:55
Toluene-d8 (surr)	99.8	89-112		%	1		08/05/16 20:55

**Batch Information**

Analytical Batch: VMS16050  
Analytical Method: EPA 602/624  
Analyst: TJT  
Analytical Date/Time: 08/05/16 20:55  
Container ID: 1164486010-B

Print Date: 09/19/2016 10:35:13AM

## Results of SWM07-01

Client Sample ID: **SWM07-01**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1164486010  
 Lab Project ID: 1164486

Collection Date: 08/04/16 15:32  
 Received Date: 08/04/16 16:53  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

## Results by Waters Department

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	14.2	2.63	0.816	mg/L	1		08/08/16 12:04

## Batch Information

Analytical Batch: STS5140  
 Analytical Method: SM21 2540D  
 Analyst: LLP  
 Analytical Date/Time: 08/08/16 12:04  
 Container ID: 1164486010-H

Print Date: 09/19/2016 10:35:13AM



Results of **SWM08-01**

Client Sample ID: **SWM08-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164486011  
Lab Project ID: 1164486

Collection Date: 08/04/16 15:47  
Received Date: 08/04/16 16:53  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Calcium	9860	500	150	ug/L	1		08/18/16 17:43
Magnesium	2150	50.0	15.0	ug/L	1		08/18/16 17:43

**Batch Information**

Analytical Batch: MMS9497  
Analytical Method: EP200.8  
Analyst: EAB  
Analytical Date/Time: 08/18/16 17:43  
Container ID: 1164486011-B

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Hardness as CaCO3	33.5	5.00	5.00	mg/L	1		08/18/16 17:43

**Batch Information**

Analytical Batch: MMS9497  
Analytical Method: SM21 2340B  
Analyst: EAB  
Analytical Date/Time: 08/18/16 17:43  
Container ID: 1164486011-B

Print Date: 09/19/2016 10:35:13AM



Results of **SWM08-01**

Client Sample ID: **SWM08-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164486011  
Lab Project ID: 1164486

Collection Date: 08/04/16 15:47  
Received Date: 08/04/16 16:53  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.38	2.00	2.00	mg/L	1		08/05/16 17:00

**Batch Information**

Analytical Batch: BOD5518  
Analytical Method: SM21 5210B  
Analyst: K.W  
Analytical Date/Time: 08/05/16 17:00  
Container ID: 1164486011-D

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	4100	100	100	col/100mL	1		08/04/16 19:21

**Batch Information**

Analytical Batch: BTF15026  
Analytical Method: SM21 9222D  
Analyst: ACF  
Analytical Date/Time: 08/04/16 19:21  
Container ID: 1164486011-A

Print Date: 09/19/2016 10:35:13AM

## Results of SWM08-01

Client Sample ID: **SWM08-01**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1164486011  
 Lab Project ID: 1164486

Collection Date: 08/04/16 15:47  
 Received Date: 08/04/16 16:53  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

## Results by Waters Department

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	9.37	2.53	0.785	mg/L	1		08/08/16 12:04

## Batch Information

Analytical Batch: STS5140  
 Analytical Method: SM21 2540D  
 Analyst: LLP  
 Analytical Date/Time: 08/08/16 12:04  
 Container ID: 1164486011-C

Print Date: 09/19/2016 10:35:13AM





Results of SWM08-01 Dup

Client Sample ID: SWM08-01 Dup
Client Project ID: 5078 MOA Stormwater Management
Lab Sample ID: 1164486012
Lab Project ID: 1164486

Collection Date: 08/04/16 15:47
Received Date: 08/04/16 16:53
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Metals by ICP/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Calcium and Magnesium.

Batch Information

Analytical Batch: MMS9497
Analytical Method: EP200.8
Analyst: EAB
Analytical Date/Time: 08/18/16 18:19
Container ID: 1164486012-B

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row includes Hardness as CaCO3.

Batch Information

Analytical Batch: MMS9497
Analytical Method: SM21 2340B
Analyst: EAB
Analytical Date/Time: 08/18/16 18:19
Container ID: 1164486012-B

Print Date: 09/19/2016 10:35:13AM



Results of **SWM08-01 Dup**

Client Sample ID: **SWM08-01 Dup**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164486012  
Lab Project ID: 1164486

Collection Date: 08/04/16 15:47  
Received Date: 08/04/16 16:53  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.53	2.00	2.00	mg/L	1		08/05/16 17:00

**Batch Information**

Analytical Batch: BOD5518  
Analytical Method: SM21 5210B  
Analyst: K.W  
Analytical Date/Time: 08/05/16 17:00  
Container ID: 1164486012-D

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	3500	100	100	col/100mL	1		08/04/16 19:21

**Batch Information**

Analytical Batch: BTF15026  
Analytical Method: SM21 9222D  
Analyst: ACF  
Analytical Date/Time: 08/04/16 19:21  
Container ID: 1164486012-A

Print Date: 09/19/2016 10:35:13AM

## Results of SWM08-01 Dup

Client Sample ID: **SWM08-01 Dup**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1164486012  
 Lab Project ID: 1164486

Collection Date: 08/04/16 15:47  
 Received Date: 08/04/16 16:53  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

## Results by Waters Department

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	11.3	3.13	0.969	mg/L	1		08/08/16 12:04

## Batch Information

Analytical Batch: STS5140  
 Analytical Method: SM21 2540D  
 Analyst: LLP  
 Analytical Date/Time: 08/08/16 12:04  
 Container ID: 1164486012-C

Print Date: 09/19/2016 10:35:13AM



Results of **SWM09-01**

Client Sample ID: **SWM09-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164486013  
Lab Project ID: 1164486

Collection Date: 08/04/16 16:11  
Received Date: 08/04/16 16:53  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Calcium	18400	500	150	ug/L	1		08/18/16 17:49
Magnesium	4090	50.0	15.0	ug/L	1		08/18/16 17:49

**Batch Information**

Analytical Batch: MMS9497  
Analytical Method: EP200.8  
Analyst: EAB  
Analytical Date/Time: 08/18/16 17:49  
Container ID: 1164486013-G

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Hardness as CaCO3	62.7	5.00	5.00	mg/L	1		08/18/16 17:49

**Batch Information**

Analytical Batch: MMS9497  
Analytical Method: SM21 2340B  
Analyst: EAB  
Analytical Date/Time: 08/18/16 17:49  
Container ID: 1164486013-G

Print Date: 09/19/2016 10:35:13AM

## Results of SWM09-01

Client Sample ID: **SWM09-01**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1164486013  
 Lab Project ID: 1164486

Collection Date: 08/04/16 16:11  
 Received Date: 08/04/16 16:53  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

## Results by Microbiology Laboratory

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.70	2.00	2.00	mg/L	1		08/05/16 17:00

### Batch Information

Analytical Batch: BOD5518  
 Analytical Method: SM21 5210B  
 Analyst: K.W  
 Analytical Date/Time: 08/05/16 17:00  
 Container ID: 1164486013-I

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	7300	100	100	col/100mL	1		08/04/16 19:21

### Batch Information

Analytical Batch: BTF15026  
 Analytical Method: SM21 9222D  
 Analyst: ACF  
 Analytical Date/Time: 08/04/16 19:21  
 Container ID: 1164486013-A

Print Date: 09/19/2016 10:35:13AM



Results of **SWM09-01**

Client Sample ID: **SWM09-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164486013  
Lab Project ID: 1164486

Collection Date: 08/04/16 16:11  
Received Date: 08/04/16 16:53  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0526 U	0.0526	0.0158	ug/L	1		08/22/16 21:04
Acenaphthylene	0.0526 U	0.0526	0.0158	ug/L	1		08/22/16 21:04
Anthracene	0.0526 U	0.0526	0.0158	ug/L	1		08/22/16 21:04
Benzo(a)Anthracene	0.0526 U	0.0526	0.0158	ug/L	1		08/22/16 21:04
Benzo[a]pyrene	0.0211 U	0.0211	0.0158	ug/L	1		08/22/16 21:04
Benzo[b]Fluoranthene	0.0526 U	0.0526	0.0158	ug/L	1		08/22/16 21:04
Benzo[g,h,i]perylene	0.0526 U	0.0526	0.0158	ug/L	1		08/22/16 21:04
Benzo[k]fluoranthene	0.0526 U	0.0526	0.0158	ug/L	1		08/22/16 21:04
Chrysene	0.0526 U	0.0526	0.0158	ug/L	1		08/22/16 21:04
Dibenzo[a,h]anthracene	0.0211 U	0.0211	0.0158	ug/L	1		08/22/16 21:04
Fluoranthene	0.0749	0.0526	0.0158	ug/L	1		08/22/16 21:04
Fluorene	0.0526 U	0.0526	0.0158	ug/L	1		08/22/16 21:04
Indeno[1,2,3-c,d] pyrene	0.0526 U	0.0526	0.0158	ug/L	1		08/22/16 21:04
Naphthalene	0.105 U	0.105	0.0326	ug/L	1		08/22/16 21:04
Phenanthrene	0.0526 U	0.0526	0.0158	ug/L	1		08/22/16 21:04
Pyrene	0.0526 U	0.0526	0.0158	ug/L	1		08/22/16 21:04
<b>Surrogates</b>							
2-Fluorobiphenyl (surr)	56.2	53-106		%	1		08/22/16 21:04
Terphenyl-d14 (surr)	40.6 *	58-132		%	1		08/22/16 21:04

**Batch Information**

Analytical Batch: XMS9560  
Analytical Method: EPA 625M SIM (PAH)  
Analyst: BRV  
Analytical Date/Time: 08/22/16 21:04  
Container ID: 1164486013-E

Print Date: 09/19/2016 10:35:13AM



Results of **SWM09-01**

Client Sample ID: **SWM09-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164486013  
Lab Project ID: 1164486

Collection Date: 08/04/16 16:11  
Received Date: 08/04/16 16:53  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/05/16 21:11
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/05/16 21:11
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/05/16 21:11
Benzene	0.400 U	0.400	0.120	ug/L	1		08/05/16 21:11
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/05/16 21:11
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		08/05/16 21:11
o-Xylene	1.00 U	1.00	0.310	ug/L	1		08/05/16 21:11
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		08/05/16 21:11
Toluene	1.00 U	1.00	0.310	ug/L	1		08/05/16 21:11
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	106	81-118		%	1		08/05/16 21:11
4-Bromofluorobenzene (surr)	105	85-114		%	1		08/05/16 21:11
Toluene-d8 (surr)	100	89-112		%	1		08/05/16 21:11

**Batch Information**

Analytical Batch: VMS16050  
Analytical Method: EPA 602/624  
Analyst: TJT  
Analytical Date/Time: 08/05/16 21:11  
Container ID: 1164486013-B



**Results of SWM09-01**

Client Sample ID: **SWM09-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164486013  
Lab Project ID: 1164486

Collection Date: 08/04/16 16:11  
Received Date: 08/04/16 16:53  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	28.0	3.33	1.03	mg/L	1		08/08/16 12:04

**Batch Information**

Analytical Batch: STS5140  
Analytical Method: SM21 2540D  
Analyst: LLP  
Analytical Date/Time: 08/08/16 12:04  
Container ID: 1164486013-H

Print Date: 09/19/2016 10:35:13AM





Results of **SWM10-01**

Client Sample ID: **SWM10-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164486014  
Lab Project ID: 1164486

Collection Date: 08/04/16 16:20  
Received Date: 08/04/16 16:53  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Calcium	23500	500	150	ug/L	1		08/18/16 18:13
Magnesium	5650	50.0	15.0	ug/L	1		08/18/16 18:13

**Batch Information**

Analytical Batch: MMS9497  
Analytical Method: EP200.8  
Analyst: EAB  
Analytical Date/Time: 08/18/16 18:13  
Container ID: 1164486014-B

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Hardness as CaCO3	81.8	5.00	5.00	mg/L	1		08/18/16 18:13

**Batch Information**

Analytical Batch: MMS9497  
Analytical Method: SM21 2340B  
Analyst: EAB  
Analytical Date/Time: 08/18/16 18:13  
Container ID: 1164486014-B

Print Date: 09/19/2016 10:35:13AM



Results of **SWM10-01**

Client Sample ID: **SWM10-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164486014  
Lab Project ID: 1164486

Collection Date: 08/04/16 16:20  
Received Date: 08/04/16 16:53  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		08/05/16 17:00

**Batch Information**

Analytical Batch: BOD5518  
Analytical Method: SM21 5210B  
Analyst: K.W  
Analytical Date/Time: 08/05/16 17:00  
Container ID: 1164486014-D

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	230	10.0	10.0	col/100mL	1		08/04/16 19:21

**Batch Information**

Analytical Batch: BTF15026  
Analytical Method: SM21 9222D  
Analyst: ACF  
Analytical Date/Time: 08/04/16 19:21  
Container ID: 1164486014-A

Print Date: 09/19/2016 10:35:13AM

## Results of SWM10-01

Client Sample ID: **SWM10-01**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1164486014  
 Lab Project ID: 1164486

Collection Date: 08/04/16 16:20  
 Received Date: 08/04/16 16:53  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

## Results by Waters Department

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	2.33	1.67	0.517	mg/L	1		08/08/16 12:04

## Batch Information

Analytical Batch: STS5140  
 Analytical Method: SM21 2540D  
 Analyst: LLP  
 Analytical Date/Time: 08/08/16 12:04  
 Container ID: 1164486014-C

Print Date: 09/19/2016 10:35:13AM

## Results of SWM01-01

Client Sample ID: **SWM01-01**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1164486015  
 Lab Project ID: 1164486

Collection Date: 08/04/16 12:50  
 Received Date: 08/04/16 16:53  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

## Results by Dissolved Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	6.25	1.00	0.310	ug/L	1		08/15/16 17:10

## Batch Information

Analytical Batch: MMS9490  
 Analytical Method: EP200.8  
 Analyst: VDL  
 Analytical Date/Time: 08/15/16 17:10  
 Container ID: 1164486015-B

Print Date: 09/19/2016 10:35:13AM



Results of **SWM02-01**

Client Sample ID: **SWM02-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164486016  
Lab Project ID: 1164486

Collection Date: 08/04/16 13:16  
Received Date: 08/04/16 16:53  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	3.35	1.00	0.310	ug/L	1		08/15/16 17:16

**Batch Information**

Analytical Batch: MMS9490  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 08/15/16 17:16  
Container ID: 1164486016-B

Print Date: 09/19/2016 10:35:13AM

## Results of SWM02-01 Dup

Client Sample ID: **SWM02-01 Dup**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1164486017  
 Lab Project ID: 1164486

Collection Date: 08/04/16 13:16  
 Received Date: 08/04/16 16:53  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

## Results by Dissolved Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	3.20	1.00	0.310	ug/L	1		08/15/16 17:19

## Batch Information

Analytical Batch: MMS9490  
 Analytical Method: EP200.8  
 Analyst: VDL  
 Analytical Date/Time: 08/15/16 17:19  
 Container ID: 1164486017-B

Print Date: 09/19/2016 10:35:13AM

## Results of SWM03-01

Client Sample ID: **SWM03-01**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1164486018  
 Lab Project ID: 1164486

Collection Date: 08/04/16 14:20  
 Received Date: 08/04/16 16:53  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

## Results by Dissolved Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	2.57	1.00	0.310	ug/L	1		08/15/16 17:22

## Batch Information

Analytical Batch: MMS9490  
 Analytical Method: EP200.8  
 Analyst: VDL  
 Analytical Date/Time: 08/15/16 17:22  
 Container ID: 1164486018-B

Print Date: 09/19/2016 10:35:13AM

## Results of SWM04-01

Client Sample ID: **SWM04-01**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1164486019  
 Lab Project ID: 1164486

Collection Date: 08/04/16 14:27  
 Received Date: 08/04/16 16:53  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

## Results by Dissolved Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	4.05	1.00	0.310	ug/L	1		08/15/16 17:25

## Batch Information

Analytical Batch: MMS9490  
 Analytical Method: EP200.8  
 Analyst: VDL  
 Analytical Date/Time: 08/15/16 17:25  
 Container ID: 1164486019-B

Print Date: 09/19/2016 10:35:13AM



## Results of SWM05-01

Client Sample ID: **SWM05-01**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1164486020  
 Lab Project ID: 1164486

Collection Date: 08/04/16 14:44  
 Received Date: 08/04/16 16:53  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

## Results by Dissolved Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	9.98	1.00	0.310	ug/L	1		08/15/16 17:28

## Batch Information

Analytical Batch: MMS9490  
 Analytical Method: EP200.8  
 Analyst: VDL  
 Analytical Date/Time: 08/15/16 17:28  
 Container ID: 1164486020-B

Print Date: 09/19/2016 10:35:13AM



**Results of SWM06-01**

Client Sample ID: **SWM06-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164486021  
Lab Project ID: 1164486

Collection Date: 08/04/16 15:12  
Received Date: 08/04/16 16:53  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	4.53	1.00	0.310	ug/L	1		08/15/16 17:31

**Batch Information**

Analytical Batch: MMS9490  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 08/15/16 17:31  
Container ID: 1164486021-B

Print Date: 09/19/2016 10:35:13AM



Results of **SWM07-01**

Client Sample ID: **SWM07-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164486022  
Lab Project ID: 1164486

Collection Date: 08/04/16 15:32  
Received Date: 08/04/16 16:53  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	10.5	1.00	0.310	ug/L	1		08/15/16 17:40

**Batch Information**

Analytical Batch: MMS9490  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 08/15/16 17:40  
Container ID: 1164486022-B

Print Date: 09/19/2016 10:35:13AM



Results of **SWM08-01**

Client Sample ID: **SWM08-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164486023  
Lab Project ID: 1164486

Collection Date: 08/04/16 15:47  
Received Date: 08/04/16 16:53  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	3.95	1.00	0.310	ug/L	1		08/15/16 17:43

**Batch Information**

Analytical Batch: MMS9490  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 08/15/16 17:43  
Container ID: 1164486023-B

Print Date: 09/19/2016 10:35:13AM

## Results of SWM08-01 Dup

Client Sample ID: **SWM08-01 Dup**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1164486024  
 Lab Project ID: 1164486

Collection Date: 08/04/16 15:47  
 Received Date: 08/04/16 16:53  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

## Results by Dissolved Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	5.28	1.00	0.310	ug/L	1		08/15/16 17:46

## Batch Information

Analytical Batch: MMS9490  
 Analytical Method: EP200.8  
 Analyst: VDL  
 Analytical Date/Time: 08/15/16 17:46  
 Container ID: 1164486024-B

Print Date: 09/19/2016 10:35:13AM



**Results of SWM09-01**

Client Sample ID: **SWM09-01**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164486025  
Lab Project ID: 1164486

Collection Date: 08/04/16 16:11  
Received Date: 08/04/16 16:53  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	2.75	1.00	0.310	ug/L	1		08/15/16 17:49

**Batch Information**

Analytical Batch: MMS9490  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 08/15/16 17:49  
Container ID: 1164486025-B

Print Date: 09/19/2016 10:35:13AM

## Results of SWM10-01

Client Sample ID: **SWM10-01**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1164486026  
 Lab Project ID: 1164486

Collection Date: 08/04/16 16:20  
 Received Date: 08/04/16 16:53  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

## Results by Dissolved Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	1.13	1.00	0.310	ug/L	1		08/15/16 17:55

## Batch Information

Analytical Batch: MMS9490  
 Analytical Method: EP200.8  
 Analyst: VDL  
 Analytical Date/Time: 08/15/16 17:55  
 Container ID: 1164486026-B

Print Date: 09/19/2016 10:35:13AM



**Results of Trip Blank**

Client Sample ID: **Trip Blank**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164486027  
Lab Project ID: 1164486

Collection Date: 08/04/16 12:50  
Received Date: 08/04/16 16:53  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/05/16 19:33
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/05/16 19:33
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/05/16 19:33
Benzene	0.400 U	0.400	0.120	ug/L	1		08/05/16 19:33
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/05/16 19:33
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		08/05/16 19:33
o-Xylene	1.00 U	1.00	0.310	ug/L	1		08/05/16 19:33
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		08/05/16 19:33
Toluene	1.00 U	1.00	0.310	ug/L	1		08/05/16 19:33
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	108	81-118		%	1		08/05/16 19:33
4-Bromofluorobenzene (surr)	104	85-114		%	1		08/05/16 19:33
Toluene-d8 (surr)	100	89-112		%	1		08/05/16 19:33

**Batch Information**

Analytical Batch: VMS16050  
Analytical Method: EPA 602/624  
Analyst: TJT  
Analytical Date/Time: 08/05/16 19:33  
Container ID: 1164486027-A

Print Date: 09/19/2016 10:35:13AM



## Method Blank

Blank ID: MB for HBN 1741151 [BOD/5518]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1342975

QC for Samples:

1164486001, 1164486002, 1164486005, 1164486006, 1164486007, 1164486008, 1164486009, 1164486010, 1164486011, 1164486012, 1164486013, 1164486014

## Results by SM21 5210B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Biochemical Oxygen Demand	2.00U	2.00	2.00	mg/L

## Batch Information

Analytical Batch: BOD5518

Analytical Method: SM21 5210B

Instrument:

Analyst: K.W

Analytical Date/Time: 8/5/2016 5:00:00PM

Print Date: 09/19/2016 10:35:18AM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1164486 [BOD5518]

Blank Spike Lab ID: 1342976

Date Analyzed: 08/05/2016 17:00

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1164486001, 1164486002, 1164486005, 1164486006, 1164486007, 1164486008, 1164486009, 1164486010, 1164486011, 1164486012, 1164486013, 1164486014

## Results by SM21 5210B

Parameter	Blank Spike (mg/L)			CL
	Spike	Result	Rec (%)	
Biochemical Oxygen Demand	198	204	103	( 84.6-115.4

## Batch Information

Analytical Batch: **BOD5518**  
Analytical Method: **SM21 5210B**  
Instrument:  
Analyst: **K.W**

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Spike Init Wt./Vol.: 198 mg/L Extract Vol: 300 mL  
Dupe Init Wt./Vol.: Extract Vol:

## Method Blank

Blank ID: MB for HBN 1741122 [BTF/15026]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1342804

QC for Samples:

1164486001, 1164486002, 1164486005, 1164486006, 1164486007, 1164486008, 1164486009, 1164486010, 1164486011, 1164486012, 1164486013, 1164486014

## Results by SM21 9222D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Fecal Coliform	1.00U	1.00	1.00	col/100mL

## Batch Information

Analytical Batch: BTF15026

Analytical Method: SM21 9222D

Instrument:

Analyst: DSH

Analytical Date/Time: 8/4/2016 10:45:00AM

Print Date: 09/19/2016 10:35:20AM

## Method Blank

Blank ID: MB for HBN 1741475 [MXX/30080]  
Blank Lab ID: 1344436

Matrix: Water (Surface, Eff., Ground)

### QC for Samples:

1164486015, 1164486016, 1164486017, 1164486018, 1164486019, 1164486020, 1164486021, 1164486022, 1164486023, 1164486024, 1164486025, 1164486026

## Results by EP200.8

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Copper	0.500U	1.00	0.310	ug/L

## Batch Information

Analytical Batch: MMS9490  
Analytical Method: EP200.8  
Instrument: Perkin Elmer Nexlon P5  
Analyst: VDL  
Analytical Date/Time: 8/15/2016 5:04:03PM

Print Date: 09/19/2016 10:35:22AM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1164486 [MMS9490]

Blank Spike Lab ID: 1344437

Date Analyzed: 08/15/2016 17:07

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1164486015, 1164486016, 1164486017, 1164486018, 1164486019, 1164486020, 1164486021, 1164486022, 1164486023, 1164486024, 1164486025, 1164486026

## Results by EP200.8

Parameter	Blank Spike (ug/L)			CL
	Spike	Result	Rec (%)	
Copper	1000	1070	107	( 85-115 )

## Batch Information

Analytical Batch: MMS9490

Analytical Method: EP200.8

Instrument: Perkin Elmer Nexlon P5

Analyst: VDL

Prep Batch:

Prep Method:

Prep Date/Time:

Spike Init Wt./Vol.: 1000 ug/L Extract Vol: 50 mL

Dupe Init Wt./Vol.: Extract Vol:

## Matrix Spike Summary

Original Sample ID: 1344438  
 MS Sample ID: 1344439 MS  
 MSD Sample ID:

Analysis Date: 08/15/2016 17:10  
 Analysis Date: 08/15/2016 17:13  
 Analysis Date:  
 Matrix: Drinking Water

QC for Samples: 1164486015, 1164486016, 1164486017, 1164486018, 1164486019, 1164486020, 1164486021, 1164486022, 1164486023, 1164486024, 1164486025

## Results by EP200.8

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Copper	6.25	1000	1070	106				70-130		

## Batch Information

Analytical Batch: MMS9490  
 Analytical Method: EP200.8  
 Instrument: Perkin Elmer Nexlon P5  
 Analyst: VDL  
 Analytical Date/Time: 8/15/2016 5:13:02PM

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 20.00mL  
 Prep Extract Vol: 50.00mL



### Matrix Spike Summary

Original Sample ID: 1344440  
MS Sample ID: 1344441 MS  
MSD Sample ID:

Analysis Date: 08/15/2016 17:49  
Analysis Date: 08/15/2016 17:52  
Analysis Date:  
Matrix: Drinking Water

QC for Samples: 1164486016, 1164486017, 1164486018, 1164486019, 1164486020, 1164486021, 1164486022, 1164486023, 1164486024, 1164486025, 1164486026

### Results by EP200.8

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Copper	2.75	1000	1010	101				70-130		

### Batch Information

Analytical Batch: MMS9490  
Analytical Method: EP200.8  
Instrument: Perkin Elmer Nexlon P5  
Analyst: VDL  
Analytical Date/Time: 8/15/2016 5:52:01PM

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Prep Initial Wt./Vol.: 20.00mL  
Prep Extract Vol: 50.00mL

Print Date: 09/19/2016 10:35:25AM

## Method Blank

Blank ID: MB for HBN 1741627 [MXX/30086]  
Blank Lab ID: 1345207

Matrix: Water (Surface, Eff., Ground)

### QC for Samples:

1164486001, 1164486002, 1164486005, 1164486006, 1164486007, 1164486008, 1164486009, 1164486010, 1164486011, 1164486012, 1164486013, 1164486014

## Results by EP200.8

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Calcium	250U	500	150	ug/L
Magnesium	25.0U	50.0	15.0	ug/L

## Batch Information

Analytical Batch: MMS9497  
Analytical Method: EP200.8  
Instrument: Perkin Elmer Nexlon P5  
Analyst: EAB  
Analytical Date/Time: 8/18/2016 5:25:45PM



## Blank Spike Summary

Blank Spike ID: LCS for HBN 1164486 [MMS9497]

Blank Spike Lab ID: 1345208

Date Analyzed: 08/18/2016 17:28

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1164486001, 1164486002, 1164486005, 1164486006, 1164486007, 1164486008, 1164486009, 1164486010, 1164486011, 1164486012, 1164486013, 1164486014

## Results by EP200.8

Parameter	Blank Spike (ug/L)			CL
	Spike	Result	Rec (%)	
Calcium	10000	9990	100	( 85-115 )
Magnesium	10000	10800	108	( 85-115 )

## Batch Information

Analytical Batch: **MMS9497**

Analytical Method: **EP200.8**

Instrument: **Perkin Elmer Nexlon P5**

Analyst: **EAB**

Prep Batch:

Prep Method:

Prep Date/Time:

Spike Init Wt./Vol.: 10000 ug/L Extract Vol: 50 mL

Dupe Init Wt./Vol.: Extract Vol:

## Matrix Spike Summary

Original Sample ID: 1345209  
 MS Sample ID: 1345210 MS  
 MSD Sample ID:

Analysis Date: 08/18/2016 17:31  
 Analysis Date: 08/18/2016 17:34  
 Analysis Date:  
 Matrix: Drinking Water

QC for Samples: 1164486007, 1164486008, 1164486009, 1164486010, 1164486011, 1164486013

## Results by EP200.8

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Calcium	62500	10000	68500	60	*		70-130			
Magnesium	15600	10000	24200	86			70-130			

## Batch Information

Analytical Batch: MMS9497  
 Analytical Method: EP200.8  
 Instrument: Perkin Elmer Nexlon P5  
 Analyst: EAB  
 Analytical Date/Time: 8/18/2016 5:34:45PM

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 20.00mL  
 Prep Extract Vol: 50.00mL

Print Date: 09/19/2016 10:35:29AM

## Matrix Spike Summary

Original Sample ID: 1345211  
 MS Sample ID: 1345212 MS  
 MSD Sample ID:

Analysis Date: 08/18/2016 18:07  
 Analysis Date: 08/18/2016 18:10  
 Analysis Date:  
 Matrix: Drinking Water

QC for Samples: 1164486001, 1164486002, 1164486005, 1164486006, 1164486007, 1164486008, 1164486009,  
 1164486010, 1164486011, 1164486012, 1164486013, 1164486014

## Results by EP200.8

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Calcium	217J	10000	10300	101				70-130		
Magnesium	36.6J	10000	10400	104				70-130		

## Batch Information

Analytical Batch: MMS9497  
 Analytical Method: EP200.8  
 Instrument: Perkin Elmer Nexlon P5  
 Analyst: EAB  
 Analytical Date/Time: 8/18/2016 6:10:47PM

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 20.00mL  
 Prep Extract Vol: 50.00mL

Print Date: 09/19/2016 10:35:29AM

## Method Blank

Blank ID: MB for HBN 1741213 [STS/5140]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1343287

QC for Samples:

1164486001, 1164486002, 1164486005, 1164486006, 1164486007, 1164486008, 1164486009, 1164486010, 1164486011, 1164486012, 1164486013, 1164486014

## Results by SM21 2540D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Total Suspended Solids	0.500U	1.00	0.310	mg/L

## Batch Information

Analytical Batch: STS5140

Analytical Method: SM21 2540D

Instrument:

Analyst: LLP

Analytical Date/Time: 8/8/2016 12:04:11PM

## Duplicate Sample Summary

Original Sample ID: 1164512001

Analysis Date: 08/08/2016 12:04

Duplicate Sample ID: 1343357

Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1164486001, 1164486002, 1164486005, 1164486006, 1164486007, 1164486008, 1164486009, 1164486010, 1164486011, 1164486012, 1164486013, 1164486014

## Results by SM21 2540D

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Suspended Solids	3120	2900	mg/L	7.30*	(< 5 )

## Batch Information

Analytical Batch: STS5140

Analytical Method: SM21 2540D

Instrument:

Analyst: LLP

Print Date: 09/19/2016 10:35:35AM

## Duplicate Sample Summary

Original Sample ID: 1168399001

Duplicate Sample ID: 1343382

QC for Samples:

1164486011, 1164486012, 1164486013, 1164486014

Analysis Date: 08/08/2016 12:04

Matrix: Water (Surface, Eff., Ground)

## Results by SM21 2540D

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Suspended Solids	28.7	26.7	mg/L	7.20*	(< 5 )

## Batch Information

Analytical Batch: STS5140

Analytical Method: SM21 2540D

Instrument:

Analyst: LLP

Print Date: 09/19/2016 10:35:35AM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1164486 [STS5140]  
 Blank Spike Lab ID: 1343288  
 Date Analyzed: 08/08/2016 12:04

Spike Duplicate ID: LCSD for HBN 1164486 [STS5140]  
 Spike Duplicate Lab ID: 1343289  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1164486001, 1164486002, 1164486005, 1164486006, 1164486007, 1164486008, 1164486009, 1164486010, 1164486011, 1164486012, 1164486013, 1164486014

## Results by SM21 2540D

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Total Suspended Solids	50	49.9	100	50	49.8	100	( 75-125 )	0.20	(< 5 )

## Batch Information

Analytical Batch: STS5140  
 Analytical Method: SM21 2540D  
 Instrument:  
 Analyst: LLP

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Spike Init Wt./Vol.: 50 mg/L Extract Vol: 1000 mL  
 Dupe Init Wt./Vol.: 50 mg/L Extract Vol: 1000 mL

## Method Blank

Blank ID: MB for HBN 1741268 [VXX/29308]  
 Blank Lab ID: 1343521

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
 1164486002, 1164486010, 1164486013, 1164486027

## Results by EPA 602/624

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,2-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,3-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,4-Dichlorobenzene	0.250U	0.500	0.150	ug/L
Benzene	0.200U	0.400	0.120	ug/L
Chlorobenzene	0.250U	0.500	0.150	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
Toluene	0.500U	1.00	0.310	ug/L
<b>Surrogates</b>				
1,2-Dichloroethane-D4 (surr)	106	81-118		%
4-Bromofluorobenzene (surr)	103	85-114		%
Toluene-d8 (surr)	101	89-112		%

## Batch Information

Analytical Batch: VMS16050  
 Analytical Method: EPA 602/624  
 Instrument: VSA Agilent GC/MS 7890B/5977A  
 Analyst: TJT  
 Analytical Date/Time: 8/5/2016 5:07:00PM



## Blank Spike Summary

Blank Spike ID: LCS for HBN 1164486 [VMS16050]  
 Blank Spike Lab ID: 1343522  
 Date Analyzed: 08/05/2016 17:39

Spike Duplicate ID: LCSD for HBN 1164486 [VMS16050]  
 Spike Duplicate Lab ID: 1343523  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1164486002, 1164486010, 1164486013, 1164486027

## Results by EPA 602/624

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,2-Dichlorobenzene	30	32.4	108	30	32.1	107	( 80-119 )	0.65	(< 20 )
1,3-Dichlorobenzene	30	33.1	110	30	32.3	108	( 80-119 )	2.40	(< 20 )
1,4-Dichlorobenzene	30	32.9	110	30	33.1	110	( 79-118 )	0.67	(< 20 )
Benzene	30	32.1	107	30	31.3	104	( 79-120 )	2.60	(< 20 )
Chlorobenzene	30	32.5	108	30	32.1	107	( 82-118 )	1.20	(< 20 )
Ethylbenzene	30	33.2	111	30	32.5	108	( 79-121 )	2.10	(< 20 )
o-Xylene	30	33.2	111	30	32.4	108	( 78-122 )	2.50	(< 20 )
P & M -Xylene	60	67.7	113	60	65.1	109	( 80-121 )	3.90	(< 20 )
Toluene	30	32.7	109	30	31.9	106	( 80-121 )	2.40	(< 20 )

## Surrogates

1,2-Dichloroethane-D4 (surr)	30	103	103	30	105	105	( 81-118 )	1.60
4-Bromofluorobenzene (surr)	30	99.2	99	30	97.9	98	( 85-114 )	1.40
Toluene-d8 (surr)	30	100	100	30	99.8	100	( 89-112 )	0.30

## Batch Information

Analytical Batch: **VMS16050**  
 Analytical Method: **EPA 602/624**  
 Instrument: **VSA Agilent GC/MS 7890B/5977A**  
 Analyst: **TJT**

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL  
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

## Billable Matrix Spike Summary

Original Sample ID: 1164486002  
 MS Sample ID: 1164486003 BMS  
 MSD Sample ID: 1164486004 BMSD

Analysis Date: 08/05/2016 20:05  
 Analysis Date: 08/06/2016 1:34  
 Analysis Date: 08/06/2016 1:50  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples:

## Results by EPA 602/624

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,2-Dichlorobenzene	1.00U	30.0	33.7	112	30.0	33.9	113	80-119	0.47	(< 20 )
1,3-Dichlorobenzene	1.00U	30.0	33.7	112	30.0	34.5	115	80-119	2.40	(< 20 )
1,4-Dichlorobenzene	0.500U	30.0	34.5	115	30.0	34.8	116	79-118	0.87	(< 20 )
Benzene	0.400U	30.0	34	113	30.0	34.0	113	79-120	0.15	(< 20 )
Chlorobenzene	0.500U	30.0	33.6	112	30.0	33.8	113	82-118	0.53	(< 20 )
Ethylbenzene	1.00U	30.0	34.5	115	30.0	34.6	115	79-121	0.35	(< 20 )
o-Xylene	1.00U	30.0	34.6	115	30.0	34.7	116	78-122	0.32	(< 20 )
P & M -Xylene	2.00U	60.0	70.6	118	60.0	70.4	117	80-121	0.30	(< 20 )
Toluene	1.00U	30.0	34.6	115	30.0	34.2	114	80-121	1.30	(< 20 )
<b>Surrogates</b>										
1,2-Dichloroethane-D4 (surr)		30.0	31.1	104	30.0	31.1	104	81-118	0.13	
4-Bromofluorobenzene (surr)		30.0	29.7	99	30.0	29.9	100	85-114	0.81	
Toluene-d8 (surr)		30.0	30	100	30.0	30.0	100	89-112	0.00	

## Batch Information

Analytical Batch: VMS16050  
 Analytical Method: EPA 602/624  
 Instrument: VSA Agilent GC/MS 7890B/5977A  
 Analyst: TJT  
 Analytical Date/Time: 8/6/2016 1:34:00AM

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 5.00mL  
 Prep Extract Vol: 5.00mL

## Method Blank

Blank ID: MB for HBN 1741317 [VXX/29314]

Blank Lab ID: 1343746

QC for Samples:

1164486005, 1164486008

Matrix: Water (Surface, Eff., Ground)

## Results by EPA 602/624

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,2-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,3-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,4-Dichlorobenzene	0.250U	0.500	0.150	ug/L
Benzene	0.200U	0.400	0.120	ug/L
Chlorobenzene	0.250U	0.500	0.150	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
Toluene	0.500U	1.00	0.310	ug/L
<b>Surrogates</b>				
1,2-Dichloroethane-D4 (surr)	103	81-118		%
4-Bromofluorobenzene (surr)	104	85-114		%
Toluene-d8 (surr)	107	89-112		%

## Batch Information

Analytical Batch: VMS16055

Analytical Method: EPA 602/624

Instrument: VPA 780/5975 GC/MS

Analyst: TJT

Analytical Date/Time: 8/8/2016 12:48:00PM

## Leaching Blank

Blank ID: LB for HBN 1741137 [TCLP/8456]

Blank Lab ID: 1342915

QC for Samples:

1164486005, 1164486008

Matrix: Water (Surface, Eff., Ground)

## Results by EPA 602/624

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,4-Dichlorobenzene	12.5U	25.0	7.50	ug/L
Benzene	10.0U	20.0	6.00	ug/L
Chlorobenzene	12.5U	25.0	7.50	ug/L
<b>Surrogates</b>				
1,2-Dichloroethane-D4 (surr)	105	81-118		%
4-Bromofluorobenzene (surr)	104	85-114		%
Toluene-d8 (surr)	108	89-112		%

## Batch Information

Analytical Batch: VMS16055

Analytical Method: EPA 602/624

Instrument: VPA 780/5975 GC/MS

Analyst: TJT

Analytical Date/Time: 8/8/2016 7:12:00PM

Print Date: 09/19/2016 10:35:42AM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1164486 [VMS16055]  
 Blank Spike Lab ID: 1343747  
 Date Analyzed: 08/08/2016 13:05

Spike Duplicate ID: LCSD for HBN 1164486 [VMS16055]  
 Spike Duplicate Lab ID: 1343748  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1164486005, 1164486008

## Results by EPA 602/624

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,2-Dichlorobenzene	30	34.0	113	30	34.9	116	( 80-119 )	2.70	(< 20 )
1,3-Dichlorobenzene	30	33.4	111	30	34.7	116	( 80-119 )	3.70	(< 20 )
1,4-Dichlorobenzene	30	34.3	114	30	35.7	119	* ( 79-118 )	4.10	(< 20 )
Benzene	30	30.9	103	30	32.0	107	( 79-120 )	3.40	(< 20 )
Chlorobenzene	30	33.4	111	30	34.2	114	( 82-118 )	2.50	(< 20 )
Ethylbenzene	30	33.8	113	30	35.0	117	( 79-121 )	3.50	(< 20 )
o-Xylene	30	33.8	113	30	35.1	117	( 78-122 )	3.90	(< 20 )
P & M -Xylene	60	67.5	113	60	70.0	117	( 80-121 )	3.50	(< 20 )
Toluene	30	33.5	112	30	34.3	114	( 80-121 )	2.40	(< 20 )

## Surrogates

1,2-Dichloroethane-D4 (surr)	30	94.7	95	30	94.6	95	( 81-118 )	0.14
4-Bromofluorobenzene (surr)	30	99.5	100	30	102	102	( 85-114 )	2.40
Toluene-d8 (surr)	30	104	104	30	105	105	( 89-112 )	0.26

## Batch Information

Analytical Batch: **VMS16055**  
 Analytical Method: **EPA 602/624**  
 Instrument: **VPA 780/5975 GC/MS**  
 Analyst: **TJT**

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL  
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

## Method Blank

Blank ID: MB for HBN 1741263 [XXX/35992]  
 Blank Lab ID: 1343499

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
 1164486002, 1164486005, 1164486008, 1164486010, 1164486013

## Results by EPA 625M SIM (PAH)

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Acenaphthene	0.0250U	0.0500	0.0150	ug/L
Acenaphthylene	0.0250U	0.0500	0.0150	ug/L
Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo(a)Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo[a]pyrene	0.0100U	0.0200	0.0150	ug/L
Benzo[b]Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Benzo[g,h,i]perylene	0.0250U	0.0500	0.0150	ug/L
Benzo[k]fluoranthene	0.0250U	0.0500	0.0150	ug/L
Chrysene	0.0250U	0.0500	0.0150	ug/L
Dibenzo[a,h]anthracene	0.0100U	0.0200	0.0150	ug/L
Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Fluorene	0.0250U	0.0500	0.0150	ug/L
Indeno[1,2,3-c,d] pyrene	0.0250U	0.0500	0.0150	ug/L
Naphthalene	0.0500U	0.100	0.0310	ug/L
Phenanthrene	0.0250U	0.0500	0.0150	ug/L
Pyrene	0.0250U	0.0500	0.0150	ug/L
<b>Surrogates</b>				
2-Fluorobiphenyl (surr)	67.4	53-106		%
Terphenyl-d14 (surr)	72.4	58-132		%

## Batch Information

Analytical Batch: XMS9560  
 Analytical Method: EPA 625M SIM (PAH)  
 Instrument: Agilent GC 7890B/5977A SWA  
 Analyst: BRV  
 Analytical Date/Time: 8/22/2016 5:42:00PM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1164486 [XMS9560]  
 Blank Spike Lab ID: 1343500  
 Date Analyzed: 08/22/2016 18:04

Spike Duplicate ID: LCSD for HBN 1164486 [XMS9560]  
 Spike Duplicate Lab ID: 1343501  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1164486002, 1164486005, 1164486008, 1164486010, 1164486013

## Results by EPA 625M SIM (PAH)

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Acenaphthene	0.5	0.463	93	0.5	0.475	95	( 48-114 )	2.60	(< 20 )
Acenaphthylene	0.5	0.416	83	0.5	0.424	85	( 35-121 )	2.10	(< 20 )
Anthracene	0.5	0.412	83	0.5	0.417	84	( 53-119 )	1.20	(< 20 )
Benzo(a)Anthracene	0.5	0.411	82	0.5	0.406	81	( 59-120 )	1.20	(< 20 )
Benzo[a]pyrene	0.5	0.412	83	0.5	0.423	85	( 53-120 )	2.60	(< 20 )
Benzo[b]Fluoranthene	0.5	0.392	78	0.5	0.403	81	( 53-126 )	2.80	(< 20 )
Benzo[g,h,i]perylene	0.5	0.352	70	0.5	0.366	73	( 44-128 )	3.90	(< 20 )
Benzo[k]fluoranthene	0.5	0.388	78	0.5	0.387	78	( 54-125 )	0.10	(< 20 )
Chrysene	0.5	0.421	84	0.5	0.434	87	( 57-120 )	2.90	(< 20 )
Dibenzo[a,h]anthracene	0.5	0.328	66	0.5	0.340	68	( 44-131 )	3.40	(< 20 )
Fluoranthene	0.5	0.424	85	0.5	0.424	85	( 58-120 )	0.03	(< 20 )
Fluorene	0.5	0.419	84	0.5	0.421	84	( 50-118 )	0.55	(< 20 )
Indeno[1,2,3-c,d] pyrene	0.5	0.361	72	0.5	0.376	75	( 48-130 )	3.80	(< 20 )
Naphthalene	0.5	0.410	82	0.5	0.416	83	( 43-114 )	1.60	(< 20 )
Phenanthrene	0.5	0.400	80	0.5	0.403	81	( 53-115 )	0.89	(< 20 )
Pyrene	0.5	0.451	90	0.5	0.463	93	( 53-121 )	2.50	(< 20 )
<b>Surrogates</b>									
2-Fluorobiphenyl (surr)	0.5	75.7	76	0.5	76.3	76	( 53-106 )	0.83	
Terphenyl-d14 (surr)	0.5	79.3	79	0.5	79.3	79	( 58-132 )	0.01	

## Batch Information

Analytical Batch: XMS9560  
 Analytical Method: EPA 625M SIM (PAH)  
 Instrument: Agilent GC 7890B/5977A SWA  
 Analyst: BRV

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Spike Init Wt./Vol.: 0.5 ug/L Extract Vol: 1 mL  
 Dupe Init Wt./Vol.: 0.5 ug/L Extract Vol: 1 mL

## Billable Matrix Spike Summary

Original Sample ID: 1164486002  
 MS Sample ID: 1164486003 BMS  
 MSD Sample ID: 1164486004 BMSD

Analysis Date: 08/22/2016 18:49  
 Analysis Date: 08/22/2016 19:11  
 Analysis Date: 08/22/2016 19:34  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples:

## Results by EPA 625M SIM (PAH)

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Acenaphthene	0.0538U	0.556	.402	72	0.505	0.291	58	48-114	32.00	* (< 20)
Acenaphthylene	0.0538U	0.556	.357	64	0.505	0.263	52	35-121	30.40	* (< 20)
Anthracene	0.0538U	0.556	.348	63	0.505	0.254	50	* 53-119	31.20	* (< 20)
Benzo(a)Anthracene	0.0538U	0.556	.257	46	* 0.505	0.181	36	* 59-120	34.80	* (< 20)
Benzo[a]pyrene	0.0245	0.556	.18	28	* 0.505	0.124	20	* 53-120	36.50	* (< 20)
Benzo[b]Fluoranthene	0.0937	0.556	.243	27	* 0.505	0.169	15	* 53-126	36.00	* (< 20)
Benzo[g,h,i]perylene	0.0538U	0.556	.136	25	* 0.505	0.0970	19	* 44-128	33.70	* (< 20)
Benzo[k]fluoranthene	0.0538U	0.556	.165	30	* 0.505	0.117	23	* 54-125	33.80	* (< 20)
Chrysene	0.0948	0.556	.317	40	* 0.505	0.227	26	* 57-120	33.20	* (< 20)
Dibenzo[a,h]anthracene	0.0215U	0.556	.0995	18	* 0.505	0.0725	14	* 44-131	31.40	* (< 20)
Fluoranthene	0.130	0.556	.442	56	* 0.505	0.325	39	* 58-120	30.50	* (< 20)
Fluorene	0.0538U	0.556	.36	65	0.505	0.268	53	50-118	29.50	* (< 20)
Indeno[1,2,3-c,d] pyrene	0.0538U	0.556	.126	23	* 0.505	0.0912	18	* 48-130	31.80	* (< 20)
Naphthalene	0.108U	0.556	.354	64	0.505	0.261	52	43-114	30.20	* (< 20)
Phenanthrene	0.0538U	0.556	.36	65	0.505	0.269	53	53-115	29.00	* (< 20)
Pyrene	0.0975	0.556	.435	61	0.505	0.318	44	* 53-121	31.00	* (< 20)
<b>Surrogates</b>										
2-Fluorobiphenyl (surr)		0.556	.331	60	0.505	0.244	48	* 53-106	30.00	
Terphenyl-d14 (surr)		0.556	.272	49	* 0.505	0.203	40	* 58-132	29.30	

## Batch Information

Analytical Batch: XMS9560  
 Analytical Method: EPA 625M SIM (PAH)  
 Instrument: Agilent GC 7890B/5977A SWA  
 Analyst: BRV  
 Analytical Date/Time: 8/22/2016 7:11:00PM

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Prep Initial Wt./Vol.: 900.00mL  
 Prep Extract Vol: 1.00mL



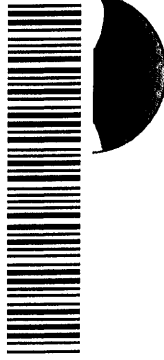
1164486

Chain of Custody Record

To: SGS Environmental Services, Inc.  
2100 West Potter Drive  
Anchorage, AK 99518  
(907) 562-2343  
(907) 561-5301 Fax  
Contact: Forest Taylor

From: Kinnetic Laboratories, Inc  
1102 West 7th Avenue  
Anchorage, AK 99501  
(907) 276-6178  
Contact: Mark Savoie

SGS Quote No. 9901  
Date Received:  
Lab #:



Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analyte	Container	Temp	No. of Bottles	Lab ID	Chain of Custody Remarks
SWM01-01	1040-3	8/4/16	1250	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	①A	
SWM02-01	847-1		1316	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	②A	
SWM02-01 Dup	847-1		1316	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑤A	
SWM03-01	1224-1		1420	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑥A	
SWM04-01	1224-2		1427	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑦A	
SWM05-01	207-1		1441	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑧A	
SWM06-01	314-22		1512	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑨A	
SWM07-01	484-1		1532	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑩A	
SWM08-01	86-1		1547	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑪A	
SWM08-01 Dup	86-1		1547	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑫A	
SWM09-01	499-1		1611	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑬A	
SWM10-01	525-2	8/4/16	1620	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	⑭A	

Project: MOA Stormwater Management Matrix: Water Project #: 5078

Complete by: 2 weeks

Note: Samples contain sodium thiosulfate for dechlorination

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLL. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

Pa 4 of 10

Sampled and Relinquished By	Date/Time	Transporter	Received By	Date/Time
<i>[Signature]</i>	8/4/16 1653	<i>[Signature]</i>	<i>[Signature]</i>	8/4/16 1653
<i>[Signature]</i>		<i>[Signature]</i>	<i>[Signature]</i>	

TB: ① HZ #71 ② 11 # 241 ③ 9.0 #241465not

### Chain of Custody Record

<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Forest Taylor	<b>SGS Quote No. 9901</b>  <b>Date Received:</b>  <b>Lab #:</b>	<b>From:</b> Kinnetic Laboratories, Inc 1102 West 7th Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie
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1164486



**Project:** MOA Stormwater Management **Matrix:** Water **Project #:** 5078  
**Complete by:** 2 weeks

Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analyte	Container	Temp	No. of Tests	Lab ID	Consent from Receipt
SWM02-01	847-1	8/4/16	1316	Samp/MS/MSD	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	9	55-15716 <del>28</del> B-D	28A-C
SWM02-01 Dup	847-1		1316	Samp	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3	5B-D	
SWM05-01	207-1		1444	Samp	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3	8B-D	
SWM07-01	484-1	↓	1532	Samp	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3	10B-D	
SWM09-01	499-1	8/4/16	1611	Samp	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3	13B-D	
Trip Blank	N/A	N/A	N/A	TB	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3	27A-C	

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

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Sampled and Relinquished By: <i>[Signature]</i>	Date/Time: 8/4/16 1653	Received By: <i>[Signature]</i>	Date/Time: 8/4/16 1653
Relinquished By: <i>[Signature]</i>	Date/Time: _____	Received By: <i>[Signature]</i>	Date/Time: 8/4/16 1653

*Absent*

## Chain of Custody Record

<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 Contact: Forest Taylor	<b>From:</b> Kinnetic Laboratories, Inc 1102 West 7th Avenue Anchorage, AK 99501 (907) 276-6178 Contact: Mark Savoie
SGS Quote No. 9901  Date Received:  Lab #:	Project #: 5078

# 1164486



**Project:** MOA Stormwater Management **Matrix:** Water  
**Complete by:** 2 weeks

Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Temp	No of Bottles	Lab ID	Condition Upon Receipt
SWM02-01	847-1	8/4/16	1316	Samp/MS/MSD	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	6	<del>234</del> E-F ③④	D-E
SWM02-01 Dup	847-1	↓	1316	Samp	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	2	5 E-F	
SWM05-01	207-1	↓	1444	Samp	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	2	9 E-F	
SWM07-01	484-1	↓	1532	Samp	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	2	10 E-F	
SWM09-01	499-1	8/4/16	1611	Samp	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	2	13 E-F	

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KL. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

Page 9 of 10

Sampled and Relinquished By: <i>[Signature]</i>	Date/Time: 8/4/16 1653	Received By: <i>[Signature]</i>	Date/Time:
Relinquished by: <i>[Signature]</i>	Date/Time:	Received By: <i>[Signature]</i>	Date/Time: 8/4/16 1653

## Chain of Custody Record

<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Forest Taylor	<b>SGS Quote No. 9901</b>  <b>Date Received:</b>  <b>Lab #:</b>	<b>From:</b> Kinnetic Laboratories, Inc 1102 West 7th Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie
<b>Project: MOA Stormwater Management</b>		<b>Project #: 5078</b>
<b>Complete by: 2 weeks</b>		



1164486

Sample ID	Container ID	Date/Time	Samp	Diss. Cu/Total Hardness (EPA 200.8)	250-ml HDPE	≤ 6 °C	Matrix: Water
SWM01-01	1040-3	8/4/16	Samp	Diss. Cu/Total Hardness (EPA 200.8)	250-ml HDPE	≤ 6 °C	1
SWM02-01	847-1	1750	Samp	Diss. Cu/Total Hardness (EPA 200.8)	250-ml HDPE	≤ 6 °C	1
SWM02-01 Dup	847-1	1316	Samp	Diss. Cu/Total Hardness (EPA 200.8)	250-ml HDPE	≤ 6 °C	1
SWM03-01	1224-1	1420	Samp	Diss. Cu/Total Hardness (EPA 200.8)	250-ml HDPE	≤ 6 °C	1
SWM04-01	1224-2	1427	Samp	Diss. Cu/Total Hardness (EPA 200.8)	250-ml HDPE	≤ 6 °C	1
SWM05-01	207-1	1444	Samp	Diss. Cu/Total Hardness (EPA 200.8)	250-ml HDPE	≤ 6 °C	1
SWM06-01	314-22	1512	Samp	Diss. Cu/Total Hardness (EPA 200.8)	250-ml HDPE	≤ 6 °C	1
SWM07-01	484-1	1532	Samp	Diss. Cu/Total Hardness (EPA 200.8)	250-ml HDPE	≤ 6 °C	1
SWM08-01	86-1	1547	Samp	Diss. Cu/Total Hardness (EPA 200.8)	250-ml HDPE	≤ 6 °C	1
SWM08-01 Dup	86-1	1547	Samp	Diss. Cu/Total Hardness (EPA 200.8)	250-ml HDPE	≤ 6 °C	1
SWM09-01	499-1	1611	Samp	Diss. Cu/Total Hardness (EPA 200.8)	250-ml HDPE	≤ 6 °C	1
SWM10-01	525-2	1620	Samp	Diss. Cu/Total Hardness (EPA 200.8)	250-ml HDPE	≤ 6 °C	1

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Methods and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

**Special Instructions/Comments: Dissolved Copper must be Filtered & Preserved at Lab**

Sampled and Relinquished By: <i>[Signature]</i>	Date/Time: 8/4/16 18:53	Relinquished By: <i>[Signature]</i>
Absent		

# Chain of Custody Record

# 1164486



**To:**  
 SGS Environmental Services, Inc.  
 2100 West Potter Drive  
 Anchorage, AK 99518  
 (907) 562-2343  
 (907) 561-5301 Fax  
 Contact: Forest Taylor

**From:**  
 Kinnetic Laboratories, Inc  
 1102 West 7th Avenue  
 Anchorage, AK 99501  
 (907) 276-6178  
 (907) 278-6881 Fax  
 Contact: Mark Savoie

**Project:** MOA Stormwater Management

**Matrix:** Water

**Complete by:** 2 weeks

**Project #:** 5078

Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Equilibrium	Temp	No. of Containers	Label	Container/Port Package
SWM01-01	1040-3	8/4/16	1250	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	① #C	
SWM02-01	847-1		1316	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	② H	
SWM02-01 Dup	847-1		1316	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	⑤ H	
SWM03-01	1224-1		1420	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	⑥ #C	
SWM04-01	1224-2		1427	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	⑦ #C	
SWM05-01	207-1		1444	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	⑧ H	
SWM06-01	314-22		1512	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	⑨ #C	
SWM07-01	484-1		1532	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	⑩ H	
SWM08-01	86-1		1547	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	⑪ #C	
SWM08-01 Dup	86-1		1547	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	⑫ #C	
SWM09-01	499-1		1611	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	⑬ H	065 61516
SWM10-01	525-2	8/4/16	1620	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	⑭ C	

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

Sampled and Relinquished By:	Date/Time	Transporter	Received By:	Date/Time
<i>[Signature]</i>	8/4/16 1653	62	<i>[Signature]</i>	8/4/16 1653
Relinquished By:		Transporter	Received By:	
			<i>[Signature]</i>	8/4/16 1653

ABent

# Chain of Custody Record

<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Forest Taylor	<b>SGS Quote No. 9901</b>  <b>Date Received:</b>  <b>Lab #:</b>	<b>From:</b> Kinnetic Laboratories, Inc 1102 West 7th Avenue Anchorage, AK 99501 (907) 276-6178 (907) 278-6881 Fax Contact: Mark Savoie
---	---	---

# 1164486



**Project:** MOA Stormwater Management **Matrix:** Water  
**Complete by:** 2 weeks **Project #:** 5078

Sample ID	Outfall ID	Sample Date	Sample Time	Sample	Analyte	Container	Temp	Lot	Lab	Comments
SWM01-01	1040-3	8/4/16	1250	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	① IFD	
SWM02-01	847-1		1316	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	② I	
SWM02-01 Dup	847-1		1316	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑤ I	
SWM03-01	1224-1		1420	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑥ IFD	
SWM04-01	1224-2		1427	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑦ IFD	
SWM05-01	207-1		1444	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑧ I	
SWM06-01	314-22		1512	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑨ IFD	
SWM07-01	484-1		1532	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑩ I	
SWM08-01	86-1		1547	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑪ IFD	
SWM08-01 Dup	86-1		1547	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑫ IFD	
SWM09-01	499-1		1611	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑬ IFD ⑬ I	095 8/5/16
SWM10-01	525-2	8/4/16	1620	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	⑭ IFD	095 8/5/16

**Data Report MUST include the following:** Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

**Special Instructions/Comments:**

Page \_\_\_\_\_

<b>Sampled and Relinquished By:</b>	<b>Date/Time:</b> 8/4/16 1653	<b>Transporter:</b> GL	<b>Received By:</b>
<b>Relinquished By:</b>			

Signature: *[Signature]*  
 Date: 8/4/16 1653  
 Agent: *[Signature]*



e-SAMPLE RECEIPT FORM

1164486



Review Criteria	Y/N (yes/no)	Exceptions Noted below
Were Custody Seals intact? Note # & location	<input type="checkbox"/>	<input checked="" type="checkbox"/> exemption permitted if sampler hand carries/delivers.
COC accompanied samples?	<input checked="" type="checkbox"/>	Absent
<input checked="" type="checkbox"/> **exemption permitted if chilled & collected <8hrs ago or chilling not required (i.e., waste, oil)		
Temperature blank compliant* (i.e., 0-6 °C after CF)?	<input checked="" type="checkbox"/>	Cooler ID: 1 @ 14.2 °C Therm ID: 71
	<input checked="" type="checkbox"/>	Cooler ID: 2 @ 11.0 °C Therm ID: 241
	<input checked="" type="checkbox"/>	Cooler ID: 3 @ 9.0 °C Therm ID: 241
	<input checked="" type="checkbox"/>	Cooler ID: @ °C Therm ID:
	<input checked="" type="checkbox"/>	Cooler ID: @ °C Therm ID:
*If >6°C, were samples collected <8 hours ago?	<input checked="" type="checkbox"/>	
If <0°C, were sample containers ice free?	<input type="checkbox"/>	
If samples received <u>without</u> a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "COOLER TEMP" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note "ambient" or "chilled".		
Note: Identify containers received at non-compliant temperature. Use form FS-0029 if more space is needed.		
Note: Refer to form F-083 "Sample Guide" for hold times.		
Were samples received within hold time?	<input checked="" type="checkbox"/>	
Do samples <b>match COC**</b> (i.e., sample IDs, dates/times collected)?	<input checked="" type="checkbox"/>	
**Note: If times differ <1hr, record details & login per COC.		
Were analyses requested unambiguous?	<input checked="" type="checkbox"/>	
Were proper containers (type/mass/volume/preservative***) used?	<input checked="" type="checkbox"/>	***Exemption permitted for metals (e.g. 200.8/6020A).
<b>IF APPLICABLE</b>		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	<input checked="" type="checkbox"/>	Received but did not travel with all samples
Were all VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	<input checked="" type="checkbox"/>	
Were all soil VOAs field extracted with MeOH+BFB?	<input checked="" type="checkbox"/>	
<b>Note to Client:</b> Any "no" answer above indicates non-compliance with standard procedures and may impact data quality.		
Additional notes (if applicable):		
Unpreserved metals container pored off into preserved container to create container for Total Hardness analysis		



### Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1164486001-A	Na2S2O3 for Chlorine Redu	OK	1164486008-C	HCL to pH < 2	OK
1164486001-B	HNO3 to pH < 2	OK	1164486008-D	HCL to pH < 2	OK
1164486001-C	No Preservative Required	OK	1164486008-E	No Preservative Required	OK
1164486001-D	No Preservative Required	OK	1164486008-F	No Preservative Required	OK
1164486002-A	Na2S2O3 for Chlorine Redu	OK	1164486008-G	HNO3 to pH < 2	OK
1164486002-B	HCL to pH < 2	OK	1164486008-H	No Preservative Required	OK
1164486002-C	HCL to pH < 2	OK	1164486008-I	No Preservative Required	OK
1164486002-D	HCL to pH < 2	OK	1164486009-A	Na2S2O3 for Chlorine Redu	OK
1164486002-E	No Preservative Required	OK	1164486009-B	HNO3 to pH < 2	OK
1164486002-F	No Preservative Required	OK	1164486009-C	No Preservative Required	OK
1164486002-G	HNO3 to pH < 2	OK	1164486009-D	No Preservative Required	OK
1164486002-H	No Preservative Required	OK	1164486010-A	Na2S2O3 for Chlorine Redu	OK
1164486002-I	No Preservative Required	OK	1164486010-B	HCL to pH < 2	OK
1164486003-A	HCL to pH < 2	OK	1164486010-C	HCL to pH < 2	OK
1164486003-B	HCL to pH < 2	OK	1164486010-D	HCL to pH < 2	OK
1164486003-C	HCL to pH < 2	OK	1164486010-E	No Preservative Required	OK
1164486003-D	No Preservative Required	OK	1164486010-F	No Preservative Required	OK
1164486003-E	No Preservative Required	OK	1164486010-G	HNO3 to pH < 2	OK
1164486004-A	HCL to pH < 2	OK	1164486010-H	No Preservative Required	OK
1164486004-B	HCL to pH < 2	OK	1164486010-I	No Preservative Required	OK
1164486004-C	HCL to pH < 2	OK	1164486011-A	Na2S2O3 for Chlorine Redu	OK
1164486004-D	No Preservative Required	OK	1164486011-B	HNO3 to pH < 2	OK
1164486004-E	No Preservative Required	OK	1164486011-C	No Preservative Required	OK
1164486005-A	Na2S2O3 for Chlorine Redu	OK	1164486011-D	No Preservative Required	OK
1164486005-B	HCL to pH < 2	OK	1164486012-A	Na2S2O3 for Chlorine Redu	OK
1164486005-C	HCL to pH < 2	OK	1164486012-B	HNO3 to pH < 2	OK
1164486005-D	HCL to pH < 2	OK	1164486012-C	No Preservative Required	OK
1164486005-E	No Preservative Required	OK	1164486012-D	No Preservative Required	OK
1164486005-F	No Preservative Required	OK	1164486013-A	Na2S2O3 for Chlorine Redu	OK
1164486005-G	HNO3 to pH < 2	OK	1164486013-B	HCL to pH < 2	OK
1164486005-H	No Preservative Required	OK	1164486013-C	HCL to pH < 2	OK
1164486005-I	No Preservative Required	OK	1164486013-D	HCL to pH < 2	OK
1164486006-A	Na2S2O3 for Chlorine Redu	OK	1164486013-E	No Preservative Required	OK
1164486006-B	HNO3 to pH < 2	OK	1164486013-F	No Preservative Required	OK
1164486006-C	No Preservative Required	OK	1164486013-G	HNO3 to pH < 2	OK
1164486006-D	No Preservative Required	OK	1164486013-H	No Preservative Required	OK
1164486007-A	Na2S2O3 for Chlorine Redu	OK	1164486013-I	No Preservative Required	OK
1164486007-B	HNO3 to pH < 2	OK	1164486014-A	Na2S2O3 for Chlorine Redu	OK
1164486007-C	No Preservative Required	OK	1164486014-B	HNO3 to pH < 2	OK
1164486007-D	No Preservative Required	OK	1164486014-C	No Preservative Required	OK
1164486008-A	Na2S2O3 for Chlorine Redu	OK	1164486014-D	No Preservative Required	OK
1164486008-B	HCL to pH < 2	OK	1164486015-A	No Preservative Required	OK



<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1164486015-B	No Preservative Required	OK			
1164486016-A	No Preservative Required	OK			
1164486016-B	No Preservative Required	OK			
1164486017-A	No Preservative Required	OK			
1164486017-B	No Preservative Required	OK			
1164486018-A	No Preservative Required	OK			
1164486018-B	No Preservative Required	OK			
1164486019-A	No Preservative Required	OK			
1164486019-B	No Preservative Required	OK			
1164486020-A	No Preservative Required	OK			
1164486020-B	No Preservative Required	OK			
1164486021-A	No Preservative Required	OK			
1164486021-B	No Preservative Required	OK			
1164486022-A	No Preservative Required	OK			
1164486022-B	No Preservative Required	OK			
1164486023-A	No Preservative Required	OK			
1164486023-B	No Preservative Required	OK			
1164486024-A	No Preservative Required	OK			
1164486024-B	No Preservative Required	OK			
1164486025-A	No Preservative Required	OK			
1164486025-B	No Preservative Required	OK			
1164486026-A	No Preservative Required	OK			
1164486026-B	No Preservative Required	OK			
1164486027-A	HCL to pH < 2	OK			
1164486027-B	HCL to pH < 2	OK			
1164486027-C	HCL to pH < 2	OK			

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM- The container was received damaged.

FR- The container was received frozen and not usable for Bacteria or BOD analyses.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

## **Appendix B2**

### **Laboratory Data Package Storm Event #2**





## Laboratory Report of Analysis

To: Kinnetic Laboratories, Inc.  
704 W 2nd Avenue  
Anchorage, AK 99501  
(907)276-6178

Report Number: **1164922**

Client Project: **5078 MOA Stormwater Management**

Dear Mark Savoie,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Forest at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,  
SGS North America Inc.

---

Forest Taylor  
Project Manager  
Forest.Taylor@sgs.com

Date

Print Date: 09/09/2016 1:38:59PM

### Case Narrative

SGS Client: **Kinnetic Laboratories, Inc.**  
SGS Project: **1164922**  
Project Name/Site: **5078 MOA Stormwater Management**  
Project Contact: **Mark Savoie**

Refer to sample receipt form for information on sample condition.

**SWM05-02 (1164922007) PS**

8270D SIM - PAH surrogate recovery for terphenyl-d14 (33.6%) and 2-fluorobiphenyl (49.6%) do not meet QC criteria.

**SWM07-02 (1164922009) PS**

8270D SIM - PAH surrogate recovery for terphenyl-d14 (28.9%) and 2-fluorobiphenyl (51.7%) do not meet QC criteria.

**SWM09-02 (1164922012) PS**

8270D SIM - PAH surrogate recovery for terphenyl-d14 (57.2%) do not meet DOD recovery limits but is within in house control limits.

**1164922023(1347210MS) (1347211) MS**

200.8 - Metals MS recovery for sodium (-475%) does not meet QC criteria. Sample concentration is 4 times greater than the spike level.

\*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 09/09/2016 1:39:01PM

### Report of Manual Integrations

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Analytical Batch</u>	<u>Analyte</u>	<u>Reason</u>
<b>EPA 625M SIM (PAH)</b>				
1164922004	SWM02-02 Dup	XMS9586	Benzo[a]pyrene	BLC
1164922007	SWM05-02	XMS9586	Benzo[k]fluoranthene	RP
1164922009	SWM07-02	XMS9586	Benzo[b]Fluoranthene	RSP
1164922012	SWM09-02	XMS9586	Benzo[k]fluoranthene	RP
1348381	LCSD for HBN 1742302 [XXX/3616	XMS9586	Benzo[k]fluoranthene	RP

#### Manual Integration Reason Code Descriptions

Code	Description
O	Original Chromatogram
M	Modified Chromatogram
SS	Skimmed surrogate
BLG	Closed baseline gap
RP	Reassign peak name
PIR	Pattern integration required
IT	Included tail
SP	Split peak
RSP	Removed split peak
FPS	Forced peak start/stop
BLC	Baseline correction
PNF	Peak not found by software

All DRO/RRO analysis are integrated per SOP.

## Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8021B, 8082A, 8260B, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
D	The analyte concentration is the result of a dilution.
DF	Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
F	Indicates value that is greater than or equal to the DL
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
JL	The analyte was positively identified, but the quantitation is a low estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
M	A matrix effect was present.
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
Q	QC parameter out of acceptance range.
R	Rejected
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

**Note:** Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

### Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
SWM02-02	1164922001	08/22/2016	08/22/2016	Water (Surface, Eff., Ground)
SWM02-02 MS	1164922002	08/22/2016	08/22/2016	Water (Surface, Eff., Ground)
SWM02-02 MSD	1164922003	08/22/2016	08/22/2016	Water (Surface, Eff., Ground)
SWM02-02 Dup	1164922004	08/22/2016	08/22/2016	Water (Surface, Eff., Ground)
SWM03-02	1164922005	08/22/2016	08/22/2016	Water (Surface, Eff., Ground)
SWM04-02	1164922006	08/22/2016	08/22/2016	Water (Surface, Eff., Ground)
SWM05-02	1164922007	08/22/2016	08/22/2016	Water (Surface, Eff., Ground)
SWM06-02	1164922008	08/22/2016	08/22/2016	Water (Surface, Eff., Ground)
SWM07-02	1164922009	08/22/2016	08/22/2016	Water (Surface, Eff., Ground)
SWM08-02	1164922010	08/22/2016	08/22/2016	Water (Surface, Eff., Ground)
SWM08-02 Dup	1164922011	08/22/2016	08/22/2016	Water (Surface, Eff., Ground)
SWM09-02	1164922012	08/22/2016	08/22/2016	Water (Surface, Eff., Ground)
SWM10-02	1164922013	08/22/2016	08/22/2016	Water (Surface, Eff., Ground)
SWM02-02	1164922014	08/22/2016	08/22/2016	Water (Surface, Eff., Ground)
SWM02-02 Dup	1164922015	08/22/2016	08/22/2016	Water (Surface, Eff., Ground)
SWM03-02	1164922016	08/22/2016	08/22/2016	Water (Surface, Eff., Ground)
SWM04-02	1164922017	08/22/2016	08/22/2016	Water (Surface, Eff., Ground)
SWM05-02	1164922018	08/22/2016	08/22/2016	Water (Surface, Eff., Ground)
SWM06-02	1164922019	08/22/2016	08/22/2016	Water (Surface, Eff., Ground)
SWM07-02	1164922020	08/22/2016	08/22/2016	Water (Surface, Eff., Ground)
SWM08-02	1164922021	08/22/2016	08/22/2016	Water (Surface, Eff., Ground)
SWM08-02 Dup	1164922022	08/22/2016	08/22/2016	Water (Surface, Eff., Ground)
SWM09-02	1164922023	08/22/2016	08/22/2016	Water (Surface, Eff., Ground)
SWM10-02	1164922024	08/22/2016	08/22/2016	Water (Surface, Eff., Ground)
Trip Blank	1164922025	08/22/2016	08/22/2016	Water (Surface, Eff., Ground)

Method

EPA 602/624  
 EPA 625M SIM (PAH)  
 SM21 5210B  
 SM21 9222D  
 SM21 2340B  
 EP200.8  
 EP200.8  
 SM21 2540D

Method Description

602 Aromatics by 624 (W)  
 625 Semi-Volatiles GC/MS Liq/Liq ext.  
 Biochemical Oxygen Demand SM21 5210B  
 Fecal Coliform (MF)  
 Hardness as CaCO3 by ICP-MS  
 Metals in Drinking Water by ICP-MS DISSO  
 Metals in Water by 200.8 ICP-MS  
 Total Suspended Solids SM20 2540D



### Detectable Results Summary

Client Sample ID: **SWM02-02**

Lab Sample ID: 1164922001

**Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Calcium	37500	ug/L
Hardness as CaCO3	124	mg/L
Magnesium	7430	ug/L
Fecal Coliform	13	col/100mL
Fluoranthene	0.0680	ug/L
Total Suspended Solids	2.44	mg/L

**Microbiology Laboratory**

**Polynuclear Aromatics GC/MS**

**Waters Department**

Client Sample ID: **SWM02-02 Dup**

Lab Sample ID: 1164922004

**Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Calcium	37000	ug/L
Hardness as CaCO3	122	mg/L
Magnesium	7230	ug/L
Fecal Coliform	6.6	col/100mL
Fluoranthene	0.0641	ug/L
Total Suspended Solids	2.45	mg/L

**Microbiology Laboratory**

**Polynuclear Aromatics GC/MS**

**Waters Department**

Client Sample ID: **SWM03-02**

Lab Sample ID: 1164922005

**Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Calcium	21700	ug/L
Hardness as CaCO3	84.7	mg/L
Magnesium	7410	ug/L
Biochemical Oxygen Demand	2.42	mg/L
Fecal Coliform	1150	col/100mL
Total Suspended Solids	16.2	mg/L

**Microbiology Laboratory**

**Waters Department**

Client Sample ID: **SWM04-02**

Lab Sample ID: 1164922006

**Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Calcium	16500	ug/L
Hardness as CaCO3	60.0	mg/L
Magnesium	4560	ug/L
Fecal Coliform	2200	col/100mL
Total Suspended Solids	31.4	mg/L

**Microbiology Laboratory**

**Waters Department**

### Detectable Results Summary

Client Sample ID: **SWM05-02**

Lab Sample ID: 1164922007

**Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Calcium	8040	ug/L
Hardness as CaCO3	32.5	mg/L
Magnesium	3010	ug/L
Biochemical Oxygen Demand	3.28	mg/L
Fecal Coliform	1500	col/100mL

**Microbiology Laboratory**

**Polynuclear Aromatics GC/MS**

Benzo[a]pyrene	0.0334	ug/L
Benzo[b]Fluoranthene	0.107	ug/L
Benzo[g,h,i]perylene	0.0654	ug/L
Chrysene	0.110	ug/L
Fluoranthene	0.132	ug/L
Pyrene	0.107	ug/L
Total Suspended Solids	129	mg/L

**Waters Department**

Client Sample ID: **SWM06-02**

Lab Sample ID: 1164922008

**Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Calcium	3010	ug/L
Hardness as CaCO3	10.4	mg/L
Magnesium	689	ug/L
Biochemical Oxygen Demand	2.90	mg/L
Fecal Coliform	8000	col/100mL
Total Suspended Solids	24.8	mg/L

**Microbiology Laboratory**

**Waters Department**

Client Sample ID: **SWM07-02**

Lab Sample ID: 1164922009

**Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Calcium	5020	ug/L
Hardness as CaCO3	21.2	mg/L
Magnesium	2110	ug/L
Biochemical Oxygen Demand	14.0	mg/L
Fecal Coliform	9900	col/100mL
Benzo[b]Fluoranthene	0.0518	ug/L
Benzo[g,h,i]perylene	0.0585	ug/L
Chrysene	0.0742	ug/L
Fluoranthene	0.0777	ug/L
Pyrene	0.112	ug/L
Total Suspended Solids	129	mg/L

**Microbiology Laboratory**

**Polynuclear Aromatics GC/MS**

**Waters Department**

Client Sample ID: **SWM08-02**

Lab Sample ID: 1164922010

**Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Calcium	3720	ug/L
Hardness as CaCO3	13.6	mg/L
Magnesium	1060	ug/L
Biochemical Oxygen Demand	3.87	mg/L
Fecal Coliform	782	col/100mL
Total Suspended Solids	60.0	mg/L

**Microbiology Laboratory**

**Waters Department**

### Detectable Results Summary

Client Sample ID: **SWM08-02 Dup**

Lab Sample ID: 1164922011

**Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Calcium	3680	ug/L
Hardness as CaCO3	14.1	mg/L
Magnesium	1190	ug/L
Biochemical Oxygen Demand	3.79	mg/L
Fecal Coliform	891	col/100mL
Total Suspended Solids	60.8	mg/L

**Microbiology Laboratory**

**Waters Department**

Client Sample ID: **SWM09-02**

Lab Sample ID: 1164922012

**Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Calcium	8030	ug/L
Hardness as CaCO3	27.8	mg/L
Magnesium	1890	ug/L
Biochemical Oxygen Demand	3.12	mg/L
Fecal Coliform	700	col/100mL

**Microbiology Laboratory**

**Polynuclear Aromatics GC/MS**

Benzo(a)Anthracene	0.0799	ug/L
Benzo[a]pyrene	0.120	ug/L
Benzo[b]Fluoranthene	0.247	ug/L
Benzo[g,h,i]perylene	0.143	ug/L
Benzo[k]fluoranthene	0.0686	ug/L
Chrysene	0.204	ug/L
Dibenzo[a,h]anthracene	0.0272	ug/L
Fluoranthene	0.335	ug/L
Indeno[1,2,3-c,d] pyrene	0.107	ug/L
Phenanthrene	0.105	ug/L
Pyrene	0.246	ug/L
Total Suspended Solids	48.6	mg/L

**Waters Department**

Client Sample ID: **SWM10-02**

Lab Sample ID: 1164922013

**Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Calcium	12600	ug/L
Hardness as CaCO3	43.0	mg/L
Magnesium	2810	ug/L
Biochemical Oxygen Demand	2.62	mg/L
Fecal Coliform	390	col/100mL
Total Suspended Solids	59.8	mg/L

**Microbiology Laboratory**

**Waters Department**

Client Sample ID: **SWM02-02**

Lab Sample ID: 1164922014

**Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Copper	3.07	ug/L

Client Sample ID: **SWM02-02 Dup**

Lab Sample ID: 1164922015

**Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Copper	2.73	ug/L

Client Sample ID: **SWM03-02**

Lab Sample ID: 1164922016

**Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Copper	4.10	ug/L

### Detectable Results Summary

Client Sample ID: <b>SWM04-02</b>			
Lab Sample ID: 1164922017	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Dissolved Metals by ICP/MS</b>	Copper	3.38	ug/L
Client Sample ID: <b>SWM05-02</b>			
Lab Sample ID: 1164922018	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Dissolved Metals by ICP/MS</b>	Copper	4.94	ug/L
Client Sample ID: <b>SWM06-02</b>			
Lab Sample ID: 1164922019	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Dissolved Metals by ICP/MS</b>	Copper	1.97	ug/L
Client Sample ID: <b>SWM07-02</b>			
Lab Sample ID: 1164922020	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Dissolved Metals by ICP/MS</b>	Copper	7.33	ug/L
Client Sample ID: <b>SWM08-02</b>			
Lab Sample ID: 1164922021	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Dissolved Metals by ICP/MS</b>	Copper	3.04	ug/L
Client Sample ID: <b>SWM08-02 Dup</b>			
Lab Sample ID: 1164922022	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Dissolved Metals by ICP/MS</b>	Copper	3.00	ug/L
Client Sample ID: <b>SWM09-02</b>			
Lab Sample ID: 1164922023	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Dissolved Metals by ICP/MS</b>	Copper	950	ug/L
Client Sample ID: <b>SWM10-02</b>			
Lab Sample ID: 1164922024	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Dissolved Metals by ICP/MS</b>	Copper	2.05	ug/L

Print Date: 09/09/2016 1:39:05PM



Results of **SWM02-02**

Client Sample ID: **SWM02-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164922001  
Lab Project ID: 1164922

Collection Date: 08/22/16 14:00  
Received Date: 08/22/16 18:00  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Calcium	37500	500	150	ug/L	1		08/30/16 18:38
Magnesium	7430	50.0	15.0	ug/L	1		08/30/16 18:38

**Batch Information**

Analytical Batch: MMS9515  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 08/30/16 18:38  
Container ID: 1164922001-B

Prep Batch: MXX30127  
Prep Method: E200.2  
Prep Date/Time: 08/26/16 10:28  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Hardness as CaCO3	124	5.00	5.00	mg/L	1		08/30/16 18:38

**Batch Information**

Analytical Batch: MMS9515  
Analytical Method: SM21 2340B  
Analyst: VDL  
Analytical Date/Time: 08/30/16 18:38  
Container ID: 1164922001-B

Prep Batch: MXX30127  
Prep Method: E200.2  
Prep Date/Time: 08/26/16 10:28  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 09/09/2016 1:39:06PM



Results of **SWM02-02**

Client Sample ID: **SWM02-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164922001  
Lab Project ID: 1164922

Collection Date: 08/22/16 14:00  
Received Date: 08/22/16 18:00  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		08/23/16 17:20

**Batch Information**

Analytical Batch: BOD5531  
Analytical Method: SM21 5210B  
Analyst: K.W  
Analytical Date/Time: 08/23/16 17:20  
Container ID: 1164922001-C

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	13	1.64	1.64	col/100mL	1		08/22/16 20:20

**Batch Information**

Analytical Batch: BTF15064  
Analytical Method: SM21 9222D  
Analyst: ACF  
Analytical Date/Time: 08/22/16 20:20  
Container ID: 1164922001-A

Print Date: 09/09/2016 1:39:06PM



### Results of SWM02-02

Client Sample ID: **SWM02-02**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1164922001  
 Lab Project ID: 1164922

Collection Date: 08/22/16 14:00  
 Received Date: 08/22/16 18:00  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

### Results by Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0568 U	0.0568	0.0170	ug/L	1		09/02/16 01:44
Acenaphthylene	0.0568 U	0.0568	0.0170	ug/L	1		09/02/16 01:44
Anthracene	0.0568 U	0.0568	0.0170	ug/L	1		09/02/16 01:44
Benzo(a)Anthracene	0.0568 U	0.0568	0.0170	ug/L	1		09/02/16 01:44
Benzo[a]pyrene	0.0227 U	0.0227	0.0170	ug/L	1		09/02/16 01:44
Benzo[b]Fluoranthene	0.0568 U	0.0568	0.0170	ug/L	1		09/02/16 01:44
Benzo[g,h,i]perylene	0.0568 U	0.0568	0.0170	ug/L	1		09/02/16 01:44
Benzo[k]fluoranthene	0.0568 U	0.0568	0.0170	ug/L	1		09/02/16 01:44
Chrysene	0.0568 U	0.0568	0.0170	ug/L	1		09/02/16 01:44
Dibenzo[a,h]anthracene	0.0227 U	0.0227	0.0170	ug/L	1		09/02/16 01:44
Fluoranthene	0.0680	0.0568	0.0170	ug/L	1		09/02/16 01:44
Fluorene	0.0568 U	0.0568	0.0170	ug/L	1		09/02/16 01:44
Indeno[1,2,3-c,d] pyrene	0.0568 U	0.0568	0.0170	ug/L	1		09/02/16 01:44
Naphthalene	0.114 U	0.114	0.0352	ug/L	1		09/02/16 01:44
Phenanthrene	0.0568 U	0.0568	0.0170	ug/L	1		09/02/16 01:44
Pyrene	0.0568 U	0.0568	0.0170	ug/L	1		09/02/16 01:44
<b>Surrogates</b>							
2-Fluorobiphenyl (surr)	72.8	53-106		%	1		09/02/16 01:44
Terphenyl-d14 (surr)	74.8	58-132		%	1		09/02/16 01:44

### Batch Information

Analytical Batch: XMS9586  
 Analytical Method: EPA 625M SIM (PAH)  
 Analyst: BRV  
 Analytical Date/Time: 09/02/16 01:44  
 Container ID: 1164922001-E

Prep Batch: XXX36162  
 Prep Method: SW3520C  
 Prep Date/Time: 08/27/16 10:44  
 Prep Initial Wt./Vol.: 880 mL  
 Prep Extract Vol: 1 mL

Print Date: 09/09/2016 1:39:06PM

## Results of SWM02-02

Client Sample ID: **SWM02-02**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1164922001  
 Lab Project ID: 1164922

Collection Date: 08/22/16 14:00  
 Received Date: 08/22/16 18:00  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

## Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/31/16 14:56
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/31/16 14:56
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/31/16 14:56
Benzene	0.400 U	0.400	0.120	ug/L	1		08/31/16 14:56
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/31/16 14:56
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		08/31/16 14:56
o-Xylene	1.00 U	1.00	0.310	ug/L	1		08/31/16 14:56
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		08/31/16 14:56
Toluene	1.00 U	1.00	0.310	ug/L	1		08/31/16 14:56
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	113	81-118		%	1		08/31/16 14:56
4-Bromofluorobenzene (surr)	101	85-114		%	1		08/31/16 14:56
Toluene-d8 (surr)	98.9	89-112		%	1		08/31/16 14:56

## Batch Information

Analytical Batch: VMS16134  
 Analytical Method: EPA 602/624  
 Analyst: TJT  
 Analytical Date/Time: 08/31/16 14:56  
 Container ID: 1164922001-G

Prep Batch: VXX29479  
 Prep Method: SW5030B  
 Prep Date/Time: 08/31/16 06:00  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL



## Results of SWM02-02

Client Sample ID: **SWM02-02**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1164922001  
 Lab Project ID: 1164922

Collection Date: 08/22/16 14:00  
 Received Date: 08/22/16 18:00  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

## Results by Waters Department

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	2.44	1.28	0.397	mg/L	1		08/24/16 12:15

## Batch Information

Analytical Batch: STS5170  
 Analytical Method: SM21 2540D  
 Analyst: LLP  
 Analytical Date/Time: 08/24/16 12:15  
 Container ID: 1164922001-D

Print Date: 09/09/2016 1:39:06PM



Results of SWM02-02 Dup

Client Sample ID: SWM02-02 Dup
Client Project ID: 5078 MOA Stormwater Management
Lab Sample ID: 1164922004
Lab Project ID: 1164922

Collection Date: 08/22/16 14:00
Received Date: 08/22/16 18:00
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Metals by ICP/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Calcium and Magnesium.

Batch Information

Analytical Batch: MMS9515
Analytical Method: EP200.8
Analyst: VDL
Analytical Date/Time: 08/30/16 19:02
Container ID: 1164922004-B
Prep Batch: MXX30127
Prep Method: E200.2
Prep Date/Time: 08/26/16 10:28
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row includes Hardness as CaCO3.

Batch Information

Analytical Batch: MMS9515
Analytical Method: SM21 2340B
Analyst: VDL
Analytical Date/Time: 08/30/16 19:02
Container ID: 1164922004-B
Prep Batch: MXX30127
Prep Method: E200.2
Prep Date/Time: 08/26/16 10:28
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 09/09/2016 1:39:06PM

## Results of SWM02-02 Dup

Client Sample ID: **SWM02-02 Dup**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1164922004  
 Lab Project ID: 1164922

Collection Date: 08/22/16 14:00  
 Received Date: 08/22/16 18:00  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

## Results by Microbiology Laboratory

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		08/23/16 17:20

### Batch Information

Analytical Batch: BOD5531  
 Analytical Method: SM21 5210B  
 Analyst: K.W  
 Analytical Date/Time: 08/23/16 17:20  
 Container ID: 1164922004-C

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	6.6	1.64	1.64	col/100mL	1		08/22/16 20:20

### Batch Information

Analytical Batch: BTF15064  
 Analytical Method: SM21 9222D  
 Analyst: ACF  
 Analytical Date/Time: 08/22/16 20:20  
 Container ID: 1164922004-A



Results of SWM02-02 Dup

Client Sample ID: SWM02-02 Dup
Client Project ID: 5078 MOA Stormwater Management
Lab Sample ID: 1164922004
Lab Project ID: 1164922

Collection Date: 08/22/16 14:00
Received Date: 08/22/16 18:00
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate compounds with associated quality and detection data.

Batch Information

Analytical Batch: XMS9586
Analytical Method: EPA 625M SIM (PAH)
Analyst: BRV
Analytical Date/Time: 09/02/16 02:51
Container ID: 1164922004-E

Prep Batch: XXX36162
Prep Method: SW3520C
Prep Date/Time: 08/27/16 10:44
Prep Initial Wt./Vol.: 900 mL
Prep Extract Vol: 1 mL

## Results of SWM02-02 Dup

Client Sample ID: **SWM02-02 Dup**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1164922004  
 Lab Project ID: 1164922

Collection Date: 08/22/16 14:00  
 Received Date: 08/22/16 18:00  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

## Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/31/16 15:12
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/31/16 15:12
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/31/16 15:12
Benzene	0.400 U	0.400	0.120	ug/L	1		08/31/16 15:12
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/31/16 15:12
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		08/31/16 15:12
o-Xylene	1.00 U	1.00	0.310	ug/L	1		08/31/16 15:12
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		08/31/16 15:12
Toluene	1.00 U	1.00	0.310	ug/L	1		08/31/16 15:12
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	103	81-118		%	1		08/31/16 15:12
4-Bromofluorobenzene (surr)	101	85-114		%	1		08/31/16 15:12
Toluene-d8 (surr)	101	89-112		%	1		08/31/16 15:12

## Batch Information

Analytical Batch: VMS16134  
 Analytical Method: EPA 602/624  
 Analyst: TJT  
 Analytical Date/Time: 08/31/16 15:12  
 Container ID: 1164922004-G

Prep Batch: VXX29479  
 Prep Method: SW5030B  
 Prep Date/Time: 08/31/16 06:00  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL

## Results of SWM02-02 Dup

Client Sample ID: **SWM02-02 Dup**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1164922004  
 Lab Project ID: 1164922

Collection Date: 08/22/16 14:00  
 Received Date: 08/22/16 18:00  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

## Results by Waters Department

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	2.45	1.02	0.316	mg/L	1		08/24/16 12:15

## Batch Information

Analytical Batch: STS5170  
 Analytical Method: SM21 2540D  
 Analyst: LLP  
 Analytical Date/Time: 08/24/16 12:15  
 Container ID: 1164922004-D

Print Date: 09/09/2016 1:39:06PM



Results of **SWM03-02**

Client Sample ID: **SWM03-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164922005  
Lab Project ID: 1164922

Collection Date: 08/22/16 14:30  
Received Date: 08/22/16 18:00  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Calcium	21700	500	150	ug/L	1		08/30/16 19:05
Magnesium	7410	50.0	15.0	ug/L	1		08/30/16 19:05

**Batch Information**

Analytical Batch: MMS9515  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 08/30/16 19:05  
Container ID: 1164922005-B

Prep Batch: MXX30127  
Prep Method: E200.2  
Prep Date/Time: 08/26/16 10:28  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Hardness as CaCO3	84.7	5.00	5.00	mg/L	1		08/30/16 19:05

**Batch Information**

Analytical Batch: MMS9515  
Analytical Method: SM21 2340B  
Analyst: VDL  
Analytical Date/Time: 08/30/16 19:05  
Container ID: 1164922005-B

Prep Batch: MXX30127  
Prep Method: E200.2  
Prep Date/Time: 08/26/16 10:28  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 09/09/2016 1:39:06PM



Results of **SWM03-02**

Client Sample ID: **SWM03-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164922005  
Lab Project ID: 1164922

Collection Date: 08/22/16 14:30  
Received Date: 08/22/16 18:00  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.42	2.00	2.00	mg/L	1		08/23/16 17:20

**Batch Information**

Analytical Batch: BOD5531  
Analytical Method: SM21 5210B  
Analyst: K.W  
Analytical Date/Time: 08/23/16 17:20  
Container ID: 1164922005-C

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	1150	9.09	9.09	col/100mL	1		08/22/16 20:20

**Batch Information**

Analytical Batch: BTF15064  
Analytical Method: SM21 9222D  
Analyst: ACF  
Analytical Date/Time: 08/22/16 20:20  
Container ID: 1164922005-A

Print Date: 09/09/2016 1:39:06PM



## Results of SWM03-02

Client Sample ID: **SWM03-02**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1164922005  
 Lab Project ID: 1164922

Collection Date: 08/22/16 14:30  
 Received Date: 08/22/16 18:00  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

## Results by Waters Department

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	16.2	2.38	0.738	mg/L	1		08/24/16 12:15

## Batch Information

Analytical Batch: STS5170  
 Analytical Method: SM21 2540D  
 Analyst: LLP  
 Analytical Date/Time: 08/24/16 12:15  
 Container ID: 1164922005-D

Print Date: 09/09/2016 1:39:06PM



Results of **SWM04-02**

Client Sample ID: **SWM04-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164922006  
Lab Project ID: 1164922

Collection Date: 08/22/16 14:35  
Received Date: 08/22/16 18:00  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Calcium	16500	500	150	ug/L	1		08/30/16 19:08
Magnesium	4560	50.0	15.0	ug/L	1		08/30/16 19:08

**Batch Information**

Analytical Batch: MMS9515  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 08/30/16 19:08  
Container ID: 1164922006-B

Prep Batch: MXX30127  
Prep Method: E200.2  
Prep Date/Time: 08/26/16 10:28  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Hardness as CaCO3	60.0	5.00	5.00	mg/L	1		08/30/16 19:08

**Batch Information**

Analytical Batch: MMS9515  
Analytical Method: SM21 2340B  
Analyst: VDL  
Analytical Date/Time: 08/30/16 19:08  
Container ID: 1164922006-B

Prep Batch: MXX30127  
Prep Method: E200.2  
Prep Date/Time: 08/26/16 10:28  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 09/09/2016 1:39:06PM



Results of **SWM04-02**

Client Sample ID: **SWM04-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164922006  
Lab Project ID: 1164922

Collection Date: 08/22/16 14:35  
Received Date: 08/22/16 18:00  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		08/23/16 17:20

**Batch Information**

Analytical Batch: BOD5531  
Analytical Method: SM21 5210B  
Analyst: K.W  
Analytical Date/Time: 08/23/16 17:20  
Container ID: 1164922006-C

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	2200	100	100	col/100mL	1		08/22/16 20:20

**Batch Information**

Analytical Batch: BTF15064  
Analytical Method: SM21 9222D  
Analyst: ACF  
Analytical Date/Time: 08/22/16 20:20  
Container ID: 1164922006-A

Print Date: 09/09/2016 1:39:06PM

## Results of SWM04-02

Client Sample ID: **SWM04-02**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1164922006  
 Lab Project ID: 1164922

Collection Date: 08/22/16 14:35  
 Received Date: 08/22/16 18:00  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

## Results by Waters Department

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	31.4	2.38	0.738	mg/L	1		08/24/16 12:15

## Batch Information

Analytical Batch: STS5170  
 Analytical Method: SM21 2540D  
 Analyst: LLP  
 Analytical Date/Time: 08/24/16 12:15  
 Container ID: 1164922006-D



Results of **SWM05-02**

Client Sample ID: **SWM05-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164922007  
Lab Project ID: 1164922

Collection Date: 08/22/16 15:00  
Received Date: 08/22/16 18:00  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Calcium	8040	500	150	ug/L	1		08/30/16 19:11
Magnesium	3010	50.0	15.0	ug/L	1		08/30/16 19:11

**Batch Information**

Analytical Batch: MMS9515  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 08/30/16 19:11  
Container ID: 1164922007-B

Prep Batch: MXX30127  
Prep Method: E200.2  
Prep Date/Time: 08/26/16 10:28  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Hardness as CaCO3	32.5	5.00	5.00	mg/L	1		08/30/16 19:11

**Batch Information**

Analytical Batch: MMS9515  
Analytical Method: SM21 2340B  
Analyst: VDL  
Analytical Date/Time: 08/30/16 19:11  
Container ID: 1164922007-B

Prep Batch: MXX30127  
Prep Method: E200.2  
Prep Date/Time: 08/26/16 10:28  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 09/09/2016 1:39:06PM



Results of **SWM05-02**

Client Sample ID: **SWM05-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164922007  
Lab Project ID: 1164922

Collection Date: 08/22/16 15:00  
Received Date: 08/22/16 18:00  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	3.28	2.00	2.00	mg/L	1		08/23/16 17:20

**Batch Information**

Analytical Batch: BOD5531  
Analytical Method: SM21 5210B  
Analyst: K.W  
Analytical Date/Time: 08/23/16 17:20  
Container ID: 1164922007-C

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	1500	100	100	col/100mL	1		08/22/16 20:20

**Batch Information**

Analytical Batch: BTF15064  
Analytical Method: SM21 9222D  
Analyst: ACF  
Analytical Date/Time: 08/22/16 20:20  
Container ID: 1164922007-A

Print Date: 09/09/2016 1:39:06PM



Results of **SWM05-02**

Client Sample ID: **SWM05-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164922007  
Lab Project ID: 1164922

Collection Date: 08/22/16 15:00  
Received Date: 08/22/16 18:00  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0529 U	0.0529	0.0159	ug/L	1		09/02/16 03:13
Acenaphthylene	0.0529 U	0.0529	0.0159	ug/L	1		09/02/16 03:13
Anthracene	0.0529 U	0.0529	0.0159	ug/L	1		09/02/16 03:13
Benzo(a)Anthracene	0.0529 U	0.0529	0.0159	ug/L	1		09/02/16 03:13
Benzo[a]pyrene	0.0334	0.0212	0.0159	ug/L	1		09/02/16 03:13
Benzo[b]Fluoranthene	0.107	0.0529	0.0159	ug/L	1		09/02/16 03:13
Benzo[g,h,i]perylene	0.0654	0.0529	0.0159	ug/L	1		09/02/16 03:13
Benzo[k]fluoranthene	0.0529 U	0.0529	0.0159	ug/L	1		09/02/16 03:13
Chrysene	0.110	0.0529	0.0159	ug/L	1		09/02/16 03:13
Dibenzo[a,h]anthracene	0.0212 U	0.0212	0.0159	ug/L	1		09/02/16 03:13
Fluoranthene	0.132	0.0529	0.0159	ug/L	1		09/02/16 03:13
Fluorene	0.0529 U	0.0529	0.0159	ug/L	1		09/02/16 03:13
Indeno[1,2,3-c,d] pyrene	0.0529 U	0.0529	0.0159	ug/L	1		09/02/16 03:13
Naphthalene	0.106 U	0.106	0.0328	ug/L	1		09/02/16 03:13
Phenanthrene	0.0529 U	0.0529	0.0159	ug/L	1		09/02/16 03:13
Pyrene	0.107	0.0529	0.0159	ug/L	1		09/02/16 03:13
<b>Surrogates</b>							
2-Fluorobiphenyl (surr)	49.6	*	53-106	%	1		09/02/16 03:13
Terphenyl-d14 (surr)	33.6	*	58-132	%	1		09/02/16 03:13

**Batch Information**

Analytical Batch: XMS9586  
Analytical Method: EPA 625M SIM (PAH)  
Analyst: BRV  
Analytical Date/Time: 09/02/16 03:13  
Container ID: 1164922007-E

Prep Batch: XXX36162  
Prep Method: SW3520C  
Prep Date/Time: 08/27/16 10:44  
Prep Initial Wt./Vol.: 945 mL  
Prep Extract Vol: 1 mL

Print Date: 09/09/2016 1:39:06PM



Results of **SWM05-02**

Client Sample ID: **SWM05-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164922007  
Lab Project ID: 1164922

Collection Date: 08/22/16 15:00  
Received Date: 08/22/16 18:00  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/31/16 16:18
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/31/16 16:18
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/31/16 16:18
Benzene	0.400 U	0.400	0.120	ug/L	1		08/31/16 16:18
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/31/16 16:18
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		08/31/16 16:18
o-Xylene	1.00 U	1.00	0.310	ug/L	1		08/31/16 16:18
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		08/31/16 16:18
Toluene	1.00 U	1.00	0.310	ug/L	1		08/31/16 16:18
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	107	81-118		%	1		08/31/16 16:18
4-Bromofluorobenzene (surr)	102	85-114		%	1		08/31/16 16:18
Toluene-d8 (surr)	100	89-112		%	1		08/31/16 16:18

**Batch Information**

Analytical Batch: VMS16134  
Analytical Method: EPA 602/624  
Analyst: TJT  
Analytical Date/Time: 08/31/16 16:18  
Container ID: 1164922007-G

Prep Batch: VXX29479  
Prep Method: SW5030B  
Prep Date/Time: 08/31/16 06:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

Print Date: 09/09/2016 1:39:06PM



## Results of SWM05-02

Client Sample ID: **SWM05-02**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1164922007  
 Lab Project ID: 1164922

Collection Date: 08/22/16 15:00  
 Received Date: 08/22/16 18:00  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

## Results by Waters Department

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	129	7.14	2.21	mg/L	1		08/24/16 12:15

## Batch Information

Analytical Batch: STS5170  
 Analytical Method: SM21 2540D  
 Analyst: LLP  
 Analytical Date/Time: 08/24/16 12:15  
 Container ID: 1164922007-D

Print Date: 09/09/2016 1:39:06PM



Results of **SWM06-02**

Client Sample ID: **SWM06-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164922008  
Lab Project ID: 1164922

Collection Date: 08/22/16 15:45  
Received Date: 08/22/16 18:00  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Calcium	3010	500	150	ug/L	1		08/30/16 19:14
Magnesium	689	50.0	15.0	ug/L	1		08/30/16 19:14

**Batch Information**

Analytical Batch: MMS9515  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 08/30/16 19:14  
Container ID: 1164922008-B

Prep Batch: MXX30127  
Prep Method: E200.2  
Prep Date/Time: 08/26/16 10:28  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Hardness as CaCO3	10.4	5.00	5.00	mg/L	1		08/30/16 19:14

**Batch Information**

Analytical Batch: MMS9515  
Analytical Method: SM21 2340B  
Analyst: VDL  
Analytical Date/Time: 08/30/16 19:14  
Container ID: 1164922008-B

Prep Batch: MXX30127  
Prep Method: E200.2  
Prep Date/Time: 08/26/16 10:28  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 09/09/2016 1:39:06PM



Results of **SWM06-02**

Client Sample ID: **SWM06-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164922008  
Lab Project ID: 1164922

Collection Date: 08/22/16 15:45  
Received Date: 08/22/16 18:00  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.90	2.00	2.00	mg/L	1		08/23/16 17:20

**Batch Information**

Analytical Batch: BOD5531  
Analytical Method: SM21 5210B  
Analyst: K.W  
Analytical Date/Time: 08/23/16 17:20  
Container ID: 1164922008-C

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	8000	100	100	col/100mL	1		08/22/16 20:20

**Batch Information**

Analytical Batch: BTF15064  
Analytical Method: SM21 9222D  
Analyst: ACF  
Analytical Date/Time: 08/22/16 20:20  
Container ID: 1164922008-A

Print Date: 09/09/2016 1:39:06PM



**Results of SWM06-02**

Client Sample ID: **SWM06-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164922008  
Lab Project ID: 1164922

Collection Date: 08/22/16 15:45  
Received Date: 08/22/16 18:00  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	24.8	2.40	0.745	mg/L	1		08/24/16 12:15

**Batch Information**

Analytical Batch: STS5170  
Analytical Method: SM21 2540D  
Analyst: LLP  
Analytical Date/Time: 08/24/16 12:15  
Container ID: 1164922008-D

Print Date: 09/09/2016 1:39:06PM



Results of **SWM07-02**

Client Sample ID: **SWM07-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164922009  
Lab Project ID: 1164922

Collection Date: 08/22/16 16:05  
Received Date: 08/22/16 18:00  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Calcium	5020	500	150	ug/L	1		08/30/16 19:23
Magnesium	2110	50.0	15.0	ug/L	1		08/30/16 19:23

**Batch Information**

Analytical Batch: MMS9515  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 08/30/16 19:23  
Container ID: 1164922009-B

Prep Batch: MXX30127  
Prep Method: E200.2  
Prep Date/Time: 08/26/16 10:28  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Hardness as CaCO3	21.2	5.00	5.00	mg/L	1		08/30/16 19:23

**Batch Information**

Analytical Batch: MMS9515  
Analytical Method: SM21 2340B  
Analyst: VDL  
Analytical Date/Time: 08/30/16 19:23  
Container ID: 1164922009-B

Prep Batch: MXX30127  
Prep Method: E200.2  
Prep Date/Time: 08/26/16 10:28  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 09/09/2016 1:39:06PM

## Results of SWM07-02

Client Sample ID: **SWM07-02**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1164922009  
 Lab Project ID: 1164922

Collection Date: 08/22/16 16:05  
 Received Date: 08/22/16 18:00  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

## Results by Microbiology Laboratory

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	14.0	2.00	2.00	mg/L	1		08/23/16 17:20

### Batch Information

Analytical Batch: BOD5531  
 Analytical Method: SM21 5210B  
 Analyst: K.W  
 Analytical Date/Time: 08/23/16 17:20  
 Container ID: 1164922009-C

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	9900	100	100	col/100mL	1		08/22/16 20:20

### Batch Information

Analytical Batch: BTF15064  
 Analytical Method: SM21 9222D  
 Analyst: ACF  
 Analytical Date/Time: 08/22/16 20:20  
 Container ID: 1164922009-A



Results of SWM07-02

Client Sample ID: SWM07-02
Client Project ID: 5078 MOA Stormwater Management
Lab Sample ID: 1164922009
Lab Project ID: 1164922

Collection Date: 08/22/16 16:05
Received Date: 08/22/16 18:00
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their detection results.

Batch Information

Analytical Batch: XMS9586
Analytical Method: EPA 625M SIM (PAH)
Analyst: BRV
Analytical Date/Time: 09/02/16 03:36
Container ID: 1164922009-E

Prep Batch: XXX36162
Prep Method: SW3520C
Prep Date/Time: 08/27/16 10:44
Prep Initial Wt./Vol.: 965 mL
Prep Extract Vol: 1 mL



Results of **SWM07-02**

Client Sample ID: **SWM07-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164922009  
Lab Project ID: 1164922

Collection Date: 08/22/16 16:05  
Received Date: 08/22/16 18:00  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/31/16 16:35
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/31/16 16:35
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/31/16 16:35
Benzene	0.400 U	0.400	0.120	ug/L	1		08/31/16 16:35
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/31/16 16:35
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		08/31/16 16:35
o-Xylene	1.00 U	1.00	0.310	ug/L	1		08/31/16 16:35
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		08/31/16 16:35
Toluene	1.00 U	1.00	0.310	ug/L	1		08/31/16 16:35
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	112	81-118		%	1		08/31/16 16:35
4-Bromofluorobenzene (surr)	101	85-114		%	1		08/31/16 16:35
Toluene-d8 (surr)	102	89-112		%	1		08/31/16 16:35

**Batch Information**

Analytical Batch: VMS16134  
Analytical Method: EPA 602/624  
Analyst: TJT  
Analytical Date/Time: 08/31/16 16:35  
Container ID: 1164922009-G

Prep Batch: VXX29479  
Prep Method: SW5030B  
Prep Date/Time: 08/31/16 06:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

Print Date: 09/09/2016 1:39:06PM



## Results of SWM07-02

Client Sample ID: **SWM07-02**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1164922009  
 Lab Project ID: 1164922

Collection Date: 08/22/16 16:05  
 Received Date: 08/22/16 18:00  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

## Results by Waters Department

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	129	6.67	2.07	mg/L	1		08/24/16 12:15

## Batch Information

Analytical Batch: STS5170  
 Analytical Method: SM21 2540D  
 Analyst: LLP  
 Analytical Date/Time: 08/24/16 12:15  
 Container ID: 1164922009-D

Print Date: 09/09/2016 1:39:06PM



Results of **SWM08-02**

Client Sample ID: **SWM08-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164922010  
Lab Project ID: 1164922

Collection Date: 08/22/16 16:00  
Received Date: 08/22/16 18:00  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Calcium	3720	500	150	ug/L	1		08/30/16 19:26
Magnesium	1060	50.0	15.0	ug/L	1		08/30/16 19:26

**Batch Information**

Analytical Batch: MMS9515  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 08/30/16 19:26  
Container ID: 1164922010-B

Prep Batch: MXX30127  
Prep Method: E200.2  
Prep Date/Time: 08/26/16 10:28  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Hardness as CaCO3	13.6	5.00	5.00	mg/L	1		08/30/16 19:26

**Batch Information**

Analytical Batch: MMS9515  
Analytical Method: SM21 2340B  
Analyst: VDL  
Analytical Date/Time: 08/30/16 19:26  
Container ID: 1164922010-B

Prep Batch: MXX30127  
Prep Method: E200.2  
Prep Date/Time: 08/26/16 10:28  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 09/09/2016 1:39:06PM



Results of **SWM08-02**

Client Sample ID: **SWM08-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164922010  
Lab Project ID: 1164922

Collection Date: 08/22/16 16:00  
Received Date: 08/22/16 18:00  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	3.87	2.00	2.00	mg/L	1		08/23/16 17:20

**Batch Information**

Analytical Batch: BOD5531  
Analytical Method: SM21 5210B  
Analyst: K.W  
Analytical Date/Time: 08/23/16 17:20  
Container ID: 1164922010-C

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	782	9.09	9.09	col/100mL	1		08/22/16 20:20

**Batch Information**

Analytical Batch: BTF15064  
Analytical Method: SM21 9222D  
Analyst: ACF  
Analytical Date/Time: 08/22/16 20:20  
Container ID: 1164922010-A

Print Date: 09/09/2016 1:39:06PM

## Results of SWM08-02

Client Sample ID: **SWM08-02**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1164922010  
 Lab Project ID: 1164922

Collection Date: 08/22/16 16:00  
 Received Date: 08/22/16 18:00  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

## Results by Waters Department

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	60.0	3.77	1.17	mg/L	1		08/24/16 12:15

## Batch Information

Analytical Batch: STS5170  
 Analytical Method: SM21 2540D  
 Analyst: LLP  
 Analytical Date/Time: 08/24/16 12:15  
 Container ID: 1164922010-D

Print Date: 09/09/2016 1:39:06PM



**Results of SWM08-02 Dup**

Client Sample ID: **SWM08-02 Dup**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164922011  
Lab Project ID: 1164922

Collection Date: 08/22/16 16:00  
Received Date: 08/22/16 18:00  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Calcium	3680	500	150	ug/L	1		08/30/16 19:35
Magnesium	1190	50.0	15.0	ug/L	1		08/30/16 19:35

**Batch Information**

Analytical Batch: MMS9515  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 08/30/16 19:35  
Container ID: 1164922011-B

Prep Batch: MXX30127  
Prep Method: E200.2  
Prep Date/Time: 08/26/16 10:28  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Hardness as CaCO3	14.1	5.00	5.00	mg/L	1		08/30/16 19:35

**Batch Information**

Analytical Batch: MMS9515  
Analytical Method: SM21 2340B  
Analyst: VDL  
Analytical Date/Time: 08/30/16 19:35  
Container ID: 1164922011-B

Prep Batch: MXX30127  
Prep Method: E200.2  
Prep Date/Time: 08/26/16 10:28  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 09/09/2016 1:39:06PM



**Results of SWM08-02 Dup**

Client Sample ID: **SWM08-02 Dup**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164922011  
Lab Project ID: 1164922

Collection Date: 08/22/16 16:00  
Received Date: 08/22/16 18:00  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	3.79	2.00	2.00	mg/L	1		08/23/16 17:20

**Batch Information**

Analytical Batch: BOD5531  
Analytical Method: SM21 5210B  
Analyst: K.W  
Analytical Date/Time: 08/23/16 17:20  
Container ID: 1164922011-C

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	891	9.09	9.09	col/100mL	1		08/22/16 20:20

**Batch Information**

Analytical Batch: BTF15064  
Analytical Method: SM21 9222D  
Analyst: ACF  
Analytical Date/Time: 08/22/16 20:20  
Container ID: 1164922011-A

Print Date: 09/09/2016 1:39:06PM

## Results of SWM08-02 Dup

Client Sample ID: **SWM08-02 Dup**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1164922011  
 Lab Project ID: 1164922

Collection Date: 08/22/16 16:00  
 Received Date: 08/22/16 18:00  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

## Results by Waters Department

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	60.8	4.00	1.24	mg/L	1		08/24/16 12:15

## Batch Information

Analytical Batch: STS5170  
 Analytical Method: SM21 2540D  
 Analyst: LLP  
 Analytical Date/Time: 08/24/16 12:15  
 Container ID: 1164922011-D

Print Date: 09/09/2016 1:39:06PM



Results of **SWM09-02**

Client Sample ID: **SWM09-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164922012  
Lab Project ID: 1164922

Collection Date: 08/22/16 16:40  
Received Date: 08/22/16 18:00  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Calcium	8030	500	150	ug/L	1		08/30/16 19:38
Magnesium	1890	50.0	15.0	ug/L	1		08/30/16 19:38

**Batch Information**

Analytical Batch: MMS9515  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 08/30/16 19:38  
Container ID: 1164922012-B

Prep Batch: MXX30127  
Prep Method: E200.2  
Prep Date/Time: 08/26/16 10:28  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Hardness as CaCO3	27.8	5.00	5.00	mg/L	1		08/30/16 19:38

**Batch Information**

Analytical Batch: MMS9515  
Analytical Method: SM21 2340B  
Analyst: VDL  
Analytical Date/Time: 08/30/16 19:38  
Container ID: 1164922012-B

Prep Batch: MXX30127  
Prep Method: E200.2  
Prep Date/Time: 08/26/16 10:28  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 09/09/2016 1:39:06PM





Results of **SWM09-02**

Client Sample ID: **SWM09-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164922012  
Lab Project ID: 1164922

Collection Date: 08/22/16 16:40  
Received Date: 08/22/16 18:00  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	3.12	2.00	2.00	mg/L	1		08/23/16 17:20

**Batch Information**

Analytical Batch: BOD5531  
Analytical Method: SM21 5210B  
Analyst: K.W  
Analytical Date/Time: 08/23/16 17:20  
Container ID: 1164922012-C

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	700	9.09	9.09	col/100mL	1		08/22/16 20:20

**Batch Information**

Analytical Batch: BTF15064  
Analytical Method: SM21 9222D  
Analyst: ACF  
Analytical Date/Time: 08/22/16 20:20  
Container ID: 1164922012-A

Print Date: 09/09/2016 1:39:06PM



Results of SWM09-02

Client Sample ID: SWM09-02
Client Project ID: 5078 MOA Stormwater Management
Lab Sample ID: 1164922012
Lab Project ID: 1164922

Collection Date: 08/22/16 16:40
Received Date: 08/22/16 18:00
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their detection results.

Batch Information

Analytical Batch: XMS9586
Analytical Method: EPA 625M SIM (PAH)
Analyst: BRV
Analytical Date/Time: 09/02/16 03:58
Container ID: 1164922012-E

Prep Batch: XXX36162
Prep Method: SW3520C
Prep Date/Time: 08/27/16 10:44
Prep Initial Wt./Vol.: 930 mL
Prep Extract Vol: 1 mL

## Results of SWM09-02

Client Sample ID: **SWM09-02**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1164922012  
 Lab Project ID: 1164922

Collection Date: 08/22/16 16:40  
 Received Date: 08/22/16 18:00  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

## Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/31/16 17:08
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/31/16 17:08
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/31/16 17:08
Benzene	0.400 U	0.400	0.120	ug/L	1		08/31/16 17:08
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/31/16 17:08
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		08/31/16 17:08
o-Xylene	1.00 U	1.00	0.310	ug/L	1		08/31/16 17:08
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		08/31/16 17:08
Toluene	1.00 U	1.00	0.310	ug/L	1		08/31/16 17:08
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	105	81-118		%	1		08/31/16 17:08
4-Bromofluorobenzene (surr)	103	85-114		%	1		08/31/16 17:08
Toluene-d8 (surr)	101	89-112		%	1		08/31/16 17:08

## Batch Information

Analytical Batch: VMS16134  
 Analytical Method: EPA 602/624  
 Analyst: TJT  
 Analytical Date/Time: 08/31/16 17:08  
 Container ID: 1164922012-G

Prep Batch: VXX29479  
 Prep Method: SW5030B  
 Prep Date/Time: 08/31/16 06:00  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL



Results of **SWM09-02**

Client Sample ID: **SWM09-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164922012  
Lab Project ID: 1164922

Collection Date: 08/22/16 16:40  
Received Date: 08/22/16 18:00  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	48.6	3.08	0.954	mg/L	1		08/24/16 12:15

Batch Information

Analytical Batch: STS5170  
Analytical Method: SM21 2540D  
Analyst: LLP  
Analytical Date/Time: 08/24/16 12:15  
Container ID: 1164922012-D

Print Date: 09/09/2016 1:39:06PM



Results of **SWM10-02**

Client Sample ID: **SWM10-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164922013  
Lab Project ID: 1164922

Collection Date: 08/22/16 16:47  
Received Date: 08/22/16 18:00  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Calcium	12600	500	150	ug/L	1		08/30/16 19:41
Magnesium	2810	50.0	15.0	ug/L	1		08/30/16 19:41

**Batch Information**

Analytical Batch: MMS9515  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 08/30/16 19:41  
Container ID: 1164922013-B

Prep Batch: MXX30127  
Prep Method: E200.2  
Prep Date/Time: 08/26/16 10:28  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Hardness as CaCO3	43.0	5.00	5.00	mg/L	1		08/30/16 19:41

**Batch Information**

Analytical Batch: MMS9515  
Analytical Method: SM21 2340B  
Analyst: VDL  
Analytical Date/Time: 08/30/16 19:41  
Container ID: 1164922013-B

Prep Batch: MXX30127  
Prep Method: E200.2  
Prep Date/Time: 08/26/16 10:28  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 09/09/2016 1:39:06PM



Results of **SWM10-02**

Client Sample ID: **SWM10-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164922013  
Lab Project ID: 1164922

Collection Date: 08/22/16 16:47  
Received Date: 08/22/16 18:00  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.62	2.00	2.00	mg/L	1		08/23/16 17:20

**Batch Information**

Analytical Batch: BOD5531  
Analytical Method: SM21 5210B  
Analyst: K.W  
Analytical Date/Time: 08/23/16 17:20  
Container ID: 1164922013-C

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	390	10.0	10.0	col/100mL	1		08/22/16 20:20

**Batch Information**

Analytical Batch: BTF15064  
Analytical Method: SM21 9222D  
Analyst: ACF  
Analytical Date/Time: 08/22/16 20:20  
Container ID: 1164922013-A

Print Date: 09/09/2016 1:39:06PM

## Results of SWM10-02

Client Sample ID: **SWM10-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164922013  
Lab Project ID: 1164922

Collection Date: 08/22/16 16:47  
Received Date: 08/22/16 18:00  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

## Results by Waters Department

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	59.8	2.38	0.738	mg/L	1		08/24/16 12:15

## Batch Information

Analytical Batch: STS5170  
Analytical Method: SM21 2540D  
Analyst: LLP  
Analytical Date/Time: 08/24/16 12:15  
Container ID: 1164922013-D

Print Date: 09/09/2016 1:39:06PM

## Results of SWM02-02

Client Sample ID: **SWM02-02**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1164922014  
 Lab Project ID: 1164922

Collection Date: 08/22/16 14:00  
 Received Date: 08/22/16 18:00  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

## Results by Dissolved Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	3.07	1.00	0.310	ug/L	1		08/24/16 19:16

## Batch Information

Analytical Batch: MMS9508  
 Analytical Method: EP200.8  
 Analyst: VDL  
 Analytical Date/Time: 08/24/16 19:16  
 Container ID: 1164922014-B

Prep Batch: MX30114  
 Prep Method: E200.2  
 Prep Date/Time: 08/24/16 11:55  
 Prep Initial Wt./Vol.: 20 mL  
 Prep Extract Vol: 50 mL



## Results of SWM02-02 Dup

Client Sample ID: **SWM02-02 Dup**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1164922015  
 Lab Project ID: 1164922

Collection Date: 08/22/16 14:00  
 Received Date: 08/22/16 18:00  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

## Results by Dissolved Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	2.73	1.00	0.310	ug/L	1		08/24/16 18:31

## Batch Information

Analytical Batch: MMS9508  
 Analytical Method: EP200.8  
 Analyst: VDL  
 Analytical Date/Time: 08/24/16 18:31  
 Container ID: 1164922015-B

Prep Batch: MXX30114  
 Prep Method: E200.2  
 Prep Date/Time: 08/24/16 11:55  
 Prep Initial Wt./Vol.: 20 mL  
 Prep Extract Vol: 50 mL

Print Date: 09/09/2016 1:39:06PM



**Results of SWM03-02**

Client Sample ID: **SWM03-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164922016  
Lab Project ID: 1164922

Collection Date: 08/22/16 14:30  
Received Date: 08/22/16 18:00  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	4.10	1.00	0.310	ug/L	1		08/24/16 18:34

**Batch Information**

Analytical Batch: MMS9508  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 08/24/16 18:34  
Container ID: 1164922016-B

Prep Batch: MXX30114  
Prep Method: E200.2  
Prep Date/Time: 08/24/16 11:55  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 09/09/2016 1:39:06PM



Results of **SWM04-02**

Client Sample ID: **SWM04-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164922017  
Lab Project ID: 1164922

Collection Date: 08/22/16 14:35  
Received Date: 08/22/16 18:00  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	3.38	1.00	0.310	ug/L	1		08/24/16 18:37

**Batch Information**

Analytical Batch: MMS9508  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 08/24/16 18:37  
Container ID: 1164922017-B

Prep Batch: MXX30114  
Prep Method: E200.2  
Prep Date/Time: 08/24/16 11:55  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 09/09/2016 1:39:06PM



Results of **SWM05-02**

Client Sample ID: **SWM05-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164922018  
Lab Project ID: 1164922

Collection Date: 08/22/16 15:00  
Received Date: 08/22/16 18:00  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	4.94	1.00	0.310	ug/L	1		08/24/16 18:40

**Batch Information**

Analytical Batch: MMS9508  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 08/24/16 18:40  
Container ID: 1164922018-B

Prep Batch: MXX30114  
Prep Method: E200.2  
Prep Date/Time: 08/24/16 11:55  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 09/09/2016 1:39:06PM



Results of **SWM06-02**

Client Sample ID: **SWM06-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164922019  
Lab Project ID: 1164922

Collection Date: 08/22/16 15:45  
Received Date: 08/22/16 18:00  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	1.97	1.00	0.310	ug/L	1		08/24/16 18:49

**Batch Information**

Analytical Batch: MMS9508  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 08/24/16 18:49  
Container ID: 1164922019-B

Prep Batch: MXX30114  
Prep Method: E200.2  
Prep Date/Time: 08/24/16 11:55  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 09/09/2016 1:39:06PM



**Results of SWM07-02**

Client Sample ID: **SWM07-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164922020  
Lab Project ID: 1164922

Collection Date: 08/22/16 16:05  
Received Date: 08/22/16 18:00  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	7.33	1.00	0.310	ug/L	1		08/24/16 18:52

**Batch Information**

Analytical Batch: MMS9508  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 08/24/16 18:52  
Container ID: 1164922020-B

Prep Batch: MXX30114  
Prep Method: E200.2  
Prep Date/Time: 08/24/16 11:55  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 09/09/2016 1:39:06PM



**Results of SWM08-02**

Client Sample ID: **SWM08-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164922021  
Lab Project ID: 1164922

Collection Date: 08/22/16 16:00  
Received Date: 08/22/16 18:00  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	3.04	1.00	0.310	ug/L	1		08/24/16 18:55

**Batch Information**

Analytical Batch: MMS9508  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 08/24/16 18:55  
Container ID: 1164922021-B

Prep Batch: MXX30114  
Prep Method: E200.2  
Prep Date/Time: 08/24/16 11:55  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 09/09/2016 1:39:06PM

## Results of SWM08-02 Dup

Client Sample ID: **SWM08-02 Dup**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1164922022  
 Lab Project ID: 1164922

Collection Date: 08/22/16 16:00  
 Received Date: 08/22/16 18:00  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

## Results by Dissolved Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	3.00	1.00	0.310	ug/L	1		08/24/16 18:58

## Batch Information

Analytical Batch: MMS9508  
 Analytical Method: EP200.8  
 Analyst: VDL  
 Analytical Date/Time: 08/24/16 18:58  
 Container ID: 1164922022-B

Prep Batch: MXX30114  
 Prep Method: E200.2  
 Prep Date/Time: 08/24/16 11:55  
 Prep Initial Wt./Vol.: 20 mL  
 Prep Extract Vol: 50 mL

Print Date: 09/09/2016 1:39:06PM





Results of **SWM09-02**

Client Sample ID: **SWM09-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164922023  
Lab Project ID: 1164922

Collection Date: 08/22/16 16:40  
Received Date: 08/22/16 18:00  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	950	1.00	0.310	ug/L	1		08/24/16 19:01

**Batch Information**

Analytical Batch: MMS9508  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 08/24/16 19:01  
Container ID: 1164922023-B

Prep Batch: MXX30114  
Prep Method: E200.2  
Prep Date/Time: 08/24/16 11:55  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 09/09/2016 1:39:06PM



**Results of SWM10-02**

Client Sample ID: **SWM10-02**  
Client Project ID: **5078 MOA Stormwater Management**  
Lab Sample ID: 1164922024  
Lab Project ID: 1164922

Collection Date: 08/22/16 16:47  
Received Date: 08/22/16 18:00  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	2.05	1.00	0.310	ug/L	1		08/24/16 19:07

**Batch Information**

Analytical Batch: MMS9508  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 08/24/16 19:07  
Container ID: 1164922024-B

Prep Batch: MX30114  
Prep Method: E200.2  
Prep Date/Time: 08/24/16 11:55  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 09/09/2016 1:39:06PM



### Results of Trip Blank

Client Sample ID: **Trip Blank**  
 Client Project ID: **5078 MOA Stormwater Management**  
 Lab Sample ID: 1164922025  
 Lab Project ID: 1164922

Collection Date: 08/22/16 14:00  
 Received Date: 08/22/16 18:00  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

### Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/31/16 14:23
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/31/16 14:23
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/31/16 14:23
Benzene	0.400 U	0.400	0.120	ug/L	1		08/31/16 14:23
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/31/16 14:23
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		08/31/16 14:23
o-Xylene	1.00 U	1.00	0.310	ug/L	1		08/31/16 14:23
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		08/31/16 14:23
Toluene	1.00 U	1.00	0.310	ug/L	1		08/31/16 14:23
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	106	81-118		%	1		08/31/16 14:23
4-Bromofluorobenzene (surr)	102	85-114		%	1		08/31/16 14:23
Toluene-d8 (surr)	103	89-112		%	1		08/31/16 14:23

### Batch Information

Analytical Batch: VMS16134  
 Analytical Method: EPA 602/624  
 Analyst: TJT  
 Analytical Date/Time: 08/31/16 14:23  
 Container ID: 1164922025-A

Prep Batch: VXX29479  
 Prep Method: SW5030B  
 Prep Date/Time: 08/31/16 06:00  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL

Print Date: 09/09/2016 1:39:06PM

## Method Blank

Blank ID: MB for HBN 1742120 [BOD/5531]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1347530

QC for Samples:

1164922001, 1164922004, 1164922005, 1164922006, 1164922007, 1164922008, 1164922009, 1164922010, 1164922011, 1164922012, 1164922013

## Results by SM21 5210B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Biochemical Oxygen Demand	2.00U	2.00	2.00	mg/L

## Batch Information

Analytical Batch: BOD5531

Analytical Method: SM21 5210B

Instrument:

Analyst: K.W

Analytical Date/Time: 8/23/2016 5:20:00PM

Print Date: 09/09/2016 1:39:12PM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1164922 [BOD5531]

Blank Spike Lab ID: 1347531

Date Analyzed: 08/23/2016 17:20

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1164922001, 1164922004, 1164922005, 1164922006, 1164922007, 1164922008, 1164922009,  
1164922010, 1164922011, 1164922012, 1164922013

## Results by SM21 5210B

Parameter	Blank Spike (mg/L)			CL
	Spike	Result	Rec (%)	
Biochemical Oxygen Demand	198	199	101	( 84.6-115.4

## Batch Information

Analytical Batch: **BOD5531**  
Analytical Method: **SM21 5210B**  
Instrument:  
Analyst: **K.W**

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Spike Init Wt./Vol.: 198 mg/L Extract Vol: 300 mL  
Dupe Init Wt./Vol.: Extract Vol:



### Method Blank

Blank ID: MB for HBN 1742122 [BTF/15064]  
Blank Lab ID: 1347532

Matrix: Water (Surface, Eff., Ground)

#### QC for Samples:

1164922001, 1164922004, 1164922005, 1164922006, 1164922007, 1164922008, 1164922009, 1164922010, 1164922011, 1164922012, 1164922013

### Results by SM21 9222D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Fecal Coliform	1.00U	1.00	1.00	col/100mL

### Batch Information

Analytical Batch: BTF15064  
Analytical Method: SM21 9222D  
Instrument:  
Analyst: K.W  
Analytical Date/Time: 8/22/2016 11:27:00AM

Print Date: 09/09/2016 1:39:14PM

## Method Blank

Blank ID: MB for HBN 1742049 [MXX/30114]  
Blank Lab ID: 1347204

Matrix: Water (Surface, Eff., Ground)

### QC for Samples:

1164922014, 1164922015, 1164922016, 1164922017, 1164922018, 1164922019, 1164922020, 1164922021, 1164922022, 1164922023, 1164922024

## Results by EP200.8

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Copper	0.500U	1.00	0.310	ug/L

## Batch Information

Analytical Batch: MMS9508  
Analytical Method: EP200.8  
Instrument: Perkin Elmer Nexlon P5  
Analyst: VDL  
Analytical Date/Time: 8/24/2016 6:16:31PM

Prep Batch: MXX30114  
Prep Method: E200.2  
Prep Date/Time: 8/24/2016 11:55:15AM  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 09/09/2016 1:39:16PM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1164922 [MXX30114]

Blank Spike Lab ID: 1347205

Date Analyzed: 08/24/2016 18:19

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1164922014, 1164922015, 1164922016, 1164922017, 1164922018, 1164922019, 1164922020, 1164922021, 1164922022, 1164922023, 1164922024

## Results by EP200.8

Parameter	Blank Spike (ug/L)			CL
	Spike	Result	Rec (%)	
Copper	1000	924	92	( 85-115 )

## Batch Information

Analytical Batch: MMS9508

Analytical Method: EP200.8

Instrument: Perkin Elmer Nexlon P5

Analyst: VDL

Prep Batch: MXX30114

Prep Method: E200.2

Prep Date/Time: 08/24/2016 11:55

Spike Init Wt./Vol.: 1000 ug/L Extract Vol: 50 mL

Dupe Init Wt./Vol.: Extract Vol:



## Matrix Spike Summary

Original Sample ID: 1347208  
 MS Sample ID: 1347209 MS  
 MSD Sample ID:

Analysis Date: 08/24/2016 18:22  
 Analysis Date: 08/24/2016 18:25  
 Analysis Date:  
 Matrix: Drinking Water

QC for Samples: 1164922014, 1164922015, 1164922016, 1164922017, 1164922018, 1164922019, 1164922020, 1164922021, 1164922022, 1164922023

## Results by EP200.8

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Copper	1.85	1000	954	95				70-130		

## Batch Information

Analytical Batch: MMS9508  
 Analytical Method: EP200.8  
 Instrument: Perkin Elmer Nexlon P5  
 Analyst: VDL  
 Analytical Date/Time: 8/24/2016 6:25:28PM

Prep Batch: MXX30114  
 Prep Method: DW Digest for Metals on ICP-MS  
 Prep Date/Time: 8/24/2016 11:55:15AM  
 Prep Initial Wt./Vol.: 20.00mL  
 Prep Extract Vol: 50.00mL

## Matrix Spike Summary

Original Sample ID: 1347210  
 MS Sample ID: 1347211 MS  
 MSD Sample ID:

Analysis Date: 08/24/2016 19:01  
 Analysis Date: 08/24/2016 19:04  
 Analysis Date:  
 Matrix: Drinking Water

QC for Samples: 1164922014, 1164922015, 1164922016, 1164922017, 1164922018, 1164922019, 1164922020, 1164922021, 1164922022, 1164922023, 1164922024

## Results by EP200.8

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Copper	950	1000	1880	93				70-130		

## Batch Information

Analytical Batch: MMS9508  
 Analytical Method: EP200.8  
 Instrument: Perkin Elmer Nexlon P5  
 Analyst: VDL  
 Analytical Date/Time: 8/24/2016 7:04:20PM

Prep Batch: MXX30114  
 Prep Method: DW Digest for Metals on ICP-MS  
 Prep Date/Time: 8/24/2016 11:55:15AM  
 Prep Initial Wt./Vol.: 20.00mL  
 Prep Extract Vol: 50.00mL

## Method Blank

Blank ID: MB for HBN 1742245 [MXX/30127]  
 Blank Lab ID: 1348128

Matrix: Water (Surface, Eff., Ground)

### QC for Samples:

1164922001, 1164922004, 1164922005, 1164922006, 1164922007, 1164922008, 1164922009, 1164922010, 1164922011, 1164922012, 1164922013

## Results by EP200.8

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Calcium	250U	500	150	ug/L
Magnesium	25.0U	50.0	15.0	ug/L

## Batch Information

Analytical Batch: MMS9515  
 Analytical Method: EP200.8  
 Instrument: Perkin Elmer Nexlon P5  
 Analyst: VDL  
 Analytical Date/Time: 8/30/2016 6:47:51PM

Prep Batch: MXX30127  
 Prep Method: E200.2  
 Prep Date/Time: 8/26/2016 10:28:26AM  
 Prep Initial Wt./Vol.: 20 mL  
 Prep Extract Vol: 50 mL

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1164922 [MXX30127]  
 Blank Spike Lab ID: 1348129  
 Date Analyzed: 08/30/2016 18:50

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1164922001, 1164922004, 1164922005, 1164922006, 1164922007, 1164922008, 1164922009,  
 1164922010, 1164922011, 1164922012, 1164922013

## Results by EP200.8

Parameter	Blank Spike (ug/L)			CL
	Spike	Result	Rec (%)	
Calcium	10000	10700	107	( 85-115 )
Magnesium	10000	10400	104	( 85-115 )

## Batch Information

Analytical Batch: **MMS9515**  
 Analytical Method: **EP200.8**  
 Instrument: **Perkin Elmer Nexlon P5**  
 Analyst: **VDL**

Prep Batch: **MXX30127**  
 Prep Method: **E200.2**  
 Prep Date/Time: **08/26/2016 10:28**  
 Spike Init Wt./Vol.: 10000 ug/L Extract Vol: 50 mL  
 Dupe Init Wt./Vol.: Extract Vol:

## Matrix Spike Summary

Original Sample ID: 1348130  
 MS Sample ID: 1348131 MS  
 MSD Sample ID:

Analysis Date: 08/30/2016 18:53  
 Analysis Date: 08/30/2016 18:56  
 Analysis Date:  
 Matrix: Drinking Water

QC for Samples: 1164922001, 1164922004, 1164922005, 1164922006, 1164922007, 1164922008, 1164922009, 1164922010

## Results by EP200.8

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Calcium	250U	10000	10700	107				70-130		
Magnesium	20.2J	10000	9840	98				70-130		

## Batch Information

Analytical Batch: MMS9515  
 Analytical Method: EP200.8  
 Instrument: Perkin Elmer Nexlon P5  
 Analyst: VDL  
 Analytical Date/Time: 8/30/2016 6:56:48PM

Prep Batch: MXX30127  
 Prep Method: DW Digest for Metals on ICP-MS  
 Prep Date/Time: 8/26/2016 10:28:26AM  
 Prep Initial Wt./Vol.: 20.00mL  
 Prep Extract Vol: 50.00mL

## Matrix Spike Summary

Original Sample ID: 1348132  
 MS Sample ID: 1348133 MS  
 MSD Sample ID:

Analysis Date: 08/30/2016 19:29  
 Analysis Date: 08/30/2016 19:32  
 Analysis Date:  
 Matrix: Drinking Water

QC for Samples: 1164922001, 1164922004, 1164922005, 1164922006, 1164922007, 1164922008, 1164922009,  
 1164922010, 1164922011, 1164922012, 1164922013

## Results by EP200.8

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Calcium	30500	10000	40800	103				70-130		
Magnesium	23500	10000	34300	108				70-130		

## Batch Information

Analytical Batch: MMS9515  
 Analytical Method: EP200.8  
 Instrument: Perkin Elmer Nexlon P5  
 Analyst: VDL  
 Analytical Date/Time: 8/30/2016 7:32:35PM

Prep Batch: MXX30127  
 Prep Method: DW Digest for Metals on ICP-MS  
 Prep Date/Time: 8/26/2016 10:28:26AM  
 Prep Initial Wt./Vol.: 20.00mL  
 Prep Extract Vol: 50.00mL



**Method Blank**

Blank ID: MB for HBN 1742103 [STS/5170]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1347456

QC for Samples:

1164922001, 1164922004, 1164922005, 1164922006, 1164922007, 1164922008, 1164922009, 1164922010, 1164922011, 1164922012, 1164922013

**Results by SM21 2540D**

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Total Suspended Solids	0.500U	1.00	0.310	mg/L

**Batch Information**

Analytical Batch: STS5170

Analytical Method: SM21 2540D

Instrument:

Analyst: LLP

Analytical Date/Time: 8/24/2016 12:15:17PM

Print Date: 09/09/2016 1:39:26PM

## Duplicate Sample Summary

Original Sample ID: 1164922009  
 Duplicate Sample ID: 1347534

Analysis Date: 08/24/2016 12:15  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1164922001, 1164922004, 1164922005, 1164922006, 1164922007, 1164922008, 1164922009, 1164922010, 1164922011, 1164922012, 1164922013

## Results by SM21 2540D

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Suspended Solids	129	128	mg/L	1.00	(< 5 )

## Batch Information

Analytical Batch: STS5170  
 Analytical Method: SM21 2540D  
 Instrument:  
 Analyst: LLP



## Duplicate Sample Summary

Original Sample ID: 1164928001

Duplicate Sample ID: 1347535

QC for Samples:

1164922010, 1164922011, 1164922012, 1164922013

Analysis Date: 08/24/2016 12:15

Matrix: Water (Surface, Eff., Ground)

## Results by SM21 2540D

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Suspended Solids	128	126	mg/L	1.90	(< 5 )

## Batch Information

Analytical Batch: STS5170

Analytical Method: SM21 2540D

Instrument:

Analyst: LLP

Print Date: 09/09/2016 1:39:27PM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1164922 [STS5170]  
 Blank Spike Lab ID: 1347457  
 Date Analyzed: 08/24/2016 12:15

Spike Duplicate ID: LCSD for HBN 1164922 [STS5170]  
 Spike Duplicate Lab ID: 1347458  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1164922001, 1164922004, 1164922005, 1164922006, 1164922007, 1164922008, 1164922009, 1164922010, 1164922011, 1164922012, 1164922013

## Results by SM21 2540D

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Total Suspended Solids	50	50.0	100	50	50.0	100	( 75-125 )	0.00	(< 5 )

## Batch Information

Analytical Batch: STS5170  
 Analytical Method: SM21 2540D  
 Instrument:  
 Analyst: LLP

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Spike Init Wt./Vol.: 50 mg/L Extract Vol: 1000 mL  
 Dupe Init Wt./Vol.: 50 mg/L Extract Vol: 1000 mL

## Method Blank

Blank ID: MB for HBN 1742593 [VXX/29479]  
 Blank Lab ID: 1349708

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
 1164922001, 1164922004, 1164922007, 1164922009, 1164922012, 1164922025

## Results by EPA 602/624

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,2-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,3-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,4-Dichlorobenzene	0.250U	0.500	0.150	ug/L
Benzene	0.200U	0.400	0.120	ug/L
Chlorobenzene	0.250U	0.500	0.150	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
Toluene	0.500U	1.00	0.310	ug/L
<b>Surrogates</b>				
1,2-Dichloroethane-D4 (surr)	109	81-118		%
4-Bromofluorobenzene (surr)	101	85-114		%
Toluene-d8 (surr)	101	89-112		%

## Batch Information

Analytical Batch: VMS16134  
 Analytical Method: EPA 602/624  
 Instrument: VPA 780/5975 GC/MS  
 Analyst: TJT  
 Analytical Date/Time: 8/31/2016 11:00:00AM

Prep Batch: VXX29479  
 Prep Method: SW5030B  
 Prep Date/Time: 8/31/2016 6:00:00AM  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1164922 [VXX29479]  
 Blank Spike Lab ID: 1349709  
 Date Analyzed: 08/31/2016 11:17

Spike Duplicate ID: LCSD for HBN 1164922 [VXX29479]  
 Spike Duplicate Lab ID: 1349710  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1164922001, 1164922004, 1164922007, 1164922009, 1164922012, 1164922025

## Results by EPA 602/624

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,2-Dichlorobenzene	30	31.2	104	30	32.4	108	( 80-119 )	3.80	(< 20 )
1,3-Dichlorobenzene	30	32.2	107	30	33.1	110	( 80-119 )	2.80	(< 20 )
1,4-Dichlorobenzene	30	32.1	107	30	33.9	113	( 79-118 )	5.50	(< 20 )
Benzene	30	32.1	107	30	32.5	108	( 79-120 )	1.20	(< 20 )
Chlorobenzene	30	31.2	104	30	32.5	108	( 82-118 )	3.90	(< 20 )
Ethylbenzene	30	33.4	111	30	33.0	110	( 79-121 )	1.40	(< 20 )
o-Xylene	30	34.2	114	30	34.0	113	( 78-122 )	0.67	(< 20 )
P & M -Xylene	60	68.0	113	60	67.8	113	( 80-121 )	0.28	(< 20 )
Toluene	30	29.3	98	30	31.4	105	( 80-121 )	6.80	(< 20 )

## Surrogates

1,2-Dichloroethane-D4 (surr)	30	97.2	97	30	93.6	94	( 81-118 )	3.80
4-Bromofluorobenzene (surr)	30	95.8	96	30	98.7	99	( 85-114 )	3.00
Toluene-d8 (surr)	30	93.9	94	30	98.4	98	( 89-112 )	4.70

## Batch Information

Analytical Batch: **VMS16134**  
 Analytical Method: **EPA 602/624**  
 Instrument: **VPA 780/5975 GC/MS**  
 Analyst: **TJT**

Prep Batch: **VXX29479**  
 Prep Method: **SW5030B**  
 Prep Date/Time: **08/31/2016 06:00**  
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL  
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

## Billable Matrix Spike Summary

Original Sample ID: 1164922001  
 MS Sample ID: 1164922002 BMS  
 MSD Sample ID: 1164922003 BMSD

Analysis Date: 08/31/2016 14:56  
 Analysis Date: 08/31/2016 21:10  
 Analysis Date: 08/31/2016 21:26  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples:

## Results by EPA 602/624

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,2-Dichlorobenzene	1.00U	30.0	32.5	108	30.0	34.1	114	80-119	4.90	(< 20 )
1,3-Dichlorobenzene	1.00U	30.0	33	110	30.0	34.0	113	80-119	3.00	(< 20 )
1,4-Dichlorobenzene	0.500U	30.0	33.8	113	30.0	34.2	114	79-118	1.10	(< 20 )
Benzene	0.400U	30.0	34.8	116	30.0	34.5	115	79-120	0.95	(< 20 )
Chlorobenzene	0.500U	30.0	32.6	109	30.0	33.9	113	82-118	3.90	(< 20 )
Ethylbenzene	1.00U	30.0	34.4	115	30.0	34.4	115	79-121	0.00	(< 20 )
o-Xylene	1.00U	30.0	34.5	115	30.0	35.1	117	78-122	1.80	(< 20 )
P & M -Xylene	2.00U	60.0	69.7	116	60.0	69.8	116	80-121	0.10	(< 20 )
Toluene	1.00U	30.0	29.8	99	30.0	32.6	109	80-121	9.30	(< 20 )
<b>Surrogates</b>										
1,2-Dichloroethane-D4 (surr)		30.0	31.8	106	30.0	31.9	106	81-118	0.50	
4-Bromofluorobenzene (surr)		30.0	29.1	97	30.0	29.4	98	85-114	0.96	
Toluene-d8 (surr)		30.0	27.7	92	30.0	29.8	99	89-112	7.30	

## Batch Information

Analytical Batch: VMS16134  
 Analytical Method: EPA 602/624  
 Instrument: VPA 780/5975 GC/MS  
 Analyst: TJT  
 Analytical Date/Time: 8/31/2016 9:10:00PM

Prep Batch: VXX29479  
 Prep Method: Volatiles Extraction 8240/8260 FULL  
 Prep Date/Time: 8/31/2016 6:00:00AM  
 Prep Initial Wt./Vol.: 5.00mL  
 Prep Extract Vol: 5.00mL



### Method Blank

Blank ID: MB for HBN 1742302 [XXX/36162]  
Blank Lab ID: 1348379

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
1164922001, 1164922004, 1164922007, 1164922009, 1164922012

### Results by EPA 625M SIM (PAH)

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Acenaphthene	0.0250U	0.0500	0.0150	ug/L
Acenaphthylene	0.0250U	0.0500	0.0150	ug/L
Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo(a)Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo[a]pyrene	0.0100U	0.0200	0.0150	ug/L
Benzo[b]Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Benzo[g,h,i]perylene	0.0250U	0.0500	0.0150	ug/L
Benzo[k]fluoranthene	0.0250U	0.0500	0.0150	ug/L
Chrysene	0.0250U	0.0500	0.0150	ug/L
Dibenzo[a,h]anthracene	0.0100U	0.0200	0.0150	ug/L
Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Fluorene	0.0250U	0.0500	0.0150	ug/L
Indeno[1,2,3-c,d] pyrene	0.0250U	0.0500	0.0150	ug/L
Naphthalene	0.0500U	0.100	0.0310	ug/L
Phenanthrene	0.0250U	0.0500	0.0150	ug/L
Pyrene	0.0250U	0.0500	0.0150	ug/L
<b>Surrogates</b>				
2-Fluorobiphenyl (surr)	75.9	53-106		%
Terphenyl-d14 (surr)	79.6	58-132		%

### Batch Information

Analytical Batch: XMS9586  
Analytical Method: EPA 625M SIM (PAH)  
Instrument: Agilent GC 7890B/5977A SWA  
Analyst: BRV  
Analytical Date/Time: 9/1/2016 6:15:00PM

Prep Batch: XXX36162  
Prep Method: SW3520C  
Prep Date/Time: 8/27/2016 10:44:43AM  
Prep Initial Wt./Vol.: 1000 mL  
Prep Extract Vol: 1 mL

Print Date: 09/09/2016 1:39:33PM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1164922 [XXX36162]  
 Blank Spike Lab ID: 1348380  
 Date Analyzed: 09/01/2016 19:00

Spike Duplicate ID: LCSD for HBN 1164922  
 [XXX36162]  
 Spike Duplicate Lab ID: 1348381  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1164922001, 1164922004, 1164922007, 1164922009, 1164922012

## Results by EPA 625M SIM (PAH)

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Acenaphthene	0.5	0.522	104	0.5	0.524	105	( 48-114 )	0.48	(< 20 )
Acenaphthylene	0.5	0.470	94	0.5	0.474	95	( 35-121 )	0.86	(< 20 )
Anthracene	0.5	0.495	99	0.5	0.491	98	( 53-119 )	0.69	(< 20 )
Benzo(a)Anthracene	0.5	0.436	87	0.5	0.424	85	( 59-120 )	2.80	(< 20 )
Benzo[a]pyrene	0.5	0.495	99	0.5	0.484	97	( 53-120 )	2.20	(< 20 )
Benzo[b]Fluoranthene	0.5	0.437	87	0.5	0.419	84	( 53-126 )	4.20	(< 20 )
Benzo[g,h,i]perylene	0.5	0.462	92	0.5	0.466	93	( 44-128 )	0.86	(< 20 )
Benzo[k]fluoranthene	0.5	0.465	93	0.5	0.459	92	( 54-125 )	1.20	(< 20 )
Chrysene	0.5	0.487	97	0.5	0.484	97	( 57-120 )	0.75	(< 20 )
Dibenzo[a,h]anthracene	0.5	0.457	91	0.5	0.458	92	( 44-131 )	0.14	(< 20 )
Fluoranthene	0.5	0.472	94	0.5	0.474	95	( 58-120 )	0.40	(< 20 )
Fluorene	0.5	0.484	97	0.5	0.482	97	( 50-118 )	0.36	(< 20 )
Indeno[1,2,3-c,d] pyrene	0.5	0.453	91	0.5	0.455	91	( 48-130 )	0.39	(< 20 )
Naphthalene	0.5	0.428	86	0.5	0.437	87	( 43-114 )	2.00	(< 20 )
Phenanthrene	0.5	0.449	90	0.5	0.430	86	( 53-115 )	4.40	(< 20 )
Pyrene	0.5	0.519	104	0.5	0.513	103	( 53-121 )	1.20	(< 20 )
<b>Surrogates</b>									
2-Fluorobiphenyl (surr)	0.5	75.6	76	0.5	78.3	78	( 53-106 )	3.50	
Terphenyl-d14 (surr)	0.5	76.8	77	0.5	79.8	80	( 58-132 )	3.80	

## Batch Information

Analytical Batch: XMS9586  
 Analytical Method: EPA 625M SIM (PAH)  
 Instrument: Agilent GC 7890B/5977A SWA  
 Analyst: BRV

Prep Batch: XXX36162  
 Prep Method: SW3520C  
 Prep Date/Time: 08/27/2016 10:44  
 Spike Init Wt./Vol.: 0.5 ug/L Extract Vol: 1 mL  
 Dupe Init Wt./Vol.: 0.5 ug/L Extract Vol: 1 mL

## Billable Matrix Spike Summary

Original Sample ID: 1164922001  
 MS Sample ID: 1164922002 BMS  
 MSD Sample ID: 1164922003 BMSD

Analysis Date: 09/02/2016 1:44  
 Analysis Date: 09/02/2016 2:06  
 Analysis Date: 09/02/2016 2:28  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples:

## Results by EPA 625M SIM (PAH)

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Acenaphthene	0.0568U	0.562	.55	98	0.549	0.523	95	48-114	5.00	(< 20 )
Acenaphthylene	0.0568U	0.562	.489	87	0.549	0.460	84	35-121	6.00	(< 20 )
Anthracene	0.0568U	0.562	.525	94	0.549	0.500	91	53-119	5.00	(< 20 )
Benzo(a)Anthracene	0.0568U	0.562	.498	89	0.549	0.463	84	59-120	7.30	(< 20 )
Benzo[a]pyrene	0.0227U	0.562	.543	97	0.549	0.519	95	53-120	4.50	(< 20 )
Benzo[b]Fluoranthene	0.0568U	0.562	.52	93	0.549	0.499	91	53-126	4.10	(< 20 )
Benzo[g,h,i]perylene	0.0568U	0.562	.551	98	0.549	0.516	94	44-128	6.50	(< 20 )
Benzo[k]fluoranthene	0.0568U	0.562	.524	93	0.549	0.497	90	54-125	5.30	(< 20 )
Chrysene	0.0568U	0.562	.571	102	0.549	0.557	101	57-120	2.50	(< 20 )
Dibenzo[a,h]anthracene	0.0227U	0.562	.531	95	0.549	0.500	91	44-131	6.20	(< 20 )
Fluoranthene	0.0680	0.562	.564	88	0.549	0.530	84	58-120	6.30	(< 20 )
Fluorene	0.0568U	0.562	.501	89	0.549	0.475	86	50-118	5.40	(< 20 )
Indeno[1,2,3-c,d] pyrene	0.0568U	0.562	.537	96	0.549	0.508	92	48-130	5.70	(< 20 )
Naphthalene	0.114U	0.562	.45	80	0.549	0.423	77	43-114	6.00	(< 20 )
Phenanthrene	0.0568U	0.562	.484	86	0.549	0.455	83	53-115	6.20	(< 20 )
Pyrene	0.0568U	0.562	.577	103	0.549	0.543	99	53-121	5.90	(< 20 )
<b>Surrogates</b>										
2-Fluorobiphenyl (surr)		0.562	.408	73	0.549	0.423	77	53-106	3.60	
Terphenyl-d14 (surr)		0.562	.418	75	0.549	0.417	76	58-132	0.33	


## Batch Information

Analytical Batch: XMS9586  
 Analytical Method: EPA 625M SIM (PAH)  
 Instrument: Agilent GC 7890B/5977A SWA  
 Analyst: BRV  
 Analytical Date/Time: 9/2/2016 2:06:00AM

Prep Batch: XXX36162  
 Prep Method: Liquid/Liquid Extraction for 625 SIMS  
 Prep Date/Time: 8/27/2016 10:44:43AM  
 Prep Initial Wt./Vol.: 890.00mL  
 Prep Extract Vol: 1.00mL



# Chain of Custody Record

<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Forest Taylor	<b>From:</b> Kinnetic Laboratories, Inc 704 West 2nd Avenue Anchorage, AK 99501 (907) 276-6178 Contact: Mark Savoie
SGS Quote No. 337618  Date Received:  Lab #:	1164922 

Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM01-02	1040-3	NA	NA	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1		
①A SWM02-02	847-1	8/22	1400	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1		
②A SWM02-02 Dup	847-1		1400	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1		
③A SWM03-02	1224-1		1430	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1		
④A SWM04-02	1224-2		1435	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1		
⑤A SWM05-02	207-1		1500	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1		
⑥A SWM06-02	314-22		1545	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1		
⑦A SWM07-02	484-1		1605	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1		
⑧A SWM08-02	86-1		1600	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1		
⑨A SWM08-02 Dup	86-1		1600	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1		
⑩A SWM09-02	499-1		1640	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1		
⑪A SWM10-02	525-2	8/22	1647	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1		

**Project:** MOA Stormwater Management **Matrix:** Water **Project #: 5078**

**Complete by:** 2 weeks **Note:** Samples contain sodium thiosulfate for dechlorination

**Data Report MUST include the following:** Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Sampled and Relinquished By:	Date/Time	Transporter	Received By:	Date/Time
<i>AS</i>	8/22/1530	hurd		
Relinquished By:			Received By:	
			<i>Jayakumar</i>	8/22/16 1810

① 8:50 AM ② 8:30 AM ③ 3:00 PM CS absent

### Chain of Custody Record

<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Forest Taylor	<b>From:</b> Kinnetic Laboratories, Inc 704 West 2nd Avenue Anchorage, AK 99501 (907) 276-6178 Contact: Mark Savoie
SGS Quote No. 337618  Date Received:  Lab #:	Project #: 5078

Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM01-02	1040-3	NA	NA	Samp	Total Hardness (EPA 200.8)	125-ml HDPE	Nitric, ≤6°C	1		
<del>SWM02-02</del>	847-1	8/22	1400	Samp	Total Hardness (EPA 200.8)	125-ml HDPE	Nitric, ≤6°C	1		
<del>SWM02-02 Dup</del>	847-1		1400	Samp	Total Hardness (EPA 200.8)	125-ml HDPE	Nitric, ≤6°C	1		
<del>SWM03-02</del>	1224-1		1430	Samp	Total Hardness (EPA 200.8)	125-ml HDPE	Nitric, ≤6°C	1		
<del>SWM04-02</del>	1224-2		1435	Samp	Total Hardness (EPA 200.8)	125-ml HDPE	Nitric, ≤6°C	1		
<del>SWM05-02</del>	207-1		1500	Samp	Total Hardness (EPA 200.8)	125-ml HDPE	Nitric, ≤6°C	1		
<del>SWM06-02</del>	314-22		1545	Samp	Total Hardness (EPA 200.8)	125-ml HDPE	Nitric, ≤6°C	1		
<del>SWM07-02</del>	484-1		1605	Samp	Total Hardness (EPA 200.8)	125-ml HDPE	Nitric, ≤6°C	1		
<del>SWM08-02</del>	86-1		1600	Samp	Total Hardness (EPA 200.8)	125-ml HDPE	Nitric, ≤6°C	1		
<del>SWM08-02 Dup</del>	86-1		1600	Samp	Total Hardness (EPA 200.8)	125-ml HDPE	Nitric, ≤6°C	1		
<del>SWM09-02</del>	499-1		1640	Samp	Total Hardness (EPA 200.8)	125-ml HDPE	Nitric, ≤6°C	1		
<del>SWM10-02</del>	525-2		1647	Samp	Total Hardness (EPA 200.8)	125-ml HDPE	Nitric, ≤6°C	1		

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

<b>Sampled and Relinquished By:</b>	<b>Transporter</b>	<b>Received By:</b>
AS	8/22/1530 hmd	[Signature]
<b>Relinquished By:</b>	<b>Transporter</b>	<b>Date/Time:</b>
[Signature]	[Signature]	8/22/16 0800


# Chain of Custody Record

**To:** SGS Environmental Services, Inc.  
 2100 West Potter Drive  
 Anchorage, AK 99518  
 (907) 562-2343  
 (907) 561-5301 Fax  
 Contact: Forest Taylor

**From:** Kinnetic Laboratories, Inc  
 704 West 2nd Avenue  
 Anchorage, AK 99501  
 (907) 276-6178  
 Contact: Mark Savoie

SGS Quote No. 337618  
 Date Received:  
 Lab #:

1164922



**Project:** MOA Stormwater Management  
**Matrix:** Water  
**Project #:** 5078

**Complete by:** 2 weeks

Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM01-02	1040-3	NA	NA	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1		
SWM02-02	847-1	8/22	1400	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1		
SWM02-02 Dup	847-1		1400	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1		
SWM03-02	1224-1		1430	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1		
SWM04-02	1224-2		1500	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1		
SWM05-02	207-1		1500	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1		
SWM06-02	314-22		1545	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1		
SWM07-02	484-1		1600	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1		
SWM08-02	86-1		1600	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1		
SWM08-02 Dup	86-1		1600	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1		
SWM09-02	499-1		1640	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1		
SWM10-02	525-2	8/22	1647	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1		

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

Sampled and Relinquished By	Date/Time	Transporter	Received By	Date/Time
AS	8/22 1730	hand		
		Transporter	MS	8/22/16

### Chain of Custody Record

<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Forest Taylor	<b>SGS Quote No. 337618</b>  <b>Date Received:</b>  <b>Lab #:</b>	<b>From:</b> Kinnetic Laboratories, Inc 704 West 2nd Avenue Anchorage, AK 99501 (907) 276-6178  <b>Contact: Mark Savoie</b>
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# 1164922



**Project:** MOA Stormwater Management      **Matrix:** Water      **Project #: 5078**  
**Complete by:** 2 weeks

Sample ID	Outfall ID	Sample Date	Sample Filter	Sample Type	Analyte	Container	Pres.	No. of Bottles	Lake ID	Condition Upon Receipt
SWM01-02	1040-3	NA	NA	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1		
① SWM02-02	847-1	8/22	1400	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1		
② SWM02-02 Dup	847-1		1400	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1		
③ SWM03-02	1224-1		1430	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1		
④ SWM04-02	1224-2		1435	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1		
⑤ SWM05-02	207-1		1560	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1		
⑥ SWM06-02	314-22		1545	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1		
⑦ SWM07-02	484-1		1605	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1		
⑧ SWM08-02	86-1		1600	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1		
⑨ SWM08-02 Dup	86-1		1600	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1		
⑩ SWM09-02	499-1		1640	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1		
⑪ SWM10-02	525-2	8/22	1627	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1		

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

<b>Sampled and Relinquished By:</b>	<b>Date/Time:</b>	<b>Transporter:</b>	<b>Received By:</b>	<b>Date/Time:</b>
<i>AS</i>	8/22 1530	haw	<i>[Signature]</i>	
<b>Relinquished By:</b>	<b>Date/Time:</b>	<b>Transporter:</b>	<b>Received By:</b>	<b>Date/Time:</b>
<i>[Signature]</i>			<i>[Signature]</i>	8/22/16 1900

## Chain of Custody Record

<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Forest Taylor	<b>From:</b> Kinnetic Laboratories, Inc 704 West 2nd Avenue Anchorage, AK 99501 (907) 276-6178 Contact: Mark Savoie
SGS Quote No. 337618  Date Received:  Lab #:	1164922  

Project: MOA Stormwater Management      Matrix: Water      Project #: 5078  
 Complete by: 2 weeks

Sample ID	Outfall ID	Sample Date	Sample Time	Sample	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
<del>05-F</del> SWM02-02	847-1	8/22	1400	Samp/MS/MSD	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	6		
<del>05-F</del> SWM02-02 Dup	847-1		1400	Samp	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	2		
<del>05-F</del> SWM05-02	207-1		1500	Samp	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	2		
<del>05-F</del> SWM07-02	484-1		1605	Samp	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	2		
<del>05-F</del> SWM09-02	499-1	8/22	1640	Samp	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	2		

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

Sampled and Relinquished By:	<i>AK</i>	Transporter:	Received By:	Date/Time:
Relinquished By:		Transporter:	Received By:	Date/Time:
		<i>band</i>	<i>[Signature]</i>	8/22 1530
			<i>[Signature]</i>	8/22/16 18:00

# Chain of Custody Record

<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Forest Taylor	<b>SGS Quote No. 337618</b>  <b>Date Received:</b>  <b>Lab #:</b>	<b>From:</b> Kinnetic Laboratories, Inc 704 West 2nd Avenue Anchorage, AK 99501 (907) 276-6178  Contact: Mark Savoie
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## 1164922



Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
① SWM02-02 <del>847-1</del>	847-1	8/27	1400	Samp/MS/MSD	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	9		
② SWM02-02 Dup <del>847-1</del>	847-1		1400	Samp	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3		
③ SWM05-02 <del>207-1</del>	207-1		1500	Samp	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3		
④ SWM07-02 <del>484-1</del>	484-1		1605	Samp	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3		
⑤ SWM09-02 <del>499-1</del>	499-1	8/27	1640	Samp	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3		
⑥ Trip Blank <del>N/A</del>	N/A	N/A	N/A	TB	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3	25 A-C	
⑦ <del>700</del>										
⑧ <del>9/22/16</del>										

Project: MOA Stormwater Management      Matrix: Water      Project #: 5078

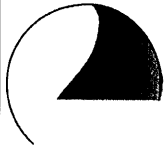
Complete by: 2 weeks

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Sampled and Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
<i>AG</i>	8/22 1530	hard		
Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
			<i>msavoie</i>	8/27/16 1800

# Chain of Custody Record

<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Forest Taylor	<b>From:</b> Kinnetic Laboratories, I 704 West 2nd Avenue Anchorage, AK 99501 (907) 276-6178 Contact: Mark Savoie
SGS Quote No. 337618  Date Received:  Lab #:	Project #: 5078  Matrix: Water



## 1164922



Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analyte	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM01-02	1040-3	NS	NA	Samp	Dissolved Cu (EPA 200.8)	125-ml HDPE	≤ 6 °C	1		
①④ SWM02-02	847-1	8/22	1400	Samp	Dissolved Cu (EPA 200.8)	125-ml HDPE	≤ 6 °C	1		
①⑤ SWM02-02 Dup	847-1		1400	Samp	Dissolved Cu (EPA 200.8)	125-ml HDPE	≤ 6 °C	1		
①⑥ SWM03-02	1224-1		1430	Samp	Dissolved Cu (EPA 200.8)	125-ml HDPE	≤ 6 °C	1		
①⑦ SWM04-02	1224-2		1435	Samp	Dissolved Cu (EPA 200.8)	125-ml HDPE	≤ 6 °C	1		
①⑧ SWM05-02	207-1		1500	Samp	Dissolved Cu (EPA 200.8)	125-ml HDPE	≤ 6 °C	1		
①⑨ SWM06-02	314-22		1545	Samp	Dissolved Cu (EPA 200.8)	125-ml HDPE	≤ 6 °C	1		
②① SWM07-02	484-1		1605	Samp	Dissolved Cu (EPA 200.8)	125-ml HDPE	≤ 6 °C	1		
②② SWM08-02	86-1		1600	Samp	Dissolved Cu (EPA 200.8)	125-ml HDPE	≤ 6 °C	1		
②③ SWM08-02 Dup	86-1		1600	Samp	Dissolved Cu (EPA 200.8)	125-ml HDPE	≤ 6 °C	1		
②④ SWM09-02	499-1		1640	Samp	Dissolved Cu (EPA 200.8)	125-ml HDPE	≤ 6 °C	1		
②⑤ SWM10-02	525-2	8/22	1647	Samp	Dissolved Cu (EPA 200.8)	125-ml HDPE	≤ 6 °C	1		

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments: **Dissolved Copper must be Filtered & Preserved at Lab**

Sampled and Relinquished By: <i>AG</i>	Date/Time: 8/22 1730	Transporter: hand	Received By: _____	Date/Time: _____
Relinquished By: _____	Date/Time: _____	Transporter: _____	Received By: <i>Jyckun</i>	Date/Time: 8/22/16 1800



e-SAMPLE RECEIPT FORM

1164922



1 1 6 4 9 2 2

Review Criteria	Y/N (yes/no)	Exceptions Noted below
Were Custody Seals intact? Note # & location	<input type="checkbox"/>	<input checked="" type="checkbox"/> exemption permitted if sampler hand carries/delivers.
COC accompanied samples?	<input checked="" type="checkbox"/>	Absent
<input type="checkbox"/> **exemption permitted if chilled & collected <8hrs ago or chilling not required (i.e., waste, oil)	<input type="checkbox"/>	
Temperature blank compliant* (i.e., 0-6 °C after CF)?	<input checked="" type="checkbox"/> N	Cooler ID: 1 @ 8.5 °C Therm ID: D6
	<input checked="" type="checkbox"/> Y	Cooler ID: 2 @ 3.3 °C Therm ID: D6
	<input checked="" type="checkbox"/> Y	Cooler ID: 3 @ 0.0 °C Therm ID: 238
	<input checked="" type="checkbox"/> Y	Cooler ID: @ °C Therm ID:
	<input checked="" type="checkbox"/> Y	Cooler ID: @ °C Therm ID:
*If >6°C, were samples collected <8 hours ago?	<input checked="" type="checkbox"/>	
If <0°C, were sample containers ice free?	<input type="checkbox"/>	
If samples received <u>without</u> a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "COOLER TEMP" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note "ambient" or "chilled".		
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.		
Note: Refer to form F-083 "Sample Guide" for hold times.		
Were samples received within hold time?	<input checked="" type="checkbox"/>	
Do samples <b>match COC**</b> (i.e., sample IDs, dates/times collected)?	<input checked="" type="checkbox"/>	
**Note: If times differ <1hr, record details & login per COC.		
Were analyses requested unambiguous?	<input checked="" type="checkbox"/>	
Were proper containers (type/mass/volume/preservative***)used?	<input checked="" type="checkbox"/>	<input type="checkbox"/> ***Exemption permitted for metals (e.g,200.8/6020A).
<b>IF APPLICABLE</b>		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	<input checked="" type="checkbox"/>	
Were all VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	<input type="checkbox"/>	Sample 3E had bubble greater than 6MM
Were all soil VOAs field extracted with MeOH+BFB?	<input checked="" type="checkbox"/>	
<b>Note to Client:</b> Any "no" answer above indicates non-compliance with standard procedures and may impact data quality.		
Additional notes (if applicable):		





### Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1164922001-A	Na2S2O3 for Chlorine Redu	OK	1164922007-G	HCL to pH < 2	OK
1164922001-B	HNO3 to pH < 2	OK	1164922007-H	HCL to pH < 2	OK
1164922001-C	No Preservative Required	OK	1164922007-I	HCL to pH < 2	OK
1164922001-D	No Preservative Required	OK	1164922008-A	Na2S2O3 for Chlorine Redu	OK
1164922001-E	No Preservative Required	OK	1164922008-B	HNO3 to pH < 2	OK
1164922001-F	No Preservative Required	OK	1164922008-C	No Preservative Required	OK
1164922001-G	HCL to pH < 2	OK	1164922008-D	No Preservative Required	OK
1164922001-H	HCL to pH < 2	OK	1164922009-A	Na2S2O3 for Chlorine Redu	OK
1164922001-I	HCL to pH < 2	OK	1164922009-B	HNO3 to pH < 2	OK
1164922002-A	No Preservative Required	OK	1164922009-C	No Preservative Required	OK
1164922002-B	No Preservative Required	OK	1164922009-D	No Preservative Required	OK
1164922002-C	HCL to pH < 2	OK	1164922009-E	No Preservative Required	OK
1164922002-D	HCL to pH < 2	OK	1164922009-F	No Preservative Required	OK
1164922002-E	HCL to pH < 2	OK	1164922009-G	HCL to pH < 2	OK
1164922003-A	No Preservative Required	OK	1164922009-H	HCL to pH < 2	OK
1164922003-B	No Preservative Required	OK	1164922009-I	HCL to pH < 2	OK
1164922003-C	HCL to pH < 2	OK	1164922010-A	Na2S2O3 for Chlorine Redu	OK
1164922003-D	HCL to pH < 2	OK	1164922010-B	HNO3 to pH < 2	OK
1164922003-E	HCL to pH < 2	OK	1164922010-C	No Preservative Required	OK
1164922004-A	Na2S2O3 for Chlorine Redu	OK	1164922010-D	No Preservative Required	OK
1164922004-B	HNO3 to pH < 2	OK	1164922011-A	Na2S2O3 for Chlorine Redu	OK
1164922004-C	No Preservative Required	OK	1164922011-B	HNO3 to pH < 2	OK
1164922004-D	No Preservative Required	OK	1164922011-C	No Preservative Required	OK
1164922004-E	No Preservative Required	OK	1164922011-D	No Preservative Required	OK
1164922004-F	No Preservative Required	OK	1164922012-A	Na2S2O3 for Chlorine Redu	OK
1164922004-G	HCL to pH < 2	OK	1164922012-B	HNO3 to pH < 2	OK
1164922004-H	HCL to pH < 2	OK	1164922012-C	No Preservative Required	OK
1164922004-I	HCL to pH < 2	OK	1164922012-D	No Preservative Required	OK
1164922005-A	Na2S2O3 for Chlorine Redu	OK	1164922012-E	No Preservative Required	OK
1164922005-B	HNO3 to pH < 2	OK	1164922012-F	No Preservative Required	OK
1164922005-C	No Preservative Required	OK	1164922012-G	HCL to pH < 2	OK
1164922005-D	No Preservative Required	OK	1164922012-H	HCL to pH < 2	OK
1164922006-A	Na2S2O3 for Chlorine Redu	OK	1164922012-I	HCL to pH < 2	OK
1164922006-B	HNO3 to pH < 2	OK	1164922013-A	Na2S2O3 for Chlorine Redu	OK
1164922006-C	No Preservative Required	OK	1164922013-B	HNO3 to pH < 2	OK
1164922006-D	No Preservative Required	OK	1164922013-C	No Preservative Required	OK
1164922007-A	Na2S2O3 for Chlorine Redu	OK	1164922013-D	No Preservative Required	OK
1164922007-B	HNO3 to pH < 2	OK	1164922014-A	No Preservative Required	OK
1164922007-C	No Preservative Required	OK	1164922014-B	HNO3 to pH < 2	OK
1164922007-D	No Preservative Required	OK	1164922015-A	No Preservative Required	OK
1164922007-E	No Preservative Required	OK	1164922015-B	HNO3 to pH < 2	OK
1164922007-F	No Preservative Required	OK	1164922016-A	No Preservative Required	OK

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1164922016-B	HNO3 to pH < 2	OK			
1164922017-A	No Preservative Required	OK			
1164922017-B	HNO3 to pH < 2	OK			
1164922018-A	No Preservative Required	OK			
1164922018-B	HNO3 to pH < 2	OK			
1164922019-A	No Preservative Required	OK			
1164922019-B	HNO3 to pH < 2	OK			
1164922020-A	No Preservative Required	OK			
1164922020-B	HNO3 to pH < 2	OK			
1164922021-A	No Preservative Required	OK			
1164922021-B	HNO3 to pH < 2	OK			
1164922022-A	No Preservative Required	OK			
1164922022-B	HNO3 to pH < 2	OK			
1164922023-A	No Preservative Required	OK			
1164922023-B	HNO3 to pH < 2	OK			
1164922024-A	No Preservative Required	OK			
1164922024-B	HNO3 to pH < 2	OK			
1164922025-A	HCL to pH < 2	OK			
1164922025-B	HCL to pH < 2	OK			
1164922025-C	HCL to pH < 2	OK			

#### Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM- The container was received damaged.

FR- The container was received frozen and not usable for Bacteria or BOD analyses.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.



## **Appendix B3**

### **Laboratory Data Package Storm Event #3**





## Laboratory Report of Analysis

To: MOA-Project Mnmt/Engr  
PO Box 196650  
Anchorage, AK 99519  
907-343-8058

Report Number: **1165480**

Client Project: **MOA Storm Water 5078**

Dear Kristi Bischofberger,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Forest at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,  
SGS North America Inc.

---

Forest Taylor  
Project Manager  
Forest.Taylor@sgs.com

Date

Print Date: 10/06/2016 9:20:32AM

## Case Narrative

SGS Client: **MOA-Project Mnmt/Engr**  
SGS Project: **1165480**  
Project Name/Site: **MOA Storm Water 5078**  
Project Contact: **Kristi Bischofberger**

Refer to sample receipt form for information on sample condition.

### **SWM05-03 (1165480008) PS**

8270D SIM - PAH surrogate recovery for terphenyl-d14 (46.3%) does not meet DOD recovery limits but is within in house control limits.

### **SWM07-03 (1165480010) PS**

8270D SIM - PAH surrogate recovery for terphenyl-d14 (34.6%) does not meet QC criteria. Sample was reanalyzed outside of hold time. Sample results are comparable. The in-hold data was reported.

### **1165480008DUP (1353264) DUP**

2540D - Total Suspended Solids - Sample duplicate RPD was outside of acceptance limits. The difference between sample and duplicate results is less than the LOQ.

### **1165476001(1352581MS) (1352582) MS**

200.8 - Metals MS recovery for zinc (57.1%) does not meet QC criteria. Sample concentration is 4 times greater than the spike level.

\*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 10/06/2016 9:20:34AM

### Report of Manual Integrations

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Analytical Batch</u>	<u>Analyte</u>	<u>Reason</u>
<b>EPA 625M SIM (PAH)</b>				
1165480013	SWM09-03	XMS9625	Benzo[k]fluoranthene	RP

#### Manual Integration Reason Code Descriptions

Code	Description
O	Original Chromatogram
M	Modified Chromatogram
SS	Skimmed surrogate
BLG	Closed baseline gap
RP	Reassign peak name
PIR	Pattern integration required
IT	Included tail
SP	Split peak
RSP	Removed split peak
FPS	Forced peak start/stop
BLC	Baseline correction
PNF	Peak not found by software

All DRO/RRO analysis are integrated per SOP.

Print Date: 10/06/2016 9:20:35AM



## Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8021B, 8082A, 8260B, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
D	The analyte concentration is the result of a dilution.
DF	Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
F	Indicates value that is greater than or equal to the DL
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
JL	The analyte was positively identified, but the quantitation is a low estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
M	A matrix effect was present.
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
Q	QC parameter out of acceptance range.
R	Rejected
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

### Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
SWM01-03	1165480001	09/15/2016	09/15/2016	Water (Surface, Eff., Ground)
SWM02-03	1165480002	09/15/2016	09/15/2016	Water (Surface, Eff., Ground)
SWM02-03 MS	1165480003	09/15/2016	09/15/2016	Water (Surface, Eff., Ground)
SWM02-03 MSD	1165480004	09/15/2016	09/15/2016	Water (Surface, Eff., Ground)
SWM02-03 DUP	1165480005	09/15/2016	09/15/2016	Water (Surface, Eff., Ground)
SWM03-03	1165480006	09/15/2016	09/15/2016	Water (Surface, Eff., Ground)
SWM04-03	1165480007	09/15/2016	09/15/2016	Water (Surface, Eff., Ground)
SWM05-03	1165480008	09/15/2016	09/15/2016	Water (Surface, Eff., Ground)
SWM06-03	1165480009	09/15/2016	09/15/2016	Water (Surface, Eff., Ground)
SWM07-03	1165480010	09/15/2016	09/15/2016	Water (Surface, Eff., Ground)
SWM08-03	1165480011	09/15/2016	09/15/2016	Water (Surface, Eff., Ground)
SWM08-03 DUP	1165480012	09/15/2016	09/15/2016	Water (Surface, Eff., Ground)
SWM09-03	1165480013	09/15/2016	09/15/2016	Water (Surface, Eff., Ground)
SWM10-03	1165480014	09/15/2016	09/15/2016	Water (Surface, Eff., Ground)
Trip Blank	1165480015	09/15/2016	09/15/2016	Water (Surface, Eff., Ground)
SWM01-03	1165480016	09/15/2016	09/15/2016	Water (Surface, Eff., Ground)
SWM02-03	1165480017	09/15/2016	09/15/2016	Water (Surface, Eff., Ground)
SWM02-03 DUP	1165480018	09/15/2016	09/15/2016	Water (Surface, Eff., Ground)
SWM03-03	1165480019	09/15/2016	09/15/2016	Water (Surface, Eff., Ground)
SWM04-03	1165480020	09/15/2016	09/15/2016	Water (Surface, Eff., Ground)
SWM05-03	1165480021	09/15/2016	09/15/2016	Water (Surface, Eff., Ground)
SWM06-03	1165480022	09/15/2016	09/15/2016	Water (Surface, Eff., Ground)
SWM07-03	1165480023	09/15/2016	09/15/2016	Water (Surface, Eff., Ground)
SWM08-03	1165480024	09/15/2016	09/15/2016	Water (Surface, Eff., Ground)
SWM08-03 DUP	1165480025	09/15/2016	09/15/2016	Water (Surface, Eff., Ground)
SWM09-03	1165480026	09/15/2016	09/15/2016	Water (Surface, Eff., Ground)
SWM10-03	1165480027	09/15/2016	09/15/2016	Water (Surface, Eff., Ground)

<u>Method</u>	<u>Method Description</u>
EPA 602/624	602 Aromatics by 624 (W)
EPA 625M SIM (PAH)	625 Semi-Volatiles GC/MS Liq/Liq ext.
SM21 5210B	Biochemical Oxygen Demand SM21 5210B
SM21 9222D	Fecal Coliform (MF)
SM21 2340B	Hardness as CaCO3 by ICP-MS
EP200.8	Metals in Drinking Water by ICP-MS DISSO
EP200.8	Metals in Water by 200.8 ICP-MS
SM21 2540D	Total Suspended Solids SM20 2540D

Print Date: 10/06/2016 9:20:40AM

### Detectable Results Summary

Client Sample ID: **SWM01-03**

Lab Sample ID: 1165480001

**Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Calcium	16300	ug/L
Hardness as CaCO3	52.5	mg/L
Magnesium	2870	ug/L
Fecal Coliform	320	col/100mL
Total Suspended Solids	8.87	mg/L

**Microbiology Laboratory**

**Waters Department**

Client Sample ID: **SWM02-03**

Lab Sample ID: 1165480002

**Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Calcium	39300	ug/L
Hardness as CaCO3	131	mg/L
Magnesium	7880	ug/L
Fecal Coliform	33	col/100mL

**Microbiology Laboratory**

Client Sample ID: **SWM02-03 DUP**

Lab Sample ID: 1165480005

**Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Calcium	39600	ug/L
Hardness as CaCO3	132	mg/L
Magnesium	8010	ug/L
Fecal Coliform	30	col/100mL

**Microbiology Laboratory**

Client Sample ID: **SWM03-03**

Lab Sample ID: 1165480006

**Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Calcium	24500	ug/L
Hardness as CaCO3	91.2	mg/L
Magnesium	7290	ug/L
Fecal Coliform	126	col/100mL
Total Suspended Solids	5.63	mg/L

**Microbiology Laboratory**

**Waters Department**

Client Sample ID: **SWM04-03**

Lab Sample ID: 1165480007

**Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Calcium	34200	ug/L
Hardness as CaCO3	119	mg/L
Magnesium	8170	ug/L
Fecal Coliform	530	col/100mL
Total Suspended Solids	17.1	mg/L

**Microbiology Laboratory**

**Waters Department**

Client Sample ID: **SWM05-03**

Lab Sample ID: 1165480008

**Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Calcium	28600	ug/L
Hardness as CaCO3	96.4	mg/L
Magnesium	6070	ug/L
Fecal Coliform	909	col/100mL
Total Suspended Solids	17.2	mg/L

**Microbiology Laboratory**

**Waters Department**



### Detectable Results Summary

Client Sample ID: **SWM06-03**

Lab Sample ID: 1165480009

**Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Calcium	14300	ug/L
Hardness as CaCO3	52.8	mg/L
Magnesium	4160	ug/L

**Microbiology Laboratory**

Biochemical Oxygen Demand	2.04	mg/L
Fecal Coliform	440	col/100mL
Total Suspended Solids	3.71	mg/L

**Waters Department**

Client Sample ID: **SWM07-03**

Lab Sample ID: 1165480010

**Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Calcium	5710	ug/L
Hardness as CaCO3	18.0	mg/L
Magnesium	904	ug/L

**Microbiology Laboratory**

Fecal Coliform	718	col/100mL
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**Waters Department**

Total Suspended Solids	10.0	mg/L
------------------------	------	------

Client Sample ID: **SWM08-03**

Lab Sample ID: 1165480011

**Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Calcium	20100	ug/L
Hardness as CaCO3	69.2	mg/L
Magnesium	4620	ug/L

**Microbiology Laboratory**

Fecal Coliform	350	col/100mL
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**Waters Department**

Total Suspended Solids	9.81	mg/L
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Client Sample ID: **SWM08-03 DUP**

Lab Sample ID: 1165480012

**Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Calcium	19800	ug/L
Hardness as CaCO3	68.5	mg/L
Magnesium	4640	ug/L

**Microbiology Laboratory**

Fecal Coliform	360	col/100mL
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**Waters Department**

Total Suspended Solids	8.75	mg/L
------------------------	------	------

Client Sample ID: **SWM09-03**

Lab Sample ID: 1165480013

**Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Calcium	32900	ug/L
Hardness as CaCO3	114	mg/L
Magnesium	7600	ug/L

**Microbiology Laboratory**

Fecal Coliform	114	col/100mL
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**Waters Department**

Total Suspended Solids	5.30	mg/L
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Client Sample ID: **SWM10-03**

Lab Sample ID: 1165480014

**Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Calcium	28700	ug/L
Hardness as CaCO3	101	mg/L
Magnesium	7100	ug/L

Client Sample ID: **SWM01-03**

Lab Sample ID: 1165480016

**Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Copper	3.28	ug/L

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SGS North America Inc.

200 West Potter Drive, Anchorage, AK 99518  
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Member of SGS Group

### Detectable Results Summary

Client Sample ID: <b>SWM02-03</b>			
Lab Sample ID: 1165480017	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Dissolved Metals by ICP/MS</b>	Copper	3.05	ug/L
Client Sample ID: <b>SWM02-03 DUP</b>			
Lab Sample ID: 1165480018	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Dissolved Metals by ICP/MS</b>	Copper	3.17	ug/L
Client Sample ID: <b>SWM03-03</b>			
Lab Sample ID: 1165480019	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Dissolved Metals by ICP/MS</b>	Copper	2.87	ug/L
Client Sample ID: <b>SWM04-03</b>			
Lab Sample ID: 1165480020	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Dissolved Metals by ICP/MS</b>	Copper	2.84	ug/L
Client Sample ID: <b>SWM05-03</b>			
Lab Sample ID: 1165480021	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Dissolved Metals by ICP/MS</b>	Copper	5.63	ug/L
Client Sample ID: <b>SWM06-03</b>			
Lab Sample ID: 1165480022	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Dissolved Metals by ICP/MS</b>	Copper	2.58	ug/L
Client Sample ID: <b>SWM07-03</b>			
Lab Sample ID: 1165480023	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Dissolved Metals by ICP/MS</b>	Copper	5.68	ug/L
Client Sample ID: <b>SWM08-03</b>			
Lab Sample ID: 1165480024	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Dissolved Metals by ICP/MS</b>	Copper	1.79	ug/L
Client Sample ID: <b>SWM08-03 DUP</b>			
Lab Sample ID: 1165480025	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Dissolved Metals by ICP/MS</b>	Copper	1.51	ug/L

Print Date: 10/06/2016 9:20:41AM



**Results of SWM01-03**

Client Sample ID: **SWM01-03**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480001  
Lab Project ID: 1165480

Collection Date: 09/15/16 10:15  
Received Date: 09/15/16 15:35  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Calcium	16300	500	150	ug/L	1		09/19/16 19:38
Magnesium	2870	50.0	15.0	ug/L	1		09/19/16 19:38

**Batch Information**

Analytical Batch: MMS9539  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 09/19/16 19:38  
Container ID: 1165480001-D

Prep Batch: MXX30202  
Prep Method: E200.2  
Prep Date/Time: 09/19/16 09:16  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Hardness as CaCO3	52.5	5.00	5.00	mg/L	1		09/19/16 19:38

**Batch Information**

Analytical Batch: MMS9539  
Analytical Method: SM21 2340B  
Analyst: VDL  
Analytical Date/Time: 09/19/16 19:38  
Container ID: 1165480001-D

Prep Batch: MXX30202  
Prep Method: E200.2  
Prep Date/Time: 09/19/16 09:16  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 10/06/2016 9:20:43AM



**Results of SWM01-03**

Client Sample ID: **SWM01-03**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480001  
Lab Project ID: 1165480

Collection Date: 09/15/16 10:15  
Received Date: 09/15/16 15:35  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		09/16/16 19:40

**Batch Information**

Analytical Batch: BOD5553  
Analytical Method: SM21 5210B  
Analyst: K.W  
Analytical Date/Time: 09/16/16 19:40  
Container ID: 1165480001-B

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	320	10.0	10.0	col/100mL	1		09/15/16 17:45

**Batch Information**

Analytical Batch: BTF15109  
Analytical Method: SM21 9222D  
Analyst: ACF  
Analytical Date/Time: 09/15/16 17:45  
Container ID: 1165480001-A

Print Date: 10/06/2016 9:20:43AM



**Results of SWM01-03**

Client Sample ID: **SWM01-03**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480001  
Lab Project ID: 1165480

Collection Date: 09/15/16 10:15  
Received Date: 09/15/16 15:35  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	8.87	1.41	0.437	mg/L	1		09/20/16 13:25

**Batch Information**

Analytical Batch: STS5214  
Analytical Method: SM21 2540D  
Analyst: KBE  
Analytical Date/Time: 09/20/16 13:25  
Container ID: 1165480001-C

Print Date: 10/06/2016 9:20:43AM





Results of **SWM02-03**

Client Sample ID: **SWM02-03**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480002  
Lab Project ID: 1165480

Collection Date: 09/15/16 11:30  
Received Date: 09/15/16 15:35  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Calcium	39300	500	150	ug/L	1		09/19/16 19:41
Magnesium	7880	50.0	15.0	ug/L	1		09/19/16 19:41

**Batch Information**

Analytical Batch: MMS9539  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 09/19/16 19:41  
Container ID: 1165480002-D

Prep Batch: MXX30202  
Prep Method: E200.2  
Prep Date/Time: 09/19/16 09:16  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Hardness as CaCO3	131	5.00	5.00	mg/L	1		09/19/16 19:41

**Batch Information**

Analytical Batch: MMS9539  
Analytical Method: SM21 2340B  
Analyst: VDL  
Analytical Date/Time: 09/19/16 19:41  
Container ID: 1165480002-D

Prep Batch: MXX30202  
Prep Method: E200.2  
Prep Date/Time: 09/19/16 09:16  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 10/06/2016 9:20:43AM



**Results of SWM02-03**

Client Sample ID: **SWM02-03**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480002  
Lab Project ID: 1165480

Collection Date: 09/15/16 11:30  
Received Date: 09/15/16 15:35  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		09/16/16 19:40

**Batch Information**

Analytical Batch: BOD5553  
Analytical Method: SM21 5210B  
Analyst: K.W  
Analytical Date/Time: 09/16/16 19:40  
Container ID: 1165480002-B

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	33	1.64	1.64	col/100mL	1		09/15/16 17:45

**Batch Information**

Analytical Batch: BTF15109  
Analytical Method: SM21 9222D  
Analyst: ACF  
Analytical Date/Time: 09/15/16 17:45  
Container ID: 1165480002-A

Print Date: 10/06/2016 9:20:43AM



**Results of SWM02-03**

Client Sample ID: **SWM02-03**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480002  
Lab Project ID: 1165480

Collection Date: 09/15/16 11:30  
Received Date: 09/15/16 15:35  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0521 U	0.0521	0.0156	ug/L	1		09/22/16 05:31
Acenaphthylene	0.0521 U	0.0521	0.0156	ug/L	1		09/22/16 05:31
Anthracene	0.0521 U	0.0521	0.0156	ug/L	1		09/22/16 05:31
Benzo(a)Anthracene	0.0521 U	0.0521	0.0156	ug/L	1		09/22/16 05:31
Benzo[a]pyrene	0.0208 U	0.0208	0.00646	ug/L	1		09/22/16 05:31
Benzo[b]Fluoranthene	0.0521 U	0.0521	0.0156	ug/L	1		09/22/16 05:31
Benzo[g,h,i]perylene	0.0521 U	0.0521	0.0156	ug/L	1		09/22/16 05:31
Benzo[k]fluoranthene	0.0521 U	0.0521	0.0156	ug/L	1		09/22/16 05:31
Chrysene	0.0521 U	0.0521	0.0156	ug/L	1		09/22/16 05:31
Dibenzo[a,h]anthracene	0.0208 U	0.0208	0.00646	ug/L	1		09/22/16 05:31
Fluoranthene	0.0521 U	0.0521	0.0156	ug/L	1		09/22/16 05:31
Fluorene	0.0521 U	0.0521	0.0156	ug/L	1		09/22/16 05:31
Indeno[1,2,3-c,d] pyrene	0.0521 U	0.0521	0.0156	ug/L	1		09/22/16 05:31
Naphthalene	0.104 U	0.104	0.0323	ug/L	1		09/22/16 05:31
Phenanthrene	0.0521 U	0.0521	0.0156	ug/L	1		09/22/16 05:31
Pyrene	0.0521 U	0.0521	0.0156	ug/L	1		09/22/16 05:31
<b>Surrogates</b>							
2-Fluorobiphenyl (surr)	73.6	53-106		%	1		09/22/16 05:31
Terphenyl-d14 (surr)	71.7	58-132		%	1		09/22/16 05:31

**Batch Information**

Analytical Batch: XMS9625  
Analytical Method: EPA 625M SIM (PAH)  
Analyst: S.G  
Analytical Date/Time: 09/22/16 05:31  
Container ID: 1165480002-E

Prep Batch: XXX36309  
Prep Method: SW3520C  
Prep Date/Time: 09/16/16 09:04  
Prep Initial Wt./Vol.: 960 mL  
Prep Extract Vol: 1 mL

Print Date: 10/06/2016 9:20:43AM



### Results of SWM02-03

Client Sample ID: **SWM02-03**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480002  
Lab Project ID: 1165480

Collection Date: 09/15/16 11:30  
Received Date: 09/15/16 15:35  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

### Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		09/16/16 22:45
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		09/16/16 22:45
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		09/16/16 22:45
Benzene	0.400 U	0.400	0.120	ug/L	1		09/16/16 22:45
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		09/16/16 22:45
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		09/16/16 22:45
o-Xylene	1.00 U	1.00	0.310	ug/L	1		09/16/16 22:45
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		09/16/16 22:45
Toluene	1.00 U	1.00	0.310	ug/L	1		09/16/16 22:45
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	96.9	81-118		%	1		09/16/16 22:45
4-Bromofluorobenzene (surr)	98.2	85-114		%	1		09/16/16 22:45
Toluene-d8 (surr)	101	89-112		%	1		09/16/16 22:45

### Batch Information

Analytical Batch: VMS16198  
Analytical Method: EPA 602/624  
Analyst: TJT  
Analytical Date/Time: 09/16/16 22:45  
Container ID: 1165480002-G

Prep Batch: VXX29587  
Prep Method: SW5030B  
Prep Date/Time: 09/16/16 06:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

Print Date: 10/06/2016 9:20:43AM



**Results of SWM02-03**

Client Sample ID: **SWM02-03**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480002  
Lab Project ID: 1165480

Collection Date: 09/15/16 11:30  
Received Date: 09/15/16 15:35  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	1.04 U	1.04	0.323	mg/L	1		09/20/16 13:25

**Batch Information**

Analytical Batch: STS5214  
Analytical Method: SM21 2540D  
Analyst: KBE  
Analytical Date/Time: 09/20/16 13:25  
Container ID: 1165480002-C

Print Date: 10/06/2016 9:20:43AM



**Results of SWM02-03 DUP**

Client Sample ID: **SWM02-03 DUP**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480005  
Lab Project ID: 1165480

Collection Date: 09/15/16 11:30  
Received Date: 09/15/16 15:35  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Calcium	39600	500	150	ug/L	1		09/19/16 19:44
Magnesium	8010	50.0	15.0	ug/L	1		09/19/16 19:44

**Batch Information**

Analytical Batch: MMS9539  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 09/19/16 19:44  
Container ID: 1165480005-D

Prep Batch: MXX30202  
Prep Method: E200.2  
Prep Date/Time: 09/19/16 09:16  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Hardness as CaCO3	132	5.00	5.00	mg/L	1		09/19/16 19:44

**Batch Information**

Analytical Batch: MMS9539  
Analytical Method: SM21 2340B  
Analyst: VDL  
Analytical Date/Time: 09/19/16 19:44  
Container ID: 1165480005-D

Prep Batch: MXX30202  
Prep Method: E200.2  
Prep Date/Time: 09/19/16 09:16  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 10/06/2016 9:20:43AM



**Results of SWM02-03 DUP**

Client Sample ID: **SWM02-03 DUP**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480005  
Lab Project ID: 1165480

Collection Date: 09/15/16 11:30  
Received Date: 09/15/16 15:35  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		09/16/16 19:40

**Batch Information**

Analytical Batch: BOD5553  
Analytical Method: SM21 5210B  
Analyst: K.W  
Analytical Date/Time: 09/16/16 19:40  
Container ID: 1165480005-B

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	30	1.64	1.64	col/100mL	1		09/15/16 17:45

**Batch Information**

Analytical Batch: BTF15109  
Analytical Method: SM21 9222D  
Analyst: ACF  
Analytical Date/Time: 09/15/16 17:45  
Container ID: 1165480005-A

Print Date: 10/06/2016 9:20:43AM



Results of SWM02-03 DUP

Client Sample ID: SWM02-03 DUP
Client Project ID: MOA Storm Water 5078
Lab Sample ID: 1165480005
Lab Project ID: 1165480

Collection Date: 09/15/16 11:30
Received Date: 09/15/16 15:35
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate compounds with associated quality and detection data.

Batch Information

Analytical Batch: XMS9625
Analytical Method: EPA 625M SIM (PAH)
Analyst: S.G
Analytical Date/Time: 09/22/16 06:33
Container ID: 1165480005-E

Prep Batch: XXX36309
Prep Method: SW3520C
Prep Date/Time: 09/16/16 09:04
Prep Initial Wt./Vol.: 980 mL
Prep Extract Vol: 1 mL

Print Date: 10/06/2016 9:20:43AM





### Results of SWM02-03 DUP

Client Sample ID: **SWM02-03 DUP**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480005  
Lab Project ID: 1165480

Collection Date: 09/15/16 11:30  
Received Date: 09/15/16 15:35  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

### Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		09/16/16 23:02
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		09/16/16 23:02
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		09/16/16 23:02
Benzene	0.400 U	0.400	0.120	ug/L	1		09/16/16 23:02
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		09/16/16 23:02
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		09/16/16 23:02
o-Xylene	1.00 U	1.00	0.310	ug/L	1		09/16/16 23:02
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		09/16/16 23:02
Toluene	1.00 U	1.00	0.310	ug/L	1		09/16/16 23:02
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	97.6	81-118		%	1		09/16/16 23:02
4-Bromofluorobenzene (surr)	97.2	85-114		%	1		09/16/16 23:02
Toluene-d8 (surr)	102	89-112		%	1		09/16/16 23:02

### Batch Information

Analytical Batch: VMS16198  
Analytical Method: EPA 602/624  
Analyst: TJT  
Analytical Date/Time: 09/16/16 23:02  
Container ID: 1165480005-G

Prep Batch: VXX29587  
Prep Method: SW5030B  
Prep Date/Time: 09/16/16 06:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

Print Date: 10/06/2016 9:20:43AM



**Results of SWM02-03 DUP**

Client Sample ID: **SWM02-03 DUP**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480005  
Lab Project ID: 1165480

Collection Date: 09/15/16 11:30  
Received Date: 09/15/16 15:35  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	1.04 U	1.04	0.321	mg/L	1		09/20/16 13:25

**Batch Information**

Analytical Batch: STS5214  
Analytical Method: SM21 2540D  
Analyst: KBE  
Analytical Date/Time: 09/20/16 13:25  
Container ID: 1165480005-C

Print Date: 10/06/2016 9:20:43AM



**Results of SWM03-03**

Client Sample ID: **SWM03-03**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480006  
Lab Project ID: 1165480

Collection Date: 09/15/16 12:25  
Received Date: 09/15/16 15:35  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Calcium	24500	500	150	ug/L	1		09/19/16 19:47
Magnesium	7290	50.0	15.0	ug/L	1		09/19/16 19:47

**Batch Information**

Analytical Batch: MMS9539  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 09/19/16 19:47  
Container ID: 1165480006-D

Prep Batch: MXX30202  
Prep Method: E200.2  
Prep Date/Time: 09/19/16 09:16  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Hardness as CaCO3	91.2	5.00	5.00	mg/L	1		09/19/16 19:47

**Batch Information**

Analytical Batch: MMS9539  
Analytical Method: SM21 2340B  
Analyst: VDL  
Analytical Date/Time: 09/19/16 19:47  
Container ID: 1165480006-D

Prep Batch: MXX30202  
Prep Method: E200.2  
Prep Date/Time: 09/19/16 09:16  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 10/06/2016 9:20:43AM



**Results of SWM03-03**

Client Sample ID: **SWM03-03**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480006  
Lab Project ID: 1165480

Collection Date: 09/15/16 12:25  
Received Date: 09/15/16 15:35  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		09/16/16 19:40

**Batch Information**

Analytical Batch: BOD5553  
Analytical Method: SM21 5210B  
Analyst: K.W  
Analytical Date/Time: 09/16/16 19:40  
Container ID: 1165480006-B

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	126	1.64	1.64	col/100mL	1		09/15/16 17:45

**Batch Information**

Analytical Batch: BTF15109  
Analytical Method: SM21 9222D  
Analyst: ACF  
Analytical Date/Time: 09/15/16 17:45  
Container ID: 1165480006-A

Print Date: 10/06/2016 9:20:43AM



**Results of SWM03-03**

Client Sample ID: **SWM03-03**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480006  
Lab Project ID: 1165480

Collection Date: 09/15/16 12:25  
Received Date: 09/15/16 15:35  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	5.63	1.01	0.312	mg/L	1		09/20/16 13:25

**Batch Information**

Analytical Batch: STS5214  
Analytical Method: SM21 2540D  
Analyst: KBE  
Analytical Date/Time: 09/20/16 13:25  
Container ID: 1165480006-C

Print Date: 10/06/2016 9:20:43AM



Results of **SWM04-03**

Client Sample ID: **SWM04-03**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480007  
Lab Project ID: 1165480

Collection Date: 09/15/16 12:30  
Received Date: 09/15/16 15:35  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Calcium	34200	500	150	ug/L	1		09/19/16 19:50
Magnesium	8170	50.0	15.0	ug/L	1		09/19/16 19:50

**Batch Information**

Analytical Batch: MMS9539  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 09/19/16 19:50  
Container ID: 1165480007-D

Prep Batch: MXX30202  
Prep Method: E200.2  
Prep Date/Time: 09/19/16 09:16  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Hardness as CaCO3	119	5.00	5.00	mg/L	1		09/19/16 19:50

**Batch Information**

Analytical Batch: MMS9539  
Analytical Method: SM21 2340B  
Analyst: VDL  
Analytical Date/Time: 09/19/16 19:50  
Container ID: 1165480007-D

Prep Batch: MXX30202  
Prep Method: E200.2  
Prep Date/Time: 09/19/16 09:16  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 10/06/2016 9:20:43AM



**Results of SWM04-03**

Client Sample ID: **SWM04-03**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480007  
Lab Project ID: 1165480

Collection Date: 09/15/16 12:30  
Received Date: 09/15/16 15:35  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		09/16/16 19:40

**Batch Information**

Analytical Batch: BOD5553  
Analytical Method: SM21 5210B  
Analyst: K.W  
Analytical Date/Time: 09/16/16 19:40  
Container ID: 1165480007-B

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	530	10.0	10.0	col/100mL	1		09/15/16 17:45

**Batch Information**

Analytical Batch: BTF15109  
Analytical Method: SM21 9222D  
Analyst: ACF  
Analytical Date/Time: 09/15/16 17:45  
Container ID: 1165480007-A

Print Date: 10/06/2016 9:20:43AM



**Results of SWM04-03**

Client Sample ID: **SWM04-03**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480007  
Lab Project ID: 1165480

Collection Date: 09/15/16 12:30  
Received Date: 09/15/16 15:35  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	17.1	1.06	0.328	mg/L	1		09/20/16 13:25

**Batch Information**

Analytical Batch: STS5214  
Analytical Method: SM21 2540D  
Analyst: KBE  
Analytical Date/Time: 09/20/16 13:25  
Container ID: 1165480007-C

Print Date: 10/06/2016 9:20:43AM





Results of **SWM05-03**

Client Sample ID: **SWM05-03**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480008  
Lab Project ID: 1165480

Collection Date: 09/15/16 13:00  
Received Date: 09/15/16 15:35  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Calcium	28600	500	150	ug/L	1		09/19/16 19:59
Magnesium	6070	50.0	15.0	ug/L	1		09/19/16 19:59

**Batch Information**

Analytical Batch: MMS9539  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 09/19/16 19:59  
Container ID: 1165480008-D

Prep Batch: MXX30202  
Prep Method: E200.2  
Prep Date/Time: 09/19/16 09:16  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Hardness as CaCO3	96.4	5.00	5.00	mg/L	1		09/19/16 19:59

**Batch Information**

Analytical Batch: MMS9539  
Analytical Method: SM21 2340B  
Analyst: VDL  
Analytical Date/Time: 09/19/16 19:59  
Container ID: 1165480008-D

Prep Batch: MXX30202  
Prep Method: E200.2  
Prep Date/Time: 09/19/16 09:16  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 10/06/2016 9:20:43AM



**Results of SWM05-03**

Client Sample ID: **SWM05-03**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480008  
Lab Project ID: 1165480

Collection Date: 09/15/16 13:00  
Received Date: 09/15/16 15:35  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		09/16/16 19:40

**Batch Information**

Analytical Batch: BOD5553  
Analytical Method: SM21 5210B  
Analyst: K.W  
Analytical Date/Time: 09/16/16 19:40  
Container ID: 1165480008-B

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	909	9.09	9.09	col/100mL	1		09/15/16 17:45

**Batch Information**

Analytical Batch: BTF15109  
Analytical Method: SM21 9222D  
Analyst: ACF  
Analytical Date/Time: 09/15/16 17:45  
Container ID: 1165480008-A

Print Date: 10/06/2016 9:20:43AM



### Results of SWM05-03

Client Sample ID: **SWM05-03**  
 Client Project ID: **MOA Storm Water 5078**  
 Lab Sample ID: 1165480008  
 Lab Project ID: 1165480

Collection Date: 09/15/16 13:00  
 Received Date: 09/15/16 15:35  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

### Results by Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0510 U	0.0510	0.0153	ug/L	1		09/22/16 06:54
Acenaphthylene	0.0510 U	0.0510	0.0153	ug/L	1		09/22/16 06:54
Anthracene	0.0510 U	0.0510	0.0153	ug/L	1		09/22/16 06:54
Benzo(a)Anthracene	0.0510 U	0.0510	0.0153	ug/L	1		09/22/16 06:54
Benzo[a]pyrene	0.0204 U	0.0204	0.00633	ug/L	1		09/22/16 06:54
Benzo[b]Fluoranthene	0.0510 U	0.0510	0.0153	ug/L	1		09/22/16 06:54
Benzo[g,h,i]perylene	0.0510 U	0.0510	0.0153	ug/L	1		09/22/16 06:54
Benzo[k]fluoranthene	0.0510 U	0.0510	0.0153	ug/L	1		09/22/16 06:54
Chrysene	0.0510 U	0.0510	0.0153	ug/L	1		09/22/16 06:54
Dibenzo[a,h]anthracene	0.0204 U	0.0204	0.00633	ug/L	1		09/22/16 06:54
Fluoranthene	0.0510 U	0.0510	0.0153	ug/L	1		09/22/16 06:54
Fluorene	0.0510 U	0.0510	0.0153	ug/L	1		09/22/16 06:54
Indeno[1,2,3-c,d] pyrene	0.0510 U	0.0510	0.0153	ug/L	1		09/22/16 06:54
Naphthalene	0.102 U	0.102	0.0316	ug/L	1		09/22/16 06:54
Phenanthrene	0.0510 U	0.0510	0.0153	ug/L	1		09/22/16 06:54
Pyrene	0.0510 U	0.0510	0.0153	ug/L	1		09/22/16 06:54
<b>Surrogates</b>							
2-Fluorobiphenyl (surr)	68.9	53-106		%	1		09/22/16 06:54
Terphenyl-d14 (surr)	46.3 *	58-132		%	1		09/22/16 06:54

### Batch Information

Analytical Batch: XMS9625  
 Analytical Method: EPA 625M SIM (PAH)  
 Analyst: S.G  
 Analytical Date/Time: 09/22/16 06:54  
 Container ID: 1165480008-E

Prep Batch: XXX36309  
 Prep Method: SW3520C  
 Prep Date/Time: 09/16/16 09:04  
 Prep Initial Wt./Vol.: 980 mL  
 Prep Extract Vol: 1 mL

Print Date: 10/06/2016 9:20:43AM



### Results of SWM05-03

Client Sample ID: **SWM05-03**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480008  
Lab Project ID: 1165480

Collection Date: 09/15/16 13:00  
Received Date: 09/15/16 15:35  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

### Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		09/16/16 23:18
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		09/16/16 23:18
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		09/16/16 23:18
Benzene	0.400 U	0.400	0.120	ug/L	1		09/16/16 23:18
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		09/16/16 23:18
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		09/16/16 23:18
o-Xylene	1.00 U	1.00	0.310	ug/L	1		09/16/16 23:18
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		09/16/16 23:18
Toluene	1.00 U	1.00	0.310	ug/L	1		09/16/16 23:18
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	97.1	81-118		%	1		09/16/16 23:18
4-Bromofluorobenzene (surr)	97.6	85-114		%	1		09/16/16 23:18
Toluene-d8 (surr)	103	89-112		%	1		09/16/16 23:18

### Batch Information

Analytical Batch: VMS16198  
Analytical Method: EPA 602/624  
Analyst: TJT  
Analytical Date/Time: 09/16/16 23:18  
Container ID: 1165480008-G

Prep Batch: VXX29587  
Prep Method: SW5030B  
Prep Date/Time: 09/16/16 06:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

Print Date: 10/06/2016 9:20:43AM



**Results of SWM05-03**

Client Sample ID: **SWM05-03**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480008  
Lab Project ID: 1165480

Collection Date: 09/15/16 13:00  
Received Date: 09/15/16 15:35  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	17.2	4.00	1.24	mg/L	1		09/20/16 13:25

**Batch Information**

Analytical Batch: STS5214  
Analytical Method: SM21 2540D  
Analyst: KBE  
Analytical Date/Time: 09/20/16 13:25  
Container ID: 1165480008-C

Print Date: 10/06/2016 9:20:43AM



**Results of SWM06-03**

Client Sample ID: **SWM06-03**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480009  
Lab Project ID: 1165480

Collection Date: 09/15/16 13:30  
Received Date: 09/15/16 15:35  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Calcium	14300	500	150	ug/L	1		09/19/16 20:02
Magnesium	4160	50.0	15.0	ug/L	1		09/19/16 20:02

**Batch Information**

Analytical Batch: MMS9539  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 09/19/16 20:02  
Container ID: 1165480009-D

Prep Batch: MXX30202  
Prep Method: E200.2  
Prep Date/Time: 09/19/16 09:16  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Hardness as CaCO3	52.8	5.00	5.00	mg/L	1		09/19/16 20:02

**Batch Information**

Analytical Batch: MMS9539  
Analytical Method: SM21 2340B  
Analyst: VDL  
Analytical Date/Time: 09/19/16 20:02  
Container ID: 1165480009-D

Prep Batch: MXX30202  
Prep Method: E200.2  
Prep Date/Time: 09/19/16 09:16  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 10/06/2016 9:20:43AM



**Results of SWM06-03**

Client Sample ID: **SWM06-03**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480009  
Lab Project ID: 1165480

Collection Date: 09/15/16 13:30  
Received Date: 09/15/16 15:35  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.04	2.00	2.00	mg/L	1		09/16/16 19:40

**Batch Information**

Analytical Batch: BOD5553  
Analytical Method: SM21 5210B  
Analyst: K.W  
Analytical Date/Time: 09/16/16 19:40  
Container ID: 1165480009-B

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	440	10.0	10.0	col/100mL	1		09/15/16 17:45

**Batch Information**

Analytical Batch: BTF15109  
Analytical Method: SM21 9222D  
Analyst: ACF  
Analytical Date/Time: 09/15/16 17:45  
Container ID: 1165480009-A

Print Date: 10/06/2016 9:20:43AM



**Results of SWM06-03**

Client Sample ID: **SWM06-03**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480009  
Lab Project ID: 1165480

Collection Date: 09/15/16 13:30  
Received Date: 09/15/16 15:35  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	3.71	1.43	0.443	mg/L	1		09/20/16 13:25

**Batch Information**

Analytical Batch: STS5214  
Analytical Method: SM21 2540D  
Analyst: KBE  
Analytical Date/Time: 09/20/16 13:25  
Container ID: 1165480009-C

Print Date: 10/06/2016 9:20:43AM





Results of **SWM07-03**

Client Sample ID: **SWM07-03**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480010  
Lab Project ID: 1165480

Collection Date: 09/15/16 13:55  
Received Date: 09/15/16 15:35  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Calcium	5710	500	150	ug/L	1		09/19/16 20:05
Magnesium	904	50.0	15.0	ug/L	1		09/19/16 20:05

**Batch Information**

Analytical Batch: MMS9539  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 09/19/16 20:05  
Container ID: 1165480010-D

Prep Batch: MXX30202  
Prep Method: E200.2  
Prep Date/Time: 09/19/16 09:16  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Hardness as CaCO3	18.0	5.00	5.00	mg/L	1		09/19/16 20:05

**Batch Information**

Analytical Batch: MMS9539  
Analytical Method: SM21 2340B  
Analyst: VDL  
Analytical Date/Time: 09/19/16 20:05  
Container ID: 1165480010-D

Prep Batch: MXX30202  
Prep Method: E200.2  
Prep Date/Time: 09/19/16 09:16  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 10/06/2016 9:20:43AM



**Results of SWM07-03**

Client Sample ID: **SWM07-03**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480010  
Lab Project ID: 1165480

Collection Date: 09/15/16 13:55  
Received Date: 09/15/16 15:35  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		09/16/16 19:40

**Batch Information**

Analytical Batch: BOD5553  
Analytical Method: SM21 5210B  
Analyst: K.W  
Analytical Date/Time: 09/16/16 19:40  
Container ID: 1165480010-B

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	718	9.09	9.09	col/100mL	1		09/15/16 17:45

**Batch Information**

Analytical Batch: BTF15109  
Analytical Method: SM21 9222D  
Analyst: ACF  
Analytical Date/Time: 09/15/16 17:45  
Container ID: 1165480010-A

Print Date: 10/06/2016 9:20:43AM



Results of **SWM07-03**

Client Sample ID: **SWM07-03**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480010  
Lab Project ID: 1165480

Collection Date: 09/15/16 13:55  
Received Date: 09/15/16 15:35  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0505 U	0.0505	0.0152	ug/L	1		09/22/16 07:14
Acenaphthylene	0.0505 U	0.0505	0.0152	ug/L	1		09/22/16 07:14
Anthracene	0.0505 U	0.0505	0.0152	ug/L	1		09/22/16 07:14
Benzo(a)Anthracene	0.0505 U	0.0505	0.0152	ug/L	1		09/22/16 07:14
Benzo[a]pyrene	0.0202 U	0.0202	0.00626	ug/L	1		09/22/16 07:14
Benzo[b]Fluoranthene	0.0505 U	0.0505	0.0152	ug/L	1		09/22/16 07:14
Benzo[g,h,i]perylene	0.0505 U	0.0505	0.0152	ug/L	1		09/22/16 07:14
Benzo[k]fluoranthene	0.0505 U	0.0505	0.0152	ug/L	1		09/22/16 07:14
Chrysene	0.0505 U	0.0505	0.0152	ug/L	1		09/22/16 07:14
Dibenzo[a,h]anthracene	0.0202 U	0.0202	0.00626	ug/L	1		09/22/16 07:14
Fluoranthene	0.0505 U	0.0505	0.0152	ug/L	1		09/22/16 07:14
Fluorene	0.0505 U	0.0505	0.0152	ug/L	1		09/22/16 07:14
Indeno[1,2,3-c,d] pyrene	0.0505 U	0.0505	0.0152	ug/L	1		09/22/16 07:14
Naphthalene	0.101 U	0.101	0.0313	ug/L	1		09/22/16 07:14
Phenanthrene	0.0505 U	0.0505	0.0152	ug/L	1		09/22/16 07:14
Pyrene	0.0505 U	0.0505	0.0152	ug/L	1		09/22/16 07:14
<b>Surrogates</b>							
2-Fluorobiphenyl (surr)	66.6	53-106		%	1		09/22/16 07:14
Terphenyl-d14 (surr)	34.6 *	58-132		%	1		09/22/16 07:14

**Batch Information**

Analytical Batch: XMS9625  
Analytical Method: EPA 625M SIM (PAH)  
Analyst: S.G  
Analytical Date/Time: 09/22/16 07:14  
Container ID: 1165480010-E

Prep Batch: XXX36309  
Prep Method: SW3520C  
Prep Date/Time: 09/16/16 09:04  
Prep Initial Wt./Vol.: 990 mL  
Prep Extract Vol: 1 mL

Print Date: 10/06/2016 9:20:43AM



Results of **SWM07-03**

Client Sample ID: **SWM07-03**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480010  
Lab Project ID: 1165480

Collection Date: 09/15/16 13:55  
Received Date: 09/15/16 15:35  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		09/16/16 23:34
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		09/16/16 23:34
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		09/16/16 23:34
Benzene	0.400 U	0.400	0.120	ug/L	1		09/16/16 23:34
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		09/16/16 23:34
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		09/16/16 23:34
o-Xylene	1.00 U	1.00	0.310	ug/L	1		09/16/16 23:34
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		09/16/16 23:34
Toluene	1.00 U	1.00	0.310	ug/L	1		09/16/16 23:34
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	96.9	81-118		%	1		09/16/16 23:34
4-Bromofluorobenzene (surr)	98.3	85-114		%	1		09/16/16 23:34
Toluene-d8 (surr)	101	89-112		%	1		09/16/16 23:34

Batch Information

Analytical Batch: VMS16198  
Analytical Method: EPA 602/624  
Analyst: TJT  
Analytical Date/Time: 09/16/16 23:34  
Container ID: 1165480010-G

Prep Batch: VXX29587  
Prep Method: SW5030B  
Prep Date/Time: 09/16/16 06:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

Print Date: 10/06/2016 9:20:43AM



**Results of SWM07-03**

Client Sample ID: **SWM07-03**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480010  
Lab Project ID: 1165480

Collection Date: 09/15/16 13:55  
Received Date: 09/15/16 15:35  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	10.0	1.92	0.596	mg/L	1		09/21/16 12:00

**Batch Information**

Analytical Batch: STS5215  
Analytical Method: SM21 2540D  
Analyst: LLP  
Analytical Date/Time: 09/21/16 12:00  
Container ID: 1165480010-C

Print Date: 10/06/2016 9:20:43AM



Results of **SWM08-03**

Client Sample ID: **SWM08-03**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480011  
Lab Project ID: 1165480

Collection Date: 09/15/16 14:00  
Received Date: 09/15/16 15:35  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Calcium	20100	500	150	ug/L	1		09/19/16 20:08
Magnesium	4620	50.0	15.0	ug/L	1		09/19/16 20:08

**Batch Information**

Analytical Batch: MMS9539  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 09/19/16 20:08  
Container ID: 1165480011-D

Prep Batch: MXX30202  
Prep Method: E200.2  
Prep Date/Time: 09/19/16 09:16  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Hardness as CaCO3	69.2	5.00	5.00	mg/L	1		09/19/16 20:08

**Batch Information**

Analytical Batch: MMS9539  
Analytical Method: SM21 2340B  
Analyst: VDL  
Analytical Date/Time: 09/19/16 20:08  
Container ID: 1165480011-D

Prep Batch: MXX30202  
Prep Method: E200.2  
Prep Date/Time: 09/19/16 09:16  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 10/06/2016 9:20:43AM



**Results of SWM08-03**

Client Sample ID: **SWM08-03**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480011  
Lab Project ID: 1165480

Collection Date: 09/15/16 14:00  
Received Date: 09/15/16 15:35  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		09/16/16 19:40

**Batch Information**

Analytical Batch: BOD5553  
Analytical Method: SM21 5210B  
Analyst: K.W  
Analytical Date/Time: 09/16/16 19:40  
Container ID: 1165480011-B

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	350	10.0	10.0	col/100mL	1		09/15/16 17:45

**Batch Information**

Analytical Batch: BTF15109  
Analytical Method: SM21 9222D  
Analyst: ACF  
Analytical Date/Time: 09/15/16 17:45  
Container ID: 1165480011-A

Print Date: 10/06/2016 9:20:43AM



**Results of SWM08-03**

Client Sample ID: **SWM08-03**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480011  
Lab Project ID: 1165480

Collection Date: 09/15/16 14:00  
Received Date: 09/15/16 15:35  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	9.81	1.92	0.596	mg/L	1		09/21/16 12:00

**Batch Information**

Analytical Batch: STS5215  
Analytical Method: SM21 2540D  
Analyst: LLP  
Analytical Date/Time: 09/21/16 12:00  
Container ID: 1165480011-C

Print Date: 10/06/2016 9:20:43AM





Results of **SWM08-03 DUP**

Client Sample ID: **SWM08-03 DUP**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480012  
Lab Project ID: 1165480

Collection Date: 09/15/16 14:00  
Received Date: 09/15/16 15:35  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Calcium	19800	500	150	ug/L	1		09/19/16 20:17
Magnesium	4640	50.0	15.0	ug/L	1		09/19/16 20:17

**Batch Information**

Analytical Batch: MMS9539  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 09/19/16 20:17  
Container ID: 1165480012-D

Prep Batch: MXX30202  
Prep Method: E200.2  
Prep Date/Time: 09/19/16 09:16  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Hardness as CaCO3	68.5	5.00	5.00	mg/L	1		09/19/16 20:17

**Batch Information**

Analytical Batch: MMS9539  
Analytical Method: SM21 2340B  
Analyst: VDL  
Analytical Date/Time: 09/19/16 20:17  
Container ID: 1165480012-D

Prep Batch: MXX30202  
Prep Method: E200.2  
Prep Date/Time: 09/19/16 09:16  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 10/06/2016 9:20:43AM



**Results of SWM08-03 DUP**

Client Sample ID: **SWM08-03 DUP**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480012  
Lab Project ID: 1165480

Collection Date: 09/15/16 14:00  
Received Date: 09/15/16 15:35  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		09/16/16 19:40

**Batch Information**

Analytical Batch: BOD5553  
Analytical Method: SM21 5210B  
Analyst: K.W  
Analytical Date/Time: 09/16/16 19:40  
Container ID: 1165480012-B

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	360	10.0	10.0	col/100mL	1		09/15/16 17:45

**Batch Information**

Analytical Batch: BTF15109  
Analytical Method: SM21 9222D  
Analyst: ACF  
Analytical Date/Time: 09/15/16 17:45  
Container ID: 1165480012-A

Print Date: 10/06/2016 9:20:43AM



**Results of SWM08-03 DUP**

Client Sample ID: **SWM08-03 DUP**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480012  
Lab Project ID: 1165480

Collection Date: 09/15/16 14:00  
Received Date: 09/15/16 15:35  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	8.75	2.50	0.775	mg/L	1		09/21/16 12:00

**Batch Information**

Analytical Batch: STS5215  
Analytical Method: SM21 2540D  
Analyst: LLP  
Analytical Date/Time: 09/21/16 12:00  
Container ID: 1165480012-C

Print Date: 10/06/2016 9:20:43AM



Results of **SWM09-03**

Client Sample ID: **SWM09-03**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480013  
Lab Project ID: 1165480

Collection Date: 09/15/16 14:40  
Received Date: 09/15/16 15:35  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Calcium	32900	500	150	ug/L	1		09/19/16 20:20
Magnesium	7600	50.0	15.0	ug/L	1		09/19/16 20:20

**Batch Information**

Analytical Batch: MMS9539  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 09/19/16 20:20  
Container ID: 1165480013-D

Prep Batch: MXX30202  
Prep Method: E200.2  
Prep Date/Time: 09/19/16 09:16  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Hardness as CaCO3	114	5.00	5.00	mg/L	1		09/19/16 20:20

**Batch Information**

Analytical Batch: MMS9539  
Analytical Method: SM21 2340B  
Analyst: VDL  
Analytical Date/Time: 09/19/16 20:20  
Container ID: 1165480013-D

Prep Batch: MXX30202  
Prep Method: E200.2  
Prep Date/Time: 09/19/16 09:16  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 10/06/2016 9:20:43AM



**Results of SWM09-03**

Client Sample ID: **SWM09-03**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480013  
Lab Project ID: 1165480

Collection Date: 09/15/16 14:40  
Received Date: 09/15/16 15:35  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		09/16/16 19:40

**Batch Information**

Analytical Batch: BOD5553  
Analytical Method: SM21 5210B  
Analyst: K.W  
Analytical Date/Time: 09/16/16 19:40  
Container ID: 1165480013-B

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	114	2.00	2.00	col/100mL	1		09/15/16 17:45

**Batch Information**

Analytical Batch: BTF15109  
Analytical Method: SM21 9222D  
Analyst: ACF  
Analytical Date/Time: 09/15/16 17:45  
Container ID: 1165480013-A

Print Date: 10/06/2016 9:20:43AM



**Results of SWM09-03**

Client Sample ID: **SWM09-03**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480013  
Lab Project ID: 1165480

Collection Date: 09/15/16 14:40  
Received Date: 09/15/16 15:35  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0505 U	0.0505	0.0152	ug/L	1		09/22/16 07:35
Acenaphthylene	0.0505 U	0.0505	0.0152	ug/L	1		09/22/16 07:35
Anthracene	0.0505 U	0.0505	0.0152	ug/L	1		09/22/16 07:35
Benzo(a)Anthracene	0.0505 U	0.0505	0.0152	ug/L	1		09/22/16 07:35
Benzo[a]pyrene	0.0202 U	0.0202	0.00626	ug/L	1		09/22/16 07:35
Benzo[b]Fluoranthene	0.0505 U	0.0505	0.0152	ug/L	1		09/22/16 07:35
Benzo[g,h,i]perylene	0.0505 U	0.0505	0.0152	ug/L	1		09/22/16 07:35
Benzo[k]fluoranthene	0.0505 U	0.0505	0.0152	ug/L	1		09/22/16 07:35
Chrysene	0.0505 U	0.0505	0.0152	ug/L	1		09/22/16 07:35
Dibenzo[a,h]anthracene	0.0202 U	0.0202	0.00626	ug/L	1		09/22/16 07:35
Fluoranthene	0.0505 U	0.0505	0.0152	ug/L	1		09/22/16 07:35
Fluorene	0.0505 U	0.0505	0.0152	ug/L	1		09/22/16 07:35
Indeno[1,2,3-c,d] pyrene	0.0505 U	0.0505	0.0152	ug/L	1		09/22/16 07:35
Naphthalene	0.101 U	0.101	0.0313	ug/L	1		09/22/16 07:35
Phenanthrene	0.0505 U	0.0505	0.0152	ug/L	1		09/22/16 07:35
Pyrene	0.0505 U	0.0505	0.0152	ug/L	1		09/22/16 07:35
<b>Surrogates</b>							
2-Fluorobiphenyl (surr)	66.5	53-106		%	1		09/22/16 07:35
Terphenyl-d14 (surr)	64.1	58-132		%	1		09/22/16 07:35

**Batch Information**

Analytical Batch: XMS9625  
Analytical Method: EPA 625M SIM (PAH)  
Analyst: S.G  
Analytical Date/Time: 09/22/16 07:35  
Container ID: 1165480013-E

Prep Batch: XXX36309  
Prep Method: SW3520C  
Prep Date/Time: 09/16/16 09:04  
Prep Initial Wt./Vol.: 990 mL  
Prep Extract Vol: 1 mL



**Results of SWM09-03**

Client Sample ID: **SWM09-03**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480013  
Lab Project ID: 1165480

Collection Date: 09/15/16 14:40  
Received Date: 09/15/16 15:35  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		09/16/16 23:50
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		09/16/16 23:50
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		09/16/16 23:50
Benzene	0.400 U	0.400	0.120	ug/L	1		09/16/16 23:50
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		09/16/16 23:50
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		09/16/16 23:50
o-Xylene	1.00 U	1.00	0.310	ug/L	1		09/16/16 23:50
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		09/16/16 23:50
Toluene	1.00 U	1.00	0.310	ug/L	1		09/16/16 23:50
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	98.5	81-118		%	1		09/16/16 23:50
4-Bromofluorobenzene (surr)	97.5	85-114		%	1		09/16/16 23:50
Toluene-d8 (surr)	101	89-112		%	1		09/16/16 23:50

**Batch Information**

Analytical Batch: VMS16198  
Analytical Method: EPA 602/624  
Analyst: TJT  
Analytical Date/Time: 09/16/16 23:50  
Container ID: 1165480013-G

Prep Batch: VXX29587  
Prep Method: SW5030B  
Prep Date/Time: 09/16/16 06:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

Print Date: 10/06/2016 9:20:43AM



Results of **SWM09-03**

Client Sample ID: **SWM09-03**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480013  
Lab Project ID: 1165480

Collection Date: 09/15/16 14:40  
Received Date: 09/15/16 15:35  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	5.30	1.00	0.310	mg/L	1		09/21/16 12:00

Batch Information

Analytical Batch: STS5215  
Analytical Method: SM21 2540D  
Analyst: LLP  
Analytical Date/Time: 09/21/16 12:00  
Container ID: 1165480013-C

Print Date: 10/06/2016 9:20:43AM





Results of **SWM10-03**

Client Sample ID: **SWM10-03**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480014  
Lab Project ID: 1165480

Collection Date: 09/15/16 14:50  
Received Date: 09/15/16 15:35  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Calcium	28700	500	150	ug/L	1		09/19/16 20:23
Magnesium	7100	50.0	15.0	ug/L	1		09/19/16 20:23

**Batch Information**

Analytical Batch: MMS9539  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 09/19/16 20:23  
Container ID: 1165480014-D

Prep Batch: MXX30202  
Prep Method: E200.2  
Prep Date/Time: 09/19/16 09:16  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Hardness as CaCO3	101	5.00	5.00	mg/L	1		09/19/16 20:23

**Batch Information**

Analytical Batch: MMS9539  
Analytical Method: SM21 2340B  
Analyst: VDL  
Analytical Date/Time: 09/19/16 20:23  
Container ID: 1165480014-D

Prep Batch: MXX30202  
Prep Method: E200.2  
Prep Date/Time: 09/19/16 09:16  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 10/06/2016 9:20:43AM



**Results of SWM10-03**

Client Sample ID: **SWM10-03**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480014  
Lab Project ID: 1165480

Collection Date: 09/15/16 14:50  
Received Date: 09/15/16 15:35  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		09/16/16 19:40

**Batch Information**

Analytical Batch: BOD5553  
Analytical Method: SM21 5210B  
Analyst: K.W  
Analytical Date/Time: 09/16/16 19:40  
Container ID: 1165480014-B

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	1.64 U	1.64	1.64	col/100mL	1		09/15/16 17:45

**Batch Information**

Analytical Batch: BTF15109  
Analytical Method: SM21 9222D  
Analyst: ACF  
Analytical Date/Time: 09/15/16 17:45  
Container ID: 1165480014-A

Print Date: 10/06/2016 9:20:43AM



**Results of SWM10-03**

Client Sample ID: **SWM10-03**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480014  
Lab Project ID: 1165480

Collection Date: 09/15/16 14:50  
Received Date: 09/15/16 15:35  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	1.00 U	1.00	0.310	mg/L	1		09/21/16 12:00

**Batch Information**

Analytical Batch: STS5215  
Analytical Method: SM21 2540D  
Analyst: LLP  
Analytical Date/Time: 09/21/16 12:00  
Container ID: 1165480014-C

Print Date: 10/06/2016 9:20:43AM



### Results of Trip Blank

Client Sample ID: **Trip Blank**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480015  
Lab Project ID: 1165480

Collection Date: 09/15/16 11:30  
Received Date: 09/15/16 15:35  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

### Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		09/16/16 20:03
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		09/16/16 20:03
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		09/16/16 20:03
Benzene	0.400 U	0.400	0.120	ug/L	1		09/16/16 20:03
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		09/16/16 20:03
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		09/16/16 20:03
o-Xylene	1.00 U	1.00	0.310	ug/L	1		09/16/16 20:03
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		09/16/16 20:03
Toluene	1.00 U	1.00	0.310	ug/L	1		09/16/16 20:03
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	97.1	81-118		%	1		09/16/16 20:03
4-Bromofluorobenzene (surr)	97.9	85-114		%	1		09/16/16 20:03
Toluene-d8 (surr)	102	89-112		%	1		09/16/16 20:03

### Batch Information

Analytical Batch: VMS16198  
Analytical Method: EPA 602/624  
Analyst: TJT  
Analytical Date/Time: 09/16/16 20:03  
Container ID: 1165480015-A

Prep Batch: VXX29587  
Prep Method: SW5030B  
Prep Date/Time: 09/16/16 06:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

Print Date: 10/06/2016 9:20:43AM



**Results of SWM01-03**

Client Sample ID: **SWM01-03**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480016  
Lab Project ID: 1165480

Collection Date: 09/15/16 10:15  
Received Date: 09/15/16 17:39  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	3.28	1.00	0.310	ug/L	1		09/19/16 21:17

**Batch Information**

Analytical Batch: MMS9539  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 09/19/16 21:17  
Container ID: 1165480016-B

Prep Batch: MXX30198  
Prep Method: E200.2  
Prep Date/Time: 09/19/16 09:15  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 10/06/2016 9:20:43AM



Results of **SWM02-03**

Client Sample ID: **SWM02-03**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480017  
Lab Project ID: 1165480

Collection Date: 09/15/16 11:30  
Received Date: 09/15/16 17:39  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	3.05	1.00	0.310	ug/L	1		09/19/16 21:20

**Batch Information**

Analytical Batch: MMS9539  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 09/19/16 21:20  
Container ID: 1165480017-B

Prep Batch: MXX30198  
Prep Method: E200.2  
Prep Date/Time: 09/19/16 09:15  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 10/06/2016 9:20:43AM



**Results of SWM02-03 DUP**

Client Sample ID: **SWM02-03 DUP**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480018  
Lab Project ID: 1165480

Collection Date: 09/15/16 11:30  
Received Date: 09/15/16 17:39  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	3.17	1.00	0.310	ug/L	1		09/19/16 21:23

**Batch Information**

Analytical Batch: MMS9539  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 09/19/16 21:23  
Container ID: 1165480018-B

Prep Batch: MXX30198  
Prep Method: E200.2  
Prep Date/Time: 09/19/16 09:15  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 10/06/2016 9:20:43AM



Results of **SWM03-03**

Client Sample ID: **SWM03-03**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480019  
Lab Project ID: 1165480

Collection Date: 09/15/16 12:25  
Received Date: 09/15/16 17:39  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	2.87	1.00	0.310	ug/L	1		09/19/16 21:26

**Batch Information**

Analytical Batch: MMS9539  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 09/19/16 21:26  
Container ID: 1165480019-B

Prep Batch: MXX30198  
Prep Method: E200.2  
Prep Date/Time: 09/19/16 09:15  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 10/06/2016 9:20:43AM





**Results of SWM04-03**

Client Sample ID: **SWM04-03**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480020  
Lab Project ID: 1165480

Collection Date: 09/15/16 12:30  
Received Date: 09/15/16 17:39  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	2.84	1.00	0.310	ug/L	1		09/19/16 21:29

**Batch Information**

Analytical Batch: MMS9539  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 09/19/16 21:29  
Container ID: 1165480020-B

Prep Batch: MXX30198  
Prep Method: E200.2  
Prep Date/Time: 09/19/16 09:15  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 10/06/2016 9:20:43AM



**Results of SWM05-03**

Client Sample ID: **SWM05-03**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480021  
Lab Project ID: 1165480

Collection Date: 09/15/16 13:00  
Received Date: 09/15/16 17:39  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	5.63	1.00	0.310	ug/L	1		09/19/16 21:32

**Batch Information**

Analytical Batch: MMS9539  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 09/19/16 21:32  
Container ID: 1165480021-B

Prep Batch: MXX30198  
Prep Method: E200.2  
Prep Date/Time: 09/19/16 09:15  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 10/06/2016 9:20:43AM



**Results of SWM06-03**

Client Sample ID: **SWM06-03**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480022  
Lab Project ID: 1165480

Collection Date: 09/15/16 13:30  
Received Date: 09/15/16 17:39  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	2.58	1.00	0.310	ug/L	1		09/19/16 21:35

**Batch Information**

Analytical Batch: MMS9539  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 09/19/16 21:35  
Container ID: 1165480022-B

Prep Batch: MXX30198  
Prep Method: E200.2  
Prep Date/Time: 09/19/16 09:15  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 10/06/2016 9:20:43AM



Results of **SWM07-03**

Client Sample ID: **SWM07-03**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480023  
Lab Project ID: 1165480

Collection Date: 09/15/16 13:55  
Received Date: 09/15/16 17:39  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	5.68	1.00	0.310	ug/L	1		09/19/16 21:38

**Batch Information**

Analytical Batch: MMS9539  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 09/19/16 21:38  
Container ID: 1165480023-B

Prep Batch: MXX30198  
Prep Method: E200.2  
Prep Date/Time: 09/19/16 09:15  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 10/06/2016 9:20:43AM



**Results of SWM08-03**

Client Sample ID: **SWM08-03**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480024  
Lab Project ID: 1165480

Collection Date: 09/15/16 14:00  
Received Date: 09/15/16 17:39  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	1.79	1.00	0.310	ug/L	1		09/19/16 21:41

**Batch Information**

Analytical Batch: MMS9539  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 09/19/16 21:41  
Container ID: 1165480024-B

Prep Batch: MXX30198  
Prep Method: E200.2  
Prep Date/Time: 09/19/16 09:15  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 10/06/2016 9:20:43AM



Results of **SWM08-03 DUP**

Client Sample ID: **SWM08-03 DUP**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480025  
Lab Project ID: 1165480

Collection Date: 09/15/16 14:00  
Received Date: 09/15/16 17:39  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	1.51	1.00	0.310	ug/L	1		09/19/16 21:56

**Batch Information**

Analytical Batch: MMS9539  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 09/19/16 21:56  
Container ID: 1165480025-B

Prep Batch: MXX30198  
Prep Method: E200.2  
Prep Date/Time: 09/19/16 09:15  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 10/06/2016 9:20:43AM



Results of **SWM09-03**

Client Sample ID: **SWM09-03**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480026  
Lab Project ID: 1165480

Collection Date: 09/15/16 14:40  
Received Date: 09/15/16 17:39  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	1.00 U	1.00	0.310	ug/L	1		09/19/16 21:59

**Batch Information**

Analytical Batch: MMS9539  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 09/19/16 21:59  
Container ID: 1165480026-B

Prep Batch: MXX30198  
Prep Method: E200.2  
Prep Date/Time: 09/19/16 09:15  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 10/06/2016 9:20:43AM



**Results of SWM10-03**

Client Sample ID: **SWM10-03**  
Client Project ID: **MOA Storm Water 5078**  
Lab Sample ID: 1165480027  
Lab Project ID: 1165480

Collection Date: 09/15/16 14:50  
Received Date: 09/15/16 17:39  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	1.00 U	1.00	0.310	ug/L	1		09/19/16 22:02

**Batch Information**

Analytical Batch: MMS9539  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 09/19/16 22:02  
Container ID: 1165480027-B

Prep Batch: MXX30198  
Prep Method: E200.2  
Prep Date/Time: 09/19/16 09:15  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 10/06/2016 9:20:43AM





### Method Blank

Blank ID: MB for HBN 1743293 [BOD/5553]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1352672

QC for Samples:

1165480001, 1165480002, 1165480005, 1165480006, 1165480007, 1165480008, 1165480009, 1165480010, 1165480011, 1165480012, 1165480013, 1165480014

### Results by SM21 5210B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Biochemical Oxygen Demand	2.00U	2.00	2.00	mg/L

### Batch Information

Analytical Batch: BOD5553

Analytical Method: SM21 5210B

Instrument:

Analyst: K.W

Analytical Date/Time: 9/16/2016 7:40:00PM

Print Date: 10/06/2016 9:21:42AM



### Blank Spike Summary

Blank Spike ID: LCS for HBN 1165480 [BOD5553]

Blank Spike Lab ID: 1352673

Date Analyzed: 09/16/2016 19:40

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1165480001, 1165480002, 1165480005, 1165480006, 1165480007, 1165480008, 1165480009, 1165480010, 1165480011, 1165480012, 1165480013, 1165480014

### Results by SM21 5210B

Parameter	Blank Spike (mg/L)			CL
	Spike	Result	Rec (%)	
Biochemical Oxygen Demand	198	186	94	( 84.6-115.4

### Batch Information

Analytical Batch: **BOD5553**  
Analytical Method: **SM21 5210B**  
Instrument:  
Analyst: **K.W**

Prep Batch:  
Prep Method:  
Prep Date/Time:  
Spike Init Wt./Vol.: 198 mg/L Extract Vol: 300 mL  
Dupe Init Wt./Vol.: Extract Vol:

Print Date: 10/06/2016 9:21:44AM



### Method Blank

Blank ID: MB for HBN 1743224 [BTF/15109]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1352383

QC for Samples:

1165480001, 1165480002, 1165480005, 1165480006, 1165480007, 1165480008, 1165480009, 1165480010, 1165480011, 1165480012, 1165480013, 1165480014

### Results by SM21 9222D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Fecal Coliform	1.00U	1.00	1.00	col/100mL

### Batch Information

Analytical Batch: BTF15109

Analytical Method: SM21 9222D

Instrument:

Analyst: ACF

Analytical Date/Time: 9/15/2016 5:45:00PM

Print Date: 10/06/2016 9:21:48AM



### Method Blank

Blank ID: MB for HBN 1743229 [MXX/30198]  
Blank Lab ID: 1352393

Matrix: Water (Surface, Eff., Ground)

#### QC for Samples:

1165480016, 1165480017, 1165480018, 1165480019, 1165480020, 1165480021, 1165480022, 1165480023, 1165480024, 1165480025, 1165480026, 1165480027

### Results by EP200.8

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Copper	0.500U	1.00	0.310	ug/L

### Batch Information

Analytical Batch: MMS9539  
Analytical Method: EP200.8  
Instrument: Perkin Elmer Nexlon P5  
Analyst: VDL  
Analytical Date/Time: 9/19/2016 8:54:50PM

Prep Batch: MXX30198  
Prep Method: E200.2  
Prep Date/Time: 9/19/2016 9:15:52AM  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 10/06/2016 9:21:51AM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1165480 [MXX30198]

Blank Spike Lab ID: 1352394

Date Analyzed: 09/19/2016 20:57

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1165480016, 1165480017, 1165480018, 1165480019, 1165480020, 1165480021, 1165480022, 1165480023, 1165480024, 1165480025, 1165480026, 1165480027

## Results by EP200.8

Parameter	Blank Spike (ug/L)			CL
	Spike	Result	Rec (%)	
Copper	1000	1040	104	( 85-115 )

## Batch Information

Analytical Batch: **MMS9539**

Analytical Method: **EP200.8**

Instrument: **Perkin Elmer Nexlon P5**

Analyst: **VDL**

Prep Batch: **MXX30198**

Prep Method: **E200.2**

Prep Date/Time: **09/19/2016 09:15**

Spike Init Wt./Vol.: 1000 ug/L Extract Vol: 50 mL

Dupe Init Wt./Vol.: Extract Vol:



### Matrix Spike Summary

Original Sample ID: 1352581  
MS Sample ID: 1352582 MS  
MSD Sample ID:

Analysis Date: 09/19/2016 21:50  
Analysis Date: 09/19/2016 21:53  
Analysis Date:  
Matrix: Drinking Water

QC for Samples: 1165480016, 1165480017, 1165480018, 1165480019, 1165480020, 1165480021, 1165480022, 1165480023, 1165480024, 1165480025, 1165480026, 1165480027

### Results by EP200.8

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Copper	35.1	1000	1090	106				70-130		

### Batch Information

Analytical Batch: MMS9539  
Analytical Method: EP200.8  
Instrument: Perkin Elmer Nexlon P5  
Analyst: VDL  
Analytical Date/Time: 9/19/2016 9:53:32PM

Prep Batch: MXX30198  
Prep Method: DW Digest for Metals on ICP-MS  
Prep Date/Time: 9/19/2016 9:15:52AM  
Prep Initial Wt./Vol.: 20.00mL  
Prep Extract Vol: 50.00mL

Print Date: 10/06/2016 9:21:55AM



### Matrix Spike Summary

Original Sample ID: 1352583  
MS Sample ID: 1352584 MS  
MSD Sample ID:

Analysis Date: 09/19/2016 21:00  
Analysis Date: 09/19/2016 21:03  
Analysis Date:  
Matrix: Drinking Water

QC for Samples: 1165480016, 1165480017, 1165480018, 1165480019, 1165480020, 1165480021, 1165480022, 1165480023, 1165480024

### Results by EP200.8

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Copper	143	1000	1170	103				70-130		

### Batch Information

Analytical Batch: MMS9539  
Analytical Method: EP200.8  
Instrument: Perkin Elmer Nexlon P5  
Analyst: VDL  
Analytical Date/Time: 9/19/2016 9:03:48PM

Prep Batch: MXX30198  
Prep Method: DW Digest for Metals on ICP-MS  
Prep Date/Time: 9/19/2016 9:15:52AM  
Prep Initial Wt./Vol.: 20.00mL  
Prep Extract Vol: 50.00mL

Print Date: 10/06/2016 9:21:55AM



### Method Blank

Blank ID: MB for HBN 1743275 [MXX/30202]  
Blank Lab ID: 1352585

Matrix: Water (Surface, Eff., Ground)

#### QC for Samples:

1165480001, 1165480002, 1165480005, 1165480006, 1165480007, 1165480008, 1165480009, 1165480010, 1165480011, 1165480012, 1165480013, 1165480014

### Results by EP200.8

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Calcium	250U	500	150	ug/L
Magnesium	25.0U	50.0	15.0	ug/L

### Batch Information

Analytical Batch: MMS9539  
Analytical Method: EP200.8  
Instrument: Perkin Elmer Nexlon P5  
Analyst: VDL  
Analytical Date/Time: 9/19/2016 7:23:11PM

Prep Batch: MXX30202  
Prep Method: E200.2  
Prep Date/Time: 9/19/2016 9:16:09AM  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 10/06/2016 9:21:56AM





### Blank Spike Summary

Blank Spike ID: LCS for HBN 1165480 [MXX30202]  
Blank Spike Lab ID: 1352586  
Date Analyzed: 09/19/2016 19:26

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1165480001, 1165480002, 1165480005, 1165480006, 1165480007, 1165480008, 1165480009,  
1165480010, 1165480011, 1165480012, 1165480013, 1165480014

### Results by EP200.8

Parameter	Blank Spike (ug/L)			CL
	Spike	Result	Rec (%)	
Calcium	10000	10300	103	( 85-115 )
Magnesium	10000	9450	95	( 85-115 )

### Batch Information

Analytical Batch: **MMS9539**  
Analytical Method: **EP200.8**  
Instrument: **Perkin Elmer Nexlon P5**  
Analyst: **VDL**

Prep Batch: **MXX30202**  
Prep Method: **E200.2**  
Prep Date/Time: **09/19/2016 09:16**  
Spike Init Wt./Vol.: 10000 ug/L Extract Vol: 50 mL  
Dupe Init Wt./Vol.: Extract Vol:

Print Date: 10/06/2016 9:22:08AM



### Matrix Spike Summary

Original Sample ID: 1352587  
MS Sample ID: 1352588 MS  
MSD Sample ID:

Analysis Date: 09/19/2016 19:29  
Analysis Date: 09/19/2016 19:32  
Analysis Date:  
Matrix: Drinking Water

QC for Samples: 1165480001, 1165480002, 1165480005, 1165480006, 1165480007, 1165480008, 1165480009, 1165480010, 1165480011

### Results by EP200.8

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Calcium	11600	10000	21600	100				70-130		
Magnesium	2180	10000	12200	100				70-130		

### Batch Information

Analytical Batch: MMS9539  
Analytical Method: EP200.8  
Instrument: Perkin Elmer Nexlon P5  
Analyst: VDL  
Analytical Date/Time: 9/19/2016 7:32:47PM

Prep Batch: MXX30202  
Prep Method: DW Digest for Metals on ICP-MS  
Prep Date/Time: 9/19/2016 9:16:09AM  
Prep Initial Wt./Vol.: 20.00mL  
Prep Extract Vol: 50.00mL

Print Date: 10/06/2016 9:22:08AM



### Matrix Spike Summary

Original Sample ID: 1352592  
MS Sample ID: 1352593 MS  
MSD Sample ID:

Analysis Date: 09/19/2016 20:11  
Analysis Date: 09/19/2016 20:14  
Analysis Date:  
Matrix: Drinking Water

QC for Samples: 1165480001, 1165480002, 1165480005, 1165480006, 1165480007, 1165480008, 1165480009, 1165480010, 1165480011, 1165480012, 1165480013, 1165480014

### Results by EP200.8

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Calcium	9720	10000	21300	115				70-130		
Magnesium	1890	10000	12400	105				70-130		

### Batch Information

Analytical Batch: MMS9539  
Analytical Method: EP200.8  
Instrument: Perkin Elmer Nexlon P5  
Analyst: VDL  
Analytical Date/Time: 9/19/2016 8:14:36PM

Prep Batch: MXX30202  
Prep Method: DW Digest for Metals on ICP-MS  
Prep Date/Time: 9/19/2016 9:16:09AM  
Prep Initial Wt./Vol.: 20.00mL  
Prep Extract Vol: 50.00mL

Print Date: 10/06/2016 9:22:08AM



### Method Blank

Blank ID: MB for HBN 1743406 [STS/5214]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1353197

QC for Samples:

1165480001, 1165480002, 1165480005, 1165480006, 1165480007, 1165480008, 1165480009

### Results by SM21 2540D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Total Suspended Solids	0.500U	1.00	0.310	mg/L

### Batch Information

Analytical Batch: STS5214

Analytical Method: SM21 2540D

Instrument:

Analyst: KBE

Analytical Date/Time: 9/20/2016 1:25:39PM

Print Date: 10/06/2016 9:22:11AM



### Duplicate Sample Summary

Original Sample ID: 1165472002

Duplicate Sample ID: 1353263

QC for Samples:

1165480001, 1165480002, 1165480005, 1165480006, 1165480007, 1165480008, 1165480009

Analysis Date: 09/20/2016 13:25

Matrix: Water (Surface, Eff., Ground)

### Results by SM21 2540D

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Suspended Solids	195	186	mg/L	4.60	(< 5 )

### Batch Information

Analytical Batch: STS5214

Analytical Method: SM21 2540D

Instrument:

Analyst: KBE

Print Date: 10/06/2016 9:22:12AM



### Duplicate Sample Summary

Original Sample ID: 1165480008

Duplicate Sample ID: 1353264

QC for Samples:

1165480001, 1165480002, 1165480005, 1165480006, 1165480007, 1165480008, 1165480009

Analysis Date: 09/20/2016 13:25

Matrix: Water (Surface, Eff., Ground)

### Results by SM21 2540D

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Suspended Solids	17.2	14.0	mg/L	20.50*	(< 5 )

### Batch Information

Analytical Batch: STS5214

Analytical Method: SM21 2540D

Instrument:

Analyst: KBE

Print Date: 10/06/2016 9:22:12AM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1165480 [STS5214]  
 Blank Spike Lab ID: 1353198  
 Date Analyzed: 09/20/2016 13:25

Spike Duplicate ID: LCSD for HBN 1165480 [STS5214]  
 Spike Duplicate Lab ID: 1353199  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1165480001, 1165480002, 1165480005, 1165480006, 1165480007, 1165480008, 1165480009

## Results by SM21 2540D

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Total Suspended Solids	50	49.9	100	50	49.9	100	( 75-125 )	0.00	(< 5 )

## Batch Information

Analytical Batch: STS5214  
 Analytical Method: SM21 2540D  
 Instrument:  
 Analyst: KBE

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Spike Init Wt./Vol.: 50 mg/L Extract Vol: 1000 mL  
 Dupe Init Wt./Vol.: 50 mg/L Extract Vol: 1000 mL



### Method Blank

Blank ID: MB for HBN 1743446 [STS/5215]

Blank Lab ID: 1353388

QC for Samples:

1165480010, 1165480011, 1165480012, 1165480013, 1165480014

Matrix: Water (Surface, Eff., Ground)

### Results by SM21 2540D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Total Suspended Solids	0.500U	1.00	0.310	mg/L

### Batch Information

Analytical Batch: STS5215

Analytical Method: SM21 2540D

Instrument:

Analyst: LLP

Analytical Date/Time: 9/21/2016 12:00:12PM

Print Date: 10/06/2016 9:22:14AM





### Duplicate Sample Summary

Original Sample ID: 1165517002

Duplicate Sample ID: 1353543

QC for Samples:

1165480010, 1165480011, 1165480012, 1165480013, 1165480014

Analysis Date: 09/21/2016 12:00

Matrix: Water (Surface, Eff., Ground)

### Results by SM21 2540D

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Suspended Solids	23.5	23.0	mg/L	2.20	(< 5 )

### Batch Information

Analytical Batch: STS5215

Analytical Method: SM21 2540D

Instrument:

Analyst: LLP

Print Date: 10/06/2016 9:22:15AM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1165480 [STS5215]  
 Blank Spike Lab ID: 1353389  
 Date Analyzed: 09/21/2016 12:00

Spike Duplicate ID: LCSD for HBN 1165480 [STS5215]  
 Spike Duplicate Lab ID: 1353390  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1165480010, 1165480011, 1165480012, 1165480013, 1165480014

## Results by SM21 2540D

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Total Suspended Solids	50	49.6	99	50	50.0	100	( 75-125 )	0.80	(< 5 )

## Batch Information

Analytical Batch: STS5215  
 Analytical Method: SM21 2540D  
 Instrument:  
 Analyst: LLP

Prep Batch:  
 Prep Method:  
 Prep Date/Time:  
 Spike Init Wt./Vol.: 50 mg/L Extract Vol: 1000 mL  
 Dupe Init Wt./Vol.: 50 mg/L Extract Vol: 1000 mL



### Method Blank

Blank ID: MB for HBN 1743351 [VXX/29587]  
Blank Lab ID: 1352940

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
1165480002, 1165480005, 1165480008, 1165480010, 1165480013, 1165480015

### Results by EPA 602/624

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,2-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,3-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,4-Dichlorobenzene	0.250U	0.500	0.150	ug/L
Benzene	0.200U	0.400	0.120	ug/L
Chlorobenzene	0.250U	0.500	0.150	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
Toluene	0.500U	1.00	0.310	ug/L
<b>Surrogates</b>				
1,2-Dichloroethane-D4 (surr)	96.3	81-118		%
4-Bromofluorobenzene (surr)	96.1	85-114		%
Toluene-d8 (surr)	102	89-112		%

### Batch Information

Analytical Batch: VMS16198  
Analytical Method: EPA 602/624  
Instrument: VSA Agilent GC/MS 7890B/5977A  
Analyst: TJT  
Analytical Date/Time: 9/16/2016 3:50:00PM

Prep Batch: VXX29587  
Prep Method: SW5030B  
Prep Date/Time: 9/16/2016 6:00:00AM  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

Print Date: 10/06/2016 9:22:17AM

## Leaching Blank

Blank ID: LB for HBN 1743212 [TCLP/8526]  
 Blank Lab ID: 1352342

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
 1165480002, 1165480005, 1165480008, 1165480010, 1165480013, 1165480015

## Results by EPA 602/624

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,4-Dichlorobenzene	12.5U	25.0	7.50	ug/L
Benzene	10.0U	20.0	6.00	ug/L
Chlorobenzene	12.5U	25.0	7.50	ug/L
<b>Surrogates</b>				
1,2-Dichloroethane-D4 (surr)	97	81-118		%
4-Bromofluorobenzene (surr)	98.1	85-114		%
Toluene-d8 (surr)	102	89-112		%

## Batch Information

Analytical Batch: VMS16198  
 Analytical Method: EPA 602/624  
 Instrument: VSA Agilent GC/MS 7890B/5977A  
 Analyst: TJT  
 Analytical Date/Time: 9/16/2016 8:52:00PM

Prep Batch: VXX29587  
 Prep Method: SW5030B  
 Prep Date/Time: 9/16/2016 6:00:00AM  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL

Print Date: 10/06/2016 9:22:17AM



### Blank Spike Summary

Blank Spike ID: LCS for HBN 1165480 [VXX29587]  
 Blank Spike Lab ID: 1352941  
 Date Analyzed: 09/16/2016 16:06

Spike Duplicate ID: LCSD for HBN 1165480 [VXX29587]  
 Spike Duplicate Lab ID: 1352942  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1165480002, 1165480005, 1165480008, 1165480010, 1165480013, 1165480015

### Results by EPA 602/624

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,2-Dichlorobenzene	30	29.6	99	30	30.3	101	( 80-119 )	2.30	(< 20 )
1,3-Dichlorobenzene	30	29.9	100	30	30.6	102	( 80-119 )	2.30	(< 20 )
1,4-Dichlorobenzene	30	30.5	102	30	31.6	105	( 79-118 )	3.60	(< 20 )
Benzene	30	31.5	105	30	32.0	107	( 79-120 )	1.70	(< 20 )
Chlorobenzene	30	31.1	104	30	31.3	104	( 82-118 )	0.83	(< 20 )
Ethylbenzene	30	31.6	105	30	32.2	107	( 79-121 )	1.80	(< 20 )
o-Xylene	30	32.6	109	30	32.7	109	( 78-122 )	0.49	(< 20 )
P & M -Xylene	60	63.8	106	60	65.1	108	( 80-121 )	1.90	(< 20 )
Toluene	30	30.5	102	30	31.1	104	( 80-121 )	1.90	(< 20 )

### Surrogates

1,2-Dichloroethane-D4 (surr)	30	94.2	94	30	93.6	94	( 81-118 )	0.64
4-Bromofluorobenzene (surr)	30	95.4	95	30	96	96	( 85-114 )	0.70
Toluene-d8 (surr)	30	101	101	30	101	101	( 89-112 )	0.26

### Batch Information

Analytical Batch: **VMS16198**  
 Analytical Method: **EPA 602/624**  
 Instrument: **VSA Agilent GC/MS 7890B/5977A**  
 Analyst: **TJT**

Prep Batch: **VXX29587**  
 Prep Method: **SW5030B**  
 Prep Date/Time: **09/16/2016 06:00**  
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL  
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 10/06/2016 9:22:19AM



### Billable Matrix Spike Summary

Original Sample ID: 1165480002  
MS Sample ID: 1165480003 BMS  
MSD Sample ID: 1165480004 BMSD

Analysis Date: 09/16/2016 22:45  
Analysis Date: 09/16/2016 18:58  
Analysis Date: 09/16/2016 19:15  
Matrix: Water (Surface, Eff., Ground)

QC for Samples:

### Results by EPA 602/624

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,2-Dichlorobenzene	1.00U	30.0	31.3	104	30.0	31.1	104	80-119	0.61	(< 20 )
1,3-Dichlorobenzene	1.00U	30.0	31.5	105	30.0	31.1	104	80-119	1.20	(< 20 )
1,4-Dichlorobenzene	0.500U	30.0	32.4	108	30.0	32.4	108	79-118	0.25	(< 20 )
Benzene	0.400U	30.0	33	110	30.0	32.6	109	79-120	1.10	(< 20 )
Chlorobenzene	0.500U	30.0	32.8	109	30.0	32.3	108	82-118	1.60	(< 20 )
Ethylbenzene	1.00U	30.0	33.7	112	30.0	33.0	110	79-121	1.90	(< 20 )
o-Xylene	1.00U	30.0	34.4	115	30.0	33.6	112	78-122	2.40	(< 20 )
P & M -Xylene	2.00U	60.0	67.7	113	60.0	66.5	111	80-121	1.80	(< 20 )
Toluene	1.00U	30.0	32.7	109	30.0	31.7	106	80-121	3.20	(< 20 )
<b>Surrogates</b>										
1,2-Dichloroethane-D4 (surr)		30.0	28.1	94	30.0	28.3	94	81-118	0.71	
4-Bromofluorobenzene (surr)		30.0	28.9	96	30.0	28.7	96	85-114	0.69	
Toluene-d8 (surr)		30.0	30.7	102	30.0	30.4	101	89-112	0.82	

### Batch Information

Analytical Batch: VMS16198  
Analytical Method: EPA 602/624  
Instrument: VSA Agilent GC/MS 7890B/5977A  
Analyst: TJT  
Analytical Date/Time: 9/16/2016 6:58:00PM

Prep Batch: VXX29587  
Prep Method: Volatiles Extraction 8240/8260 FULL  
Prep Date/Time: 9/16/2016 6:00:00AM  
Prep Initial Wt./Vol.: 5.00mL  
Prep Extract Vol: 5.00mL

Print Date: 10/06/2016 9:22:20AM



### Method Blank

Blank ID: MB for HBN 1743233 [XXX/36309]  
Blank Lab ID: 1352411

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
1165480002, 1165480005, 1165480008, 1165480010, 1165480013

### Results by EPA 625M SIM (PAH)

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Acenaphthene	0.0250U	0.0500	0.0150	ug/L
Acenaphthylene	0.0250U	0.0500	0.0150	ug/L
Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo(a)Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo[a]pyrene	0.0100U	0.0200	0.00620	ug/L
Benzo[b]Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Benzo[g,h,i]perylene	0.0250U	0.0500	0.0150	ug/L
Benzo[k]fluoranthene	0.0250U	0.0500	0.0150	ug/L
Chrysene	0.0250U	0.0500	0.0150	ug/L
Dibenzo[a,h]anthracene	0.0100U	0.0200	0.00620	ug/L
Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Fluorene	0.0250U	0.0500	0.0150	ug/L
Indeno[1,2,3-c,d] pyrene	0.0250U	0.0500	0.0150	ug/L
Naphthalene	0.0500U	0.100	0.0310	ug/L
Phenanthrene	0.0250U	0.0500	0.0150	ug/L
Pyrene	0.0250U	0.0500	0.0150	ug/L
<b>Surrogates</b>				
2-Fluorobiphenyl (surr)	73.5	53-106		%
Terphenyl-d14 (surr)	64.6	58-132		%

### Batch Information

Analytical Batch: XMS9625  
Analytical Method: EPA 625M SIM (PAH)  
Instrument: SVA Agilent 780/5975 GC/MS  
Analyst: S.G  
Analytical Date/Time: 9/22/2016 2:24:00AM

Prep Batch: XXX36309  
Prep Method: SW3520C  
Prep Date/Time: 9/16/2016 9:04:21AM  
Prep Initial Wt./Vol.: 1000 mL  
Prep Extract Vol: 1 mL

Print Date: 10/06/2016 9:22:21AM



### Blank Spike Summary

Blank Spike ID: LCS for HBN 1165480 [XXX36309]  
 Blank Spike Lab ID: 1352412  
 Date Analyzed: 09/22/2016 02:44

Spike Duplicate ID: LCSD for HBN 1165480 [XXX36309]  
 Spike Duplicate Lab ID: 1352413  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1165480002, 1165480005, 1165480008, 1165480010, 1165480013

### Results by EPA 625M SIM (PAH)

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Acenaphthene	0.5	0.455	91	0.5	0.463	93	( 48-114 )	1.70	(< 20 )
Acenaphthylene	0.5	0.389	78	0.5	0.409	82	( 35-121 )	5.00	(< 20 )
Anthracene	0.5	0.408	82	0.5	0.418	84	( 53-119 )	2.60	(< 20 )
Benzo(a)Anthracene	0.5	0.398	80	0.5	0.403	81	( 59-120 )	1.30	(< 20 )
Benzo[a]pyrene	0.5	0.425	85	0.5	0.433	87	( 53-120 )	2.00	(< 20 )
Benzo[b]Fluoranthene	0.5	0.393	79	0.5	0.400	80	( 53-126 )	1.90	(< 20 )
Benzo[g,h,i]perylene	0.5	0.398	80	0.5	0.410	82	( 44-128 )	3.00	(< 20 )
Benzo[k]fluoranthene	0.5	0.386	77	0.5	0.390	78	( 54-125 )	0.93	(< 20 )
Chrysene	0.5	0.420	84	0.5	0.432	86	( 57-120 )	2.70	(< 20 )
Dibenzo[a,h]anthracene	0.5	0.410	82	0.5	0.425	85	( 44-131 )	3.60	(< 20 )
Fluoranthene	0.5	0.390	78	0.5	0.400	80	( 58-120 )	2.70	(< 20 )
Fluorene	0.5	0.409	82	0.5	0.413	83	( 50-118 )	0.96	(< 20 )
Indeno[1,2,3-c,d] pyrene	0.5	0.402	80	0.5	0.414	83	( 48-130 )	3.10	(< 20 )
Naphthalene	0.5	0.386	77	0.5	0.390	78	( 43-114 )	0.96	(< 20 )
Phenanthrene	0.5	0.410	82	0.5	0.404	81	( 53-115 )	1.40	(< 20 )
Pyrene	0.5	0.418	84	0.5	0.430	86	( 53-121 )	2.80	(< 20 )
<b>Surrogates</b>									
2-Fluorobiphenyl (surr)	0.5	73.7	74	0.5	81	81	( 53-106 )	9.50	
Terphenyl-d14 (surr)	0.5	66.9	67	0.5	79.3	79	( 58-132 )	17.00	

### Batch Information

Analytical Batch: XMS9625  
 Analytical Method: EPA 625M SIM (PAH)  
 Instrument: SVA Agilent 780/5975 GC/MS  
 Analyst: S.G

Prep Batch: XXX36309  
 Prep Method: SW3520C  
 Prep Date/Time: 09/16/2016 09:04  
 Spike Init Wt./Vol.: 0.5 ug/L Extract Vol: 1 mL  
 Dupe Init Wt./Vol.: 0.5 ug/L Extract Vol: 1 mL

Print Date: 10/06/2016 9:22:23AM





### Billable Matrix Spike Summary

Original Sample ID: 1165480002  
 MS Sample ID: 1165480003 BMS  
 MSD Sample ID: 1165480004 BMSD

Analysis Date: 09/22/2016 5:31  
 Analysis Date: 09/22/2016 5:51  
 Analysis Date: 09/22/2016 6:12  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples:

### Results by EPA 625M SIM (PAH)

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Acenaphthene	0.0521U	0.510	.463	91	0.510	0.451	88	48-114	2.50	(< 20 )
Acenaphthylene	0.0521U	0.510	.404	79	0.510	0.394	77	35-121	2.40	(< 20 )
Anthracene	0.0521U	0.510	.399	78	0.510	0.397	78	53-119	0.38	(< 20 )
Benzo(a)Anthracene	0.0521U	0.510	.407	80	0.510	0.404	79	59-120	0.66	(< 20 )
Benzo[a]pyrene	0.0208U	0.510	.419	82	0.510	0.423	83	53-120	0.91	(< 20 )
Benzo[b]Fluoranthene	0.0521U	0.510	.398	78	0.510	0.401	79	53-126	0.67	(< 20 )
Benzo[g,h,i]perylene	0.0521U	0.510	.388	76	0.510	0.394	77	44-128	1.50	(< 20 )
Benzo[k]fluoranthene	0.0521U	0.510	.388	76	0.510	0.392	77	54-125	1.10	(< 20 )
Chrysene	0.0521U	0.510	.427	84	0.510	0.430	84	57-120	0.85	(< 20 )
Dibenzo[a,h]anthracene	0.0208U	0.510	.401	79	0.510	0.408	80	44-131	1.60	(< 20 )
Fluoranthene	0.0521U	0.510	.407	80	0.510	0.400	78	58-120	1.80	(< 20 )
Fluorene	0.0521U	0.510	.412	81	0.510	0.392	77	50-118	4.90	(< 20 )
Indeno[1,2,3-c,d] pyrene	0.0521U	0.510	.394	77	0.510	0.399	78	48-130	1.40	(< 20 )
Naphthalene	0.104U	0.510	.378	74	0.510	0.369	72	43-114	2.30	(< 20 )
Phenanthrene	0.0521U	0.510	.404	79	0.510	0.397	78	53-115	1.70	(< 20 )
Pyrene	0.0521U	0.510	.432	85	0.510	0.426	83	53-121	1.60	(< 20 )
<b>Surrogates</b>										
2-Fluorobiphenyl (surr)		0.510	.411	81	0.510	0.382	75	53-106	7.40	
Terphenyl-d14 (surr)		0.510	.405	79	0.510	0.365	72	58-132	10.40	

### Batch Information

Analytical Batch: XMS9625  
 Analytical Method: EPA 625M SIM (PAH)  
 Instrument: SVA Agilent 780/5975 GC/MS  
 Analyst: S.G  
 Analytical Date/Time: 9/22/2016 5:51:00AM

Prep Batch: XXX36309  
 Prep Method: Liquid/Liquid Extraction for 625 SIMS  
 Prep Date/Time: 9/16/2016 9:04:21AM  
 Prep Initial Wt./Vol.: 980.00mL  
 Prep Extract Vol: 1.00mL

Print Date: 10/06/2016 9:22:24AM

# Chain of Custody Record

1165480



<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Forest Taylor	<b>From:</b> Kinnetic Laboratories, Inc 704 West 2nd Avenue Anchorage, AK 99501 (907) 276-6178 Contact: Mark Savoie
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**SGS Quote No. 337618**  
**Date Received:**  
**Lab #:**

**Project #: 5078**

Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition/Upon Receipt
SWM01-03	1040-3	9/15/16	1015	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	1 A	
SWM02-03	847-1		1130	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	2 A	
SWM02-03 Dup	847-1		1130	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	3 SA	
SWM03-03	1224-1		1225	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	6 A	
SWM04-03	1224-2		1230	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	7 A	
SWM05-03	207-1		1300	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	8 A	
SWM06-03	314-22		1330	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	9 A	
SWM07-03	484-1		1355	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	10 A	
SWM08-03	86-1		1400	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	11 A	
SWM08-03 Dup	86-1		1400	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	12 A	
SWM09-03	499-1		1440	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	13 A	
SWM10-03	525-2		1450	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	14 A	

**Project: MOA Stormwater Management**  
**Matrix: Water**  
**Complete by: 2 weeks**

Note: Samples contain sodium thiosulfate for dechlorination

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

Sampled and Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
<i>M. Adam</i>	9/15/16 1535	<i>Hand</i>		
Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
			<i>MMW Weber</i>	9/15/16 15:35

CS: Absent Hand Delivered TB: 1:5.9 #D20 2:0.5 #D3 3:2.1 #D11

### Chain of Custody Record

<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Forest Taylor	<b>SGS Quote No.</b> 337618  <b>Date Received:</b>  <b>Lab #:</b>	<b>From:</b> Kinnetik Laboratories, Inc 704 West 2nd Avenue Anchorage, AK 99501 (907) 276-6178  Contact: Mark Savoie	<div style="text-align: right; font-weight: bold; font-size: 24px;">1165480</div>
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**Project:** MOA Stormwater Management      **Matrix:** Water      **Project #:** 5078  
**Complete by:** 2 weeks


Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analyst	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM01-03	1040-3	9/15/16	1015	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	BC	
SWM02-03	847-1		1130	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	BC	
SWM02-03 Dup	847-1		1130	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	BC	
SWM03-03	1224-1		1225	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	BC	
SWM04-03	1224-2		1230	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	BC	
SWM05-03	207-1		1300	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	BC	
SWM06-03	314-22		1330 <del>1330</del> <del>1330</del>	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	BC	
SWM07-03	484-1		1355	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	BC	
SWM08-03	86-1		1400	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	BC	
SWM08-03 Dup	86-1		1400	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	BC	
SWM09-03	499-1		1440	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	BC	
SWM10-03	525-2		1450	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	BC	

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

<b>Sampled and Relinquished By:</b>	<b>Transporter:</b>	<b>Date/Time:</b>	<b>Received By:</b>	<b>Date/Time:</b>
<i>MS</i>	<i>hms</i>	9/15/16 1535		
<b>Relinquished By:</b>	<b>Transporter:</b>	<b>Date/Time:</b>	<b>Received By:</b>	<b>Date/Time:</b>
			<i>ms</i>	9/15/16 1535

### Chain of Custody Record

<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 Contact: Forest Taylor	<b>SGS Quote No.</b> 337618  <b>Date Received:</b>  <b>Lab #:</b>	<b>From:</b> Kinnetic Laboratories, Inc 704 West 2nd Avenue Anchorage, AK 99501 (907) 276-6178  <b>Contact:</b> Mark Savoie	<b>1165480</b> 
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**Project:** MOA Stormwater Management      **Matrix:** Water      **Project #:** 5078  
**Complete by:** 2 weeks


Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM01-03	1040-3	9/15/16	1015	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	(1) B	
SWM02-03	847-1		1130	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	(2) B	
SWM02-03 Dup	847-1		1130	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	(5) B	
SWM03-03	1224-1		1225	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	(6) B	
SWM04-03	1224-2		1230	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	(7) B	
SWM05-03	207-1		1300	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	(8) B	
SWM06-03	314-22		1330	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	(9) B	
SWM07-03	484-1		1355	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	(10) B	
SWM08-03	86-1		1400	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	(11) B	
SWM08-03 Dup	86-1		1400	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	(12) B	
SWM09-03	499-1		1440	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	(13) B	
SWM10-03	525-2		1450	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	(14) B	

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

<b>Sampled and Relinquished By:</b>	<b>Date/Time:</b>	<b>Transporter:</b>	<b>Received By:</b>	<b>Date/Time:</b>
<i>MS</i>	9/15/16 1535	<i>haz</i>		
<b>Relinquished By:</b>	<b>Date/Time:</b>	<b>Transporter:</b>	<b>Received By:</b>	<b>Date/Time:</b>
			<i>Mark Savoie</i>	9/15/16 1535

### Chain of Custody Record

<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Forest Taylor	<b>SGS Quote No.</b> 337618  <b>Date Received:</b>  <b>Lab #:</b>
<b>From:</b> Kinnetic Laboratories, Inc 704 West 2nd Avenue Anchorage, AK 99501 (907) 276-6178  Contact: Mark Savoie	<div style="text-align: right;"> <b>1165480</b>   </div>

**Project:** MOA Stormwater Management      **Matrix:** Water      **Project #:** 5078  
**Complete by:** 2 weeks

Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM01-03	1040-3	9/15/16	1015	Samp	Total Hardness (EPA 200.8)	125-ml HDPE	Nitric, ≤6°C	1	100	
SWM02-03	847-1		1130	Samp	Total Hardness (EPA 200.8)	125-ml HDPE	Nitric, ≤6°C	1	200	
SWM02-03 Dup	847-1		1130	Samp	Total Hardness (EPA 200.8)	125-ml HDPE	Nitric, ≤6°C	1	500	
SWM03-03	1224-1		1225	Samp	Total Hardness (EPA 200.8)	125-ml HDPE	Nitric, ≤6°C	1	600	
SWM04-03	1224-2		1230	Samp	Total Hardness (EPA 200.8)	125-ml HDPE	Nitric, ≤6°C	1	700	
SWM05-03	207-1		1300	Samp	Total Hardness (EPA 200.8)	125-ml HDPE	Nitric, ≤6°C	1	800	
SWM06-03	314-22		1330	Samp	Total Hardness (EPA 200.8)	125-ml HDPE	Nitric, ≤6°C	1	900	
SWM07-03	484-1		1355	Samp	Total Hardness (EPA 200.8)	125-ml HDPE	Nitric, ≤6°C	1	1000	
SWM08-03	86-1		1400	Samp	Total Hardness (EPA 200.8)	125-ml HDPE	Nitric, ≤6°C	1	1100	
SWM08-03 Dup	86-1		1400	Samp	Total Hardness (EPA 200.8)	125-ml HDPE	Nitric, ≤6°C	1	1200	
SWM09-03	499-1		1440	Samp	Total Hardness (EPA 200.8)	125-ml HDPE	Nitric, ≤6°C	1	1300	
SWM10-03	525-2		1450	Samp	Total Hardness (EPA 200.8)	125-ml HDPE	Nitric, ≤6°C	1	1400	

**Data Report MUST include the following:** Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

**Special Instructions/Comments:**

<b>Sampled and Relinquished By:</b>	<b>Date/Time:</b>	<b>Received By:</b>	<b>Date/Time:</b>
<i>M. Taylor</i>	9/15/16 1535	<i>MS</i>	
<b>Relinquished By:</b>	<b>Date/Time:</b>	<b>Received By:</b>	<b>Date/Time:</b>
		<i>Mark Savoie</i>	9/15/16 15:35

# Chain of Custody Record

<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Forest Taylor	<b>From:</b> Kinnetic Laboratories, Inc 704 West 2nd Avenue Anchorage, AK 99501 (907) 276-6178 Contact: Mark Savoie
SGS Quote No. 337618  Date Received:  Lab #:	1165480  

Project: MOA Stormwater Management      Matrix: Water      Project #: 5078  
 Complete by: 2 weeks

Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM02-03	847-1	9/15/16	1130	Samp/MS/MSD	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	6	② BDA8	
SWM02-03 Dup	847-1		1130	Samp	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	2	⑤ EF	
SWM05-03	207-1		1300	Samp	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	2	⑧ E-F	
SWM07-03	484-1		1355	Samp	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	2	⑩ E-F	
SWM09-03	499-1	✓	1440	Samp	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	2	⑬ E-P	

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

Sampled and Relinquished By:  <i>M. Aron</i>	Date/Time: 9/15/16 1535	Transporter: hand	Received By: [Signature]	Date/Time: 9/15/16 15:35
Relinquished By: [Signature]				

### Chain of Custody Record

<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Forest Taylor	<b>SGS Quote No.</b> 337618  <b>Date Received:</b>  <b>Lab #:</b>	<b>From:</b> Kinnetic Laboratories, Inc 704 West 2nd Avenue Anchorage, AK 99501 (907) 276-6178  Contact: Mark Savoie
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# 1165480



Project: MOA Stormwater Management		Matrix: Water		Project #: 5078						
Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM02-03	847-1	9/15/14	1130	Samp/MS/MSD	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	9	26-I 30X-E	
SWM02-03 Dup	847-1		1130	Samp	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3	S	
SWM05-03	207-1		1300	Samp	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3	S	
SWM07-03	484-1		1355	Samp	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3	100-I	
SWM09-03	499-1		1440	Samp	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3	13 6-I	
Trip Blank	N/A	N/A	N/A	TB	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3	15 A-C	

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:	
Sampled and Relinquished By: <i>M. Am...</i>	Received By: <i>Mark Savoie</i>
Date/Time: 9/15/14 1535	Date/Time: 9/15/16 15:35
Relinquished By: <i>M. Am...</i>	Received By: <i>Mark Savoie</i>
Date/Time: 9/15/14 1535	Date/Time: 9/15/16 15:35

# Chain of Custody Record

**To:** SGS Environmental Services, Inc.  
 2100 West Potter Drive  
 Anchorage, AK 99518  
 (907) 562-2343  
 Contact: Forest Taylor

**From:** Kinnetic Laboratories, Inc  
 704 West 2nd Avenue  
 Anchorage, AK 99501  
 (907) 276-6178

SGS Quote No. 337618  
 Date Received:  
 Lab #:

1165480



Contact: Mark Savoie

Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analyte	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM01-03	1040-3	9/15/14	1015	Samp	Dissolved Cu (EPA 200.8)	125-ml HDPE	≤ 6 °C	1	16 A-B	
SWM02-03	847-1		1130	Samp	Dissolved Cu (EPA 200.8)	125-ml HDPE	≤ 6 °C	1	17 A-B	
SWM02-03 Dup	847-1		1130	Samp	Dissolved Cu (EPA 200.8)	125-ml HDPE	≤ 6 °C	1	18 A-B	
SWM03-03	1224-1		1225	Samp	Dissolved Cu (EPA 200.8)	125-ml HDPE	≤ 6 °C	1	19 A-B	
SWM04-03	1224-2		1230	Samp	Dissolved Cu (EPA 200.8)	125-ml HDPE	≤ 6 °C	1	20 A-B	
SWM05-03	207-1		1300	Samp	Dissolved Cu (EPA 200.8)	125-ml HDPE	≤ 6 °C	1	21 A-B	
SWM06-03	314-22		1330	Samp	Dissolved Cu (EPA 200.8)	125-ml HDPE	≤ 6 °C	1	22 A-B	
SWM07-03	484-1		1355	Samp	Dissolved Cu (EPA 200.8)	125-ml HDPE	≤ 6 °C	1	23 A-B	
SWM08-03	86-1		1400	Samp	Dissolved Cu (EPA 200.8)	125-ml HDPE	≤ 6 °C	1	24 A-B	
SWM08-03 Dup	86-1		1400	Samp	Dissolved Cu (EPA 200.8)	125-ml HDPE	≤ 6 °C	1	25 A-B	
SWM09-03	499-1		1440	Samp	Dissolved Cu (EPA 200.8)	125-ml HDPE	≤ 6 °C	1	26 A-B	
SWM10-03	525-2		1450	Samp	Dissolved Cu (EPA 200.8)	125-ml HDPE	≤ 6 °C	1	27 A-B	

**Project:** MOA Stormwater Management  
**Matrix:** Water  
**Project #:** 5078

**Complete by:** 2 weeks

**Data Report MUST include the following:** Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

**Special Instructions/Comments:** Dissolved Copper must be Filtered & Preserved at Lab

<b>Sampled and Relinquished By:</b>	<b>Transporter</b>	<b>Received By:</b>	<b>Date/Time:</b>
<i>M. Brown</i>	<i>Hand</i>	<i>W. Savoie</i>	9/15/14 1535
<b>Relinquished By:</b>	<b>Transporter</b>	<b>Received By:</b>	<b>Date/Time:</b>
		<i>W. Savoie</i>	9/15/16 1535





e-SAMPLE RECEIPT FORM

1165480



Review Criteria	Y/N (yes/no)	Exceptions Noted below
Were Custody Seals intact? Note # & location	<input checked="" type="checkbox"/>	<input type="checkbox"/> exemption permitted if sampler hand carries/delivers.
COC accompanied samples?	<input checked="" type="checkbox"/>	<b>Absent</b>
<input type="checkbox"/> **exemption permitted if chilled & collected <8hrs ago or chilling not required (i.e., waste, oil)	<input checked="" type="checkbox"/>	
Temperature blank compliant* (i.e., 0-6 °C after CF)?	<input checked="" type="checkbox"/>	Cooler ID: 1 @ 5.9 °C Therm ID: D20
	<input checked="" type="checkbox"/>	Cooler ID: 2 @ 0.5 °C Therm ID: D3
	<input checked="" type="checkbox"/>	Cooler ID: 3 @ 2.1 °C Therm ID: D11
	<input checked="" type="checkbox"/>	Cooler ID: @ °C Therm ID:
	<input checked="" type="checkbox"/>	Cooler ID: @ °C Therm ID:
*If >6°C, were samples collected <8 hours ago?	<input checked="" type="checkbox"/>	
If <0°C, were sample containers ice free?	<input checked="" type="checkbox"/>	
If samples received <u>without</u> a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "COOLER TEMP" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note "ambient" or "chilled".		
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.		
Note: Refer to form F-083 "Sample Guide" for hold times.		
Were samples received within hold time?	<input checked="" type="checkbox"/>	
Do samples <b>match COC**</b> (i.e., sample IDs, dates/times collected)?	<input checked="" type="checkbox"/>	
**Note: If times differ <1hr, record details & login per COC.		
Were analyses requested unambiguous?	<input checked="" type="checkbox"/>	
Were proper containers (type/mass/volume/preservative***)used?	<input checked="" type="checkbox"/>	<input type="checkbox"/> ***Exemption permitted for metals (e.g,200.8/6020A).
<b>IF APPLICABLE</b>		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	<input checked="" type="checkbox"/>	
Were all VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	<input checked="" type="checkbox"/>	
Were all soil VOAs field extracted with MeOH+BFB?	<input checked="" type="checkbox"/>	
<b>Note to Client:</b> Any "no" answer above indicates non-compliance with standard procedures and may impact data quality.		
Additional notes (if applicable):		



### Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1165480001-A	Na2S2O3 for Chlorine Redu	OK	1165480008-C	No Preservative Required	OK
1165480001-B	No Preservative Required	OK	1165480008-D	HNO3 to pH < 2	OK
1165480001-C	No Preservative Required	OK	1165480008-E	No Preservative Required	OK
1165480001-D	HNO3 to pH < 2	OK	1165480008-F	No Preservative Required	OK
1165480002-A	Na2S2O3 for Chlorine Redu	OK	1165480008-G	HCL to pH < 2	OK
1165480002-B	No Preservative Required	OK	1165480008-H	HCL to pH < 2	OK
1165480002-C	No Preservative Required	OK	1165480008-I	HCL to pH < 2	OK
1165480002-D	HNO3 to pH < 2	OK	1165480009-A	Na2S2O3 for Chlorine Redu	OK
1165480002-E	No Preservative Required	OK	1165480009-B	No Preservative Required	OK
1165480002-F	No Preservative Required	OK	1165480009-C	No Preservative Required	OK
1165480002-G	HCL to pH < 2	OK	1165480009-D	HNO3 to pH < 2	OK
1165480002-H	HCL to pH < 2	OK	1165480010-A	Na2S2O3 for Chlorine Redu	OK
1165480002-I	HCL to pH < 2	OK	1165480010-B	No Preservative Required	OK
1165480003-A	No Preservative Required	OK	1165480010-C	No Preservative Required	OK
1165480003-B	No Preservative Required	OK	1165480010-D	HNO3 to pH < 2	OK
1165480003-C	HCL to pH < 2	OK	1165480010-E	No Preservative Required	OK
1165480003-D	HCL to pH < 2	OK	1165480010-F	No Preservative Required	OK
1165480003-E	HCL to pH < 2	OK	1165480010-G	HCL to pH < 2	OK
1165480004-A	No Preservative Required	OK	1165480010-H	HCL to pH < 2	OK
1165480004-B	No Preservative Required	OK	1165480010-I	HCL to pH < 2	OK
1165480004-C	HCL to pH < 2	OK	1165480011-A	Na2S2O3 for Chlorine Redu	OK
1165480004-D	HCL to pH < 2	OK	1165480011-B	No Preservative Required	OK
1165480004-E	HCL to pH < 2	OK	1165480011-C	No Preservative Required	OK
1165480005-A	Na2S2O3 for Chlorine Redu	OK	1165480011-D	HNO3 to pH < 2	OK
1165480005-B	No Preservative Required	OK	1165480012-A	Na2S2O3 for Chlorine Redu	OK
1165480005-C	No Preservative Required	OK	1165480012-B	No Preservative Required	OK
1165480005-D	HNO3 to pH < 2	OK	1165480012-C	No Preservative Required	OK
1165480005-E	No Preservative Required	OK	1165480012-D	HNO3 to pH < 2	OK
1165480005-F	No Preservative Required	OK	1165480013-A	Na2S2O3 for Chlorine Redu	OK
1165480005-G	HCL to pH < 2	OK	1165480013-B	No Preservative Required	OK
1165480005-H	HCL to pH < 2	OK	1165480013-C	No Preservative Required	OK
1165480005-I	HCL to pH < 2	OK	1165480013-D	HNO3 to pH < 2	OK
1165480006-A	Na2S2O3 for Chlorine Redu	OK	1165480013-E	No Preservative Required	OK
1165480006-B	No Preservative Required	OK	1165480013-F	No Preservative Required	OK
1165480006-C	No Preservative Required	OK	1165480013-G	HCL to pH < 2	OK
1165480006-D	HNO3 to pH < 2	OK	1165480013-H	HCL to pH < 2	OK
1165480007-A	Na2S2O3 for Chlorine Redu	OK	1165480013-I	HCL to pH < 2	OK
1165480007-B	No Preservative Required	OK	1165480014-A	Na2S2O3 for Chlorine Redu	OK
1165480007-C	No Preservative Required	OK	1165480014-B	No Preservative Required	OK
1165480007-D	HNO3 to pH < 2	OK	1165480014-C	No Preservative Required	OK
1165480008-A	Na2S2O3 for Chlorine Redu	OK	1165480014-D	HNO3 to pH < 2	OK
1165480008-B	No Preservative Required	OK	1165480015-A	HCL to pH < 2	OK

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1165480015-B	HCL to pH < 2	OK			
1165480015-C	HCL to pH < 2	OK			
1165480016-A	No Preservative Required	OK			
1165480016-B	HNO3 to pH < 2	OK			
1165480017-A	No Preservative Required	OK			
1165480017-B	HNO3 to pH < 2	OK			
1165480018-A	No Preservative Required	OK			
1165480018-B	HNO3 to pH < 2	OK			
1165480019-A	No Preservative Required	OK			
1165480019-B	HNO3 to pH < 2	OK			
1165480020-A	No Preservative Required	OK			
1165480020-B	HNO3 to pH < 2	OK			
1165480021-A	No Preservative Required	OK			
1165480021-B	HNO3 to pH < 2	OK			
1165480022-A	No Preservative Required	OK			
1165480022-B	HNO3 to pH < 2	OK			
1165480023-A	No Preservative Required	OK			
1165480023-B	HNO3 to pH < 2	OK			
1165480024-A	No Preservative Required	OK			
1165480024-B	HNO3 to pH < 2	OK			
1165480025-A	No Preservative Required	OK			
1165480025-B	HNO3 to pH < 2	OK			
1165480026-A	No Preservative Required	OK			
1165480026-B	HNO3 to pH < 2	OK			
1165480027-A	No Preservative Required	OK			
1165480027-B	HNO3 to pH < 2	OK			

#### Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM- The container was received damaged.

FR- The container was received frozen and not usable for Bacteria or BOD analyses.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

## **Appendix B4**

### **Laboratory Data Package Storm Event #4**





## Laboratory Report of Analysis

To: MOA-Project Mnmt/Engr  
PO Box 196650  
Anchorage, AK 99519  
907-343-8058

Report Number: **1165654**

Client Project: **MOA Stormwater Managment**

Dear Kristi Bischofberger,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Forest at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,  
SGS North America Inc.

---

Forest Taylor  
Project Manager  
Forest.Taylor@sgs.com

Date

Print Date: 11/14/2016 9:48:07AM

SGS North America Inc. | 200 West Potter Drive, Anchorage, AK 99518  
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Member of SGS Group

### Case Narrative

SGS Client: **MOA-Project Mnmt/Engr**  
SGS Project: **1165654**  
Project Name/Site: **MOA Stormwater Management**  
Project Contact: **Kristi Bischofberger**

Refer to sample receipt form for information on sample condition.

**SWM01-04 (1165654001) PS**

9222D - Fecal coliform sample analyzed past hold time due to laboratory error.

**SWM02-04 (1165654002) PS**

8270D SIM - PAH surrogate recovery for terphenyl-d14 (43.2%) does not meet DOD recovery limits but is within in house control limits

**SWM02-04 DUP (1165654005) PS**

8270D SIM - PAH surrogate recovery for terphenyl-d14 (52.6%) does not meet DOD recovery limits but is within in house control limits

**SWM05-04 (1165654008) PS**

8270D SIM - PAH surrogate recovery for terphenyl-d14 (41.1%) does not meet DOD recovery limits but is within in house control limits

**SWM07-04 (1165654010) PS**

8270D SIM - PAH surrogate recovery for terphenyl-d14 (38.9%) does not meet DOD recovery limits but is within in house control limits

**SWM09-04 (1165654013) PS**

8270D SIM - PAH surrogate recovery for terphenyl-d14 (56.4%) does not meet DOD recovery limits but is within in house control limits

**SWM02-04 MS (1165654003) BMS**

8270D SIM - PAH BMS recovery for benzo[a]anthracene (58.4%) does not meet QC criteria. Refer to the LCS for accuracy requirements.

**SWM02-04 MSD (1165654004) BMSD**

8270D SIM - PAH BMSD recovery for benzo[k]fluoranthene (51.8%) does not meet QC criteria. Refer to the LCS for accuracy requirements.

**1165654008(1355022DUP) (1354848) DUP**

2540D - Total Suspended Solids - Sample duplicate RPD was outside of acceptance limits. Refer to LCS/LCSD RPD for batch precision.

**1165654002MS (1354708) MS**

8270D SIM - PAH MS recovery for benzo[a]anthracene (58.4%) does not meet QC criteria. Refer to the LCS for accuracy requirements.

**1165763008(1355343MS) (1355344) MS**

200.8 - Metals MS recovery for calcium (35%) does not meet QC criteria. Sample concentration is 4 times greater than the spike level.

**1165654002MSD (1354709) MSD**

8270D SIM - PAH MS recovery for benzo[k]fluoranthene (51.8%) does not meet QC criteria. Refer to the LCS for accuracy requirements.

\*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

### Report of Manual Integrations

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Analytical Batch</u>	<u>Analyte</u>	<u>Reason</u>
<b>EPA 625M SIM (PAH)</b>				
1165654002	SWM02-04	XMS9642	Benzo[a]pyrene	RP
1165654002	SWM02-04	XMS9642	Benzo[k]fluoranthene	RSP
1165654002	SWM02-04	XMS9642	Dibenzo[a,h]anthracene	RP
1165654003	SWM02-04 MS	XMS9642	Benzo[a]pyrene	RP
1165654003	SWM02-04 MS	XMS9642	Benzo[k]fluoranthene	RP
1165654003	SWM02-04 MS	XMS9642	Dibenzo[a,h]anthracene	RP
1165654004	SWM02-04 MSD	XMS9642	Benzo[k]fluoranthene	RP
1165654004	SWM02-04 MSD	XMS9642	Dibenzo[a,h]anthracene	RP
1165654005	SWM02-04 DUP	XMS9642	Benzo[k]fluoranthene	RSP
1165654008	SWM05-04	XMS9642	Benzo[a]pyrene	RP
1165654008	SWM05-04	XMS9642	Benzo[g,h,i]perylene	RP
1165654008	SWM05-04	XMS9642	Benzo[k]fluoranthene	RSP
1165654010	SWM07-04	XMS9642	Benzo(a)Anthracene	RP
1165654010	SWM07-04	XMS9642	Benzo[a]pyrene	RP
1165654010	SWM07-04	XMS9642	Benzo[b]Fluoranthene	RP
1165654010	SWM07-04	XMS9642	Benzo[g,h,i]perylene	PNF
1165654010	SWM07-04	XMS9642	Benzo[k]fluoranthene	RSP
1165654010	SWM07-04	XMS9642	Indeno[1,2,3-c,d] pyrene	RP
1165654013	SWM09-04	XMS9642	Benzo[g,h,i]perylene	RP
1165654013	SWM09-04	XMS9642	Benzo[k]fluoranthene	RP
1165654013	SWM09-04	XMS9642	Chrysene	RP
1355144	CVC for HBN 1744209 [XMS/9642]	XMS9642	Benzo[k]fluoranthene	RP

#### Manual Integration Reason Code Descriptions

Code	Description
O	Original Chromatogram
M	Modified Chromatogram
SS	Skimmed surrogate
BLG	Closed baseline gap
RP	Reassign peak name
PIR	Pattern integration required
IT	Included tail
SP	Split peak
RSP	Removed split peak
FPS	Forced peak start/stop
BLC	Baseline correction
PNF	Peak not found by software

All DRO/RRO analysis are integrated per SOP.



## Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8021B, 8082A, 8260B, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
D	The analyte concentration is the result of a dilution.
DF	Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
F	Indicates value that is greater than or equal to the DL
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
JL	The analyte was positively identified, but the quantitation is a low estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
M	A matrix effect was present.
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
Q	QC parameter out of acceptance range.
R	Rejected
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

### Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
SWM01-04	1165654001	09/22/2016	09/22/2016	Water (Surface, Eff., Ground)
SWM02-04	1165654002	09/22/2016	09/22/2016	Water (Surface, Eff., Ground)
SWM02-04 MS	1165654003	09/22/2016	09/22/2016	Water (Surface, Eff., Ground)
SWM02-04 MSD	1165654004	09/22/2016	09/22/2016	Water (Surface, Eff., Ground)
SWM02-04 DUP	1165654005	09/22/2016	09/22/2016	Water (Surface, Eff., Ground)
SWM03-04	1165654006	09/22/2016	09/22/2016	Water (Surface, Eff., Ground)
SWM04-04	1165654007	09/22/2016	09/22/2016	Water (Surface, Eff., Ground)
SWM05-04	1165654008	09/22/2016	09/22/2016	Water (Surface, Eff., Ground)
SWM06-04	1165654009	09/22/2016	09/22/2016	Water (Surface, Eff., Ground)
SWM07-04	1165654010	09/22/2016	09/22/2016	Water (Surface, Eff., Ground)
SWM08-04	1165654011	09/22/2016	09/22/2016	Water (Surface, Eff., Ground)
SWM08-04 DUP	1165654012	09/22/2016	09/22/2016	Water (Surface, Eff., Ground)
SWM09-04	1165654013	09/22/2016	09/22/2016	Water (Surface, Eff., Ground)
SWM10-04	1165654014	09/22/2016	09/22/2016	Water (Surface, Eff., Ground)
Trip blanks	1165654015	09/22/2016	09/22/2016	Water (Surface, Eff., Ground)
SWM01-04	1165654016	09/22/2016	09/22/2016	Water (Surface, Eff., Ground)
SWM02-04	1165654017	09/22/2016	09/22/2016	Water (Surface, Eff., Ground)
SWM02-04 DUP	1165654018	09/22/2016	09/22/2016	Water (Surface, Eff., Ground)
SWM03-04	1165654019	09/22/2016	09/22/2016	Water (Surface, Eff., Ground)
SWM04-04	1165654020	09/22/2016	09/22/2016	Water (Surface, Eff., Ground)
SWM05-04	1165654021	09/22/2016	09/22/2016	Water (Surface, Eff., Ground)
SWM06-04	1165654022	09/22/2016	09/22/2016	Water (Surface, Eff., Ground)
SWM07-04	1165654023	09/22/2016	09/22/2016	Water (Surface, Eff., Ground)
SWM08-04	1165654024	09/22/2016	09/22/2016	Water (Surface, Eff., Ground)
SWM08-04 DUP	1165654025	09/22/2016	09/22/2016	Water (Surface, Eff., Ground)
SWM09-04	1165654026	09/22/2016	09/22/2016	Water (Surface, Eff., Ground)
SWM10-04	1165654027	09/22/2016	09/22/2016	Water (Surface, Eff., Ground)

<u>Method</u>	<u>Method Description</u>
EPA 602/624	602 Aromatics by 624 (W)
EPA 625M SIM (PAH)	625 Semi-Volatiles GC/MS Liq/Liq ext.
SM21 5210B	Biochemical Oxygen Demand SM21 5210B
SM21 9222D	Fecal Coliform (MF)
SM21 2340B	Hardness as CaCO3 by ICP-MS
EP200.8	Metals in Drinking Water by ICP-MS DISSO
EP200.8	Metals in Water by 200.8 ICP-MS
SM21 2540D	Total Suspended Solids SM20 2540D

Print Date: 11/14/2016 9:48:16AM

### Detectable Results Summary

Client Sample ID: **SWM01-04**

Lab Sample ID: 1165654001

**Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Calcium	2230	ug/L
Hardness as CaCO <sub>3</sub>	8.56	mg/L
Magnesium	730	ug/L
Biochemical Oxygen Demand	2.37	mg/L
Fecal Coliform	225	col/100mL
Total Suspended Solids	42.5	mg/L

**Microbiology Laboratory**

**Waters Department**

Client Sample ID: **SWM02-04**

Lab Sample ID: 1165654002

**Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Calcium	10100	ug/L
Hardness as CaCO <sub>3</sub>	39.0	mg/L
Magnesium	3370	ug/L
Fecal Coliform	78	col/100mL
Acenaphthylene	0.0213J	ug/L
Anthracene	0.0426J	ug/L
Benzo(a)Anthracene	0.145	ug/L
Benzo[a]pyrene	0.302	ug/L
Benzo[b]Fluoranthene	0.651	ug/L
Benzo[g,h,i]perylene	0.530	ug/L
Benzo[k]fluoranthene	0.180	ug/L
Chrysene	0.400	ug/L
Fluoranthene	0.414	ug/L
Indeno[1,2,3-c,d] pyrene	0.383	ug/L
Phenanthrene	0.148	ug/L
Pyrene	0.335	ug/L
Toluene	0.350J	ug/L
Total Suspended Solids	78.4	mg/L

**Microbiology Laboratory**

**Polynuclear Aromatics GC/MS**

**Volatile GC/MS**

**Waters Department**

### Detectable Results Summary

Client Sample ID: **SWM02-04 DUP**

Lab Sample ID: 1165654005

**Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Calcium	8030	ug/L
Hardness as CaCO <sub>3</sub>	31.0	mg/L
Magnesium	2670	ug/L
<b>Microbiology Laboratory</b> <b>Polynuclear Aromatics GC/MS</b>	Fecal Coliform	86 col/100mL
Acenaphthylene	0.0264J	ug/L
Anthracene	0.0485J	ug/L
Benzo(a)Anthracene	0.180	ug/L
Benzo[a]pyrene	0.362	ug/L
Benzo[b]Fluoranthene	0.843	ug/L
Benzo[g,h,i]perylene	0.674	ug/L
Benzo[k]fluoranthene	0.232	ug/L
Chrysene	0.517	ug/L
Fluoranthene	0.471	ug/L
Indeno[1,2,3-c,d] pyrene	0.490	ug/L
Phenanthrene	0.173	ug/L
Pyrene	0.379	ug/L
<b>Volatile GC/MS</b> <b>Waters Department</b>	Toluene	0.340J ug/L
Total Suspended Solids	81.9	mg/L

Client Sample ID: **SWM03-04**

Lab Sample ID: 1165654006

**Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Calcium	13900	ug/L
Hardness as CaCO <sub>3</sub>	54.8	mg/L
Magnesium	4890	ug/L
<b>Microbiology Laboratory</b>	Biochemical Oxygen Demand	2.21 mg/L
	Fecal Coliform	446 col/100mL
<b>Waters Department</b>	Total Suspended Solids	47.3 mg/L

Client Sample ID: **SWM04-04**

Lab Sample ID: 1165654007

**Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Calcium	12200	ug/L
Hardness as CaCO <sub>3</sub>	43.4	mg/L
Magnesium	3130	ug/L
<b>Microbiology Laboratory</b>	Fecal Coliform	7270 col/100mL
<b>Waters Department</b>	Total Suspended Solids	11.3 mg/L

### Detectable Results Summary

Client Sample ID: **SWM05-04**

Lab Sample ID: 1165654008

**Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Calcium	9310	ug/L
Hardness as CaCO3	47.8	mg/L
Magnesium	5950	ug/L

**Microbiology Laboratory**

Biochemical Oxygen Demand	3.57	mg/L
Fecal Coliform	1630	col/100mL

**Polynuclear Aromatics GC/MS**

Anthracene	0.0196J	ug/L
Benzo(a)Anthracene	0.0933	ug/L
Benzo[a]pyrene	0.139	ug/L
Benzo[b]Fluoranthene	0.321	ug/L
Benzo[g,h,i]perylene	0.275	ug/L
Benzo[k]fluoranthene	0.0912	ug/L
Chrysene	0.294	ug/L
Fluoranthene	0.249	ug/L
Phenanthrene	0.0858	ug/L
Pyrene	0.238	ug/L
Toluene	0.400J	ug/L
Total Suspended Solids	380	mg/L

**Volatile GC/MS**

**Waters Department**

Client Sample ID: **SWM06-04**

Lab Sample ID: 1165654009

**Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Calcium	3310	ug/L
Hardness as CaCO3	12.3	mg/L
Magnesium	976	ug/L

**Microbiology Laboratory**

Biochemical Oxygen Demand	7.80	mg/L
Fecal Coliform	1320	col/100mL

**Waters Department**

Total Suspended Solids	11.2	mg/L
------------------------	------	------

Client Sample ID: **SWM07-04**

Lab Sample ID: 1165654010

**Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Calcium	3520	ug/L
Hardness as CaCO3	15.7	mg/L
Magnesium	1680	ug/L

**Microbiology Laboratory**

Biochemical Oxygen Demand	5.11	mg/L
Fecal Coliform	3800	col/100mL

**Polynuclear Aromatics GC/MS**

Benzo(a)Anthracene	0.0199J	ug/L
Benzo[a]pyrene	0.0327	ug/L
Benzo[b]Fluoranthene	0.0544	ug/L
Benzo[g,h,i]perylene	0.0601	ug/L
Chrysene	0.0663	ug/L
Fluoranthene	0.0747	ug/L
Fluorene	0.0161J	ug/L
Indeno[1,2,3-c,d] pyrene	0.0264J	ug/L
Phenanthrene	0.0448J	ug/L
Pyrene	0.101	ug/L

**Waters Department**

Total Suspended Solids	72.2	mg/L
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Print Date: 11/14/2016 9:48:19AM

### Detectable Results Summary

Client Sample ID: **SWM08-04**

Lab Sample ID: 1165654011

**Metals by ICP/MS**

Parameter	Result	Units
Calcium	3190	ug/L
Hardness as CaCO3	12.4	mg/L
Magnesium	1080	ug/L

**Microbiology Laboratory**

Biochemical Oxygen Demand	4.43	mg/L
Fecal Coliform	1210	col/100mL
Total Suspended Solids	36.9	mg/L

**Waters Department**

Client Sample ID: **SWM08-04 DUP**

Lab Sample ID: 1165654012

**Metals by ICP/MS**

Parameter	Result	Units
Calcium	3130	ug/L
Hardness as CaCO3	12.0	mg/L
Magnesium	1030	ug/L

**Microbiology Laboratory**

Biochemical Oxygen Demand	4.38	mg/L
Fecal Coliform	1530	col/100mL
Total Suspended Solids	26.7	mg/L

**Waters Department**

Client Sample ID: **SWM09-04**

Lab Sample ID: 1165654013

**Metals by ICP/MS**

Parameter	Result	Units
Calcium	6910	ug/L
Hardness as CaCO3	24.4	mg/L
Magnesium	1750	ug/L

**Microbiology Laboratory**

Biochemical Oxygen Demand	3.72	mg/L
Fecal Coliform	360	col/100mL

**Polynuclear Aromatics GC/MS**

Benzo(a)Anthracene	0.0264J	ug/L
Benzo[a]pyrene	0.0272	ug/L
Benzo[b]Fluoranthene	0.0597	ug/L
Benzo[g,h,i]perylene	0.0406J	ug/L
Chrysene	0.0526	ug/L
Fluoranthene	0.0988	ug/L
Indeno[1,2,3-c,d] pyrene	0.0274J	ug/L
Phenanthrene	0.0386J	ug/L
Pyrene	0.0721	ug/L
Total Suspended Solids	20.2	mg/L

**Waters Department**

Client Sample ID: **SWM10-04**

Lab Sample ID: 1165654014

**Metals by ICP/MS**

Parameter	Result	Units
Calcium	12400	ug/L
Hardness as CaCO3	44.4	mg/L
Magnesium	3260	ug/L

**Microbiology Laboratory**

Biochemical Oxygen Demand	4.62	mg/L
Fecal Coliform	360	col/100mL

**Waters Department**

Total Suspended Solids	21.4	mg/L
------------------------	------	------

Client Sample ID: **SWM01-04**

Lab Sample ID: 1165654016

**Dissolved Metals by ICP/MS**

Parameter	Result	Units
Copper	1.46	ug/L

### Detectable Results Summary

Client Sample ID: <b>SWM02-04</b>			
Lab Sample ID: 1165654017	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Dissolved Metals by ICP/MS</b>	Copper	1.75	ug/L
Client Sample ID: <b>SWM02-04 DUP</b>			
Lab Sample ID: 1165654018	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Dissolved Metals by ICP/MS</b>	Copper	1.76	ug/L
Client Sample ID: <b>SWM03-04</b>			
Lab Sample ID: 1165654019	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Dissolved Metals by ICP/MS</b>	Copper	3.82	ug/L
Client Sample ID: <b>SWM04-04</b>			
Lab Sample ID: 1165654020	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Dissolved Metals by ICP/MS</b>	Copper	2.69	ug/L
Client Sample ID: <b>SWM05-04</b>			
Lab Sample ID: 1165654021	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Dissolved Metals by ICP/MS</b>	Copper	6.15	ug/L
Client Sample ID: <b>SWM06-04</b>			
Lab Sample ID: 1165654022	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Dissolved Metals by ICP/MS</b>	Copper	1.82	ug/L
Client Sample ID: <b>SWM07-04</b>			
Lab Sample ID: 1165654023	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Dissolved Metals by ICP/MS</b>	Copper	5.48	ug/L
Client Sample ID: <b>SWM08-04</b>			
Lab Sample ID: 1165654024	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Dissolved Metals by ICP/MS</b>	Copper	3.31	ug/L
Client Sample ID: <b>SWM08-04 DUP</b>			
Lab Sample ID: 1165654025	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Dissolved Metals by ICP/MS</b>	Copper	3.37	ug/L
Client Sample ID: <b>SWM09-04</b>			
Lab Sample ID: 1165654026	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Dissolved Metals by ICP/MS</b>	Copper	2.36	ug/L
Client Sample ID: <b>SWM10-04</b>			
Lab Sample ID: 1165654027	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
<b>Dissolved Metals by ICP/MS</b>	Copper	1.34	ug/L

Print Date: 11/14/2016 9:48:19AM

## Results of SWM01-04

Client Sample ID: **SWM01-04**  
 Client Project ID: **MOA Stormwater Management**  
 Lab Sample ID: 1165654001  
 Lab Project ID: 1165654

Collection Date: 09/22/16 10:25  
 Received Date: 09/22/16 15:08  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

## Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Calcium	2230	500	150	ug/L	1		10/03/16 15:10
Magnesium	730	50.0	15.0	ug/L	1		10/03/16 15:10

## Batch Information

Analytical Batch: MMS9559  
 Analytical Method: EP200.8  
 Analyst: VDL  
 Analytical Date/Time: 10/03/16 15:10  
 Container ID: 1165654001-D

Prep Batch: MX30233  
 Prep Method: E200.2  
 Prep Date/Time: 09/29/16 16:00  
 Prep Initial Wt./Vol.: 20 mL  
 Prep Extract Vol: 50 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Hardness as CaCO3	8.56	5.00	5.00	mg/L	1		10/03/16 15:10

## Batch Information

Analytical Batch: MMS9559  
 Analytical Method: SM21 2340B  
 Analyst: VDL  
 Analytical Date/Time: 10/03/16 15:10  
 Container ID: 1165654001-D

Prep Batch: MX30233  
 Prep Method: E200.2  
 Prep Date/Time: 09/29/16 16:00  
 Prep Initial Wt./Vol.: 20 mL  
 Prep Extract Vol: 50 mL





Results of **SWM01-04**

Client Sample ID: **SWM01-04**  
Client Project ID: **MOA Stormwater Management**  
Lab Sample ID: 1165654001  
Lab Project ID: 1165654

Collection Date: 09/22/16 10:25  
Received Date: 09/22/16 15:08  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.37	2.00	2.00	mg/L	1		09/23/16 21:40

**Batch Information**

Analytical Batch: BOD5560  
Analytical Method: SM21 5210B  
Analyst: K.W  
Analytical Date/Time: 09/23/16 21:40  
Container ID: 1165654001-B

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	225	1.64	1.64	col/100mL	1		09/22/16 18:47

**Batch Information**

Analytical Batch: BTF15123  
Analytical Method: SM21 9222D  
Analyst: AEE  
Analytical Date/Time: 09/22/16 18:47  
Container ID: 1165654001-A



**Results of SWM01-04**

Client Sample ID: **SWM01-04**  
Client Project ID: **MOA Stormwater Management**  
Lab Sample ID: 1165654001  
Lab Project ID: 1165654

Collection Date: 09/22/16 10:25  
Received Date: 09/22/16 15:08  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	42.5	1.33	0.413	mg/L	1		09/23/16 17:57

**Batch Information**

Analytical Batch: STS5220  
Analytical Method: SM21 2540D  
Analyst: LLP  
Analytical Date/Time: 09/23/16 17:57  
Container ID: 1165654001-C



Results of **SWM02-04**

Client Sample ID: **SWM02-04**  
Client Project ID: **MOA Stormwater Management**  
Lab Sample ID: 1165654002  
Lab Project ID: 1165654

Collection Date: 09/22/16 10:50  
Received Date: 09/22/16 15:08  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Calcium	10100	500	150	ug/L	1		10/03/16 15:13
Magnesium	3370	50.0	15.0	ug/L	1		10/03/16 15:13

**Batch Information**

Analytical Batch: MMS9559  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 10/03/16 15:13  
Container ID: 1165654002-D

Prep Batch: MX30233  
Prep Method: E200.2  
Prep Date/Time: 09/29/16 16:00  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Hardness as CaCO3	39.0	5.00	5.00	mg/L	1		10/03/16 15:13

**Batch Information**

Analytical Batch: MMS9559  
Analytical Method: SM21 2340B  
Analyst: VDL  
Analytical Date/Time: 10/03/16 15:13  
Container ID: 1165654002-D

Prep Batch: MX30233  
Prep Method: E200.2  
Prep Date/Time: 09/29/16 16:00  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL



Results of **SWM02-04**

Client Sample ID: **SWM02-04**  
Client Project ID: **MOA Stormwater Management**  
Lab Sample ID: 1165654002  
Lab Project ID: 1165654

Collection Date: 09/22/16 10:50  
Received Date: 09/22/16 15:08  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		09/23/16 21:40

**Batch Information**

Analytical Batch: BOD5560  
Analytical Method: SM21 5210B  
Analyst: K.W  
Analytical Date/Time: 09/23/16 21:40  
Container ID: 1165654002-B

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	78	2.00	2.00	col/100mL	1		09/22/16 18:47

**Batch Information**

Analytical Batch: BTF15123  
Analytical Method: SM21 9222D  
Analyst: AEE  
Analytical Date/Time: 09/22/16 18:47  
Container ID: 1165654002-A



### Results of SWM02-04

Client Sample ID: **SWM02-04**  
 Client Project ID: **MOA Stormwater Management**  
 Lab Sample ID: 1165654002  
 Lab Project ID: 1165654

Collection Date: 09/22/16 10:50  
 Received Date: 09/22/16 15:08  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

### Results by Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0266 U	0.0532	0.0160	ug/L	1		09/28/16 04:41
Acenaphthylene	0.0213 J	0.0532	0.0160	ug/L	1		09/28/16 04:41
Anthracene	0.0426 J	0.0532	0.0160	ug/L	1		09/28/16 04:41
Benzo(a)Anthracene	0.145	0.0532	0.0160	ug/L	1		09/28/16 04:41
Benzo[a]pyrene	0.302	0.0213	0.00660	ug/L	1		09/28/16 04:41
Benzo[b]Fluoranthene	0.651	0.0532	0.0160	ug/L	1		09/28/16 04:41
Benzo[g,h,i]perylene	0.530	0.0532	0.0160	ug/L	1		09/28/16 04:41
Benzo[k]fluoranthene	0.180	0.0532	0.0160	ug/L	1		09/28/16 04:41
Chrysene	0.400	0.0532	0.0160	ug/L	1		09/28/16 04:41
Dibenzo[a,h]anthracene	0.0107 U	0.0213	0.00660	ug/L	1		09/28/16 04:41
Fluoranthene	0.414	0.0532	0.0160	ug/L	1		09/28/16 04:41
Fluorene	0.0266 U	0.0532	0.0160	ug/L	1		09/28/16 04:41
Indeno[1,2,3-c,d] pyrene	0.383	0.0532	0.0160	ug/L	1		09/28/16 04:41
Naphthalene	0.0530 U	0.106	0.0330	ug/L	1		09/28/16 04:41
Phenanthrene	0.148	0.0532	0.0160	ug/L	1		09/28/16 04:41
Pyrene	0.335	0.0532	0.0160	ug/L	1		09/28/16 04:41
<b>Surrogates</b>							
2-Fluorobiphenyl (surr)	58.6	53-106		%	1		09/28/16 04:41
Terphenyl-d14 (surr)	43.2 *	58-132		%	1		09/28/16 04:41

### Batch Information

Analytical Batch: XMS9642  
 Analytical Method: EPA 625M SIM (PAH)  
 Analyst: BRV  
 Analytical Date/Time: 09/28/16 04:41  
 Container ID: 1165654002-H

Prep Batch: XXX36393  
 Prep Method: SW3520C  
 Prep Date/Time: 09/27/16 08:42  
 Prep Initial Wt./Vol.: 940 mL  
 Prep Extract Vol: 1 mL



Results of **SWM02-04**

Client Sample ID: **SWM02-04**  
Client Project ID: **MOA Stormwater Management**  
Lab Sample ID: 1165654002  
Lab Project ID: 1165654

Collection Date: 09/22/16 10:50  
Received Date: 09/22/16 15:08  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2-Dichlorobenzene	0.500 U	1.00	0.310	ug/L	1		09/27/16 22:57
1,3-Dichlorobenzene	0.500 U	1.00	0.310	ug/L	1		09/27/16 22:57
1,4-Dichlorobenzene	0.250 U	0.500	0.150	ug/L	1		09/27/16 22:57
Benzene	0.200 U	0.400	0.120	ug/L	1		09/27/16 22:57
Chlorobenzene	0.250 U	0.500	0.150	ug/L	1		09/27/16 22:57
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		09/27/16 22:57
o-Xylene	0.500 U	1.00	0.310	ug/L	1		09/27/16 22:57
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		09/27/16 22:57
Toluene	0.350 J	1.00	0.310	ug/L	1		09/27/16 22:57
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	103	81-118		%	1		09/27/16 22:57
4-Bromofluorobenzene (surr)	101	85-114		%	1		09/27/16 22:57
Toluene-d8 (surr)	102	89-112		%	1		09/27/16 22:57

**Batch Information**

Analytical Batch: VMS16225  
Analytical Method: EPA 602/624  
Analyst: TJT  
Analytical Date/Time: 09/27/16 22:57  
Container ID: 1165654002-E

Prep Batch: VXX29653  
Prep Method: SW5030B  
Prep Date/Time: 09/27/16 06:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL



**Results of SWM02-04**

Client Sample ID: **SWM02-04**  
Client Project ID: **MOA Stormwater Management**  
Lab Sample ID: 1165654002  
Lab Project ID: 1165654

Collection Date: 09/22/16 10:50  
Received Date: 09/22/16 15:08  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	78.4	4.00	1.24	mg/L	1		09/23/16 17:57

**Batch Information**

Analytical Batch: STS5220  
Analytical Method: SM21 2540D  
Analyst: LLP  
Analytical Date/Time: 09/23/16 17:57  
Container ID: 1165654002-C



Results of SWM02-04 DUP

Client Sample ID: SWM02-04 DUP
Client Project ID: MOA Stormwater Management
Lab Sample ID: 1165654005
Lab Project ID: 1165654

Collection Date: 09/22/16 10:50
Received Date: 09/22/16 15:08
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Metals by ICP/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Calcium and Magnesium.

Batch Information

Analytical Batch: MMS9559
Analytical Method: EP200.8
Analyst: VDL
Analytical Date/Time: 10/03/16 15:24
Container ID: 1165654005-D
Prep Batch: MX30233
Prep Method: E200.2
Prep Date/Time: 09/29/16 16:00
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row includes Hardness as CaCO3.

Batch Information

Analytical Batch: MMS9559
Analytical Method: SM21 2340B
Analyst: VDL
Analytical Date/Time: 10/03/16 15:24
Container ID: 1165654005-D
Prep Batch: MX30233
Prep Method: E200.2
Prep Date/Time: 09/29/16 16:00
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL



## Results of SWM02-04 DUP

Client Sample ID: **SWM02-04 DUP**  
 Client Project ID: **MOA Stormwater Management**  
 Lab Sample ID: 1165654005  
 Lab Project ID: 1165654

Collection Date: 09/22/16 10:50  
 Received Date: 09/22/16 15:08  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

## Results by Microbiology Laboratory

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		09/23/16 21:40

### Batch Information

Analytical Batch: BOD5560  
 Analytical Method: SM21 5210B  
 Analyst: K.W  
 Analytical Date/Time: 09/23/16 21:40  
 Container ID: 1165654005-B

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	86	2.00	2.00	col/100mL	1		09/22/16 18:47

### Batch Information

Analytical Batch: BTF15123  
 Analytical Method: SM21 9222D  
 Analyst: AEE  
 Analytical Date/Time: 09/22/16 18:47  
 Container ID: 1165654005-A



Results of SWM02-04 DUP

Client Sample ID: SWM02-04 DUP
Client Project ID: MOA Stormwater Management
Lab Sample ID: 1165654005
Lab Project ID: 1165654

Collection Date: 09/22/16 10:50
Received Date: 09/22/16 15:08
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their concentrations.

Batch Information

Analytical Batch: XMS9642
Analytical Method: EPA 625M SIM (PAH)
Analyst: BRV
Analytical Date/Time: 09/28/16 05:48
Container ID: 1165654005-H

Prep Batch: XXX36393
Prep Method: SW3520C
Prep Date/Time: 09/27/16 08:42
Prep Initial Wt./Vol.: 930 mL
Prep Extract Vol: 1 mL



Results of SWM02-04 DUP

Client Sample ID: SWM02-04 DUP
Client Project ID: MOA Stormwater Management
Lab Sample ID: 1165654005
Lab Project ID: 1165654

Collection Date: 09/22/16 10:50
Received Date: 09/22/16 15:08
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, Benzene, Chlorobenzene, Ethylbenzene, o-Xylene, P & M -Xylene, Toluene, and Surrogates (1,2-Dichloroethane-D4, 4-Bromofluorobenzene, Toluene-d8).

Batch Information

Analytical Batch: VMS16225
Analytical Method: EPA 602/624
Analyst: TJT
Analytical Date/Time: 09/27/16 23:14
Container ID: 1165654005-E

Prep Batch: VXX29653
Prep Method: SW5030B
Prep Date/Time: 09/27/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



**Results of SWM02-04 DUP**

Client Sample ID: **SWM02-04 DUP**  
Client Project ID: **MOA Stormwater Management**  
Lab Sample ID: 1165654005  
Lab Project ID: 1165654

Collection Date: 09/22/16 10:50  
Received Date: 09/22/16 15:08  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	81.9	3.85	1.19	mg/L	1		09/23/16 17:57

**Batch Information**

Analytical Batch: STS5220  
Analytical Method: SM21 2540D  
Analyst: LLP  
Analytical Date/Time: 09/23/16 17:57  
Container ID: 1165654005-C

## Results of SWM03-04

Client Sample ID: **SWM03-04**  
 Client Project ID: **MOA Stormwater Management**  
 Lab Sample ID: 1165654006  
 Lab Project ID: 1165654

Collection Date: 09/22/16 11:35  
 Received Date: 09/22/16 15:08  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

## Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Calcium	13900	500	150	ug/L	1		10/03/16 15:27
Magnesium	4890	50.0	15.0	ug/L	1		10/03/16 15:27

## Batch Information

Analytical Batch: MMS9559  
 Analytical Method: EP200.8  
 Analyst: VDL  
 Analytical Date/Time: 10/03/16 15:27  
 Container ID: 1165654006-D

Prep Batch: MX30233  
 Prep Method: E200.2  
 Prep Date/Time: 09/29/16 16:00  
 Prep Initial Wt./Vol.: 20 mL  
 Prep Extract Vol: 50 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Hardness as CaCO3	54.8	5.00	5.00	mg/L	1		10/03/16 15:27

## Batch Information

Analytical Batch: MMS9559  
 Analytical Method: SM21 2340B  
 Analyst: VDL  
 Analytical Date/Time: 10/03/16 15:27  
 Container ID: 1165654006-D

Prep Batch: MX30233  
 Prep Method: E200.2  
 Prep Date/Time: 09/29/16 16:00  
 Prep Initial Wt./Vol.: 20 mL  
 Prep Extract Vol: 50 mL



Results of **SWM03-04**

Client Sample ID: **SWM03-04**  
Client Project ID: **MOA Stormwater Management**  
Lab Sample ID: 1165654006  
Lab Project ID: 1165654

Collection Date: 09/22/16 11:35  
Received Date: 09/22/16 15:08  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.21	2.00	2.00	mg/L	1		09/23/16 21:40

**Batch Information**

Analytical Batch: BOD5560  
Analytical Method: SM21 5210B  
Analyst: K.W  
Analytical Date/Time: 09/23/16 21:40  
Container ID: 1165654006-B

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	446	1.00	1.00	col/100mL	1		09/22/16 18:47

**Batch Information**

Analytical Batch: BTF15123  
Analytical Method: SM21 9222D  
Analyst: AEE  
Analytical Date/Time: 09/22/16 18:47  
Container ID: 1165654006-A



**Results of SWM03-04**

Client Sample ID: **SWM03-04**  
Client Project ID: **MOA Stormwater Management**  
Lab Sample ID: 1165654006  
Lab Project ID: 1165654

Collection Date: 09/22/16 11:35  
Received Date: 09/22/16 15:08  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	47.3	2.27	0.705	mg/L	1		09/27/16 11:45

**Batch Information**

Analytical Batch: STS5226  
Analytical Method: SM21 2540D  
Analyst: LLP  
Analytical Date/Time: 09/27/16 11:45  
Container ID: 1165654006-C



Results of **SWM04-04**

Client Sample ID: **SWM04-04**  
Client Project ID: **MOA Stormwater Management**  
Lab Sample ID: 1165654007  
Lab Project ID: 1165654

Collection Date: 09/22/16 11:45  
Received Date: 09/22/16 15:08  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Calcium	12200	500	150	ug/L	1		10/03/16 15:30
Magnesium	3130	50.0	15.0	ug/L	1		10/03/16 15:30

**Batch Information**

Analytical Batch: MMS9559  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 10/03/16 15:30  
Container ID: 1165654007-D

Prep Batch: MX30233  
Prep Method: E200.2  
Prep Date/Time: 09/29/16 16:00  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Hardness as CaCO3	43.4	5.00	5.00	mg/L	1		10/03/16 15:30

**Batch Information**

Analytical Batch: MMS9559  
Analytical Method: SM21 2340B  
Analyst: VDL  
Analytical Date/Time: 10/03/16 15:30  
Container ID: 1165654007-D

Prep Batch: MX30233  
Prep Method: E200.2  
Prep Date/Time: 09/29/16 16:00  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL





Results of **SWM04-04**

Client Sample ID: **SWM04-04**  
Client Project ID: **MOA Stormwater Management**  
Lab Sample ID: 1165654007  
Lab Project ID: 1165654

Collection Date: 09/22/16 11:45  
Received Date: 09/22/16 15:08  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	2.00 U	2.00	2.00	mg/L	1		09/23/16 21:40

**Batch Information**

Analytical Batch: BOD5560  
Analytical Method: SM21 5210B  
Analyst: K.W  
Analytical Date/Time: 09/23/16 21:40  
Container ID: 1165654007-B

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	7270	1.00	1.00	col/100mL	1		09/22/16 18:47

**Batch Information**

Analytical Batch: BTF15123  
Analytical Method: SM21 9222D  
Analyst: AEE  
Analytical Date/Time: 09/22/16 18:47  
Container ID: 1165654007-A



**Results of SWM04-04**

Client Sample ID: **SWM04-04**  
Client Project ID: **MOA Stormwater Management**  
Lab Sample ID: 1165654007  
Lab Project ID: 1165654

Collection Date: 09/22/16 11:45  
Received Date: 09/22/16 15:08  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	11.3	1.00	0.310	mg/L	1		09/27/16 11:45

**Batch Information**

Analytical Batch: STS5226  
Analytical Method: SM21 2540D  
Analyst: LLP  
Analytical Date/Time: 09/27/16 11:45  
Container ID: 1165654007-C



Results of **SWM05-04**

Client Sample ID: **SWM05-04**  
Client Project ID: **MOA Stormwater Management**  
Lab Sample ID: 1165654008  
Lab Project ID: 1165654

Collection Date: 09/22/16 12:05  
Received Date: 09/22/16 15:08  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Calcium	9310	500	150	ug/L	1		10/03/16 15:33
Magnesium	5950	50.0	15.0	ug/L	1		10/03/16 15:33

**Batch Information**

Analytical Batch: MMS9559  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 10/03/16 15:33  
Container ID: 1165654008-D

Prep Batch: MX30233  
Prep Method: E200.2  
Prep Date/Time: 09/29/16 16:00  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Hardness as CaCO3	47.8	5.00	5.00	mg/L	1		10/03/16 15:33

**Batch Information**

Analytical Batch: MMS9559  
Analytical Method: SM21 2340B  
Analyst: VDL  
Analytical Date/Time: 10/03/16 15:33  
Container ID: 1165654008-D

Prep Batch: MX30233  
Prep Method: E200.2  
Prep Date/Time: 09/29/16 16:00  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL



Results of **SWM05-04**

Client Sample ID: **SWM05-04**  
Client Project ID: **MOA Stormwater Management**  
Lab Sample ID: 1165654008  
Lab Project ID: 1165654

Collection Date: 09/22/16 12:05  
Received Date: 09/22/16 15:08  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	3.57	2.00	2.00	mg/L	1		09/23/16 21:40

**Batch Information**

Analytical Batch: BOD5560  
Analytical Method: SM21 5210B  
Analyst: K.W  
Analytical Date/Time: 09/23/16 21:40  
Container ID: 1165654008-B

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	1630	1.00	1.00	col/100mL	1		09/22/16 18:47

**Batch Information**

Analytical Batch: BTF15123  
Analytical Method: SM21 9222D  
Analyst: AEE  
Analytical Date/Time: 09/22/16 18:47  
Container ID: 1165654008-A



Results of **SWM05-04**

Client Sample ID: **SWM05-04**  
Client Project ID: **MOA Stormwater Management**  
Lab Sample ID: 1165654008  
Lab Project ID: 1165654

Collection Date: 09/22/16 12:05  
Received Date: 09/22/16 15:08  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0255 U	0.0510	0.0153	ug/L	1		09/28/16 06:11
Acenaphthylene	0.0255 U	0.0510	0.0153	ug/L	1		09/28/16 06:11
Anthracene	0.0196 J	0.0510	0.0153	ug/L	1		09/28/16 06:11
Benzo(a)Anthracene	0.0933	0.0510	0.0153	ug/L	1		09/28/16 06:11
Benzo[a]pyrene	0.139	0.0204	0.00633	ug/L	1		09/28/16 06:11
Benzo[b]Fluoranthene	0.321	0.0510	0.0153	ug/L	1		09/28/16 06:11
Benzo[g,h,i]perylene	0.275	0.0510	0.0153	ug/L	1		09/28/16 06:11
Benzo[k]fluoranthene	0.0912	0.0510	0.0153	ug/L	1		09/28/16 06:11
Chrysene	0.294	0.0510	0.0153	ug/L	1		09/28/16 06:11
Dibenzo[a,h]anthracene	0.0102 U	0.0204	0.00633	ug/L	1		09/28/16 06:11
Fluoranthene	0.249	0.0510	0.0153	ug/L	1		09/28/16 06:11
Fluorene	0.0255 U	0.0510	0.0153	ug/L	1		09/28/16 06:11
Indeno[1,2,3-c,d] pyrene	0.0255 U	0.0510	0.0153	ug/L	1		09/28/16 06:11
Naphthalene	0.0510 U	0.102	0.0316	ug/L	1		09/28/16 06:11
Phenanthrene	0.0858	0.0510	0.0153	ug/L	1		09/28/16 06:11
Pyrene	0.238	0.0510	0.0153	ug/L	1		09/28/16 06:11
<b>Surrogates</b>							
2-Fluorobiphenyl (surr)	70.6		53-106	%	1		09/28/16 06:11
Terphenyl-d14 (surr)	41.1	*	58-132	%	1		09/28/16 06:11

**Batch Information**

Analytical Batch: XMS9642  
Analytical Method: EPA 625M SIM (PAH)  
Analyst: BRV  
Analytical Date/Time: 09/28/16 06:11  
Container ID: 1165654008-H

Prep Batch: XXX36393  
Prep Method: SW3520C  
Prep Date/Time: 09/27/16 08:42  
Prep Initial Wt./Vol.: 980 mL  
Prep Extract Vol: 1 mL



Results of **SWM05-04**

Client Sample ID: **SWM05-04**  
Client Project ID: **MOA Stormwater Management**  
Lab Sample ID: 1165654008  
Lab Project ID: 1165654

Collection Date: 09/22/16 12:05  
Received Date: 09/22/16 15:08  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2-Dichlorobenzene	0.500 U	1.00	0.310	ug/L	1		09/27/16 23:30
1,3-Dichlorobenzene	0.500 U	1.00	0.310	ug/L	1		09/27/16 23:30
1,4-Dichlorobenzene	0.250 U	0.500	0.150	ug/L	1		09/27/16 23:30
Benzene	0.200 U	0.400	0.120	ug/L	1		09/27/16 23:30
Chlorobenzene	0.250 U	0.500	0.150	ug/L	1		09/27/16 23:30
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		09/27/16 23:30
o-Xylene	0.500 U	1.00	0.310	ug/L	1		09/27/16 23:30
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		09/27/16 23:30
Toluene	0.400 J	1.00	0.310	ug/L	1		09/27/16 23:30
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	103	81-118		%	1		09/27/16 23:30
4-Bromofluorobenzene (surr)	95.3	85-114		%	1		09/27/16 23:30
Toluene-d8 (surr)	98.6	89-112		%	1		09/27/16 23:30

**Batch Information**

Analytical Batch: VMS16225  
Analytical Method: EPA 602/624  
Analyst: TJT  
Analytical Date/Time: 09/27/16 23:30  
Container ID: 1165654008-E

Prep Batch: VXX29653  
Prep Method: SW5030B  
Prep Date/Time: 09/27/16 06:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL



Results of **SWM05-04**

Client Sample ID: **SWM05-04**  
Client Project ID: **MOA Stormwater Management**  
Lab Sample ID: 1165654008  
Lab Project ID: 1165654

Collection Date: 09/22/16 12:05  
Received Date: 09/22/16 15:08  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	380	10.0	3.10	mg/L	1		09/28/16 15:14

**Batch Information**

Analytical Batch: STS5228  
Analytical Method: SM21 2540D  
Analyst: LLP  
Analytical Date/Time: 09/28/16 15:14  
Container ID: 1165654008-C



Results of **SWM06-04**

Client Sample ID: **SWM06-04**  
Client Project ID: **MOA Stormwater Management**  
Lab Sample ID: 1165654009  
Lab Project ID: 1165654

Collection Date: 09/22/16 12:40  
Received Date: 09/22/16 15:08  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Calcium	3310	500	150	ug/L	1		10/03/16 14:26
Magnesium	976	50.0	15.0	ug/L	1		10/03/16 14:26

**Batch Information**

Analytical Batch: MMS9559  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 10/03/16 14:26  
Container ID: 1165654009-D

Prep Batch: MX30233  
Prep Method: E200.2  
Prep Date/Time: 09/29/16 16:00  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Hardness as CaCO3	12.3	5.00	5.00	mg/L	1		10/03/16 14:26

**Batch Information**

Analytical Batch: MMS9559  
Analytical Method: SM21 2340B  
Analyst: VDL  
Analytical Date/Time: 10/03/16 14:26  
Container ID: 1165654009-D

Prep Batch: MX30233  
Prep Method: E200.2  
Prep Date/Time: 09/29/16 16:00  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL





Results of **SWM06-04**

Client Sample ID: **SWM06-04**  
Client Project ID: **MOA Stormwater Management**  
Lab Sample ID: 1165654009  
Lab Project ID: 1165654

Collection Date: 09/22/16 12:40  
Received Date: 09/22/16 15:08  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	7.80	2.00	2.00	mg/L	1		09/23/16 21:40

**Batch Information**

Analytical Batch: BOD5560  
Analytical Method: SM21 5210B  
Analyst: K.W  
Analytical Date/Time: 09/23/16 21:40  
Container ID: 1165654009-B

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	1320	9.09	9.09	col/100mL	1		09/22/16 18:47

**Batch Information**

Analytical Batch: BTF15123  
Analytical Method: SM21 9222D  
Analyst: AEE  
Analytical Date/Time: 09/22/16 18:47  
Container ID: 1165654009-A



**Results of SWM06-04**

Client Sample ID: **SWM06-04**  
Client Project ID: **MOA Stormwater Management**  
Lab Sample ID: 1165654009  
Lab Project ID: 1165654

Collection Date: 09/22/16 12:40  
Received Date: 09/22/16 15:08  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	11.2	2.25	0.697	mg/L	1		09/27/16 11:45

**Batch Information**

Analytical Batch: STS5226  
Analytical Method: SM21 2540D  
Analyst: LLP  
Analytical Date/Time: 09/27/16 11:45  
Container ID: 1165654009-C



Results of **SWM07-04**

Client Sample ID: **SWM07-04**  
Client Project ID: **MOA Stormwater Management**  
Lab Sample ID: 1165654010  
Lab Project ID: 1165654

Collection Date: 09/22/16 13:05  
Received Date: 09/22/16 15:08  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Calcium	3520	500	150	ug/L	1		10/03/16 18:50
Magnesium	1680	50.0	15.0	ug/L	1		10/03/16 18:50

**Batch Information**

Analytical Batch: MMS9559  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 10/03/16 18:50  
Container ID: 1165654010-D

Prep Batch: MXX30233  
Prep Method: E200.2  
Prep Date/Time: 09/29/16 16:00  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Hardness as CaCO3	15.7	5.00	5.00	mg/L	1		10/03/16 18:50

**Batch Information**

Analytical Batch: MMS9559  
Analytical Method: SM21 2340B  
Analyst: VDL  
Analytical Date/Time: 10/03/16 18:50  
Container ID: 1165654010-D

Prep Batch: MXX30233  
Prep Method: E200.2  
Prep Date/Time: 09/29/16 16:00  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL



Results of **SWM07-04**

Client Sample ID: **SWM07-04**  
Client Project ID: **MOA Stormwater Management**  
Lab Sample ID: 1165654010  
Lab Project ID: 1165654

Collection Date: 09/22/16 13:05  
Received Date: 09/22/16 15:08  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	5.11	2.00	2.00	mg/L	1		09/23/16 21:40

**Batch Information**

Analytical Batch: BOD5560  
Analytical Method: SM21 5210B  
Analyst: K.W  
Analytical Date/Time: 09/23/16 21:40  
Container ID: 1165654010-B

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	3800	100	100	col/100mL	1		09/22/16 18:47

**Batch Information**

Analytical Batch: BTF15123  
Analytical Method: SM21 9222D  
Analyst: AEE  
Analytical Date/Time: 09/22/16 18:47  
Container ID: 1165654010-A



Results of **SWM07-04**

Client Sample ID: **SWM07-04**  
Client Project ID: **MOA Stormwater Management**  
Lab Sample ID: 1165654010  
Lab Project ID: 1165654

Collection Date: 09/22/16 13:05  
Received Date: 09/22/16 15:08  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0255 U	0.0510	0.0153	ug/L	1		09/28/16 06:33
Acenaphthylene	0.0255 U	0.0510	0.0153	ug/L	1		09/28/16 06:33
Anthracene	0.0255 U	0.0510	0.0153	ug/L	1		09/28/16 06:33
Benzo(a)Anthracene	0.0199 J	0.0510	0.0153	ug/L	1		09/28/16 06:33
Benzo[a]pyrene	0.0327	0.0204	0.00633	ug/L	1		09/28/16 06:33
Benzo[b]Fluoranthene	0.0544	0.0510	0.0153	ug/L	1		09/28/16 06:33
Benzo[g,h,i]perylene	0.0601	0.0510	0.0153	ug/L	1		09/28/16 06:33
Benzo[k]fluoranthene	0.0255 U	0.0510	0.0153	ug/L	1		09/28/16 06:33
Chrysene	0.0663	0.0510	0.0153	ug/L	1		09/28/16 06:33
Dibenzo[a,h]anthracene	0.0102 U	0.0204	0.00633	ug/L	1		09/28/16 06:33
Fluoranthene	0.0747	0.0510	0.0153	ug/L	1		09/28/16 06:33
Fluorene	0.0161 J	0.0510	0.0153	ug/L	1		09/28/16 06:33
Indeno[1,2,3-c,d] pyrene	0.0264 J	0.0510	0.0153	ug/L	1		09/28/16 06:33
Naphthalene	0.0510 U	0.102	0.0316	ug/L	1		09/28/16 06:33
Phenanthrene	0.0448 J	0.0510	0.0153	ug/L	1		09/28/16 06:33
Pyrene	0.101	0.0510	0.0153	ug/L	1		09/28/16 06:33
<b>Surrogates</b>							
2-Fluorobiphenyl (surr)	73.4	53-106		%	1		09/28/16 06:33
Terphenyl-d14 (surr)	38.9 *	58-132		%	1		09/28/16 06:33

**Batch Information**

Analytical Batch: XMS9642  
Analytical Method: EPA 625M SIM (PAH)  
Analyst: BRV  
Analytical Date/Time: 09/28/16 06:33  
Container ID: 1165654010-H

Prep Batch: XXX36393  
Prep Method: SW3520C  
Prep Date/Time: 09/27/16 08:42  
Prep Initial Wt./Vol.: 980 mL  
Prep Extract Vol: 1 mL



Results of **SWM07-04**

Client Sample ID: **SWM07-04**  
Client Project ID: **MOA Stormwater Management**  
Lab Sample ID: 1165654010  
Lab Project ID: 1165654

Collection Date: 09/22/16 13:05  
Received Date: 09/22/16 15:08  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2-Dichlorobenzene	0.500 U	1.00	0.310	ug/L	1		09/27/16 23:46
1,3-Dichlorobenzene	0.500 U	1.00	0.310	ug/L	1		09/27/16 23:46
1,4-Dichlorobenzene	0.250 U	0.500	0.150	ug/L	1		09/27/16 23:46
Benzene	0.200 U	0.400	0.120	ug/L	1		09/27/16 23:46
Chlorobenzene	0.250 U	0.500	0.150	ug/L	1		09/27/16 23:46
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		09/27/16 23:46
o-Xylene	0.500 U	1.00	0.310	ug/L	1		09/27/16 23:46
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		09/27/16 23:46
Toluene	0.500 U	1.00	0.310	ug/L	1		09/27/16 23:46
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	100	81-118		%	1		09/27/16 23:46
4-Bromofluorobenzene (surr)	99.2	85-114		%	1		09/27/16 23:46
Toluene-d8 (surr)	90.2	89-112		%	1		09/27/16 23:46

**Batch Information**

Analytical Batch: VMS16225  
Analytical Method: EPA 602/624  
Analyst: TJT  
Analytical Date/Time: 09/27/16 23:46  
Container ID: 1165654010-E

Prep Batch: VXX29653  
Prep Method: SW5030B  
Prep Date/Time: 09/27/16 06:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

## Results of SWM07-04

Client Sample ID: **SWM07-04**  
 Client Project ID: **MOA Stormwater Management**  
 Lab Sample ID: 1165654010  
 Lab Project ID: 1165654

Collection Date: 09/22/16 13:05  
 Received Date: 09/22/16 15:08  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

## Results by Waters Department

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	72.2	4.88	1.51	mg/L	1		09/27/16 11:45

## Batch Information

Analytical Batch: STS5226  
 Analytical Method: SM21 2540D  
 Analyst: LLP  
 Analytical Date/Time: 09/27/16 11:45  
 Container ID: 1165654010-C



Results of **SWM08-04**

Client Sample ID: **SWM08-04**  
Client Project ID: **MOA Stormwater Management**  
Lab Sample ID: 1165654011  
Lab Project ID: 1165654

Collection Date: 09/22/16 13:15  
Received Date: 09/22/16 15:08  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Calcium	3190	500	150	ug/L	1		10/03/16 14:31
Magnesium	1080	50.0	15.0	ug/L	1		10/03/16 14:31

**Batch Information**

Analytical Batch: MMS9559  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 10/03/16 14:31  
Container ID: 1165654011-D

Prep Batch: MXX30233  
Prep Method: E200.2  
Prep Date/Time: 09/29/16 16:00  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Hardness as CaCO3	12.4	5.00	5.00	mg/L	1		10/03/16 14:31

**Batch Information**

Analytical Batch: MMS9559  
Analytical Method: SM21 2340B  
Analyst: VDL  
Analytical Date/Time: 10/03/16 14:31  
Container ID: 1165654011-D

Prep Batch: MXX30233  
Prep Method: E200.2  
Prep Date/Time: 09/29/16 16:00  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL





Results of **SWM08-04**

Client Sample ID: **SWM08-04**  
Client Project ID: **MOA Stormwater Management**  
Lab Sample ID: 1165654011  
Lab Project ID: 1165654

Collection Date: 09/22/16 13:15  
Received Date: 09/22/16 15:08  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	4.43	2.00	2.00	mg/L	1		09/23/16 21:40

**Batch Information**

Analytical Batch: BOD5560  
Analytical Method: SM21 5210B  
Analyst: K.W  
Analytical Date/Time: 09/23/16 21:40  
Container ID: 1165654011-B

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	1210	1.00	1.00	col/100mL	1		09/22/16 18:47

**Batch Information**

Analytical Batch: BTF15123  
Analytical Method: SM21 9222D  
Analyst: AEE  
Analytical Date/Time: 09/22/16 18:47  
Container ID: 1165654011-A



**Results of SWM08-04**

Client Sample ID: **SWM08-04**  
Client Project ID: **MOA Stormwater Management**  
Lab Sample ID: 1165654011  
Lab Project ID: 1165654

Collection Date: 09/22/16 13:15  
Received Date: 09/22/16 15:08  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	36.9	3.08	0.954	mg/L	1		09/27/16 11:45

**Batch Information**

Analytical Batch: STS5226  
Analytical Method: SM21 2540D  
Analyst: LLP  
Analytical Date/Time: 09/27/16 11:45  
Container ID: 1165654011-C



Results of SWM08-04 DUP

Client Sample ID: SWM08-04 DUP
Client Project ID: MOA Stormwater Management
Lab Sample ID: 1165654012
Lab Project ID: 1165654

Collection Date: 09/22/16 13:15
Received Date: 09/22/16 15:08
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Metals by ICP/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Calcium and Magnesium.

Batch Information

Analytical Batch: MMS9559
Analytical Method: EP200.8
Analyst: VDL
Analytical Date/Time: 10/03/16 14:34
Container ID: 1165654012-D
Prep Batch: MX30233
Prep Method: E200.2
Prep Date/Time: 09/29/16 16:00
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row includes Hardness as CaCO3.

Batch Information

Analytical Batch: MMS9559
Analytical Method: SM21 2340B
Analyst: VDL
Analytical Date/Time: 10/03/16 14:34
Container ID: 1165654012-D
Prep Batch: MX30233
Prep Method: E200.2
Prep Date/Time: 09/29/16 16:00
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL



Results of **SWM08-04 DUP**

Client Sample ID: **SWM08-04 DUP**  
Client Project ID: **MOA Stormwater Management**  
Lab Sample ID: 1165654012  
Lab Project ID: 1165654

Collection Date: 09/22/16 13:15  
Received Date: 09/22/16 15:08  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	4.38	2.00	2.00	mg/L	1		09/23/16 21:40

**Batch Information**

Analytical Batch: BOD5560  
Analytical Method: SM21 5210B  
Analyst: K.W  
Analytical Date/Time: 09/23/16 21:40  
Container ID: 1165654012-B

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	1530	1.00	1.00	col/100mL	1		09/22/16 18:47

**Batch Information**

Analytical Batch: BTF15123  
Analytical Method: SM21 9222D  
Analyst: AEE  
Analytical Date/Time: 09/22/16 18:47  
Container ID: 1165654012-A

## Results of SWM08-04 DUP

Client Sample ID: **SWM08-04 DUP**  
 Client Project ID: **MOA Stormwater Management**  
 Lab Sample ID: 1165654012  
 Lab Project ID: 1165654

Collection Date: 09/22/16 13:15  
 Received Date: 09/22/16 15:08  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

## Results by Waters Department

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	26.7	2.04	0.633	mg/L	1		09/27/16 11:45

## Batch Information

Analytical Batch: STS5226  
 Analytical Method: SM21 2540D  
 Analyst: LLP  
 Analytical Date/Time: 09/27/16 11:45  
 Container ID: 1165654012-C



Results of **SWM09-04**

Client Sample ID: **SWM09-04**  
Client Project ID: **MOA Stormwater Management**  
Lab Sample ID: 1165654013  
Lab Project ID: 1165654

Collection Date: 09/22/16 13:45  
Received Date: 09/22/16 15:08  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Calcium	6910	500	150	ug/L	1		10/03/16 14:37
Magnesium	1750	50.0	15.0	ug/L	1		10/03/16 14:37

**Batch Information**

Analytical Batch: MMS9559  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 10/03/16 14:37  
Container ID: 1165654013-D

Prep Batch: MX30233  
Prep Method: E200.2  
Prep Date/Time: 09/29/16 16:00  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Hardness as CaCO3	24.4	5.00	5.00	mg/L	1		10/03/16 14:37

**Batch Information**

Analytical Batch: MMS9559  
Analytical Method: SM21 2340B  
Analyst: VDL  
Analytical Date/Time: 10/03/16 14:37  
Container ID: 1165654013-D

Prep Batch: MX30233  
Prep Method: E200.2  
Prep Date/Time: 09/29/16 16:00  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL



Results of **SWM09-04**

Client Sample ID: **SWM09-04**  
Client Project ID: **MOA Stormwater Management**  
Lab Sample ID: 1165654013  
Lab Project ID: 1165654

Collection Date: 09/22/16 13:45  
Received Date: 09/22/16 15:08  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	3.72	2.00	2.00	mg/L	1		09/23/16 21:40

**Batch Information**

Analytical Batch: BOD5560  
Analytical Method: SM21 5210B  
Analyst: K.W  
Analytical Date/Time: 09/23/16 21:40  
Container ID: 1165654013-B

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	360	10.0	10.0	col/100mL	1		09/22/16 18:47

**Batch Information**

Analytical Batch: BTF15123  
Analytical Method: SM21 9222D  
Analyst: AEE  
Analytical Date/Time: 09/22/16 18:47  
Container ID: 1165654013-A



**Results of SWM09-04**

Client Sample ID: **SWM09-04**  
 Client Project ID: **MOA Stormwater Management**  
 Lab Sample ID: 1165654013  
 Lab Project ID: 1165654

Collection Date: 09/22/16 13:45  
 Received Date: 09/22/16 15:08  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

**Results by Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Acenaphthene	0.0255 U	0.0510	0.0153	ug/L	1		09/28/16 06:56
Acenaphthylene	0.0255 U	0.0510	0.0153	ug/L	1		09/28/16 06:56
Anthracene	0.0255 U	0.0510	0.0153	ug/L	1		09/28/16 06:56
Benzo(a)Anthracene	0.0264 J	0.0510	0.0153	ug/L	1		09/28/16 06:56
Benzo[a]pyrene	0.0272	0.0204	0.00633	ug/L	1		09/28/16 06:56
Benzo[b]Fluoranthene	0.0597	0.0510	0.0153	ug/L	1		09/28/16 06:56
Benzo[g,h,i]perylene	0.0406 J	0.0510	0.0153	ug/L	1		09/28/16 06:56
Benzo[k]fluoranthene	0.0255 U	0.0510	0.0153	ug/L	1		09/28/16 06:56
Chrysene	0.0526	0.0510	0.0153	ug/L	1		09/28/16 06:56
Dibenzo[a,h]anthracene	0.0102 U	0.0204	0.00633	ug/L	1		09/28/16 06:56
Fluoranthene	0.0988	0.0510	0.0153	ug/L	1		09/28/16 06:56
Fluorene	0.0255 U	0.0510	0.0153	ug/L	1		09/28/16 06:56
Indeno[1,2,3-c,d] pyrene	0.0274 J	0.0510	0.0153	ug/L	1		09/28/16 06:56
Naphthalene	0.0510 U	0.102	0.0316	ug/L	1		09/28/16 06:56
Phenanthrene	0.0386 J	0.0510	0.0153	ug/L	1		09/28/16 06:56
Pyrene	0.0721	0.0510	0.0153	ug/L	1		09/28/16 06:56
<b>Surrogates</b>							
2-Fluorobiphenyl (surr)	81.5		53-106	%	1		09/28/16 06:56
Terphenyl-d14 (surr)	56.4	*	58-132	%	1		09/28/16 06:56

**Batch Information**

Analytical Batch: XMS9642  
 Analytical Method: EPA 625M SIM (PAH)  
 Analyst: BRV  
 Analytical Date/Time: 09/28/16 06:56  
 Container ID: 1165654013-H

Prep Batch: XXX36393  
 Prep Method: SW3520C  
 Prep Date/Time: 09/27/16 08:42  
 Prep Initial Wt./Vol.: 980 mL  
 Prep Extract Vol: 1 mL





Results of **SWM09-04**

Client Sample ID: **SWM09-04**  
Client Project ID: **MOA Stormwater Management**  
Lab Sample ID: 1165654013  
Lab Project ID: 1165654

Collection Date: 09/22/16 13:45  
Received Date: 09/22/16 15:08  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2-Dichlorobenzene	0.500 U	1.00	0.310	ug/L	1		10/03/16 23:37
1,3-Dichlorobenzene	0.500 U	1.00	0.310	ug/L	1		10/03/16 23:37
1,4-Dichlorobenzene	0.250 U	0.500	0.150	ug/L	1		10/03/16 23:37
Benzene	0.200 U	0.400	0.120	ug/L	1		10/03/16 23:37
Chlorobenzene	0.250 U	0.500	0.150	ug/L	1		10/03/16 23:37
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		10/03/16 23:37
o-Xylene	0.500 U	1.00	0.310	ug/L	1		10/03/16 23:37
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		10/03/16 23:37
Toluene	0.500 U	1.00	0.310	ug/L	1		10/03/16 23:37
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	96.9	81-118		%	1		10/03/16 23:37
4-Bromofluorobenzene (surr)	104	85-114		%	1		10/03/16 23:37
Toluene-d8 (surr)	104	89-112		%	1		10/03/16 23:37

**Batch Information**

Analytical Batch: VMS16248  
Analytical Method: EPA 602/624  
Analyst: TJT  
Analytical Date/Time: 10/03/16 23:37  
Container ID: 1165654013-E

Prep Batch: VXX29707  
Prep Method: SW5030B  
Prep Date/Time: 10/03/16 06:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL



Results of **SWM09-04**

Client Sample ID: **SWM09-04**  
Client Project ID: **MOA Stormwater Management**  
Lab Sample ID: 1165654013  
Lab Project ID: 1165654

Collection Date: 09/22/16 13:45  
Received Date: 09/22/16 15:08  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Waters Department**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	20.2	1.67	0.517	mg/L	1		09/27/16 11:45

**Batch Information**

Analytical Batch: STS5226  
Analytical Method: SM21 2540D  
Analyst: LLP  
Analytical Date/Time: 09/27/16 11:45  
Container ID: 1165654013-C



Results of **SWM10-04**

Client Sample ID: **SWM10-04**  
Client Project ID: **MOA Stormwater Management**  
Lab Sample ID: 1165654014  
Lab Project ID: 1165654

Collection Date: 09/22/16 13:55  
Received Date: 09/22/16 15:08  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Calcium	12400	500	150	ug/L	1		10/03/16 14:46
Magnesium	3260	50.0	15.0	ug/L	1		10/03/16 14:46

**Batch Information**

Analytical Batch: MMS9559  
Analytical Method: EP200.8  
Analyst: VDL  
Analytical Date/Time: 10/03/16 14:46  
Container ID: 1165654014-D

Prep Batch: MX30233  
Prep Method: E200.2  
Prep Date/Time: 09/29/16 16:00  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Hardness as CaCO3	44.4	5.00	5.00	mg/L	1		10/03/16 14:46

**Batch Information**

Analytical Batch: MMS9559  
Analytical Method: SM21 2340B  
Analyst: VDL  
Analytical Date/Time: 10/03/16 14:46  
Container ID: 1165654014-D

Prep Batch: MX30233  
Prep Method: E200.2  
Prep Date/Time: 09/29/16 16:00  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL



**Results of SWM10-04**

Client Sample ID: **SWM10-04**  
Client Project ID: **MOA Stormwater Management**  
Lab Sample ID: 1165654014  
Lab Project ID: 1165654

Collection Date: 09/22/16 13:55  
Received Date: 09/22/16 15:08  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Microbiology Laboratory**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Biochemical Oxygen Demand	4.62	2.00	2.00	mg/L	1		09/23/16 21:40

**Batch Information**

Analytical Batch: BOD5560  
Analytical Method: SM21 5210B  
Analyst: K.W  
Analytical Date/Time: 09/23/16 21:40  
Container ID: 1165654014-B

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Fecal Coliform	360	10.0	10.0	col/100mL	1		09/22/16 18:47

**Batch Information**

Analytical Batch: BTF15123  
Analytical Method: SM21 9222D  
Analyst: AEE  
Analytical Date/Time: 09/22/16 18:47  
Container ID: 1165654014-A

## Results of SWM10-04

Client Sample ID: **SWM10-04**  
 Client Project ID: **MOA Stormwater Management**  
 Lab Sample ID: 1165654014  
 Lab Project ID: 1165654

Collection Date: 09/22/16 13:55  
 Received Date: 09/22/16 15:08  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

## Results by Waters Department

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Total Suspended Solids	21.4	2.00	0.620	mg/L	1		09/27/16 11:45

## Batch Information

Analytical Batch: STS5226  
 Analytical Method: SM21 2540D  
 Analyst: LLP  
 Analytical Date/Time: 09/27/16 11:45  
 Container ID: 1165654014-C

## Results of Trip blanks

Client Sample ID: **Trip blanks**  
 Client Project ID: **MOA Stormwater Management**  
 Lab Sample ID: 1165654015  
 Lab Project ID: 1165654

Collection Date: 09/22/16 10:25  
 Received Date: 09/22/16 15:08  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

## Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2-Dichlorobenzene	0.500 U	1.00	0.310	ug/L	1		10/03/16 21:27
1,3-Dichlorobenzene	0.500 U	1.00	0.310	ug/L	1		10/03/16 21:27
1,4-Dichlorobenzene	0.250 U	0.500	0.150	ug/L	1		10/03/16 21:27
Benzene	0.200 U	0.400	0.120	ug/L	1		10/03/16 21:27
Chlorobenzene	0.250 U	0.500	0.150	ug/L	1		10/03/16 21:27
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		10/03/16 21:27
o-Xylene	0.500 U	1.00	0.310	ug/L	1		10/03/16 21:27
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		10/03/16 21:27
Toluene	0.500 U	1.00	0.310	ug/L	1		10/03/16 21:27
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	96.4	81-118		%	1		10/03/16 21:27
4-Bromofluorobenzene (surr)	108	85-114		%	1		10/03/16 21:27
Toluene-d8 (surr)	102	89-112		%	1		10/03/16 21:27

## Batch Information

Analytical Batch: VMS16248  
 Analytical Method: EPA 602/624  
 Analyst: TJT  
 Analytical Date/Time: 10/03/16 21:27  
 Container ID: 1165654015-A

Prep Batch: VXX29707  
 Prep Method: SW5030B  
 Prep Date/Time: 10/03/16 06:00  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL

## Results of SWM01-04

Client Sample ID: **SWM01-04**  
 Client Project ID: **MOA Stormwater Management**  
 Lab Sample ID: 1165654016  
 Lab Project ID: 1165654

Collection Date: 09/22/16 10:25  
 Received Date: 09/22/16 15:08  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

## Results by Dissolved Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	1.46	1.00	0.310	ug/L	1		09/27/16 18:12

## Batch Information

Analytical Batch: MMS9551  
 Analytical Method: EP200.8  
 Analyst: ACF  
 Analytical Date/Time: 09/27/16 18:12  
 Container ID: 1165654016-B

Prep Batch: MXX30221  
 Prep Method: E200.2  
 Prep Date/Time: 09/27/16 09:52  
 Prep Initial Wt./Vol.: 20 mL  
 Prep Extract Vol: 50 mL



Results of **SWM02-04**

Client Sample ID: **SWM02-04**  
Client Project ID: **MOA Stormwater Management**  
Lab Sample ID: 1165654017  
Lab Project ID: 1165654

Collection Date: 09/22/16 10:50  
Received Date: 09/22/16 15:08  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	1.75	1.00	0.310	ug/L	1		09/27/16 18:21

**Batch Information**

Analytical Batch: MMS9551  
Analytical Method: EP200.8  
Analyst: ACF  
Analytical Date/Time: 09/27/16 18:21  
Container ID: 1165654017-B

Prep Batch: MXX30221  
Prep Method: E200.2  
Prep Date/Time: 09/27/16 09:52  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL





**Results of SWM02-04 DUP**

Client Sample ID: **SWM02-04 DUP**  
Client Project ID: **MOA Stormwater Management**  
Lab Sample ID: 1165654018  
Lab Project ID: 1165654

Collection Date: 09/22/16 10:50  
Received Date: 09/22/16 15:08  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	1.76	1.00	0.310	ug/L	1		09/27/16 18:24

**Batch Information**

Analytical Batch: MMS9551  
Analytical Method: EP200.8  
Analyst: ACF  
Analytical Date/Time: 09/27/16 18:24  
Container ID: 1165654018-B

Prep Batch: MXX30221  
Prep Method: E200.2  
Prep Date/Time: 09/27/16 09:52  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

## Results of SWM03-04

Client Sample ID: **SWM03-04**  
 Client Project ID: **MOA Stormwater Management**  
 Lab Sample ID: 1165654019  
 Lab Project ID: 1165654

Collection Date: 09/22/16 11:35  
 Received Date: 09/22/16 15:08  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

## Results by Dissolved Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	3.82	1.00	0.310	ug/L	1		09/27/16 18:27

## Batch Information

Analytical Batch: MMS9551  
 Analytical Method: EP200.8  
 Analyst: ACF  
 Analytical Date/Time: 09/27/16 18:27  
 Container ID: 1165654019-B

Prep Batch: MXX30221  
 Prep Method: E200.2  
 Prep Date/Time: 09/27/16 09:52  
 Prep Initial Wt./Vol.: 20 mL  
 Prep Extract Vol: 50 mL



Results of **SWM04-04**

Client Sample ID: **SWM04-04**  
Client Project ID: **MOA Stormwater Management**  
Lab Sample ID: 1165654020  
Lab Project ID: 1165654

Collection Date: 09/22/16 11:45  
Received Date: 09/22/16 15:08  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	2.69	1.00	0.310	ug/L	1		09/27/16 18:30

**Batch Information**

Analytical Batch: MMS9551  
Analytical Method: EP200.8  
Analyst: ACF  
Analytical Date/Time: 09/27/16 18:30  
Container ID: 1165654020-B

Prep Batch: MXX30221  
Prep Method: E200.2  
Prep Date/Time: 09/27/16 09:52  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL



**Results of SWM05-04**

Client Sample ID: **SWM05-04**  
Client Project ID: **MOA Stormwater Management**  
Lab Sample ID: 1165654021  
Lab Project ID: 1165654

Collection Date: 09/22/16 12:05  
Received Date: 09/22/16 15:08  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	6.15	1.00	0.310	ug/L	1		09/27/16 18:33

**Batch Information**

Analytical Batch: MMS9551  
Analytical Method: EP200.8  
Analyst: ACF  
Analytical Date/Time: 09/27/16 18:33  
Container ID: 1165654021-B

Prep Batch: MXX30221  
Prep Method: E200.2  
Prep Date/Time: 09/27/16 09:52  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL



**Results of SWM06-04**

Client Sample ID: **SWM06-04**  
Client Project ID: **MOA Stormwater Management**  
Lab Sample ID: 1165654022  
Lab Project ID: 1165654

Collection Date: 09/22/16 12:40  
Received Date: 09/22/16 15:08  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	1.82	1.00	0.310	ug/L	1		09/27/16 18:36

**Batch Information**

Analytical Batch: MMS9551  
Analytical Method: EP200.8  
Analyst: ACF  
Analytical Date/Time: 09/27/16 18:36  
Container ID: 1165654022-B

Prep Batch: MXX30221  
Prep Method: E200.2  
Prep Date/Time: 09/27/16 09:52  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL



**Results of SWM07-04**

Client Sample ID: **SWM07-04**  
Client Project ID: **MOA Stormwater Management**  
Lab Sample ID: 1165654023  
Lab Project ID: 1165654

Collection Date: 09/22/16 13:05  
Received Date: 09/22/16 15:08  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	5.48	1.00	0.310	ug/L	1		09/27/16 18:39

**Batch Information**

Analytical Batch: MMS9551  
Analytical Method: EP200.8  
Analyst: ACF  
Analytical Date/Time: 09/27/16 18:39  
Container ID: 1165654023-B

Prep Batch: MXX30221  
Prep Method: E200.2  
Prep Date/Time: 09/27/16 09:52  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL



Results of **SWM08-04**

Client Sample ID: **SWM08-04**  
Client Project ID: **MOA Stormwater Management**  
Lab Sample ID: 1165654024  
Lab Project ID: 1165654

Collection Date: 09/22/16 13:15  
Received Date: 09/22/16 15:08  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	3.31	1.00	0.310	ug/L	1		09/27/16 18:42

**Batch Information**

Analytical Batch: MMS9551  
Analytical Method: EP200.8  
Analyst: ACF  
Analytical Date/Time: 09/27/16 18:42  
Container ID: 1165654024-B

Prep Batch: MXX30221  
Prep Method: E200.2  
Prep Date/Time: 09/27/16 09:52  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL



Results of **SWM08-04 DUP**

Client Sample ID: **SWM08-04 DUP**  
Client Project ID: **MOA Stormwater Management**  
Lab Sample ID: 1165654025  
Lab Project ID: 1165654

Collection Date: 09/22/16 13:15  
Received Date: 09/22/16 15:08  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	3.37	1.00	0.310	ug/L	1		09/27/16 19:03

**Batch Information**

Analytical Batch: MMS9551  
Analytical Method: EP200.8  
Analyst: ACF  
Analytical Date/Time: 09/27/16 19:03  
Container ID: 1165654025-B

Prep Batch: MXX30221  
Prep Method: E200.2  
Prep Date/Time: 09/27/16 09:52  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL





**Results of SWM09-04**

Client Sample ID: **SWM09-04**  
Client Project ID: **MOA Stormwater Management**  
Lab Sample ID: 1165654026  
Lab Project ID: 1165654

Collection Date: 09/22/16 13:45  
Received Date: 09/22/16 15:08  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	2.36	1.00	0.310	ug/L	1		09/27/16 19:06

**Batch Information**

Analytical Batch: MMS9551  
Analytical Method: EP200.8  
Analyst: ACF  
Analytical Date/Time: 09/27/16 19:06  
Container ID: 1165654026-B

Prep Batch: MXX30221  
Prep Method: E200.2  
Prep Date/Time: 09/27/16 09:52  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL



**Results of SWM10-04**

Client Sample ID: **SWM10-04**  
Client Project ID: **MOA Stormwater Management**  
Lab Sample ID: 1165654027  
Lab Project ID: 1165654

Collection Date: 09/22/16 13:55  
Received Date: 09/22/16 15:08  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Dissolved Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Copper	1.34	1.00	0.310	ug/L	1		09/27/16 19:09

**Batch Information**

Analytical Batch: MMS9551  
Analytical Method: EP200.8  
Analyst: ACF  
Analytical Date/Time: 09/27/16 19:09  
Container ID: 1165654027-B

Prep Batch: MXX30221  
Prep Method: E200.2  
Prep Date/Time: 09/27/16 09:52  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

## Method Blank

Blank ID: MB for HBN 1743795 [BOD/5560]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1354222

QC for Samples:

1165654001, 1165654002, 1165654005, 1165654006, 1165654007, 1165654008, 1165654009, 1165654010, 1165654011, 1165654012, 1165654013, 1165654014

## Results by SM21 5210B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Biochemical Oxygen Demand	2.00U	2.00	2.00	mg/L

## Batch Information

Analytical Batch: BOD5560

Analytical Method: SM21 5210B

Instrument:

Analyst: K.W

Analytical Date/Time: 9/23/2016 9:40:00PM

Print Date: 11/14/2016 9:50:12AM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1165654 [BOD5560]

Blank Spike Lab ID: 1354223

Date Analyzed: 09/23/2016 21:40

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1165654001, 1165654002, 1165654005, 1165654006, 1165654007, 1165654008, 1165654009, 1165654010, 1165654011, 1165654012, 1165654013, 1165654014

## Results by SM21 5210B

Parameter	Blank Spike (mg/L)			CL
	Spike	Result	Rec (%)	
Biochemical Oxygen Demand	198	191	97	( 84.6-115.4

## Batch Information

Analytical Batch: **BOD5560**  
Analytical Method: **SM21 5210B**  
Instrument:  
Analyst: **K.W**

Print Date: 11/14/2016 9:50:17AM

## Method Blank

Blank ID: MB for HBN 1743800 [BTF/15123]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1354238

QC for Samples:

1165654001, 1165654002, 1165654005, 1165654006, 1165654007, 1165654008, 1165654009, 1165654010, 1165654011, 1165654012, 1165654013, 1165654014

## Results by SM21 9222D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Fecal Coliform	1.00U	1.00	1.00	col/100mL

## Batch Information

Analytical Batch: BTF15123

Analytical Method: SM21 9222D

Instrument:

Analyst: AEE

Analytical Date/Time: 9/22/2016 4:10:00PM

Print Date: 11/14/2016 9:50:19AM

## Method Blank

Blank ID: MB for HBN 1743781 [MXX/30221]  
 Blank Lab ID: 1354139

Matrix: Water (Surface, Eff., Ground)

### QC for Samples:

1165654016, 1165654017, 1165654018, 1165654019, 1165654020, 1165654021, 1165654022, 1165654023, 1165654024,  
 1165654025, 1165654026, 1165654027

## Results by EP200.8

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Copper	0.500U	1.00	0.310	ug/L

## Batch Information

Analytical Batch: MMS9551  
 Analytical Method: EP200.8  
 Instrument: Perkin Elmer Nexlon P5  
 Analyst: ACF  
 Analytical Date/Time: 9/27/2016 9:12:56PM

Prep Batch: MXX30221  
 Prep Method: E200.2  
 Prep Date/Time: 9/27/2016 9:52:51AM  
 Prep Initial Wt./Vol.: 20 mL  
 Prep Extract Vol: 50 mL

Print Date: 11/14/2016 9:50:24AM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1165654 [MXX30221]

Blank Spike Lab ID: 1354140

Date Analyzed: 09/27/2016 18:03

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1165654016, 1165654017, 1165654018, 1165654019, 1165654020, 1165654021, 1165654022, 1165654023, 1165654024, 1165654025, 1165654026, 1165654027

## Results by EP200.8

Parameter	Blank Spike (ug/L)			CL
	Spike	Result	Rec (%)	
Copper	1000	972	97	( 85-115 )

## Batch Information

Analytical Batch: **MMS9551**

Analytical Method: **EP200.8**

Instrument: **Perkin Elmer Nexlon P5**

Analyst: **ACF**

Prep Batch: **MXX30221**

Prep Method: **E200.2**

Prep Date/Time: **09/27/2016 09:52**

Spike Init Wt./Vol.: 1000 ug/L Extract Vol: 50 mL

Dupe Init Wt./Vol.: Extract Vol:



### Matrix Spike Summary

Original Sample ID: 1354585  
MS Sample ID: 1354586 MS  
MSD Sample ID:

Analysis Date: 09/27/2016 18:06  
Analysis Date: 09/27/2016 18:09  
Analysis Date:  
Matrix: Drinking Water

QC for Samples: 1165654016, 1165654017, 1165654018, 1165654019, 1165654020, 1165654021, 1165654022, 1165654023, 1165654024

### Results by EP200.8

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Copper	3.58	1000	959	96				70-130		

### Batch Information

Analytical Batch: MMS9551  
Analytical Method: EP200.8  
Instrument: Perkin Elmer Nexlon P5  
Analyst: ACF  
Analytical Date/Time: 9/27/2016 6:09:28PM

Prep Batch: MXX30221  
Prep Method: DW Digest for Metals on ICP-MS  
Prep Date/Time: 9/27/2016 9:52:51AM  
Prep Initial Wt./Vol.: 20.00mL  
Prep Extract Vol: 50.00mL

Print Date: 11/14/2016 9:50:30AM





### Matrix Spike Summary

Original Sample ID: 1354587  
MS Sample ID: 1354588 MS  
MSD Sample ID:

Analysis Date: 09/27/2016 18:45  
Analysis Date: 09/27/2016 18:48  
Analysis Date:  
Matrix: Drinking Water

QC for Samples: 1165654016, 1165654017, 1165654018, 1165654019, 1165654020, 1165654021, 1165654022, 1165654023, 1165654024, 1165654025, 1165654026, 1165654027

### Results by EP200.8

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Copper	92.0	1000	1030	94				70-130		

### Batch Information

Analytical Batch: MMS9551  
Analytical Method: EP200.8  
Instrument: Perkin Elmer Nexlon P5  
Analyst: ACF  
Analytical Date/Time: 9/27/2016 6:48:22PM

Prep Batch: MXX30221  
Prep Method: DW Digest for Metals on ICP-MS  
Prep Date/Time: 9/27/2016 9:52:51AM  
Prep Initial Wt./Vol.: 20.00mL  
Prep Extract Vol: 50.00mL

Print Date: 11/14/2016 9:50:30AM

## Method Blank

Blank ID: MB for HBN 1744249 [MXX/30233]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1355339

QC for Samples:

1165654001, 1165654002, 1165654005, 1165654006, 1165654007, 1165654008, 1165654009, 1165654010, 1165654011, 1165654012, 1165654013, 1165654014

## Results by EP200.8

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Calcium	250U	500	150	ug/L
Magnesium	25.0U	50.0	15.0	ug/L

## Batch Information

Analytical Batch: MMS9559  
Analytical Method: EP200.8  
Instrument: Perkin Elmer Nexlon P5  
Analyst: VDL  
Analytical Date/Time: 10/3/2016 2:11:03PM

Prep Batch: MXX30233  
Prep Method: E200.2  
Prep Date/Time: 9/29/2016 4:00:34PM  
Prep Initial Wt./Vol.: 20 mL  
Prep Extract Vol: 50 mL

Print Date: 11/14/2016 9:50:31AM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1165654 [MXX30233]

Blank Spike Lab ID: 1355340

Date Analyzed: 10/03/2016 14:14

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1165654001, 1165654002, 1165654005, 1165654006, 1165654007, 1165654008, 1165654009, 1165654010, 1165654011, 1165654012, 1165654013, 1165654014

## Results by EP200.8

Parameter	Blank Spike (ug/L)			CL ( 85-115 )
	Spike	Result	Rec (%)	
Calcium	10000	10200	102	( 85-115 )
Magnesium	10000	10100	101	( 85-115 )

## Batch Information

Analytical Batch: **MMS9559**

Analytical Method: **EP200.8**

Instrument: **Perkin Elmer Nexlon P5**

Analyst: **VDL**

Prep Batch: **MXX30233**

Prep Method: **E200.2**

Prep Date/Time: **09/29/2016 16:00**

Spike Init Wt./Vol.: 10000 ug/L Extract Vol: 50 mL

Dupe Init Wt./Vol.: Extract Vol:

## Matrix Spike Summary

Original Sample ID: 1355341  
 MS Sample ID: 1355342 MS  
 MSD Sample ID:

Analysis Date: 10/03/2016 14:55  
 Analysis Date: 10/03/2016 14:58  
 Analysis Date:  
 Matrix: Drinking Water

QC for Samples: 1165654001, 1165654002, 1165654005, 1165654006, 1165654007, 1165654008

## Results by EP200.8

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Calcium	17400	10000	27500	100				70-130		
Magnesium	1660	10000	12700	110				70-130		

## Batch Information

Analytical Batch: MMS9559  
 Analytical Method: EP200.8  
 Instrument: Perkin Elmer Nexlon P5  
 Analyst: VDL  
 Analytical Date/Time: 10/3/2016 2:58:57PM

Prep Batch: MXX30233  
 Prep Method: DW Digest for Metals on ICP-MS  
 Prep Date/Time: 9/29/2016 4:00:34PM  
 Prep Initial Wt./Vol.: 20.00mL  
 Prep Extract Vol: 50.00mL

Print Date: 11/14/2016 9:50:36AM

## Matrix Spike Summary

Original Sample ID: 1355343  
 MS Sample ID: 1355344 MS  
 MSD Sample ID:

Analysis Date: 10/03/2016 14:17  
 Analysis Date: 10/03/2016 14:20  
 Analysis Date:  
 Matrix: Drinking Water

QC for Samples: 1165654001, 1165654002, 1165654005, 1165654006, 1165654007, 1165654008, 1165654009,  
 1165654010, 1165654011, 1165654012, 1165654013, 1165654014

## Results by EP200.8

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Calcium	122000	10000	125000	35 *				70-130		
Magnesium	6580	10000	16500	100				70-130		

## Batch Information

Analytical Batch: MMS9559  
 Analytical Method: EP200.8  
 Instrument: Perkin Elmer Nexlon P5  
 Analyst: VDL  
 Analytical Date/Time: 10/3/2016 2:20:01PM

Prep Batch: MXX30233  
 Prep Method: DW Digest for Metals on ICP-MS  
 Prep Date/Time: 9/29/2016 4:00:34PM  
 Prep Initial Wt./Vol.: 20.00mL  
 Prep Extract Vol: 50.00mL

Print Date: 11/14/2016 9:50:36AM

## Method Blank

Blank ID: MB for HBN 1743789 [STS/5220]

Blank Lab ID: 1354189

QC for Samples:

1165654001, 1165654002, 1165654005

Matrix: Water (Surface, Eff., Ground)

## Results by SM21 2540D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Total Suspended Solids	0.500U	1.00	0.310	mg/L

## Batch Information

Analytical Batch: STS5220

Analytical Method: SM21 2540D

Instrument:

Analyst: LLP

Analytical Date/Time: 9/23/2016 5:57:14PM

Print Date: 11/14/2016 9:50:40AM

## Duplicate Sample Summary

Original Sample ID: 1165626002

Duplicate Sample ID: 1354217

QC for Samples:

1165654001, 1165654002, 1165654005

Analysis Date: 09/23/2016 17:57

Matrix: Water (Surface, Eff., Ground)

## Results by SM21 2540D

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Suspended Solids	74.2	75.0	mg/L	1.10	(< 5 )

## Batch Information

Analytical Batch: STS5220

Analytical Method: SM21 2540D

Instrument:

Analyst: LLP

Print Date: 11/14/2016 9:50:41AM

## Duplicate Sample Summary

Original Sample ID: 1165654002

Duplicate Sample ID: 1354218

QC for Samples:

1165654001, 1165654002, 1165654005

Analysis Date: 09/23/2016 17:57

Matrix: Water (Surface, Eff., Ground)

## Results by SM21 2540D

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Suspended Solids	78.4	78.4	mg/L	0.00	(< 5 )

## Batch Information

Analytical Batch: STS5220

Analytical Method: SM21 2540D

Instrument:

Analyst: LLP

Print Date: 11/14/2016 9:50:41AM



## Blank Spike Summary

Blank Spike ID: LCS for HBN 1165654 [STS5220]  
 Blank Spike Lab ID: 1354190  
 Date Analyzed: 09/23/2016 17:57

Spike Duplicate ID: LCSD for HBN 1165654 [STS5220]  
 Spike Duplicate Lab ID: 1354191  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1165654001, 1165654002, 1165654005

## Results by SM21 2540D

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Total Suspended Solids	50	49.9	100	50	49.8	100	( 75-125 )	0.20	(< 5 )

## Batch Information

Analytical Batch: STS5220  
 Analytical Method: SM21 2540D  
 Instrument:  
 Analyst: LLP

## Method Blank

Blank ID: MB for HBN 1744124 [STS/5226]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1354770

QC for Samples:

1165654006, 1165654007, 1165654009, 1165654010, 1165654011, 1165654012, 1165654013, 1165654014

## Results by SM21 2540D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Total Suspended Solids	0.500U	1.00	0.310	mg/L

## Batch Information

Analytical Batch: STS5226

Analytical Method: SM21 2540D

Instrument:

Analyst: LLP

Analytical Date/Time: 9/27/2016 11:45:43AM

Print Date: 11/14/2016 9:50:46AM

## Duplicate Sample Summary

Original Sample ID: 1355022  
 Duplicate Sample ID: 1354848

Analysis Date: 09/27/2016 11:45  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1165654006, 1165654007, 1165654009, 1165654010, 1165654011, 1165654012, 1165654013, 1165654014

## Results by SM21 2540D

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Suspended Solids	333	359	mg/L	7.30*	(< 5 )

## Batch Information

Analytical Batch: STS5226  
 Analytical Method: SM21 2540D  
 Instrument:  
 Analyst: LLP

Print Date: 11/14/2016 9:50:47AM

## Duplicate Sample Summary

Original Sample ID: 1165722001

Duplicate Sample ID: 1354849

QC for Samples:

1165654012, 1165654013, 1165654014

Analysis Date: 09/27/2016 11:45

Matrix: Water (Surface, Eff., Ground)

## Results by SM21 2540D

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Suspended Solids	29.0	28.0	mg/L	3.50	(< 5 )

## Batch Information

Analytical Batch: STS5226

Analytical Method: SM21 2540D

Instrument:

Analyst: LLP

Print Date: 11/14/2016 9:50:47AM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1165654 [STS5226]  
 Blank Spike Lab ID: 1354771  
 Date Analyzed: 09/27/2016 11:45

Spike Duplicate ID: LCSD for HBN 1165654 [STS5226]  
 Spike Duplicate Lab ID: 1354772  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1165654006, 1165654007, 1165654009, 1165654010, 1165654011, 1165654012, 1165654013, 1165654014

## Results by SM21 2540D

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Total Suspended Solids	50	50.0	100	50	49.8	100	( 75-125 )	0.40	(< 5 )

## Batch Information

Analytical Batch: STS5226  
 Analytical Method: SM21 2540D  
 Instrument:  
 Analyst: LLP

## Method Blank

Blank ID: MB for HBN 1744196 [STS/5228]

Blank Lab ID: 1355101

QC for Samples:

1165654008

Matrix: Water (Surface, Eff., Ground)

## Results by SM21 2540D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Total Suspended Solids	0.500U	1.00	0.310	mg/L

## Batch Information

Analytical Batch: STS5228

Analytical Method: SM21 2540D

Instrument:

Analyst: LLP

Analytical Date/Time: 9/28/2016 3:14:59PM

Print Date: 11/14/2016 9:50:50AM

## Duplicate Sample Summary

Original Sample ID: 1165654008

Duplicate Sample ID: 1355610

QC for Samples:

1165654008

Analysis Date: 09/28/2016 15:14

Matrix: Water (Surface, Eff., Ground)

## Results by SM21 2540D

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Suspended Solids	380	375	mg/L	1.30	(< 5 )

## Batch Information

Analytical Batch: STS5228

Analytical Method: SM21 2540D

Instrument:

Analyst: LLP

Print Date: 11/14/2016 9:50:51AM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1165654 [STS5228]  
 Blank Spike Lab ID: 1355102  
 Date Analyzed: 09/28/2016 15:14

Spike Duplicate ID: LCSD for HBN 1165654 [STS5228]  
 Spike Duplicate Lab ID: 1355103  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1165654008

## Results by SM21 2540D

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Total Suspended Solids	50	50.1	100	50	49.8	100	( 75-125 )	0.60	(< 5 )

## Batch Information

Analytical Batch: STS5228  
 Analytical Method: SM21 2540D  
 Instrument:  
 Analyst: LLP

Print Date: 11/14/2016 9:50:52AM



## Method Blank

Blank ID: MB for HBN 1744187 [VXX/29653]  
 Blank Lab ID: 1355076

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
 1165654002, 1165654005, 1165654008, 1165654010

## Results by EPA 602/624

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,2-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,3-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,4-Dichlorobenzene	0.250U	0.500	0.150	ug/L
Benzene	0.200U	0.400	0.120	ug/L
Chlorobenzene	0.250U	0.500	0.150	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
Toluene	0.500U	1.00	0.310	ug/L
<b>Surrogates</b>				
1,2-Dichloroethane-D4 (surr)	99.5	81-118		%
4-Bromofluorobenzene (surr)	97.4	85-114		%
Toluene-d8 (surr)	101	89-112		%

## Batch Information

Analytical Batch: VMS16225  
 Analytical Method: EPA 602/624  
 Instrument: VSA Agilent GC/MS 7890B/5977A  
 Analyst: TJT  
 Analytical Date/Time: 9/27/2016 4:49:00PM

Prep Batch: VXX29653  
 Prep Method: SW5030B  
 Prep Date/Time: 9/27/2016 6:00:00AM  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1165654 [VXX29653]  
 Blank Spike Lab ID: 1355077  
 Date Analyzed: 09/27/2016 17:05

Spike Duplicate ID: LCSD for HBN 1165654 [VXX29653]  
 Spike Duplicate Lab ID: 1355078  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1165654002, 1165654005, 1165654008, 1165654010

## Results by EPA 602/624

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,2-Dichlorobenzene	30	29.8	99	30	30.7	102	( 80-119 )	2.90	(< 20 )
1,3-Dichlorobenzene	30	29.8	99	30	31.2	104	( 80-119 )	4.50	(< 20 )
1,4-Dichlorobenzene	30	30.9	103	30	32.1	107	( 79-118 )	3.80	(< 20 )
Benzene	30	29.6	99	30	29.8	99	( 79-120 )	0.77	(< 20 )
Chlorobenzene	30	30.4	101	30	31.0	103	( 82-118 )	1.80	(< 20 )
Ethylbenzene	30	31.3	104	30	32.1	107	( 79-121 )	2.40	(< 20 )
o-Xylene	30	31.7	106	30	32.7	109	( 78-122 )	3.20	(< 20 )
P & M -Xylene	60	62.8	105	60	63.1	105	( 80-121 )	0.44	(< 20 )
Toluene	30	29.9	100	30	30.3	101	( 80-121 )	1.40	(< 20 )

## Surrogates

1,2-Dichloroethane-D4 (surr)	30	96.2	96	30	95.4	95	( 81-118 )	0.80
4-Bromofluorobenzene (surr)	30	96.6	97	30	96.9	97	( 85-114 )	0.31
Toluene-d8 (surr)	30	101	101	30	100	100	( 89-112 )	0.27

## Batch Information

Analytical Batch: **VMS16225**  
 Analytical Method: **EPA 602/624**  
 Instrument: **VSA Agilent GC/MS 7890B/5977A**  
 Analyst: **TJT**

Prep Batch: **VXX29653**  
 Prep Method: **SW5030B**  
 Prep Date/Time: **09/27/2016 06:00**  
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL  
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL



### Billable Matrix Spike Summary

Original Sample ID: 1165654002  
MS Sample ID: 1165654003 BMS  
MSD Sample ID: 1165654004 BMSD

Analysis Date: 09/27/2016 22:57  
Analysis Date: 09/28/2016 1:08  
Analysis Date: 09/28/2016 1:24  
Matrix: Water (Surface, Eff., Ground)

QC for Samples:

### Results by EPA 602/624

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,2-Dichlorobenzene	0.500U	30.0	29	97	30.0	30.3	101	80-119	4.10	(< 20 )
1,3-Dichlorobenzene	0.500U	30.0	29.7	99	30.0	29.5	98	80-119	0.68	(< 20 )
1,4-Dichlorobenzene	0.250U	30.0	31.1	104	30.0	30.1	100	79-118	3.30	(< 20 )
Benzene	0.200U	30.0	30.4	101	30.0	29.2	97	79-120	4.00	(< 20 )
Chlorobenzene	0.250U	30.0	30.3	101	30.0	29.6	99	82-118	2.30	(< 20 )
Ethylbenzene	0.500U	30.0	31.8	106	30.0	31.7	106	79-121	0.25	(< 20 )
o-Xylene	0.500U	30.0	31.7	106	30.0	32.8	109	78-122	3.50	(< 20 )
P & M -Xylene	1.00U	60.0	64	107	60.0	62.9	105	80-121	1.70	(< 20 )
Toluene	0.350J	30.0	30.5	101	30.0	30.7	101	80-121	0.62	(< 20 )
<b>Surrogates</b>										
1,2-Dichloroethane-D4 (surr)		30.0	29.2	97	30.0	28.9	96	81-118	1.00	
4-Bromofluorobenzene (surr)		30.0	29.5	98	30.0	29.4	98	85-114	0.37	
Toluene-d8 (surr)		30.0	29.7	99	30.0	29.5	98	89-112	0.78	

### Batch Information

Analytical Batch: VMS16225  
Analytical Method: EPA 602/624  
Instrument: VSA Agilent GC/MS 7890B/5977A  
Analyst: TJT  
Analytical Date/Time: 9/28/2016 1:08:00AM

Prep Batch: VXX29653  
Prep Method: Volatiles Extraction 8240/8260 FULL  
Prep Date/Time: 9/27/2016 6:00:00AM  
Prep Initial Wt./Vol.: 5.00mL  
Prep Extract Vol: 5.00mL

Print Date: 11/14/2016 9:50:58AM

## Method Blank

Blank ID: MB for HBN 1744735 [VXX/29707]

Blank Lab ID: 1356733

QC for Samples:

1165654013, 1165654015

Matrix: Water (Surface, Eff., Ground)

## Results by EPA 602/624

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,2-Dichlorobenzene	0.510J	1.00	0.310	ug/L
1,3-Dichlorobenzene	0.430J	1.00	0.310	ug/L
1,4-Dichlorobenzene	0.360J	0.500	0.150	ug/L
Benzene	0.200U	0.400	0.120	ug/L
Chlorobenzene	0.180J	0.500	0.150	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	0.810J	2.00	0.620	ug/L
Toluene	0.500U	1.00	0.310	ug/L
<b>Surrogates</b>				
1,2-Dichloroethane-D4 (surr)	104	81-118		%
4-Bromofluorobenzene (surr)	102	85-114		%
Toluene-d8 (surr)	106	89-112		%

## Batch Information

Analytical Batch: VMS16248  
 Analytical Method: EPA 602/624  
 Instrument: VPA 780/5975 GC/MS  
 Analyst: TJT  
 Analytical Date/Time: 10/3/2016 5:53:00PM

Prep Batch: VXX29707  
 Prep Method: SW5030B  
 Prep Date/Time: 10/3/2016 6:00:00AM  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL

Print Date: 11/14/2016 9:50:59AM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1165654 [VXX29707]  
 Blank Spike Lab ID: 1356734  
 Date Analyzed: 10/03/2016 18:10

Spike Duplicate ID: LCSD for HBN 1165654 [VXX29707]  
 Spike Duplicate Lab ID: 1356735  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1165654013, 1165654015

## Results by EPA 602/624

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,2-Dichlorobenzene	30	29.6	99	30	30.4	101	( 80-119 )	2.90	(< 20 )
1,3-Dichlorobenzene	30	29.7	99	30	30.8	103	( 80-119 )	3.60	(< 20 )
1,4-Dichlorobenzene	30	30.2	101	30	31.9	106	( 79-118 )	5.30	(< 20 )
Benzene	30	31.8	106	30	31.9	106	( 79-120 )	0.09	(< 20 )
Chlorobenzene	30	29.3	98	30	29.4	98	( 82-118 )	0.41	(< 20 )
Ethylbenzene	30	31.0	103	30	31.8	106	( 79-121 )	2.70	(< 20 )
o-Xylene	30	29.5	99	30	30.5	102	( 78-122 )	3.20	(< 20 )
P & M -Xylene	60	56.0	93	60	58.4	97	( 80-121 )	4.20	(< 20 )
Toluene	30	30.4	101	30	29.1	97	( 80-121 )	4.30	(< 20 )

## Surrogates

1,2-Dichloroethane-D4 (surr)	30	98.1	98	30	95.8	96	( 81-118 )	2.40	
4-Bromofluorobenzene (surr)	30	105	105	30	108	108	( 85-114 )	3.20	
Toluene-d8 (surr)	30	99.6	100	30	94	94	( 89-112 )	5.70	

## Batch Information

Analytical Batch: **VMS16248**  
 Analytical Method: **EPA 602/624**  
 Instrument: **VPA 780/5975 GC/MS**  
 Analyst: **TJT**

Prep Batch: **VXX29707**  
 Prep Method: **SW5030B**  
 Prep Date/Time: **10/03/2016 06:00**  
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL  
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL



### Method Blank

Blank ID: MB for HBN 1744109 [XXX/36393]  
Blank Lab ID: 1354685

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
1165654002, 1165654005, 1165654008, 1165654010, 1165654013

### Results by EPA 625M SIM (PAH)

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Acenaphthene	0.0250U	0.0500	0.0150	ug/L
Acenaphthylene	0.0250U	0.0500	0.0150	ug/L
Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo(a)Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo[a]pyrene	0.0100U	0.0200	0.00620	ug/L
Benzo[b]Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Benzo[g,h,i]perylene	0.0250U	0.0500	0.0150	ug/L
Benzo[k]fluoranthene	0.0250U	0.0500	0.0150	ug/L
Chrysene	0.0250U	0.0500	0.0150	ug/L
Dibenzo[a,h]anthracene	0.0100U	0.0200	0.00620	ug/L
Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Fluorene	0.0250U	0.0500	0.0150	ug/L
Indeno[1,2,3-c,d] pyrene	0.0250U	0.0500	0.0150	ug/L
Naphthalene	0.0500U	0.100	0.0310	ug/L
Phenanthrene	0.0250U	0.0500	0.0150	ug/L
Pyrene	0.0250U	0.0500	0.0150	ug/L
<b>Surrogates</b>				
2-Fluorobiphenyl (surr)	89.3	53-106		%
Terphenyl-d14 (surr)	90.5	58-132		%

### Batch Information

Analytical Batch: XMS9640  
Analytical Method: EPA 625M SIM (PAH)  
Instrument: SVA Agilent 780/5975 GC/MS  
Analyst: S.G  
Analytical Date/Time: 9/28/2016 3:42:00AM

Prep Batch: XXX36393  
Prep Method: SW3520C  
Prep Date/Time: 9/27/2016 8:42:18AM  
Prep Initial Wt./Vol.: 1000 mL  
Prep Extract Vol: 1 mL

Print Date: 11/14/2016 9:51:03AM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1165654 [XXX36393]  
 Blank Spike Lab ID: 1354686  
 Date Analyzed: 09/28/2016 04:03

Spike Duplicate ID: LCSD for HBN 1165654 [XXX36393]  
 Spike Duplicate Lab ID: 1354687  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1165654002, 1165654005, 1165654008, 1165654010, 1165654013

## Results by EPA 625M SIM (PAH)

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Acenaphthene	0.5	0.498	100	0.5	0.493	99	( 48-114 )	1.10	(< 20 )
Acenaphthylene	0.5	0.430	86	0.5	0.427	85	( 35-121 )	0.80	(< 20 )
Anthracene	0.5	0.414	83	0.5	0.400	80	( 53-119 )	3.40	(< 20 )
Benzo(a)Anthracene	0.5	0.412	82	0.5	0.398	80	( 59-120 )	3.40	(< 20 )
Benzo[a]pyrene	0.5	0.393	79	0.5	0.357	71	( 53-120 )	9.60	(< 20 )
Benzo[b]Fluoranthene	0.5	0.381	76	0.5	0.368	74	( 53-126 )	3.50	(< 20 )
Benzo[g,h,i]perylene	0.5	0.349	70	0.5	0.325	65	( 44-128 )	7.30	(< 20 )
Benzo[k]fluoranthene	0.5	0.378	76	0.5	0.358	72	( 54-125 )	5.70	(< 20 )
Chrysene	0.5	0.438	88	0.5	0.425	85	( 57-120 )	3.10	(< 20 )
Dibenzo[a,h]anthracene	0.5	0.337	67	0.5	0.316	63	( 44-131 )	6.30	(< 20 )
Fluoranthene	0.5	0.436	87	0.5	0.427	85	( 58-120 )	2.10	(< 20 )
Fluorene	0.5	0.422	84	0.5	0.420	84	( 50-118 )	0.42	(< 20 )
Indeno[1,2,3-c,d] pyrene	0.5	0.346	69	0.5	0.322	64	( 48-130 )	7.20	(< 20 )
Naphthalene	0.5	0.427	86	0.5	0.424	85	( 43-114 )	0.83	(< 20 )
Phenanthrene	0.5	0.408	82	0.5	0.398	80	( 53-115 )	2.40	(< 20 )
Pyrene	0.5	0.462	92	0.5	0.451	90	( 53-121 )	2.20	(< 20 )
<b>Surrogates</b>									
2-Fluorobiphenyl (surr)	0.5	88.4	88	0.5	88.6	89	( 53-106 )	0.29	
Terphenyl-d14 (surr)	0.5	89.1	89	0.5	89	89	( 58-132 )	0.09	

## Batch Information

Analytical Batch: XMS9640  
 Analytical Method: EPA 625M SIM (PAH)  
 Instrument: SVA Agilent 780/5975 GC/MS  
 Analyst: S.G

Prep Batch: XXX36393  
 Prep Method: SW3520C  
 Prep Date/Time: 09/27/2016 08:42  
 Spike Init Wt./Vol.: 0.5 ug/L Extract Vol: 1 mL  
 Dupe Init Wt./Vol.: 0.5 ug/L Extract Vol: 1 mL

## Billable Matrix Spike Summary

Original Sample ID: 1165654002  
 MS Sample ID: 1165654003 BMS  
 MSD Sample ID: 1165654004 BMSD

Analysis Date: 09/28/2016 4:41  
 Analysis Date: 09/28/2016 5:04  
 Analysis Date: 09/28/2016 5:26  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples:

## Results by EPA 625M SIM (PAH)

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Acenaphthene	0.0266U	0.538	.472	88	0.543	0.491	90	48-114	3.90	(< 20 )
Acenaphthylene	0.0213J	0.538	.405	71	0.543	0.432	76	35-121	6.50	(< 20 )
Anthracene	0.0426J	0.538	.374	62	0.543	0.390	64	53-119	4.40	(< 20 )
Benzo(a)Anthracene	0.145	0.538	.459	58 *	0.543	0.504	66	59-120	9.40	(< 20 )
Benzo[a]pyrene	0.302	0.538	.628	61	0.543	0.625	59	53-120	0.47	(< 20 )
Benzo[b]Fluoranthene	0.651	0.538	1.09	81	0.543	1.17	95	53-126	7.10	(< 20 )
Benzo[g,h,i]perylene	0.530	0.538	.995	87	0.543	0.958	79	44-128	3.70	(< 20 )
Benzo[k]fluoranthene	0.180	0.538	.485	57	0.543	0.461	52 *	54-125	5.00	(< 20 )
Chrysene	0.400	0.538	.792	73	0.543	0.868	86	57-120	9.20	(< 20 )
Dibenzo[a,h]anthracene	0.0107U	0.538	.362	67	0.543	0.358	66	44-131	1.10	(< 20 )
Fluoranthene	0.414	0.538	.834	78	0.543	0.878	85	58-120	5.10	(< 20 )
Fluorene	0.0266U	0.538	.433	81	0.543	0.432	80	50-118	0.35	(< 20 )
Indeno[1,2,3-c,d] pyrene	0.383	0.538	.772	72	0.543	0.763	70	48-130	1.10	(< 20 )
Naphthalene	0.0530U	0.538	.359	67	0.543	0.366	67	43-114	1.80	(< 20 )
Phenanthrene	0.148	0.538	.482	62	0.543	0.517	68	53-115	6.90	(< 20 )
Pyrene	0.335	0.538	.731	74	0.543	0.789	84	53-121	7.60	(< 20 )
<b>Surrogates</b>										
2-Fluorobiphenyl (surr)		0.538	.433	81	0.543	0.459	84	53-106	5.90	
Terphenyl-d14 (surr)		0.538	.323	60	0.543	0.347	64	58-132	7.20	

## Batch Information

Analytical Batch: XMS9642  
 Analytical Method: EPA 625M SIM (PAH)  
 Instrument: Agilent GC 7890B/5977A SWA  
 Analyst: BRV  
 Analytical Date/Time: 9/28/2016 5:04:00AM

Prep Batch: XXX36393  
 Prep Method: Liquid/Liquid Extraction for 625 SIMS  
 Prep Date/Time: 9/27/2016 8:42:18AM  
 Prep Initial Wt./Vol.: 930.00mL  
 Prep Extract Vol: 1.00mL

Print Date: 11/14/2016 9:51:07AM



1165654



Chain of Custody Record

To: SGS Environmental Services, Inc.  
2100 West Potter Drive  
Anchorage, AK 99518  
(907) 562-2343  
(907) 561-5301 Fax  
Contact: Forest Taylor

From: Kinnetic Laboratories, Inc  
704 West 2nd Avenue  
Anchorage, AK 99501  
(907) 276-6178  
Contact: Mark Savoie

SGS Quote No. 337618 **B:ll to moA**

Date Received:

Lab #:

Project: MOA Stormwater Management Matrix: Water Project #: 5078

Note: Samples contain sodium thiosulfate for dechlorination

Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM01-04	1040-3	9/22/14	1025	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	11A	
SWM02-04	847-1		1050	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	12A	
SWM02-04 Dup	847-1		1050	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	13A	
SWM03-04	1224-1		1135	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	14A	
SWM04-04	1224-2		1145	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	15A	
SWM05-04	207-1		1205	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	16A	
SWM06-04	314-22		1240	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	17A	
SWM07-04	484-1		1305	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	18A	
SWM08-04	86-1		1315	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	19A	
SWM08-04 Dup	86-1		1315	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	20A	
SWM09-04	499-1		1345	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	21A	
SWM10-04	525-2		1355	Samp	Fecal (SM 9222D)	125-ml sterile	<10 °C	1	22A	

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLL. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

Sampled and Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
Man [Signature]	9/22/14 1508	hooS	[Signature]	
Relinquished By:		Transporter	Received By:	9/22/16 15:08

1165654



Chain of Custody Record

To: SGS Environmental Services, Inc.  
2100 West Potter Drive  
Anchorage, AK 99518  
(907) 562-2343  
(907) 561-5301 Fax  
Contact: Forest Taylor

From: Kinnetic Laboratories, Inc.  
704 West 2nd Avenue  
Anchorage, AK 99501  
(907) 276-6178  
Contact: Mark Savoie

SGS Quote No. 337618  
Date Received:  
Lab #:  
Bill to MDA

Project: MOA Stormwater Management  
Matrix: Water  
Project #: 5078

Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM01-04	1040-3	9/22/16	1025	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	11B	
SWM02-04	847-1		1050	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	12B	
SWM02-04 Dup	847-1		1050	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	15B	
SWM03-04	1224-1		1135	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	16B	
SWM04-04	1224-2		1145	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	17B	
SWM05-04	207-1		1205	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	18B	
SWM06-04	314-22		1240	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	19B	
SWM07-04	484-1		1305	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	20B	
SWM08-04	86-1		1315	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	21B	
SWM08-04 Dup	86-1		1315 (2450)	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	12B	
SWM09-04	499-1		1345	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	13B	
SWM10-04	525-2		1355	Samp	BOD (SM 5210B)	1-L HDPE	≤ 6 °C	1	14B	

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

Sampled and Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
Mark Savoie	9/22/16 1500	WMS	Mark Savoie	9/22/16 15:08
Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:

1165654



Chain of Custody Record

From:  
Kinnetic Laboratories, Inc  
704 West 2nd Avenue  
Anchorage, AK 99501  
(907) 276-6178  
Contact: Mark Savoie

SGS Quote No. 337618 Bill to MOA  
Date Received:  
Lab #:

To:  
SGS Environmental Services, Inc.  
2100 West Potter Drive  
Anchorage, AK 99518  
(907) 562-2343  
(907) 561-5301 Fax  
Contact: Forest Taylor

Project: MOA Stormwater Management Matrix: Water Project #: 5078  
Complete by: 2 weeks

Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM01-04	1040-3	9/22/16	1025	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	106	
SWM02-04	847-1		1050	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	107	
SWM02-04 Dup	847-1		1050	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	108	
SWM03-04	1224-1		1135	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	109	
SWM04-04	1224-2		1145	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	110	
SWM05-04	207-1		1205	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	111	
SWM06-04	314-22		1240	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	112	
SWM07-04	484-1		1305	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	113	
SWM08-04	86-1		1315	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	114	
SWM08-04 Dup	86-1		1315	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	115	
SWM09-04	499-1		1345	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	116	
SWM10-04	525-2		1355	Samp	TSS (SM 2540D)	1-L HDPE	≤ 6 °C	1	117	

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

Sampled and Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
Mark Brown	9/22/16 1508	WMS	Mark Brown	9/22/16 15:08
Relinquished By:		Transporter	Received By:	

1165654

Chain of Custody Record

To: SGS Environmental Services, Inc.  
 2100 West Potter Drive  
 Anchorage, AK 99518  
 (907) 562-2343  
 (907) 561-5301 Fax  
 Contact: Forest Taylor

From: Kinnetic Laboratories, Inc  
 704 West 2nd Avenue  
 Anchorage, AK 99501  
 (907) 276-6178  
 Contact: Mark Savoie

SGS Quote No. 337618 **Bill to MOA**

Date Received:

Lab #:



Project: MOA Stormwater Management Matrix: Water Project #: 5078

Complete by: 2 weeks

Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM01-04	1040-3	9/22/16	1025	Samp	Total Hardness (EPA 200.8)	125-ml HDPE	Nitric, ≤6°C	1	10	
SWM02-04	847-1	/	1050	Samp	Total Hardness (EPA 200.8)	125-ml HDPE	Nitric, ≤6°C	1	20	
SWM02-04 Dup	847-1		1050	Samp	Total Hardness (EPA 200.8)	125-ml HDPE	Nitric, ≤6°C	1	30	
SWM03-04	1224-1		1135	Samp	Total Hardness (EPA 200.8)	125-ml HDPE	Nitric, ≤6°C	1	40	
SWM04-04	1224-2		1145	Samp	Total Hardness (EPA 200.8)	125-ml HDPE	Nitric, ≤6°C	1	20	
SWM05-04	207-1		1205	Samp	Total Hardness (EPA 200.8)	125-ml HDPE	Nitric, ≤6°C	1	80	
SWM06-04	314-22		1240	Samp	Total Hardness (EPA 200.8)	125-ml HDPE	Nitric, ≤6°C	1	90	
SWM07-04	484-1		1305	Samp	Total Hardness (EPA 200.8)	125-ml HDPE	Nitric, ≤6°C	1	100	
SWM08-04	86-1		1315	Samp	Total Hardness (EPA 200.8)	125-ml HDPE	Nitric, ≤6°C	1	110	
SWM08-04 Dup	86-1		1315	Samp	Total Hardness (EPA 200.8)	125-ml HDPE	Nitric, ≤6°C	1	120	
SWM09-04	499-1		1345	Samp	Total Hardness (EPA 200.8)	125-ml HDPE	Nitric, ≤6°C	1	130	
SWM10-04	525-2	1355	Samp	Total Hardness (EPA 200.8)	125-ml HDPE	Nitric, ≤6°C	1	140		

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

Sampled and Relinquished By:	Date/Time:	Transporter:	Received By:	Date/Time:
Mark Ann	9/22/16 1508	Hand	Mark Ann	9/22/16 15:08
Relinquished By:	Date/Time:	Transporter:	Received By:	Date/Time:
			Mark Ann	9/22/16 15:08

1165654



Chain of Custody Record

From:  
 Kinnetic Laboratories, Inc  
 704 West 2nd Avenue  
 Anchorage, AK 99501  
 (907) 276-6178  
 Contact: Mark Savoie

SGS Quote No. 337618 **Bill to MOA**  
 Date Received:  
 Lab #:

To:  
 SGS Environmental Services, Inc.  
 2100 West Potter Drive  
 Anchorage, AK 99518  
 (907) 562-2343  
 (907) 561-5301 Fax  
 Contact: Forest Taylor

Project #: 5078

Matrix: Water

Project: MOA Stormwater Management

Complete by: 2 weeks

Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM02-04	847-1	9/22/14	1050	Samp/MS/MSD	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	9	039 A-2	
SWM02-04 Dup	847-1		1050	Samp	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3	5 E-6	
SWM05-04	207-1		1205	Samp	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3	8 E-6	
SWM07-04	484-1		1305	Samp	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3	10 E-6	
SWM09-04	499-1		1345	Samp	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3	13 E-6	
Trip Blank	N/A	N/A	N/A	TB	TAH (EPA 602/624)	40-ml VOA	HCl, ≤6°C	3	15 A-2	

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

Sampled and Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
Mark A. Finn	9/22/14 1508	hms	Mark Savoie	9/22/14 1508
Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:

1165654

Chain of Custody Record

From: Kinnetic Laboratories, Inc.  
704 West 2nd Avenue  
Anchorage, AK 99501  
(907) 276-6178  
Contact: Mark Savoie

SGS Quote No. 337618 **B:IL to MOA**  
Date Received:  
Lab #:

To: SGS Environmental Services, Inc.  
2100 West Potter Drive  
Anchorage, AK 99518  
(907) 562-2343  
(907) 561-5301 Fax  
Contact: Forest Taylor

Project: MOA Stormwater Management  
Matrix: Water  
Project #: 5078

Sample ID	Outfall/ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM02-04	847-1	9/22/14	1050	Samp/MS/MSD	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	6	H-I O-E	
SWM02-04 Dup	847-1	/	1050	Samp	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	2	H-I	
SWM05-04	207-1	/	1205	Samp	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	2	H-I	
SWM07-04	484-1	/	1305	Samp	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	2	H-I	
SWM09-04	499-1	/	1345	Samp	TAqH (EPA 625M SIM)	1-L AG	≤ 6 °C	2	H-I	

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments:

Sampled and Relinquished By:	Transporter	Received By:	Date/Time:
Mark Amos	hms	Mmm Wll	9/22/14 1506
Relinquished By:	Transporter	Received By:	Date/Time:
			9/22/14 1508

# 1165654



## Chain of Custody Record

<b>To:</b> SGS Environmental Services, Inc. 2100 West Potter Drive Anchorage, AK 99518 (907) 562-2343 (907) 561-5301 Fax Contact: Forest Taylor	<b>From:</b> Kinnetic Laboratories, Inc 704 West 2nd Avenue Anchorage, AK 99501 (907) 276-6178 Contact: Mark Savoie
SGS Quote No. 337618 - Bill to MOA Date Received: Lab #:	Project #: 5078 Matrix: Water Project: MOA Stormwater Management Complete by: 2 weeks

Sample ID	Outfall ID	Sample Date	Sample Time	Sample Type	Analysis	Container	Pres	No. of Bottles	Lab ID	Condition Upon Receipt
SWM01-04	1040-3	9/22/16	1025	Samp	Dissolved Cu (EPA 200.8)	125-ml HDPE	≤ 6 °C	1	16 A-B	
SWM02-04	847-1		1050	Samp	Dissolved Cu (EPA 200.8)	125-ml HDPE	≤ 6 °C	1	17 A-B	
SWM02-04 Dup	847-1		1050	Samp	Dissolved Cu (EPA 200.8)	125-ml HDPE	≤ 6 °C	1	18 A-B	
SWM03-04	1224-1		1135	Samp	Dissolved Cu (EPA 200.8)	125-ml HDPE	≤ 6 °C	1	19 A-B	
SWM04-04	1224-2		1145	Samp	Dissolved Cu (EPA 200.8)	125-ml HDPE	≤ 6 °C	1	20 A-B	
SWM05-04	207-1		1205	Samp	Dissolved Cu (EPA 200.8)	125-ml HDPE	≤ 6 °C	1	21 A-B	
SWM06-04	314-22		1240	Samp	Dissolved Cu (EPA 200.8)	125-ml HDPE	≤ 6 °C	1	22 A-B	
SWM07-04	484-1		1305	Samp	Dissolved Cu (EPA 200.8)	125-ml HDPE	≤ 6 °C	1	23 A-B	
SWM08-04	86-1		1315	Samp	Dissolved Cu (EPA 200.8)	125-ml HDPE	≤ 6 °C	1	24 A-B	
SWM08-04 Dup	86-1		1315	Samp	Dissolved Cu (EPA 200.8)	125-ml HDPE	≤ 6 °C	1	25 A-B	
SWM09-04	499-1		1345	Samp	Dissolved Cu (EPA 200.8)	125-ml HDPE	≤ 6 °C	1	26 A-B	
SWM10-04	525-2		1355	Samp	Dissolved Cu (EPA 200.8)	125-ml HDPE	≤ 6 °C	1	27 A-B	

Data Report MUST include the following: Sample ID, Analytical Method, Detection Limit, Date of Extraction if applicable, Date of Analysis, Analytical Results and Signature of QA Reviewer. Submit all data in digital formats to KLI. Email digital reports to msavoie@kinneticlabs.com. All times on this sheet are military time.

Special Instructions/Comments: Dissolved Copper must be Filtered & Preserved at Lab

Sampled and Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:
Mark A	9/23/16 1508	hand	Mmm Wm	9/22/16 15:08
Relinquished By:	Date/Time:	Transporter	Received By:	Date/Time:

TB: Chilled for all CS: Absent hand Delivered



e-SAMPLE RECEIPT FORM

1165654



1 1 6 5 6 5 4

Review Criteria	Y/N (yes/no)	Exceptions Noted below
Were Custody Seals intact? Note # & location	<input type="checkbox"/>	<input checked="" type="checkbox"/> exemption permitted if sampler hand carries/delivers.
COC accompanied samples?	<input checked="" type="checkbox"/>	Absent
<input type="checkbox"/> **exemption permitted if chilled & collected <8hrs ago or chilling not required (i.e., waste, oil)	<input type="checkbox"/>	
Temperature blank compliant* (i.e., 0-6 °C after CF)?	<input checked="" type="checkbox"/>	Cooler ID: 1 @ chilled °C Therm ID:
	<input checked="" type="checkbox"/>	Cooler ID: 2 @ chilled °C Therm ID:
	<input checked="" type="checkbox"/>	Cooler ID: 3 @ chilled °C Therm ID:
	<input checked="" type="checkbox"/>	Cooler ID: @ °C Therm ID:
	<input checked="" type="checkbox"/>	Cooler ID: @ °C Therm ID:
*If >6°C, were samples collected <8 hours ago?	<input checked="" type="checkbox"/>	
If <0°C, were sample containers ice free?	<input checked="" type="checkbox"/>	
If samples received <u>without</u> a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "COOLER TEMP" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note "ambient" or "chilled".		
Note: Identify containers received at non-compliant temperature. Use form FS-0029 if more space is needed.		
Note: Refer to form F-083 "Sample Guide" for hold times.		
Were samples received within hold time?	<input checked="" type="checkbox"/>	
Do samples <b>match COC**</b> (i.e., sample IDs, dates/times collected)?	<input checked="" type="checkbox"/>	
**Note: If times differ <1hr, record details & login per COC.		
Were analyses requested unambiguous?	<input checked="" type="checkbox"/>	
Were proper containers (type/mass/volume/preservative***)used?	<input checked="" type="checkbox"/>	<input type="checkbox"/> ***Exemption permitted for metals (e.g, 200.8/6020A).
<b>IF APPLICABLE</b>		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	<input checked="" type="checkbox"/>	
Were all VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	<input checked="" type="checkbox"/>	
Were all soil VOAs field extracted with MeOH+BFB?	<input checked="" type="checkbox"/>	
<b>Note to Client:</b> Any "no" answer above indicates non-compliance with standard procedures and may impact data quality.		
Additional notes (if applicable):		





### Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1165654001-A	Na2S2O3 for Chlorine Redu	OK	1165654006-C	No Preservative Required	OK
1165654001-B	No Preservative Required	OK	1165654006-D	HNO3 to pH < 2	OK
1165654001-C	No Preservative Required	OK	1165654007-A	Na2S2O3 for Chlorine Redu	OK
1165654001-D	HNO3 to pH < 2	OK	1165654007-B	No Preservative Required	OK
1165654002-A	Na2S2O3 for Chlorine Redu	OK	1165654007-C	No Preservative Required	OK
1165654002-B	No Preservative Required	OK	1165654007-D	HNO3 to pH < 2	OK
1165654002-C	No Preservative Required	OK	1165654008-A	Na2S2O3 for Chlorine Redu	OK
1165654002-D	HNO3 to pH < 2	OK	1165654008-B	No Preservative Required	OK
1165654002-E	HCL to pH < 2	OK	1165654008-C	No Preservative Required	OK
1165654002-F	HCL to pH < 2	OK	1165654008-D	HNO3 to pH < 2	OK
1165654002-G	HCL to pH < 2	OK	1165654008-E	HCL to pH < 2	OK
1165654002-H	No Preservative Required	OK	1165654008-F	HCL to pH < 2	OK
1165654002-I	No Preservative Required	OK	1165654008-G	HCL to pH < 2	OK
1165654003-A	HCL to pH < 2	OK	1165654008-H	No Preservative Required	OK
1165654003-B	HCL to pH < 2	OK	1165654008-I	No Preservative Required	OK
1165654003-C	HCL to pH < 2	OK	1165654009-A	Na2S2O3 for Chlorine Redu	OK
1165654003-D	No Preservative Required	OK	1165654009-B	No Preservative Required	OK
1165654003-E	No Preservative Required	OK	1165654009-C	No Preservative Required	OK
1165654003-F	HCL to pH < 2	OK	1165654009-D	HNO3 to pH < 2	OK
1165654003-G	HCL to pH < 2	OK	1165654010-A	Na2S2O3 for Chlorine Redu	OK
1165654003-H	No Preservative Required	OK	1165654010-B	No Preservative Required	OK
1165654003-I	No Preservative Required	OK	1165654010-C	No Preservative Required	OK
1165654004-A	HCL to pH < 2	OK	1165654010-D	HNO3 to pH < 2	OK
1165654004-B	HCL to pH < 2	OK	1165654010-E	HCL to pH < 2	OK
1165654004-C	HCL to pH < 2	OK	1165654010-F	HCL to pH < 2	OK
1165654004-D	No Preservative Required	OK	1165654010-G	HCL to pH < 2	OK
1165654004-E	No Preservative Required	OK	1165654010-H	No Preservative Required	OK
1165654004-F	HCL to pH < 2	OK	1165654010-I	No Preservative Required	OK
1165654004-G	HCL to pH < 2	OK	1165654011-A	Na2S2O3 for Chlorine Redu	OK
1165654004-H	No Preservative Required	OK	1165654011-B	No Preservative Required	OK
1165654004-I	No Preservative Required	OK	1165654011-C	No Preservative Required	OK
1165654005-A	Na2S2O3 for Chlorine Redu	OK	1165654011-D	HNO3 to pH < 2	OK
1165654005-B	No Preservative Required	OK	1165654012-A	Na2S2O3 for Chlorine Redu	OK
1165654005-C	No Preservative Required	OK	1165654012-B	No Preservative Required	OK
1165654005-D	HNO3 to pH < 2	OK	1165654012-C	No Preservative Required	OK
1165654005-E	HCL to pH < 2	OK	1165654012-D	HNO3 to pH < 2	OK
1165654005-F	HCL to pH < 2	OK	1165654013-A	Na2S2O3 for Chlorine Redu	OK
1165654005-G	HCL to pH < 2	OK	1165654013-B	No Preservative Required	OK
1165654005-H	No Preservative Required	OK	1165654013-C	No Preservative Required	OK
1165654005-I	No Preservative Required	OK	1165654013-D	HNO3 to pH < 2	OK
1165654006-A	Na2S2O3 for Chlorine Redu	OK	1165654013-E	HCL to pH < 2	OK
1165654006-B	No Preservative Required	OK	1165654013-F	HCL to pH < 2	OK

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1165654013-G	HCL to pH < 2	OK			
1165654013-H	No Preservative Required	OK			
1165654013-I	No Preservative Required	OK			
1165654014-A	Na2S2O3 for Chlorine Redu	OK			
1165654014-B	No Preservative Required	OK			
1165654014-C	No Preservative Required	OK			
1165654014-D	HNO3 to pH < 2	OK			
1165654015-A	HCL to pH < 2	OK			
1165654015-B	HCL to pH < 2	OK			
1165654015-C	HCL to pH < 2	OK			
1165654016-A	No Preservative Required	OK			
1165654016-B	HNO3 to pH < 2	OK			
1165654017-A	No Preservative Required	OK			
1165654017-B	HNO3 to pH < 2	OK			
1165654018-A	No Preservative Required	OK			
1165654018-B	HNO3 to pH < 2	OK			
1165654019-A	No Preservative Required	OK			
1165654019-B	HNO3 to pH < 2	OK			
1165654020-A	No Preservative Required	OK			
1165654020-B	HNO3 to pH < 2	OK			
1165654021-A	No Preservative Required	OK			
1165654021-B	HNO3 to pH < 2	OK			
1165654022-A	No Preservative Required	OK			
1165654022-B	HNO3 to pH < 2	OK			
1165654023-A	No Preservative Required	OK			
1165654023-B	HNO3 to pH < 2	OK			
1165654024-A	No Preservative Required	OK			
1165654024-B	HNO3 to pH < 2	OK			
1165654025-A	No Preservative Required	OK			
1165654025-B	HNO3 to pH < 2	OK			
1165654026-A	No Preservative Required	OK			
1165654026-B	HNO3 to pH < 2	OK			
1165654027-A	No Preservative Required	OK			
1165654027-B	HNO3 to pH < 2	OK			

#### Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM- The container was received damaged.

FR- The container was received frozen and not usable for Bacteria or BOD analyses.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

## **Appendix D**

### **Field Logs**



Storm #1

MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG

STATION ID: SWM <u>01</u>	DATE: <u>8/4/16</u>	SAMPLE TIME: <u>12:50 pm</u>
OUTFALL/NODE ID: <u>1040-3</u>	PHYSICAL LOCATION: <u>L. OTIS &amp; O'Malley</u>	

OUTFALL FLOW MEASUREMENTS

Flow Method (circle)	Bucket	<u>Flow Meter</u>
Flow Meter	Flow Speed (ft/s): <u>0.18</u>	Water Depth (in): <u>1.0</u>
		Pipe Diam (in): <u>18</u>
Bucket Measurements	Time 1 (s)	Time 2 (s)
Bucket: 1-gal 5-gal		

IN SITU WATER QUALITY MEASUREMENTS

INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TEMP (°C)	SpCond (µS/cm)	DO (mg/L)	DO (% Sat)	pH	TURB (ntu)
MEASUREMENT	<u>17.07</u>	<u>47</u>	<u>8.59</u> <sup>8.59</sup>	<u>92.5</u>	<u>8.11</u>	<u>43.2</u>
FIELD REPLICATE						

DISCRETE WATER QUALITY SAMPLES

SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)					
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu Hardness
SWM <u>01</u> -01	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>
SWM ___-01 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:						Sampler's Initials: <u>GL</u>

STANDARD OBSERVATIONS




PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS
ODOR	<u>None</u>	<u>No</u>
COLOR	<u>gray brown</u>	<u>Gray brown</u>
CLARITY	<u>fair</u>	
FLOATABLES	<u>none</u>	
DEPOSITS or STAINS		
SHEEN		
SURFACE SCUM		
DEBRIS	<u>None</u>	

WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:

Notes by ANDREW Daughton all stations

Photos:  Yes  No

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: <u>SWM 02</u>		DATE: <u>8 / 4 / 16</u>		SAMPLE TIME: <u>1316</u>		
OUTFALL/NODE ID: <u>847-1</u>		PHYSICAL LOCATION: <u>Home Depot ABBOTT RD</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket		Flow Meter		
Flow Meter		Flow Speed (ft/s): <u>1.63-2.68</u>		Water Depth (in): <u>1.25</u>		
Pipe Diam (in): <u>18</u>						
Bucket Measurements		Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #		YSI 556 MULTIPROBE: KLI #1939		HACH 2100P/Q TURBIDIMETER: KLI #0833		
TEMP (°C)		SpCond (µS/cm)		DO (mg/L)		
DO (% Sat)		pH		TURB (ntu)		
MEASUREMENT		<u>15.02</u>	<u>114</u>	<u>10.02</u>	<u>99.8</u>	
FIELD REPLICATE		<u>15.01</u>	<u>115</u>	<u>9.91</u>	<u>98.5</u>	
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)					
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu Hardness
<u>SWM 02 -01</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<u>SWM 02 -01 Dup</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials: <u>GL</u>	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS			
ODOR	<u>NONE</u>		<u>No</u>			
COLOR	<u>NONE</u>		<u>No</u>			
CLARITY	<u>Clear</u>		<u>Clear</u>			
FLOATABLES	<u>NONE</u>					
DEPOSITS or STAINS						
SHEEN						
SURFACE SCUM						
DEBRIS	<u>NONE</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: GL

Date: 8/11/16

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*velocity on 2nd reading: 2.69 ft/s*

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: <u>SWM 03</u>		DATE: <u>8 / 4 / 16</u>	SAMPLE TIME: <u>1420</u>			
OUTFALL/NODE ID: <u>1224-1</u>		PHYSICAL LOCATION: <u>Old Sewer + Sy/WW North</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	Flow Meter			
Flow Meter	Flow Speed (ft/s): <u>0.18</u>		Water Depth (in): <u>2.0</u>		Pipe Diam (in): <u>36 in.</u>	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TEMP (°C)	SpCond (µS/cm)	DO (mg/L)	DO (% Sat)	pH	TURB (ntu)
MEASUREMENT	<u>14.72</u>	<u>107</u>	<u>8.32</u>	<u>83.1</u>	<u>7.43</u>	<u>15.3</u>
FIELD REPLICATE						
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)					
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu Hardness
<u>SWM 03-01</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>
<u>SWM ___-01 Dup</u>						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials: <u>BL</u>	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS			
ODOR	<u>None</u>					
COLOR						
CLARITY						
FLOATABLES						
DEPOSITS or STAINS						
SHEEN						
SURFACE SCUM						
DEBRIS	<u>None</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: BL

Date: 8/11/16

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New culvert. Larger, longer extension. Redone rip rap. Signs of disturbance.

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>04</u>		DATE: <u>8/4/16</u>	SAMPLE TIME: <u>1427</u>			
OUTFALL/NODE ID: <u>1224-2</u>		PHYSICAL LOCATION: <u>Old Sewer / Skyland (South)</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	Flow Meter			
Flow Meter	Flow Speed (ft/s): <u>0.01</u>		Water Depth (in): <u>2.25</u>		Pipe Diam (in): <u>18</u>	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TEMP (°C)	SpCond (µS/cm)	DO (mg/L)	DO (% Sat)	pH	TURB (ntu)
MEASUREMENT	<u>16.82</u>	<u>145</u>	<u>7.23</u>	<u>74.7</u>	<u>7.39</u>	<u>23.0</u>
FIELD REPLICATE						
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)					
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu Hardness
SWM <u>04</u> -01	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>
SWM <u>    </u> -01 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials: <u>GL</u>	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS			
ODOR	<u>NONE</u>					
COLOR	<u>Brown</u>		<u>Brown</u>			
CLARITY	<u>hazy</u>					
FLOATABLES	<u>NONE</u>					
DEPOSITS or STAINS						
SHEEN						
SURFACE SCUM						
DEBRIS	<u>NONE</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: GL Date: 8/11/16 Page 4 of 10

*flowing, but below velocity of sensor measurement*



**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>05</u>		DATE: <u>8 / 4 / 16</u>		SAMPLE TIME: <u>1444</u>		
OUTFALL/NODE ID: <u>207-1</u>		PHYSICAL LOCATION: <u>E 56th @ SAVER School</u>				
<b>OUTFALL FLOW MEASUREMENTS</b>						
Flow Method (circle)		Bucket		Flow Meter		
Flow Meter	Flow Speed (ft/s): <u>0.8</u>		Water Depth (in): <u>1.0</u>		Pipe Diam (in): <u>24</u>	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Rate (gal/s)	
Bucket: 1-gal 5-gal						
<b>IN SITU WATER QUALITY MEASUREMENTS</b>						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TEMP (°C)	SpCond (µS/cm)	DO (mg/L)	DO (% Sat)	pH	TURB (ntu)
MEASUREMENT	<u>16.63</u>	<u>94</u>	<u>8.28</u>	<u>86.5</u>	<u>7.74</u>	<u>88.4</u>
FIELD REPLICATE	<u>16.62</u>	<u>92</u>	<u>7.90</u>	<u>81.6</u>	<u>7.57</u>	<u>80.1</u>
<b>DISCRETE WATER QUALITY SAMPLES</b>						
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)					
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu Hardness
SWM <u>05</u> -01	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SWM <u>   </u> -01 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:						Sampler's Initials: <u>GL</u>
<b>STANDARD OBSERVATIONS</b>						
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS			
ODOR	<u>NONE</u>					
COLOR						
CLARITY						
FLOATABLES						
DEPOSITS or STAINS						
SHEEN						
SURFACE SCUM						
DEBRIS	<u>NONE</u>					
<b>WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:</b>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

**MOA Stormwater Management Program**  
**WATER QUALITY STORM SAMPLING FIELD LOG**

*Rain stopped*

STATION ID: <u>SWM 06</u>		DATE: <u>8 / 4 / 16</u>		SAMPLE TIME: <u>1512</u>	
OUTFALL/NODE ID: <u>314-22</u>		PHYSICAL LOCATION: <u>MAPLE WOOD</u>			
OUTFALL FLOW MEASUREMENTS					
Flow Method (circle)		Bucket		Flow Meter	
Flow Meter	Flow Speed (ft/s): <u>0.074(est)</u>		Water Depth (in): <u>0.5(est)</u>		Pipe Diam (in):
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time
Bucket: 1-gal 5-gal					
IN SITU WATER QUALITY MEASUREMENTS					
INSTRUMENT/SERIAL #		YSI 556 MULTIPROBE: KLI #1939		HACH 2100P/Q TURBIDIMETER: KLI #0833	
	TEMP (°C)	SpCond (µS/cm)	DO (mg/L)	DO (% Sat)	pH
MEASUREMENT	<u>16.53</u>	<u>64</u>	<u>8.22</u>	<u>850</u>	<u>7.15</u>
FIELD REPLICATE					
DISCRETE WATER QUALITY SAMPLES					
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)				
	FECAL	BOD	TSS	TAqH	TAH
<u>SWM 06 -01</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
<u>SWM ___ -01 Dup</u>					
MS/MSD SAMPLES					
FIELD QC (Trip/Equip)					
Description of QC Samples:					Sampler's Initials:
STANDARD OBSERVATIONS					
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS		
ODOR	<u>None</u>		<u>None</u>		
COLOR	<u>clean</u>		<u>None. No oily film.</u>		
CLARITY	<u>white</u>				
FLOATABLES	<u>none</u>				
DEPOSITS or STAINS	<u>none</u>				
SHEEN	<u>none</u>				
SURFACE SCUM	<u>none</u>				
DEBRIS	<u>none</u>				
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:					
<u>see below</u>					
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No					

Reviewed By: GR Date: 8/11/16 Page 6 of 10

*Need to sleeve culvert if we are to keep sampling due to rust.*

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>07</u>		DATE: <u>8 / 4 / 16</u>		SAMPLE TIME: <u>1532</u>		
OUTFALL/NODE ID: <u>484-1</u>		PHYSICAL LOCATION: <u>New Sewer North</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle) <u>Bucket</u>		Flow Meter				
Flow Meter	Flow Speed (ft/s):		Water Depth (in): <u>0.25</u>		Pipe Diam (in): <u>18</u>	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	
Bucket: <u>1-gal</u> 5-gal	<u>34.2</u>	<u>33.65</u>	<u>33.71</u>			
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TEMP (°C)	SpCond (µS/cm)	DO (mg/L)	DO (% Sat)	pH	
MEASUREMENT	<u>15.24</u>	<u>50</u>	<u>9.17</u>	<u>91.6</u>	<u>7.05</u>	
FIELD REPLICATE						
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)					
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu Hardness
SWM <u>07</u> -01	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>
SWM <u>    </u> -01 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials: <u>GL</u>	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>None</u>					
COLOR	<u>Slight</u>					
CLARITY	<u>cloudy</u>					
FLOATABLES	<u>None</u>					
DEPOSITS or STAINS	↓					
SHEEN						
SURFACE SCUM						
DEBRIS	<u>None</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
Photos: <u>Yes</u> No						

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: <u>SWM 08</u>		DATE: <u>8/9/16</u>		SAMPLE TIME: <u>1547</u>		
OUTFALL/NODE ID: <u>86-1</u>		PHYSICAL LOCATION: <u>New Seward (S) Black Sabbath</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	Flow Meter			
Flow Meter	Flow Speed (ft/s): <u>1.18</u>		Water Depth (in):		Pipe Diam (in): <u>42</u>	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal	<u>                    </u>	<u>                    </u>	<u>                    </u>	<u>                    </u>	<u>                    </u>	<u>                    </u>
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TEMP (°C)	SpCond (µS/cm)	DO (mg/L)	DO (% Sat)	pH	TURB (ntu)
MEASUREMENT	<u>15.14</u>	<u>89</u>	<u>9.11</u>	<u>90.6</u>	<u>6.89</u>	<u>27.9</u>
FIELD REPLICATE	<u>15.13</u>	<u>91</u>	<u>9.01</u>	<u>89.6</u>	<u>6.79</u>	<u>26.9</u>
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)					
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu Hardness
<u>SWM 08-01</u>	<u>X</u>	<u>X</u>	<u>X</u>			<u>X</u>
<u>SWM 08-01 Dup</u>	<u>X</u>	<u>X</u>	<u>X</u>			<u>X</u>
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials: <u>GL</u>	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>yes</u>	<u>hydrocarbon odor</u>				
COLOR	<u>clear</u>					
CLARITY	<u>very</u>					
FLOATABLES	<u>none</u>					
DEPOSITS or STAINS	<u>                    </u>					
SHEEN	<u>                    </u>					
SURFACE SCUM	<u>                    </u>					
DEBRIS	<u>None</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>09</u>		DATE: <u>8/9/16</u>		SAMPLE TIME: <u>1611</u>		
OUTFALL/NODE ID: <u>499-1</u>		PHYSICAL LOCATION: <u>Boeke North side</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket <u>Flow Meter</u> - <u>too slow to measure</u>				
Flow Meter	Flow Speed (ft/s): <u>0.01*</u>	Water Depth (in): <u>0.25</u>		Pipe Diam (in): <u>24</u>		
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TEMP (°C)	SpCond (µS/cm)	DO (mg/L)	DO (% Sat)	pH	TURB (ntu)
MEASUREMENT	<u>15.56</u>	<u>155</u>	<u>7.89</u>	<u>79.5</u>	<u>7.23</u>	<u>43.0</u>
FIELD REPLICATE						
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)					
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu Hardness
SWM <u>09-01</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>
SWM <u>    </u> -01 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:						Sampler's Initials: <u>GL</u>
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>None</u>					
COLOR	<u>None</u>					
CLARITY	<u>clear</u>					
FLOATABLES	<u>dirt film</u>					
DEPOSITS or STAINS	<u>No</u>					
SHEEN	<u>No</u>					
SURFACE SCUM	<u>film</u>					
DEBRIS	<u>grass</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: GL

Date: 8/11/16

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\* in register table

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>10</u>		DATE: <u>8/4/16</u>		SAMPLE TIME: <u>1620</u>		
OUTFALL/NODE ID: <u>525-2</u>		PHYSICAL LOCATION: <u>Boeke (south bank)</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket		Flow Meter		
Flow Meter	Flow Speed (ft/s): <u>0.96</u>		Water Depth (in): <u>1.5</u>		Pipe Diam (in): <u>30</u>	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TEMP (°C)	SpCond (µS/cm)	DO (mg/L)	DO (% Sat)	pH	TURB (ntu)
MEASUREMENT	<u>12.52</u>	<u>218</u>	<u>10.43</u>	<u>98.2</u>	<u>6.88</u>	<u>10.9</u>
FIELD REPLICATE						
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)					
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu Hardness
SWM <u>10</u> -01	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>
SWM <u>    </u> -01 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:						Sampler's Initials: <u>GL</u>
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>Clean</u>					
COLOR	<u>None</u>					
CLARITY	<u>clean</u>					
FLOATABLES	<u>No</u>					
DEPOSITS or STAINS	<u>Orange stain concrete</u>	<u>- Always present</u>				
SHEEN	<u>None</u>					
SURFACE SCUM	<u>NO</u>					
DEBRIS	<u>None</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>Clear &amp; cold</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: GL

Date: 8/11/16

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Storm #2

MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG

STATION ID: SWM 01 DATE: 8/22/16 SAMPLE TIME: 1330

OUTFALL/NODE ID: 1040-3 PHYSICAL LOCATION: Lots 10 Malley

OUTFALL FLOW MEASUREMENTS

Flow Method (circle) Bucket Flow Meter NA

Flow Meter	Flow Speed (ft/s):	Water Depth (in):	Pipe Diam (in):
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)
Bucket: 1-gal 5-gal			

IN SITU WATER QUALITY MEASUREMENTS

INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939	HACH 2100P/Q TURBIDIMETER: KLI #0833
	TEMP (°C)	SpCond (µS/cm)
	DO (mg/L)	DO (% Sat)
MEASUREMENT	pH	TURB (ntu)
FIELD REPLICATE		

DISCRETE WATER QUALITY SAMPLES

SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)					
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu Hardness
SWM <u>01-01 02</u>						
SWM <u>01-01 Dup 02</u>						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:						Sampler's Initials: <u>GW</u>

STANDARD OBSERVATIONS

PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS
ODOR	<u>none</u>	
COLOR	<u>gray / silty looking</u>	
CLARITY	<u>cloudy</u>	
FLOATABLES	<u>leaves &amp; debris</u>	
DEPOSITS or STAINS	<u>no</u>	
SHEEN	<u>no</u>	
SURFACE SCUM	<u>no</u>	
DEBRIS		

WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:

stagnant water in pipe - not flowing  
rain

Photos:  Yes  No NOT sampled

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>02</u>		DATE: <u>8/22/16</u>	SAMPLE TIME: <u>1400</u>			
OUTFALL/NODE ID: <u>847-1</u>		PHYSICAL LOCATION: <u>Home Depot/Abbott</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	<u>Flow Meter</u>			
Flow Meter	Flow Speed (ft/s): <u>2.93</u>	Water Depth (in): <u>1.0</u>	Pipe Diam (in):			
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal	<u>        </u>	<u>        </u>	<u>        </u>	<u>        </u>	<u>        </u>	<u>        </u>
IN-SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #		YSI 556 MULTIPROBE: KLI #1939		HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TEMP (°C)	SpCond (µS/cm)	DO (mg/L)	DO (% Sat)	pH	TURB (ntu)
MEASUREMENT	<u>10.71</u>	<u>308</u>	<u>10.29</u> <del>10.2</del>	<u>102.1</u>	<u>9.22</u>	<u>4.64</u>
FIELD REPLICATE	<u>10.70</u>	<u>310</u>	<u>11.16</u>	<u>105.0</u>	<u>8.96</u>	<u>3.88</u>
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)					
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu Hardness
<u>SWM 02-01</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<u>SWM 02-01 Dup</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
MS/MSD SAMPLES				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
FIELD QC (Trip/Equip)						
Description of QC Samples:						Sampler's Initials: <u>GL</u>
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>no</u>					
COLOR	<u>no</u>					
CLARITY	<u>clear</u>					
FLOATABLES	<u>no</u>					
DEPOSITS or STAINS	<u>no</u>					
SHEEN	<u>no</u>					
SURFACE SCUM	<u>no</u>					
DEBRIS	<u>no</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>rain - now on River</u>						
<u>Note: Remaind pH = probe wasn't allow to equil. bntc long enough</u>						
<u>after calibration @ pH = 10 as evident by drop or dup. M Sevoic</u>						



**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>03</u>		DATE: <u>8/27/16</u>		SAMPLE TIME: <u>1430</u>		
OUTFALL/NODE ID: <u>1224-1</u>		PHYSICAL LOCATION: <u>Old Seward/Slyvan 1</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket		Flow Meter		
Flow Meter	Flow Speed (ft/s): <u>.77</u>		Water Depth (in): <u>2 7/8</u>		Pipe Diam (in):	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TEMP (°C)	SpCond (µS/cm)	DO (mg/L)	DO (% Sat)	pH	TURB (ntu)
MEASUREMENT	<u>12.46</u>	<u>181</u>	<u>2.60</u>	<u>81.0</u>	<u>8.36</u>	<u>30.2</u>
FIELD REPLICATE	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)					
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu Hardness
<u>SWM 03-01 02</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<u>SWM 03-01 Dup</u>						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:						Sampler's Initials: <u>GL</u>
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>no</u>					
COLOR	<u>Faint tea color</u>					
CLARITY	<u>slight cloudy</u>					
FLOATABLES	<u>no</u>					
DEPOSITS or STAINS	<u>light no d</u>					
SHEEN	<u>no</u>					
SURFACE SCUM	<u>no</u>					
DEBRIS	<u>no</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>.77 ft/sec - questioning consistency?</u>						
<u>New curb vent 0</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: Aly

Date: 9/8/16

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>04</u>		DATE: <u>8/22/16</u>	SAMPLE TIME: <u>1435</u>			
OUTFALL/NODE ID: <u>1224-2</u>		PHYSICAL LOCATION: <u>Old Seward / Salvan 2</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	Flow Meter			
Flow Meter	Flow Speed (ft/s): <u>0.35</u>		Water Depth (in): <u>5</u>		Pipe Diam (in):	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal	—	—	—	—	—	—
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TEMP (°C)	SpCond (µS/cm)	DO (mg/L)	DO (% Sat)	pH	TURB (ntu)
MEASUREMENT	<u>14.93</u>	<u>190</u>	<u>8.70</u>	<u>86.1</u>	<u>7.68</u>	<u>47.3</u>
FIELD REPLICATE	—	—	—	—	—	—
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)					
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu Hardness
SWM <u>04-01 02</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SWM <u>—-01 Dup</u>	—	—	—	—	—	—
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:						Sampler's Initials: <u>GL</u>
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>no</u>					
COLOR	<u>silty</u>	<u>more than <sup>SWM</sup> 03</u>				
CLARITY	<u>cloudy</u>	"				
FLOATABLES	<u>no</u>					
DEPOSITS or STAINS	<u>no</u>					
SHEEN	<u>no</u>					
SURFACE SCUM	<u>no</u>					
DEBRIS	<u>no</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>Flowing but ponded up back into pipe since used construction of SWM 04</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: Aly

Date: 9/8/16

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>05</u>		DATE: <u>8/22/16</u>		SAMPLE TIME: <u>1500</u>		
OUTFALL/NODE ID: <u>207-1</u>		PHYSICAL LOCATION: <u>56<sup>th</sup> / Save School</u>				
<b>OUTFALL FLOW MEASUREMENTS</b>						
Flow Method (circle)		Bucket		Flow Meter <u>3.29 (1.8) 2.75</u>		
Flow Meter	Flow Speed (ft/s): <u>3.29</u>	Water Depth (in): <u>27/8</u>		Pipe Diam (in):		
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal	—	—	—	—	—	—
<b>IN SITU WATER QUALITY MEASUREMENTS</b>						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TEMP (°C)	SpCond (µS/cm)	DO (mg/L)	DO (% Sat)	pH	TURB (ntu)
MEASUREMENT	<u>14.56</u>	<u>51</u>	<u>9.72</u>	<u>95.6</u>	<u>7.81</u>	<u>NR</u>
FIELD REPLICATE	<u>14.56</u>	<u>53</u>	<u>9.61</u>	<u>94.4</u>	<u>7.66</u>	<u>NR</u>
<b>DISCRETE WATER QUALITY SAMPLES</b>						
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)					
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu Hardness
<u>SWM 05-01 02</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<u>SWM 05-01 Dup</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MS/MSD SAMPLES	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FIELD QC (Trip/Equip)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Description of QC Samples:						Sampler's Initials: <u>GL</u>
<b>STANDARD OBSERVATIONS</b>						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>no</u>					
COLOR	<u>tea colored</u>					
CLARITY	<u>cloudy</u>	<u>- slightly</u>				
FLOATABLES	<u>no</u>					
DEPOSITS or STAINS	<u>no</u>					
SHEEN	<u>yes</u>	<u>light oily sheen in pool</u>				
SURFACE SCUM	<u>no</u>					
DEBRIS	<u>no</u>					
<b>WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:</b>						
<u># taken @ BIG OF</u>						
<u>SMALL OF 1.8" @ 1.06 f/sec - same H<sub>2</sub>O</u>						
Photos: (Yes) No						

Reviewed By: GL

Date: 9/8/16

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

1545  
15

STATION ID: SWM 06      DATE: 8/22/16      SAMPLE TIME: M. A. P. L. M. A. D.

OUTFALL/NODE ID: 314.22      PHYSICAL LOCATION: M. A. P. L. M. A. D.

**OUTFALL FLOW MEASUREMENTS**

Flow Method (circle)      Bucket      Flow Meter

Flow Meter      Flow Speed (ft/s): 0.95      Water Depth (in): 1.75      Pipe Diam (in):

Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
---------------------	------------	------------	------------	------------	------------	--------------

Bucket: 1-gal    5-gal	—	—	—	—	—	—
------------------------	---	---	---	---	---	---

**IN SITU WATER QUALITY MEASUREMENTS**

INSTRUMENT/SERIAL #      YSI 556 MULTIPROBE: KLI #1939      HACH 2100P/Q TURBIDIMETER: KLI #0833

MEASUREMENT	TEMP (°C)	SpCond (µS/cm)	DO (mg/L)	DO (% Sat)	pH	TURB (ntu)
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15.01	25	9.74	97.1	7.30	24.6
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FIELD REPLICATE	—	—	—	—	—	—
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**DISCRETE WATER QUALITY SAMPLES**

SAMPLES COLLECTED (CHECK BOX)

SAMPLE NUMBER	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu Hardness
---------------	-------	-----	-----	------	-----	-----------------------

SWM <u>06-01-02</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
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SWM <u>—-01-Dup</u>	—	—	—	—	—	—
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MS/MSD SAMPLES						
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FIELD QC (Trip/Equip)						
-----------------------	--	--	--	--	--	--

Description of QC Samples:      Sampler's Initials: GL

**STANDARD OBSERVATIONS**

PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS
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ODOR	<u>rotting org-</u>	
------	---------------------	--

COLOR	<u>clear</u>	
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CLARITY	<u>clear</u>	
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FLOATABLES	<u>no</u>	
------------	-----------	--

DEPOSITS or STAINS	<u>no</u>	
--------------------	-----------	--

SHEEN	<u>no</u>	
-------	-----------	--

SURFACE SCUM	<u>no</u>	
--------------	-----------	--

DEBRIS	<u>no</u>	
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**WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:**

squished down pipe - deformed - oval

shaped - bottom flattened

Photos:  Yes     No

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>07</u>		DATE: <u>8/22/16</u>		SAMPLE TIME: <u>1605</u>		
OUTFALL/NODE ID: <u>484-1</u>		PHYSICAL LOCATION: <u>N. Seward St</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket		Flow Meter		
Flow Meter		Flow Speed (ft/s): <u>2.41</u>		Water Depth (in): <u>1.5</u>		
Pipe Diam (in):		Time 1 (s)		Time 2 (s)		
Bucket Measurements		Time 3 (s)		Time 4 (s)		
Total Time		Rate (gal/s)				
Bucket: 1-gal 5-gal		—		—		
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #		YSI 556 MULTIPROBE: KLI #1939		HACH 2100P/Q TURBIDIMETER: KLI #0833		
TEMP (°C)		SpCond (µS/cm)		DO (mg/L)		
DO (% Sat)		pH		TURB (ntu)		
MEASUREMENT		<u>14.70</u>		<u>38</u>		
FIELD REPLICATE		<u>9.32</u>		<u>91.9</u>		
		<u>6.69</u>		<u>204</u>		
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)					
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu Hardness
<u>SWM07-01 02</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<u>SWM__-01 Dup</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MS/MSD SAMPLES	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FIELD QC (Trip/Equip)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Description of QC Samples:					Sampler's Initials: <u>GL</u>	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS			
ODOR	<u>no</u>					
COLOR	<u>gray / yellow</u>					
CLARITY	<u>imbid - cloudy -</u>					
FLOATABLES	<u>no</u>					
DEPOSITS or STAINS	<u>no</u>					
SHEEN	<u>no</u>					
SURFACE SCUM	<u>no</u>					
DEBRIS						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>Running High - near record high - according to G.L.</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: AG

Date: 9/8/16

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>08</u>		DATE: 8/22/16		SAMPLE TIME: 11:00		
OUTFALL/NODE ID: 86-1		PHYSICAL LOCATION: N Seward 42"				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket		Flow Meter		
Flow Meter	Flow Speed (ft/s): <u>2.28</u> <u>2.19</u>		Water Depth (in): <u>4.75</u>		Pipe Diam (in):	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	
Bucket: 1-gal 5-gal	—	—	—	—	—	
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #		YSI 556 MULTIPROBE: KLI #1939		HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TEMP (°C)	SpCond (µS/cm)	DO (mg/L)	DO (% Sat)	pH	
MEASUREMENT	<u>14.62</u>	<u>29</u>	<u>10.79</u>	<u>107.2</u>	<u>6.88</u>	
FIELD REPLICATE	<u>14.62</u>	<u>29</u>	<u>9.95</u>	<u>97.7</u>	<u>6.78</u>	
	TURB (ntu)					
	<u>80.8</u>					
	<u>81.0</u>					
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)					
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu Hardness
SWM <u>08-01-02</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SWM <u>08-01 Dup</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
MS/MSD SAMPLES	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FIELD QC (Trip/Equip)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Description of QC Samples:					Sampler's Initials: <u>GL</u>	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>- fuel smell</u>					
COLOR	<u>brown / gray</u>					
CLARITY	<u>turbid</u>					
FLOATABLES						
DEPOSITS or STAINS	<u>no</u>					
SHEEN	<u>no</u>					
SURFACE SCUM	<u>no</u>					
DEBRIS	<u>brush &amp; sticks</u>	<u>- litter from area -</u>				
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>Running like crazy!</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: GL

Date: 9/8/16

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

80.8  
81.0  
204  
2-16-16

STATION ID: <u>SWM09</u>	DATE: <u>8/22/16</u>	SAMPLE TIME: <u>1640</u>
OUTFALL/NODE ID: <u>499-1</u>	PHYSICAL LOCATION: <u>Boeten</u>	

**OUTFALL FLOW MEASUREMENTS**

Flow Method (circle)	Bucket	<u>Flow Meter</u>
Flow Meter	Flow Speed (ft/s): <u>0.55</u>	Water Depth (in): <u>4.35</u>
Bucket Measurements	Time 1 (s)	Time 2 (s)
Bucket: 1-gal 5-gal		

**IN SITU WATER QUALITY MEASUREMENTS**

INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TEMP (°C)	SpCond (µS/cm)	DO (mg/L)	DO (% Sat)	pH	TURB (ntu)
MEASUREMENT	<u>14.69</u>	<u>165</u>	<u>9.33</u>	<u>92.3</u>	<u>6.93</u>	<u>NR</u>
FIELD REPLICATE						

**DISCRETE WATER QUALITY SAMPLES**

SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)					
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu Hardness
<u>SWM09-01 02</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<u>SWM___-01 Dup</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:						Sampler's Initials: <u>GL</u>

**STANDARD OBSERVATIONS**

PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS
ODOR	<u>slight fuel odor</u>	
COLOR	<u>gray / brown</u>	
CLARITY	<u>turbid</u>	
FLOATABLES	<u>no</u>	
DEPOSITS or STAINS	<u>no</u>	
SHEEN	<u>no</u>	
SURFACE SCUM	<u>no</u>	
DEBRIS	<u>no</u>	

**WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:**

running very high for this site

Photos:  Yes  No

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>10</u>		DATE: <u>8/22/16</u>		SAMPLE TIME: <u>1647</u>		
OUTFALL/NODE ID: <u>525-2</u>		PHYSICAL LOCATION: <u>Breke - S</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket		Flow Meter		
Flow Meter	Flow Speed (ft/s): <u>2.3</u>		Water Depth (in): <u>2.75</u>		Pipe Diam (in):	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	
Bucket: 1-gal 5-gal	—	—	—	—	—	
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TEMP (°C)	SpCond (µS/cm)	DO (mg/L)	DO (% Sat)	pH	TURB (ntu)
MEASUREMENT	<u>13.55</u>	<u>130</u>	<u>10.30</u>	<u>99.2</u>	<u>100.49</u>	<u>45.2</u>
FIELD REPLICATE						
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)					
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu Hardness
SWM <u>10-01-02</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SWM <u>10-01 Dup</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MS/MSD SAMPLES	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FIELD QC (Trip/Equip)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Description of QC Samples:						Sampler's Initials: <u>GL</u>
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS			
ODOR	— faint fuel smell —					
COLOR	light tea color		— alot more than usual			
CLARITY	slightly turbid					
FLOATABLES	no					
DEPOSITS or STAINS	no					
SHEEN	no					
SURFACE SCUM	no					
DEBRIS	no					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>deeper than usual</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: A Ly

Date: 9/8/16

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Storm #3

MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG

STATION ID: SWM <u>01</u>		DATE: <u>9/15/16</u>	SAMPLE TIME: <u>1015</u>			
OUTFALL/NODE ID: <u>1040-3</u>		PHYSICAL LOCATION: <u>Lake Otis / O'malley</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	Flow Meter			<u>H<sub>2</sub>O too low for meter</u>
Flow Meter	Flow Speed (ft/s): <u>&lt;.1</u>	Water Depth (in): <u>.25"</u>	Pipe Diam (in): <u>18"</u>			
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal	<u>Flow is just a trickle</u>				---	---
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TEMP (°C)	SpCond (µS/cm)	DO (mg/L)	DO (% Sat)	pH	TURB (ntu)
MEASUREMENT	<u>10.84</u>	<u>158</u>	<u>11.75</u>	<u>106</u>	<u>6.43</u>	<u>13.9</u>
FIELD REPLICATE						
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)					
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu Hardness
SWM <u>01</u> -03	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>
SWM <u>   </u> -03 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials: <u>MS</u>	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS			
ODOR	<u>none</u>					
COLOR	<u>clear</u>					
CLARITY	<u>clear</u>					
FLOATABLES	<u>none</u>					
DEPOSITS or STAINS	<u>none</u>					
SHEEN	<u>none</u>					
SURFACE SCUM	<u>none</u>					
DEBRIS	<u>none</u>		<u>- small amount of urban trash</u>			
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>High broken clouds</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: M. [Signature]

Date: 10/3/16

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: <u>SWM 02</u>		DATE: <u>9/15/16</u>		SAMPLE TIME: <u>11:30</u>		
OUTFALL/NODE ID: <u>847-1</u>		PHYSICAL LOCATION: <u>Home Depot / Diamond</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket		Flow Meter		
Flow Meter	Flow Speed (ft/s): <u>2.22</u>	Water Depth (in): <u>.75</u>		Pipe Diam (in): <u>18'</u>		
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TEMP (°C)	SpCond (µS/cm)	DO (mg/L)	DO (% Sat)	pH	TURB (ntu)
MEASUREMENT	<u>9.93</u>	<u>360</u>	<u>12.45</u>	<u>110.1</u>	<u>7.48</u>	<u>.72</u>
FIELD REPLICATE	<u>9.94</u>	<u>361</u>	<u>12.46</u>	<u>110.2</u>	<u>7.57</u>	<u>.71</u>
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)					
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu Hardness
<u>SWM 02-03</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<u>SWM 02-03 Dup</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
MS/MSD SAMPLES	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
FIELD QC (Trip/Equip)					<input checked="" type="checkbox"/>	
Description of QC Samples:					Sampler's Initials: <u>MS</u>	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>no</u>					
COLOR	<u>clear</u>					
CLARITY	<u>clear</u>					
FLOATABLES	<u>no</u>	<u>- algae in bottom of culvert/collar</u>				
DEPOSITS or STAINS	<u>no</u>					
SHEEN	<u>no</u>					
SURFACE SCUM	<u>no</u>					
DEBRIS	<u>little garbage</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>No rain - high OC</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: M. Brown

Date: 10/3/16

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: <u>SWM 03</u>		DATE: <u>9/15/16</u>		SAMPLE TIME: <u>12:25</u>		
OUTFALL/NODE ID: <u>1224-1(?)</u>		PHYSICAL LOCATION: <u>SULVAN / OSH</u>				
<u>(New Pipe) 7</u> <b>OUTFALL FLOW MEASUREMENTS</b>						
Flow Method (circle)		Bucket		Flow Meter <u>(Fiberglass)</u>		
Flow Meter	Flow Speed (ft/s): <u>0.59</u>		Water Depth (in): <u>1.5"</u>		Pipe Diam (in): <u>36" cm</u>	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
<b>IN SITU WATER QUALITY MEASUREMENTS</b>						
INSTRUMENT/SERIAL #		YSI 556 MULTIPROBE: KLI #1939		HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TEMP (°C)	SpCond (µS/cm)	DO (mg/L)	DO (% Sat)	pH	TURB (ntu)
MEASUREMENT	<u>11.07</u>	<u>230</u>	<u>10.98</u>	<u>99.8</u>	<u>7.39</u>	<u>15.7</u>
FIELD REPLICATE						
<b>DISCRETE WATER QUALITY SAMPLES</b>						
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)					
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu Hardness
<u>SWM 03-03</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>
<u>SWM ___-03 Dup</u>						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:						Sampler's Initials: <u>MS</u>
<b>STANDARD OBSERVATIONS</b>						
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS			
ODOR	<u>no</u>					
COLOR	<u>no</u>					
CLARITY	<u>no</u>					
FLOATABLES	<u>no</u>					
DEPOSITS or STAINS	<u>no</u>					
SHEEN	<u>no</u>					
SURFACE SCUM	<u>no</u>					
DEBRIS	<u>no</u>		<u>- small bit of sord in pipe</u>			
<b>WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:</b>						
<u>OC, no run</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: M. [Signature]

Date: 10/3/16

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: <u>SWM 04</u>		DATE: <u>9/15/16</u>		SAMPLE TIME: <u>1230</u>		
OUTFALL/NODE ID: <u>1224-2 (?)</u>		PHYSICAL LOCATION: <u>SULLIVAN / OSH</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket		Flow Meter		
Flow Meter	Flow Speed (ft/s): <u>0.15</u>	Water Depth (in): <u>3.0"</u>		Pipe Diam (in): <u>18"</u>		
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TEMP (°C)	SpCond (µS/cm)	DO (mg/L)	DO (% Sat)	pH	TURB (ntu)
MEASUREMENT	<u>12.35</u>	<u>321</u>	<u>10.67</u>	<u>10 (15)</u>	<u>7.43</u>	<u>4.36</u>
FIELD REPLICATE			<u>15</u> <u>10.53</u>	<u>99.6</u>		
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)					
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu Hardness
<u>SWM 04-03</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>
<u>SWM ___-03 Dup</u>						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:						Sampler's Initials: <u>MS</u>
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>no</u>					
COLOR	<u>clear</u>					
CLARITY	<u>clear</u>					
FLOATABLES	<u>organics</u>					
DEPOSITS or STAINS	<u>no</u>					
SHEEN	<u>no</u>					
SURFACE SCUM	<u>no</u>					
DEBRIS	<u>no</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>OC, no rain</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: M. Brown

Date: 10/3/16

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: <b>SWM05</b>		DATE: <b>9/15/16</b>		SAMPLE TIME: <b>1300</b>		
OUTFALL/NODE ID: <b>207-1</b>		PHYSICAL LOCATION: <b>56th + 5AVE</b>				
<b>OUTFALL FLOW MEASUREMENTS</b> <b>2nd Pipe</b>						
Flow Method (circle)		Bucket	Flow Meter		<b>0.29 fps @ .5" depth</b>	
Flow Meter	Flow Speed (ft/s): <b>0.35</b>	Water Depth (in): <b>.9"</b>		Pipe Diam (in): <b>24"</b>		
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
<b>IN SITU WATER QUALITY MEASUREMENTS</b>						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TEMP (°C)	SpCond (µS/cm)	DO (mg/L)	DO (% Sat)	pH	TURB (ntu)
MEASUREMENT	<b>11.63</b>	<b>232</b>	<b>10.58</b>	<b>97.6</b>	<b>7.31</b>	<b>56.8</b>
FIELD REPLICATE						
<b>DISCRETE WATER QUALITY SAMPLES</b>						
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)					
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu Hardness
SWM <b>05</b> -03	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SWM__-03 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:	<b>none</b>				Sampler's Initials: <b>MS</b>	
<b>STANDARD OBSERVATIONS</b>						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<b>none</b>					
COLOR	<b>no</b>					
CLARITY	<b>cloudy</b>					
FLOATABLES	<b>no</b>					
DEPOSITS or STAINS						
SHEEN						
SURFACE SCUM						
DEBRIS	<b>no</b>					
<b>WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:</b>						
measured flow in both pipes (#1) 0.35 ft/s + 0.9" depth						
(#2) 0.299 ft/s + 0.5 depth						
Photos: (Yes) No						

Reviewed By: M. Brown

Date: 10/3/16

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>06</u>		DATE: <u>9/15/16</u>	SAMPLE TIME: <u>1330</u>			
OUTFALL/NODE ID: <u>314-22</u>		PHYSICAL LOCATION: <u>Mastewood</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	Flow Meter			
Flow Meter	Flow Speed (ft/s): <u>0.37</u>	Water Depth (in): <u>0.5</u>	Pipe Diam (in): <u>24"</u>			
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939		HACH 2100P/Q TURBIDIMETER: KLI #0833			
	TEMP (°C)	SpCond (µS/cm)	DO (mg/L)	DO (% Sat)	pH	TURB (ntu)
MEASUREMENT	<u>10.70</u>	<u>140</u>	<u>10.66</u>	<u>95.8</u>	<u>7.10</u>	<u>8.72</u>
FIELD REPLICATE						
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)					Dissolved Cu Hardness
	FECAL	BOD	TSS	TAqH	TAH	
SWM <u>06</u> -03	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>
SWM <u>    </u> -03 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials: <u>MS</u>	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>NO</u>					
COLOR	<u>NO</u>					
CLARITY	<u>—</u>	<u>lightly cloudy - barely</u>				
FLOATABLES	<u>—</u>					
DEPOSITS or STAINS	<u>—</u>					
SHEEN	<u>—</u>					
SURFACE SCUM	<u>—</u>					
DEBRIS	<u>—</u>	<u>couple leaves</u>				
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>OC, light sprinkling rain</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: M. Anon

Date: 10/3/16

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>07</u>		DATE: <u>9/15/16</u>		SAMPLE TIME: <u>1355</u>		
OUTFALL/NODE ID: <u>484-1</u>		PHYSICAL LOCATION: <u>Seward Highway/CH-1A</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle) <u>Bucket</u>		Flow Meter				
Flow Meter	Flow Speed (ft/s):		Water Depth (in): <u>    </u>		Pipe Diam (in):	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal	<u>156</u>					
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #		YSI 556 MULTIPROBE: KLI #1939		HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TEMP (°C)	SpCond (µS/cm)	DO (mg/L)	DO (% Sat)	pH	TURB (ntu)
MEASUREMENT	<u>11.81</u>	<u>49</u>	<u>10.15</u>	<u>93.5</u>	<u>7.72</u>	<u>47.4</u>
FIELD REPLICATE						
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)					
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu Hardness
SWM <u>07</u> -03	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SWM <u>    </u> -03 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials: <u>MS</u>	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS			
ODOR	<u>musty</u>					
COLOR	<u>grey</u>					
CLARITY	<u>cloudy</u>					
FLOATABLES	<u>no</u>					
DEPOSITS or STAINS	<u>no</u>					
SHEEN	<u>no</u>					
SURFACE SCUM	<u>→</u>		<u>sudsy in the bottles</u>			
DEBRIS	<u>no</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>☁☁, sprinkling rain off/on</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: M Annie

Date: 10/7/16

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: <u>SWM 08</u>		DATE: <u>9/15/16</u>		SAMPLE TIME: <u>1400</u>		
OUTFALL/NODE ID: <u>86-1</u>		PHYSICAL LOCATION: <u>Black Sabbath</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket		Flow Meter		
Flow Meter	Flow Speed (ft/s): <u>0.77</u>		Water Depth (in): <u>1.3'</u>		Pipe Diam (in): <u>48</u>	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #		YSI 556 MULTIPROBE: KLI #1939		HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TEMP (°C)	SpCond (µS/cm)	DO (mg/L)	DO (% Sat)	pH	TURB (ntu)
MEASUREMENT	<u>10.92</u>	<u>233</u>	<u>12.31</u>	<u>111.3</u>	<u>7.31</u>	<u>14.1</u>
FIELD REPLICATE	<u>10.92</u>	<u>236</u>	<u>11.96</u>	<u>108.2</u>	<u>7.23</u>	<u>14.2</u>
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)					
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu Hardness
<u>SWM 08-03</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<u>SWM 08-03 Dup</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:						Sampler's Initials: <u>MS</u>
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS			
ODOR	<u>Ruel</u>					
COLOR	<u>greyish brown</u>		<u>- only slight</u>			
CLARITY	<u>clear</u>					
FLOATABLES	<u>no</u>					
DEPOSITS or STAINS	<u>no</u>					
SHEEN	<u>no</u>					
SURFACE SCUM	<u>no</u>					
DEBRIS	<u>no</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>OC, light sprinkles</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: M Brown

Date: 10/3/16

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>09</u>		DATE: <u>9/15/16</u>	SAMPLE TIME: <u>1440</u>			
OUTFALL/NODE ID: <u>499-1</u>		PHYSICAL LOCATION: <u>Ben Boeke</u>				
<b>OUTFALL FLOW MEASUREMENTS</b>						
Flow Method (circle)		Bucket	Flow Meter <u>1.6" - after 10 mins.</u>			
Flow Meter	Flow Speed (ft/s): <u>0.18</u>	Water Depth (in): <u>1.8"</u>	Pipe Diam (in): <u>24"</u>			
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
<b>IN SITU WATER QUALITY MEASUREMENTS</b>						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TEMP (°C)	SpCond (µS/cm)	DO (mg/L)	DO (% Sat)	pH	TURB (ntu)
MEASUREMENT	<u>12.32</u>	<u>317</u>	<u>10.92</u>	<u>102.0</u>	<u>7.63</u>	<u>5.68</u>
FIELD REPLICATE						
<b>DISCRETE WATER QUALITY SAMPLES</b>						
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)					
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu Hardness
SWM <u>09</u> -03	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SWM <u>   </u> -03 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:						Sampler's Initials: <u>MS</u>
<b>STANDARD OBSERVATIONS</b>						
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS			
ODOR	<u>no</u>					
COLOR	<u>clear</u>					
CLARITY	<u>clear</u>					
FLOATABLES	<u>no</u>					
DEPOSITS or STAINS	<u>no</u>					
SHEEN	<u>no</u>					
SURFACE SCUM	<u>no</u>					
DEBRIS	<u>manure</u>		<u>+ leaves + such - not in pipe</u>			
<b>WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:</b>						
<u>☁ light rain</u>						
Photos: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>						

Reviewed By: M. Taylor

Date: 10/3/16

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>10</u>		DATE: <u>9/15/16</u>	SAMPLE TIME: <u>1450</u>			
OUTFALL/NODE ID: <u>525-2</u>		PHYSICAL LOCATION: <u>Ben Boete - Southside</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	Flow Meter			
Flow Meter	Flow Speed (ft/s): <u>1.24</u>		Water Depth (in): <u>1.5"</u>		Pipe Diam (in): <u>24"</u>	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TEMP (°C)	SpCond (µS/cm)	DO (mg/L)	DO (% Sat)	pH	TURB (ntu)
MEASUREMENT	<u>11.40</u>	<u>339</u>	<u>12.18</u>	<u>111.5</u>	<u>7.34</u>	<u>3.07</u>
FIELD REPLICATE						
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)					
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu Hardness
SWM <u>10</u> -03	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>
SWM <u>   </u> -03 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:						Sampler's Initials: <u>MS</u>
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS			
ODOR						
COLOR	<u>- clear</u>					
CLARITY	<u>clear</u>					
FLOATABLES	<u>no</u>					
DEPOSITS or STAINS	<u>stains -</u>		<u>runner color</u>			
SHEEN	<u>no</u>					
SURFACE SCUM	<u>no</u>					
DEBRIS	<u>no</u>					
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>OC, off + on sprinkling showers</u>						
Photos: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>						

Reviewed By: M. Brown

Date: 10/3/16

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

*Storm #4*

STATION ID: SWM <u>01</u>		DATE: <u>9/22/16</u>	SAMPLE TIME: <u>1025</u>			
OUTFALL/NODE ID: <u>1040-3</u>		PHYSICAL LOCATION: <u>O'Malley &amp; Lake Otis</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	Flow Meter			
Flow Meter	Flow Speed (ft/s): <u>1.41</u>	Water Depth (in): <u>3.1</u>	Pipe Diam (in): <u>18</u>			
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TEMP (°C)	SpCond (µS/cm)	DO (mg/L)	DO (% Sat)	pH	TURB (ntu)
MEASUREMENT	<u>8.07</u>	<u>17</u>	<u>11.06</u>	<u>93.6</u>	<u>6.84</u>	<u>22.6</u>
FIELD REPLICATE						
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)					
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu Hardness
SWM <u>01</u> -04	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
SWM <u>    </u> -04 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials: <u>MS</u>	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS			
ODOR			No			
COLOR			Slight Brown			
CLARITY			Clear			
FLOATABLES			No			
DEPOSITS or STAINS			No			
SHEEN			No			
SURFACE SCUM			No			
DEBRIS						
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>Little Urban trash. No scum no foam. Clear water w/ slight brown tinge</u>						
<u>Culvert in good condition</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: M. Hansen

Date: 10/3/16

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>02</u>		DATE: <u>9/22/16</u>		SAMPLE TIME: <u>1050</u>		
OUTFALL/NODE ID: <u>847-1</u>		PHYSICAL LOCATION: <u>Abbot Home Dept</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket		<u>Flow Meter</u>		
Flow Meter	Flow Speed (ft/s): <u>8.10</u>	Water Depth (in): <u>2.2</u>		Pipe Diam (in): <u>18 in</u>		
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #		YSI 556 MULTIPROBE: KLI #1939		HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TEMP (°C)	SpCond (µS/cm)	DO (mg/L)	DO (% Sat)	pH	TURB (ntu)
MEASUREMENT	<u>8.29</u>	<u>58</u>	<u>11.18</u>	<u>94.5</u>	<u>6.96</u>	<u>162</u>
FIELD REPLICATE	<u>8.34</u>	<u>71</u>	<u>11.08</u>	<u>94.3</u>	<u>6.95</u>	<u>159</u>
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)					
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu Hardness
SWM <u>02</u> -04	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SWM <u>02</u> -04 Dup	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
MS/MSD SAMPLES				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
FIELD QC (Trip/Equip)				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Description of QC Samples:					Sampler's Initials: <u>MS</u>	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS			
ODOR			<u>No</u>			
COLOR			<u>Brown (light)</u>			
CLARITY			<u>Clear</u>			
FLOATABLES			<u>No</u>			
DEPOSITS or STAINS			<u>Algae growth</u>			
SHEEN			<u>No</u>			
SURFACE SCUM			<u>No</u>			
DEBRIS			<u>No</u>			
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>Algae growing on collar</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: MJ Arce

Date: 10/3/16

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>03</u>		DATE: <u>9/22/16</u>	SAMPLE TIME: <u>1135</u>			
OUTFALL/NODE ID: <u>1224-1</u>		PHYSICAL LOCATION: <u>Sylvan Drive</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	Flow Meter			
Flow Meter	Flow Speed (ft/s): <u>1.91</u>		Water Depth (in): <u>3.6</u>		Pipe Diam (in): <u>36</u>	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #		YSI 556 MULTIPROBE: KLI #1939		HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TEMP (°C)	SpCond (µS/cm)	DO (mg/L)	DO (% Sat)	pH	TURB (ntu)
MEASUREMENT	<u>9.55</u>	<u>127</u>	<u>10.19</u>	<u>89.3</u>	<u>7.04</u>	<u>86.7</u>
FIELD REPLICATE						
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)					
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu Hardness
SWM <u>03</u> -04	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
SWM <u>    </u> -04 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:						Sampler's Initials: <u>MS</u>
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS			
ODOR			<u>No</u>			
COLOR			<u>Slight Brown Tinge</u>			
CLARITY			<u>Slightly Cloudy</u>			
FLOATABLES			<u>No</u>			
DEPOSITS or STAINS	<u>sediment stain</u>		<u>Slight Staining &amp; sediment</u>			
SHEEN			<u>No</u>			
SURFACE SCUM			<u>No</u>			
DEBRIS			<u>No</u>			
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>Collected is in good condition</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: M. Aron

Date: 10/3/16

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>04</u>		DATE: <u>9/22/16</u>		SAMPLE TIME: <u>1145</u>	
OUTFALL/NODE ID: <u>1224-2</u>		PHYSICAL LOCATION: <u>Sylvan Drive</u>			
OUTFALL FLOW MEASUREMENTS					
Flow Method (circle)		Bucket		Flow Meter	
Flow Meter	Flow Speed (ft/s): <u>0.52</u>		Water Depth (in): <u>7.8</u>		Pipe Diam (in): <u>18</u>
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time
Bucket: 1-gal 5-gal					
IN SITU WATER QUALITY MEASUREMENTS					
INSTRUMENT/SERIAL #		YSI 556 MULTIPROBE: KLI #1939		HACH 2100P/Q TURBIDIMETER: KLI #0833	
	TEMP (°C)	SpCond (µS/cm)	DO (mg/L)	DO (% Sat)	pH
MEASUREMENT	<u>9.91</u>	<u>119</u>	<u>10.05</u>	<u>88.9</u>	<u>7.09</u>
FIELD REPLICATE					
DISCRETE WATER QUALITY SAMPLES					
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)				
	FECAL	BOD	TSS	TAqH	TAH
SWM <u>04</u> -04	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SWM <u>   </u> -04 Dup	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MS/MSD SAMPLES	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FIELD QC (Trip/Equip)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Description of QC Samples:					Sampler's Initials: <u>MS</u>
STANDARD OBSERVATIONS					
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS		
ODOR			<u>No</u>		
COLOR			<u>No</u>		
CLARITY			<u>Clear</u>		
FLOATABLES			<u>No</u>		
DEPOSITS or STAINS			<u>No</u>		
SHEEN			<u>No</u>		
SURFACE SCUM			<u>No</u>		
DEBRIS			<u>No</u>		
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:					
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No					

Reviewed By: M. Brown

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>05</u>		DATE: <u>9/22/16</u>	SAMPLE TIME: <u>1205</u>			
OUTFALL/NODE ID: <u>207-1</u>		PHYSICAL LOCATION: <u>Save School</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket		Flow Meter		
Flow Meter	Flow Speed (ft/s): <u>3.55</u>		Water Depth (in): <u>6.0/33</u>		Pipe Diam (in): <u>24/24</u>	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal		<u>2.13</u>				
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TEMP (°C)	SpCond (µS/cm)	DO (mg/L)	DO (% Sat)	pH	TURB (ntu)
MEASUREMENT	<u>9.17</u>	<u>45</u>	<u>10.53</u>	<u>91.5</u>	<u>7.00</u>	<u>351</u>
FIELD REPLICATE						
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)					
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu Hardness
SWM <u>05</u> -04	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SWM <u>   </u> -04 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:						Sampler's Initials: <u>MS</u>
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS			
ODOR			<u>No</u>			
COLOR			<u>Brown</u>			
CLARITY			<u>Cloudy</u>			
FLOATABLES			<u>No</u>			
DEPOSITS or STAINS			<u>No</u>			
SHEEN			<u>No</u>			
SURFACE SCUM			<u>No</u>			
DEBRIS			<u>No</u>			
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>Two side by side CMP 1st: 3.55 ft/s + 6.0 inch 2nd 2.13 ft/s + 3.3 inch</u>						
Photos: Yes No						

Reviewed By: M. [Signature]

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>06</u>		DATE: <u>9/22/16</u>	SAMPLE TIME: <u>1240</u>			
OUTFALL/NODE ID: <u>314-22</u>		PHYSICAL LOCATION: <u>Maplewood</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	Flow Meter			
Flow Meter	Flow Speed (ft/s): <u>1.48</u>		Water Depth (in): <u>2.5</u>		Pipe Diam (in): <u>20in</u>	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal	<u>9.46</u>					
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TEMP (°C)	SpCond (µS/cm)	DO (mg/L)	DO (% Sat)	pH	TURB (ntu)
MEASUREMENT	<u>9.46</u>	<u>32</u>	<u>10.71</u>	<u>93.5</u>	<u>6.75</u>	<u>29.2</u>
FIELD REPLICATE						
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)					
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu Hardness
SWM <u>06</u> -04	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
SWM <u>   </u> -04 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:						Sampler's Initials: <u>MS</u>
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS			
ODOR			<u>No</u>			
COLOR			<u>No/Slight Brown Tinge</u>			
CLARITY			<u>Clear</u>			
FLOATABLES			<u>No Leaves coming down pipe</u>			
DEPOSITS or STAINS			<u>No</u>			
SHEEN			<u>No</u>			
SURFACE SCUM			<u>No</u>			
DEBRIS			<u>No</u>			
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>Bubbles 24in wide 18in high CMP looks a little squashed</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: <u>SWM 07</u>		DATE: <u>9/22/16</u>		SAMPLE TIME: <u>1300-1305</u>		
OUTFALL/NODE ID: <u>484-1</u>		PHYSICAL LOCATION: <u>Seward Hwy</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket		<u>Flow Meter</u>		
Flow Meter	Flow Speed (ft/s): <u>2.74</u>	Water Depth (in): <u>2.1</u>		Pipe Diam (in): <u>24in</u>		
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TEMP (°C)	SpCond (µS/cm)	DO (mg/L)	DO (% Sat)	pH	TURB (ntu)
MEASUREMENT	<u>9.67</u>	<u>27</u>	<u>10.75</u>	<u>94.3</u>	<u>6.65</u>	<u>120</u>
FIELD REPLICATE						
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)					
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu Hardness
<u>SWM 07-04</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<u>SWM ___-04 Dup</u>						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials: <u>MS</u>	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS			
ODOR			<u>No</u>			
COLOR			<u>Light Brown</u>			
CLARITY			<u>Clear Cloudy</u>			
FLOATABLES			<u>No</u>			
DEPOSITS or STAINS			<u>No</u>			
SHEEN			<u>No</u>			
SURFACE SCUM			<u>No</u>			
DEBRIS			<u>No</u>			
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>24in CMP. Reached about 18in</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: <u>SWM 08</u>		DATE: <u>9/22/16</u>		SAMPLE TIME: <u>1315</u>		
OUTFALL/NODE ID: <u>86-1</u>		PHYSICAL LOCATION: <u>Seward Hwy</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket		<u>Flow Meter</u>		
Flow Meter	Flow Speed (ft/s): <u>8.84</u>	Water Depth (in): <u>5.1</u>		Pipe Diam (in): <u>48</u>		
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TEMP (°C)	SpCond (µS/cm)	DO (mg/L)	DO (% Sat)	pH	TURB (ntu)
MEASUREMENT	<u>9.51</u>	<u>30</u>	<u>10.72</u>	<u>93.7</u>	<u>6.81</u>	<u>51.0</u>
FIELD REPLICATE	<u>9.58</u>	<u>28</u>	<u>10.72</u>	<u>93.9</u>	<u>6.73</u>	<u>53.3</u>
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)					
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu Hardness
<u>SWM 08-04</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<u>SWM 08-04 Dup</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials: <u>MS</u>	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE	EXTENT - COMMENTS				
ODOR	<u>Hydrocarbon</u>	<u>Hg</u>				
COLOR		<u>Light Brown</u>				
CLARITY		<u>Cloudy</u>				
FLOATABLES		<u>No</u>				
DEPOSITS or STAINS		<u>No</u>				
SHEEN		<u>No</u>				
SURFACE SCUM		<u>No</u>				
DEBRIS	<u>Leaves (lots)</u>	<u>No</u>				
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
<u>48 in Concrete Pipe</u>						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

Reviewed By: M. Brown

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**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: SWM <u>09</u>		DATE: <u>9/22/16</u>	SAMPLE TIME: <u>1345</u>			
OUTFALL/NODE ID: <u>499-1</u>		PHYSICAL LOCATION: <u>Sullivan Arena / Boeke</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	Flow Meter			
Flow Meter	Flow Speed (ft/s): <u>0.18</u>	Water Depth (in): <u>6.4</u>	Pipe Diam (in): <u>24</u>			
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TEMP (°C)	SpCond (µS/cm)	DO (mg/L)	DO (% Sat)	pH	TURB (ntu)
MEASUREMENT	<u>10.15</u>	<u>66</u>	<u>10.06</u>	<u>89.5</u>	<u>6.89</u>	<u>33.8</u>
FIELD REPLICATE						
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)					
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu Hardness
SWM <u>09</u> -04	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SWM <u>    </u> -04 Dup						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:						Sampler's Initials: <u>MS</u>
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS			
ODOR			<u>No</u>			
COLOR			<u>Brown Tint</u>			
CLARITY			<u>Slightly cloudy</u>			
FLOATABLES			<u>No</u>			
DEPOSITS or STAINS			<u>No</u>			
SHEEN			<u>No</u>			
SURFACE SCUM			<u>No</u>			
DEBRIS			<u>No</u>			
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
Photos: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						

**MOA Stormwater Management Program  
WATER QUALITY STORM SAMPLING FIELD LOG**

STATION ID: <u>SWM 10</u>		DATE: <u>9 / 20 / 16</u>	SAMPLE TIME: <u>1355</u>			
OUTFALL/NODE ID: <u>525-2</u>		PHYSICAL LOCATION: <u>Sullivan Arena/Baete</u>				
OUTFALL FLOW MEASUREMENTS						
Flow Method (circle)		Bucket	<u>Flow Meter</u>			
Flow Meter	Flow Speed (ft/s): <u>2.48</u>		Water Depth (in): <u>3.0</u>		Pipe Diam (in): <u>24in</u>	
Bucket Measurements	Time 1 (s)	Time 2 (s)	Time 3 (s)	Time 4 (s)	Total Time	Rate (gal/s)
Bucket: 1-gal 5-gal						
IN SITU WATER QUALITY MEASUREMENTS						
INSTRUMENT/SERIAL #	YSI 556 MULTIPROBE: KLI #1939			HACH 2100P/Q TURBIDIMETER: KLI #0833		
	TEMP (°C)	SpCond (µS/cm)	DO (mg/L)	DO (% Sat)	pH	TURB (ntu)
MEASUREMENT	<u>16.29</u>	<u>144</u>	<u>16.53</u>	<u>93.8</u>	<u>10.60</u>	<u>17.2</u>
FIELD REPLICATE						
DISCRETE WATER QUALITY SAMPLES						
SAMPLE NUMBER	SAMPLES COLLECTED (CHECK BOX)					
	FECAL	BOD	TSS	TAqH	TAH	Dissolved Cu Hardness
<u>SWM 10-04</u>						
<u>SWM ___-04 Dup</u>						
MS/MSD SAMPLES						
FIELD QC (Trip/Equip)						
Description of QC Samples:					Sampler's Initials: <u>MS</u>	
STANDARD OBSERVATIONS						
PARAMETER	TYPE/SOURCE		EXTENT - COMMENTS			
ODOR			<u>No</u>			
COLOR			<u>No</u>			
CLARITY			<u>Clear</u>			
FLOATABLES			<u>No</u>			
DEPOSITS or STAINS	<u>Rust</u>		<u>No On Rock + Pipe</u>			
SHEEN			<u>No</u>			
SURFACE SCUM	<u>Rust</u>		<u>No</u>			
DEBRIS			<u>No</u>			
WEATHER - VEGETATION - OTHER UNUSUAL CONDITIONS - COMMENTS:						
Photos: <input checked="" type="radio"/> Yes <input type="radio"/> No						

Reviewed By: M. [Signature]

Date: 10/3/16

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**Appendix C**  
**Field & Laboratory Data Validation**



## Field & Laboratory Data Validation

Data review focused on the following quality control (QC) parameters and their overall effects on the data:

- Physical parameter replicate comparisons
- Sample handling and holding time compliance
- Field replicate comparison for conventional and organic constituents
- Comparisons of laboratory controls (e.g., matrix spike/matrix spike duplicates).

### 1. Physical Parameter Comparisons

Precipitation was measured at four project locations within the Anchorage basin using tipping bucket rain gauges. Due to gauge performance issues, only two of those gauges recorded useful information. To supplement the lost gauge information, three National Weather Service monitored gauges were also utilized. The QAPP (MOA, 2012) specifies that storm events must meet the following criteria: a storm event must be greater than 0.1 inch of rain in 24 hours and be preceded by 24 hours of dry weather (less than 0.1 inch of rain). These criteria were applied on a 24-hr storm basis rather than a calendar basis since some times the storm would come in late in the evening the day before sampling took place. In all cases with no exceptions sampling was completed within 24 hours from the start of a storm with the preceding 24 hours being less than 0.1 inches. Therefore, all four storms that were sampled in 2016 met the above criteria.

Rain gauges were deployed on August 8 and 9, 2016 which was after the first storm event, therefore rainfall information from other locations with Anchorage were utilized for the storm. For the August 4, 2016 storm event, the storm began about 7 am on 4 August with the three rain gauges registered 0.76, 0.44, and 0.52 inches for the entire storm event. Only trace levels of precipitation was recorded in the 24 hours preceding the beginning of the storm.

The second storm event occurred on 22 August with recorded rainfall ranging from 0.34 inches at Spencer to 1.02 inches at PANC. Rainfall that was recorded within the study area during the preceding calendar day ranged from 0.0 to 0.08 inches which is within the < 0.1 inch dry weather criteria. Sampling for the second event was initiated at 13:30 approximately 4-5 hrs after the beginning of the storm.

The third event took place on 15 September. On the day of sampling, precipitation ranged from 0.04 inches at Spencer's to 0.36 inches recorded at Merrill Field. Precipitation during the preceding day was part of the same rain event with rainfall beginning at approximately 22:30 hours on 14 September. Sampling was initiated within 12 hrs of the beginning of the storm event and sampling occurred after a 24-hr period of no rain when the storm's starting time was taken into account.

The fourth monitoring event took place on 22 September. Precipitation for this event ranged from 0.66 inches at PANC to 0.93 inches at Spencer's with fairly consistent rainfall across the Anchorage watershed. Precipitation on the preceding day ranged from 0.03 inches at Merrill Field and CCSC to 0.16 inches at Spencer's with most of the rain occurring late on the prior

evening as part of the same storm event. Outfall monitoring for the fourth storm event began approximately 12 hrs after the beginning of the storm event with rainfall being fairly heavy prior to and during the sampling effort.

Grab samples were obtained during four storm events from the flowing water discharging from the storm drain outfalls prior to mixing with the stream water. Flows were monitored using the acoustic doppler flow meter, except at stations SWM07. At SWM07, the volume/ time method was utilized for two of the sampling events where repeated measurements were made and the average measurement used to calculate the flow velocity. The coefficient of variation (CV) was calculated to determine variability of the measurement technique. The CV is a percentage representing the standard deviation divided by the mean of a population.

**Table 1. Coefficients of Variation for Volume/Time Flow Measurements**

Storm Event Date	Station SWM07
August 4, 2016	0.89%
August 22, 2016	Acoustic Doppler
September 15, 2016	Flow too slow to duplicate
September 22, 2016	Acoustic Doppler

## 2. Sample Handling and Holding Time Compliance

Samples were taken directly from the stormwater flow into laboratory-cleaned sample bottles that had the appropriate preservatives. For every storm event, all samples were appropriately labeled and the chains of custody completed as prescribed in the QAPP. For all storm events, samples were maintained in the coolers at less than 6 °C or delivered to the laboratory within a few hours of sampling which meets EPA’s sampling preservation and holding requirements for temperature. Sample custody was maintained; samples were delivered directly to the laboratory by the sample crew within hours of sample collection. For fecal coliform, the parameter with the shortest holding time (8 hours) in all but one case, samples were processed by the laboratory immediately and within the prescribed holding time. One of the Fecal Coliform samples in the fourth event (SWM01-04) was run 22 minutes out of hold time due to laboratory error. For all other parameters, the holding times specified in the QAPP (MOA, 2012) were met.

## 3. Comparisons of Field Replicate Analyses

### *Conventional Parameters*

Replicates of parameters analyzed in the field were taken as a measure of field variability/precision, where precision was calculated as either a relative percent difference (RPD) or the difference between measurements as defined in the QAPP. However, it should be noted that the precision values listed in the QAPP for field instruments were usually the precision of the instrument and not realistic goals for natural variability of stormwater field measurements. For example, in a highly turbid sample, turbidity in the same sample will vary over time as



suspended particles settle and move which, in turn, affects light reflection and the turbidity concentration of the sample.

Field analyses included dissolved oxygen, pH, temperature, turbidity and specific conductivity. Sampling events included field replicates at two stations: SWM02 and SWM08. Table 2 provides the field variability/precision for parameters measured in the field that were conducted during the four sampling events. Replicates were taken at a rate of 20%, exceeding the 15% prescribed for all parameters in the QAPP.

**Table 2. Precision and Variability of Field Parameters**

Parameter	QAPP Standard	July 8, 2015		August 9, 2015		September 14, 2015		September 27, 2015	
		SWM02	SWM08	SWM02	SWM08	SWM02	SWM08	SWM02	SWM08
DO	± 10%	1.1	1.1	8.2	8.1	0.1	2.9	0.9	0
pH	± 0.2 units	<b>0.28</b>	0.10	<b>0.26</b>	0.10	0.09	0.08	0.01	0.08
Turbidity	± 1NTU	<b>2.8</b>	1.0	0.76	0.2	0.01	0.1	<b>3.0</b>	<b>2.3</b>
Temperature	0.4 °C	0.01	0.01	0.01	0.00	0.01	0.00	0.05	0.07
Conductivity	± 1 µS/cm	1	<b>2</b>	<b>2</b>	0	1	<b>3</b>	<b>13</b>	<b>2</b>

Values in bold and red exceeded the precision or accuracy specified in the QAPP. \* Denotes that a replicate sample was not taken and therefore could not be compared for precision and variability.

Field analyses did not consistently meet the precision goals prescribed in the QAPP since the measurements and samples that were taken were not true splits, but were replicate field samples that were obtained a few minutes apart and represented potentially different water masses. The relative percent differences that were calculated for the field replicates are a reflection of field and sampling variability, where the outfall’s discharge may be quite variable over time. Dissolved oxygen and temperature met the precision during all sampling events. Conductivity was the field parameter that most frequently did not meet the precision limits due to the variability of the discharge. Although not specified in the outfall monitoring plan, conductivity was monitored to provide additional information to the field crew. These failures to meet the precision sensitivities prescribed in the QAPP likely reflect the heterogeneous nature of stormwater flow.

Replicate samples for the conventional parameters were taken as field duplicates at SWM02 and SWM08 and analyzed by the laboratory as a measure of field variability/precision. Relative percent differences (RPDs) were calculated. Replicates were taken at a rate of 20%, exceeding the 15% prescribed for all parameters in the QAPP.

Field variability was less than the QAPP limits for all but three cases. The RPD for Fecal Coliform for SWM02-02 was 65% with a QAPP limit of 60%. The RPD of the field replicates for TSS was above the QAPP limit of 25% for SW02-01 at 27% and for SWM08-04 was 32%. All other parameters met the standards prescribed in the QAPP for (Table 3).

In any future sampling it may be desirable to split a sample or have the laboratory perform duplicate analysis on a sample to differentiate between laboratory precision and field variability/precision that is reflected in this study’s data. Sampling protocol may also be changed

to include sampling duplicate parameters at near the same time. For example, fill the bacteria bottles from both the primary and duplicate set one right after the other.

**Table 3. Field Duplicate Results (RPDs) for Conventional Parameters Compared with QAPP Precision Standard**

Parameter	QAPP Precision (RPD)	Outfall Location	Storm Event Date			
			04-Aug-2016	22-Aug-2016	15-Sep-2016	22-Sep-2016
TSS	25%	SWM02	<b>27%</b>	0.4%	0%	4.4%
		SWM08	19%	1.3%	11%	<b>32%</b>
BOD	NA	SWM02	0%	0%	0%	0%
		SWM08	6.1%	2.1%	0%	1.1%
FC	60%	SWM02	8.13 %	<b>65%</b>	9.5%	9.8%
		SWM08	16%	13%	2.8%	23%

Field Duplicates are separate grabs.

Values in bold and red did not meet the precision criterion in the QAPP (MOA, 2012). Samples with N/A cannot be calculated due to one value being non-detect. If both values are ND at the same level the RPD is reported as 0%.

### *Dissolved Copper and Hardness*

Field replicates of dissolved copper and hardness were taken at SWM02 and SWM08, after being added to the constituent list as part of the program augmentation this year. Those results are presented in Table 4 and show variability below 30% for all events with the largest RPD of 29% for copper in the first storm event on 4 August and 23% for hardness in the fourth storm event on 22 September.

**Table 4. Field Duplicate Results (RPDs) Dissolved Copper and Hardness as CaCO<sub>3</sub>**

Parameter	QAPP Precision (RPD)	Outfall Location	Storm Event Date			
			04-Aug-2016	22-Aug-2016	15-Sep-2016	22-Sep-2016
Dissolved Copper	NA	SWM02	4.6%	12%	3.9%	0.57%
		SWM08	29%	1.3%	17%	1.8%
Hardness	NA	SWM02	3.4%	1.6%	0.8%	23%
		SWM08	0.60%	3.6%	1.0%	3.3%

Field Duplicates are separate grabs.

### *Organic Parameters*

Field replicates for the TAH and TAqH constituents were obtained at station SWM02 during each of the four storm events. This represents a replication rate of 20%, which exceeds the 15% prescribed in the QAPP.

The field precision RPDs for TAH or TAqH constituents are presented in Table 5. The variability was less than the limits set by the QAPP in all cases. The largest variability was seen

in the last storm event with a number of RPDs exceeding 25% but none reaching or exceeding the 30% prescribed in the QAPP. No qualifications for field precision was necessary.

#### **4. Comparisons of Laboratory Controls**

Verification analyses for laboratory parameters were conducted by SGS North America, Inc., the laboratory performing the analyses. SGS is certified by the EPA and the Alaska Drinking Water Program and has an approved QA/QC program. Analytical methods and testing procedures were in adherence with the QAPP, standard methods, and EPA-approved protocols and guidelines.

##### ***Conventional Parameters***

Laboratory method blanks were performed for the three conventional parameters BOD, TSS, and fecal coliform. None of the method blanks had any detections. The laboratory control sample and sample duplicate (LCS/LCSD) for the conventional parameters for all storm events were within the laboratory control limits except in two instances and the LCS/LCSD RPDs were all within the laboratories internal limits of 5% and met the QAPP limits of 25%.

Two laboratory duplicates for TSS for the first storm had RPDs of 7.2 and 7.3%, above the laboratory acceptable range of 5% but below the QAPP limit of 25%. The TSS lab duplicate for the third event of September 15<sup>th</sup> was 14.0 mg/L with the sample value of 17.2 with an RPD of 20.5% which is above the internal laboratory limit but below the QAPP limit of 25%.

##### ***Dissolved Copper and Hardness***

Hardness is computed from magnesium and calcium so the QC for those compounds relate to the quality of the hardness results. For the first sampling event on 4 August the Calcium matrix spike was recovered at 60% which is below the lower lab limit of 70%. The source result was greater than 4 times the spike concentration which negates the usefulness of the spike results and no additional action is required.

##### ***Organic Parameters***

Trip blanks were collected for the TAH analyses to ascertain whether the handling of the samples introduced contaminants. The trip blank samples showed no evidence of contamination. All TAH constituents were undetected.

The Laboratory and Method Blanks were all non-detect with the exception of one of the two method blanks run for the fourth storm. In that case four constituents had values detected above the Method Detection Limit but below the reporting limit. Two samples were potentially affected by this (SMW09-04 and the Trip Blank) but in both cases the sample values were not detected at any level and so no further action required.

Laboratory Control Samples and Sample Duplicates (LCS/LCSD) were run, as were Matrix Spikes and Spike Duplicates (MS/MSD), to confirm the accuracy and precision of the analysis of the organic parameters. Spike recoveries confirm accuracy and the relative percent difference (RPD) confirms precision. Matrix Spikes confirm the ability to see the target analyte in the sample. The MS/MSD results are presented for the organic analysis in Table 5.

All spike recoveries and their relative percent differences were within acceptable range for the TAH compounds for all events with one exception. The LCSD was recovered at 119% which is above the lab limit of 118% but below the QAPP limit of 120%. Since the corresponding sample results were not detected, no further action is required.

For the TAqH the story is more complex. The analysis of the samples from the first storm of August 4, 2016 showed a number of low spike recoveries and large RPDs. The Laboratory Control Samples were in range for those parameters.

There were no PAH MS/MSD recoveries out of specified limits for either the second or third storm events. One low recovery was reported for one compound for the fourth storm on 22 September.

A number of PAH surrogate recoveries were reported out of limits. Those details are as follows.

Analysis of surrogates for the first event of August 4, 2016 resulted in numerous low PAH surrogate recoveries. Terphenyl-d14 was recovered at below either lab or QAPP limits for a number of field samples. For sample SWM02-01 it was recovered at 55.9% which is below the lab limit of 58% but above the QAPP limit of 52%. For SWM02-01 Dup it was recovered at 51.6% which is below both the QAPP and lab limits. For SWM05-01 it was recovered at 32%, for SWM07-01 it was recovered at 23.6% and for SWM09-01 it was recovered at 40.6%. The surrogate 2-Fluorobiphenyl was recovered below the QAPP limit of 50% for one field sample, SWM07-01 where it was recovered at 49.5%.

Some of the QC samples for that first event also had low PAH surrogates. The MS/MSD for SWM02-01 had low recoveries for Terphenyl-d14 (49% and 40%). The 2-Fluorobiphenyl was recovered in the MSD at 40%.

Three samples from the second event of August 22<sup>nd</sup> had low PAH surrogate recoveries. Both surrogates for SWM05-02 were reported as low. 2-Fluorobiphenyl was recovered at 49.6% with a QAPP lower limit of 50%. Terphenyl-d14 was recovered at 33.6% with QAPP lower limit of 52%.

Both PAH surrogates for SWM07-02 were reported low. 2-Fluorobiphenyl was recovered at 51.7%, below the QAPP limit of 50%. Terphenyl-d14 was recovered at 28.9% below the QAPP limit of 52%. One surrogate was reported slightly low for SWM09-02 with Terphenyl-d14 recovered at 57.2% with the lower QAPP limit of 52%. All other surrogates were recovered within range for the 22 August 22 storm event.

Two samples for the third storm event had low PAH surrogate recoveries. Terphenyl-d14 for SWM05-03 was recovered at 46.3% and SWM07-03 was at 34.6%, and both are below the QAPP lower limit.

Five samples had Terphenyl-d14 surrogate recoveries below the laboratory lower limit of 58%. The surrogate for SWM02-04 was recovered at 43.2%, for SWM02-04 Dup at 52.6%, for SWM05-04 at 41.1%, for SWM07-04 at 38.9% and SWM09-04 at 56.4%. The QAPP lower limit is 52% so SWM02-04 Dup and SWM09-04 are within that range.

For PAHs, it was determined to qualify cases where both MS and MSD were low which were also cases with RPDs that exceed the QAPP. This occurred for 10 analytes on the first storm event. A qualifier of J-, or UJ- if not detected, was applied to those samples to indicate that they may have a low bias. Since other QC samples such as the LCS were found to be within acceptance limits, the laboratory felt that the low recoveries on the MS and MSD were matrix interference problems, so no additional action was taken.

In qualifying the TAqH data it is important to note that the TAqH constituents are hydrophobic and are likely to sorb or otherwise associate with particles in the stormwater. Thus, where the quality of the stormwater is highly variable with respect to particulates, TAqH constituent exceedances of precision and accuracy limits may be expected. In addition, it should be noted that the MS/MSD analyses for TAqH were based on separate field replicates that were obtained for this purpose. Therefore, it is expected that there may be differences in the analyses that are the result of field variability and not due to any issues with the laboratory analysis.

## **5. Conclusions**

A careful review of the results confirmed that the field and laboratory samples met most QA/QC requirements. A total of 6 TAqH constituents that were detected required qualification with a low bias due to low percent recoveries in both the MS and MSD's for the first storm event. An additional 34 TAqH constituents that were not detected for the first storm event were also qualified with a low bias. Despite these minor QC issues, overall evaluation of the analytical QA/QC data indicates that the project data, are for the most part, within established performance criteria and can be used for characterization of stormwater for this project.

Table 5. Field and Laboratory Precision and Accuracy for TAH and TAqH

Parameter	QAPP Standard		04-Aug-2016			22-Aug-2016			15-Sep-2016			22-Sep-2016		
	Precision	Accuracy	Field Precision	Lab Precision	Lab Accuracy	Field Precision	Lab Precision	Lab Accuracy	Field Precision	Lab Precision	Lab Accuracy	Field Precision	Lab Precision	Lab Accuracy
	RPD	% Recovery	RPD	RPD MS/MSD	% Rec MS/MSD	RPD	RPD MS/MSD	% Rec MS/MSD	RPD	RPD MS/MSD	% Rec MS/MSD	RPD	RPD MS/MSD	% Rec MS/MSD
<b>TAH</b>														
Benzene	20%	80-120%	0	0.15	113 / 113	0	0.95	116 / 115	0	1.1	110 / 109	0	4	101 / 97.3
Chlorobenzene	20%	80-120%	0	0.53	112 / 113	0	3.9	109 / 113	0	1.6	109 / 108	0	2.3	101 / 98.6
1,2-Dichlorobenzene	20%	80-120%	0	0.47	112 / 113	0	4.9	108 / 114	0	0.61	104 / 104	0	4.1	96.8 / 101
1,3-Dichlorobenzene	20%	80-120%	0	2.4	112 / 115	0	3	110 / 113	0	1.2	105 / 104	0	0.68	98.9 / 98.2
1,4-Dichlorobenzene	20%	80-120%	0	0.87	115 / 116	0	1.1	113 / 114	0	0.25	108 / 108	0	3.3	104 / 100
Ethylbenzene	20%	80-120%	0	0.35	115 / 115	0	0	115 / 115	0	1.9	112 / 110	0	0.25	106 / 106
Toluene	20%	77-120%	0	1.3	115 / 114	0	9.3	99.2 / 109	0	3.2	109 / 106	0	0.62	102 / 102
o-Xylene	20%	80-120%	0	0.32	115 / 116	0	1.8	115 / 117	0	2.4	115 / 112	0	3.5	106 / 109
p & m-Xylenes	20%	80-120%	0	0.3	118 / 117	0	4	106 / 116	0	1.8	113 / 111	0	1.7	107 / 105
<b>TAqH</b>														
Acenaphthene	30%	53-110%	0	<b>32</b>	72.4 / 57.7	0	5	97.9 / 95.2	0	2.5	90.7 / 88.4	0	3.9	87.8 / 43
Acenaphthylene	30%	53-105%	0	<b>30.4</b>	64.3 / <b>52.1</b>	0	6	87 / 83.7	0	2.4	79.1 / 77.3	0	6.5	75.3 / 79.5
Anthracene	30%	59-110%	0	<b>31.2</b>	62.6 / <b>50.3</b>	0	5	93.5 / 90.9	0	0.38	78.2 / 77.9	0	4.4	69.5 / 71.8
Benzo(a)anthracene	30%	64-110%	0	<b>34.8</b>	<b>46.3 / 35.8</b>	0	7.3	88.7 / 84.3	0	0.66	79.8 / 79.3	21.5	9.4	<b>58.4</b> / 66.1
Benzo(a)pyrene	30%	58-110%	0.8	<b>36.5</b>	<b>27.9 / 19.7</b>	0	4.5	96.7 / 94.5	0	0.91	82.1 / 82.9	18.1	0.47	60.6 / 59.4
Benzo(b)fluoranthene	30%	57-120%	2.7	<b>36</b>	<b>26.9 / 14.9</b>	0	4.1	92.6 / 90.9	0	0.67	78.1 / 78.6	25.7	7.1	81.4 / 95.4
Benzo(g,h,i)perylene	30%	48-123%	0	<b>33.7</b>	<b>24.5 / 19.2</b>	0	6.5	98 / 93.9	0	1.5	76 / 77.2	23.9	3.7	86.5 / 78.8
Benzo(k)fluoranthene	30%	58-124%	0	<b>33.8</b>	<b>29.7 / 23.2</b>	0	5.3	93.2 / 90.4	0	1.1	76 / 76.9	25.2	5	56.8 / 51.8
Chrysene	30%	63-110%	5.2	<b>33.2</b>	<b>40 / 26.2</b>	0	2.5	102 / 101	0	0.85	83.6 / 84.3	25.5	9.2	72.9 / 86.1
Dibenzo(a,h)anthracene	30%	53-125%	0	<b>31.4</b>	<b>17.9 / 14.4</b>	0	6.2	94.6 / 90.9	0	1.6	78.7 / 79.9	0	1.1	67.4 / 65.9
Fluoranthene	30%	59-115%	6.3	<b>30.5</b>	<b>56.1 / 38.5</b>	5.9	6.3	88.3 / 84.1	0	1.8	79.7 / 78.3	12.9	5.1	78.1 / 85.3
Fluorene	30%	56-110%	0	29.5	64.8 / <b>53</b>	0	5.4	89.2 / 86.4	0	4.9	80.7 / 76.9	0	0.35	80.6 / 79.5
Indeno(1,2,3-cd)pyrene	30%	51-125%	0	<b>31.8</b>	<b>22.6 / 18.1</b>	0	5.7	95.7 / 92.4	0	1.4	77.2 / 78.2	24.5	1.1	72.3 / 70
Naphthalene	30%	45-100%	0	<b>30.2</b>	63.6 / 51.6	0	6	80 / 77	0	2.3	74 / 72.3	0	1.8	66.8 / 67.3
Phenanthrene	30%	58-115%	0	29	64.7 / <b>53.2</b>	0	6.2	86.1 / 82.8	0	1.7	79.2 / 77.9	15.6	6.9	62.3 / 67.9
Pyrene	30%	62-128%	0	<b>31</b>	<b>60.8 / 43.7</b>	0	5.9	103 / 98.9	0	1.6	84.7 / 83.4	12.3	7.6	73.7 / 83.5

Values in bold and red did not meet the precision criterion in the QAPP (MOA, 2012).