APPENDIX E

Surface Water Quality Sampling

E-1 Surface Water Quality Sampling Protocol

E-2 Laboratory Results

E-3 *In Situ* Measurements

E-4 Year 1 – Surface Water Quality Sampling Results

E-5 Year 2 – Surface Water Quality Sampling Results

E-1 Surface Water Quality Sampling Protocol

TECHNICAL MEMORANDUM

DATE June 12, 2012
Revision 1 April 25, 2013

PROJECT No. 12-1151-0155

TO Jim Delaney
Covanta Durham York Renewable Energy L.P.

CC Jeff Bedard and Janice Campbell - Courtice Power Partners; and Terry Winhold - Golder Associates

FROM Steve Auger

EMAIL Steve_Auger@golder.com

DURHAM-YORK ENERGY CENTER SURFACE WATER SAMPLING PROTOCOL DURING CONSTRUCTION PERIOD – Starting June 2012 to approximately May 2014

1.0 INTRODUCTION

This memorandum outlines the Surface Water Sampling protocol for the on and off-site sampling activities for the Durham-York Energy Center ('the Site') during construction activities in support of the overall Groundwater and Surface Water Sampling Monitoring Plan as per Condition 20 of the Site's Environmental Assessment Notice of Approval. The Site Plan Agreement was executed with the Corporation of the Municipality of Clarington and Regional Municipality of Durham on January 24, 2012. Since then, Site construction activities are underway. Operation for the facility is scheduled to commence in May, 2014. Golder Associates Ltd. ('Golder') performed the initial site reconnaissance for this program on May 29, 2012. Covanta Durham York Renewable Energy Limited ('Covanta') commissioned Golder to carry-out this program on May 25, 2012.

2.0 SURFACE WATER SAMPLING

The surface water sampling stations (SWM-E-IN, SWM-E-OUT, SWM-W-IN SWM-W-OUT, and SW1 to SW4) for all on and off-site efforts are shown on Figure 1.

Frequency

At least one inter-event (dry period) surface water sampling grab will occur per season (at minimum, approximately 48 hours after a significant rainfall event of 5 mm or greater). Two more rainfall-runoff sampling grabs will occur for rainfall events of approximately 5 mm or greater.

The surface water sampling grabs will be initiated after direction is received from Covanta. The decision will occur after Covanta consults with the on-site contractor, Courtice Power Partners ('CPP', and Golder.

Sampling Grabs and In Situ Measurements

- Four (4), 500 mL sampling bottles will be filled at each location with surface water grabs. Two (2) of the sampling bottles from each location will be submitted to the laboratory for Total Suspended Solids ('TSS')

and Turbidity analyses. The bottles submitted will be labelled with the appropriate analysis identified, the date and time of sampling, sampling grab location and Golder project number. An additional two (2) bottles will act as duplicates and be stored off-site at the local Golder-Whitby office until lab results are received, reviewed and discussed with Covanta. The duplicate samples will be discarded every season once this review and follow-up discussion is complete. If there is any question or concern regarding the initial laboratory results, the duplicate samples will be submitted to the laboratory for additional analysis after Covanta provides consent for this additional expense.

- *In situ* measurements for pH, temperature and conductivity will also be taken by Golder staff when on-site. The instrument used for these measurements will be calibrated before each use, to ensure accurate results are provided.

On-Site Stormwater Management Ponds

Grab samples will be taken during rainfall-runoff event periods at the inlet and outlet of the East and West stormwater management ('SWM') Ponds.

Rainfall-Runoff-Discharge Sampling

Every reasonable effort, while ensuring safety of the Golder staff, will be taken to sample during a significant rainfall-runoff event (approximately 5 mm or greater of total rainfall) after Golder receives direction to proceed from Covanta.

Grab samples at the inlet and outlet of the SWM Ponds will be taken during the rising and falling limbs of the inflow and outflow to and from these SWM Ponds, respectively. The coordination of these sample grabs will be based on experience and the specific storm characteristics (e.g., intensity, duration, total volume) and Site conditions (e.g., antecedent conditions).

Controlled Discharge Sampling

During a controlled pump-out sampling scenario, the East and West SWM Pond outlet stations, along with the upstream and downstream receiving swale (SW1 and SW2) and Tooley Creek grabs will be performed (at the very least) following a significant rainfall event of approximately 5 mm or greater. Considering this 'controlled' sampling scenario, it is not anticipated that inflow conditions at the SWM-E-IN and SWM-W-IN sampling locations will be suitable for grab samples. However, if there is still reasonable inflow into the ponds during these controlled discharge events, grab samples will also be taken at these locations.

Off-Site Receiving Swale and Tooley Creek

Grab sampling at the upstream and downstream receiving swale locations (SW1 and SW2), along with the upstream and downstream Tooley Creek stations (SW3 and SW4), will occur after all on-site sampling is complete. These samples will be taken in numerical sequence.

The following general good practices for surface water grab sampling will also be followed by Golder staff.

Grab Sampling Technique

- Surface Water sampling will occur via a grab sample from identified, consistent sampling locations that are considered representative of 'well-mixed' surface water conditions at the sampling station. Typically, these grabs will be taken in the centre-line zone of the receiving swale or creek, or the centre of the inlet or outlet location for the SWM Ponds. These samples should be grabbed from depths slightly below the surface of the water, is the water depths at the time of sampling is accommodating (Burton and Pitt, 2002).

- Care must be taken to not to disturb the substrate at the sampling station, to avoid any increase in TSS or Turbidity measurements while sampling efforts occur. If depths are too shallow, every effort will be taken for a 'well-mixed' sample, while avoiding any disturbance (e.g., shallow sampling scoops using control bottle).

Field Forms and Reporting

- Golder has developed a surface water sampling field form that should be filled out in it's entirety for each station during the sampling effort (Attachment 1). Along with the recorded *in situ* measurements, visual observations will be made during the sampling periods.
- A technical memorandum will be prepared each season, outlining the surface water sampling results along with a summary of the Erosion and Sediment Control ('E&SC') weekly reviews. This memo will also highlight any additional E&SC measures recommended for consideration, if there are any concerns with surface water impacts off-site based on the surface water sampling results and/or the E&SC inspection reviews.

Site Photographic Record

A photographic record of conditions at the eight surface water quality sampling locations and other notable view points will developed by Golder to illustrate study area conditions during the surface water sampling visits.

Sample Submission to Laboratory

- Grab samples will be packaged in ice and sent to the laboratory for analysis immediately after the sampling event. Approximately two (2) bags of ice will be required to fill the cooler box provided with the bottles. Ice bags should entirely surround the sample bottles by being placed on the bottom of the cooler below the sample bottles, as well as between, on all sides and above the sample bottles. If the temperature of the bottles is below 10 ˚C when it is received at the laboratory, the analysis results are less reliable and this will be noted in the laboratory results.
- Golder will follow the chain-of-custody protocol from the laboratory of choice, and provide a copy of the grab sample set exchange with the laboratory to Covanta for their records.
- When analytical results are complete, they will be forwarded via e-mail to the Golder Surface Water Certified Environmental Practitioner ('CEP').

3.0 HEALTH AND SAFETY

Site Training and Communication

All Golder staff involved with the Site's Surface Water Sampling program will receive Health and Safety orientation from CPP. As part of the training requirement, Golder staff will ensure both Workplace Hazardous Materials Information System ('WHMIS') and Fall Protection Awareness training/qualifications are current.

Upon arrival to the Site, Golder staff must back vehicles safely into a parking spot in the eastern control area near the contractors and consultants offices. Golder staff must check in with the CPP Environmental Monitor and Inspector (EMI) or Janice Campbell (CPP Health and Safety Coordinator) for a Health and Safety briefing outlining the specific Site activities and notable hazards for the day. A sign-in sheet within the CPP training must also be filled. Upon departure, a check-out confirmation with the CPP representative originally contacted, along with signing out must also occur.

Jim Delaney or Dave Haldenby (Covanta) will also be informed of each site visit by the Golder Surface Water CEP or designate ahead of the Golder team's arrival.

Golder Health and Safety Environment Plan

The Golder staff will be following a separate Health and Safety Environment Plan ('HaESP'), that outlines the risks and preventative strategies to ensure safety on and off Site (Attachment 2). The appropriate Health and Safety personal protection equipment for the on and off-site work include a construction hat, goggles, steel toed construction boots (while on-site), and waders for the off-site sampling work in Tooley Creek at stations SW3 and SW4.

For the surface water sampling efforts, a check-in and out contact will also be made with the Golder project manager or alternative Health & Safety point of contact for the site visit.

CN Railway Line

There are two sampling stations off-site (SW1 and SW2) that are located north of and in close proximity to the CN Railway line as shown on Figure 1.

The SW1 station is located just northwest of the Osbourne Road crossing, within approximately 15 m of the gate and lights signal system for the CN railway line. Golder staff should never venture south of the swale or this station. If there is any indication that a train is coming (i.e., the signal lights start flashing and the gates come down, along with horn blasting heard from a distance), the Golder sampling team will walk away from the sampling equipment and efforts to a control point along and outside of the southeastern side of the Site's perimeter fence where they will wait until the train has passed.

At the SW2 station, this sampling station has been selected so Golder staff can reach within the receiving swale to take the sample while still being north of the farmer's fence and CN Railway line right-of-way for grabs at this station.

Attachment 1:Surface Water Sampling Field Form
Attachment 2:Golder's HAESP

N.B.
For Attachment 1, see Appendix E-3 in Surface Water Monitoring Program Annual Report.

Attachment 2 is not provided .

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4.0 REFERENCES

Burton, G.A. and Pitt, R.E. (2002). *Stormwater Effects Handbook: A Tool for Watershed Managers, Scientists, and Engineers*, Lewis Publishers. pp. 247-251, 307, 313, 337, 357

E-2 Laboratory Results

Your Project #: 12-1151-0155
Site#: 12-1151-0155
Site Location: CONVANTA
Your C.O.C. #: C#464950, C#464950-04-01

Attention:Steve Auger

Golder Associates Ltd
140 Renfrew Dr
Suite 110
Markham, ON
L3R 6B3

Report Date: 2014/06/19
Report #: R3063789
Version: 1

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B4A4330
Received: 2014/06/18, 14:20

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Total Metals Analysis by ICPMS	3	N/A	2014/06/19	CAM SOP-00447	EPA 6020

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Antonella Brasil, Senior Project Manager
Email: ABrasil@maxxam.ca
Phone# (905)817-5817

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Maxxam Job #: B4A4330
Report Date: 2014/06/19

Golder Associates Ltd
Client Project #: 12-1151-0155
Site Location: CONVANTA
Sampler Initials: DW

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		002216	002217	002218		
Sampling Date		2014/06/17 11:36	2014/06/17 11:45	2014/06/17 11:26		
COC Number		C#464950-04-01	C#464950-04-01	C#464950-04-01		
	Units	E-SWMP(OUTLET)	W-SWMP	E-SWMP(FOREBAY)	RDL	QC Batch
Metals						
Total Iron (Fe)	ug/L	280	420	490	100	3647020

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B4A4330
Report Date: 2014/06/19

Golder Associates Ltd
Client Project #: 12-1151-0155
Site Location: CONVANTA
Sampler Initials: DW

TEST SUMMARY

Maxxam ID: 002216
Sample ID: E-SWMP(OUTLET)
Matrix: Water

Collected: 2014/06/17
Shipped:
Received: 2014/06/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Metals Analysis by ICPMS	ICP/MS	3647020	N/A	2014/06/19	Prempal Bhatti

Maxxam ID: 002217
Sample ID: W-SWMP
Matrix: Water

Collected: 2014/06/17
Shipped:
Received: 2014/06/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Metals Analysis by ICPMS	ICP/MS	3647020	N/A	2014/06/19	Prempal Bhatti

Maxxam ID: 002218
Sample ID: E-SWMP(FOREBAY)
Matrix: Water

Collected: 2014/06/17
Shipped:
Received: 2014/06/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Metals Analysis by ICPMS	ICP/MS	3647020	N/A	2014/06/19	Prempal Bhatti

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Maxxam Job #: B4A4330
Report Date: 2014/06/19

Golder Associates Ltd
Client Project #: 12-1151-0155
Site Location: CONVANTA
Sampler Initials: DW

GENERAL COMMENTS

Results relate only to the items tested.

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Maxxam Job #: B4A4330
Report Date: 2014/06/19

Golder Associates Ltd
Client Project #: 12-1151-0155
Site Location: CONVANTA
Sampler Initials: DW

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
3647020	PBA	Matrix Spike	Total Iron (Fe)	2014/06/19		106	%	80 - 120
3647020	PBA	Spiked Blank	Total Iron (Fe)	2014/06/19		106	%	80 - 120
3647020	PBA	Method Blank	Total Iron (Fe)	2014/06/19	<100		ug/L	

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

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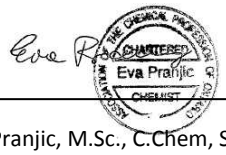
Maxxam Job #: B4A4330
Report Date: 2014/06/19

Golder Associates Ltd
Client Project #: 12-1151-0155
Site Location: CONVANTA
Sampler Initials: DW

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist

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E-3 *In Situ* Measurements

SURFACE WATER SAMPLING RECORD FORM

PROJECT INFORMATION

Project Number: 12-1151-0155
Client: Covanta
Site Location: E SWMP-OUT

Date: 30-Apr-14
Sampled By: E.Marsch / L.Macleod

SITE DATA

Time	
Surveyed reference point	
Water Depth at Staff Gauge (m)	~0.5m
Stream Width (m)	3m
Stagnant	Yes / No
Flow Rate	med to high

Location ID	E-SWMP-OUT

Logger Number	
Loger Download Time	
Photos Taken	Yes / No (#)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or µS	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour

SAMPLING RECORD

Sampling Method:
Sample Depth:
Time Sampled:
Sample Appearance:
Colour:
Odour:

Sample ID:
Dup taken? / Dup ID:

Turbidity: Low / Medium / High

Sample Container and Preservation:

OBSERVATIONS

Weather Conditions:
Temperature:
Current Precipitation:
Precipitation of past 24 / 48 hrs:

Notes: could not access due to instability of swail walls as well as deep mud. Jim Delaney advised us to not attempt to access the outlet area. High turbidity could be seen at outlet point

SITE SKETCH

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155
Client: Covanta
Site Location: E-SWMP-IN

Date: 30-Apr-14
Sampled By: E.Marsch / L.Macleod

SITE DATA

Time	10:56
Surveyed reference point	
Water Depth at Staff Gauge (m)	3.
Stream Width (m)	
Stagnant	Yes / No
Flow Rate	

Location ID	E-SWMP-IN

Logger Number	
Loger Download Time	
Photos Taken	Yes / No (#1-3)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or µS	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
10:56	/	1426	6.68	/	5.6	188 NTU	light brown	none

SAMPLING RECORD

Sampling Method: grab pole
Sample Depth: surface
Time Sampled: 11:00
Sample Appearance: Colour: light brown
Odour: /

Sample ID: E-SWMP-IN
Dup taken? / Dup ID: Yes DUP 1

Turbidity: Low / Medium / High

Sample Container and Preservation:
lab provided

OBSERVATIONS

Weather Conditions:
Temperature: 5°C
Current Precipitation: light rain - high winds
Precipitation of past 24 / 48 hrs: 10 + mm
Notes: water very turbid; pond now gravity feeds to swail south of pond; water levels high

SITE SKETCH

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155
Client: Covanta
Site Location: W-SWMP-OUT

Date: 30-Apr-14
Sampled By: E.Marsch / L.Macleod

SITE DATA

Time	11:15
Surveyed reference point	
Water Depth at Staff Gauge (m)	~ 0.10m
Stream Width (m)	< 1 m
Stagnant	Yes (No)
Flow Rate	med.

Location ID	W-SWMP-OUT

Logger Number	
Loger Download Time	
Photos Taken	(Yes) / No (#)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or µS	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
11:15	/	578	9.97	/	5.7	816	M.br	/

SAMPLING RECORD

Sampling Method: grab only
Sample Depth: surface/outlet discharge
Time Sampled: 11:15
Sample Appearance: Colour: light brown
Odour:

Sample ID: W-SWMP-OUT
Dup taken? / Dup ID: DUP 2

Turbidity: Low / (Medium) / High

Sample Container and Preservation:
lab provided

OBSERVATIONS

Weather Conditions:
Temperature: 5°C
Current Precipitation: light rain high winds
Precipitation of past 24 / 48 hrs: ~10mm
Notes: Sample obtained from overflow pipe not from swale outlet as the stability of swale was questionable due to mud. water was turbid; turbid was observed at discharge outlet

SITE SKETCH

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155
Client: Covanta
Site Location: W-SWMP-IN

Date: 30-Apr-14
Sampled By: E.Marsch / L.Macleod

SITE DATA

Time	11:30
Surveyed reference point	
Water Depth at Staff Gauge (m)	3m
Stream Width (m)	
Stagnant	Yes / No
Flow Rate	

Location ID	W-SWMP-IN

Logger Number	
Loger Download Time	
Photos Taken	Yes / No (#)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or µS	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
11:30	/	~~mS~~ µS 563	8.2	/	5.6	888	Lt. brown	/

SAMPLING RECORD

Sampling Method: grab pole
Sample Depth: Surface
Time Sampled: 11:30
Sample Appearance:
Colour: light brown
Odour:

Sample ID: W-SWMP IN
Dup taken? / Dup ID: DUP 3

Turbidity: Low / Medium / High

Sample Container and Preservation:
lab provided

OBSERVATIONS

Weather Conditions:
Temperature: 5°C
Current Precipitation: light rain - high winds
Precipitation of past 24 / 48 hrs: ~10mm
Notes: water very turbid, level high and discharge was occurring via overflow pipe - system is now gravity fed. to small culvert

SITE SKETCH

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155
Client: Covanta
Site Location: SW1

Date: 30-Apr-14
Sampled By: E.Marsch / L.Macleod

SITE DATA

Time	11:45
Surveyed reference point	
Water Depth at Staff Gauge (m)	~0.75m
Stream Width (m)	3m
Stagnant	(Yes) / No
Flow Rate	high to med

Location ID	SW1

Logger Number	
Loger Download Time	
Photos Taken	(Yes) / No (#)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or µS	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
1145	/	3150	8.19	5.6	5.6	160	lt. br.	

SAMPLING RECORD

Sampling Method: grab pole
Sample Depth: surface
Time Sampled: 11:45
Sample Appearance: Colour: light brown
Odour:

Sample ID: SW1
Dup taken? / Dup ID: DUP 4

Turbidity: Low / Medium / (High)

Sample Container and Preservation:
labs provided

OBSERVATIONS

Weather Conditions:
Temperature: 5°C
Current Precipitation: light rain - high winds
Precipitation of past 24 / 48 hrs: ≥ 10mm
Notes: water levels very high and very turbid;

SITE SKETCH

SURFACE WATER SAMPLING RECORD FORM

PROJECT INFORMATION

Project Number: 12-1151-0155
Client: Covanta
Site Location: SW2

Date: 30-Apr-14
Sampled By: E.Marsch / L.Macleod

SITE DATA

Time	12:00
Surveyed reference point	
Water Depth at Staff Gauge (m)	~0.50m
Stream Width (m)	3 m
Stagnant	Yes / (No)
Flow Rate	med to high

Location ID	SW2

Logger Number	
Loger Download Time	
Photos Taken	(Yes) / No (# 2)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or µS	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
12:00	/	1427	8.21	/	5.7	376	lt. brown	/

SAMPLING RECORD

Sampling Method: grab pole
Sample Depth: surface
Time Sampled: 12:00
Sample Appearance: Colour: light brown
Odour: /

Sample ID: SW2
Dup taken? / Dup ID: DUP5

Turbidity: Low / Medium / (High)

Sample Container and Preservation:
lab provided

OBSERVATIONS

Weather Conditions:
Temperature: 5°C
Current Precipitation: light rain-high winds
Precipitation of past 24 / 48 hrs: ~10 mm
Notes: high water levels & high turbidity.

SITE SKETCH

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155
Client: Covanta
Site Location: SW 3

Date: 30-Apr-14
Sampled By: E.Marsch / L.Macleod

SITE DATA

Time	12:15
Surveyed reference point	
Water Depth at Staff Gauge (m)	1.5 m
Stream Width (m)	3 m
Stagnant	Yes / (No)
Flow Rate	high

Location ID	SW3

Logger Number	
Loger Download Time	
Photos Taken	(Yes) / No (#)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or (µS)	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
12:15	/	722	8.21	/	5.6	90.2	li. br	/

SAMPLING RECORD

Sampling Method: grab pole
Sample Depth: surface.
Time Sampled: 12:15
Sample Appearance: Colour: light brown
Odour:

Sample ID: SW3
Dup taken? / Dup ID: Dup 6

Turbidity: Low / Medium / (High)

Sample Container and Preservation:
lab provided

OBSERVATIONS

Weather Conditions:
Temperature: 5°C
Current Precipitation: light rain + high winds
Precipitation of past 24 / 48 hrs: ~ 10 mm
Notes: very high water levels and turbidity - construction activities noted with respect to water/stream relocation west and west of sampling location (previously completed)

SITE SKETCH

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155
Client: Covanta
Site Location: SW4

Date: 30-Apr-14
Sampled By: E.Marsch / L.Macleod

SITE DATA

Time	12:30
Surveyed reference point	
Water Depth at Staff Gauge (m)	1.5 m
Stream Width (m)	3 m
Stagnant	Yes / No
Flow Rate	high

Location ID	SW4

Logger Number	
Loger Download Time	
Photos Taken	Yes / No (#)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or µS	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
12:30	/	978	8.33	/	5.9	114	lt br	/

SAMPLING RECORD

Sampling Method: grab pole
Sample Depth: surface
Time Sampled: 12:30
Sample Appearance: Colour: light brown
Odour:

Sample ID: SW4
Dup taken? / Dup ID: Duplicate DUP 7

Turbidity: Low / Medium / High

Sample Container and Preservation:
lab provided

OBSERVATIONS

Weather Conditions:
Temperature: 5°C
Current Precipitation: light rain high winds
Precipitation of past 24 / 48 hrs: ~10 mm
Notes: very high water levels and turbidity; construction activities related to stream re-location and erosion observed west of sampling location (previously completed)

SITE SKETCH

Macleod, Linda

From: Macleod, Linda
Sent: Wednesday, April 30, 2014 3:17 PM
To: Auger, Steve
Cc: Witheridge, Devon (Devon_Witheridge@golder.com); Marsch, Evelyn
Subject: Covanta Sampling

Hi Steve,

Evelyn and I met with Jim Delaney this morning. He escorted us to E-SWMP-IN and indicated the gravity feed was operational. The water levels and turbidity were very high (NTU 188). Samples and photos were obtained.

We proceed to W-SWMP-OUT (NTU 816) where overflow discharge was occurring due to very high water levels W-SWMP-IN. Samples and photos were obtained. Water levels and turbidity were very high in W-SWMP-IN (NTU 888) and the gravity feed was operational.

We were discouraged from entering the swale to obtain photos due to the very deep muddy conditions. Photos were obtained from above and turbid water was observed entering the ditch/swale from the gravity feed out pipe. We were advised to not attempt to obtain photos of the E-SWMP-OUT from the south side of the swale due to the muddy conditions.

SW1, 2, 3, and 4 were all more turbid than normal. Water levels were also much higher and faster than normal. Samples and photos were obtained from all locations.

SW1 NTU 160
SW2 NTU 376
SW3 NTU 90.2
SW4 NTU 114

All field notes and photos have been uploaded them to the project folder. Maxim has been notified to pick-up the turbidity meter. Please advise if a you would like samples to be submitted.

Thanks,

Linda

Calibrated pH/EC pens. Note: attempted several times during a 25 minute period of time to calibrate conductivity without success. The pen was reading very high values and would not accept calibration.
Apr 30, 2014
Linda Macleod

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Certificate of Calibration

This certifies that Hach Model 2100Q s/n 7714 has been calibrated and meets the Manufacturer's operating parameters.

PRIMARY TURBIDITY STANDARDS

Lot#	NTU
A2307 exp. Oct-14	0.1
A2305 exp. Oct-14	20.0
A2286 exp. Oct-14	100.0
A2269 exp. Sept-14	800

Apr. 29, 2014

Certified

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SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155
Client: CONVAUTA
Site Location: SW1

Date: MAY 30/14
Sampled By: Devon W. Lena Z

SITE DATA

Time	12:30
Surveyed reference point	/
Water Depth at Staff Gauge (m)	/
Stream Width (m)	
Stagnant	(Yes) / No
Flow Rate	low

Location ID	

Logger Number	
Loger Download Time	
Photos Taken	Yes / No (#)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or µS	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
12:30		4.09	7.25		19.4	9.25 ntu	No.	No

SAMPLING RECORD

Sampling Method: GRAB
Sample Depth: surface
Time Sampled: 1230

Sample ID: SW1
Dup taken? / Dup ID: SW1 DUP

Sample Appearance:
Colour: clear
Odour: NO

Turbidity: (Low) / Medium / High

Sample Container and Preservation:
6 x plastic bottles

OBSERVATIONS

Weather Conditions:
Temperature:
Current Precipitation:
Precipitation of past 24 / 48 hrs:

Notes: - calibrated Hanna combo pen w/ 7.01 + 4.01 calibration solution & calibration solut 1413 µs/cm used for conductance.

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1152-0155
Client: CONVANTA
Site Location: E-SWMP-OUT

Date: MAY 30/14
Sampled By: DW/LZ

SITE DATA

Time	1310
Surveyed reference point	/
Water Depth at Staff Gauge (m)	/
Stream Width (m)	1.25
Stagnant	Yes / No
Flow Rate	LOW

Location ID	E-SWMP-OUT

Logger Number	/
Loger Download Time	/
Photos Taken	(Yes) No (#)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or µS	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
1310		11.35	7.67		18.3	8.52	NO	NO

SAMPLING RECORD

Sampling Method: GRAB
Sample Depth: SURFACE
Time Sampled: 13:10

Sample ID: E-SWMP-OUT
Dup taken? / Dup ID: E-SWMP-OUT-DUP

Sample Appearance:
Colour: Clear
Odour: N.

Turbidity: (Low) / Medium / High

Sample Container and Preservation:
TDS - 563 ppm
- 6 x plastic bottles

OBSERVATIONS

Weather Conditions:
Temperature:
Current Precipitation:
Precipitation of past 24 / 48 hrs:

Notes:

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155
Client: CONVANTA
Site Location: W-SWMP-OUTLOT

Date: MAY 30/14
Sampled By: DW/LZ

SITE DATA

Time	1321
Surveyed reference point	✓
Water Depth at Staff Gauge (m)	✓
Stream Width (m)	✓
Stagnant	Yes / No
Flow Rate	✓ - DRY

Location ID	

Logger Number	
Loger Download Time	
Photos Taken	Yes / No (#)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or µS	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
✓	✓	✓	✓	✓	✓	✓	✓	✓

SAMPLING RECORD

Sampling Method: DRY
Sample ID: NOT SAMPLED
Sample Depth:
Dup taken? / Dup ID:
Time Sampled:

Sample Appearance:
Colour:
Odour:

Turbidity: Low / Medium / High

Sample Container and Preservation:

NOT SAMPLED - DRY

OBSERVATIONS

Weather Conditions:
Temperature:
Current Precipitation:
Precipitation of past 24 / 48 hrs:

Notes:

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155
Client: CONVANTA
Site Location: SW 2

Date: MAY 30/14
Sampled By: DW / LZ

SITE DATA

Time	1345
Surveyed reference point	/
Water Depth at Staff Gauge (m)	/
Stream Width (m)	1m
Stagnant	Yes / (No)
Flow Rate	LOW

Location ID	SW 2

Logger Number	
Loger Download Time	
Photos Taken	Yes / (No) #
Photo Location	NO.

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or (µS)	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
1345	/	1099	8.19	/	19.0	8.86	clear	No

SAMPLING RECORD

Sampling Method: GRAB
Sample Depth: surface
Time Sampled: 1345

Sample ID: SW 2
Dup taken? / Dup ID: SW2 DUP

Sample Appearance:
Colour: clear
Odour: no

Turbidity: (Low) / Medium / High

Sample Container and Preservation:
6x plastic

OBSERVATIONS

Weather Conditions:
Temperature:
Current Precipitation:
Precipitation of past 24 / 48 hrs:

Notes:

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155
Client: CONVANTA
Site Location: SW 3

Date: May 30/14
Sampled By: DW / LZ

SITE DATA

Time	1400
Surveyed reference point	✓
Water Depth at Staff Gauge (m)	✓
Stream Width (m)	1.2m
Stagnant	Yes / (No)
Flow Rate	Med.

Location ID	SW 3

Logger Number	✓
Loger Download Time	✓
Photos Taken	(Yes) / No (#)
Photo Location	✓

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or (µS)	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
1400	✓	828	8.47	✓	16.6 ~~20.9~~	4.13	NO	NO

SAMPLING RECORD

Sampling Method: Grab
Sample Depth: surface
Time Sampled: 1400

Sample ID: SW 3
Dup taken? / Dup ID: SW ~~3~~ 7 - Dup

Sample Appearance:
Colour: clear
Odour: NO

Turbidity: (Low) / Medium / High

Sample Container and Preservation:
- 6x plastic bottles
- TDS - 400 ppm

OBSERVATIONS

Weather Conditions:
Temperature:
Current Precipitation:
Precipitation of past 24 / 48 hrs:

Notes:

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155
Client: CONWANTA
Site Location: SW4

Date: MAY 30/14
Sampled By: DW/LZ

SITE DATA

Time	14:30
Surveyed reference point	✓
Water Depth at Staff Gauge (m)	✓
Stream Width (m)	1.0
Stagnant	Yes / (No)
Flow Rate	Medium

Location ID	SW4

Logger Number	
Loger Download Time	
Photos Taken	Yes / (No) (#)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or µS	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
1430	✓	864	8.16	✓	16.8	2.93	NO	NO

SAMPLING RECORD

Sampling Method: GRAB
Sample Depth: SURFACE
Time Sampled: 14:30

Sample ID: SW4
Dup taken? / Dup ID: SW4-DUP

Sample Appearance:
Colour: clear
Odour: NO

Turbidity: (Low) / Medium / High

Sample Container and Preservation:

6 x plastic bottles
TSS-432

OBSERVATIONS

Weather Conditions:
Temperature:
Current Precipitation:
Precipitation of past 24 / 48 hrs:

Notes:

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155
Client: CONVANTA
Site Location: E-Swamp

Date: MAY 30/14
Sampled By: DW

SITE DATA

Time	1500
Surveyed reference point	/
Water Depth at Staff Gauge (m)	/
~~Stream~~ Width (m)	50%
Stagnant	Yes / (No)
Flow Rate	

Location ID	E-swamp

Logger Number	
Loger Download Time	
Photos Taken	(Yes) / No (#)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or (µS)	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
1500	/	1004	9.16		22.6	27.6 ntu	clear	N

SAMPLING RECORD

Sampling Method: GRAB
Sample Depth: surface
Time Sampled: 1500
Sample Appearance:
Colour: brown - pond
Odour: NO

Sample ID: E-SWAMP
Dup taken? / Dup ID: E-SWAMP - DUP

Turbidity: (Low) / Medium / High

Sample Container and Preservation:
SO4 - PPM - TDS
- 6 x plastic - NP

OBSERVATIONS

Weather Conditions:
Temperature:
Current Precipitation:
Precipitation of past 24 / 48 hrs:
Notes:

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155
Client: CONVANTA
Site Location: W-SWAMP

Date: MAY 30/14
Sampled By: DW

SITE DATA

Time	1515
Surveyed reference point	/
Water Depth at Staff Gauge (m)	/
Stream Width (m)	85% Pond
Stagnant	(Yes) / No
Flow Rate	—

Location ID	W-SWAMP

Logger Number	
Loger Download Time	
Photos Taken	(Yes) / No (#)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or (µS)	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
1515	/	457	9.30	/	21.6	9.99	clear	NO

SAMPLING RECORD

Sampling Method: GRAB
Sample Depth: SURFACE
Time Sampled: 1515

Sample ID: W-SWAMP
Dup taken? / Dup ID: W-SWAMP - DUP

Sample Appearance:
Colour: clear
Odour: NO

Turbidity: (Low) / Medium / High

Sample Container and Preservation:
6x Plastic
220 ppm TDS.

OBSERVATIONS

Weather Conditions:
Temperature:
Current Precipitation:
Precipitation of past 24 / 48 hrs:

Notes:

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Certificate of Calibration

This certifies that Hach Model 2100P s/n 38030 has been calibrated and meets the Manufacturer's operating parameters.

PRIMARY TURBIDITY STANDARDS

Lot#	NTU
A2307 exp. Oct-14	0.1
A2305 exp. Oct-14	20.0
A2286 exp. Oct-14	100.0
A2269 exp. Sept-14	800

MAY 26, 2014

Certified

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SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155
Client: CONVANTA
Site Location: SW1

Date: JUNE 3/14
Sampled By: DW/EM

SITE DATA

Time	1051
Surveyed reference point	/
Water Depth at Staff Gauge (m)	/
Stream Width (m)	1.5
Stagnant	Yes / (No)
Flow Rate	Mod-High

Location ID	SW1

Logger Number	
Loger Download Time	
Photos Taken	(Yes) / No (#)
Photo Location	West of SW1

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or µS	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
1051	/	971	7.87	/	17.4	24.7	no	no

SAMPLING RECORD

Sampling Method: grab
Sample Depth: Surface
Time Sampled: 1051

Sample ID: SW1
Dup taken? / Dup ID: SW1-DUP

Sample Appearance:
Colour: clear
Odour: no

Turbidity: (Low) / Medium / High

Sample Container and Preservation:
6x unpreserved plastic

OBSERVATIONS

Weather Conditions:
Temperature:
Current Precipitation:
Precipitation of past 24 / 48 hrs:

Notes:

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155
Client: CONVANTA
Site Location: SW2

Date: JUNE 3/14
Sampled By: DW/EM

SITE DATA

Time	1131
Surveyed reference point	
Water Depth at Staff Gauge (m)	
Stream Width (m)	4.5
Stagnant	Yes / (No)
Flow Rate	LOW

Location ID	SW 2

Logger Number	
Loger Download Time	
Photos Taken	(Yes) / No (#)
Photo Location	North

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or (µS)	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
1131	/	859	8.00	/	18.4°C	120	Lt. Br	NO

SAMPLING RECORD

Sampling Method: pole grab
Sample Depth: surface
Time Sampled: 1131
Sample Appearance:
Colour: Lt. Br
Odour: N

Sample ID: SW 2
Dup taken? / Dup ID: SW 2 - DUP

Turbidity: (Low) / Medium / High

Sample Container and Preservation:

6 x unpreserved plastic

OBSERVATIONS

Weather Conditions:
Temperature:
Current Precipitation:
Precipitation of past 24 / 48 hrs:
Notes:

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155
Client: CONVANTA
Site Location: SW3

Date: JUNE 3/14
Sampled By: DW/EM

SITE DATA

Time	1150
Surveyed reference point	—
Water Depth at Staff Gauge (m)	—
Stream Width (m)	1.5
Stagnant	Yes (No)
Flow Rate	med high

Location ID	SW3

Logger Number	
Loger Download Time	
Photos Taken	(Yes) / No (#)
Photo Location	East

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or (µS)	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
1150	—	866	8.12	—	16.9	33.0	Li Br.	ND

SAMPLING RECORD

Sampling Method: grab
Sample Depth: surface
Time Sampled: 1150

Sample ID: SW3
Dup taken? / Dup ID: SW3 DUP

Sample Appearance:
Colour: Li br. - slight cloudy
Odour: ND

Turbidity: (Low) / Medium / High

Sample Container and Preservation:
6x no preserv plastic

OBSERVATIONS

Weather Conditions:
Temperature:
Current Precipitation:
Precipitation of past 24 / 48 hrs:

Notes:

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155
Client: CONVANTA
Site Location: SW 4

Date: JUNE 3/14
Sampled By: DW/EM

SITE DATA

Time	1200
Surveyed reference point	-
Water Depth at Staff Gauge (m)	-
Stream Width (m)	3m
Stagnant	Yes / (No)
Flow Rate	med.

Location ID	SW 4

Logger Number	
Loger Download Time	
Photos Taken	(Yes) / No (#)
Photo Location	east.

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or µS	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
1700	-	315	3.5	-	17.0	48.7	L. Br.	m.

SAMPLING RECORD

Sampling Method: grab
Sample Depth: surface
Time Sampled: 1200

Sample ID: SW 4
Dup taken? / Dup ID: SW 4 - Dup.

Sample Appearance:
Colour: L. Br.
Odour:

Turbidity: Low / Medium / High

Sample Container and Preservation:

5X unpreserved plastic

OBSERVATIONS

Weather Conditions:
Temperature:
Current Precipitation:
Precipitation of past 24 / 48 hrs:

Notes:

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155
Client: CONVANTA
Site Location: E-SWMP

Date: JUNE 3/14
Sampled By: DW/EM

SITE DATA

Time	1013
Surveyed reference point	/
Water Depth at Staff Gauge (m)	/
Stream Width (m)	POND
Stagnant	(Yes) / No
Flow Rate	N

Location ID	SWMP - E

Logger Number	/
Loger Download Time	/
Photos Taken	(Yes) / No (#)
Photo Location	POND - NW

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or (µS)	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
1013	/	958	7.71		18.3°C	427	brown	No

SAMPLING RECORD

Sampling Method: grab - pole
Sample Depth: surface
Time Sampled: 1013

Sample ID: E-SWMP
Dup taken? / Dup ID: E-SWMP-DUP

Sample Appearance:
Colour: brown, slight cloudy
Odour: N

Turbidity: Low / Medium / High

Sample Container and Preservation:
6 x unpreserved plastic

OBSERVATIONS

Weather Conditions:
Temperature:
Current Precipitation:
Precipitation of past 24 / 48 hrs:

Notes: calibrated pH pen w/ 4 + 7 pH + 1413 µs/cm

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155
Client: CONVANTA
Site Location: W- SMMP

Date: JUNE 3/14
Sampled By: DW/EM

SITE DATA

Time	1021
Surveyed reference point	/
Water Depth at Staff Gauge (m)	/
Stream Width (m)	POND
Stagnant	(Yes) No
Flow Rate	No

Location ID	W- SMPM

Logger Number	
Loger Download Time	
Photos Taken	(Yes) / No (#)
Photo Location	East of Pond

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or (µS)	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
1021		543	7.76		20.2	51.4	lt. br.	no.

SAMPLING RECORD

Sampling Method: pole grab.
Sample Depth: surface
Time Sampled: 1021

Sample ID: W- SMPMP
Dup taken? / Dup ID: W- SMPMP - DUP

Sample Appearance:
Colour: light brown, very slight cloud.
Odour: N.

Turbidity: (Low) / Medium / High

Sample Container and Preservation:
6 x unpreserved.

OBSERVATIONS

Weather Conditions:
Temperature:
Current Precipitation:
Precipitation of past 24 / 48 hrs:

Notes:

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155
Client: CONVANTA
Site Location: E-swmp-out

Date: JUNE 3/14
Sampled By: DW/EM

SITE DATA

Time	1110
Surveyed reference point	
Water Depth at Staff Gauge (m)	
Stream Width (m)	2m
Stagnant	Yes / (No)
Flow Rate	Mod. to high

Location ID	E-swmp-out

Logger Number	
Loger Download Time	
Photos Taken	(Yes) / No (#)
Photo Location	North

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or (µS)	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
1110	/	~~[illegible]~~ 1125	7.77	/	18.7	21.9	clear	No

SAMPLING RECORD

Sampling Method: grab
Sample Depth: surface
Time Sampled: 1110

Sample ID: E-swmp-out
Dup taken? / Dup ID: " " DW

Sample Appearance:
Colour: clear
Odour: clear

Turbidity: (Low) / Medium / High

Sample Container and Preservation:
6 x unpreserved plastic.

OBSERVATIONS

Weather Conditions:
Temperature:
Current Precipitation:
Precipitation of past 24 / 48 hrs:

Notes:

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155
Client: CONVANTA
Site Location: W-SWMP-OUT

Date: JUNE 3/14
Sampled By: DW/EM

SITE DATA

Time	1121
Surveyed reference point	/
Water Depth at Staff Gauge (m)	/
Stream Width (m)	3m
Stagnant	Yes (No)
Flow Rate	mod - 6 hgh

Location ID	W-SWMP-OUT

Logger Number	
Loger Download Time	
Photos Taken	(Yes) / No (#)
Photo Location	North

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or (µS)	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
1121	/	520	8.42	/	19.2	539	Li. Br	NO

SAMPLING RECORD

Sampling Method: grab
Sample Depth: surface
Time Sampled: 1121

Sample ID: W-SWMP-OUT
Dup taken? / Dup ID: W-SWMP-OUT DUP

Sample Appearance:
Colour: Brown, cloudy
Odour: no

Turbidity: Low / (Medium) / High

Sample Container and Preservation:
6X unpreserved plastic

OBSERVATIONS

Weather Conditions:
Temperature:
Current Precipitation:
Precipitation of past 24 / 48 hrs:
Notes:

Heroes

Darlington Park Rd

S Service Rd

Courtice Rd

Darlington Park Rd

Osborne Rd

SW3

SW4

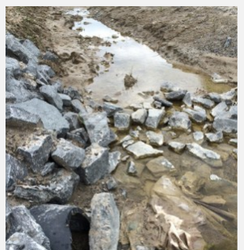
SW2

NEW ROAD

New swale

West SWMP—OUT

East SWMP—OUT



West SWMP

East SWMP

Osborne Rd

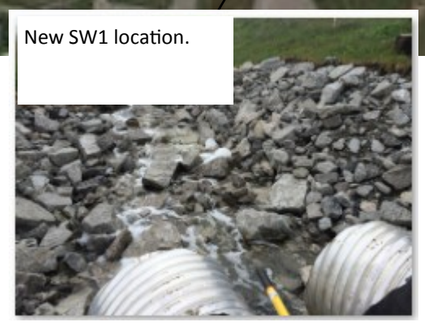
*SW1

Courtice

Former SW1 location.

* SW1—new location. A new swale has been construction north of the previous SW1 location, east side of the Water Plant drive way north of the rail road tracks. The SWMP discharge into the new swale, there fore the new location represent the upstream water quality prior to the pond discharge.

New SW1 location.



SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155

Client: COVANTA

Site Location: E-SUMP-IN

Date: July 28, 2014

Sampled By: LM/??/KS

SITE DATA

Time	1:15
Surveyed reference point	
Water Depth at Staff Gauge (m)	2 m
Stream Width (m)	
Stagnant	Yes / No (circled: No)
Flow Rate	low

Location ID	E-SUMP-IN

Logger Number	
Loger Download Time	
Photos Taken	Yes (circled) / No (# 1-5)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or µS (circled: µS)	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
1:15	/	534	7.45	/	21.4	233	li brown	none

SAMPLING RECORD

Sampling Method: direct

Sample Depth: surface

Time Sampled: 1:15

Sample Appearance:

Colour: li. brown

Odour:

Sample ID: E-SUMP-IN

Dup taken? / Dup ID:

Turbidity: Low / Medium / High (circled: High)

Sample Container and Preservation:

6X unpreserved plastic

OBSERVATIONS

Weather Conditions:

Temperature: 26°C

Current Precipitation: none

Precipitation of past 24 / 48 hrs: < 2 mm

Notes: high water level, very turbid, ditch north of [illegible] discharged [illegible] to E-SUMP-IN

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155
Client: COUANTA
Site Location: W-SW HP-IN

Date: July 28, 2014
Sampled By: MHZ KS

SITE DATA

Time	1:25
Surveyed reference point	
Water Depth at Staff Gauge (m)	2 m
Stream Width (m)	
Stagnant	Yes / No
Flow Rate	Low

Location ID	W-SW HP-IN

Logger Number	
Loger Download Time	
Photos Taken	Yes / No (# 6-8)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or µS	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
1:25	/	505.	7.55	/	22.9	157	light	none

SAMPLING RECORD

Sampling Method: surface - grab
Sample Depth:
Time Sampled: 1:25

Sample ID: W-SW HP-IN
Dup taken? / Dup ID: Yes Dup 2

Sample Appearance:
Colour: light brown
Odour: none

Turbidity: Low / Medium / High

Sample Container and Preservation:
6x unpreserved plastic

OBSERVATIONS

Weather Conditions:
Temperature: 20°C
Current Precipitation: none
Precipitation of past 24 / 48 hrs: <2 mm
Notes: very turbid water levels high

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155
Client: COUANTA
Site Location: SW1

Date: July 28, 2014
Sampled By: MKZ KS

SITE DATA

Time	1:45
Surveyed reference point	
Water Depth at Staff Gauge (m)	
Stream Width (m)	
Stagnant	Yes / (No)
Flow Rate	steady

Location ID	SW1

Logger Number	
Loger Download Time	
Photos Taken	(Yes) / No (# 9-10
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or ~~µS~~	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
	/	744	8.13	/	19.6	11	clear	none

SAMPLING RECORD

Sampling Method: surface grab
Sample Depth: grab
Time Sampled: 1:45
Sample Appearance:
Colour: clear
Odour: none

Sample ID: SW1
Dup taken? / Dup ID: DUP3

Turbidity: (Low) / Medium / High

Sample Container and Preservation:
6x unpreserved plastic

OBSERVATIONS

Weather Conditions:
Temperature: 20°C
Current Precipitation: none
Precipitation of past 24 / 48 hrs: < 2 mm
Notes: clear steady, very low turbidity, many limestone slip rock, some algae

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155
Client: COVANTA
Site Location: E-SWMP-out

Date: July 28, 2014
Sampled By: [illegible] KS

SITE DATA

Time	1:58
Surveyed reference point	/
Water Depth at Staff Gauge (m)	/
Stream Width (m)	n/a
Stagnant	Yes / No
Flow Rate	steady

Location ID	E-SWMP-out
Logger Number	
Loger Download Time	
Photos Taken	Yes / No (# 11-12)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or µS	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
1:58	/	3.49	7.13	/	22°	5.75	clear	none

SAMPLING RECORD

Sampling Method: surface grab
Sample Depth: surface flow evident
Time Sampled: 1:58

Sample ID: E-SWMP-out
Dup taken? / Dup ID: DUP5

Sample Appearance:
Colour: clear
Odour: none

Turbidity: Low / Medium / High

Sample Container and Preservation:
6x unpreserved plastic

OBSERVATIONS

Weather Conditions:
Temperature: 20°C
Current Precipitation: none
Precipitation of past 24 / 48 hrs: <2mm
Notes: clear, sampled directly from outlet of culvert, looks to be less than one month old

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155

Client: COVANTA

Site Location: W-SUMP-OUT

Date: July 28, 2014

Sampled By: LM/KRKS

SITE DATA

Time	2:25
Surveyed reference point	
Water Depth at Staff Gauge (m)	0.1 m
Stream Width (m)	N/A
Stagnant	Yes / No (circled: No)
Flow Rate	steady

Location ID	W-SUMP-OUT

Logger Number	
Loger Download Time	
Photos Taken	Yes / No (# 14-16
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or μS	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
2:25	/	444	8.11	/	19.8	208	clear	none

SAMPLING RECORD

Sampling Method: grab from culvert

Sample Depth: outlet

Time Sampled:

Sample Appearance:
Colour: clear

Odour: none

Sample ID: W-SUMP-OUT

Dup taken? / Dup ID: DUP4

Turbidity: Low / Medium / High (circled: Medium)

Sample Container and Preservation:

6X unpreserved plastic

OBSERVATIONS

Weather Conditions:

Temperature: 22°C

Current Precipitation: none

Precipitation of past 24 / 48 hrs: < 2mm

Notes: steady, some turbidity

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155
Client: COLUNTA
Site Location: SW4

Date: July 28, 2014
Sampled By: [illegible]

SITE DATA

Time	2:45
Surveyed reference point	
Water Depth at Staff Gauge (m)	1.0
Stream Width (m)	2.5m
Stagnant	Yes / No
Flow Rate	Fast

Location ID	SW4

Logger Number	
Loger Download Time	
Photos Taken	Yes / No (# 17-19)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or µS	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
2:45	/	668	7.09	/	19.4	45.1	brown	none

SAMPLING RECORD

Sampling Method: grab
Sample Depth: surface
Time Sampled: 2:45

Sample ID: SW4
Dup taken? / Dup ID: Dup 6

Sample Appearance:
Colour: brown
Odour: none

Turbidity: Low / Medium / High

Sample Container and Preservation:
6x unpreserved plastic

OBSERVATIONS

Weather Conditions:
Temperature: 20°C
Current Precipitation: none
Precipitation of past 24 / 48 hrs: < 2 mm

Notes: turbid, fast current, heavily overgrown, unable to locate stake, access + creek safety

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155

Client: COVANTA

Site Location: SW 2

Date: July 28, 2014

Sampled By: LM/[illegible]/KS

SITE DATA

Time	3:04
Surveyed reference point	
Water Depth at Staff Gauge (m)	1 m
Stream Width (m)	3 m
Stagnant	Yes / No (circled: No)
Flow Rate	very slow

Location ID	SW 2

Logger Number	
Loger Download Time	
Photos Taken	Yes / No (# 20-23) (circled: Yes)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or µS (circled: µS)	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
3:04	/	349	8.07	/	21.1	55.4	brown	none

SAMPLING RECORD

Sampling Method: surface grab

Sample Depth:

Time Sampled: 3:04

Sample ID: SW1

Dup taken? / Dup ID: DUP 7

Sample Appearance:

Colour: brown

Odour: none

Turbidity: Low / Medium / High (circled: High)

Sample Container and Preservation:

6X unpreserved plastic

OBSERVATIONS

Weather Conditions:

Temperature: 26°C

Current Precipitation: none

Precipitation of past 24 / 48 hrs: < 2 mm

Notes: new road construction improved ability to reach usual sampling location - sample obtained from west side of new concrete culvert ~30' north of bridge

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155
Client: Cavanta
Site Location: SW3

Date: July 28, 2014
Sampled By: LM / KS

SITE DATA

Time	3:20
Surveyed reference point	
Water Depth at Staff Gauge (m)	0.30 m
Stream Width (m)	1 m
Stagnant	Yes / ~~No~~ (No circled)
Flow Rate	Fast

Location ID	SW3

Logger Number	
Loger Download Time	
Photos Taken	(Yes circled) Yes / No (# 24-26
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or µS	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
3:20	/	805	8.1	/	18.1	21.9	translucent reddish	no odour

SAMPLING RECORD

Sampling Method: surface-grab
Sample Depth:
Time Sampled: 3:20
Sample Appearance:
Colour: translucent reddish
Odour: no

Sample ID: SW 3
Dup taken? / Dup ID: Dup 8

Turbidity: (Low circled) Low / Medium / High

Sample Container and Preservation:
6x unpreserved bottles - plastic

OBSERVATIONS

Weather Conditions:
Temperature: 21 °C
Current Precipitation: none
Precipitation of past 24 / 48 hrs: < 2 mm

Notes: water level high, low turbidity, grass had been cut in the meadow west of the stream, slopes were steep

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1152-0155
Client: CONVANTA
Site Location: _____

Date: Aug. 29/14
Sampled By: DD

SITE DATA

Time	1055
Surveyed reference point	
Water Depth at Staff Gauge (m)	
Stream Width (m)	
Stagnant	(Yes) / No
Flow Rate	N

Location ID: E-SWMP.

Logger Number	
Loger Download Time	
Photos Taken	(Yes) / No (#)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or (µS)	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
1055		755	~~7.58~~ 6.67		22.2	11.1		

SAMPLING RECORD

Sampling Method: pole
Sample Depth: surface
Time Sampled: 1055

Sample ID: E-SWMP
Dup taken? / Dup ID: Y

Sample Appearance:
Colour: _____
Odour: _____

Turbidity: (Low) / Medium / High

Sample Container and Preservation:

OBSERVATIONS

Weather Conditions:
Temperature: _____
Current Precipitation: _____
Precipitation of past 24 / 48 hrs: _____

Notes: - low water level
-

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155
Client: CONVANTA
Site Location: _____

Date: Aug. 29/14
Sampled By: DW/LZ

SITE DATA

Time	10:25
Surveyed reference point	
Water Depth at Staff Gauge (m)	
Stream Width (m)	
Stagnant	(Yes) / No
Flow Rate	

Location ID	E-SWMP OUT

Logger Number	
Loger Download Time	
Photos Taken	(Yes) / No (# _____)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or (µS)	pH pH Units	Redox Potential mV	Temperature °C	Turbidity NTU	Colour	Odour
1025	/	777	7.82	/	20.9	29.4	NA	NA

SAMPLING RECORD

Sampling Method: _____
Sample Depth: _____
Time Sampled: _____
Sample Appearance:
Colour: _____
Odour: _____

Sample ID: E-SWMP-OUT
Dup taken? / Dup ID: _____

Turbidity: Low / Medium / High

Sample Container and Preservation:

– not enough water to collect sample. enough water seems to be pooled in outlet pipe – no discharge.

OBSERVATIONS

Weather Conditions:
Temperature: _____
Current Precipitation: _____
Precipitation of past 24 / 48 hrs: _____

Notes: * only in situ test sample – no sample collected

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1155-0155
Client: CONVANTA
Site Location: _____

Date: Aug. 29
Sampled By: DW

SITE DATA

Time	1106
Surveyed reference point	/
Water Depth at Staff Gauge (m)	
Stream Width (m)	
Stagnant	(Yes) / No
Flow Rate	/

Location ID: W-SW MP.

Logger Number	
Loger Download Time	
Photos Taken	(Yes) / No (# _____)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or µS	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
1106	/	497	6.78	/	21.7	12.2	NO	NO

SAMPLING RECORD

Sampling Method: Pole
Sample Depth: Surface
Time Sampled: 1106

Sample ID: W-SW MP
Dup taken? / Dup ID: Y

Sample Appearance:
Colour: /
Odour: /

Turbidity: (Low) / Medium / High

Sample Container and Preservation:

OBSERVATIONS

Weather Conditions:
Temperature: _____
Current Precipitation: _____
Precipitation of past 24 / 48 hrs: _____
Notes: – water level low

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155

Client: CONVAN

Site Location: _____

Date: _____

Sampled By: _____

SITE DATA

Time	1032
Surveyed reference point	
Water Depth at Staff Gauge (m)	
Stream Width (m)	DRY
Stagnant	(Yes) / No
Flow Rate	NO

Location ID: #SW11 W-[illegible] - OUT

Logger Number	
Loger Download Time	
Photos Taken	(Yes) / No (# _____)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or µS	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour

SAMPLING RECORD

Sampling Method: _____

Sample Depth: _____

Time Sampled: _____

Sample Appearance:

Colour: _____

Odour: _____

Sample ID: _____

Dup taken? / Dup ID: _____

Turbidity: Low / Medium / High

Sample Container and Preservation:

- outlet was dry.

- No sample.

OBSERVATIONS

Weather Conditions:

Temperature: _____

Current Precipitation: _____

Precipitation of past 24 / 48 hrs: _____

Notes: _____

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155
Client: CONVANTA
Site Location: _____

Date: Aug. 29/14
Sampled By: DW/LZ

SITE DATA

Time	1130
Surveyed reference point	/
Water Depth at Staff Gauge (m)	DRY
Stream Width (m)	/
Stagnant	Yes / No
Flow Rate	/

Location ID	SW1

Logger Number	/
Loger Download Time	/
Photos Taken	Yes / No (# 0)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or µS	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour

SAMPLING RECORD

Sampling Method: _____
Sample Depth: _____
Time Sampled: _____
Sample Appearance:
Colour: _____
Odour: _____

Sample ID: _____
Dup taken? / Dup ID: _____

Turbidity: Low / Medium / High

Sample Container and Preservation:

No sample collected

OBSERVATIONS

Weather Conditions:
Temperature: _____
Current Precipitation: _____
Precipitation of past 24 / 48 hrs: _____
Notes: _____

- Sample location was dry.

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155
Client: CONAMA
Site Location: SW2

Date: Aug 29/14
Sampled By: DW/CL

SITE DATA

Time	938
Surveyed reference point	
Water Depth at Staff Gauge (m)	
Stream Width (m)	
Stagnant	Yes / No
Flow Rate	

Location ID	SW2

Logger Number	
Loger Download Time	
Photos Taken	(Yes) No (#)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or µS	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour

SAMPLING RECORD

Sampling Method: DRY
Sample Depth:
Time Sampled:

Sample ID:
Dup taken? / Dup ID:

Sample Appearance:
Colour:
Odour:

Turbidity: (Low) / Medium / High

Sample Container and Preservation:

- not enough water to collect sample
- slight flow appeared clear.

OBSERVATIONS

Weather Conditions:
Temperature:
Current Precipitation:
Precipitation of past 24 / 48 hrs:

Notes:

DRY - unable to obtain samples

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1157-0155
Client: CONVANTA
Site Location: SW 3

Date: Aug. 27
Sampled By: PW / LZ

SITE DATA

Time	914
Surveyed reference point	/
Water Depth at Staff Gauge (m)	/
Stream Width (m)	0.3m
Stagnant	Yes / (No)
Flow Rate	low

Location ID	SW 3

Logger Number	
Loger Download Time	/
Photos Taken	(Yes) / No (#)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or (µS)	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
914	/	1346	6.75	/	15.7	8.75	NA	NA

SAMPLING RECORD

Sampling Method: grab
Sample Depth: surface
Time Sampled: 914

Sample ID: SW3
Dup taken? / Dup ID: YES

Sample Appearance:
Colour: NA
Odour: NA

Turbidity: (Low) / Medium / High

Sample Container and Preservation:

OBSERVATIONS

Weather Conditions:
Temperature:
Current Precipitation:
Precipitation of past 24 / 48 hrs:

Notes:

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155
Client: CONVANTA
Site Location: _____

Date: Aug. 29
Sampled By: DW/LZ

SITE DATA

Time	952
Surveyed reference point	✓
Water Depth at Staff Gauge (m)	✓
Stream Width (m)	2m
Stagnant	(Yes) No
Flow Rate	Low

Location ID	SW 4

Logger Number	
Loger Download Time	
Photos Taken	(Yes) No (# _____)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or (µS)	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
952	✓	1126	6.62	✓	15.3	11.5	clear	no.

SAMPLING RECORD

Sampling Method: pole
Sample Depth: surface.
Time Sampled: 952

Sample ID: SW 4
Dup taken? / Dup ID: Y

Sample Appearance:
Colour: NO
Odour: NO

Turbidity: (Low) / Medium / High

Sample Container and Preservation:

_____

_____

_____

_____

OBSERVATIONS

Weather Conditions:
Temperature: _____
Current Precipitation: _____
Precipitation of past 24 / 48 hrs: _____

Notes: _____

_____

_____

_____

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Certificate of Calibration

This certifies that Hach Model 2100P s/n 31733 has been calibrated and meets the Manufacturer's operating parameters.

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Lot#	NTU
A2307 exp. Oct-14	0.1
A2305 exp. Oct-14	20.0
A2286 exp. Oct-14	100.0
A2269 exp. Sept-14	800

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SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155
Client: CONVANTA
Site Location: _____

Date: Sept. 11/14
Sampled By: DW/LZ

SITE DATA

Time	1115
Surveyed reference point	✓
Water Depth at Staff Gauge (m)	✓
Stream Width (m)	
Stagnant	(Yes) / No
Flow Rate	N

Location ID	E-SWMP

Logger Number	
Loger Download Time	
Photos Taken	(Yes) / No (# _____)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or (µS)	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
1116		7.07	7.92		20.3	0	-	-

SAMPLING RECORD

Sampling Method: pole
Sample Depth: surface
Time Sampled: 1115

Sample ID: E-SWMP
Dup taken? / Dup ID: E-SWMP

Sample Appearance:
Colour: clear
Odour: no

Turbidity (Low) / Medium / High

Sample Container and Preservation:

OBSERVATIONS

Weather Conditions:
Temperature: _____
Current Precipitation: _____
Precipitation of past 24 / 48 hrs: _____

Notes: _____

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155
Client: CONVANTA
Site Location: _____

Date: Sept. 11/14
Sampled By: DW/LZ

SITE DATA

Time	1210
Surveyed reference point	
Water Depth at Staff Gauge (m)	
Stream Width (m)	
Stagnant	Yes / (No)
Flow Rate	Mod

Location ID	E-Swmp. out

Logger Number	
Loger Download Time	
Photos Taken	(Yes) / No (# _____)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or (µS)	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
1210	/	605	8.13	/	18.8°C	0	clear	none

SAMPLING RECORD

Sampling Method: grab
Sample Depth: surface
Time Sampled: 1210

Sample ID: E-Swmp-out
Dup taken? / Dup ID: E-Swmp dup

Sample Appearance:
Colour: clear
Odour: none

Turbidity: (Low) / Medium / High

Sample Container and Preservation:

_____

_____

_____

_____

OBSERVATIONS

Weather Conditions:
Temperature: _____
Current Precipitation: _____
Precipitation of past 24 / 48 hrs: _____

Notes: _____

_____

_____

_____

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155
Client: CONVANTA
Site Location: _____

Date: Sept. 11/14
Sampled By: DW/LL

SITE DATA

Time	1125
Surveyed reference point	
Water Depth at Staff Gauge (m)	
Stream Width (m)	
Stagnant	(Yes) No
Flow Rate	

Location ID	W - Swmp.

Logger Number	
Loger Download Time	
Photos Taken	(Yes) / No (#)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or (µS)	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
1125		615	8.09	/	20.1	0	N	N

SAMPLING RECORD

Sampling Method: pole
Sample Depth: surface
Time Sampled: 1125

Sample ID: W-Swmp
Dup taken? / Dup ID: N / -

Sample Appearance:
Colour: none
Odour: none

Turbidity: (Low) / Medium / High

Sample Container and Preservation:

_____

_____

_____

_____

OBSERVATIONS

Weather Conditions:
Temperature: _____
Current Precipitation: _____
Precipitation of past 24 / 48 hrs: _____

Notes: _____

_____

_____

_____

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155
Client: CONVANTA
Site Location: _____

Date: Sept. 11/14
Sampled By: DW / LZ

SITE DATA

Time	1200
Surveyed reference point	
Water Depth at Staff Gauge (m)	
Stream Width (m)	
Stagnant	Yes / (No)
Flow Rate	Med.

Location ID	W-SWMP-OUT

Logger Number	
Loger Download Time	
Photos Taken	(Yes) No (# _____)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or (µS)	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
1200		670	8.33		18.4	0	clear	none

SAMPLING RECORD

Sampling Method: grab
Sample Depth: surface
Time Sampled: 1200

Sample ID: W-SWMP-OUT
Dup taken? / Dup ID: W-SWMP-OUT

Sample Appearance:
Colour: clear
Odour: none.

Turbidity: (Low) / Medium / High

Sample Container and Preservation:

OBSERVATIONS

Weather Conditions:
Temperature: _____
Current Precipitation: _____
Precipitation of past 24 / 48 hrs: _____

Notes: _____

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155
Client: CONVANTA
Site Location: _____

Date: SAT. 11/14
Sampled By: DW / LZ

SITE DATA

Time	1140
Surveyed reference point	
Water Depth at Staff Gauge (m)	
Stream Width (m)	
Stagnant	Yes / (No)
Flow Rate	

Location ID	SW1

Logger Number	
Loger Download Time	
Photos Taken	(Yes) / No (# _____)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or (µS)	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
1140	-	569	7.98	-	17.8	0	NO	NO

SAMPLING RECORD

Sampling Method: grab
Sample Depth: surface
Time Sampled: 1140

Sample ID: SW1
Dup taken? / Dup ID: SW1

Sample Appearance:
Colour: NO
Odour: NO

Turbidity: (Low) / Medium / High

Sample Container and Preservation:

_____

_____

_____

_____

OBSERVATIONS

Weather Conditions:
Temperature: _____
Current Precipitation: _____
Precipitation of past 24 / 48 hrs: _____

Notes: _____

_____

_____

_____

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155
Client: CONTANTA
Site Location: _____

Date: Sept. 11/14
Sampled By: DW / LL

SITE DATA

Time	1245
Surveyed reference point	
Water Depth at Staff Gauge (m)	
Stream Width (m)	
Stagnant	Yes / (No)
Flow Rate	

Location ID	SW2

Logger Number	
Loger Download Time	
Photos Taken	(Yes) / No (# _____)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or (µS)	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
1245	-	4.89	8.26	-	17.5	0	NO	NO

SAMPLING RECORD

Sampling Method: pole
Sample Depth: surface
Time Sampled: 1245

Sample ID: SW2
Dup taken? / Dup ID: SW2

Sample Appearance:
Colour: NO
Odour: NO

Turbidity: (Low) / Medium / High

Sample Container and Preservation:

OBSERVATIONS

Weather Conditions:
Temperature: _____
Current Precipitation: _____
Precipitation of past 24 / 48 hrs: _____

Notes: _____

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155
Client: CONWAN TA
Site Location: _____

Date: Sept. 11/14
Sampled By: DW / LL2

SITE DATA

Time	1:00 pm
Surveyed reference point	
Water Depth at Staff Gauge (m)	
Stream Width (m)	
Stagnant	Yes / (No)
Flow Rate	

Location ID	SW3

Logger Number	
Loger Download Time	
Photos Taken	Yes / No (# _____)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or (µS)	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
1:00	-	1177	8.16	-	17.7	12	light brown	no

SAMPLING RECORD

Sampling Method: pole
Sample Depth: surface
Time Sampled: 1:00 pm

Sample ID: SW3
Dup taken? / Dup ID: SW3

Sample Appearance:
Colour: light brown / yellow
Odour: no

Turbidity: (Low) / Medium / High

Sample Container and Preservation:

_____

_____

_____

_____

OBSERVATIONS

Weather Conditions:

Temperature: _____

Current Precipitation: _____

Precipitation of past 24 / 48 hrs: _____

Notes: _____

_____

_____

_____

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155
Client: CONVANTA
Site Location: _____

Date: Sept. 11/14
Sampled By: DW/LZ

SITE DATA

Time	1230
Surveyed reference point	
Water Depth at Staff Gauge (m)	
Stream Width (m)	
Stagnant	Yes (No)
Flow Rate	med

Location ID	SW 4

Logger Number	
Loger Download Time	
Photos Taken	(Yes) / No (#)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or (µS)	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
1230	/	1012	8.17	/	17.7°	21	br.	

SAMPLING RECORD

Sampling Method: pole
Sample Depth: surface
Time Sampled: 1230

Sample ID: SW 4
Dup taken? / Dup ID: SW 4

Sample Appearance:
Colour: brown. slt
Odour: none

Turbidity: Low / (Medium) / High

Sample Container and Preservation:

_____

_____

_____

_____

OBSERVATIONS

Weather Conditions:
Temperature: _____
Current Precipitation: _____
Precipitation of past 24 / 48 hrs: _____

Notes: _____

_____

_____

_____

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Certificate of Calibration

This certifies that Hach Model 2100P s/n 78116 has been calibrated and meets the Manufacturer's operating parameters.

PRIMARY TURBIDITY STANDARDS

Lot#	NTU
A2307 exp. Oct-14	0.1
A2305 exp. Oct-14	20.0
A2286 exp. Oct-14	100.0
~~A2269 exp. Sept~~-14 A3010 July/15	800

OCT. 07, 2014

Certified DH

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SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1152-0155
Client: Covanta
Site Location: SW2

Date: Oct 24 2014
Sampled By: E. Marsch / L. Zolanewski

SITE DATA

Time	12:30
Surveyed reference point	
Water Depth at Staff Gauge (m)	N/a
Stream Width (m)	2m
Stagnant	Yes / (No)
Flow Rate	low

Location ID	SW2

Logger Number	
Loger Download Time	
Photos Taken	Yes / No (#)
Photo Location	

SAMPLING PARAMETER Not Sampled

Time	Dissolved Oxygen mg/L	Conductivity mS or µS	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour

SAMPLING RECORD

Sampling Method: Not sampled
Sample Depth:
Time Sampled:
Sample Appearance:
Colour:
Odour:

Sample ID:
Dup taken? / Dup ID:

Turbidity: Low / Medium / High

Sample Container and Preservation:

Very low water level (0.03 m) - could not sample without disturbing silt

OBSERVATIONS

Weather Conditions:
Temperature:
Current Precipitation:
Precipitation of past 24 / 48 hrs:
Notes:

SURFACE WATER SAMPLING RECORD FORM

PROJECT INFORMATION

Project Number: 12-1152-0155
Client: Covanta
Site Location: Sump-E-IN

Date: Oct 24, 2014
Sampled By: E. Marsch / L. Zdanowski

SITE DATA

Time	10:20
Surveyed reference point	
Water Depth at Staff Gauge (m)	
Stream Width (m)	
Stagnant	(Yes) / No
Flow Rate	

Location ID	Sump-E-IN

Logger Number	
Loger Download Time	
Photos Taken	Yes / No (#)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity (mS or µS)	pH pH Units	Redox Potential mV	Temperature °C	Turbidity NTU	Colour	Odour
10:30		362	7.15		10.7	36.4	murky	None

SAMPLING RECORD

Sampling Method: pole
Sample Depth: 0.2 m
Time Sampled: 10:30

Sample ID: Sump-E-IN
Dup taken? / Dup ID: Yes - same

Sample Appearance:
Colour: murky
Odour: none

Turbidity: (Low) / Medium / High

Sample Container and Preservation:

OBSERVATIONS

Weather Conditions:
Temperature: 15°C Sunny
Current Precipitation: None
Precipitation of past 24 / 48 hrs: None

Notes:

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1152-0155
Client: Cowanta
Site Location: Swmp-w-1N

Date: OCT 24, 2014
Sampled By: E Marsch/L Zdanowski

SITE DATA

Time	11:00am
Surveyed reference point	
Water Depth at Staff Gauge (m)	
Stream Width (m)	
Stagnant	(Yes) / No
Flow Rate	N/A

Location ID	SWMP-W-1N

Logger Number	
Loger Download Time	
Photos Taken	Yes / No (#)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or (µS)	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
1am		377	7.27		10.3	44.9	murky	none

SAMPLING RECORD

Sampling Method: Pole
Sample Depth: 0.2m
Time Sampled: 11 am
Sample Appearance:
Colour: Murky
Odour: none

Sample ID: SWMP-W-1N
Dup taken? / Dup ID: Yes same

Turbidity: (Low) / Medium / High

Sample Container and Preservation:

OBSERVATIONS

Weather Conditions:
Temperature: 15°C
Current Precipitation: none
Precipitation of past 24 / 48 hrs: none

Notes:

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1152-0155
Client: Coventa
Site Location: SW#3

Date: Oct 24, 2014
Sampled By: E. March / L. Zdanowski

SITE DATA

Time	1pm
Surveyed reference point	centre
Water Depth at Staff Gauge (m)	0.3m
Stream Width (m)	1.5
Stagnant	Yes / (No)
Flow Rate	medium

Location ID	SW3

Logger Number	
Loger Download Time	
Photos Taken	Yes / No (#)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or (µS)	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
		847	8.32		9.5	8.34	clear	none

SAMPLING RECORD

Sampling Method: pole
Sample Depth: 0.3m
Time Sampled: 1:15 pm

Sample ID: SW3
Dup taken? / Dup ID: Yes - same

Sample Appearance:
Colour: clear
Odour: none

Turbidity: Low / (Medium) / High

Sample Container and Preservation:

OBSERVATIONS

Weather Conditions:
Temperature: 15°C sunny
Current Precipitation: none
Precipitation of past 24 / 48 hrs: none
Notes: Fairly low water level, stream flowing regularly.

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1152-0035
Client: Cavalier
Site Location: SW9

Date: Oct 24 2014
Sampled By: EMarsch/L Zolowski

SITE DATA

Time	12:00
Surveyed reference point	
Water Depth at Staff Gauge (m)	0.20
Stream Width (m)	2 m
Stagnant	Yes / (No)
Flow Rate	med

Location ID	SW9

Logger Number	
Loger Download Time	
Photos Taken	Yes / No (#)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or (µS)	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
12:00	/	~~1.1~~ 807	8.24	/	9.2	11.7	NONE	NONE

SAMPLING RECORD

Sampling Method: Pole
Sample Depth: 0.2m
Time Sampled: 12:00

Sample ID:
Dup taken? / Dup ID: Yes - same

Sample Appearance:
Colour: none
Odour: none

Turbidity: Low / Medium / High

Sample Container and Preservation:

OBSERVATIONS

Weather Conditions:
Temperature: 15°C Sunny
Current Precipitation: none
Precipitation of past 24 / 48 hrs: none

Notes:

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1152-0155
Client: Cavacia
Site Location: Sump-W-out

Date: Oct 24 2014
Sampled By: GMarsh/L Zdanowski

SITE DATA

Time	12pm
Surveyed reference point	
Water Depth at Staff Gauge (m)	N/a
Stream Width (m)	1.5m
Stagnant	Yes / (No)
Flow Rate	low

Location ID	Sump-W-out
Logger Number	
Loger Download Time	
Photos Taken	Yes / No (#)
Photo Location	

SAMPLING PARAMETER Not sample

Time	Dissolved Oxygen mg/L	Conductivity mS or µS	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour

SAMPLING RECORD

Sampling Method: N/A
Sample Depth:
Time Sampled:
Sample Appearance:
Colour:
Odour:

Sample ID:
Dup taken? / Dup ID:

Turbidity: Low / Medium / High

Sample Container and Preservation:

OBSERVATIONS

Weather Conditions:
Temperature:
Current Precipitation:
Precipitation of past 24 / 48 hrs:

Notes: Very little water ~ 0.03m at deepest No flow from pipe. Clear and flowing slightly around rocks preventing sampler from accessing water

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1152-0155
Client: Cavanta
Site Location: Sump-E-out

Date: Oct 24-2014
Sampled By: G. Marsch / L. Zdanowski

SITE DATA

Time	11:35
Surveyed reference point	Centre
Water Depth at Staff Gauge (m)	0.3m
Stream Width (m)	2m
Stagnant	(Yes) / No
Flow Rate	none

Location ID	Sump-E-out

Logger Number	
Loger Download Time	
Photos Taken	Yes / No (#)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or (µS)	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
11:40		625	8.88		11.5	5.38		

SAMPLING RECORD

Sampling Method: Pole
Sample Depth: 0.20m
Time Sampled: 11:45

Sample ID: Sump-E-out
Dup taken? / Dup ID: Yes - same

Sample Appearance:
Colour: clear
Odour: none

Turbidity: (Low) / Medium / High

Sample Container and Preservation:

OBSERVATIONS

Weather Conditions:
Temperature:
Current Precipitation:
Precipitation of past 24 / 48 hrs:

Notes:

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1152-0155
Client: Cavanta
Site Location: SW1

Date: Oct 24 2014
Sampled By: E. Marsch / L. Zdanowski

SITE DATA

Time	
Surveyed reference point	
Water Depth at Staff Gauge (m)	
Stream Width (m)	
Stagnant	Yes / No
Flow Rate	

Location ID	SW1

Logger Number	
Loger Download Time	
Photos Taken	Yes / No (#)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or (µS)	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
		781	7.78		11.3	16.2	clear	none

SAMPLING RECORD

Sampling Method: Pole
Sample Depth: 0.05m
Time Sampled: 11:15 am

Sample ID: SW1
Dup taken? / Dup ID: Yes - same

Sample Appearance:
Colour: clear
Odour: none

Turbidity: Low / Medium / High

Sample Container and Preservation:

OBSERVATIONS

Weather Conditions:
Temperature:
Current Precipitation:
Precipitation of past 24 / 48 hrs:

Notes:

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12115101/55
Client: Cenovus
Site Location: _____

Date: Dec 23, 2014
Sampled By: E. Marsch / D. Rutherridge

SITE DATA

Time	940
Surveyed reference point	
Water Depth at Staff Gauge (m)	
Stream Width (m)	
Stagnant	(Yes) / No
Flow Rate	

Location ID	SUMP-E-[illegible]IN

Logger Number	
Loger Download Time	
Photos Taken	Yes / No (# Y)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or (µS)	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
		1709	6.95		2.4	5.8	Clear	None

SAMPLING RECORD

Sampling Method: POT + POLE
Sample Depth: SURFACE
Time Sampled: _____

Sample ID: _____
Dup taken? / Dup ID: _____

Sample Appearance:
Colour: _____
Odour: _____

Turbidity: Low / Medium / High

Sample Container and Preservation:

_____

_____

_____

_____

OBSERVATIONS

Weather Conditions:
Temperature: _____
Current Precipitation: _____
Precipitation of past 24 / 48 hrs: _____

Notes: _____

_____

_____

_____

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155
Client: CONVANN
Site Location: SWMP-E-OUT

Date: Dec. 22/14
Sampled By: PW/EM

SITE DATA

Time	1035
Surveyed reference point	/
Water Depth at Staff Gauge (m)	/
Stream Width (m)	0.5
Stagnant	Yes / (No)
Flow Rate	LOW

Location ID	SWMP-E-OUT

Logger Number	
Loger Download Time	
Photos Taken	(Yes) / No (#)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or (µS)	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
1035		~~3.126~~	7.41		3.8	40.8	clear	no

SAMPLING RECORD

Sampling Method: POT + POLE
Sample Depth: SURFACE
Time Sampled: 1035

Sample ID: SWMP-E-OUT
Dup taken? / Dup ID:

Sample Appearance:
Colour:
Odour:

Turbidity: (Low) / Medium / High

Sample Container and Preservation:
3x

OBSERVATIONS

Weather Conditions:
Temperature:
Current Precipitation:
Precipitation of past 24 / 48 hrs:

Notes:

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12115 0155

Client: Cenovus

Site Location: _____

Date: Dec 23 2014

Sampled By: E. Marsch/D Witheridge

SITE DATA

Time	950
Surveyed reference point	
Water Depth at Staff Gauge (m)	
Stream Width (m)	
Stagnant	Yes / No
Flow Rate	

FROZEN

Location ID	SWMP-W-IN
Logger Number	
Loger Download Time	
Photos Taken	Yes / No (#)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or µS	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour

SAMPLING RECORD

Sampling Method: _____

Sample ID: _____

Sample Depth: _____

Dup taken? / Dup ID: _____

Time Sampled: _____

Sample Appearance:

Colour: _____

Turbidity: Low / Medium / High

Odour: _____

Sample Container and Preservation:

_____

_____

_____

_____

OBSERVATIONS

Weather Conditions:

Temperature: _____

Current Precipitation: _____

Precipitation of past 24 / 48 hrs: _____

Notes: FROZEN

_____

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_____

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155
Client: CONWEST
Site Location: SWMP-WEST-OUT

Date: Dec-23-14
Sampled By: DW/EM

SITE DATA

Time	1020
Surveyed reference point	
Water Depth at Staff Gauge (m)	
Stream Width (m)	0.5m
Stagnant	Yes / (No)
Flow Rate	Med.

Location ID	SWMP-W-OUT
Logger Number	
Loger Download Time	
Photos Taken	(Yes) / No (#)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or µS	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
1020	/		7.41		4.1	22.0		

SAMPLING RECORD

Sampling Method: POT + POLE
Sample Depth: SURFACE
Time Sampled:
Sample Appearance:
Colour: slightly cloudy
Odour: none

Sample ID: SWMP-W-OUT
Dup taken? / Dup ID:

Turbidity: (Low) / Medium / High

Sample Container and Preservation:

OBSERVATIONS

Weather Conditions:
Temperature:
Current Precipitation:
Precipitation of past 24 / 48 hrs:
Notes:

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155
Client: CONVANTA
Site Location: Osborne Rd.

Date: Dec. 22/14
Sampled By: DW/EM

SITE DATA

Time	1005
Surveyed reference point	
Water Depth at Staff Gauge (m)	
Stream Width (m)	1.5
Stagnant	Yes / (No)
Flow Rate	Mod.

Location ID	SW1

Logger Number	
Loger Download Time	
Photos Taken	(Yes) / No (#)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or µS	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
1005	/	1670	7.74		3.9	12.2	NONE	NONE.

SAMPLING RECORD

Sampling Method: GRAB + POLE
Sample Depth: SURFACE
Time Sampled: 1005

Sample ID: SW1
Dup taken? / Dup ID:

Sample Appearance:
Colour: clear
Odour: NONE

Turbidity: (Low) / Medium / High

Sample Container and Preservation:
3 x unpreserved.

OBSERVATIONS

Weather Conditions:
Temperature:
Current Precipitation:
Precipitation of past 24 / 48 hrs:

Notes:

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 2151055
Client: Coronado
Site Location: _____

Date: Dec 23 2014
Sampled By: E. Hawson / D. Witheridge

SITE DATA

Time	11:45
Surveyed reference point	
Water Depth at Staff Gauge (m)	0.2m
Stream Width (m)	1 m
Stagnant	Yes / (No)
Flow Rate	Low

Location ID	SW 2

Logger Number	
Loger Download Time	
Photos Taken	Yes / No (# _____)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or (µS)	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
		1060	8.04		3.0	65	murky	none

SAMPLING RECORD

Sampling Method: Pot + pole
Sample Depth: surface
Time Sampled: 11:45
Sample Appearance:
Colour: murky
Odour: none

Sample ID: SW 2
Dup taken? / Dup ID: _____

Turbidity: Low / Medium / High

Sample Container and Preservation:

OBSERVATIONS

Weather Conditions:
Temperature: 0°C
Current Precipitation: none
Precipitation of past 24 / 48 hrs: ~1mm

Notes: _____

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155
Client: CONVANTA
Site Location: SW3

Date: Dec. 22/14
Sampled By: DW/EM

SITE DATA

Time	1100
Surveyed reference point	
Water Depth at Staff Gauge (m)	
Stream Width (m)	1.0m
Stagnant	Yes / (No)
Flow Rate	FAST

Location ID	SW3

Logger Number	
Loger Download Time	
Photos Taken	Yes / No (#)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or µS	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
1100		1041	7.80		2.5	6.50	none	none

SAMPLING RECORD

Sampling Method: POT + POLE
Sample Depth: SURFACE
Time Sampled: 1100

Sample ID: SW3
Dup taken? / Dup ID:

Sample Appearance:
Colour: none
Odour: none

Turbidity: (Low) / Medium / High

Sample Container and Preservation:

OBSERVATIONS

Weather Conditions:
Temperature: 0°C
Current Precipitation: none
Precipitation of past 24 / 48 hrs: ~1mm

Notes:

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12115/0155
Client: Cervantes
Site Location:

Date: Dec 23 2014
Sampled By:

SITE DATA

Time	11:20am
Surveyed reference point	centre
Water Depth at Staff Gauge (m)	0.5m
Stream Width (m)	1.5
Stagnant	Yes / (No)
Flow Rate	Medium

Location ID	SW 4

Logger Number	
Loger Download Time	
Photos Taken	(Yes) / No (#)
Photo Location	Bank

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity (mS or µS)	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
		1037	1.83		2.6	4.67	Clear	None

SAMPLING RECORD

Sampling Method: Pot + Pole
Sample Depth: surface
Time Sampled: 11:20

Sample ID: SW 4
Dup taken? / Dup ID:

Sample Appearance:
Colour: none
Odour: none

Turbidity: (Low) / Medium / High

Sample Container and Preservation:

OBSERVATIONS

Weather Conditions:
Temperature: 0°C
Current Precipitation: none
Precipitation of past 24 / 48 hrs: ~ 1mm

Notes:

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Certificate of Calibration

This certifies that Hanna HI991300 s/n 8144RS has been calibrated following the Manufacturer's published instructions and specifications, using NIST traceable solutions and standards.

2-Point pH	Spec. Cond.
4.00, 7.00	1413uS/cm

pH 4.00 Lot # 3AL369 Lot # 4AG160
pH 7.00 Lot # 3AL262 @ 20 deg C

DEC. 19, 2014

Calibrated

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This certifies that Hach Model 2100Q s/n 28116 has been calibrated and meets the Manufacturer's operating parameters.

PRIMARY TURBIDITY STANDARDS Vials

Lot#	NTU
A4241 Exp.Aug./16	0.1
A4260 Exp.Sept./16	20.0
A4248 Exp.Sept./16	100.0
A4259 Exp.Sept./16	800

Dec 19, 2014

Certified

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SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155 (3000)
Client: COVANTA
Site Location: _____

Date: JANUARY 15, 2015
Sampled By: DW / EM

SITE DATA

Time	9:20
Surveyed reference point	N/A
Water Depth at Staff Gauge (m)	
Stream Width (m)	
Stagnant	Yes / No
Flow Rate	

Location ID	SWMP-E-IN

Logger Number	
Loger Download Time	
Photos Taken	Yes / No (#)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or µS	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
	N/A							

SAMPLING RECORD

Sampling Method: N/A
Sample Depth: _____
Time Sampled: _____
Sample Appearance:
Colour: _____
Odour: _____

Sample ID: No sample
Dup taken? / Dup ID: _____

Turbidity: Low / Medium / High

Sample Container and Preservation:

_____

_____

_____

_____

OBSERVATIONS

Weather Conditions:
Temperature: -10°C
Current Precipitation: none
Precipitation of past 24 / 48 hrs: none

Notes: Pond frozen. Mostly snow covered.

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155 (3000)
Client: COVANTA
Site Location: _____

Date: JANUARY 15, 2015
Sampled By: DW / EM

SITE DATA

Time	9:30
Surveyed reference point	N/A
Water Depth at Staff Gauge (m)	
Stream Width (m)	
Stagnant	Yes / No
Flow Rate	

Location ID	SWMP-W-IN

Logger Number	
Loger Download Time	
Photos Taken	Yes / No (#)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or µS	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
	N/A							

SAMPLING RECORD

Sampling Method: N/A
Sample Depth: _____
Time Sampled: _____
Sample Appearance:
Colour: _____
Odour: _____

Sample ID: No Sample
Dup taken? / Dup ID: _____

Turbidity: Low / Medium / High

Sample Container and Preservation:

_____

_____

_____

_____

OBSERVATIONS

Weather Conditions:
Temperature: -10°C
Current Precipitation: none
Precipitation of past 24 / 48 hrs: none
Notes: Pond frozen - entirely snow covered

_____

_____

_____

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155 (3000)
Client: COVANTA
Site Location: _____

Date: JANUARY 15, 2015
Sampled By: DW / EM

SITE DATA

Time	10 am
Surveyed reference point	N/A
Water Depth at Staff Gauge (m)	
Stream Width (m)	
Stagnant	Yes / No
Flow Rate	

Location ID	Sump-E-Out

Logger Number	
Loger Download Time	
Photos Taken	Yes / No (#)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or µS	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
N/A								

SAMPLING RECORD

Sampling Method: N/A
Sample ID: none
Sample Depth: _____
Dup taken? / Dup ID: _____
Time Sampled: _____
Sample Appearance:
Colour: _____
Turbidity: Low / Medium / High
Odour: _____

Sample Container and Preservation:

OBSERVATIONS

Weather Conditions:
Temperature: -10 °C
Current Precipitation: none
Precipitation of past 24 / 48 hrs: none
Notes: Pipe Frozen, no snow cover on creek
1m downstream (west of out) small amounts of open water with algae / thin layer of ice

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155 (3000)
Client: COVANTA
Site Location: _____

Date: JANUARY 15, 2015
Sampled By: DW / EM

SITE DATA

Time	1010
Surveyed reference point	N/A
Water Depth at Staff Gauge (m)	
Stream Width (m)	
Stagnant	Yes / No
Flow Rate	

Location ID	SUMP - W-OUT

Logger Number	
Loger Download Time	
Photos Taken	Yes / No (#)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or µS	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
N/A								

SAMPLING RECORD

Sampling Method: no sample
Sample Depth: N/A
Time Sampled: _____
Sample Appearance:
Colour: _____
Odour: _____

Sample ID: _____
Dup taken? / Dup ID: _____

Turbidity: Low / Medium / High

Sample Container and Preservation:

OBSERVATIONS

Weather Conditions:
Temperature: -10 °C
Current Precipitation: none
Precipitation of past 24 / 48 hrs: none
Notes: Location Frozen, creek frozen, no snow cover on creek

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155 (3000)
Client: COVANTA
Site Location: _____

Date: JANUARY 15, 2015
Sampled By: DW / EM

SITE DATA

Time	9:45
Surveyed reference point	N/A
Water Depth at Staff Gauge (m)	
Stream Width (m)	
Stagnant	Yes / No
Flow Rate	

Location ID	SW1

Logger Number	
Loger Download Time	
Photos Taken	Yes / No (#)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or µS	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
NA								

SAMPLING RECORD

Sampling Method: none
Sample Depth: _____
Time Sampled: _____
Sample Appearance:
Colour: _____
Odour: _____

Sample ID: no sample
Dup taken? / Dup ID: _____

Turbidity: Low / Medium / High

Sample Container and Preservation:

_____

_____

_____

_____

OBSERVATIONS

Weather Conditions:
Temperature: -10°C
Current Precipitation: none
Precipitation of past 24 / 48 hrs: none
Notes: Creek frozen, no snow cover

_____

_____

_____

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155 (3000)
Client: COVANTA
Site Location: _____

Date: JANUARY 15, 2015
Sampled By: DW / EM

SITE DATA

Time	10:45
Surveyed reference point	N/A
Water Depth at Staff Gauge (m)	
Stream Width (m)	
Stagnant	Yes / No
Flow Rate	

Location ID	SW 2

Logger Number	
Loger Download Time	
Photos Taken	Yes / No (#)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or µS	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
N/A								

SAMPLING RECORD

Sampling Method: _____
Sample Depth: _____
Time Sampled: _____
Sample ID: _____
Dup taken? / Dup ID: _____

Sample Appearance:
Colour: _____
Odour: _____

Turbidity: Low / Medium / High

Sample Container and Preservation:

OBSERVATIONS

Weather Conditions:
Temperature: -10 °C
Current Precipitation: none
Precipitation of past 24 / 48 hrs: none
Notes: Frozen with snow cover

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155 (3000)
Client: COVANTA
Site Location: _____

Date: JANUARY 15, 2015
Sampled By: DW / EM

SITE DATA

Time	10:30
Surveyed reference point	N/A
Water Depth at Staff Gauge (m)	
Stream Width (m)	
Stagnant	Yes / No
Flow Rate	

Location ID	SW3

Logger Number	
Loger Download Time	
Photos Taken	Yes / No (#)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or µS	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
N/A								

SAMPLING RECORD

Sampling Method: none
Sample ID: no sample
Sample Depth: _____
Dup taken? / Dup ID: _____
Time Sampled: _____

Sample Appearance:
Colour: _____
Turbidity: Low / Medium / High
Odour: _____

Sample Container and Preservation:

_____

_____

_____

_____

OBSERVATIONS

Weather Conditions:
Temperature: -10
Current Precipitation: none
Precipitation of past 24 / 48 hrs: none
Notes: Frozen - same snow cover

_____

_____

_____

SURFACE WATER SAMPLING RECORD FORM

Golder Associates

PROJECT INFORMATION

Project Number: 12-1151-0155 (3000)
Client: COVANTA
Site Location: _____

Date: JANUARY 15, 2015
Sampled By: DW / EM

SITE DATA

Time	10:25
Surveyed reference point	N/A
Water Depth at Staff Gauge (m)	
Stream Width (m)	
Stagnant	Yes / No
Flow Rate	

Location ID	SW4

Logger Number	
Loger Download Time	
Photos Taken	Yes / No (#)
Photo Location	

SAMPLING PARAMETER

Time	Dissolved Oxygen mg/L	Conductivity mS or µS	pH pH Units	Redox Potential mV	Temperature °C	Turbidity	Colour	Odour
N/A								

SAMPLING RECORD

Sampling Method: no sample
Sample Depth: _____
Time Sampled: _____
Sample Appearance:
Colour: _____
Odour: _____

Sample ID: none
Dup taken? / Dup ID: _____

Turbidity: Low / Medium / High

Sample Container and Preservation:

_____

_____

_____

_____

OBSERVATIONS

Weather Conditions:
Temperature: -10°C
Current Precipitation: none
Precipitation of past 24 / 48 hrs: none
Notes: Creek frozen at sampling location
Creek open water 2m north and 2m south but very little flow

E-4 Year 1 – Surface Water Quality Sampling Results

Table 1: Total Suspended Solids Sampling Results

Date (Type of event) [1.]	TSS Limit [2], CWQG [3] (mg/L)	RDL [3] (mg/L)	Stations							
			SW-1 (mg/L)	SW-2 (mg/L)	SW-3 (mg/L)	SW-4 (mg/L)	E-SWMP-IN (mg/L)	W-SWMP-IN (mg/L)	E-SWMP-OUT (mg/L)	W-SWMP-OUT (mg/L)
June 5, 2012 (Inter-event)	25	10	**54**	10	<10	<10	NA	NA	NA	NA
June 27, 2012 (Inter-event)		10	**230**	<10	<10	<10	NA	NA	NA	<10
September 6, 2012 (Rainfall-runoff, Controlled discharge)		10	**68**	24	<10	15	15	17	<10	19
September 28, 2012 (Inter-event)		10	**35**	15	<10	<10	<10	ND	<10	ND
November 1, 2012 (Rainfall-runoff-discharge)		10	20	17	<10	10	**1400**	**120**	ND	31
March 12, 2013 (Freshet Conditions)		10	20	<10	**64**	**53**	19	**29**	ND	ND
March 19, 2013 (Controlled discharge)		10	14	14	<10	<10	<10	13	<10	<10
April 8, 2013 (Controlled discharge)		10	<10	<10	<10	<10	12	<10	13	19

Notes:

1. Inter-event (dry), controlled discharge (due to recent rainfall-runoff), rainfall-runoff-discharge (gravity drain), or freshet ('spring melt') sampling event conditions.
2. There is no PWQO and {Interim PWQO} for TSS. A suitable TSS limit for various sewage (including SWM) discharges, and receiving water is accepted to be 25 mg/L (MOE, 1994b).
3. The CWQQs for TSS are the following:
   i. clear flow
   Maximum increase of 25 mg/L from background levels for any short-term exposure (e.g., 24-h period). Maximum average increase of 5 mg/L from background levels for longer term exposures (e.g., inputs lasting between 24 h and 30 d).
   ii. high flow
   Maximum increase of 25 mg/L from background levels at any time when background levels are between 25 and 250 mg/L. Should not increase more than 10% of background levels when background is ≥ 250 mg/L (CCME, 2013).
4. RDL - Reported Detection Limit.
5. Where 'NA' is entered, sample was not measured to do Health &Safety / access issues during construction.
6. Where 'ND' is entered, SWM Pond station was not sampled or provided in this table, since there was no discharge from the SWM feature during the sampling effort.
7. Exceedances of limits are in bold, with further discussion in Section 5.2, where applicable.

Table 2: Turbidity Sampling Results

Date (Type of event) [1.]	PWQO (NTU)	CWQG (NTU)	RDL [4.] (NTU)	Stations							
				SW-1 (NTU)	SW-2 (NTU)	SW-3 (NTU)	SW-4 (NTU)	E-SWMP-IN (NTU)	W-SWMP-IN (NTU)	E-SWMP-OUT (NTU)	W-SWMP-OUT (NTU)
June 5, 2012 (Inter-event)	Surface water concentrations will change the natural Secchi disk reading by more than 10% [2.]	See Note [3.] for CWQG narrative for Turbidity.	0.2	31	5.2	3.5	2.9	NA	NA	NA	NA
June 27, 2012 (Inter-event)			0.2	70	1.7	3.4	3.2	NA	NA	NA	6.1
September 6, 2012 (Rainfall-runoff, Controlled discharge)			0.2	120	27	3.2	**16**	6.9	11	6.0	9.6
September 28, 2012 (Inter-event)			0.2	5.2	5.9	4.6	4.9	1.4	ND	3.3	ND
November 1, 2012 (Rainfall-runoff-discharge)			0.2	37	28	10	9.7	910	270	ND	55
March 12, 2013 (Freshet Conditions)			0.2	25	14	32	27	41	86	ND	ND
March 19, 2013 (Controlled discharge)			0.2	22	14	9.2	6.3	2.0	21	4.5	5.6
April 8, 2013 (Controlled discharge)			0.2	5.2	4.4	1.5	1.8	12	15	23	30

Notes:

1. Inter-event (dry), controlled discharge (due to recent rainfall-runoff), rainfall-runoff-discharge (gravity drain), or freshet ('spring melt') sampling event conditions.
2. Lab results for Turbidity analyzed only, due to challenges with accurate and consistent *in situ* Secchi disk measurements for turbidity.
3. The CWQGs for TSS are the following:
   i. clear flow
   Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).
   ii. high flow or turbid waters
   Maximum increase of 8 NTUs from background levels at any one time when background levels are between 8 and 80 NTUs. Should not increase more than 10% of background levels when background is > 80 NTUs (CCME, 2013).
4. RDL - Reported Detection Limit.
5. Where 'NA' is provided, sample was not measured to do Health &Safety / access issues during construction.
6. Where 'ND' is provided, SWM Pond station was not sampled or provided in this table, since there was no discharge from the SWM feature during the sampling effort.
7. Exceedances of limits are in bold, with further discussion in Section 5.2, where applicable.

Table 3: *In Situ* pH Measurements

Date (Type of event) [1.]	PWQO	CWQG	Stations							
			SW-1	SW-2	SW-3	SW-4	E-SWMP-IN	W-SWMP-IN	E-SWMP-OUT	W-SWMP-OUT
June 5, 2012 (Inter-event)	6.5 to 8.5	6.5 to 9	7.15	7.38	7.60	7.70	NA	NA	NA	NA
June 27, 2012 (Inter-event)			**5.78**	**6.25**	7.15	6.64	NA	NA	NA	7.47
September 6, 2012 (Rainfall-runoff, Controlled discharge)			7.73	7.74	7.94	7.79	8.33	8.20	8.33	8.14
September 28, 2012 (Inter-event)			7.40	7.41	7.70	7.38	8.16	ND	**8.86**	ND
November 1, 2012 (Rainfall-runoff-discharge)			8.25	8.06	8.35	8.31	**9.80**	**8.80**	ND	**8.62**
March 12, 2013 (Freshet Conditions)			**6.28**	8.00	7.70	7.76	**5.83**	**5.94**	ND	ND
March 19, 2013 (Controlled discharge)			7.12	7.43	7.64	7.62	6.85	7.35	7.74	8.16
April 8, 2013 (Controlled discharge)			7.16	7.30	7.54	7.79	**5.59**	**6.27**	7.08	6.98

Notes:
1. Inter-event (dry) or rainfall-runoff sampling event indication is provided below the date.
2. Where 'NA' is provided, sample was not measured to do Health &Safety / access issues during construction.
3. Where 'ND' is provided, SWM Pond station was not sampled or provided in this table, since there was no discharge from the SWM feature during the sampling effort.
4. Sampling results out of the PWQO and CWQG acceptable limits are in bold, with further discussion in Section 5.2, where applicable.

Table 4: *In Situ* Temperature Measurements

Date (Type of event) [1.]	PWQO	CWQG	Stations							
			SW-1 (°C)	SW-2 (°C)	SW-3 (°C)	SW-4 (°C)	E-SWMP-IN (°C)	W-SWMP-IN (°C)	E-SWMP-OUT (°C)	W-SWMP-OUT (°C)
June 5, 2012 (Inter-event)	Note[2.]	Note[3.]	16.1	15.4	16.8	17.1	NA	NA	NA	NA
June 27, 2012 (Inter-event)			18.0	17.8	17.0	15.9	NA	NA	NA	20.8
September 6, 2012 (Rainfall-runoff, Controlled discharge)			23.1	22.3	20.1	21.2	26.8	24.0	24.4	25.4
September 28, 2012 (Inter-event)			14.7	13.8	12.6	13.2	15.7	ND	15.8	ND
November 1, 2012 (Rainfall-runoff-discharge)			7.9	8.3	8.6	8.5	8.4	8.0	ND	8.2
March 12, 2013 (Freshet Conditions)			2.8	2.7	1.4	1.4	2.4	1.6	ND	ND
March 19, 2013 (Controlled discharge)			1.5	0.2	0.5	1.2	4.4	0.8	5.2	5
April 8, 2013 (Controlled discharge)			6.7	6.7	7.7	7.6	7.6	7.7	7.7	7.8

Notes:

1. Inter-event (dry) or rainfall-runoff sampling event indication is provided below the date.
2. PWQO for Temperature (generally) states: The natural thermal regime of any body of water shall not be altered so as to impair the quality of the natural environment. In particular, the diversity, distribution and abundance of plant and animal life shall not be significantly changed (MOE, 1994).
3. CWQG for Temperature:
   i.Thermal Stratification: Thermal additions to receiving waters should be such that thermal stratification and subsequent turnover dates are not altered from those existing prior to the addition of heat from artificial origins
   ii. Maximum Weekly Average Temperature: Thermal additions to receiving waters should be such that the maximum weekly average temperature is not exceeded
   iii. Short-term Exposure to Extreme Temperature: Thermal additions to receiving waters should be such that the short-term exposures to maximum temperatures are not exceeded. Exposures should not be so lengthy or frequent as to adversely affect the important species (CCME, 2013).
4. Where 'NA' is provided, sample was not measured to do Health &Safety / access issues during construction.
5. Where 'ND' is provided, SWM Pond station was not sampled or provided in this table, since there was no discharge from the SWM feature during the sampling effort.
6. Exceedances of limits are in bold, with further discussion in Section 5.2, where applicable.

Table 5: *In Situ* Conductivity Measurements

Date [1.] (Type of event)	PWQO, CWQG [2]	Stations							
		SW-1 (µS/cm)	SW-2 (µS/cm)	SW-3 (µS/cm)	SW-4 (µS/cm)	E-SWMP-IN (µS/cm)	W-SWMP-IN (µS/cm)	E-SWMP-OUT [4.] (µS/cm)	W-SWMP-OUT [4.] (µS/cm)
June 5, 2012 (Inter-event)	N/A	629	602	1174	1041	NA	NA	NA	NA
June 27, 2012 (Inter-event)		551	641	1130	998	NA	NA	NA	640
September 6, 2012 (Rainfall-runoff, Controlled discharge)		270	480	1030	640	460	700	450	650
September 28, 2012 (Inter-event)		615	678	1185	1052	515	ND	500	ND
November 1, 2012 (Rainfall-runoff-discharge)		408	440	771	747	494	415	ND	457
March 12, 2013 (Freshet Conditions)		980	1000	390	400	1280	370	ND	ND
March 19, 2013 (Controlled discharge)		5330	3460	1420	1340	1970	360	2010	1940
April 8, 2013 (Controlled discharge)		1960	1730	860	820	2160	650	2140	2150

Notes:
1. Inter-event (dry) or rainfall-runoff sampling event indication is provided below the date.
2. There are no PWQO and CWQG limits for conductivity. However, higher values are often related to higher concentrations of finer suspended metals in surface water. More discussion provided in Section 5.2.
3. Where 'NA' is provided, sample was not measured to do Health &Safety / access issues during construction.
4. Where 'ND' is provided, SWM Pond station was not sampled or provided in this table, since there was no discharge from the SWM feature during the sampling effort.

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E-5 Year 2 – Surface Water Quality Sampling Results

Table 1: *In Situ* Turbidity Measurements

Date [1.] (Type of event)	PWQO (NTU)	CWQG (NTU)	Stations							
			SW-1 (NTU)	SW-2 (NTU)	SW-3 (NTU)	SW-4 (NTU)	E-SWMP-IN (NTU)	W-SWMP-IN (NTU)	E-SWMP-OUT (NTU)	W-SWMP-OUT (NTU)
May 31, 2013 (Controlled Discharge)	Surface water concentrations will change the natural Secchi disk reading by more than 10% [2.]	See Note [2.] for CWQG narrative for Turbidity .	22.5	15.8	4.67	5.15	36.5	40	NA	1000 [5.]
June 25, 2013 (Rainfall-runoff, Controlled Discharge)			101	13.9	66.1	**84.8**	21.9	41.3	20.9	186
July 22, 2013 (Controlled discharge)			9.10	15.37	5.92	4.67	26.64	310	180	52.4
August 28, 2013 (Inter-event)			NA	NA	NA	NA	NA	235	NA	NA
September 30, 2013 (Inter-event)			24.6	NA	12.91	9.20	ND	ND	ND	ND
October 7, 2013 (Rainfall-runoff, no discharge)			23	43.49	26.95	25.37	39.56	86.67	39.96	55.44
November 22, 2013 (Controlled discharge)			51.1	23.0	5.53	14.4	196	25.3	80	25.6
December 20, 2013 (Inter-event)			76.7	NA	13.6	12.2	ND	ND	2.85	NA
January 13, 2014 (Rainfall-runoff, no discharge)			7.63	27.8	4.76	4.48	ND	ND	NA	NA
February 28, 2014 (Inter-event)			10	NA	NA	NA	NA	NA	NA	NA
March 31, 2014 (Controlled Discharge)			15.9	555	374	335	NA	NA	NA	110

Notes:

1. Inter-event (dry) or rainfall-runoff sampling event indication is provided below the date.
2. The CWQQs for TSS are the following:
   i. clear flow
   Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).
   ii. high flow or turbid waters
   Maximum increase of 8 NTUs from background levels at any one time when background levels are between 8 and 80 NTUs. Should not increase more than 10% of background levels when background is > 80 NTUs (CCME, 2013).
3. Where 'NA' is indicated, sample was not measured to do Health &Safety / access issues during construction.
4. Where 'ND' is indicated, SWM Pond station was not sampled or provided in this table, since there was no discharge from the SWM feature during the sampling effort. Turbidity meter instrument measurement likely out of range.

Table 2: Turbidity Sampling Results

Date (Type of event) [1.]	PWQO (NTU)	CWQG (NTU)	RDL [4.] (NTU)	Stations							
				SW-1 (NTU)	SW-2 (NTU)	SW-3 (NTU)	SW-4 (NTU)	E-SWMP-IN (NTU)	W-SWMP-IN (NTU)	E-SWMP-OUT (NTU)	W-SWMP-OUT (NTU)
May 31, 2013 (Controlled Discharge)	Surface water concentrations will change the natural Secchi disk reading by more than 10% [2.]	See Note [2.] for CWQG narrative for Turbidity.	0.2	10	9	2.5	2.9	20	130	NA	460
June 25, 2013 (Rainfall-runoff, Controlled Discharge)			0.2	28	7.7	17	20	8.2	19	9.3	52
July 22, 2013 (Controlled discharge)			0.2	9.0	16	5.4	5.2	33	450	280	390
August 28, 2013 (Inter-event)			0.2	NA	NA	NA	NA	NA	NA	NA	NA
September 30, 2013 (Inter-event)			0.2	NA	NA	NA	NA	NA	NA	ND	ND
October 7, 2013 (Rainfall-runoff, no discharge)			0.2	24	24	25	29	28	130	32	47
November 22, 2013 (Controlled discharge)			0.2	29	18	5.1	16	89	36	110	35
December 20, 2013 (Inter-event)			0.2	ND	ND	ND	ND	ND	ND	ND	ND
January 13, 2014 (Rainfall-runoff, no discharge)			0.2	NA	10	NA	NA	ND	ND	ND	ND
February 28, 2014 (Inter-event)			NA	NA	NA	NA	NA	NA	NA	NA	NA
March 31, 2014 (Controlled Discharge)			0.2	9.8	220	87	100	NA	NA	NA	66

Notes:

1. Inter-event (dry), controlled discharge (due to recent rainfall-runoff), rainfall-runoff-discharge (gravity drain), or freshet ('spring melt') sampling event conditions.
2. The CWQQs for TSS are the following:
   i. clear flow
   Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).
   ii. high flow or turbid waters
   Maximum increase of 8 NTUs from background levels at any one time when background levels are between 8 and 80 NTUs. Should not increase more than 10% of background levels when background is > 80 NTUs (CCME, 2013).
3. RDL - Reported Detection Limit.
4. Where 'NA' is indicated, sample was not measured to do Health &Safety / access issues during construction.
5. Where 'ND' is indicated, SWM Pond station was not sampled or provided in this table, since there was no discharge from the SWM feature during the sampling effort.
   Exceedances of limits are in bold, with further discussion in Section 5.2, where applicable.

Table 3: Total Suspended Solids Sampling Results

Date (Type of event) [1]	TSS Limit [2], CWQG [3] (mg/L)	RDL [3] (mg/L)	Stations							
			SW-1 (mg/L)	SW-2 (mg/L)	SW-3 (mg/L)	SW-4 (mg/L)	E-SWMP-IN (mg/L)	W-SWMP-IN (mg/L)	E-SWMP-OUT (mg/L)	W-SWMP-OUT (mg/L)
May 31, 2013 (Controlled Discharge)	25	10	<10	10	<10	<10	<10	17	NA	**92**
June 25, 2013 (Rainfall-runoff, Controlled discharge)		10	**81**	10	**28**	**44**	<10	12	<10	**87**
July 22, 2013 (Controlled discharge)		10	8	5	3	2	18	**49**	**240**	**130**
August 28, 2013 (Inter-event)		10	NA	NA	NA	NA	NA	NA	NA	NA
September 30, 2013 (Inter-event)		10	NA	NA	NA	NA	ND	ND	ND	ND
October 7, 2013 (Rainfall-runoff, no discharge)		10	**40**	**49**	**31**	22	**31**	**81**	**69**	**150**
November 22, 2013 (Controlled discharge)		10	**28**	**28**	7	18	**430**	**45**	**300**	**30**
December 20, 2013 (Inter-event)		10	ND	ND	ND	ND	ND	ND	ND	ND
January 13, 2014 (Rainfall-runoff, no discharge)		10	NA	**26**	NA	NA	ND	ND	ND	ND
February 28, 2014 (Inter-event)		10	NA	NA	NA	NA	NA	NA	NA	NA
March 31, 2014 (Controlled Discharge)		10	10	**330**	**540**	**590**	NA	NA	NA	**36**

Notes:

1. Inter-event (dry), controlled discharge (due to recent rainfall-runoff), rainfall-runoff-discharge (gravity drain), or freshet ('spring melt') sampling event conditions.
2. There is no PWQO and {Interim PWQO} for TSS. A suitable TSS limit for various sewage (including SWM) discharges, and receiving water is accepted to be 25 mg/L (MOE, 1994b).
3. The CWQQs for TSS are the following:
   i. clear flow - Maximum increase of 25 mg/L from background levels for any short-term exposure (e.g., 24-h period). Maximum average increase of 5 mg/L from background levels for longer term exposures (e.g., inputs lasting between 24 h and 30 d).
   ii. high flow - Maximum increase of 25 mg/L from background levels at any time when background levels are between 25 and 250 mg/L. Should not increase more than 10% of background levels when background is ≥ 250 mg/L (CCME, 2013).
4. RDL - Reported Detection Limit.
5. Where 'NA' is entered, sample was not measured to do Health &Safety / access issues during construction.
6. Where 'ND' is entered, SWM Pond station was not sampled or provided in this table, since there was no discharge from the SWM feature during the sampling effort.
7. Exceedances of limits are in bold, with further discussion in Section 5.2, where applicable.

Table 4: *In Situ* pH Measurements

Date (Type of event) [1.]	PWQO	CWQG	Stations							
			SW-1	SW-2	SW-3	SW-4	E-SWMP-IN	W-SWMP-IN	E-SWMP-OUT	W-SWMP-OUT
May 31, 2013 (Controlled Discharge)	6.5 to 8.5	6.5 to 9	8.07	8.07	8.26	8.16	8.13	**8.62**	NA	8.58
June 25, 2013 (Rainfall-runoff Controlled Discharge)			6.96	7.01	7.53	7.33	**6.46**	6.58	7.07	7.20
July 22, 2013 (Controlled discharge)			7.25	7.80	7.38	7.57	**8.58**	8.03	7.45	7.58
August 28, 2013 (Inter-event)			NA	NA	NA	NA	NA	**8.79**	NA	NA
September 30, 2013 (Inter-event)			**6.38**	NA	6.63	6.68	ND	ND	ND	ND
October 7, 2013 (Rainfall-runoff, no discharge)			7.83	7.87	7.92	7.83	8.08	8.40	8.25	8.26
November 22, 2013 (Controlled discharge)			8.49	8.26	8.35	8.32	**8.57**	9.41	**9.30**	**9.35**
December 20, 2013 (Inter-event)			7.96	NA	8.14	7.96	ND	ND	8.33	NA
January 13, 2014 (Rainfall-runoff, no discharge)			8.13	7.98	8.17	8.25	ND	ND	NA	NA
February 28, 2014 (Inter-event)			NA	NA	NA	NA	NA	NA	NA	NA
March 31, 2014 (Controlled Discharge)			8.83	8.22	8.24	8.28	NA	NA	NA	8.90

Notes:
1. Inter-event (dry) or rainfall-runoff sampling event indication is provided below the date.
2. Where 'NA' is indicated, sample was not measured to do Health &Safety / access issues during construction.
3. Where 'ND' is indicated, SWM Pond station was not sampled or provided in this table, since there was no discharge from the SWM feature during the sampling effort.
4. Sampling results out of the PWQO and CWQG acceptable limits are in bold, with further discussion in Section 5.2, where applicable.

Table 5: *In Situ* Temperature Measurements

Date (Type of event) [1.]	PWQO	CWQG	Stations							
			SW-1 (°C)	SW-2 (°C)	SW-3 (°C)	SW-4 (°C)	E-SWMP-IN (°C)	W-SWMP-IN (°C)	E-SWMP-OUT (°C)	W-SWMP-OUT (°C)
May 31, 2013 (Controlled Discharge)	Note[2.]	Note[3.]	20.1	17.4	18.9	17.7	22.7	22.3	NA	14.9
June 25, 2013 (Rainfall-runoff, Controlled Discharge)			21.0	18.6	19.1	19.0	23.4	23.8	23.3	21.6
July 22, 2013 (Controlled discharge)			23.5	21.4	22.3	21.6	25.2	24.4	24.9	24.9
August 28, 2013 (Inter-event)			NA	NA	NA	NA	NA	24.3	NA	NA
September 30, 2013 (Inter-event)			22.4	NA	20.5	26.5	ND	ND	ND	ND
October 7, 2013 (Rainfall-runoff, no discharge)			15.2	14.1	14.2	14.8	16.3	15.5	16.0	15.9
November 22, 2013 (Controlled discharge)			5.9	5.8	5.6	5.6	7.8	3.5	4.4	3.8
December 20, 2013 (Inter-event)			0.0	NA	0.0	0.9	ND	ND	3.9	NA
January 13, 2014 (Rainfall-runoff, no discharge)			1.4	0.3	0.5	0.3	ND	ND	NA	NA
February 28, 2014 (Inter-event)			NA	NA	NA	NA	NA	NA	NA	NA
March 31, 2014 (Controlled Discharge)			6.7	2.3	2.1	1.7	NA	NA	NA	2.2

Notes:

1. Inter-event (dry) or rainfall-runoff sampling event indication is provided below the date.
2. PWQO for Temperature (generally) states: The natural thermal regime of any body of water shall not be altered so as to impair the quality of the natural environment. In particular, the diversity, distribution and abundance of plant and animal life shall not be significantly changed (MOE, 1994).
3. CWQG for Temperature:
   i.Thermal Stratification: Thermal additions to receiving waters should be such that thermal stratification and subsequent turnover dates are not altered from those existing prior to the addition of heat from artificial origins
   ii. Maximum Weekly Average Temperature: Thermal additions to receiving waters should be such that the maximum weekly average temperature is not exceeded
   iii. Short-term Exposure to Extreme Temperature: Thermal additions to receiving waters should be such that the short-term exposures to maximum temperatures are not exceeded. Exposures should not be so lengthy or frequent as to adversely affect the important species (CCME, 2013).
4. Where 'NA' is indicated, sample was not measured to do Health &Safety / access issues during construction.
5. Where 'ND' is indicated, SWM Pond station was not sampled or provided in this table, since there was no discharge from the SWM feature during the sampling effort.
6. Exceedances of limits are in bold, with further discussion in Section 5.2, where applicable.

Table 6: *In Situ* Conductivity Measurements

Date [1.] (Type of event)	PWQO, CWQG[2]	Stations							
		SW-1 (µS/cm)	SW-2 (µS/cm)	SW-3 (µS/cm)	SW-4 (µS/cm)	E-SWMP-IN (µS/cm)	W-SWMP-IN (µS/cm)	E-SWMP-OUT [4.] (µS/cm)	W-SWMP-OUT [4.] (µS/cm)
May 31, 2013 (Controlled Discharge)	N/A	610	700	920	860	1080	320	NA	280
June 25, 2013 (Rainfall-runoff, Controlled Discharge)		630	740	860	820	940	410	840	400
July 22, 2013 (Controlled discharge)		670	590	1270	1080	750	280	420	290
August 28, 2013 (Inter-event)		NA	NA	NA	NA	NA	318	NA	NA
September 30, 2013 (Inter-event)		>20	NA	>20	>20	ND	ND	ND	ND
October 7, 2013 (Rainfall-runoff, no discharge)		520	860	960	850	2150	1140	1080	1020
November 22, 2013 (Controlled discharge)		449	577	930	834	943	551	598	548
December 20, 2013 (Inter-event)		3999 [5.]	NA	3999 [5.]	3999 [5.]	ND	ND	2756	NA
January 13, 2014 (Rainfall-runoff, no discharge)		3999 [5.]	3160	1116	1440	ND	ND	NA	NA
February 28, 2014 (Inter-event)		NA	NA	NA	NA	NA	NA	NA	NA
March 31, 2014 (Controlled Discharge)		1635	1065	505	552	NA	NA	NA	615

Notes:
1. Inter-event (dry) or rainfall-runoff sampling event indication is provided below the date.
2. There are no PWQO and CWQG limits for conductivity. However, higher values are often related to higher concentrations of finer suspended metals in surface water. More discussion provided in Section 5.2.
3. Where 'NA' is indicated, sample was not measured to do Health &Safety / access issues during construction.
4. Where 'ND' is indicated, SWM Pond station was not sampled or provided in this table, since there was no discharge from the SWM feature during the sampling effort.
5. Exceeding range of Hana probe, most likely due to freezing conditions / stagnant water.