



# North Island Laboratories

• 2755 B Moray Avenue, Courtenay, B.C. V9N 8M9 Tel: (250) 338-7786 Fax: (250) 338-7553

## Certificate of Analysis

Report To: GW Solutions Inc.  
K. Antonio Barroso

Lab Number: 109086  
Date Reported: 25 Mar 14  
Date Completed: 25 Mar 14  
Date Received: 21 Mar 14 9:49

**109086-01 Well # 1**

**Tahsis**

Sampled By: Antonio  
Sampling Date: 20 Mar 14 14:30

Test	Result	Units	Drinking Water Guideline
Chloride	1.4	mg/L	250 AO
Fluoride	<0.05	mg/L	1.5 MAC
Nitrate (N)	0.10	mg/L	10 MAC
Nitrite (N)	<0.05	mg/L	1 MAC
Sulphate	3.4	mg/L	500 AO
pH at 25 C	7.8	pH Units	6.5-8.5
Total Dissolved Solids (conductivity ca	66	mg/L	500 (AO)
Total Coliforms (DES)	<1.0	MPN/100mL	<1
E. coli (DES)	<1.0	MPN/100mL	<1
T-Aluminium	0.064	mg/L	0.1 Operational Std
T-Antimony	<0.0005	mg/L	0.006 MAC
T-Arsenic	<0.00025	mg/L	0.010 MAC
T-Barium	<0.00025	mg/L	1.0 MAC
T-Beryllium	<0.00025	mg/L	
T-Boron	0.015	mg/L	5 MAC
T-Bismuth	<0.0005	mg/L	
T-Cadmium	<0.00005	mg/L	0.005 MAC
T-Calcium	15.2	mg/L	
T-Chromium	<0.0025	mg/L	0.05 MAC
T-Cobalt	<0.0005	mg/L	
T-Copper	0.0017	mg/L	1.0 AO
T-Iron	0.157	mg/L	0.3 AO
T-Lead	<0.0005	mg/L	0.010 MAC
T-Lithium	<0.0025	mg/L	
T-Magnesium	2.07	mg/L	
T-Manganese	<0.0050	mg/L	0.05 AO

AO = Aesthetic Objective; MAC = Max. Allowable Concentration; IMAC = Interim MAC

> = Greater than; < = Less than

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Canadian Drinking Water Guidelines as listed on Dec. 5th, 2005 and are subject to change. Method uncertainties for specified analyses are available upon request.

3/25/2014 17:07

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## 109086-01 Well # 1

## Tahsis

Sampled By: Antonio

Sampling Date: 20 Mar 14 14:30

Test	Result	Units	Drinking Water Guideline
T-Molybdenum	<0.00025	mg/L	
T-Nickel	<0.0010	mg/L	
T-Potassium	<0.5	mg/L	
T-Selenium	<0.0005	mg/L	0.01 MAC
T-Silicon	3.57	mg/L	
T-Silver	<0.00025	mg/L	
T-Sodium	1.9	mg/L	200 AO
T-Strontium	0.0268	mg/L	
T-Thallium	<0.00005	mg/L	
T-Tin	<0.0005	mg/L	
T-Titanium	0.0037	mg/L	
T-Uranium	0.00009	mg/L	
T-Vanadium	0.0013	mg/L	
T-Zinc	0.007	mg/L	5.0 AO
Hardness (CaCO <sub>3</sub> )	47	mg/L	80-100

## 109086-02 Well # 2

## Tahsis

Sampled By: Antonio

Sampling Date: 20 Mar 14 8:40

Test	Result	Units	Drinking Water Guideline
Chloride	15.9	mg/L	250 AO
Fluoride	<0.05	mg/L	1.5 MAC
Nitrate (N)	0.13	mg/L	10 MAC
Nitrite (N)	<0.05	mg/L	1 MAC
Sulphate	18.5	mg/L	500 AO
pH at 25 C	7.8	pH Units	6.5-8.5
Total Dissolved Solids (conductivity ca	131	mg/L	500 (AO)
Total Coliforms (DES)	<1.0	MPN/100mL	<1
E. coli (DES)	<1.0	MPN/100mL	<1
T-Aluminium	0.116	mg/L	0.1 Operational Std
T-Antimony	<0.0005	mg/L	0.006 MAC
T-Arsenic	0.00047	mg/L	0.010 MAC
T-Barium	0.00062	mg/L	1.0 MAC

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109086-02 Well # 2

Tahsis

Sampled By: Antonio

Sampling Date: 20 Mar 14 8:40

Test	Result	Units	Drinking Water Guideline
T-Beryllium	<0.00025	mg/L	
T-Boron	0.036	mg/L	5 MAC
T-Bismuth	<0.0005	mg/L	
T-Cadmium	<0.00005	mg/L	0.005 MAC
T-Calcium	19.9	mg/L	
T-Chromium	<0.0025	mg/L	0.05 MAC
T-Cobalt	0.0005	mg/L	
T-Copper	0.0032	mg/L	1.0 AO
T-Iron	0.299	mg/L	0.3 AO
T-Lead	<0.0005	mg/L	0.010 MAC
T-Lithium	<0.0025	mg/L	
T-Magnesium	2.26	mg/L	
T-Manganese	0.034	mg/L	0.05 AO
T-Molybdenum	<0.00025	mg/L	
T-Nickel	<0.0010	mg/L	
T-Potassium	<0.5	mg/L	
T-Selenium	<0.0005	mg/L	0.01 MAC
T-Silicon	3.98	mg/L	
T-Silver	<0.00025	mg/L	
T-Sodium	17.2	mg/L	200 AO
T-Strontium	0.0545	mg/L	
T-Thallium	<0.00005	mg/L	
T-Tin	<0.0005	mg/L	
T-Titanium	0.0093	mg/L	
T-Uranium	0.00023	mg/L	
T-Vanadium	0.0019	mg/L	
T-Zinc	0.0079	mg/L	5.0 AO
Hardness (CaCO <sub>3</sub> )	59	mg/L	80-100

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## 109086-01

For further information regarding sampling, lab results and well disinfection, please check our web site: <http://www.nilabs.com>. For information on wells and ground water see: [www.wellwaterprotection.bc.ca](http://www.wellwaterprotection.bc.ca)  
We suggest the following Health Canada website for further information regarding the latest drinking water quality guidelines to help you assess your results:  
<http://www.hc-sc.gc.ca/ewh-semt/water-eau/drink-potab/guide/index-eng.php>

**Total Coliform:** The Total Coliform group (of micro-organisms) includes: The fecal coliform (E.coli), which are common to the intestinal tract of both man and animals, and the non-fecal coliforms that are naturally present in soils and on vegetation. The precise sanitary significance of the Total Coliform test may be difficult to establish. The test is offered as an indicator of bacterial contamination.

**E.coli:** E.coli has been shown to be an indicator of the potential presence of enteric pathogens in water. The maximum acceptable concentration (MAC) of E. coli in drinking water is <1 per 100 mL. Any untreated supply that contains E.coli should receive disinfection.

We suggest the following Health Canada website for further information regarding the latest drinking water quality guidelines to help you assess your results:  
[http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/doc\\_sup-appui/sum\\_guide-res\\_recom/index\\_e.html](http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/doc_sup-appui/sum_guide-res_recom/index_e.html)

Test	Method	Analyst	Date
Chloride	Ion Chromatography, EPA 300.1 -modified	NiSL	3/21/2014
E. coli (DES)	Enzyme Substrate, APHA 9223 B -modified	NiSL	3/21/2014
Fluoride	Ion Chromatography, EPA 300.1 -modified	NiSL	3/21/2014
Hardness (CaCO3)	Hardness by Calculation, APHA 2340 B -modified	NiSL	3/25/2014
Nitrate (N)	Ion Chromatography, EPA 300.1 -modified	NiSL	3/21/2014
Nitrite (N)	Ion Chromatography, EPA 300.1 -modified	NiSL	3/21/2014
pH at 25 C	Electrometric, APHA 4500 B -modified	NiSL	3/21/2014
Sulphate	Ion Chromatography, EPA 300.1 -modified	NiSL	3/21/2014
T-Aluminium	Exova Subcontract, ICP-MS,USEPA 200.8-modified	EXL	3/25/2014
T-Antimony	Exova Subcontract, ICP-MS,USEPA 200.8-modified	EXL	3/25/2014
T-Arsenic	Exova Subcontract, ICP-MS,USEPA 200.8-modified	EXL	3/25/2014
T-Barium	Exova Subcontract, ICP-MS,USEPA 200.8-modified	EXL	3/25/2014
T-Beryllium	Exova Subcontract, ICP-MS,USEPA 200.8-modified	EXL	3/25/2014
T-Bismuth	Exova Subcontract, ICP-MS,USEPA 200.8-modified	EXL	3/25/2014
T-Boron	Exova Subcontract, ICP-MS,USEPA 200.8-modified	EXL	3/25/2014
T-Cadmium	Exova Subcontract, ICP-MS,USEPA 200.8-modified	EXL	3/25/2014
T-Calcium	Exova Subcontract, ICP, APHA 3120B -modified	EXL	3/25/2014
T-Chromium	Exova Subcontract, ICP-MS,USEPA 200.8-modified	EXL	3/25/2014
T-Cobalt	Exova Subcontract, ICP-MS,USEPA 200.8-modified	EXL	3/25/2014
T-Copper	Exova Subcontract, ICP-MS,USEPA 200.8-modified	EXL	3/25/2014
T-Iron	Exova Subcontract, ICP, APHA 3120B -modified	EXL	3/25/2014

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T-Lead	Exova Subcontract, ICP-MS,USEPA 200.8-modified	EXL	3/25/2014
T-Lithium	Exova Subcontract, ICP-MS,USEPA 200.8-modified	EXL	3/25/2014
T-Magnesium	Exova Subcontract, ICP, APHA 3120B-modified	EXL	3/25/2014
T-Manganese	Exova Subcontract, ICP, APHA 3120B -modified	EXL	3/25/2014
T-Molybdenum	Exova Subcontract, ICP-MS,USEPA 200.8-modified	EXL	3/25/2014
T-Nickel	Exova Subcontract, ICP-MS,USEPA 200.8-modified	EXL	3/25/2014
T-Potassium	Exova Subcontract, ICP, APHA 3120B - modified	EXL	3/25/2014
T-Selenium	Exova Subcontract, ICP-MS,USEPA 200.8-modified	EXL	3/25/2014
T-Silicon	Exova Subcontract, ICP, APHA 3120B - modified	EXL	3/25/2014
T-Silver	Exova Subcontract, ICP-MS,USEPA 200.8-modified	EXL	3/25/2014
T-Sodium	Exova Subcontract, ICP, APHA 3120B - modified	EXL	3/25/2014
T-Strontium	Exova Subcontract, ICP-MS,USEPA 200.8-modified	EXL	3/25/2014
T-Thallium	Exova Subcontract, ICP-MS,USEPA 200.8-modified	EXL	3/25/2014
T-Tin	Exova Subcontract, ICP-MS,USEPA 200.8-modified	EXL	3/25/2014
T-Titanium	Exova Subcontract, ICP, APHA 3120B - modified	EXL	3/25/2014
T-Uranium	Exova Subcontract, ICP-MS,USEPA 200.8-modified	EXL	3/25/2014
T-Vanadium	Exova Subcontract, ICP, APHA 3120B - modified	EXL	3/25/2014
T-Zinc	Exova Subcontract, ICP-MS,USEPA 200.8-modified	EXL	3/25/2014
Total Coliforms (DES)	Enzyme Substrate, APHA 9223 B -modified	NI&L	3/21/2014
Total Dissolved Solids (conducti	Conductivity @25C, APHA 2510 A -modified	NI&L	3/21/2014

Approved By:

Melissa McIntosh, Lab Technician

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Your Project #: 13-12 TAHSIS GROUNDWATER EXPLO  
 Site Location: MACKELVIE RD AND JEWITT TD, TAHSIS  
 Your C.O.C. #: 08381910

**Attention: GILLES WENDLING**

GW SOLUTIONS  
 UNIT 201 - 5180 DUBLIN WAY  
 NANAIMO, BC  
 CANADA V9T 0H2

**Report Date: 2014/06/04**  
**Report #: R1579277**  
**Version: 1**

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B440957**  
**Received: 2014/05/22, 08:20**

Sample Matrix: Water  
 # Samples Received: 1

Analyses	Quantity	Date		Laboratory Method	Analytical Method
		Extracted	Analyzed		
Alkalinity - Water (1)	1	2014/05/24	2014/05/27	BBY6SOP-00026	SM2320B
Anions in Water by Ion Chromatography (1,2)	1	N/A	2014/05/22	VIC SOP-00020	Based on SM-4110B
Colour (True) (1)	1	N/A	2014/05/23	VIC SOP-00010	Based on SM-2120B
Conductance - water (1)	1	N/A	2014/05/27	BBY6SOP-00026	SM-2510B
Iron Bacteria (1)	1	N/A	2014/05/22	BBY4 SOP-00004	Based on SM-9240
Hardness Total (calculated as CaCO <sub>3</sub> )	1	N/A	2014/05/29	BBY7SOP-00002	EPA 6020A
Hardness (calculated as CaCO <sub>3</sub> )	1	N/A	2014/05/27	BBY7SOP-00002	EPA 6020A
Mercury (Total) by CVAf	1	2014/05/27	2014/05/27	BBY7SOP-00015	BC MOE Lab Manual
Heterotropic Plate Count Water Mem. Filt (1)	1	N/A	2014/05/22	BBY4 SOP-00003	Based on SM-9215
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	1	N/A	2014/05/27	BBY7SOP-00002	EPA 6020A
Elements by CRC ICPMS (dissolved)	1	N/A	2014/05/27	BBY7SOP-00002	EPA 6020A
Na, K, Ca, Mg, S by CRC ICPMS (total)	1	N/A	2014/05/29	BBY7SOP-00002	EPA 6020A
Elements by CRC ICPMS (total)	1	N/A	2014/05/29	BBY7SOP-00002	EPA 6020A
Nitrogen (Total)	1	2014/05/27	2014/05/27	BBY6SOP-00016	SM-4500N C
Ammonia-N (Preserved)	1	N/A	2014/05/27	BBY6SOP-00009	SM-4500NH3G
Nitrate + Nitrite (N) (calculated) (1)	1	N/A	2014/05/26	VIC-SOP-00005	Based SM-4500 NO <sub>2</sub> E
Nitrogen (Organic) (Cal. TKN, NH <sub>4</sub> ,N/N)	1	N/A	2014/05/28		Calc
Filter and HNO <sub>3</sub> Preserve for Metals	1	N/A	2014/05/23	BBY6WI-00001	EPA 200.2
pH Water (1,3)	1	N/A	2014/05/27	BBY6SOP-00026	SM-4500H+B
Sat. pH and Langelier Index (@ 4.4C)	1	N/A	2014/05/28	Calculated Parameter	Calculated Parameter
Sat. pH and Langelier Index (@ 60C)	1	N/A	2014/05/28	BBY WI-00033	Calculated Parameter
Sulphur Reducing Bacteria (1)	1	N/A	2014/05/22	70-C-203	Based on Sm-9240
Sulphide	1	N/A	2014/05/26	BBY6SOP-00006	SM-4500 S2D
Total Dissolved Solids (Filt. Residue) (1)	1	N/A	2014/05/26	VIC SOP-00008	Based on SM 2540C
Total coliform and E. by MF (Chromocult) (1)	1	N/A	2014/05/22	VIC SOP 00112	Based on SM-9222
Carbon (Total Organic) (4)	1	N/A	2014/05/28	BBY6SOP-00003	SM-5310C
Turbidity (1)	1	N/A	2014/05/23	VIC SOP-00011	Based on SM - 2130

\* Results relate only to the items tested.

(1) This test was performed by Maxxam Victoria

(2) Anions in Water by Ion Chromatography: The samples were received and analyzed in Maxxam Victoria. The data was processed and approved in Maxxam Burnaby.

(3) The BC-MOE and APHA Standard Method require pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the BC-MOE/APHA Standard Method holding time.

(4) TOC present in the sample should be considered as non-purgeable TOC.

Maxxam Job #: B440957  
Report Date: 2014/06/04

GW SOLUTIONS  
Client Project #: 13-12 TAHSIS GROUNDWATER EXPLO  
Site Location: MACKELVIE RD AND JEWITT TD, TAHSIS  
Sampler Initials: AB

-2-

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Debbie Nordbruket, Project Manager  
Email: DNordbruket@maxxam.ca  
Phone# (250) 385-6112

=====  
This report has been generated and distributed using a secure automated process.  
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Total cover pages: 2

Maxxam Job #: B440957  
 Report Date: 2014/06/04

GW SOLUTIONS  
 Client Project #: 13-12 TAHSIS GROUNDWATER EXPLO  
 Site Location: MACKELVIE RD AND JEWITT TD, TAHSIS  
 Sampler Initials: AB

### RESULTS OF CHEMICAL ANALYSES OF WATER

Maxxam ID					JQ7961		
Sampling Date					2014/05/21 08:30		
COC#					08381910		
	UNITS	Criteria A	Criteria B	Criteria C	TAHSIS PW	RDL	QC Batch
<b>CONVENTIONALS</b>							
Dissolved Nitrate (N)	mg/L	10			0.075	0.010	7494288
Dissolved Nitrite (N)	mg/L	1			<0.010	0.010	7494288
<b>Misc. Inorganics</b>							
Dissolved Chloride (Cl)	mg/L		250		1.34	0.50	7494288
Dissolved Fluoride (F)	mg/L	1.5			0.010	0.010	7494288
Dissolved Sulphate (SO4)	mg/L		500		2.92	0.50	7494288
<b>Calculated Parameters</b>							
Filter and HNO3 Preservation	N/A				FIELD	N/A	ONSITE
Total Hardness (CaCO3)	mg/L				50.1	0.50	7495213
<b>Misc. Inorganics</b>							
Dissolved Hardness (CaCO3)	mg/L				49.7	0.50	7495362
Alkalinity (Total as CaCO3)	mg/L				47.8	0.5	7497060
Total Organic Carbon (C)	mg/L				1.16	0.50	7500919
Alkalinity (PP as CaCO3)	mg/L				<0.5	0.5	7497060
Bicarbonate (HCO3)	mg/L				58.3	0.5	7497060
Carbonate (CO3)	mg/L				<0.5	0.5	7497060
Hydroxide (OH)	mg/L				<0.5	0.5	7497060
<b>MISCELLANEOUS</b>							
True Colour	Col. Unit		15		10	5	7495334
<b>Nutrients</b>							
Total Ammonia (N)	mg/L				0.041	0.0050	7500851
Total Organic Nitrogen (N)	mg/L				<0.020	0.020	7495970
Nitrate plus Nitrite (N)	mg/L				0.08	0.01	7496263
Total Nitrogen (N)	mg/L				0.136	0.020	7499876

N/A = Not Applicable

RDL = Reportable Detection Limit

Criteria A, Criteria B, Criteria C: The guidelines that have been included in this report have been taken from the Canadian Drinking Water Quality Summary Table, August 2012.

Criteria A = Maximum Acceptable Concentration (MAC) / Criteria B = Aesthetic Objectives (AO) / Criteria C = Operational Guidance Values (OG)

It is recommended to consult these guidelines when interpreting your data since there are non-numerical guidelines that are not included on this report.

Turbidity Guidelines:

1. Chemically assisted filtration: less than or equal to 0.3 NTU in 95% of the measurements or 95% of the time each month. Shall not exceed 1.0 NTU at any time.
2. Slow sand / diatomaceous earth filtration: less than or equal to 1.0 NTU in 95% of the measurements or 95% of the time each month. Shall not exceed 3.0 NTU at any time.
3. Membrane filtration: less than or equal to 0.1 NTU in 99% of the measurements made or at least 99% of the time each calendar month. Shall not exceed 0.3 NTU at any time.



Maxxam Job #: B440957  
 Report Date: 2014/06/04

GW SOLUTIONS  
 Client Project #: 13-12 TAHSIS GROUNDWATER EXPLO  
 Site Location: MACKELVIE RD AND JEWITT TD, TAHSIS  
 Sampler Initials: AB

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID					JQ7961		
Sampling Date					2014/05/21 08:30		
COC#					08381910		
	<b>UNITS</b>	<b>Criteria A</b>	<b>Criteria B</b>	<b>Criteria C</b>	<b>TAHSIS PW</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Physical Properties</b>							
Conductivity	uS/cm				103	1	7497061
pH	pH		6.5 : 8.5		7.7		7497063
<b>Physical Properties</b>							
Total Dissolved Solids	mg/L		500		71	10	7495634
Turbidity	NTU	see remark	see remark	see remark	0.7	0.1	7495672

**MERCURY BY COLD VAPOR (WATER)**

Maxxam ID			JQ7961		
Sampling Date			2014/05/21 08:30		
COC#			08381910		
	<b>UNITS</b>	<b>Criteria A</b>	<b>TAHSIS PW</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Elements</b>					
Total Mercury (Hg)	ug/L	1	<0.010	0.010	7499999

RDL = Reportable Detection Limit

Criteria A, Criteria B, Criteria C: The guidelines that have been included in this report have been taken from the Canadian Drinking Water Quality Summary Table, August 2012.

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Turbidity Guidelines:

1. Chemically assisted filtration: less than or equal to 0.3 NTU in 95% of the measurements or 95% of the time each month. Shall not exceed 1.0 NTU at any time.
2. Slow sand / diatomaceous earth filtration: less than or equal to 1.0 NTU in 95% of the measurements or 95% of the time each month. Shall not exceed 3.0 NTU at any time.
3. Membrane filtration: less than or equal to 0.1 NTU in 99% of the measurements made or at least 99% of the time each calendar month. Shall not exceed 0.3 NTU at any time.

Maxxam Job #: B440957  
 Report Date: 2014/06/04

GW SOLUTIONS  
 Client Project #: 13-12 TAHSIS GROUNDWATER EXPLO  
 Site Location: MACKELVIE RD AND JEWITT TD, TAHSIS  
 Sampler Initials: AB

### ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID					JQ7961		
Sampling Date					2014/05/21 08:30		
COC#					08381910		
	UNITS	Criteria A	Criteria B	Criteria C	TAHSIS PW	RDL	QC Batch
<b>Dissolved Metals by ICPMS</b>							
Dissolved Aluminum (Al)	ug/L			100	<3.0	3.0	7499758
Dissolved Antimony (Sb)	ug/L	6			<0.50	0.50	7499758
Dissolved Arsenic (As)	ug/L	10			<0.10	0.10	7499758
Dissolved Barium (Ba)	ug/L	1000			<1.0	1.0	7499758
Dissolved Beryllium (Be)	ug/L				<0.10	0.10	7499758
Dissolved Bismuth (Bi)	ug/L				<1.0	1.0	7499758
Dissolved Boron (B)	ug/L	5000			<50	50	7499758
Dissolved Cadmium (Cd)	ug/L	5			<0.010	0.010	7499758
Dissolved Chromium (Cr)	ug/L	50			<1.0	1.0	7499758
Dissolved Cobalt (Co)	ug/L				<0.50	0.50	7499758
Dissolved Copper (Cu)	ug/L		1000		1.14	0.20	7511303
Dissolved Iron (Fe)	ug/L		300		<5.0	5.0	7499758
Dissolved Lead (Pb)	ug/L	10			0.23	0.20	7499758
Dissolved Lithium (Li)	ug/L				<5.0	5.0	7499758
Dissolved Manganese (Mn)	ug/L		50		<1.0	1.0	7499758
Dissolved Mercury (Hg)	ug/L	1			<0.050	0.050	7499758
Dissolved Molybdenum (Mo)	ug/L				<1.0	1.0	7499758
Dissolved Nickel (Ni)	ug/L				<1.0	1.0	7499758
Dissolved Selenium (Se)	ug/L	10			<0.10	0.10	7499758
Dissolved Silicon (Si)	ug/L				3780	100	7499758
Dissolved Silver (Ag)	ug/L				<0.020	0.020	7499758
Dissolved Strontium (Sr)	ug/L				31.6	1.0	7499758
Dissolved Thallium (Tl)	ug/L				<0.050	0.050	7499758
Dissolved Tin (Sn)	ug/L				<5.0	5.0	7499758
Dissolved Titanium (Ti)	ug/L				<5.0	5.0	7499758
Dissolved Uranium (U)	ug/L	20			<0.10	0.10	7499758

RDL = Reportable Detection Limit

Criteria A, Criteria B, Criteria C: The guidelines that have been included in this report have been taken from the Canadian Drinking Water Quality Summary Table, August 2012.

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**Turbidity Guidelines:**

1. Chemically assisted filtration: less than or equal to 0.3 NTU in 95% of the measurements or 95% of the time each month. Shall not exceed 1.0 NTU at any time.
2. Slow sand / diatomaceous earth filtration: less than or equal to 1.0 NTU in 95% of the measurements or 95% of the time each month. Shall not exceed 3.0 NTU at any time.
3. Membrane filtration: less than or equal to 0.1 NTU in 99% of the measurements made or at least 99% of the time each calendar month. Shall not exceed 0.3 NTU at any time.

Maxxam Job #: B440957  
 Report Date: 2014/06/04

GW SOLUTIONS  
 Client Project #: 13-12 TAHSIS GROUNDWATER EXPLO  
 Site Location: MACKELVIE RD AND JEWITT TD, TAHSIS  
 Sampler Initials: AB

**ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)**

Maxxam ID					JQ7961		
Sampling Date					2014/05/21 08:30		
COC#					08381910		
	<b>UNITS</b>	<b>Criteria A</b>	<b>Criteria B</b>	<b>Criteria C</b>	<b>TAHSIS PW</b>	<b>RDL</b>	<b>QC Batch</b>
Dissolved Vanadium (V)	ug/L				<5.0	5.0	7499758
Dissolved Zinc (Zn)	ug/L		5000		<5.0	5.0	7499758
Dissolved Zirconium (Zr)	ug/L				<0.50	0.50	7499758
Dissolved Calcium (Ca)	mg/L				16.1	0.050	7495363
Dissolved Magnesium (Mg)	mg/L				2.33	0.050	7495363
Dissolved Potassium (K)	mg/L				0.167	0.050	7495363
Dissolved Sodium (Na)	mg/L		200		1.69	0.050	7495363
Dissolved Sulphur (S)	mg/L				<3.0	3.0	7495363

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3. Membrane filtration: less than or equal to 0.1 NTU in 99% of the measurements made or at least 99% of the time each calendar month. Shall not exceed 0.3 NTU at any time.

Maxxam Job #: B440957  
 Report Date: 2014/06/04

 GW SOLUTIONS  
 Client Project #: 13-12 TAHSIS GROUNDWATER EXPLO  
 Site Location: MACKELVIE RD AND JEWITT TD, TAHSIS  
 Sampler Initials: AB

**ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)**

Maxxam ID					JQ7961		
Sampling Date					2014/05/21 08:30		
COC#					08381910		
	UNITS	Criteria A	Criteria B	Criteria C	TAHSIS PW	RDL	QC Batch
<b>Total Metals by ICPMS</b>							
Total Aluminum (Al)	ug/L			100	5.0	3.0	7500726
Total Antimony (Sb)	ug/L	6			<0.50	0.50	7500726
Total Arsenic (As)	ug/L	10			<0.10	0.10	7500726
Total Barium (Ba)	ug/L	1000			<1.0	1.0	7500726
Total Beryllium (Be)	ug/L				<0.10	0.10	7500726
Total Bismuth (Bi)	ug/L				<1.0	1.0	7500726
Total Boron (B)	ug/L	5000			<50	50	7500726
Total Cadmium (Cd)	ug/L	5			<0.010	0.010	7500726
Total Chromium (Cr)	ug/L	50			<1.0	1.0	7500726
Total Cobalt (Co)	ug/L				<0.50	0.50	7500726
Total Copper (Cu)	ug/L		1000		0.94	0.20	7500726
Total Iron (Fe)	ug/L		300		<5.0	5.0	7500726
Total Lead (Pb)	ug/L	10			0.26	0.20	7500726
Total Manganese (Mn)	ug/L		50		<1.0	1.0	7500726
Total Molybdenum (Mo)	ug/L				<1.0	1.0	7500726
Total Nickel (Ni)	ug/L				<1.0	1.0	7500726
Total Selenium (Se)	ug/L	10			<0.10	0.10	7500726
Total Silicon (Si)	ug/L				3620	100	7500726
Total Silver (Ag)	ug/L				<0.020	0.020	7500726
Total Strontium (Sr)	ug/L				31.5	1.0	7500726
Total Thallium (Tl)	ug/L				<0.050	0.050	7500726
Total Tin (Sn)	ug/L				<5.0	5.0	7500726
Total Titanium (Ti)	ug/L				<5.0	5.0	7500726
Total Uranium (U)	ug/L	20			<0.10	0.10	7500726
Total Vanadium (V)	ug/L				<5.0	5.0	7500726
Total Zinc (Zn)	ug/L		5000		<5.0	5.0	7500726

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3. Membrane filtration: less than or equal to 0.1 NTU in 99% of the measurements made or at least 99% of the time each calendar month. Shall not exceed 0.3 NTU at any time.

Maxxam Job #: B440957  
 Report Date: 2014/06/04

GW SOLUTIONS  
 Client Project #: 13-12 TAHSIS GROUNDWATER EXPLO  
 Site Location: MACKELVIE RD AND JEWITT TD, TAHSIS  
 Sampler Initials: AB

### ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID					JQ7961		
Sampling Date					2014/05/21 08:30		
COC#					08381910		
	<b>UNITS</b>	<b>Criteria A</b>	<b>Criteria B</b>	<b>Criteria C</b>	<b>TAHSIS PW</b>	<b>RDL</b>	<b>QC Batch</b>
Total Zirconium (Zr)	ug/L				<0.50	0.50	7500726
Total Calcium (Ca)	mg/L				16.2	0.050	7495214
Total Magnesium (Mg)	mg/L				2.33	0.050	7495214
Total Potassium (K)	mg/L				0.134	0.050	7495214
Total Sodium (Na)	mg/L		200		1.56	0.050	7495214
Total Sulphur (S)	mg/L				<3.0	3.0	7495214

### MICROBIOLOGY (WATER)

Maxxam ID					JQ7961		
Sampling Date					2014/05/21 08:30		
COC#					08381910		
	<b>UNITS</b>	<b>Criteria A</b>			<b>TAHSIS PW</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Microbiological Param.</b>							
Heterotrophic Plate Count	CFU/mL				<1 (1)	1	7498758
<b>Parameter</b>							
Iron Bacteria	CFU/mL				2300	25	7504921
Sulphate reducing bacteria	CFU/mL				<200	200	7504851
<b>Microbiological Param.</b>							
Total Coliforms	CFU/100mL	<1			<1	1	7498469
E. coli	CFU/100mL	<1			<1	1	7498469

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3. Membrane filtration: less than or equal to 0.1 NTU in 99% of the measurements made or at least 99% of the time each calendar month. Shall not exceed 0.3 NTU at any time.

(1) - Sample arrived to laboratory past hold time, analyzed as per client request.

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GW SOLUTIONS  
 Client Project #: 13-12 TAHSIS GROUNDWATER EXPLO  
 Site Location: MACKELVIE RD AND JEWITT TD, TAHSIS  
 Sampler Initials: AB

### CALCULATED PARAMETERS (WATER)

Maxxam ID		JQ7961		
Sampling Date		2014/05/21 08:30		
COC#		08381910		
	<b>UNITS</b>	<b>TAHSIS PW</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Parameter</b>				
Langelier Index (@ 4.4C)	N/A	-1.30	N/A	7496261
Langelier Index (@ 60C)	N/A	-0.258	N/A	7496262
Saturation pH (@ 4.4C)	N/A	9.00	N/A	7496261
Saturation pH (@ 60C)	N/A	7.96	N/A	7496262

### MISCELLANEOUS (WATER)

Maxxam ID			JQ7961		
Sampling Date			2014/05/21 08:30		
COC#			08381910		
	<b>UNITS</b>	<b>Criteria B</b>	<b>TAHSIS PW</b>	<b>RDL</b>	<b>QC Batch</b>
<b>MISCELLANEOUS</b>					
Sulphide	mg/L	0.05	<0.0050	0.0050	7498220

N/A = Not Applicable

RDL = Reportable Detection Limit

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GW SOLUTIONS  
Client Project #: 13-12 TAHSIS GROUNDWATER EXPLO  
Site Location: MACKELVIE RD AND JEWITT TD, TAHSIS  
Sampler Initials: AB

**General Comments**

Heterotrphic Plate Count, Iron Related Bacteria and Sulphur Reducing Bacteria analyses received past hold time and analyzed with client consent.

Sample JQ7961, Elements by CRC ICPMS (dissolved): Test repeated.

Maxxam Job #: B440957  
 Report Date: 2014/06/04

 GW SOLUTIONS  
 Client Project #: 13-12 TAHSIS GROUNDWATER EXPLO  
 Site Location: MACKELVIE RD AND JEWITT TD, TAHSIS  
 Sampler Initials: AB

**QUALITY ASSURANCE REPORT**

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
7494288	Dissolved Nitrate (N)	2014/05/22	113	80 - 120	104	80 - 120	<0.010	mg/L	6.2	20
7494288	Dissolved Nitrite (N)	2014/05/22	105	80 - 120	107	80 - 120	<0.010	mg/L	NC	20
7494288	Dissolved Chloride (Cl)	2014/05/22	103	80 - 120	110	80 - 120	<0.50	mg/L	NC	20
7494288	Dissolved Sulphate (SO4)	2014/05/22	NC	80 - 120	109	80 - 120	<0.50	mg/L	0.3	20
7494288	Dissolved Fluoride (F)	2014/05/22			107	80 - 120	<0.010	mg/L	NC	20
7495334	True Colour	2014/05/23			100	94 - 106	<5	Col. Unit	NC	10
7495634	Total Dissolved Solids	2014/05/26			87	80 - 120	<10	mg/L	NC	20
7495672	Turbidity	2014/05/23			97	80 - 120	<0.1	NTU	6.9	20
7497060	Alkalinity (Total as CaCO3)	2014/05/27	99	80 - 120	95	80 - 120	<0.5	mg/L	0.3	20
7497060	Alkalinity (PP as CaCO3)	2014/05/27					<0.5	mg/L	NC	20
7497060	Bicarbonate (HCO3)	2014/05/27					<0.5	mg/L	0.3	20
7497060	Carbonate (CO3)	2014/05/27					<0.5	mg/L	NC	20
7497060	Hydroxide (OH)	2014/05/27					<0.5	mg/L	NC	20
7497061	Conductivity	2014/05/27			99	96 - 104	<1	uS/cm	6.6	20
7498220	Sulphide	2014/05/26	78 <sup>(1)</sup>	80 - 120	91	80 - 120	<0.0050	mg/L	0.9	20
7498469	Total Coliforms	2014/05/22							NC	N/A
7498469	E. coli	2014/05/22							NC	N/A
7498758	Heterotrophic Plate Count	2014/05/22							7.8	N/A
7499758	Dissolved Aluminum (Al)	2014/05/27	112	80 - 120	103	80 - 120	<3.0	ug/L	0.4	20
7499758	Dissolved Antimony (Sb)	2014/05/27	105	80 - 120	100	80 - 120	<0.50	ug/L	NC	20
7499758	Dissolved Arsenic (As)	2014/05/27	101	80 - 120	103	80 - 120	<0.10	ug/L	3.7	20
7499758	Dissolved Barium (Ba)	2014/05/27	NC	80 - 120	101	80 - 120	<1.0	ug/L	1.4	20
7499758	Dissolved Beryllium (Be)	2014/05/27	101	80 - 120	102	80 - 120	<0.10	ug/L	NC	20
7499758	Dissolved Bismuth (Bi)	2014/05/27	92	80 - 120	98	80 - 120	<1.0	ug/L	NC	20
7499758	Dissolved Cadmium (Cd)	2014/05/27	100	80 - 120	99	80 - 120	<0.010	ug/L	NC	20
7499758	Dissolved Chromium (Cr)	2014/05/27	104	80 - 120	100	80 - 120	<1.0	ug/L	NC	20
7499758	Dissolved Cobalt (Co)	2014/05/27	94	80 - 120	99	80 - 120	<0.50	ug/L	2.8	20
7499758	Dissolved Iron (Fe)	2014/05/27	98	80 - 120	105	80 - 120	<5.0	ug/L	NC	20
7499758	Dissolved Lead (Pb)	2014/05/27	93	80 - 120	96	80 - 120	<0.20	ug/L	NC	20
7499758	Dissolved Lithium (Li)	2014/05/27	NC	80 - 120	99	80 - 120	<5.0	ug/L	NC	20
7499758	Dissolved Manganese (Mn)	2014/05/27	NC	80 - 120	99	80 - 120	<1.0	ug/L	2.3	20
7499758	Dissolved Mercury (Hg)	2014/05/27	94	80 - 120	98	80 - 120	<0.050	ug/L	NC	20
7499758	Dissolved Molybdenum (Mo)	2014/05/27	NC	80 - 120	96	80 - 120	<1.0	ug/L	NC	20
7499758	Dissolved Nickel (Ni)	2014/05/27	NC	80 - 120	98	80 - 120	<1.0	ug/L	1.2	20
7499758	Dissolved Selenium (Se)	2014/05/27	106	80 - 120	107	80 - 120	<0.10	ug/L	NC	20
7499758	Dissolved Silver (Ag)	2014/05/27	102	80 - 120	100	80 - 120	<0.020	ug/L	NC	20
7499758	Dissolved Strontium (Sr)	2014/05/27	NC	80 - 120	98	80 - 120	<1.0	ug/L	1.7	20
7499758	Dissolved Thallium (Tl)	2014/05/27	98	80 - 120	102	80 - 120	<0.050	ug/L	NC	20
7499758	Dissolved Tin (Sn)	2014/05/27	105	80 - 120	98	80 - 120	<5.0	ug/L	NC	20
7499758	Dissolved Titanium (Ti)	2014/05/27	111	80 - 120	95	80 - 120	<5.0	ug/L	NC	20





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GW SOLUTIONS  
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 Site Location: MACKELVIE RD AND JEWITT TD, TAHSIS  
 Sampler Initials: AB

**QUALITY ASSURANCE REPORT**

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
7499758	Dissolved Uranium (U)	2014/05/27	101	80 - 120	98	80 - 120	<0.10	ug/L	NC	20
7499758	Dissolved Vanadium (V)	2014/05/27	108	80 - 120	97	80 - 120	<5.0	ug/L	NC	20
7499758	Dissolved Zinc (Zn)	2014/05/27	108	80 - 120	102	80 - 120	<5.0	ug/L	NC	20
7499758	Dissolved Boron (B)	2014/05/27					<50	ug/L	NC	20
7499758	Dissolved Silicon (Si)	2014/05/27					<100	ug/L	4.6	20
7499758	Dissolved Zirconium (Zr)	2014/05/27					<0.50	ug/L	NC	20
7499876	Total Nitrogen (N)	2014/05/27	NC	80 - 120	93	80 - 120	0.030, RDL=0.020	mg/L		
7499999	Total Mercury (Hg)	2014/05/27	101	80 - 120	105	80 - 120	<0.010	ug/L	NC	20
7500726	Total Aluminum (Al)	2014/05/29	NC	80 - 120	98	80 - 120	<3.0	ug/L	2.9	20
7500726	Total Antimony (Sb)	2014/05/29	NC	80 - 120	97	80 - 120	<0.50	ug/L	NC	20
7500726	Total Arsenic (As)	2014/05/29	102	80 - 120	99	80 - 120	<0.10	ug/L	0.2	20
7500726	Total Barium (Ba)	2014/05/29	NC	80 - 120	98	80 - 120	<1.0	ug/L	1.9	20
7500726	Total Beryllium (Be)	2014/05/29	97	80 - 120	96	80 - 120	<0.10	ug/L		
7500726	Total Bismuth (Bi)	2014/05/29	96	80 - 120	94	80 - 120	<1.0	ug/L		
7500726	Total Cadmium (Cd)	2014/05/29	98	80 - 120	97	80 - 120	<0.010	ug/L	0	20
7500726	Total Chromium (Cr)	2014/05/29	93	80 - 120	98	80 - 120	<1.0	ug/L	NC	20
7500726	Total Cobalt (Co)	2014/05/29	95	80 - 120	100	80 - 120	<0.50	ug/L	NC	20
7500726	Total Copper (Cu)	2014/05/29	NC	80 - 120	102	80 - 120	<0.20	ug/L	1.7	20
7500726	Total Iron (Fe)	2014/05/29	NC	80 - 120	104	80 - 120	<5.0	ug/L	3.4	20
7500726	Total Lead (Pb)	2014/05/29	97	80 - 120	95	80 - 120	<0.20	ug/L	2.1	20
7500726	Total Manganese (Mn)	2014/05/29	NC	80 - 120	98	80 - 120	<1.0	ug/L	0.07	20
7500726	Total Molybdenum (Mo)	2014/05/29	86	80 - 120	94	80 - 120	<1.0	ug/L	NC	20
7500726	Total Nickel (Ni)	2014/05/29	98	80 - 120	114	80 - 120	1.0, RDL=1.0	ug/L	NC	20
7500726	Total Selenium (Se)	2014/05/29	103	80 - 120	105	80 - 120	<0.10	ug/L	NC	20
7500726	Total Silver (Ag)	2014/05/29	100	80 - 120	91	80 - 120	<0.020	ug/L	NC	20
7500726	Total Strontium (Sr)	2014/05/29	NC	80 - 120	97	80 - 120	<1.0	ug/L		
7500726	Total Thallium (Tl)	2014/05/29	97	80 - 120	97	80 - 120	<0.050	ug/L		
7500726	Total Tin (Sn)	2014/05/29	NC	80 - 120	97	80 - 120	<5.0	ug/L		
7500726	Total Titanium (Ti)	2014/05/29	NC	80 - 120	88	80 - 120	<5.0	ug/L		
7500726	Total Uranium (U)	2014/05/29	99	80 - 120	96	80 - 120	<0.10	ug/L	NC	20
7500726	Total Vanadium (V)	2014/05/29	95	80 - 120	98	80 - 120	<5.0	ug/L	NC	20
7500726	Total Zinc (Zn)	2014/05/29	NC	80 - 120	107	80 - 120	<5.0	ug/L	4.1	20
7500726	Total Boron (B)	2014/05/29					<50	ug/L	NC	20
7500726	Total Silicon (Si)	2014/05/29					<100	ug/L		
7500726	Total Zirconium (Zr)	2014/05/29					<0.50	ug/L		
7500851	Total Ammonia (N)	2014/05/27	99	80 - 120	99	80 - 120	<0.0050	mg/L	NC	20
7500919	Total Organic Carbon (C)	2014/05/28	105	80 - 120	104	80 - 120	<0.50	mg/L	NC	20

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 Site Location: MACKELVIE RD AND JEWITT TD, TAHSIS  
 Sampler Initials: AB

**QUALITY ASSURANCE REPORT**

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
7504921	Iron Bacteria	2014/05/22							0	N/A
7511303	Dissolved Copper (Cu)	2014/06/04			101	80 - 120	<0.20	ug/L		

N/A = Not Applicable

RDL = Reportable Detection Limit

RPD = Relative Percent Difference

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

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.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.

NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

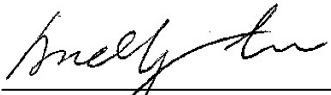
(1) - Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

## Validation Signature Page

Maxxam Job #: B440957


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



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Andy Lu, Data Validation Coordinator



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David Nadler, AASc, Victoria Operations Manager

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Maxxam Job #: B440951

COC #: 08381910



Page: 1 of 1

Invoice To: Regule Report? Yes  No   
Company Name: GW Solutions Inc.  
Contact Name: Giles Winding  
Address: Unit 201 -- 5180 Dublin Way  
Nanaimo BC No. VST 0H2  
Phone / Fax#: In: (250) 756-4538 Fax:   
E-mail: gwsolutions@shaw.ca

Report To:  
Company Name: GW Solutions Inc.  
Contact Name: Antonio Barroso  
Address: Unit 201 -- 5180 Dublin Way  
Nanaimo BC No. VST 0H2  
Phone / Fax#: In: (250) 756-4538 Fax:   
E-mail: abarroso@gwsolutions.ca

PO #:  
Quotation #:  
Project #: 13-12  
Proj. Name: Tahais groundwater exploration  
Location: Mackinaw Rd and Jewitt Dr, Tahais  
Sampled by: A. Barroso

REGULATORY REQUIREMENTS:  CSR  CME  BC Water Quality  Other  DRINKING WATER  
SERVICE REQUESTED:  Regular Turn Around Time (TAT) (5 days for most tests)  RUSH (Please contact the lab) Day Day Day Date Required:  
SPECIAL INSTRUCTIONS: Return Cooler  Ship Sample Bottles (please specify)

Sample Identification	Lab Definition of Sample	Sample Type	Date/Time(24hr) Sampled	ANALYSIS REQUESTED																					HOLD	Number of Containers	YES	NO	YES	NO																					
				BTEX/VPH	MTBE	EPH	TEH	PAH	LEPH/HEPH	COME-PHC (Fractions 1+4 Plus BTEX)	COME-PHC (Fractions 2-4)	COME-PHC (fraction 1 Plus BTEX)	PCB	Monitored by 4AMP	Monitored by OCMS	TOC	MOG	SMOG	Dissolved Metals (DM)	Total Metals	Nitrate	Nitrite	Ammonia	Chloride							Sulfide	Sulfate	Total Suspended Solids (TSS)	TDS	pH	Conductivity	Alkalinity	BOD	COD	Custom: Total & E-cod	Col	Asbestos	VIMA possibility package								
1 Tahais PW	JQT76	Water	2014/05/21 8:30 2.M															X	X																	X															
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12																																																			

Pilot name and sign		Time (24 hr)				Time Sensitive		Retention of Regs (P.C.)		Custody Seal		Does source supply multiple households?	
Relinquished By:	Date (y/m/d):	Time (24 hr):	Received by:	Date (y/m/d):	Time (24 hr):	Yes	No	Initials	Seal	Yes	No	Yes	No
Antonio Barroso	14/05/21	8:30	Miguel Barroso	14/05/22	08:20			8 7 6	Initials		X		