A.M. BAIRD
ENGINEERING & SURVEYING, INC.
1257 Main Street • P.O. Box 396 • Fortuna, CA. 95540 • (707) 725-5182 • Fax (707) 725-5581

CONSULTING – LAND DEVELOPMENT – DESIGN – SURVEYING

AMBIENT WATER GRAB SAMPLING RESULTS

Supply Creek
Humboldt County

March 7th, 2020
Job # 17-4696

INTRODUCTION

The purpose of this document is to report the results of water grab samples taken from Supply Creek as well as a tributary to Supply Creek in the fall of 2019. This office does not provide a qualitative analysis of the results. All analysis will be strictly for quantitative comparison purposes.

BACKGROUND

Humboldt County Department of Building and Planning Cannabis Services Division (herein referred to as The County) has received applications for cultivation on the Supply Creek Watershed. The Hoopa Valley Tribe has expressed concerns that the cultivation operations may affect the creek or potentially degrade its water quality. AM Baird Engineering and Surveying was contacted by The County to conduct field sampling and in-stream data collection.

REGULATORY/REGIONAL CONSIDERATIONS

Cannabis Cultivation is heavily regulated by the California Department of Food and Agriculture, California Regional Water Quality Control Board, California Department of Pesticide Regulation, Bureau of Cannabis Control, and The County. These regulatory bodies can dictate what pesticides/herbicides can be applied to cannabis, which areas of a parcel cultivation can occur, and where fuel or hazardous chemicals can be stored. These regulations are the basis for choosing which constituents to include for testing.

PESTICIDES/HERBICIDES

Both the California Department of Food and Agriculture and California Department of Pesticide Regulation states that no pesticide or herbicide can be used that may migrate into or affect groundwater, unless of a food grade or essential oil type (see attached). In addition to these usage requirements, the State also has testing requirements for the plant/product itself. Anyone applying selling in the cannabis market is required to test their products for pesticides, herbicides, heavy metals…etc. These direct product tests, as opposed to water sampling, are typically sufficient for monitoring these contaminants. Thus, they were not included in the water grab sample analysis of this report. Instead, Water grab testing for hydrocarbons, phosphorous, nitrogen, and turbidity was conducted as requested by The County because of their potential to be present with cannabis activities.

EUTROPHICATION/OTHER

Eutrophication, an excessive richness of nutrients, is a major concern on rivers within the North Coast. Nutrient load and sedimentation increase outside of natural processes, such as cannabis activities, can have the potential to cause eutrophication. Sedimentation can also occur as a by-product of development for cultivation or other grading related activities. Nutrient load increase may also occur from exposed soil amendments/fertilizers, or improper soil/amendment storage methods. However, these things can be mitigated by following both the State of California and The County best management practices (BMPs) as required in the permitting process.

TURBIDITY

Turbidity in this context is the measurement of the amount of sediment in the water. The unit of measurement for turbidity is the Nephelometric Turbidity Unit or NTU, the amount of incident light coming from 90 degrees off the object in which the initial light was directed. The NCRWB basin plan states that the allowable NTU for discharging waters is 20% of the typical level of turbidity for the receiving main body of water (River for this project). The allowable turbidity level for the Klamath and Trinity river is not stipulated by the Hoopa Valley *Water Quality Control Plan* as it is currently being evaluated.

NITROGEN AND PHOSPHROUS

Nitrogen and Phosphorous are naturally occurring elements and are important for creating the algae, plants, and aquatic organisms for larger animals like anadromous salmonids. However, they can be detrimental if they attribute to eutrophication, which may occur in low flow periods during hot dry weather. The *Water Quality Monitoring Hoopa Valley Tribe WY 2018 document* specifies a total nitrogen value of 0.2 mg/L and a total phosphorus value of 0.035 mg/L as thresholds for the Klamath River, but does not indicate thresholds for any tributary into the Trinity river, or the river itself. It is reasonable to assume that tributaries would have equal or more stringent thresholds.

Table 1: Constituent/Contaminate Sampled For

Constituent/Contaminate	Reason
Nitrogen	Nutrient Load, may contribute to late season eutrophication
Turbidity	Sedimentation load
Phosphorus	Nutrient Load, may contribute to late season eutrophication
Benzene	Pollutant from generators, cars, other engines used in cultivation
Toluene	Pollutant from generators, cars, other engines used in cultivation
Gasoline	Pollutant from generators, cars, other engines used in cultivation
Diesel	Pollutant from generators, cars, other engines used in cultivation
Motor Oil	Pollutant from generators, cars, other engines used in cultivation

METHOD/RESULTS

In-stream pH testing and water grab sampling was conducted on August 20th, September 3rd, and September 18th. The main steam and smaller tributary to Supply Creek (see attached) was sampled twice. Fecal Coliform (Escherichia Coli:E.coli) testing was completed on September 3rd and September 18th. Another tributary was suggested for sampling, but the steep terrain made it difficult to access a site.

The pH parameter threshold for any tributary within the Hoopa Valley Reservation is 7.0-8.5 according to a Water Quality Monitoring document prepared by the Hoopa Valley Tribe in 2019. Below are also the results of the pH tests. The data herein is for informational purposes only and the decision for additional testing and requirements lies with involved agencies and parties. The test results of the analysis for the constituents/contaminants relevant to this report are negative, or absent, as follows:

Table 2 NUTRIENT LEVELS

Constituent/Contaminate	Test 1	Test 2	Test 3
Total Nitrogen (mg/L)	ND < 1.0	ND < 1.0	ND < 1.0
Total Phosphorous	ND < 0.020	ND < 0.020	ND < 0.020
Turbidity (NTU)	0.43	0.15	3.4
ND = Not Detected			

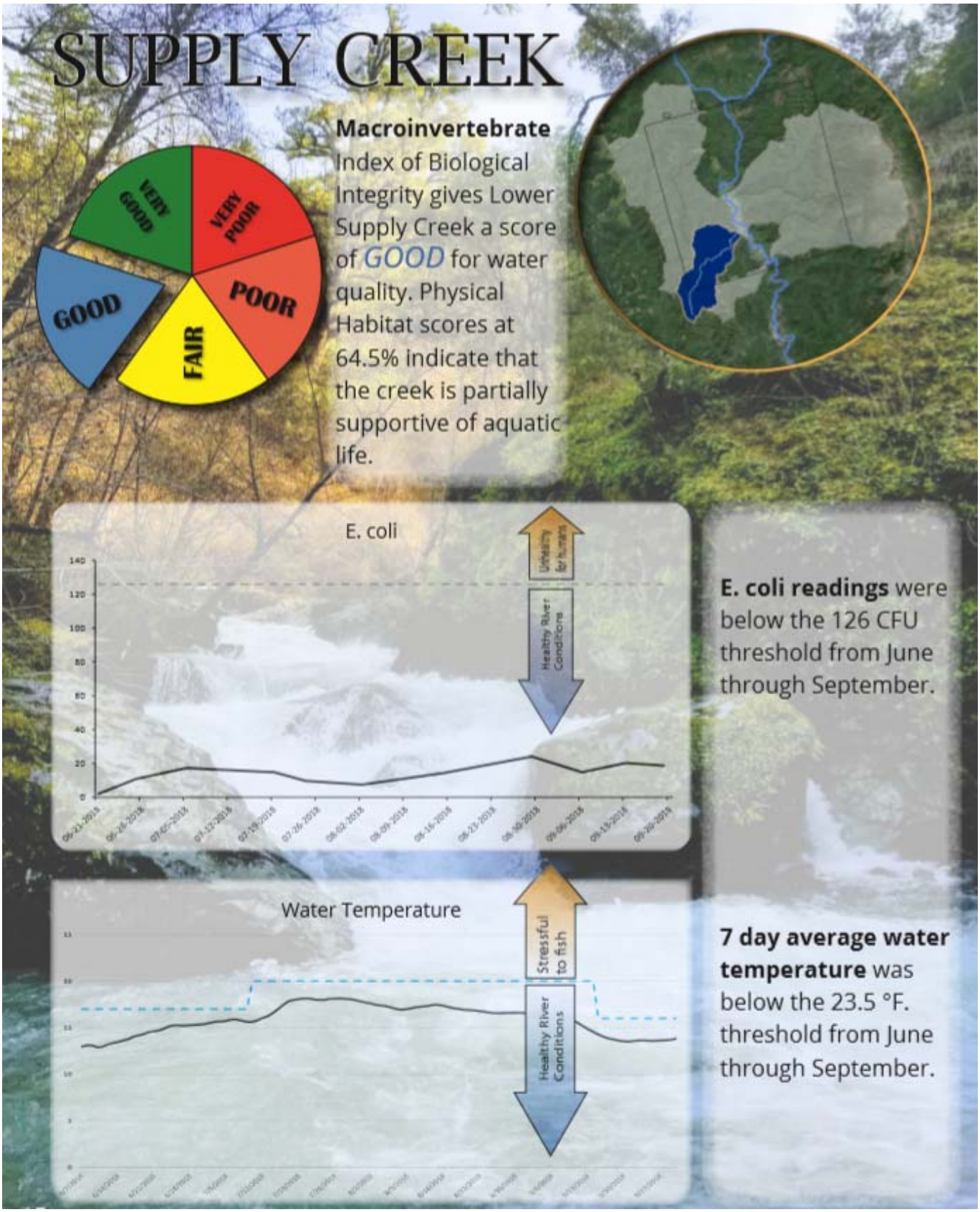
Table 3: In-Stream pH Results

pH	
SITE 1	8.3
SITE 2	8.4
SITE 3	8.3

Table 4: E.Coli Analysis Results

Fecal Coliform Well Test		
Site	MPN/100 ML	Bacteria
1	16.8	E.Coli
2	1	E.Coli

The presence of E.coli within Supply Creek and other tributaries in Humboldt County is not atypical. In a study completed by the Hoopa Valley Tribe E.coli was present within the stream during tests completed from June 21, 2018 – September 20, 2018. Cultivation applications in the area were given the CUP designation 2016 or 2017, indicating they applied to The County during those years and cultivation activities were likely occurring during that testing period. The Hoopa Valley Tribe stated that Supply Creek remained within the “Healthy River Conditions” threshold in 2018. Following, is the quality summary of Supply Creek taken from the HVT 2018 water quality study mentioned above.


SUPPLY CREEK
VERY GOOD
VERY POOR
GOOD
POOR
FAIR
Macroinvertebrate Index of Biological Integrity gives Lower Supply Creek a score of GOOD for water quality. Physical Habitat scores at 64.5% indicate that the creek is partially supportive of aquatic life.
E. coli
Unhealthy for humans
Healthy River Conditions
E. coli readings were below the 126 CFU threshold from June through September.
Water Temperature
Stressful to fish
Healthy River Conditions
7 day average water temperature was below the 23.5 °F. threshold from June through September.

REFERENCES

Environmental Protection Agency, December 2000, *Ambient Water Quality Criteria Recommendations Rivers and Streams in Nutrient Ecoregion II*

Hoopa Valley Tribe, September 11, 2002, Revisions June, 2, 2018. *Water Quality Control Plan Hoopa Valley Indian Reservation,* pg 48 - 52

Northcoast Regional Water Quality Control Board (NCWRB), June 2018. *Water Quality Control Plan for the North Coast Region*, Chapter 3, *Water Quality Objectives*, pg 3-6

A.M. BAIRD

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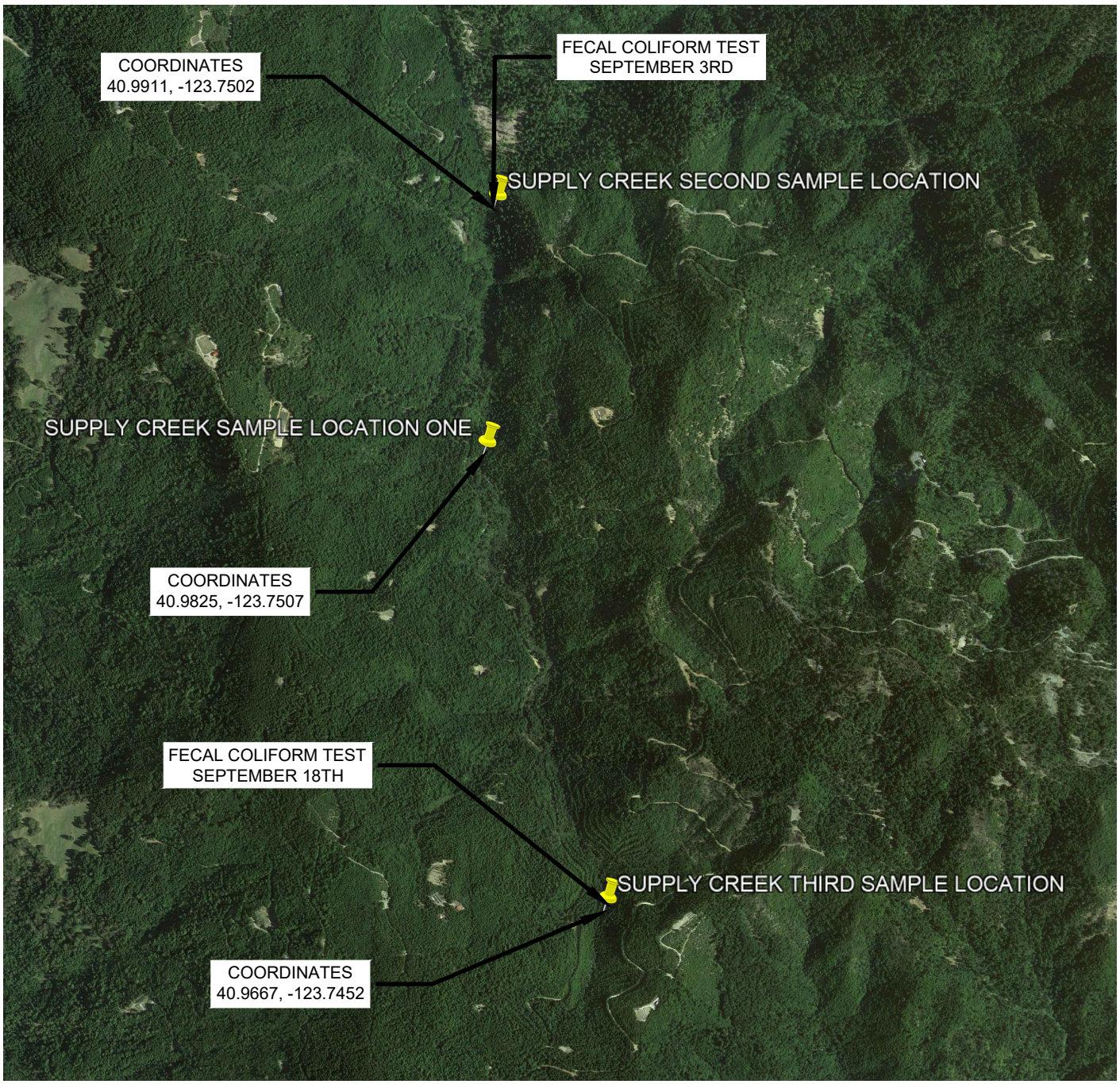
CONSULTING – LAND DEVELOPMENT – DESIGN – SURVEYING



C:\Users\AM BAIRD ENGINEERING\Desktop\Projects 2019\19-4853, Supply Creek Watershed Project\DWG Files\Sample Sites.dwg, 3/4/2020 11:25:53 AM,
ANSI A (8.50 x 11.00 Inches), 1:1

NORTH COAST LABORATORIES LTD
5680 West End Rd, Arcata, California 95521 (707)822-4649

A

Please complete the following sample information:

☐ POTABLE WATER ☒ SOURCE WATER ☐ WASTEWATER

System # _____ Sampling Time 9:58 AM
Location Supply Creek Sampled By Chase Climber
Sampling Date 9/18/19 Phone # 725-5182
☐ Routine Sample ☐ Repeat ☐ Replacement ☐ Special

Payment is due at time of service. We are pleased to accept the following (please check one):

☐ Check $_____ #_____ ☐ Cash $_____
☐ Visa ☐ Mastercard ☐ Am. Express ☐ Discover $_____

If you are paying by credit card and are not submitting samples in person please use the enclosed form to provide credit card information

Attn:/email: Chase
Name Am Beard Engineering
Address 257 Main Street
City/State/Zip Fortuna, CA, ~~95540~~

DATE CLIENT NOTIFIED _____ INITIALS _____
DATE REGULATOR NOTIFIED _____ INITIALS _____

For Office Use Only

SAMPLE TEMP (°C) 9.8 ON ICE? (Y) N H / 1
REC'D BY NAK TIME REC'D 1115
DATE REC'D 9/18/19 INOC 1221 9/19/19 AJT
SAMPLE # 1909381 READ 1327 9/20/19 AJT

TESTS REQUESTED:
☐ Presence / Absence
☒ QUANTI-TRAY
☐ 3 X 5 MTF
☐ HPC
☐ _____

RESULTS: *(MPN/100mL)*
☒ Total Coliform log 6.7
☐ Fecal Coliform _____
☒ E.coli 1.0
☐ _____

Analyst Notes: NAK 9/18/19 Seal left on sample

Quanti-Tray/2000: Total coliform 49 / 32 (large/small) E. coli 1 / 0 (large/small)

Bacterial Examination Report *All microbiology data will be destroyed after 6 years*

Hrs	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
24															
48															
24															
48															
24															

SCS
Quality Assurance Unit

NORTH COAST LABORATORIES LTD
5680 West End Rd, Arcata, California 95521 (707)822-4649

B

Please complete the following sample information:

☐ POTABLE WATER ☑ SOURCE WATER ☐ WASTEWATER

System # _____ Sampling Time 11:40AM
Location Supply Sampled By _____
Sampling Date 9/13/18 Phone # _____
☐ Routine Sample ☐ Repeat ☐ Replacement ☐ Special

Payment is due at time of service. We are pleased to accept the following (please check one):

☐ Check $_____ #_____ ☐ Cash $_____
☐ Visa ☐ Mastercard ☐ Am. Express ☐ Discover $_____

If you are paying by credit card and are not submitting samples in person please use the enclosed form to provide credit card information

Attn:/email: Ambaird
Name Ambaird Engineering and Surveying
Address 1257 Main Street
City/State/Zip Fortuna, Ca

DATE CLIENT NOTIFIED _____ INITIALS _____
DATE REGULATOR NOTIFIED _____ INITIALS _____

For Office Use Only

SAMPLE TEMP (°C) 2.0 ON ICE? Y N 4 / 1
REC'D BY M TIME REC'D 1318
DATE REC'D 9/13/18 1315 INOC 1400 8 9/13/18 AM
SAMPLE # 1909050 READ 1516 9/14/18 AM

TESTS REQUESTED:
☐ Presence / Absence
☒ QUANTI-TRAY
☐ 3 X 5 MTF
☐ HPC
☐ _____

RESULTS: *(MPN/100mL)*
☑ Total Coliform 416.0
☐ Fecal Coliform _____
☑ E.coli 16.8
☐ _____

Analyst Notes:
004 AM 9/13/18
004 AM 9/14/18

Quanti-Tray/2000: Total coliform 48 / 29 (large/small) E. coli 4 11 / 11 4 (large/small)

Bacterial Examination Report *All microbiology data will be destroyed after 6 years*

Hrs	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
24															
48															
24															
48															
24															

SCS

Quality Assurance Unit

NORTH COAST LABORATORIES LTD.

August 20, 2019

A.M. Baird Engineering
P.O. Box 396
Fortuna, CA 95540-0396

Attn: Allan Baird

RE:

Order No.: 1908031
Invoice No.: 148085
PO No.:
ELAP No.1247-Expires July 2020

SAMPLE IDENTIFICATION

Fraction	Client Sample Description
01A	SP#1
01B	SP#1
01C	SP#1
01D	SP#1

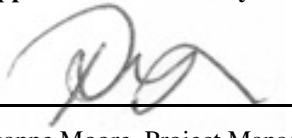
ND = Not Detected at the Reporting Limit

Limit = Reporting Limit

Flag = Explanation in Case Narrative

All solid results are expressed on a wet-weight basis unless otherwise noted.

Approved for release by:



Roxanne Moore, Project Manager

Date: 20-Aug-2019
WorkOrder: 1908031

ANALYTICAL REPORT

Client Sample ID: SP#1
Lab ID: 1908031-01A

Received: 8/2/2019
Collected: 8/2/2019 11:31

Test Name: Nitrate and/or Nitrite
Reference: EPA 300.0 Rev 2.1 (1993)

Parameter	Result	Flag	Limit	Units	DF	Extracted	Analyzed
Nitrate (as Nitrogen)	ND		0.10	mg/L	1.0		8/2/2019
Nitrite (as Nitrogen)	ND		0.10	mg/L	1.0		8/2/2019

Test Name: Turbidity
Reference: EPA 180.1

Parameter	Result	Flag	Limit	Units	DF	Extracted	Analyzed
Turbidity	0.43		0.050	NTU	1.0		8/3/2019

Client Sample ID: SP#1
Lab ID: 1908031-01B

Received: 8/2/2019
Collected: 8/2/2019 11:31

Test Name: Nitrogen - Total Kjeldahl
Reference: SM 4500-NH3 B,D 1997. Revs 2011

Parameter	Result	Flag	Limit	Units	DF	Extracted	Analyzed
Nitrogen- Total Kjeldahl	ND		1.0	mg/L	1.0	8/14/2019	8/15/2019

Test Name: Total Nitrogen
Reference: SM 4500-N, 1997. Revs 2011

Parameter	Result	Flag	Limit	Units	DF	Extracted	Analyzed
Total Nitrogen	ND		1.0	mg/L	1.0		8/16/2019

Test Name: Total Phosphate Phosphorus
Reference: SM 4500-PE, 1999. Revs 2011

Parameter	Result	Flag	Limit	Units	DF	Extracted	Analyzed
Total Phosphate Phosphorus	ND		0.020	mg/L	1.0	8/19/2019	8/20/2019

Client Sample ID: SP#1
Lab ID: 1908031-01C

Received: 8/2/2019
Collected: 8/2/2019 11:31

Test Name: EPA 8260B
Reference: EPA 8260B

Parameter	Result	Flag	Limit	Units	DF	Extracted	Analyzed
Benzene	ND		0.50	µg/L	1.0		8/6/2019
Toluene	ND		0.50	µg/L	1.0		8/6/2019
Ethylbenzene	ND		0.50	µg/L	1.0		8/6/2019
m,p-Xylene	ND		0.50	µg/L	1.0		8/6/2019
o-Xylene	ND		0.50	µg/L	1.0		8/6/2019
Surrogate: 1,2-Dichloroethane-d4	95.5		72.1-128	% Rec	1.0		8/6/2019
Surrogate: Dibromofluoromethane	97.6		80.1-124	% Rec	1.0		8/6/2019
Surrogate: Toluene-d8	94.0		72.2-125	% Rec	1.0		8/6/2019

Test Name: TPH as Gasoline
Reference: LUFT/EPA 8260B Modified

Parameter	Result	Flag	Limit	Units	DF	Extracted	Analyzed
TPHC Gasoline	ND		50	µg/L	1.0		8/6/2019

Date: 20-Aug-2019
WorkOrder: 1908031

ANALYTICAL REPORT

Client Sample ID: SP#1
Lab ID: 1908031-01D

Received: 8/2/2019
Collected: 8/2/2019 11:31

Test Name: TPH as Diesel/Motor Oil
Reference: LUFT/EPA 3511/EPA 8015B

Parameter	Result	Flag	Limit	Units	DF	Extracted	Analyzed
TPHC Diesel (C12-C22)	ND		50	µg/L	1.0	8/5/2019	8/7/2019
TPHC Motor Oil	ND		170	µg/L	1.0	8/5/2019	8/7/2019

North Coast Laboratories, Ltd.

Date: 8/20/2019

CLIENT: A.M. Baird Engineering
Work Order: 1908031
Project:

QC SUMMARY REPORT

Method Blank

Sample ID **MB 080619** Batch ID: **R100349** Test Code: **8260EW** Units: **µg/L** Analysis Date **8/6/2019 12:09:00 PM** Prep Date
Client ID: Run ID: **ORGCMS2_190806B** SeqNo: **1427955**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.50									
Toluene	ND	0.50									
Ethylbenzene	ND	0.50									
m,p-Xylene	ND	0.50									
o-Xylene	ND	0.50									
Surrogate: Dibromofluoromethane	0.976	0.10	1.00	0	97.6%	80	124	0			
Surrogate: 1,2-Dichloroethane-d4	0.961	0.10	1.00	0	96.1%	72	128	0			
Surrogate: Toluene-d8	1.10	0.10	1.00	0	110%	72	125	0			

Sample ID **MB 080619** Batch ID: **R100348** Test Code: **GASW-MS** Units: **µg/L** Analysis Date **8/6/2019 12:09:00 PM** Prep Date
Client ID: Run ID: **ORGCMS2_190806A** SeqNo: **1427949**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Gasoline	ND	50									

Sample ID **MB-080219** Batch ID: **R100331** Test Code: **ICNOW** Units: **mg/L** Analysis Date **8/2/2019 5:43:33 PM** Prep Date
Client ID: Run ID: **INIC2_190802B** SeqNo: **1427667**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate (as Nitrogen)	ND	0.10									
Nitrite (as Nitrogen)	ND	0.10									

Sample ID **MBLANK** Batch ID: **R100458** Test Code: **NKJEW** Units: **mg/L** Analysis Date **8/15/2019** Prep Date **8/14/2019**
Client ID: Run ID: **WC_190815C** SeqNo: **1429698**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen- Total Kjeldahl	ND	1.0									

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

CLIENT: A.M. Baird Engineering
Work Order: 1908031
Project:

QC SUMMARY REPORT
Method Blank

Sample ID **MBLANK WL-0819** Batch ID: **R100493** Test Code: **PO4TOW** Units: **mg/L** Analysis Date **8/20/2019** Prep Date **8/19/2019**
Client ID: Run ID: **WC_190820A** SeqNo: **1430153**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Phosphate Phosphorus	ND	0.020									

Sample ID **MB-37671** Batch ID: **37671** Test Code: **TPHDMW** Units: **µg/L** Analysis Date **8/6/2019 9:59:05 PM** Prep Date **8/5/2019**
Client ID: Run ID: **ORGC14_190806A** SeqNo: **1428137**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Diesel (C12-C22)	ND	50									
TPHC Motor Oil	ND	170									

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

North Coast Laboratories, Ltd.

Date: 8/20/2019

CLIENT: A.M. Baird Engineering
Work Order: 1908031
Project:

QC SUMMARY REPORT

Sample Matrix Spike

Sample ID **1908031-01CMS** Batch ID: **R100349** Test Code: **8260EW** Units: **µg/L** Analysis Date **8/6/2019 1:36:00 PM** Prep Date
Client ID: **SP#1** Run ID: **ORGCMS2_190806B** SeqNo: **1427958**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	24.03	0.50	20.0	0	120%	72	122	0			
Toluene	20.32	0.50	20.0	0	102%	76	120	0			
Ethylbenzene	21.07	0.50	20.0	0	105%	74	124	0			
m,p-Xylene	41.07	0.50	40.0	0	103%	77	121	0			
o-Xylene	20.53	0.50	20.0	0	103%	71	122	0			
Surrogate: Dibromofluoromethane	1.00	0.10	1.00	0	100%	80	124	0			
Surrogate: 1,2-Dichloroethane-d4	0.945	0.10	1.00	0	94.5%	72	128	0			
Surrogate: Toluene-d8	0.945	0.10	1.00	0	94.5%	72	125	0			

Sample ID **1908031-01CMS** Batch ID: **R100348** Test Code: **GASW-MS** Units: **µg/L** Analysis Date **8/6/2019 2:03:00 PM** Prep Date
Client ID: **SP#1** Run ID: **ORGCMS2_190806A** SeqNo: **1427951**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Gasoline	1,083	50	1,000	0	108%	74	125	0			

Sample ID **1908031-01B MS** Batch ID: **R100493** Test Code: **PO4TOW** Units: **mg/L** Analysis Date **8/20/2019** Prep Date **8/19/2019**
Client ID: **SP#1** Run ID: **WC_190820A** SeqNo: **1430157**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Phosphate Phosphorus	0.5052	0.020	0.500	0.0142	98.2%	85	115	0			

Sample ID **1908031-01B MSD** Batch ID: **R100493** Test Code: **PO4TOW** Units: **mg/L** Analysis Date **8/20/2019** Prep Date **8/19/2019**
Client ID: **SP#1** Run ID: **WC_190820A** SeqNo: **1430158**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Phosphate Phosphorus	0.5041	0.020	0.500	0.0142	98.0%	85	115	0.505	0.218%	10	

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

North Coast Laboratories, Ltd.

Date: 8/20/2019

CLIENT: A.M. Baird Engineering
Work Order: 1908031
Project:

QC SUMMARY REPORT

Laboratory Control Spike

Sample ID **LCS-19201** Batch ID: **R100349** Test Code: **8260EW** Units: **µg/L** Analysis Date **8/6/2019 10:17:00 AM** Prep Date
Client ID: Run ID: **ORGCMS2_190806B** SeqNo: **1427953**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	21.77	0.50	20.0	0	109%	72	122	0			
Toluene	20.85	0.50	20.0	0	104%	76	120	0			
Ethylbenzene	18.55	0.50	20.0	0	92.8%	74	124	0			
m,p-Xylene	39.25	0.50	40.0	0	98.1%	77	121	0			
o-Xylene	17.43	0.50	20.0	0	87.2%	71	122	0			
Surrogate: Dibromofluoromethane	1.00	0.10	1.00	0	100%	80	124	0			
Surrogate: 1,2-Dichloroethane-d4	0.925	0.10	1.00	0	92.5%	72	128	0			
Surrogate: Toluene-d8	1.04	0.10	1.00	0	104%	72	125	0			

Sample ID **LCSD-19201** Batch ID: **R100349** Test Code: **8260EW** Units: **µg/L** Analysis Date **8/6/2019 10:45:00 AM** Prep Date
Client ID: Run ID: **ORGCMS2_190806B** SeqNo: **1427954**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	21.14	0.50	20.0	0	106%	72	122	21.8	2.94%	30	
Toluene	18.25	0.50	20.0	0	91.2%	76	120	20.8	13.3%	30	
Ethylbenzene	20.32	0.50	20.0	0	102%	74	124	18.6	9.11%	30	
m,p-Xylene	39.91	0.50	40.0	0	99.8%	77	121	39.2	1.65%	30	
o-Xylene	20.52	0.50	20.0	0	103%	71	122	17.4	16.3%	30	
Surrogate: Dibromofluoromethane	0.998	0.10	1.00	0	99.8%	80	124	1.00	0.689%	30	
Surrogate: 1,2-Dichloroethane-d4	0.941	0.10	1.00	0	94.1%	72	128	0.925	1.75%	30	
Surrogate: Toluene-d8	0.945	0.10	1.00	0	94.5%	72	125	1.04	9.63%	30	

Sample ID **LCS-19202** Batch ID: **R100348** Test Code: **GASW-MS** Units: **µg/L** Analysis Date **8/6/2019 11:12:00 AM** Prep Date
Client ID: Run ID: **ORGCMS2_190806A** SeqNo: **1427947**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Gasoline	1,054	50	1,000	0	105%	74	125	0			

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

CLIENT: A.M. Baird Engineering
Work Order: 1908031
Project:

QC SUMMARY REPORT
Laboratory Control Spike Duplicate

Sample ID	Batch ID	Test Code	Units	Analysis Date	Prep Date
LCSD-19202	**R100348**	**GASW-MS**	**µg/L**	**8/6/2019 11:39:00 AM**	
Client ID:		Run ID: **ORGCMS2_190806A**		SeqNo: **1427948**	

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Gasoline	1,167	50	1,000	0	117%	74	125	1,050	10.2%	20	

Sample ID	Batch ID	Test Code	Units	Analysis Date	Prep Date
LCS-WL-080219-0	**R100331**	**ICNOW**	**mg/L**	**8/2/2019 6:00:11 PM**	
Client ID:		Run ID: **INIC2_190802B**		SeqNo: **1427668**	

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate (as Nitrogen)	4.816	0.10	5.00	0	96.3%	90	110	0			
Nitrite (as Nitrogen)	4.788	0.10	5.00	0	95.8%	90	110	0			

Sample ID	Batch ID	Test Code	Units	Analysis Date	Prep Date
LCSD-WL-080219-	**R100331**	**ICNOW**	**mg/L**	**8/2/2019 6:16:49 PM**	
Client ID:		Run ID: **INIC2_190802B**		SeqNo: **1427669**	

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate (as Nitrogen)	4.838	0.10	5.00	0	96.8%	90	110	4.82	0.451%	10	
Nitrite (as Nitrogen)	4.843	0.10	5.00	0	96.9%	90	110	4.79	1.14%	10	

Sample ID	Batch ID	Test Code	Units	Analysis Date	Prep Date
BLKSPK	**R100458**	**NKJEW**	**mg/L**	**8/15/2019**	**8/14/2019**
Client ID:		Run ID: **WC_190815C**		SeqNo: **1429699**	

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen- Total Kjeldahl	10.35	1.0	10.0	0	103%	85	115	0			

Sample ID	Batch ID	Test Code	Units	Analysis Date	Prep Date
BLKSPK	**R100458**	**NKJEW**	**mg/L**	**8/15/2019**	**8/14/2019**
Client ID:		Run ID: **WC_190815C**		SeqNo: **1429701**	

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen- Total Kjeldahl	8.774	1.0	10.0	0	87.7%	85	115	10.4	16.5%	20	

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

CLIENT: A.M. Baird Engineering
Work Order: 1908031
Project:

QC SUMMARY REPORT

Laboratory Control Spike

Sample ID **LCS WL-08191901** Batch ID: **R100493** Test Code: **PO4TOW** Units: **mg/L** Analysis Date **8/20/2019** Prep Date **8/19/2019**
Client ID: Run ID: **WC_190820A** SeqNo: **1430154**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Phosphate Phosphorus	0.5004	0.020	0.500	0	100%	85	115	0			

Sample ID **LCSD WL-081919** Batch ID: **R100493** Test Code: **PO4TOW** Units: **mg/L** Analysis Date **8/20/2019** Prep Date **8/19/2019**
Client ID: Run ID: **WC_190820A** SeqNo: **1430155**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Phosphate Phosphorus	0.4951	0.020	0.500	0	99.0%	85	115	0.500	1.06%	10	

Sample ID **LCS-37671** Batch ID: **37671** Test Code: **TPHDMW** Units: **µg/L** Analysis Date **8/6/2019 10:32:47 PM** Prep Date **8/5/2019**
Client ID: Run ID: **ORGC14_190806A** SeqNo: **1428138**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Diesel (C12-C22)	533.5	50	500	0	107%	73	126	0			
TPHC Motor Oil	1,102	170	1,000	0	110%	75	131	0			

Sample ID **LCSD-37671** Batch ID: **37671** Test Code: **TPHDMW** Units: **µg/L** Analysis Date **8/6/2019 11:06:31 PM** Prep Date **8/5/2019**
Client ID: Run ID: **ORGC14_190806A** SeqNo: **1428139**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Diesel (C12-C22)	575.7	50	500	0	115%	73	126	534	7.61%	30	
TPHC Motor Oil	1,065	170	1,000	0	107%	75	131	1,100	3.38%	30	

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

P. _____ of _____

NORTH COAST LABORATORIES LTD.
5680 West End Road • Arcata • CA 95521-9202
707-822-4649 Fax 707-822-6831

Chain of Custody

LABORATORY NUMBER: 1908031

Attention: _____
Results & Invoice to: Baird
Address: ambaird@suddenlink mail.com
Phone: 707-725-5182
Copies of Report to: _____
Sampler (Sign & Print): Chase Cimina

TAT: ☑ STD (2-3 Wk) ☐ Other:
PRIOR AUTHORIZATION IS REQUIRED FOR RUSH SAMPLES.

REPORTING REQUIREMENTS:
☐ State Forms
☐ Geotracker ☐ SWAMP ☐ Other EDD:
☐ Final Report PDF ☐ FAX By:

PROJECT INFORMATION
Project Number: _____
Project Name: _____
Purchase Order Number: _____

LAB ID	SAMPLE ID	DATE	TIME	MATRIX*
	SP#1	8/2/19	11:31	

PRESERVATIVE / CONTAINER / ANALYSIS: Turb. NO2/NO3; Total N; Total P; Gas/BTEX; DTMO

CONTAINER CODES: 1—½ gal. pl; 2—250 ml pl; 3—500 ml pl; 4—1 L Nalgene; 5—250 ml BG; 6—500 ml BG; 7—1 L BG; 8—40 ml VOA; 9—60 ml VOA; 10—125 ml VOA; 11—4 oz glass jar; 12—8 oz glass jar; 13—brass tube; 14—other
PRESERVATIVE CODES: a—HNO_3; b—HCl; c—H_2SO_4; d—$Na_2S_2O_3$; e—NaOH; f—$C_2H_3O_2Cl$; g—other

SPECIAL INSTRUCTIONS	SAMPLE CONDITION
	Temperature 5.0 °C
	Received On Ice? Y / N
	Samples Intact? Y / N
	Preserved? Y / N
	Preserved @ NCL? Y / N / NA

RELINQUISHED BY (Sign & Print)	DATE/TIME	RECEIVED BY (Sign)	DATE/TIME
	8/2/19 3:04pm	8/2/19	1502

SAMPLE DISPOSAL
☑ NCL Disposal of Non-Contaminated
☐ Return ☐ Pickup

CHAIN OF CUSTODY SEALS Y/N/NA
SHIPPED VIA: UPS Fed-Ex Hand

***MATRIX:** DW=Drinking Water; Eff=Effluent; Inf=Influent; SW=Surface Water; GW=Ground Water; WW=Waste Water; S=Soil; O=Other.

ALL CONTAMINATED NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT

NORTH COAST LABORATORIES LTD.

September 16, 2019

A.M. Baird Engineering
P.O. Box 396
Fortuna, CA 95540-0396

Attn: Allan Baird

Order No.: 1909028
Invoice No.: 148548
PO No.:
ELAP No.1247-Expires July 2020

RE:

SAMPLE IDENTIFICATION

Fraction	Client Sample Description
01A	Supply Creek
01B	Supply Creek
01C	Supply Creek
01D	Supply Creek

ND = Not Detected at the Reporting Limit

Limit = Reporting Limit

Flag = Explanation in Case Narrative

All solid results are expressed on a wet-weight basis unless otherwise noted.

Approved for release by:

Roxanne Moore, Project Manager

Date: 16-Sep-2019
WorkOrder: 1909028

ANALYTICAL REPORT

Client Sample ID: Supply Creek
Lab ID: 1909028-01A
Received: 9/3/2019
Collected: 9/3/2019 10:59

Test Name: Nitrate and/or Nitrite
Reference: EPA 300.0 Rev 2.1 (1993)

Parameter	Result	Flag	Limit	Units	DF	Extracted	Analyzed
Nitrate (as Nitrogen)	ND		0.10	mg/L	1.0		9/4/2019
Nitrite (as Nitrogen)	ND		0.10	mg/L	1.0		9/4/2019

Test Name: Turbidity
Reference: EPA 180.1

Parameter	Result	Flag	Limit	Units	DF	Extracted	Analyzed
Turbidity	0.15		0.050	NTU	1.0		9/5/2019

Client Sample ID: Supply Creek
Lab ID: 1909028-01B
Received: 9/3/2019
Collected: 9/3/2019 10:59

Test Name: TPH as Diesel/Motor Oil
Reference: LUFT/EPA 3511/EPA 8015B

Parameter	Result	Flag	Limit	Units	DF	Extracted	Analyzed
TPHC Diesel (C12-C22)	ND		50	µg/L	1.0	9/10/2019	9/11/2019
TPHC Motor Oil	ND		170	µg/L	1.0	9/10/2019	9/11/2019

Client Sample ID: Supply Creek
Lab ID: 1909028-01C
Received: 9/3/2019
Collected: 9/3/2019 10:59

Test Name: EPA 8260B
Reference: EPA 8260B

Parameter	Result	Flag	Limit	Units	DF	Extracted	Analyzed
Methyl tert-butyl ether (MTBE)	ND		0.50	µg/L	1.0		9/5/2019
Benzene	ND		0.50	µg/L	1.0		9/5/2019
Toluene	ND		0.50	µg/L	1.0		9/5/2019
Ethylbenzene	ND		0.50	µg/L	1.0		9/5/2019
m,p-Xylene	ND		0.50	µg/L	1.0		9/5/2019
o-Xylene	ND		0.50	µg/L	1.0		9/5/2019
Surrogate: 1,2-Dichloroethane-d4	113		72.1-128	% Rec	1.0		9/5/2019
Surrogate: Dibromofluoromethane	103		80.1-124	% Rec	1.0		9/5/2019
Surrogate: Toluene-d8	96.0		72.2-125	% Rec	1.0		9/5/2019

Test Name: TPH as Gasoline
Reference: LUFT/EPA 8260B Modified

Parameter	Result	Flag	Limit	Units	DF	Extracted	Analyzed
TPHC Gasoline	ND		50	µg/L	1.0		9/5/2019

Client Sample ID: Supply Creek
Lab ID: 1909028-01D
Received: 9/3/2019
Collected: 9/3/2019 10:59

Test Name: Nitrogen - Total Kjeldahl
Reference: SM 4500-NH3 B,D 1997. Revs 2011

Parameter	Result	Flag	Limit	Units	DF	Extracted	Analyzed
Nitrogen- Total Kjeldahl	ND		1.0	mg/L	1.0	9/12/2019	9/16/2019

Test Name: Total Nitrogen
Reference: SM 4500-N, 1997. Revs 2011

Parameter	Result	Flag	Limit	Units	DF	Extracted	Analyzed
Total Nitrogen	ND		1.0	mg/L	1.0		9/16/2019

Date: 16-Sep-2019
WorkOrder: 1909028

ANALYTICAL REPORT

Client Sample ID: Supply Creek
Lab ID: 1909028-01D

Received: 9/3/2019
Collected: 9/3/2019 10:59

Test Name: Total Phosphate Phosphorus
Reference: SM 4500-PE, 1999. Revs 2011

Parameter	Result	Flag	Limit	Units	DF	Extracted	Analyzed
Total Phosphate Phosphorus	ND		0.020	mg/L	1.0	9/11/2019	9/12/2019

North Coast Laboratories, Ltd.

Date: 9/16/2019

CLIENT: A.M. Baird Engineering
Work Order: 1909028
Project:

QC SUMMARY REPORT

Method Blank

Sample ID **MB 090519** Batch ID: **R100698** Test Code: **8260EW** Units: **µg/L** Analysis Date **9/5/2019 2:44:00 PM** Prep Date
Client ID: Run ID: **ORGCMS2_190905B** SeqNo: **1433297**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	ND	0.50									
Benzene	ND	0.50									
Toluene	ND	0.50									
Ethylbenzene	ND	0.50									
m,p-Xylene	ND	0.50									
o-Xylene	ND	0.50									
Surrogate: Dibromofluoromethane	1.03	0.10	1.00	0	103%	80	124	0			
Surrogate: 1,2-Dichloroethane-d4	1.13	0.10	1.00	0	113%	72	128	0			
Surrogate: Toluene-d8	0.966	0.10	1.00	0	96.6%	72	125	0			

Sample ID **MB 090519** Batch ID: **R100697** Test Code: **GASW-MS** Units: **µg/L** Analysis Date **9/5/2019 2:44:00 PM** Prep Date
Client ID: Run ID: **ORGCMS2_190905A** SeqNo: **1433286**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Gasoline	ND	50									

Sample ID **MBLK 090419** Batch ID: **R100685** Test Code: **ICNOW** Units: **mg/L** Analysis Date **9/4/2019 11:14:06 AM** Prep Date
Client ID: Run ID: **INIC2_190904B** SeqNo: **1433053**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate (as Nitrogen)	ND	0.10									
Nitrite (as Nitrogen)	ND	0.10									

Sample ID **MBLANK** Batch ID: **R100853** Test Code: **NKJEW** Units: **mg/L** Analysis Date **9/16/2019** Prep Date **9/12/2019**
Client ID: Run ID: **WC_190916A** SeqNo: **1435333**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen- Total Kjeldahl	ND	1.0									

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

CLIENT: A.M. Baird Engineering
Work Order: 1909028
Project:

QC SUMMARY REPORT
Method Blank

Sample ID **MBLANK WL-0911** Batch ID: **R100809** Test Code: **PO4TOW** Units: **mg/L** Analysis Date **9/12/2019** Prep Date **9/11/2019**
Client ID: Run ID: **WC_190912B** SeqNo: **1434749**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Phosphate Phosphorus	ND	0.020									

Sample ID **MB-37804** Batch ID: **37804** Test Code: **TPHDMW** Units: **µg/L** Analysis Date **9/11/2019 3:08:13 PM** Prep Date **9/10/2019**
Client ID: Run ID: **ORGC14_190910B** SeqNo: **1434546**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Diesel (C12-C22)	ND	50									
TPHC Motor Oil	ND	170									

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

North Coast Laboratories, Ltd.

Date: 9/16/2019

CLIENT: A.M. Baird Engineering
Work Order: 1909028
Project:

QC SUMMARY REPORT

Sample Matrix Spike

Sample ID **1909028-01CMS** Batch ID: **R100697** Test Code: **GASW-MS** Units: **µg/L** Analysis Date **9/5/2019 6:41:00 PM** Prep Date
Client ID: **Supply Creek** Run ID: **ORGCMS2_190905A** SeqNo: **1433292**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Gasoline	1,177	50	1,000	27.1	115%	74	125	0			

Sample ID **1909028-01D MS** Batch ID: **R100809** Test Code: **PO4TOW** Units: **mg/L** Analysis Date **9/12/2019** Prep Date **9/11/2019**
Client ID: **Supply Creek** Run ID: **WC_190912B** SeqNo: **1434762**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Phosphate Phosphorus	0.4971	0.020	0.500	0.0160	96.2%	85	115	0			

Sample ID **1909028-01D MSD** Batch ID: **R100809** Test Code: **PO4TOW** Units: **mg/L** Analysis Date **9/12/2019** Prep Date **9/11/2019**
Client ID: **Supply Creek** Run ID: **WC_190912B** SeqNo: **1434763**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Phosphate Phosphorus	0.4930	0.020	0.500	0.0160	95.4%	85	115	0.497	0.828%	10	

Sample ID **1909028-01BMS** Batch ID: **37804** Test Code: **TPHDMW** Units: **µg/L** Analysis Date **9/11/2019 4:38:24 PM** Prep Date **9/10/2019**
Client ID: **Supply Creek** Run ID: **ORGC14_190910B** SeqNo: **1434549**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Diesel (C12-C22)	523.7	50	500	0	105%	73	126	0			
TPHC Motor Oil	970.6	170	1,000	0	97.1%	75	131	0			

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

North Coast Laboratories, Ltd.

Date: 9/16/2019

CLIENT: A.M. Baird Engineering
Work Order: 1909028
Project:

QC SUMMARY REPORT

Laboratory Control Spike

Sample ID **LCS-19231** Batch ID: **R100698** Test Code: **8260EW** Units: **µg/L** Analysis Date **9/5/2019 11:48:00 AM** Prep Date
Client ID: Run ID: **ORGCMS2_190905B** SeqNo: **1433295**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	20.20	0.50	20.0	0	101%	69	133	0			
Benzene	20.45	0.50	20.0	0	102%	72	122	0			
Toluene	19.09	0.50	20.0	0	95.4%	76	120	0			
Ethylbenzene	19.38	0.50	20.0	0	96.9%	74	124	0			
m,p-Xylene	38.49	0.50	40.0	0	96.2%	77	121	0			
o-Xylene	19.02	0.50	20.0	0	95.1%	71	122	0			
Surrogate: Dibromofluoromethane	1.11	0.10	1.00	0	111%	80	124	0			
Surrogate: 1,2-Dichloroethane-d4	1.09	0.10	1.00	0	109%	72	128	0			
Surrogate: Toluene-d8	0.974	0.10	1.00	0	97.4%	72	125	0			

Sample ID **LCSD-19231** Batch ID: **R100698** Test Code: **8260EW** Units: **µg/L** Analysis Date **9/5/2019 12:18:00 PM** Prep Date
Client ID: Run ID: **ORGCMS2_190905B** SeqNo: **1433296**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	20.22	0.50	20.0	0	101%	69	133	20.2	0.0777%	30	
Benzene	20.01	0.50	20.0	0	100%	72	122	20.4	2.19%	30	
Toluene	18.50	0.50	20.0	0	92.5%	76	120	19.1	3.13%	30	
Ethylbenzene	18.79	0.50	20.0	0	94.0%	74	124	19.4	3.09%	30	
m,p-Xylene	37.08	0.50	40.0	0	92.7%	77	121	38.5	3.74%	30	
o-Xylene	18.84	0.50	20.0	0	94.2%	71	122	19.0	0.965%	30	
Surrogate: Dibromofluoromethane	1.10	0.10	1.00	0	110%	80	124	1.11	1.03%	30	
Surrogate: 1,2-Dichloroethane-d4	1.09	0.10	1.00	0	109%	72	128	1.09	0.129%	30	
Surrogate: Toluene-d8	0.963	0.10	1.00	0	96.3%	72	125	0.974	1.10%	30	

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

CLIENT: A.M. Baird Engineering
Work Order: 1909028
Project:

QC SUMMARY REPORT

Laboratory Control Spike

Sample ID **LCS-19232** Batch ID: **R100697** Test Code: **GASW-MS** Units: **µg/L** Analysis Date **9/5/2019 12:48:00 PM** Prep Date
Client ID: Run ID: **ORGCMS2_190905A** SeqNo: **1433284**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Gasoline	992.7	50	1,000	0	99.3%	74	125	0			

Sample ID **LCSD-19232** Batch ID: **R100697** Test Code: **GASW-MS** Units: **µg/L** Analysis Date **9/5/2019 1:18:00 PM** Prep Date
Client ID: Run ID: **ORGCMS2_190905A** SeqNo: **1433285**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Gasoline	956.5	50	1,000	0	95.6%	74	125	993	3.72%	20	

Sample ID **LCS WL-090419-0** Batch ID: **R100685** Test Code: **ICNOW** Units: **mg/L** Analysis Date **9/4/2019 11:30:44 AM** Prep Date
Client ID: Run ID: **INIC2_190904B** SeqNo: **1433054**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate (as Nitrogen)	5.052	0.10	5.00	0	101%	90	110	0			
Nitrite (as Nitrogen)	5.041	0.10	5.00	0	101%	90	110	0			

Sample ID **LCSD WL-090419-** Batch ID: **R100685** Test Code: **ICNOW** Units: **mg/L** Analysis Date **9/4/2019 11:47:22 AM** Prep Date
Client ID: Run ID: **INIC2_190904B** SeqNo: **1433055**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate (as Nitrogen)	5.059	0.10	5.00	0	101%	90	110	5.05	0.153%	10	
Nitrite (as Nitrogen)	5.035	0.10	5.00	0	101%	90	110	5.04	0.110%	10	

Sample ID **BLKSPK** Batch ID: **R100853** Test Code: **NKJEW** Units: **mg/L** Analysis Date **9/16/2019** Prep Date **9/12/2019**
Client ID: Run ID: **WC_190916A** SeqNo: **1435334**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen- Total Kjeldahl	10.01	1.0	10.0	0	100%	85	115	0			

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

CLIENT: A.M. Baird Engineering
Work Order: 1909028
Project:

QC SUMMARY REPORT

Laboratory Control Spike Duplicate

Sample ID **BLKSPK** Batch ID: **R100853** Test Code: **NKJEW** Units: **mg/L** Analysis Date **9/16/2019** Prep Date **9/12/2019**
Client ID: Run ID: **WC_190916A** SeqNo: **1435335**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen- Total Kjeldahl	9.906	1.0	10.0	0	99.1%	85	115	10.0	1.04%	20	

Sample ID **LCS WL-09111901** Batch ID: **R100809** Test Code: **PO4TOW** Units: **mg/L** Analysis Date **9/12/2019** Prep Date **9/11/2019**
Client ID: Run ID: **WC_190912B** SeqNo: **1434750**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Phosphate Phosphorus	0.4959	0.020	0.500	0	99.2%	85	115	0			

Sample ID **LCSD WL-091119** Batch ID: **R100809** Test Code: **PO4TOW** Units: **mg/L** Analysis Date **9/12/2019** Prep Date **9/11/2019**
Client ID: Run ID: **WC_190912B** SeqNo: **1434751**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Phosphate Phosphorus	0.4880	0.020	0.500	0	97.6%	85	115	0.496	1.61%	10	

Sample ID **LCS-37804** Batch ID: **37804** Test Code: **TPHDMW** Units: **µg/L** Analysis Date **9/11/2019 3:38:16 PM** Prep Date **9/10/2019**
Client ID: Run ID: **ORGC14_190910B** SeqNo: **1434547**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Diesel (C12-C22)	469.9	50	500	0	94.0%	73	126	0			
TPHC Motor Oil	969.9	170	1,000	0	97.0%	75	131	0			

Sample ID **LCSD-37804** Batch ID: **37804** Test Code: **TPHDMW** Units: **µg/L** Analysis Date **9/11/2019 4:08:18 PM** Prep Date **9/10/2019**
Client ID: Run ID: **ORGC14_190910B** SeqNo: **1434548**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Diesel (C12-C22)	524.8	50	500	0	105%	73	126	470	11.0%	30	
TPHC Motor Oil	983.3	170	1,000	0	98.3%	75	131	970	1.37%	30	

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

P. _____ of _____

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Chain of Custody

JP

LABORATORY NUMBER: 1909028

Attention: Baird
Results & Invoice to: _____
Address: _____
Phone: _____
Copies of Report to: _____
Sampler (Sign & Print): _____

PROJECT INFORMATION
Project Number: _____
Project Name: _____
Purchase Order Number: _____

LAB ID	SAMPLE ID	DATE	TIME	MATRIX*
	Supply Creek	9/3/19	10:54	

PRESERVATIVE | CONTAINER | ANALYSIS: Turbidity; TDMO; 8260 Light 4; Total Plus; Total 'N'

TAT: ☒ STD (2-3 Wk) ☐ Other:
PRIOR AUTHORIZATION IS REQUIRED FOR RUSH SAMPLES.

REPORTING REQUIREMENTS:
☐ State Forms
☐ Geotracker ☐ SWAMP ☐ Other EDD:
☐ Final Report PDF ☐ FAX By:

CONTAINER CODES: 1—½ gal. pl; 2—250 ml pl; 3—500 ml pl; 4—1 L Nalgene; 5—250 ml BG; 6—500 ml BG; 7—1 L BG; 8—40 ml VOA; 9—60 ml VOA; 10—125 ml VOA; 11—4 oz glass jar; 12—8 oz glass jar; 13—brass tube; 14—other
PRESERVATIVE CODES: a—HNO_3; b—HCl; c—H_2SO_4; d—$Na_2S_2O_3$; e—NaOH; f—$C_2H_3O_2Cl$; g—other

SPECIAL INSTRUCTIONS	SAMPLE CONDITION
	Temperature 2.0 °C
	Received On Ice? (Y) / N
	Samples Intact? (Y) / N
	Preserved? (Y) / N
	Preserved @ NCL?
	Y / N / (NA)

RELINQUISHED BY (Sign & Print)	DATE/TIME	RECEIVED BY (Sign)	DATE/TIME
Chase Cimina	9/3/19 1654	9/3/19	1320

SAMPLE DISPOSAL
☒ NCL Disposal of Non-Contaminated
☐ Return ☐ Pickup

CHAIN OF CUSTODY SEALS Y/N/NA
SHIPPED VIA: UPS Fed-Ex (Hand)

***MATRIX:** DW=Drinking Water; Eff=Effluent; Inf=Influent; SW=Surface Water; GW=Ground Water; WW=Waste Water; S=Soil; O=Other.

ALL CONTAMINATED NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT

NORTH COAST LABORATORIES LTD.

September 27, 2019

A.M. Baird Engineering
P.O. Box 396
Fortuna, CA 95540-0396

Attn: Chase

Order No.: 1909350
Invoice No.: 148814
PO No.:
ELAP No.1247-Expires July 2020

RE:

SAMPLE IDENTIFICATION

Fraction	Client Sample Description
01A	Supply Creek
01B	Supply Creek
01C	Supply Creek
01D	Supply Creek

ND = Not Detected at the Reporting Limit

Limit = Reporting Limit

Flag = Explanation in Case Narrative

All solid results are expressed on a wet-weight basis unless otherwise noted.

Approved for release by:

Roxanne Moore, Project Manager

Date: 27-Sep-2019
WorkOrder: 1909350

ANALYTICAL REPORT

Client Sample ID: Supply Creek
Lab ID: 1909350-01A

Received: 9/18/2019
Collected: 9/18/2019 9:58

Test Name: Nitrate and/or Nitrite
Reference: EPA 300.0 Rev 2.1 (1993)

Parameter	Result	Flag	Limit	Units	DF	Extracted	Analyzed
Nitrate (as Nitrogen)	ND		0.10	mg/L	1.0		9/19/2019
Nitrite (as Nitrogen)	ND		0.10	mg/L	1.0		9/19/2019

Test Name: Turbidity
Reference: EPA 180.1

Parameter	Result	Flag	Limit	Units	DF	Extracted	Analyzed
Turbidity	3.4		0.050	NTU	1.0		9/20/2019

Client Sample ID: Supply Creek
Lab ID: 1909350-01B

Received: 9/18/2019
Collected: 9/18/2019 9:58

Test Name: Nitrogen - Total Kjeldahl
Reference: SM 4500-NH3 B,D 1997. Revs 2011

Parameter	Result	Flag	Limit	Units	DF	Extracted	Analyzed
Nitrogen- Total Kjeldahl	ND		1.0	mg/L	1.0	9/25/2019	9/26/2019

Test Name: Total Nitrogen
Reference: SM 4500-N, 1997. Revs 2011

Parameter	Result	Flag	Limit	Units	DF	Extracted	Analyzed
Total Nitrogen	ND		1.0	mg/L	1.0		9/27/2019

Test Name: Total Phosphate Phosphorus
Reference: SM 4500-PE, 1999. Revs 2011

Parameter	Result	Flag	Limit	Units	DF	Extracted	Analyzed
Total Phosphate Phosphorus	ND		0.020	mg/L	1.0	9/25/2019	9/26/2019

Client Sample ID: Supply Creek
Lab ID: 1909350-01C

Received: 9/18/2019
Collected: 9/18/2019 9:58

Test Name: EPA 8260B
Reference: EPA 8260B

Parameter	Result	Flag	Limit	Units	DF	Extracted	Analyzed
Benzene	ND		0.50	µg/L	1.0		9/20/2019
Toluene	ND		0.50	µg/L	1.0		9/20/2019
Ethylbenzene	ND		0.50	µg/L	1.0		9/20/2019
m,p-Xylene	ND		0.50	µg/L	1.0		9/20/2019
o-Xylene	ND		0.50	µg/L	1.0		9/20/2019
Surrogate: 1,2-Dichloroethane-d4	95.0		72.1-128	% Rec	1.0		9/20/2019
Surrogate: Dibromofluoromethane	100		80.1-124	% Rec	1.0		9/20/2019
Surrogate: Toluene-d8	95.7		72.2-125	% Rec	1.0		9/20/2019

Test Name: TPH as Gasoline
Reference: LUFT/EPA 8260B Modified

Parameter	Result	Flag	Limit	Units	DF	Extracted	Analyzed
TPHC Gasoline	ND		50	µg/L	1.0		9/20/2019

Date: 27-Sep-2019
WorkOrder: 1909350

ANALYTICAL REPORT

Client Sample ID: Supply Creek
Lab ID: 1909350-01D

Received: 9/18/2019
Collected: 9/18/2019 9:58

Test Name: TPH as Diesel/Motor Oil
Reference: LUFT/EPA 3511/EPA 8015B

Parameter	Result	Flag	Limit	Units	DF	Extracted	Analyzed
TPHC Diesel (C12-C22)	ND		50	µg/L	1.0		9/23/2019
TPHC Motor Oil	ND		170	µg/L	1.0		9/23/2019

North Coast Laboratories, Ltd.

Date: 9/27/2019

CLIENT: A.M. Baird Engineering
Work Order: 1909350
Project:

QC SUMMARY REPORT

Method Blank

Sample ID **MB 092019** Batch ID: **R100932** Test Code: **8260EW** Units: **µg/L** Analysis Date **9/20/2019 2:16:00 PM** Prep Date
Client ID: Run ID: **ORGCMS2_190920C** SeqNo: **1436482**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.50									
Toluene	ND	0.50									
Ethylbenzene	ND	0.50									
m,p-Xylene	ND	0.50									
o-Xylene	ND	0.50									
Surrogate: Dibromofluoromethane	1.02	0.10	1.00	0	102%	80	124	0			
Surrogate: 1,2-Dichloroethane-d4	0.965	0.10	1.00	0	96.5%	72	128	0			
Surrogate: Toluene-d8	0.958	0.10	1.00	0	95.8%	72	125	0			

Sample ID **MB 092019** Batch ID: **R100931** Test Code: **GASW-MS** Units: **µg/L** Analysis Date **9/20/2019 2:16:00 PM** Prep Date
Client ID: Run ID: **ORGCMS2_190920B** SeqNo: **1436472**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Gasoline	ND	50									

Sample ID **MBLK 091919** Batch ID: **R100923** Test Code: **ICNOW** Units: **mg/L** Analysis Date **9/19/2019 10:36:26 AM** Prep Date
Client ID: Run ID: **INIC2_190919A** SeqNo: **1436321**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate (as Nitrogen)	ND	0.10									
Nitrite (as Nitrogen)	ND	0.10									

Sample ID **MBLANK** Batch ID: **R101022** Test Code: **NKJEW** Units: **mg/L** Analysis Date **9/26/2019 11:00:00 AM** Prep Date **9/25/2019**
Client ID: Run ID: **WC_190926D** SeqNo: **1437719**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen- Total Kjeldahl	ND	1.0									

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

CLIENT: A.M. Baird Engineering
Work Order: 1909350
Project:

QC SUMMARY REPORT
Method Blank

Sample ID **MBLANK WL-0923** Batch ID: **R101016** Test Code: **PO4TOW** Units: **mg/L** Analysis Date **9/26/2019** Prep Date **9/25/2019**
Client ID: Run ID: **WC_190926C** SeqNo: **1437638**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Phosphate Phosphorus	ND	0.020									

Sample ID **MB-37829** Batch ID: **R100958** Test Code: **TPHDMW** Units: **µg/L** Analysis Date **9/23/2019 5:25:04 PM** Prep Date
Client ID: Run ID: **ORGC14_190923A** SeqNo: **1436835**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Diesel (C12-C22)	ND	50									
TPHC Motor Oil	ND	170									

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

North Coast Laboratories, Ltd.

Date: 9/27/2019

CLIENT: A.M. Baird Engineering
Work Order: 1909350
Project:

QC SUMMARY REPORT

Sample Matrix Spike

Sample ID **1909350-01CMS** Batch ID: **R100931** Test Code: **GASW-MS** Units: **µg/L** Analysis Date **9/20/2019 8:41:00 PM** Prep Date
Client ID: **Supply Creek** Run ID: **ORGCMS2_190920B** SeqNo: **1436477**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Gasoline	1,172	50	1,000	0	117%	74	125	0			

Sample ID **1909350-01BMS** Batch ID: **R101022** Test Code: **NKJEW** Units: **mg/L** Analysis Date **9/26/2019 11:00:00 AM** Prep Date **9/25/2019**
Client ID: **Supply Creek** Run ID: **WC_190926D** SeqNo: **1437745**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen- Total Kjeldahl	10.16	1.0	10.0	0	102%	85	115	0			

Sample ID **1909350-01DMS** Batch ID: **R100958** Test Code: **TPHDMW** Units: **µg/L** Analysis Date **9/23/2019 6:55:21 PM** Prep Date
Client ID: **Supply Creek** Run ID: **ORGC14_190923A** SeqNo: **1436838**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Diesel (C12-C22)	514.9	50	500	0	103%	73	126	0			
TPHC Motor Oil	987.2	170	1,000	0	98.7%	75	131	0			

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

North Coast Laboratories, Ltd.

Date: 9/27/2019

CLIENT: A.M. Baird Engineering
Work Order: 1909350
Project:

QC SUMMARY REPORT

Laboratory Control Spike

Sample ID **LCS-19254** Batch ID: **R100932** Test Code: **8260EW** Units: **µg/L** Analysis Date **9/20/2019 12:55:00 PM** Prep Date
Client ID: Run ID: **ORGCMS2_190920C** SeqNo: **1436480**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	18.98	0.50	20.0	0	94.9%	72	122	0			
Toluene	17.58	0.50	20.0	0	87.9%	76	120	0			
Ethylbenzene	16.88	0.50	20.0	0	84.4%	74	124	0			
m,p-Xylene	34.52	0.50	40.0	0	86.3%	77	121	0			
o-Xylene	17.36	0.50	20.0	0	86.8%	71	122	0			
Surrogate: Dibromofluoromethane	1.05	0.10	1.00	0	105%	80	124	0			
Surrogate: 1,2-Dichloroethane-d4	0.952	0.10	1.00	0	95.2%	72	128	0			
Surrogate: Toluene-d8	0.964	0.10	1.00	0	96.4%	72	125	0			

Sample ID **LCSD-19254** Batch ID: **R100932** Test Code: **8260EW** Units: **µg/L** Analysis Date **9/20/2019 1:22:00 PM** Prep Date
Client ID: Run ID: **ORGCMS2_190920C** SeqNo: **1436481**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	18.02	0.50	20.0	0	90.1%	72	122	19.0	5.20%	30	
Toluene	16.09	0.50	20.0	0	80.5%	76	120	17.6	8.83%	30	
Ethylbenzene	15.63	0.50	20.0	0	78.1%	74	124	16.9	7.70%	30	
m,p-Xylene	31.68	0.50	40.0	0	79.2%	77	121	34.5	8.59%	30	
o-Xylene	16.12	0.50	20.0	0	80.6%	71	122	17.4	7.39%	30	
Surrogate: Dibromofluoromethane	1.06	0.10	1.00	0	106%	80	124	1.05	1.11%	30	
Surrogate: 1,2-Dichloroethane-d4	0.977	0.10	1.00	0	97.7%	72	128	0.952	2.52%	30	
Surrogate: Toluene-d8	0.945	0.10	1.00	0	94.5%	72	125	0.964	1.98%	30	

Sample ID **LCS-19255** Batch ID: **R100931** Test Code: **GASW-MS** Units: **µg/L** Analysis Date **9/20/2019 11:24:00 AM** Prep Date
Client ID: Run ID: **ORGCMS2_190920B** SeqNo: **1436470**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Gasoline	1,113	50	1,000	0	111%	74	125	0			

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

CLIENT: A.M. Baird Engineering
Work Order: 1909350
Project:

QC SUMMARY REPORT

Laboratory Control Spike Duplicate

Sample ID **LCSD-19255** Batch ID: **R100931** Test Code: **GASW-MS** Units: **µg/L** Analysis Date **9/20/2019 11:54:00 AM** Prep Date
Client ID: Run ID: **ORGCMS2_190920B** SeqNo: **1436471**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Gasoline	1,078	50	1,000	0	108%	74	125	1,110	3.23%	20	

Sample ID **LCS WL-091919-0** Batch ID: **R100923** Test Code: **ICNOW** Units: **mg/L** Analysis Date **9/19/2019 11:26:20 AM** Prep Date
Client ID: Run ID: **INIC2_190919A** SeqNo: **1436324**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate (as Nitrogen)	4.830	0.10	5.00	0	96.6%	90	110	0			
Nitrite (as Nitrogen)	4.920	0.10	5.00	0	98.4%	90	110	0			

Sample ID **LCSD WL-091919-** Batch ID: **R100923** Test Code: **ICNOW** Units: **mg/L** Analysis Date **9/19/2019 11:42:59 AM** Prep Date
Client ID: Run ID: **INIC2_190919A** SeqNo: **1436325**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate (as Nitrogen)	4.835	0.10	5.00	0	96.7%	90	110	4.83	0.0976%	10	
Nitrite (as Nitrogen)	4.975	0.10	5.00	0	99.5%	90	110	4.92	1.12%	10	

Sample ID **LCS** Batch ID: **R101022** Test Code: **NKJEW** Units: **mg/L** Analysis Date **9/26/2019 11:00:00 AM** Prep Date **9/25/2019**
Client ID: Run ID: **WC_190926D** SeqNo: **1437720**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen- Total Kjeldahl	9.940	1.0	10.0	0	99.4%	90	110	0			

Sample ID **LCSD** Batch ID: **R101022** Test Code: **NKJEW** Units: **mg/L** Analysis Date **9/26/2019 11:00:00 AM** Prep Date **9/25/2019**
Client ID: Run ID: **WC_190926D** SeqNo: **1437721**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen- Total Kjeldahl	9.310	1.0	10.0	0	93.1%	90	110	9.94	6.55%	20	

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

CLIENT: A.M. Baird Engineering
Work Order: 1909350
Project:

QC SUMMARY REPORT

Laboratory Control Spike

Sample ID **LCS WL-09231901** Batch ID: **R101016** Test Code: **PO4TOW** Units: **mg/L** Analysis Date **9/26/2019** Prep Date **9/25/2019**
Client ID: Run ID: **WC_190926C** SeqNo: **1437639**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Phosphate Phosphorus	0.5012	0.020	0.500	0	100%	90	110	0			

Sample ID **LCSD WL-092319** Batch ID: **R101016** Test Code: **PO4TOW** Units: **mg/L** Analysis Date **9/26/2019** Prep Date **9/25/2019**
Client ID: Run ID: **WC_190926C** SeqNo: **1437640**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Phosphate Phosphorus	0.4912	0.020	0.500	0	98.2%	90	110	0.501	2.02%	10	

Sample ID **LCS-37829** Batch ID: **R100958** Test Code: **TPHDMW** Units: **µg/L** Analysis Date **9/23/2019 5:55:15 PM** Prep Date
Client ID: Run ID: **ORGC14_190923A** SeqNo: **1436836**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Diesel (C12-C22)	509.0	50	500	11.6	99.5%	73	126	0			
TPHC Motor Oil	943.7	170	1,000	0	94.4%	75	131	0			

Sample ID **LCSD-37829** Batch ID: **R100958** Test Code: **TPHDMW** Units: **µg/L** Analysis Date **9/23/2019 6:25:22 PM** Prep Date
Client ID: Run ID: **ORGC14_190923A** SeqNo: **1436837**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Diesel (C12-C22)	514.6	50	500	11.6	101%	73	126	509	1.08%	30	
TPHC Motor Oil	996.9	170	1,000	0	99.7%	75	131	944	5.47%	30	

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

P. 1 of 1

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707-822-4649 Fax 707-822-6831

Chain of Custody

LABORATORY NUMBER: 1909350

Attention: Chase
Results & Invoice to: AM Baird Engineering
Address: 1257 Main Street, Fortuna, CA,
Phone: 707-725-5182
Copies of Report to:
Sampler (Sign & Print): Chase Cimina

TAT: ☒ STD (2-3 Wk) ☐ Other:
PRIOR AUTHORIZATION IS REQUIRED FOR RUSH SAMPLES.

REPORTING REQUIREMENTS:
☐ State Forms
☐ Geotracker ☐ SWAMP ☐ Other EDD:
☐ Final Report PDF ☐ FAX By:

PROJECT INFORMATION
Project Number:
Project Name:
Purchase Order Number:

LAB ID	SAMPLE ID	DATE	TIME	MATRIX*	PRESERVATIVE	CONTAINER	ANALYSIS
	Supply Creek	9/18/19	9:58AM				See Attached

CONTAINER CODES: 1—½ gal. pl; 2—250 ml pl; 3—500 ml pl; 4—1 L Nalgene; 5—250 ml BG; 6—500 ml BG; 7—1 L BG; 8—40 ml VOA; 9—60 ml VOA; 10—125 ml VOA; 11—4 oz glass jar; 12—8 oz glass jar; 13—brass tube; 14—other
PRESERVATIVE CODES: a—HNO_3; b—HCl; c—H_2SO_4; d—$Na_2S_2O_3$; e—NaOH; f—$C_2H_3O_2Cl$; g—other

SPECIAL INSTRUCTIONS	SAMPLE CONDITION
	Temperature 5.2 °C
	Received On Ice? Y/N
	Samples Intact? Y/N
	Preserved? Y/N
	Preserved @ NCL? Y/N/NA

RELINQUISHED BY (Sign & Print)	DATE/TIME	RECEIVED BY (Sign)	DATE/TIME
Chase Cimina	9/18/19 1114	MAK	9/18/19 1115

SAMPLE DISPOSAL
☒ NCL Disposal of Non-Contaminated
☐ Return ☐ Pickup

CHAIN OF CUSTODY SEALS Y/N/NA
SHIPPED VIA: UPS Fed-Ex Hand

***MATRIX:** DW=Drinking Water; Eff=Effluent; Inf=Influent; SW=Surface Water; GW=Ground Water; WW=Waste Water; S=Soil; O=Other.

ALL CONTAMINATED NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT

SAMPLE CONTAINER ORDER FORM

CLIENT NAME: Baird Engineering	**DATE OF REQUEST: 9/17/19**
ADDRESS (Street not PO Box) :	
CONTACT PERSON: Chase	**PHONE NUMBER:**
SHIP BY: 9/18 am	**PROJECT NAME:**

Deliver		Pickup		Cooler		Box	
Ship		DW Samples					

SPECIAL INSTRUCTIONS:

ANALYSIS	# OF Samples	Bottle Type/ Sample Volume	Number of Containers	Preservation
Tubidity/NO2/NO3	1	250 mL HDPE	1	-
Total N/P	1	500 mL HDPE	1	H2SO4
BTEX/gas	1	40 mL VOA	3	HCL
TPH D/MO	1	60 mL VOA	3	-
Bacteria	1	Bacteria	1	-

Request Taken By	RM	Prepared & Shipped By		Date Shipped		Method of Shipment	

BUREAU OF CANNABIS CONTROL
CALIFORNIA

ALL CANNABIS HARVESTED ON OR AFTER 1/1/2018 AND ALL CANNABIS PRODUCTS MANUFACTURED ON OR AFTER 1/1/2018, SHALL BE TESTED ACCORDING TO TITLE 16 OF THE CALIFORNIA CODE OF REGULATIONS, SECTION 5715, AND THE REGULATIONS THAT FOLLOW.

PHASE-IN OF REQUIRED LABORATORY TESTING	INHALABLE CANNABIS	INHALABLE CANNABIS PRODUCTS	OTHER CANNABIS & CANNABIS PRODUCTS
JANUARY 1, 2018			
Cannabinoids Testing	✔	✔	✔
Moisture Content Testing	✔		
Category II Residual Solvents and Processing Chemicals Testing		✔	✔
Category I Residual Pesticides Testing	✔	✔	✔
Microbial Impurities Testing (A. fumigatus, A. flavus, A. niger, A. terreus)	✔	✔	
Microbial Impurities Testing (Escherichia coli and Salmonella spp.)	✔	✔	✔
Homogeneity Testing of Edible Cannabis Products			✔
JULY 1, 2018			
Category I Residual Solvents and Processing Chemicals Testing		✔	✔
Category II Residual Pesticides Testing	✔	✔	✔
Foreign Material Testing	✔	✔	✔
DECEMBER 31, 2018			
Terpenoids Testing	✔	✔	✔
Mycotoxins Testing	✔	✔	✔
Heavy Metals Testing	✔	✔	✔
Water Activity Testing of Solid or Semi-Solid Edibles	✔		✔

STATE OF CALIFORNIA
dca
DEPARTMENT OF CONSUMER AFFAIRS

Bureau of Cannabis Control
1625 North Market Boulevard, Suite 202-S
Sacramento, CA 95834
(800) 952-5210

For the latest updates, follow the Bureau on social media

PDE_17-261

WILLOW BLOG

California Residual Pesticide Testing

The state of California requires all cannabis goods batches to be tested for residual pesticide (s) prior to their release for sale to the public. The full list of tests can be found *here*, on our California Cannabis Testing page.

The required cannabis residual pesticide testing classifies pesticides into two categories.

Category I residual pesticides must be undetected, meaning under .10 µg/g.

Category I Residual Pesticide	**CAS No.**
Aldicarb	116-06-3
Carbofuran	1563-66-2
Chlordane	57-74-9
Chlorfenapyr	122453-73-0

DDVP (Dichlorvos)	62-73-7
Dimethoate	60-51-5
Ethoprop(hos)	13194-48-4
Etofenprox	80844-07-1
Fenoxycarb	72490-01-8
Fipronil	120068-37-3
Imazalil	35554-44-0
Methiocarb	2032-65-7
Methyl parathion	298-00-0
Mevinphos	7786-34-7
Paclobutrazol	76738-62-0
Propoxur	114-26-1
Spiroxamine	118134-30-8
Thiacloprid	111988-49-9

Category II residual pesticides must be under their respective action levels.

Abamectin	71751-41-2	0.1	0.3
Acephate	30560-19-1	0.1	5
Acequinocyl	57960-19-7	0.1	4
Acetamiprid	135410-20-7	0.1	5
Azoxystrobin	131860-33-8	0.1	40
Bifenazate	149877-41-8	0.1	5
Bifenthrin	82657-04-3	3	0.5
Boscalid	188425-85-6	0.1	10
Captan	133-06-2	0.7	5
Carbaryl	63-25-2	0.5	0.5
Chlorantraniliprole	500008-45-7	10	40
Clofentezine	74115-24-5	0.1	0.5
Cyfluthrin	68359-37-5	2	1
Cypermethrin	52315-07-8	1	1
Diazinon	333-41-5	0.1	0.2
Dimethomorph	110488-70-5	2	20
Etoxazole	153233-91-1	0.1	1.5
Fenhexamid	126833-17-8	0.1	10
Fenpyroximate	111812-58-9	0.1	2
Flonicamid	158062-67-0	0.1	2
Fludioxonil	131341-86-1	0.1	30
Hexythiazox	78587-05-0	0.1	2
Imidacloprid	138261-41-3	5	3
Kresoxim-methyl	143390-89-0	0.1	1
Malathion	121-75-5	0.5	5
Metalaxyl	57837-19-1	2	15
Methomyl	16752-77-5	1	0.1
Myclobutanil	88671-89-0	0.1	9
Naled	300-76-5	0.1	0.5
Oxamyl	23135-22-0	0.5	0.2
Pentachloronitrobenzene	82-68-8	0.1	0.2
Permethrin	52645-53-1	0.5	20
Phosmet	732-11-6	0.1	0.2
Piperonylbutoxide	51-03-6	3	8
Prallethrin	23031-36-9	0.1	0.4
Propiconazole	60207-90-1	0.1	20
Pyrethrins	8003-34-7	0.5	1
Pyridaben	96489-71-3	0.1	3
Spinetoram	187166-15-0, 187166-40-1	0.1	3
Spinosad	131929-60-7, 131929-63-0	0.1	3
Spiromesifen	283594-90-1	0.1	12
Spirotetramat	203313-25-1	0.1	13
Tebuconazole	107534-96-3	0.1	2
Thiamethoxam	153719-23-4	5	4.5
Trifloxystrobin	141517-21-7	0.1	30

In addition to residual pesticide testing, California also tests for residual solvents and processing chemicals. Similar to residual pesticides, solvents and processing chemicals are classified in one of two categories.

Category I solvents and processing chemicals must be undetected, meaning under 1.0 µg/g.

Benzene	71-43-2
Chloroform	67-66-3
Ethylene oxide	75-21-8
Methylene chloride	75-09-2
Trichloroethylene	79-01-6

Category II solvents and processing chemicals must be under their respective action levels.

Category II Residual solvent or processing chemical	**CAS No.**	**Action Level µg/g**
Acetone	67-64-1	1000
Acetonitrile	75-05-8	80
Butane	106-97-8	1000
Ethanol	64-17-5	1000
Ethyl acetate	141-78-6	1000
Ethyl ether	60-29-7	1000
Heptane	142-82-5	1000
Hexane	110-54-3	60
Isopropyl alcohol	67-63-0	1000
Methanol	67-56-1	600
Pentane	109-66-0	1000

For more information on the other mandatory tests required by the state of California, check out our article on California Cannabis Testing. Information on retesting and remediation for failed batches can be found on our California Remediation and Retesting page.

How to Work With Us

Willow can work with you by providing product cleaning services at your location or by selling and servicing your own WillowPure machine.

We'll bring our technology and expertise to you!

Start-to-finish decontamination service:

- WillowPure technology delivered to your facility
- Access to best practices and recommendations
- Fast and efficient cycle time
- On-site experts to setup, operate, clean and repackage your product

Have your product be safe and sellable by making WillowPure part of your standard process. Willow will install your machine, train your staff and share best practices.

Not in Colorado? We provide out-of-state trials. We also make financing plans available.

Microbial Moment

February 2020 This month's newsletter is all about product quality! You'll find articles on cultivation, tips-and-tricks for brand building, regulatory updates, case studies, and more! 1. It's Not Too Late: Post-Harvest Solutions to Microbial Contamination Issues This is a long one, but well worth the read. It includes a comprehensive review of microbial contaminant testing, **READ MORE**

WILLOW INDUSTRIES **FEBRUARY 19, 2020**

Michigan Marijuana Testing

Understanding Michigan Marijuana Testing Requirements Michigan instated required contaminant and potency testing for medical marijuana in 2018, and now that adult-use laws have gone into effect starting in December 2019, large volumes of product sold in Michigan are subject to the challenges of testing. This blog post will provide an overview of Michigan contaminant testing **READ MORE**

WILLOW INDUSTRIES **FEBRUARY 10, 2020**

Passing Microbial Testing and Remediation Options in Oklahoma

Oklahoma legalized medical cannabis in 2018, and after almost a year of sales, the state introduced a framework for contaminant and potency testing in 2019. While the laws are good news for patient safety, growers and manufacturers are pressed to find reliable testing labs while trying to avoid failed results. The state's implementation of testing **READ MORE**

WILLOW INDUSTRIES **JANUARY 20, 2020**

A Natural Approach to Reducing Pesticide Use on Cannabis Plants

A major hurdle to growing clean cannabis is pest control. When insects begin to take over a cannabis crop, cultivators have limited options outside spraying plants with pesticides. This blog discusses some of the safer alternatives growers should consider before resorting to the use of chemical or natural pesticides, as well as best practices to **READ MORE**

WILLOW INDUSTRIES **JANUARY 16, 2020**

Stay up to date with our growers newsletter

Email

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855.921.6886
contact@willowindustries.com

7000 E 47TH AVENUE DR – UNIT 800, DENVER, CO 80216

CANNABIS

PESTICIDES THAT ARE **LEGAL** TO USE

Protecting workers, the public, and the environment
California Cannabis Cultivation

Protecting workers, the public, and the environment from adverse effects of pesticide use in cannabis cultivation is critical to the mission of the California Department of Pesticide Regulation (DPR). DPR and the County Agricultural Commissioners (CAC) enforce the use and sale of pesticides under Divisions 6 and 7 of the California Food and Agricultural Code (FAC), and Title 3 of the California Code of Regulations (CCR). These laws and regulations apply to all pesticide use; cannabis is no exception.

All pesticide product labels include a warning statement, precautionary statements for protecting human and environmental health, storage and disposal statements, and directions for use. By law, all pesticide users must follow these statements.

When using pesticide products in cannabis cultivation, applicators must not use a rate that is higher than the rates listed on the label and follow the agricultural use requirements including method of application, restricted entry interval, personal protective equipment, and pre-harvest interval.

Some pesticide products are never allowed in cannabis cultivation under any circumstances (see DPR's document: Pesticides that Cannot be Used on Cannabis).

California Environmental Protection Agency
dpr Department of Pesticide Regulation

Always read the label prior to using any pesticide.

PRODUCTS THAT CAN BE LEGALLY APPLIED TO CANNABIS IN CALIFORNIA

A pesticide product can legally be applied to cannabis under state law if the active ingredients found in the product are exempt from residue tolerance requirements and the product is either exempt from registration requirements or registered for a use that is broad enough to include use on cannabis.

Residue tolerance requirements are set by U.S. EPA for each pesticide on each food crop and are the amount of pesticide residue allowed to remain in or on each treated crop with "reasonable certainty of no harm." Some pesticides are exempt from the tolerance requirement when they are found to be minimal risk.

Active ingredients exempt from registration requirements are mostly food-grade essential oils such as peppermint oil or rosemary oil.

Cannabis cultivators who are licensed by the California Department of Food and Agriculture are required to comply with pesticide laws and regulations as enforced by DPR and the CAC's.

For more information:
www.cdpr.ca.gov/cannabis

PESTICIDES THAT ARE **LEGAL** TO USE ON CANNABIS

The following are examples of pesticide active ingredients that are exempt from tolerance requirements and either exempt from registration requirements or have labels broad enough to include use on cannabis. This is not an exhaustive list of active ingredients that may fit the legal use criteria. The active ingredients are organized by the intended target.

Insecticides and Miticides

- Azadirachtin
- *Bacillus thuringiensis* sub. *kurstaki*
- *Bacillus thuringiensis* sub. *israelensis*
- *Beauveria bassiana*
- *Burkholderia* spp. strain A396
- Capsaicin
- Cinnamon and cinnamon oil
- Citric acid
- Garlic and garlic oil
- Geraniol
- Horticultural oils (petroleum oil)
- Insecticidal soaps (potassium salts of fatty acids)
- Iron phosphate
- *Isaria fumosorosea*
- Neem oil
- Potassium bicarbonate
- Potassium sorbate
- Rosemary oil
- Sesame and sesame oil
- Sodium bicarbonate
- Soybean oil
- Sulfur
- Thyme oil

Fungicides and Antimicrobials

- *Bacillus amyloliquefaciens strain D747*
- Cloves and clove oil
- Corn oil
- Cottonseed oil
- *Gliocladium virens*
- Neem oil
- Peppermint and peppermint oil
- Potassium bicarbonate
- Potassium silicate
- Rosemary and rosemary oil
- Sodium bicarbonate
- Reynoutria sachalinensis extract
- Trichoderma harzianum

Vertebrate Repellants

- Castor oil
- Geraniol

CANNABIS

PESTICIDES THAT **CANNOT** BE USED

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California Cannabis Cultivation

Protecting workers, the public, and the environment from adverse effects of pesticide use in cannabis cultivation is critical to the mission of the California Department of Pesticide Regulation (DPR). DPR and the County Agricultural Commissioners (CAC) enforce the use and sale of pesticides under Divisions 6 and 7 of the California Food and Agricultural Code (FAC), and Title 3 of the California Code of Regulations (CCR). These laws and regulations apply to all pesticide use; cannabis is no exception.

All pesticide product labels include a warning statement, precautionary statements for protecting human and environmental health, storage and disposal statements, and directions for use. By law, all pesticide users must follow these statements.

When using pesticide products in cannabis cultivation, applicators must not use a rate that is higher than the rates listed on the label and follow the agricultural use requirements including method of application, restricted entry interval, personal protective equipment, and pre-harvest interval.

Always read the label prior to using any pesticide.

Some pesticides cannot be used in cannabis cultivation.

While there are some pesticide products that are legal to use on cannabis under state law, (see DPR's document: Pesticides that are Legal to Use on Cannabis) other products are never allowed in cannabis cultivation. The following criteria identify pesticide products that cannot be used in California cannabis cultivation under any circumstances. The use of any pesticides meeting any one of these criteria on cannabis will be strictly enforced as a violation of the FAC and could result in civil or criminal penalties (FAC sections 12996 and 12999.5):

- Not registered for a food use in California
- California Restricted Material including Federal Restricted Use Pesticides (3CCR section 6400)
  On the groundwater protection list (3CCR section 6800)

Cannabis cultivators who are licensed by the California Department of Food and Agriculture are required to comply with pesticide laws and regulations as enforced by DPR and the CAC's.

For more information:
www.cdpr.ca.gov/cannabis

California Environmental Protection Agency
dpr Department of Pesticide Regulation

PESTICIDES THAT CANNOT BE USED ON CANNABIS

The following are criteria for identifying pesticides that cannot be used in cannabis cultivation and examples of active ingredients meeting these criteria. This is a representative list of active ingredients and not intended to be exhaustive. The fact that an active ingredient is not listed does not authorize its use on cannabis in California.

Pesticides Not Registered for Food Use in California

If a pesticide product does not have directions for use on a food crop, it cannot be used in cannabis cultivation. Examples of active ingredients that do not have food uses include:

- Aldicarb
- Carbofuran
- Chlordane
- Chlorfenapyr
- Coumaphos
- Daminozide
- DDVP (Dichlorvos)
- Etofenprox
- Fenoxycarb
- Imazalil
- Methyl parathion
- Mevinphos
- Paclobutrazol
- Propoxur
- Spiroxamine
- Thiacloprid

California Restricted Materials

DPR designates certain pesticides as California restricted materials (3 CCR section 6400). A pesticide can be considered a restricted material for many reasons including designation as a federal Restricted Use Pesticide. Many of these products have product labels that clearly state "Restricted Use Pesticide." Consult your local CAC to determine whether a product is a restricted material. Examples of California restricted materials include:

- Abamectin
- Bifenthrin
- Brodifacoum
- Bromodiolone
- Cyfluthrin
- Difenacoum
- Difethialone
- Fipronil
- Naled

Pesticides on the Groundwater Protection List

Active ingredients that are on the Groundwater Protection List (3CCR section 6800) have chemical characteristics that make them likely to move into groundwater. Examples of active ingredients on the groundwater protection list include:

- Acephate
- Azoxystrobin
- Boscalid
- Carbaryl
- Chlorantraniliprole
- Diazinon
- Dimethoate
- Dimethomorph
- Ethoprop(hos)
- Fludioxonil
- Imidacloprid
- Malathion
- Metalaxyl
- Methiocarb
- Methomyl
- Myclobutanil
- Propiconazole
- Tebuconazole
- Thiamethoxam