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Automated Report

## Technical Report for

**Alfred Ward & Son**

**Pachner North Pit**

**SGS Job Number: DA30375**

**Sampling Date: 11/05/20**

### Report to:

Alfred Ward & Son  
PO Box 737  
Ogallala, NE 69153  
randy@wardoil.com

**ATTN: Randy Ward**

**Total number of pages in report: 63**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.



**Jason Savoie**  
General Manager

**Client Service contact: Elizabeth Sutcliffe 303-425-6021**

Certifications: CO (CO00049), NE (NE-OS-06-04), ND (R-027), UT (NELAP CO00049)  
LA (LA150028), TX (T104704511), WY (8TMS-L)

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Test results relate only to samples analyzed.

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Sample Summary

Alfred Ward & Son

Job No: DA30375

Pachner North Pit

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
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This report contains results reported as ND = Not detected. The following applies:  
Organics ND = Not detected above the MDL

DA30375-1	11/05/20	02:30	RW	11/10/20	SO	Soil	P21
DA30375-1A	11/05/20	02:30	RW	11/10/20	SO	Soil	P21
DA30375-2	11/05/20	02:30	RW	11/10/20	SO	Soil	P22
DA30375-2A	11/05/20	02:30	RW	11/10/20	SO	Soil	P22
DA30375-3	11/05/20	02:30	RW	11/10/20	SO	Soil	P23
DA30375-3A	11/05/20	02:30	RW	11/10/20	SO	Soil	P23
DA30375-4	11/05/20	02:30	RW	11/10/20	SO	Soil	P24
DA30375-4A	11/05/20	02:30	RW	11/10/20	SO	Soil	P24

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

## CASE NARRATIVE / CONFORMANCE SUMMARY

2

**Client:** Alfred Ward & Son

**Job No:** DA30375

**Site:** Pachner North Pit

**Report Date** 11/20/2020 4:43:16 P

On 11/10/2020, 4 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at SGS North America Inc. (SGS) at a temperature of 14.2 °C. The samples were intact and properly preserved, unless noted below. An SGS Job Number of DA30375 was assigned to the project. The lab sample ID, client sample ID, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

### MS Volatiles By Method SW846 8260B

**Matrix:** SO

**Batch ID:** V5V2949

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA30375-2MS, DA30375-2MSD were used as the QC samples indicated.

### GC Volatiles By Method SW846 8015D

**Matrix:** SO

**Batch ID:** GGA2433

- All samples were analyzed within the recommended method holding time.
- Sample(s) DA30375-1MS, DA30375-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

### GC/LC Semi-volatiles By Method SW846-8015D

**Matrix:** SO

**Batch ID:** OP19589

- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) DA30375-4MS, DA30375-4MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- The matrix spike (MS) recovery(s) of TPH-DRO (C10-C28) are outside control limits. Outside control limits due to high level in sample relative to spike amount.

### Metals Analysis By Method SW846 6010C

**Matrix:** AQ

**Batch ID:** MP31675

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA30375-1AMS, DA30375-1AMSD, DA30375-1ASDL were used as the QC samples for the metals analysis.
- The serial dilution RPD(s) for Magnesium are outside control limits for sample MP31675-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

### General Chemistry By Method SM 2510B-2011 MOD

**Matrix:** SO

**Batch ID:** GP28030

- Sample(s) DA30375-4DUP were used as the QC samples for the Specific Conductivity analysis.

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## General Chemistry By Method SM2540G-2011 M

**Matrix:** SO

**Batch ID:** GN51713

- Sample(s) DA30400-3DUP were used as the QC samples for the Solids, Percent analysis.

## General Chemistry By Method SW846 9045D

**Matrix:** SO

**Batch ID:** GN51705

- The data for SW846 9045D meets quality control requirements.
- The following samples were run outside of holding time for method SW846 9045D: DA30375-1, DA30375-2, DA30375-3, DA30375-4
- DA30375-1 for pH: Field parameter analyzed by the laboratory upon request.
- DA30375-2 for pH: Field parameter analyzed by the laboratory upon request.
- DA30375-3 for pH: Field parameter analyzed by the laboratory upon request.
- DA30375-4 for pH: Field parameter analyzed by the laboratory upon request.

## General Chemistry By Method USDA HANDBOOK 60

**Matrix:** SO

**Batch ID:** MP31675

- DA30375-4A for Sodium Adsorption Ratio: Calculated as:  $(\text{Na meq/L}) / \sqrt{[(\text{Ca meq/L}) + (\text{Mg meq/L})/2]}$
- DA30375-2A for Sodium Adsorption Ratio: Calculated as:  $(\text{Na meq/L}) / \sqrt{[(\text{Ca meq/L}) + (\text{Mg meq/L})/2]}$
- DA30375-3A for Sodium Adsorption Ratio: Calculated as:  $(\text{Na meq/L}) / \sqrt{[(\text{Ca meq/L}) + (\text{Mg meq/L})/2]}$
- DA30375-1A for Sodium Adsorption Ratio: Calculated as:  $(\text{Na meq/L}) / \sqrt{[(\text{Ca meq/L}) + (\text{Mg meq/L})/2]}$

SGS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting SGS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

SGS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by SGS indicated via signature on the report cover.

## Summary of Hits

Job Number: DA30375  
Account: Alfred Ward & Son  
Project: Pachner North Pit  
Collected: 11/05/20

Lab Sample ID	Client Sample ID	Result/ Analyte	RL	MDL	Units	Method
DA30375-1	P21					
TPH-DRO (C10-C28)		1370	59	56	mg/kg	SW846-8015D
Specific Conductivity		760	1.0		umhos/cm	SM 2510B-2011 MOD
pH <sup>a</sup>		9.94			su	SW846 9045D
DA30375-1A	P21					
Calcium		5.73	2.0		mg/l	SW846 6010C
Sodium		104	2.0		mg/l	SW846 6010C
Sodium Adsorption Ratio <sup>b</sup>		10.6			ratio	USDA HANDBOOK 60
DA30375-2	P22					
TPH-DRO (C10-C28)		15.1	11	10	mg/kg	SW846-8015D
Specific Conductivity		1230	1.0		umhos/cm	SM 2510B-2011 MOD
pH <sup>a</sup>		9.96			su	SW846 9045D
DA30375-2A	P22					
Calcium		3.94	2.0		mg/l	SW846 6010C
Sodium		95.4	2.0		mg/l	SW846 6010C
Sodium Adsorption Ratio <sup>b</sup>		11.2			ratio	USDA HANDBOOK 60
DA30375-3	P23					
TPH-DRO (C10-C28)		562	110	100	mg/kg	SW846-8015D
Specific Conductivity		391	1.0		umhos/cm	SM 2510B-2011 MOD
pH <sup>a</sup>		9.99			su	SW846 9045D
DA30375-3A	P23					
Calcium		4.67	2.0		mg/l	SW846 6010C
Sodium		207	2.0		mg/l	SW846 6010C
Sodium Adsorption Ratio <sup>b</sup>		23.9			ratio	USDA HANDBOOK 60
DA30375-4	P24					
TPH-DRO (C10-C28)		1920	110	110	mg/kg	SW846-8015D
Specific Conductivity		1100	1.0		umhos/cm	SM 2510B-2011 MOD
pH <sup>a</sup>		9.94			su	SW846 9045D
DA30375-4A	P24					
Calcium		11.0	2.0		mg/l	SW846 6010C

Summary of Hits

Job Number: DA30375  
Account: Alfred Ward & Son  
Project: Pachner North Pit  
Collected: 11/05/20



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Analyte						
Magnesium		1.81	1.0		mg/l	SW846 6010C
Sodium		295	2.0		mg/l	SW846 6010C
Sodium Adsorption Ratio <sup>b</sup>		21.7			ratio	USDA HANDBOOK 60

(a) Field parameter analyzed by the laboratory upon request.  
(b) Calculated as: (Na meq/L) / sqrt [(Ca meq/L)+ (Mg meq/L)/2]



Wheat Ridge, CO

Section 4

4

Sample Results

Report of Analysis



## Report of Analysis

Client Sample ID:	P21	Date Sampled:	11/05/20
Lab Sample ID:	DA30375-1	Date Received:	11/10/20
Matrix:	SO - Soil	Percent Solids:	67.5
Method:	SW846 8260B		
Project:	Pachner North Pit		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5V57709.D	1	11/16/20 12:46	MB	n/a	n/a	V5V2949
Run #2							

Run #	Initial Weight	Final Volume
Run #1	5.05 g	5.0 ml
Run #2		

## Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.5	0.73	ug/kg	
108-88-3	Toluene	ND	2.9	1.5	ug/kg	
100-41-4	Ethylbenzene	ND	2.9	0.73	ug/kg	
1330-20-7	Xylene (total)	ND	2.9	1.5	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	79%		70-131%
2037-26-5	Toluene-D8	103%		70-130%
460-00-4	4-Bromofluorobenzene	115%		70-130%
17060-07-0	1,2-Dichloroethane-D4	96%		70-130%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	P21	Date Sampled:	11/05/20
Lab Sample ID:	DA30375-1	Date Received:	11/10/20
Matrix:	SO - Soil	Percent Solids:	67.5
Method:	SW846 8015D		
Project:	Pachner North Pit		

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2	GA53856.D	1	11/12/20 19:25	JB	n/a	n/a	GGA2433

Run #1	Initial Weight	Final Volume	Methanol Aliquot
Run #2	5.2 g	5.0 ml	100 ul

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	19	9.6	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	79%		60-140%		

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	P21	
Lab Sample ID:	DA30375-1	Date Sampled: 11/05/20
Matrix:	SO - Soil	Date Received: 11/10/20
Method:	SW846-8015D SW846 3546	Percent Solids: 67.5
Project:	Pachner North Pit	

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2	FH052608.D	1	11/17/20 22:32	NO	11/17/20	OP19589	GFP2124

Run #1	Initial Weight	Final Volume
Run #2	5.0 g	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	1370	59	56	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	85%		25-141%		

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
RL = Reporting Limit      B = Indicates analyte found in associated method blank  
E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	P21	Date Sampled:	11/05/20
Lab Sample ID:	DA30375-1	Date Received:	11/10/20
Matrix:	SO - Soil	Percent Solids:	67.5
Project:	Pachner North Pit		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
%solids							
Solids, Percent	67.5		%	1	11/12/20	ST	SM2540G-2011 M
prep: DEPT.OF AG, BOOK N9							
Specific Conductivity	760	1.0	umhos/cm	1	11/12/20	SR	SM 2510B-2011 MOD
pH <sup>a</sup>	9.94		su	1	11/11/20 15:00	SR	SW846 9045D

(a) Field parameter analyzed by the laboratory upon request.

RL = Reporting Limit

4.1  
4

Report of Analysis

Client Sample ID:	P21	Date Sampled:	11/05/20
Lab Sample ID:	DA30375-1A	Date Received:	11/10/20
Matrix:	SO - Soil	Percent Solids:	67.5
Project:	Pachner North Pit		

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	5.73	2.0	mg/l	1	11/13/20	11/17/20 JM	SW846 6010C <sup>1</sup>	SW846 3010A/M <sup>2</sup>
Magnesium	< 1.0	1.0	mg/l	1	11/13/20	11/17/20 JM	SW846 6010C <sup>1</sup>	SW846 3010A/M <sup>2</sup>
Sodium	104	2.0	mg/l	1	11/13/20	11/17/20 JM	SW846 6010C <sup>1</sup>	SW846 3010A/M <sup>2</sup>

- (1) Instrument QC Batch: MA13341  
(2) Prep QC Batch: MP31675

RL = Reporting Limit

4.2  
4

Report of Analysis

Client Sample ID:	P21	Date Sampled:	11/05/20
Lab Sample ID:	DA30375-1A	Date Received:	11/10/20
Matrix:	SO - Soil	Percent Solids:	67.5
Project:	Pachner North Pit		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio <sup>a</sup>	10.6		ratio	1	11/17/20 17:03	JM	USDA HANDBOOK 60

(a) Calculated as: (Na meq/L) / sqrt [(Ca meq/L)+ (Mg meq/L)/2]

RL = Reporting Limit

## Report of Analysis

Client Sample ID:	P22	Date Sampled:	11/05/20
Lab Sample ID:	DA30375-2	Date Received:	11/10/20
Matrix:	SO - Soil	Percent Solids:	93.4
Method:	SW846 8260B		
Project:	Pachner North Pit		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5V57710.D	1	11/16/20 13:09	MB	n/a	n/a	V5V2949
Run #2							

Run #	Initial Weight	Final Volume
Run #1	5.10 g	5.0 ml
Run #2		

## Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.52	ug/kg	
108-88-3	Toluene	ND	2.1	1.0	ug/kg	
100-41-4	Ethylbenzene	ND	2.1	0.52	ug/kg	
1330-20-7	Xylene (total)	ND	2.1	1.0	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	87%		70-131%
2037-26-5	Toluene-D8	96%		70-130%
460-00-4	4-Bromofluorobenzene	100%		70-130%
17060-07-0	1,2-Dichloroethane-D4	109%		70-130%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	P22	Date Sampled:	11/05/20
Lab Sample ID:	DA30375-2	Date Received:	11/10/20
Matrix:	SO - Soil	Percent Solids:	93.4
Method:	SW846 8015D		
Project:	Pachner North Pit		

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2	GA53859.D	1	11/12/20 21:12	JB	n/a	n/a	GGA2433

Run #1	Initial Weight	Final Volume	Methanol Aliquot
Run #2	5.1 g	5.0 ml	100 ul

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	11	5.6	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	87%		60-140%		

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound



Report of Analysis

Client Sample ID:	P22	Date Sampled:	11/05/20
Lab Sample ID:	DA30375-2	Date Received:	11/10/20
Matrix:	SO - Soil	Percent Solids:	93.4
Method:	SW846-8015D SW846 3546		
Project:	Pachner North Pit		

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2	FH052598.D	1	11/17/20 20:43	NO	11/17/20	OP19589	GFP2124

Run #1	Initial Weight	Final Volume
Run #2	20.0 g	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	15.1	11	10	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	80%		25-141%		

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

4.3  
4

Report of Analysis

Client Sample ID:	P22	Date Sampled:	11/05/20
Lab Sample ID:	DA30375-2	Date Received:	11/10/20
Matrix:	SO - Soil	Percent Solids:	93.4
Project:	Pachner North Pit		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
%solids							
Solids, Percent	93.4		%	1	11/12/20	ST	SM2540G-2011 M
prep: DEPT.OF AG, BOOK N9							
Specific Conductivity	1230	1.0	umhos/cm	1	11/12/20	SR	SM 2510B-2011 MOD
pH <sup>a</sup>	9.96		su	1	11/11/20 15:00	SR	SW846 9045D

(a) Field parameter analyzed by the laboratory upon request.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	P22	Date Sampled:	11/05/20
Lab Sample ID:	DA30375-2A	Date Received:	11/10/20
Matrix:	SO - Soil	Percent Solids:	93.4
Project:	Pachner North Pit		

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	3.94	2.0	mg/l	1	11/13/20	11/17/20 JM	SW846 6010C <sup>1</sup>	SW846 3010A/M <sup>2</sup>
Magnesium	< 1.0	1.0	mg/l	1	11/13/20	11/17/20 JM	SW846 6010C <sup>1</sup>	SW846 3010A/M <sup>2</sup>
Sodium	95.4	2.0	mg/l	1	11/13/20	11/17/20 JM	SW846 6010C <sup>1</sup>	SW846 3010A/M <sup>2</sup>

- (1) Instrument QC Batch: MA13341  
(2) Prep QC Batch: MP31675

RL = Reporting Limit

4.4  
4

Report of Analysis

Client Sample ID:	P22	Date Sampled:	11/05/20
Lab Sample ID:	DA30375-2A	Date Received:	11/10/20
Matrix:	SO - Soil	Percent Solids:	93.4
Project:	Pachner North Pit		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio <sup>a</sup>	11.2		ratio	1	11/17/20 17:43	JM	USDA HANDBOOK 60

(a) Calculated as: (Na meq/L) / sqrt [(Ca meq/L)+ (Mg meq/L)/2]

RL = Reporting Limit

## Report of Analysis

Client Sample ID:	P23	Date Sampled:	11/05/20
Lab Sample ID:	DA30375-3	Date Received:	11/10/20
Matrix:	SO - Soil	Percent Solids:	90.9
Method:	SW846 8260B		
Project:	Pachner North Pit		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5V57713.D	1	11/16/20 14:19	MB	n/a	n/a	V5V2949
Run #2							

Run #	Initial Weight	Final Volume
Run #1	5.03 g	5.0 ml
Run #2		

## Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.1	0.55	ug/kg	
108-88-3	Toluene	ND	2.2	1.1	ug/kg	
100-41-4	Ethylbenzene	ND	2.2	0.55	ug/kg	
1330-20-7	Xylene (total)	ND	2.2	1.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	85%		70-131%
2037-26-5	Toluene-D8	97%		70-130%
460-00-4	4-Bromofluorobenzene	103%		70-130%
17060-07-0	1,2-Dichloroethane-D4	101%		70-130%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	P23	Date Sampled:	11/05/20
Lab Sample ID:	DA30375-3	Date Received:	11/10/20
Matrix:	SO - Soil	Percent Solids:	90.9
Method:	SW846 8015D		
Project:	Pachner North Pit		

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2	GA53860.D	1	11/12/20 21:48	JB	n/a	n/a	GGA2433

Run #1	Initial Weight	Final Volume	Methanol Aliquot
Run #2	5.0 g	5.0 ml	100 ul

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	12	6.0	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	85%		60-140%		

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	P23		
Lab Sample ID:	DA30375-3	Date Sampled:	11/05/20
Matrix:	SO - Soil	Date Received:	11/10/20
Method:	SW846-8015D SW846 3546	Percent Solids:	90.9
Project:	Pachner North Pit		

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2	FH052592.D	10	11/17/20 19:38	NO	11/17/20	OP19589	GFP2124

Run #1	Initial Weight	Final Volume
Run #2	20.0 g	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	562	110	100	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	102%		25-141%		

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

4.5  
4

Report of Analysis

Client Sample ID:	P23	Date Sampled:	11/05/20
Lab Sample ID:	DA30375-3	Date Received:	11/10/20
Matrix:	SO - Soil	Percent Solids:	90.9
Project:	Pachner North Pit		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
%solids							
Solids, Percent	90.9		%	1	11/12/20	ST	SM2540G-2011 M
prep: DEPT.OF AG, BOOK N9							
Specific Conductivity	391	1.0	umhos/cm	1	11/12/20	SR	SM 2510B-2011 MOD
pH <sup>a</sup>	9.99		su	1	11/11/20 15:00	SR	SW846 9045D

(a) Field parameter analyzed by the laboratory upon request.

RL = Reporting Limit



Report of Analysis

Client Sample ID:	P23	Date Sampled:	11/05/20
Lab Sample ID:	DA30375-3A	Date Received:	11/10/20
Matrix:	SO - Soil	Percent Solids:	90.9
Project:	Pachner North Pit		

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	4.67	2.0	mg/l	1	11/13/20	11/17/20 JM	SW846 6010C <sup>1</sup>	SW846 3010A/M <sup>2</sup>
Magnesium	< 1.0	1.0	mg/l	1	11/13/20	11/17/20 JM	SW846 6010C <sup>1</sup>	SW846 3010A/M <sup>2</sup>
Sodium	207	2.0	mg/l	1	11/13/20	11/17/20 JM	SW846 6010C <sup>1</sup>	SW846 3010A/M <sup>2</sup>

(1) Instrument QC Batch: MA13341

(2) Prep QC Batch: MP31675

RL = Reporting Limit

Report of Analysis

Client Sample ID:	P23	Date Sampled:	11/05/20
Lab Sample ID:	DA30375-3A	Date Received:	11/10/20
Matrix:	SO - Soil	Percent Solids:	90.9
Project:	Pachner North Pit		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio <sup>a</sup>	23.9		ratio	1	11/17/20 17:49	JM	USDA HANDBOOK 60

(a) Calculated as: (Na meq/L) / sqrt [(Ca meq/L)+ (Mg meq/L)/2]

RL = Reporting Limit

## Report of Analysis

Client Sample ID:	P24	Date Sampled:	11/05/20
Lab Sample ID:	DA30375-4	Date Received:	11/10/20
Matrix:	SO - Soil	Percent Solids:	89.4
Method:	SW846 8260B		
Project:	Pachner North Pit		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5V57714.D	1	11/16/20 14:42	MB	n/a	n/a	V5V2949
Run #2							

Run #	Initial Weight	Final Volume
Run #1	5.06 g	5.0 ml
Run #2		

## Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.1	0.55	ug/kg	
108-88-3	Toluene	ND	2.2	1.1	ug/kg	
100-41-4	Ethylbenzene	ND	2.2	0.55	ug/kg	
1330-20-7	Xylene (total)	ND	2.2	1.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	87%		70-131%
2037-26-5	Toluene-D8	99%		70-130%
460-00-4	4-Bromofluorobenzene	104%		70-130%
17060-07-0	1,2-Dichloroethane-D4	108%		70-130%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	P24	Date Sampled:	11/05/20
Lab Sample ID:	DA30375-4	Date Received:	11/10/20
Matrix:	SO - Soil	Percent Solids:	89.4
Method:	SW846 8015D		
Project:	Pachner North Pit		

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2	GA53861.D	1	11/12/20 22:23	JB	n/a	n/a	GGA2433

Run #1	Initial Weight	Final Volume	Methanol Aliquot
Run #2	5.1 g	5.0 ml	100 ul

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	12	6.1	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	81%		60-140%		

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	P24	Date Sampled:	11/05/20
Lab Sample ID:	DA30375-4	Date Received:	11/10/20
Matrix:	SO - Soil	Percent Solids:	89.4
Method:	SW846-8015D SW846 3546		
Project:	Pachner North Pit		

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2	FH052590.D	10	11/17/20 19:16	NO	11/17/20	OP19589	GFP2124

Run #1	Initial Weight	Final Volume
Run #2	20.0 g	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	1920	110	110	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	76%		25-141%		

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	P24	Date Sampled:	11/05/20
Lab Sample ID:	DA30375-4	Date Received:	11/10/20
Matrix:	SO - Soil	Percent Solids:	89.4
Project:	Pachner North Pit		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
%solids							
Solids, Percent	89.4		%	1	11/12/20	ST	SM2540G-2011 M
prep: DEPT.OF AG, BOOK N9							
Specific Conductivity	1100	1.0	umhos/cm	1	11/12/20	SR	SM 2510B-2011 MOD
pH <sup>a</sup>	9.94		su	1	11/11/20 15:00	SR	SW846 9045D

(a) Field parameter analyzed by the laboratory upon request.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	P24	Date Sampled:	11/05/20
Lab Sample ID:	DA30375-4A	Date Received:	11/10/20
Matrix:	SO - Soil	Percent Solids:	89.4
Project:	Pachner North Pit		

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	11.0	2.0	mg/l	1	11/13/20	11/17/20 JM	SW846 6010C <sup>1</sup>	SW846 3010A/M <sup>2</sup>
Magnesium	1.81	1.0	mg/l	1	11/13/20	11/17/20 JM	SW846 6010C <sup>1</sup>	SW846 3010A/M <sup>2</sup>
Sodium	295	2.0	mg/l	1	11/13/20	11/17/20 JM	SW846 6010C <sup>1</sup>	SW846 3010A/M <sup>2</sup>

- (1) Instrument QC Batch: MA13341  
(2) Prep QC Batch: MP31675

RL = Reporting Limit

Report of Analysis

Client Sample ID:	P24	Date Sampled:	11/05/20
Lab Sample ID:	DA30375-4A	Date Received:	11/10/20
Matrix:	SO - Soil	Percent Solids:	89.4
Project:	Pachner North Pit		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio <sup>a</sup>	21.7		ratio	1	11/17/20 17:55	JM	USDA HANDBOOK 60

(a) Calculated as: (Na meq/L) / sqrt [(Ca meq/L)+ (Mg meq/L)/2]

RL = Reporting Limit



**Misc. Forms**

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**Custody Documents and Other Forms**

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**Includes the following where applicable:**

- Chain of Custody

4036 Youngfield Street, Wheat Ridge, CO 80033  
TEL: 303-425-6021 FAX: 303-425-6854  
[www.accurfest.com](http://www.accurfest.com)

[illegible]

## DA30375: Chain of Custody

Page 1 of 3

## SGS Sample Receipt Summary

**Job Number:** DA30375      **Client:** ALFRED WARD      **Project:** PACHNER NORTH PIT  
**Date / Time Received:** 11/10/2020 12:00:00 PM      **Delivery Method:** \_\_\_\_\_      **Airbill #'s:** FXG  
**Cooler Temps (Initial/Adjusted):** #1: (14.2/14.2);

### Cooler Security

Y or N

Y or N

- |                           |                                     |                          |                       |                                     |                          |
|---------------------------|-------------------------------------|--------------------------|-----------------------|-------------------------------------|--------------------------|
| 1. Custody Seals Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3. COC Present:       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Custody Seals Intact:  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 4. Smpl Dates/Time OK | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

### Cooler Temperature

Y or N

- |                              |                          |                                     |
|------------------------------|--------------------------|-------------------------------------|
| 1. Temp criteria achieved:   | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2. Cooler temp verification: | IR Gun                   |                                     |
| 3. Cooler media:             | No Ice                   |                                     |
| 4. No. Coolers               | 1                        |                                     |

### Quality Control Preservation

Y

N

N/A

- |                                 |                                     |                          |                                     |
|---------------------------------|-------------------------------------|--------------------------|-------------------------------------|
| 1. Trip Blank present / cooler: | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2. Trip Blank listed on COC:    | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. Samples preserved properly:  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |                                     |
| 4. VOCs headspace free:         | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

### Sample Integrity - Documentation

Y or N

- |  |                                     |                          |
|--|-------------------------------------|--------------------------|
| 1. Sample labels present on bottles:   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Container labeling complete:        | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Sample container label / COC agree: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

### Sample Integrity - Condition

Y or N

- |                                  |                                     |                          |
|----------------------------------|-------------------------------------|--------------------------|
| 1. Sample recvd within HT:       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. All containers accounted for: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Condition of sample:          | Intact                              |                          |

### Sample Integrity - Instructions

Y

N

N/A

- |   |                                     |                                     |                                     |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Analysis requested is clear:           | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |                                     |
| 2. Bottles received for unspecified tests | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |                                     |
| 3. Sufficient volume recvd for analysis:  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |                                     |
| 4. Compositing instructions clear:        | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 5. Filtering instructions clear:          | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

Comments Received warm at 14.2C in plastic bag with no ice.

DA30375: Chain of Custody

Page 2 of 3

## Sample Receipt Summary - Problem Resolution

**Job Number:** DA30375

**Initiator:** jd

**CSR:** Lizz Sutcliffe

**Response Date:** 11/20/2020

**Response:** Per Randy Ward, analyzed samples deposite being received at warm temperature.

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**DA30375: Chain of Custody**

**Page 3 of 3**

**MS Volatiles****QC Data Summaries**

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**Includes the following where applicable:**

- **Method Blank Summaries**
- **Blank Spike Summaries**
- **Matrix Spike and Duplicate Summaries**

## Method Blank Summary

Page 1 of 1

Job Number: DA30375  
Account: ALFWSNEO Alfred Ward & Son  
Project: Pachner North Pit

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V2949-MB	5V57705.D	1	11/16/20	MB	n/a	n/a	V5V2949

The QC reported here applies to the following samples:

Method: SW846 8260B

DA30375-1, DA30375-2, DA30375-3, DA30375-4

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	50	25	ug/kg	
100-41-4	Ethylbenzene	ND	100	25	ug/kg	
108-88-3	Toluene	ND	100	50	ug/kg	
1330-20-7	Xylene (total)	ND	100	50	ug/kg	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	78% 70-131%
2037-26-5	Toluene-D8	99% 70-130%
460-00-4	4-Bromofluorobenzene	101% 70-130%
17060-07-0	1,2-Dichloroethane-D4	96% 70-130%

## Method Blank Summary

Page 1 of 1

Job Number: DA30375  
Account: ALFWSNEO Alfred Ward & Son  
Project: Pachner North Pit

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V2949-MB	5V57706.D	1	11/16/20	MB	n/a	n/a	V5V2949

The QC reported here applies to the following samples:

Method: SW846 8260B

DA30375-1, DA30375-2, DA30375-3, DA30375-4

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.50	ug/kg	
100-41-4	Ethylbenzene	ND	2.0	0.50	ug/kg	
108-88-3	Toluene	ND	2.0	1.0	ug/kg	
1330-20-7	Xylene (total)	ND	2.0	1.0	ug/kg	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	90% 70-131%
2037-26-5	Toluene-D8	96% 70-130%
460-00-4	4-Bromofluorobenzene	101% 70-130%
17060-07-0	1,2-Dichloroethane-D4	100% 70-130%

Blank Spike Summary

Job Number: DA30375  
Account: ALFWSNEO Alfred Ward & Son  
Project: Pachner North Pit

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V2949-BS	5V57703.D	1	11/16/20	MB	n/a	n/a	V5V2949

The QC reported here applies to the following samples: Method: SW846 8260B

DA30375-1, DA30375-2, DA30375-3, DA30375-4

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	46.4	93	68-130
100-41-4	Ethylbenzene	50	48.6	97	69-130
108-88-3	Toluene	50	46.7	93	65-130
1330-20-7	Xylene (total)	150	146	97	69-130

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	100%	70-131%
2037-26-5	Toluene-D8	98%	70-130%
460-00-4	4-Bromofluorobenzene	104%	70-130%
17060-07-0	1,2-Dichloroethane-D4	100%	70-130%

\* = Outside of Control Limits.



Matrix Spike/Matrix Spike Duplicate Summary

Job Number: DA30375  
Account: ALFWSNEO Alfred Ward & Son  
Project: Pachner North Pit

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
DA30375-2MS	5V57711.D	1	11/16/20	MB	n/a	n/a	V5V2949
DA30375-2MSD	5V57712.D	1	11/16/20	MB	n/a	n/a	V5V2949
DA30375-2	5V57710.D	1	11/16/20	MB	n/a	n/a	V5V2949

The QC reported here applies to the following samples: Method: SW846 8260B

DA30375-1, DA30375-2, DA30375-3, DA30375-4

CAS No.	Compound	DA30375-2 ug/kg	Spike Q ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND	53	40.4	76	53.2	42.0	79	4	48-130/30
100-41-4	Ethylbenzene	ND	53	38.6	73	53.2	39.1	73	1	25-144/30
108-88-3	Toluene	ND	53	39.7	75	53.2	40.3	76	1	34-130/30
1330-20-7	Xylene (total)	ND	159	116	73	160	117	73	1	24-143/30

CAS No.	Surrogate Recoveries	MS	MSD	DA30375-2	Limits
1868-53-7	Dibromofluoromethane	88%	86%	87%	70-131%
2037-26-5	Toluene-D8	99%	97%	96%	70-130%
460-00-4	4-Bromofluorobenzene	103%	104%	100%	70-130%
17060-07-0	1,2-Dichloroethane-D4	106%	107%	109%	70-130%

\* = Outside of Control Limits.

**GC Volatiles****QC Data Summaries**

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**Includes the following where applicable:**

- **Method Blank Summaries**
- **Blank Spike Summaries**
- **Matrix Spike and Duplicate Summaries**

Method Blank Summary

Job Number: DA30375  
Account: ALFWSNEO Alfred Ward & Son  
Project: Pachner North Pit

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGA2433-MB	GA53855.D	1	11/12/20	JB	n/a	n/a	GGA2433

The QC reported here applies to the following samples: Method: SW846 8015D

DA30375-1, DA30375-2, DA30375-3, DA30375-4

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	9.8	4.9	mg/kg	

CAS No.	Surrogate Recoveries	Limits
120-82-1	1,2,4-Trichlorobenzene	82% 60-140%

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7

Blank Spike Summary

Job Number: DA30375  
Account: ALFWSNEO Alfred Ward & Son  
Project: Pachner North Pit

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGA2433-BS	GA53854.D	1	11/12/20	JB	n/a	n/a	GGA2433

The QC reported here applies to the following samples: Method: SW846 8015D

DA30375-1, DA30375-2, DA30375-3, DA30375-4

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-GRO (C6-C10)	108	93.1	86	54-139

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	89%	60-140%

\* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: DA30375  
Account: ALFWSNEO Alfred Ward & Son  
Project: Pachner North Pit

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
DA30375-1MS	GA53857.D	1	11/12/20	JB	n/a	n/a	GGA2433
DA30375-1MSD	GA53858.D	1	11/12/20	JB	n/a	n/a	GGA2433
DA30375-1	GA53856.D	1	11/12/20	JB	n/a	n/a	GGA2433

The QC reported here applies to the following samples: Method: SW846 8015D

DA30375-1, DA30375-2, DA30375-3, DA30375-4

CAS No.	Compound	DA30375-1 mg/kg	Spike Q mg/kg	MS mg/kg	MS %	Spike mg/kg	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	ND	211	165	78	211	166	79	1	36-145/30

CAS No.	Surrogate Recoveries	MS	MSD	DA30375-1	Limits
120-82-1	1,2,4-Trichlorobenzene	81%	81%	79%	60-140%

\* = Outside of Control Limits.

**GC/LC Semi-volatiles****QC Data Summaries**

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**Includes the following where applicable:**

- **Method Blank Summaries**
- **Blank Spike Summaries**
- **Matrix Spike and Duplicate Summaries**

Method Blank Summary

Job Number: DA30375  
Account: ALFWSNEO Alfred Ward & Son  
Project: Pachner North Pit

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP19589-MB	FH052582.D	1	11/17/20	NO	11/17/20	OP19589	GFP2124

The QC reported here applies to the following samples: Method: SW846-8015D  
DA30375-1, DA30375-2, DA30375-3, DA30375-4

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	10	9.5	mg/kg	

CAS No.	Surrogate Recoveries	Limits
84-15-1	o-Terphenyl	81% 25-141%

Blank Spike Summary

Job Number: DA30375  
Account: ALFWSNEO Alfred Ward & Son  
Project: Pachner North Pit

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP19589-BS	FH052584.D	1	11/17/20	NO	11/17/20	OP19589	GFP2124

The QC reported here applies to the following samples: Method: SW846-8015D

DA30375-1, DA30375-2, DA30375-3, DA30375-4

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	250	196	78	49-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	89%	25-141%

\* = Outside of Control Limits.



Matrix Spike/Matrix Spike Duplicate Summary

Job Number: DA30375  
Account: ALFWSNEO Alfred Ward & Son  
Project: Pachner North Pit

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP19589-MS	FH052586.D	10	11/17/20	NO	11/17/20	OP19589	GFP2124
OP19589-MSD	FH052588.D	10	11/17/20	NO	11/17/20	OP19589	GFP2124
DA30375-4	FH052590.D	10	11/17/20	NO	11/17/20	OP19589	GFP2124

The QC reported here applies to the following samples: Method: SW846-8015D

DA30375-1, DA30375-2, DA30375-3, DA30375-4

CAS No.	Compound	DA30375-4 mg/kg	Spike Q mg/kg	MS mg/kg	MS %	Spike mg/kg	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	1920	280	2500	207* a	280	1870	-18* a	29	10-149/30

CAS No.	Surrogate Recoveries	MS	MSD	DA30375-4	Limits
84-15-1	o-Terphenyl	78%	74%	76%	25-141%

(a) Outside control limits due to high level in sample relative to spike amount.

\* = Outside of Control Limits.

## Metals Analysis

### QC Data Summaries

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Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: DA30375  
Account: ALFWSNEO - Alfred Ward & Son  
Project: Pachner North Pit

QC Batch ID: MP31675  
Matrix Type: AQUEOUS

Methods: SW846 6010C, USDA HANDBOOK 60  
Units: ug/l

Prep Date: 11/13/20

Metal	RL	IDL	MDL	MB raw	final
Aluminum	500	230	75		
Antimony	150	70	34		
Arsenic	130	110	23		
Barium	50	1.5	6.5		
Beryllium	50	5	6.5		
Boron	250	17	32		
Cadmium	50	9.5	6.5		
Calcium	2000	33	250	51.0	<2000
Chromium	50	5.5	6.5		
Cobalt	25	14	3.2		
Copper	50	23	6.5		
Iron	350	45	60		
Lead	250	67	32		
Lithium	25	3	6.5		
Magnesium	1000	250	130	69.0	<1000
Manganese	25	2.5	3.2		
Molybdenum	50	43	14		
Nickel	150	31	19		
Phosphorus	500	460	80		
Potassium	5000	420	630		
Selenium	250	150	110		
Silicon	250	210	75		
Silver	150	3	19		
Sodium	2000	63	250	-140	<2000
Strontium	25	.5	3.2		
Thallium	50	85	22		
Tin	300	210	260		
Titanium	50	2.5	6.5		
Uranium	250	20	43		
Vanadium	50	4.5	6.5		
Zinc	150	45	19		

Associated samples MP31675: DA30375-1A, DA30375-2A, DA30375-3A, DA30375-4A

Results < IDL are shown as zero for calculation purposes  
(\*) Outside of QC limits

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: DA30375  
Account: ALFWSNEO - Alfred Ward & Son  
Project: Pachner North Pit

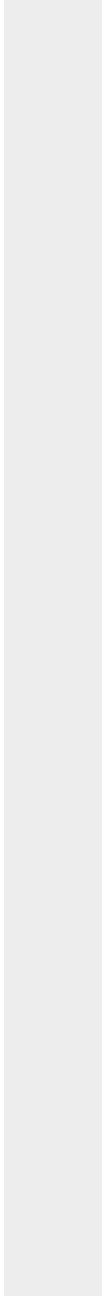
QC Batch ID: MP31675  
Matrix Type: AQUEOUS

Methods: SW846 6010C, USDA HANDBOOK 60  
Units: ug/l

Prep Date: 11/13/20

Metal	RL	IDL	MDL	MB raw	final
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(anr) Analyte not requested



MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA30375  
 Account: ALFWSNEO - Alfred Ward & Son  
 Project: Pachner North Pit

QC Batch ID: MP31675  
 Matrix Type: AQUEOUS

Methods: SW846 6010C, USDA HANDBOOK 60  
 Units: ug/l

Prep Date: 11/13/20

Metal	DA30375-1A Original MS		Spikelot ICPALL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron					
Cadmium					
Calcium	5730	131000	125000	100.2	75-125
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Lithium					
Magnesium	959	120000	125000	95.2	75-125
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silicon					
Silver					
Sodium	104000	233000	125000	103.2	75-125
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP31675: DA30375-1A, DA30375-2A, DA30375-3A, DA30375-4A

Results < IDL are shown as zero for calculation purposes  
 (\*) Outside of QC limits

Login Number: DA30375  
Account: ALFWSNEO - Alfred Ward & Son  
Project: Pachner North Pit

Methods: SW846 6010C, USDA HANDBOOK 60  
Units: ug/l

Prep Date: 11/13/20

Metal	DA30375-1A	Spikelot	QC
	Original MS	ICPALL2 % Rec	Limits

(N) Matrix Spike Rec. outside of QC limits  
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA30375  
Account: ALFWSNEO - Alfred Ward & Son  
Project: Pachner North Pit

QC Batch ID: MP31675  
Matrix Type: AQUEOUS

Methods: SW846 6010C, USDA HANDBOOK 60  
Units: ug/l

Prep Date: 11/13/20

Metal	DA30375-1A Original	MSD	Spikelot ICPAL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Boron						
Cadmium						
Calcium	5730	131000	125000	100.2	0.0	20
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Lithium						
Magnesium	959	121000	125000	96.0	0.8	20
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silicon						
Silver						
Sodium	104000	230000	125000	100.8	1.3	20
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP31675: DA30375-1A, DA30375-2A, DA30375-3A, DA30375-4A

Results < IDL are shown as zero for calculation purposes  
(\*) Outside of QC limits

Login Number: DA30375  
Account: ALFWSNEO - Alfred Ward & Son  
Project: Pachner North Pit

Methods: SW846 6010C, USDA HANDBOOK 60  
Units: ug/l

11/13/20

	DA30375-1A	Spikelot	MSD	QC
Metal	Original MSD	ICPALL2 % Rec	RPD	Limit

(N) Matrix Spike Rec. outside of QC limits  
(anr) Analyte not requested



Login Number: DA30375  
Account: ALFWSNEO - Alfred Ward & Son  
Project: Pachner North Pit

Prep Date: 11/13/20

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	124000	125000	99.2	80-120
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	118000	125000	94.4	80-120
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	129000	125000	103.2	80-120
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP31675: DA30375-1A, DA30375-2A, DA30375-3A, DA30375-4A

Results < IDL are shown as zero for calculation purposes  
(\*) Outside of QC limits

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: DA30375

Account: ALFWSNEO - Alfred Ward & Son

Project: Pachner North Pit

QC Batch ID: MP31675

Matrix Type: AQUEOUS

Methods: SW846 6010C, USDA HANDBOOK 60

Units: ug/l

Prep Date:

11/13/20

Metal	BSP Result	Spikelot ICPALL2 % Rec	QC Limits
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(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: DA30375  
 Account: ALFWSNEO - Alfred Ward & Son  
 Project: Pachner North Pit

QC Batch ID: MP31675  
 Matrix Type: AQUEOUS

Methods: SW846 6010C, USDA HANDBOOK 60  
 Units: ug/l

Prep Date: 11/13/20

Metal	DA30375-1A Original SDL 1:5		%DIF	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	1150	1080	6.0	0-10
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	192	0.00	100.0(a)	0-10
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	20800	20300	2.2	0-10
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP31675: DA30375-1A, DA30375-2A, DA30375-3A, DA30375-4A

Results < IDL are shown as zero for calculation purposes  
 (\*) Outside of QC limits

SERIAL DILUTION RESULTS SUMMARY

Login Number: DA30375  
Account: ALFWSNEO - Alfred Ward & Son  
Project: Pachner North Pit

QC Batch ID: MP31675  
Matrix Type: AQUEOUS

Methods: SW846 6010C, USDA HANDBOOK 60  
Units: ug/l

Prep Date: 11/13/20

	DA30375-1A		QC
Metal	Original SDL 1:5	%DIF	Limits

(anr) Analyte not requested

(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

**General Chemistry****QC Data Summaries**

**Includes the following where applicable:**

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: DA30375  
Account: ALFWSNEO - Alfred Ward & Son  
Project: Pachner North Pit

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Specific Conductivity	GP28030/GN51712			umhos/cm	xxxxxxx	1000	100.5	90-110%

Associated Samples:  
Batch GP28030: DA30375-1, DA30375-2, DA30375-3, DA30375-4  
(\*) Outside of QC limits

DUPLICATE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: DA30375  
Account: ALFWSNEO - Alfred Ward & Son  
Project: Pachner North Pit

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Solids, Percent	GN51713	DA30400-3	%	78.6	78.9	0.4	0-10%
Specific Conductivity	GP28030/GN51712	DA30375-4	umhos/cm	1100	1100	0.4	0-20%

Associated Samples:  
Batch GN51713: DA30375-1, DA30375-2, DA30375-3, DA30375-4  
Batch GP28030: DA30375-1, DA30375-2, DA30375-3, DA30375-4  
(\*) Outside of QC limits