



January 05, 2022

Tasman Geosciences

Mike Jahn

6855 West 119th Avenue

Broomfield CO 80020

**Project Name - PDC - Table 915-1 Metals**

**Project Number - [none]**

Attached are your analytical results for PDC - Table 915-1 Metals received by Origins Laboratory, Inc. October 06, 2021. This project is associated with Origins project number Y110138-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.  
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1725 Elk Place, Denver, CO 80211 | Phone: 303.433.1322 | Fax: 303.265.9645

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Project Number: [none]

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### CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
512336486-100621-01	Y110138-01	Water	October 6, 2021 11:32	10/06/2021 15:04

Origins Laboratory, Inc.



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Origins Laboratory

Sample Receipt Checklist

Origins Work Order: Y110138

Client: Tasman

Client Project ID: Table 915 Metals

Checklist Completed by: JH

Date/Time completed: 10/6/21

Shipped Via: HD  
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Airbill #: N/A

Matrix(s) Received: (Check all that apply): Soil/Solid ☒ Water ☐ Other: \_\_\_\_\_

Cooler Number/Temperature: 1,56 °C 1 °C 1 °C (Describe) \_\_\_\_\_ °C

Thermometer ID: T003

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 8°C <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>			
Are custody seals present on cooler? (If so, document in comments if they are signed and dated, broken or intact)	<input checked="" type="checkbox"/>			
Are custody seals present on each sample container? (If so, document in comments if they are signed and dated, broken or intact)	<input checked="" type="checkbox"/>			
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			<u>CrVI</u>
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.	<input checked="" type="checkbox"/>			
Are samples preserved that require preservation and was it checked <sup>(1)</sup> ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity) (pH < 2 for samples preserved with HNO <sub>3</sub> , HCL, H <sub>2</sub> SO <sub>4</sub> ) / (pH > 10 for samples preserved with NaAsO <sub>2</sub> +NaOH, ZnAc+NaOH)	<input checked="" type="checkbox"/>			
Additional Comments (if any):				

<sup>(1)</sup> If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to in the additional comments (above) and the case narrative.

Reviewed by (Project Manager) JM Date/Time Reviewed 10-7-21

Origins Laboratory, Inc.

*Jordan A. Merrill*

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512336486-100621-01  
10/6/2021 11:32:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Waypoint Analytical, LLC.**  
**Y110138-01 (Water)**

**Total Metals by 3500CrB-2011**

Chromium, Hexavalent	ND	10	µg/L	1	L578101	10/06/2021	10/07/2021
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**Total Metals by 6020B**

Arsenic	40.3	5	µg/L	5	L578231	10/08/2021	10/11/2021
Barium	16000	5	"	"	"	"	"
Cadmium	ND	5	"	"	"	"	"
Copper	48.6	5	"	"	"	"	"
Lead	10.6	20	"	20	"	"	"
Nickel	10.4	5	"	5	"	"	"
Selenium	ND	5	"	"	"	"	"
Silver	ND	5	"	"	"	"	"
Zinc	78.3	50	"	"	"	"	"

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**Total Metals by 3500CrB-2011 - Quality Control**  
**Waypoint Analytical, LLC.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch L578101 -**

**LCS (LCS)**

Prepared: Analyzed: 10/07/2021

Chromium, Hexavalent	122	3	µg/L	125	98	90-110
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**LRB (LRB)**

Prepared: Analyzed: 10/07/2021

Chromium, Hexavalent	ND	10	µg/L	-
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## Total Metals by 6020B - Quality Control Waypoint Analytical, LLC.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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### Batch L578231 - 3005A

#### LCS (LCS-L578231)

Prepared: 10/08/2021 Analyzed: 10/11/2021

Selenium	97.2	0.703	µg/L	100		97	80-120			
Silver	9.84	0.057	"	10		98	80-120			
Nickel	46.5	0.182	"	50		93	80-120			
Lead	48.7	0.264	"	50		97	80-120			
Copper	46.5	0.489	"	50		93	80-120			
Cadmium	9.68	0.35	"	10		97	80-120			
Barium	98.7	0.453	"	100		99	80-120			
Arsenic	47.9	0.297	"	50		96	80-120			
Zinc	478	4.67	"	500		96	80-120			

#### LRB (LRB-L578231)

Prepared: 10/08/2021 Analyzed: 10/11/2021

Zinc	ND	10	µg/L				-			
Silver	ND	1	"				-			
Arsenic	ND	1	"				-			
Barium	ND	1	"				-			
Cadmium	ND	1	"				-			
Copper	ND	1	"				-			
Lead	ND	1	"				-			
Nickel	ND	1	"				-			
Selenium	ND	1	"				-			

#### MSD (N 98310-MSD-L578231)

Source: 98310

Prepared: 10/08/2021 Analyzed: 10/11/2021

Silver	9.59	0.057	µg/L	10	<0.0570	96	75-125	1	20	
Zinc	479	4.67	"	500	<4.67	96	75-125	4	20	
Selenium	102	0.703	"	100	3.81	98	75-125	2.8	20	
Nickel	53.8	0.182	"	50	7.82	92	75-125	2.2	20	
Lead	46.5	1.32	"	50	4	93	75-125	3.3	20	

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## Total Metals by 6020B - Quality Control Waypoint Analytical, LLC.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch L578231 - 3005A</b>										
<b>MSD (N 98310-MSD-L578231)</b>		<b>Source: 98310</b>			Prepared: 10/08/2021 Analyzed: 10/11/2021					
Copper	46	0.489	µg/L	50	1.21	90	75-125	4.2	20	
Cadmium	9.85	0.35	"	10	<0.350	99	75-125	0.5	20	
Barium	531	0.453	"	100	444	87	75-125	0.7	20	
Arsenic	124	1.49	"	50	77.9	92	75-125	1.6	20	
<b>MS (N 98310-MS-L578231)</b>		<b>Source: 98310</b>			Prepared: 10/08/2021 Analyzed: 10/11/2021					
Zinc	460	4.67	µg/L	500	<4.67	92	75-125			
Barium	535	0.453	"	100	444	91	75-125			
Cadmium	9.9	0.35	"	10	<0.350	99	75-125			
Copper	44.1	0.489	"	50	1.21	86	75-125			
Lead	48.1	1.32	"	50	4	96	75-125			
Nickel	52.6	0.182	"	50	7.82	90	75-125			
Selenium	99.1	0.703	"	100	3.81	95	75-125			
Silver	9.69	0.057	"	10	<0.0570	97	75-125			
Arsenic	126	1.49	"	50	77.9	96	75-125			

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### Notes and Definitions

J Estimated Value. Analyte below reported quantitation limit.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

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