Unit# 288, 2880 45 Ave S.E.
Calgary, AB, T2B 3M1
Phone (403) 297-0868
Fax: (403) 297-0869

KaizenLAB

ANALYTICAL REPORT

Client: Municipal District of Wainwright
717 - 14 Avenue
Wainwright, AB T9W 1B3

Attention: Preston Iverson

KaizenLAB JOB #:	**332319**
DATE RECEIVED:	19-Jul-2023
DATE REPORTED:	31-Jul-2023
PROJECT ID:	2023 Tankloaders
LOCATION:	

KaizenLAB Sample #: 332319_001 **Sample ID:** Irma Tankloader
Date Sampled: 17-Jul-2023 10:30 **Matrix:** Water

Parameter Description	Units	Result	Detection Limit	
Basic Water Potability Analysis (Potability pkg #1)				
pH		8.5		
Electrical Conductivity (EC)	uS/cm	1390	10	
Alkalinity parameters of water				
Alkalinity (total, as CaCO3)	mg/L	582.8	2.0	
Alkalinity (phenolphthalein, as CaCO3)	mg/L	15.8	2.0	
Bicarbonate (as HCO3)	mg/L	672.1	2.5	
Carbonate (as CO3)	mg/L	18.9	1.5	
Hydroxide (as OH)	mg/L	<0.5	0.5	
Potability package calculations				
Total Dissolved Solids (calculated)	mg/L	871	10	
Ion Balance	%	102.89		
Anions in Water by IC				
Fluoride	mg/L	1.36	0.10	
Chloride	mg/L	9.66	0.50	
Nitrite	mg/L	<0.100	0.100	*
Nitrite-N	mg/L	<0.005	0.005	
Nitrate-N	mg/L	<0.010	0.010	
Nitrate	mg/L	<0.500	0.500	*
Nitrite-N + Nitrate-N	mg/L	<0.015	0.015	
Phosphate	mg/L	1.09	0.10	
Sulphate	mg/L	160.3	0.50	
Bromide	mg/L	0.11	0.10	
Cations in Water by ICP-OES				
Dissolved Calcium	mg/L	1.6	0.1	
Dissolved Magnesium	mg/L	0.4	0.1	
Dissolved Potassium	mg/L	2.2	0.1	
Dissolved Sodium	mg/L	339.3	0.1	

Unit# 288, 2880 45 Ave S.E.
Calgary, AB, T2B 3M1
Phone (403) 297-0868
Fax: (403) 297-0869
e-Mail: kaizenlan@kaizenlab.ca

KaizenLAB Sample #: 332319_001 **Sample ID:** Irma Tankloader

Date Sampled: 17-Jul-2023 10:30 **Matrix:** Water

Parameter Description	Units	Result	Detection Limit
Dissolved Iron	mg/L	<0.05	0.05
Dissolved Manganese	mg/L	<0.05	0.05
Hardness (calculated, as CaCO3)	mg/L	5.5	0.1
Sodium Adsorption Ratio		62.82	

Unit# 288, 2880 45 Ave S.E.
Calgary, AB, T2B 3M1
Phone (403) 297-0868
Fax: (403) 297-0869
e-Mail: kaizenlan@kaizenlab.ca

KaizenLAB Sample #: 332319_002 **Sample ID:** Giltedge Tankloader
Date Sampled: 17-Jul-2023 11:30 **Matrix:** Water

Parameter Description	Units	Result	Detection Limit	
Basic Water Potability Analysis (Potability pkg #1)				
pH		8.6		
Electrical Conductivity (EC)	uS/cm	1530	10	
Alkalinity parameters of water				
Alkalinity (total, as CaCO3)	mg/L	491.1	2.0	
Alkalinity (phenolphthalein, as CaCO3)	mg/L	19.2	2.0	
Bicarbonate (as HCO3)	mg/L	552.0	2.5	
Carbonate (as CO3)	mg/L	23.0	1.5	
Hydroxide (as OH)	mg/L	<0.5	0.5	
Potability package calculations				
Total Dissolved Solids (calculated)	mg/L	957	10	
Ion Balance	%	100.76		
Anions in Water by IC				
Fluoride	mg/L	0.51	0.10	
Chloride	mg/L	61.30	0.50	
Nitrite	mg/L	0.207	0.100	*
Nitrite-N	mg/L	0.063	0.005	
Nitrate-N	mg/L	0.113	0.010	
Nitrate	mg/L	0.502	0.500	*
Nitrite-N + Nitrate-N	mg/L	0.176	0.015	
Phosphate	mg/L	1.34	0.10	
Sulphate	mg/L	222.5	0.50	
Bromide	mg/L	0.42	0.10	
Cations in Water by ICP-OES				
Dissolved Calcium	mg/L	1.5	0.1	
Dissolved Magnesium	mg/L	0.5	0.1	
Dissolved Potassium	mg/L	2.0	0.1	
Dissolved Sodium	mg/L	367.5	0.1	
Dissolved Iron	mg/L	<0.05	0.05	
Dissolved Manganese	mg/L	<0.05	0.05	
Hardness (calculated, as CaCO3)	mg/L	5.9	0.1	
Sodium Adsorption Ratio		65.63		

Unit# 288, 2880 45 Ave S.E.
Calgary, AB, T2B 3M1
Phone (403) 297-0868
Fax: (403) 297-0869
e-Mail: kaizenlan@kaizenlab.ca

KaizenLAB Sample #: 332319_003 **Sample ID:** Ribstone Tankloader
Date Sampled: 17-Jul-2023 15:00 **Matrix:** Water

Parameter Description	Units	Result	Detection Limit	
Basic Water Potability Analysis (Potability pkg #1)				
pH		8.3		
Electrical Conductivity (EC)	uS/cm	783	10	
Alkalinity parameters of water				
Alkalinity (total, as CaCO3)	mg/L	447.4	2.0	
Alkalinity (phenolphthalein, as CaCO3)	mg/L	2.5	2.0	
Bicarbonate (as HCO3)	mg/L	539.5	2.5	
Carbonate (as CO3)	mg/L	3.0	1.5	
Hydroxide (as OH)	mg/L	<0.5	0.5	
Potability package calculations				
Total Dissolved Solids (calculated)	mg/L	495	10	
Ion Balance	%	108.96		
Anions in Water by IC				
Fluoride	mg/L	0.36	0.10	
Chloride	mg/L	10.17	0.50	
Nitrite	mg/L	<0.100	0.100	*
Nitrite-N	mg/L	<0.005	0.005	
Nitrate-N	mg/L	<0.010	0.010	
Nitrate	mg/L	<0.500	0.500	*
Nitrite-N + Nitrate-N	mg/L	<0.015	0.015	
Phosphate	mg/L	9.84	0.10	
Sulphate	mg/L	0.93	0.50	
Bromide	mg/L	<0.10	0.10	
Cations in Water by ICP-OES				
Dissolved Calcium	mg/L	3.0	0.1	
Dissolved Magnesium	mg/L	1.3	0.1	
Dissolved Potassium	mg/L	1.9	0.1	
Dissolved Sodium	mg/L	194.9	0.1	
Dissolved Iron	mg/L	<0.05	0.05	
Dissolved Manganese	mg/L	<0.05	0.05	
Hardness (calculated, as CaCO3)	mg/L	13.0	0.1	
Sodium Adsorption Ratio		23.53		
Total Arsenic	mg/L	0.04673	0.00008	

Unit# 288, 2880 45 Ave S.E.
Calgary, AB, T2B 3M1
Phone (403) 297-0868
Fax: (403) 297-0869
e-Mail: kaizenlan@kaizenlab.ca

KaizenLAB Sample #: 332319_004 **Sample ID:** Ascot Tankloader
Date Sampled: 17-Jul-2023 14:00 **Matrix:** Water

Parameter Description	Units	Result	Detection Limit	
Basic Water Potability Analysis (Potability pkg #1)				
pH		7.6		
Electrical Conductivity (EC)	uS/cm	552	10	
Alkalinity parameters of water				
Alkalinity (total, as CaCO3)	mg/L	281.0	2.0	
Alkalinity (phenolphthalein, as CaCO3)	mg/L	<2.0	2.0	
Bicarbonate (as HCO3)	mg/L	342.6	2.5	
Carbonate (as CO3)	mg/L	<1.5	1.5	
Hydroxide (as OH)	mg/L	<0.5	0.5	
Potability package calculations				
Total Dissolved Solids (calculated)	mg/L	297	10	
Ion Balance	%	102.76		
Anions in Water by IC				
Fluoride	mg/L	0.42	0.10	
Chloride	mg/L	0.71	0.50	
Nitrite	mg/L	<0.100	0.100	*
Nitrite-N	mg/L	0.008	0.005	
Nitrate-N	mg/L	0.397	0.010	
Nitrate	mg/L	1.758	0.500	*
Nitrite-N + Nitrate-N	mg/L	0.405	0.015	
Phosphate	mg/L	<0.10	0.10	
Sulphate	mg/L	17.14	0.50	
Bromide	mg/L	<0.10	0.10	
Cations in Water by ICP-OES				
Dissolved Calcium	mg/L	53.9	0.1	
Dissolved Magnesium	mg/L	25.5	0.1	
Dissolved Potassium	mg/L	3.5	0.1	
Dissolved Sodium	mg/L	23.2	0.1	
Dissolved Iron	mg/L	<0.05	0.05	
Dissolved Manganese	mg/L	<0.05	0.05	
Hardness (calculated, as CaCO3)	mg/L	239.3	0.1	
Sodium Adsorption Ratio		0.65		

Unit# 288, 2880 45 Ave S.E.
Calgary, AB, T2B 3M1
Phone (403) 297-0868
Fax: (403) 297-0869
e-Mail: kaizenlan@kaizenlab.ca

* The detection limit has been adjusted due to sample matrix type and/or insufficient sample volume.

The theoretical holding time requirement for pH in Water of 15 minutes was not met.

Test Methodologies

Alkalinity in Water: Modified from SM 2320 B
Anions in Water: Modified from SM 4110 B
Cations in Water: Modified from SM 3030 B and SM 3120 B
Electrical Conductivity in Water: Modified from SM 2510 B and CCME Guidance Manual Volume 4, 2016
pH of Water: Modified from SM 4500-H+ B
Total Dissolved Solids (calculated): Modified from SM 1030 E
Total Metals in Water: Modified from EPA 200.2 and SM 3125 B

Final Review by:

Sabrina De Gannes
Client Services Representative

Note: The results in this report relate only to the items tested and as received. Information is available for any items in 7.8.2.1 of ISO/IEC 17025:2017 that cannot be put on a test report. The report shall not be reproduced except in full without written approval of KaizenLAB. The validity of results may be affected if the information is provided by the customer.