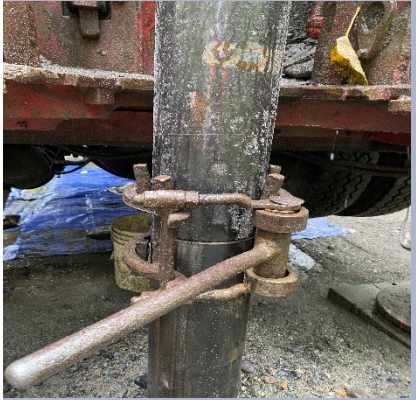

SUBMITTED TO:
Mat-Su Borough
350 E. Dahlia Avenue
Palmer, Alaska 99645

BY:
Shannon & Wilson, Inc.
247 S. Alaska Street
Palmer, Alaska 99645

907-561-2120
www.shannonwilson.com

FINAL

PUMPING TEST REPORT

2024 Talkeetna Test Well

TALKEETNA, ALASKA

SHANNON & WILSON

November 2024

Shannon & Wilson No: 113591-001

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Submitted To: Mat-Su Borough
350 E. Dahlia Avenue
Palmer, Alaska 99645
Attn: Michael Campfield, P.E.

Subject: DRAFT PUMPING TEST REPORT, 2024 TALKEETNA TEST WELL, TALKEETNA, ALASKA

Shannon & Wilson prepared this report and participated in this project as a consultant to the Matanuska-Susitna Borough. Our scope of services was specified in Agreement Number 24-141P with The Matanuska-Susitna Borough dated July 16, 2024. This work was conduct in accordance with our July 3, 2024 proposal. This report presents the results of the aquifer evaluation that was conducted and was prepared by the undersigned.

We appreciate the opportunity to be of service to you on this project. If you have questions concerning this report, or we may be of further service, please contact us.

Sincerely,

SHANNON & WILSON, INC.

AECC125

Stafford Glashan, P.E.
Senior Engineer III

SJG:KLB

CONTENTS

1 INTRODUCTION 1
2 SITE AND PROJECT DESCRIPTION 1
3 DEMAND FORECAST 1
4 TEST WELL INSTALLATION 1
4.1 Test Well TW-1 2
4.2 Initial Sampling 2
4.3 Well Completion 3
5 AQUIFER EVALUATION 3
5.1 Data Collection 4
5.2 Data Analysis 5
5.3 Results of Analytical Sampling 5
6 DISCUSSION/RECOMMENDATIONS 6
6.1 Production Well 7
6.2 Aquifer 7
7 CLOSURE/LIMITATIONS 7
8 REFERENCES 9

CONTENTS

Charts

Chart 1: Test Well TW-1 Pumping Test

Figures

Figure 1: Vicinity Map
Figure 2: Site Plan
Figure 3: Aquifer Grainsize Classification

Appendices

Appendix A: Analytical Results from Mat-Su Test Lab
Appendix B: Test Well Log and TWUA
Appendix C: Important Information

1 INTRODUCTION

This report presents a summary of our test well installation, development and pumping test field activities. Additionally, this report presents the results of our evaluation of data collected during pumping tests. The purpose of this study was to evaluate a potential new water source for suppling the City of Talkeetna with raw water for distribution.

2 SITE AND PROJECT DESCRIPTION

The MSB secured an agreement with the Alaska Railroad Corporation (ARRC) to advance a test well at 21950 South G Street in Talkeetna as shown in Figure 1. The test well was advanced in the southwest portion of the parcel, near the intersection of F Street and the undeveloped East Front Street right-of-way as shown in Figure 2. The overall project purpose is to develop a new well, water treatment system, and storage tank at a new location, if a location with better water quality can be identified. This included a field reconnaissance, drill pad development, test well installation, pumping test, and preparing this report.

3 DEMAND FORECAST

In 2023, HDR developed projections of water demand for Talkeetna in 2040 (HDR, 2023). At the request of the MSB, we used the same growth criteria (2 percent) and data to develop demand projections for the year 2050. Based on our evaluation, we project an average daily demand (ADD) of 78,350 gallons per day (gpd) and a maximum daily demand (MDD) of 142,500 gpd in 2050.

4 TEST WELL INSTALLATION

On July 26, 2024, Shannon & Wilson and Michael Campfield of the MSB visited the test well site. The nearest sanitary sewer manhole was located in the road by the Swiss Alaska Inn. Shannon & Wilson used swing ties to locate the manhole and place the drill pad outside of the 200-foot separation radius. Figure 2 shows the well location and separation radius. The

MSB obtained a Floodplain Development Permit prior to the construction of the access trail and drilling pad. McCullough Excavating of Talkeetna constructed the access road and drilling pad. The area was cleared and grubbed, a geofabric was placed, and approximately one-foot of compacted gravel was used to complete the construction. The finish grade of the access trail and drilling pad was completed within a few inches of the surrounding land.

4.1 Test Well TW-1

Test Well TW-1 was advanced on August 15 and 16 2024 by Wheaton Water Wells (Wheaton). The six-inch diameter steel casing was installed using a casing hammer and air-rotary drilling methods. Prior to advancing the wells, the locations were cleared of underground utilities by the Alaska Digline. As the well was installed, periodic samples of the encountered materials were collected from the drill cuttings.

Test Well TW-1 encountered one foot of imported gravel over one foot of organic soil. Brown gravelly sand was encountered below the organics to a depth of 92 feet below ground surface (bgs). Below 92 feet the soil became noticeably more silty and grayish in color. Observations indicate that the material encountered was alluvial in origin. Groundwater was encountered at about 7 feet bgs during drilling. Heaving sand was observed below approximately 100 feet bgs and excess cuttings were generated during drilling.

When drilling at approximately 138 feet bgs, one of the rear jacks on the drill rig was observed to have sunk approximately one foot and cracks were observed at the ground surface. A steel probe was inserted into the crack approximately 2 feet with little resistance. Based on this condition, and the aquifer materials encountered at this depth, it was decided to stop advancing the well casing.

4.2 Initial Sampling

When the casing was at about 100 feet bgs, personnel from the MSB collected a grab sample of the groundwater. The sample was evaluated for arsenic using a test strip with a negative result. A second grab sample was collected by Shannon & Wilson from the groundwater at approximately 140 feet bgs. This sample was analyzed for iron, arsenic manganese by Mat-Su Test Lab (MSTL). The results of this sampling are included in Appendix A.

Analytical sample results indicated that the sample from Test Well TW-1 contained 74 milligrams per liter (mg/L) iron and 2,100 micrograms per liter (µg/L) manganese. Both concentrations exceed the Secondary Maximum Contaminant Levels of 0.3 mg/L for iron and 50 µg/L for manganese. The sample also contained 34 µg/L of arsenic which exceeds the Maximum Contaminant Level (MCL) of 10 µg/L. It is hypothesized that spatter from the welding of the casing was suspended in the water column when the initial samples were collected. Welding rod contains high concentrations of manganese and iron.

4.3 Well Completion

Based on the aquifer materials observed, and the results of the water quality screening, it was decided to set the screen for Test Well TW-1 between 76 and 91 feet bgs. Based on gradation testing, the aquifer materials in Test Well TW-1 were classified as a poorly graded gravelly sand. Based on the gradation results, included as Figure 3, Test Well TW-1 was completed with 15-feet of telescoping well screen with a slot size of 0.060 inches.

The casing was cut at approximately 91 feet bgs and the bottom 43 feet were filled with sanitized gravel. The screen was installed between 78 and 93 feet below the top of casing (TOC) and the casing was pulled back to expose the screen. A four-foot casing and steel cap was welded on to the bottom of the screen to serve as a sump (tail).

The well screen was developed using air to surge the well and remove the sediment pulled into the wells. Test Well TW-1 was developed for approximately 3 hours and was considered complete when the sand content of the discharge was less than 0.5 milliliters per liter (mL/L) as measured with an Imhoff Cone. Approximately 1/2 cubic yard of sand was produced during development of Test Well TW-1.

5 AQUIFER EVALUATION

A pumping test was conducted on Test Well TW-1 on October 10, 2024. The pump, generator, flow meter, and discharge piping were provided by Wheaton. A Temporary Water Use Authorization (TWUA A2024-120) was secured from the Department of Natural Resources (DNR) for the pumping test at Test Well TW-1.

The evaluation of a pumping test assumes that the aquifer is uniform, homogenous, infinite, and that no recharge occurs (all pumped water is from aquifer storage). As the influence from the pumping well expands, boundary conditions may be encountered. Boundary conditions are caused by a change in the aquifer properties that increase (positive boundary condition) or decrease (negative boundary condition) the transmissivity of water in the aquifer. Positive boundary conditions may be sources of additional recharge such as surface water bodies, faults, karsts, or highly transmissive aquifer materials. Negative boundary conditions are caused by less transmissive aquifer materials such as fine-grained soil or bedrock.

On October 10, 2024 the static water level was 10.14 feet below TOC before starting the pumping test. Wheaton set the test pump with the intake located 62 feet below TOC. Shannon & Wilson deployed a pressure transducer in Test Well TW-1 at approximately 52 feet below the TOC. A totalizer flow meter was used to measure pumping rates and the pumped water was discharged approximately 100 feet north of Test Well TW-1.

5.1 Data Collection

The Test Well TW-1 pumping test began at 0707 hours on October 10, 2024 and continued until 1715 hours. A flow rate of about 300 gpm was established for the first 30 minutes of the test with just over 30 feet of drawdown observed. The flow rate was increased to approximately 350 gpm for the remainer of the test. The test was stopped before the planned 12 hour limit due to the higher than expected pumping rate. Pumping for 12 hours would have exceeded the total production authorized in our TWUA.

A sample was collected from the discharge prior to the completion of the test. The sample was collected by personnel wearing new disposable gloves. The sample bottles were placed in a cooler and transported to MSTL for analysis. The samples were analyzed for primary and secondary contaminants by EPA Method 300.0, total metals by EPA 200.8, nitrate/nitrite by standard method (SM)21 4500, total coliform by SM21 9223B, total cyanide by SM21 4500, and volatile organic contaminants by EPA Method 524.2.

The pressure transducer was left in the well to record water levels until approximately 1100 hours on October 11, 2024. A steel plate, with a threaded monitoring port, was welded on the casing after the equipment was removed from the well. The water level and pumping

rate data collected is plotted on Chart 1. The conditions of the TWUA indicated that multiple drinking water wells are located near Test Well TW-1. No indications of impacts to the water levels in Test Well TW-1 associated with pumping of those wells was observed.

5.2 Data Analysis

The data from the pumping test was evaluated in several ways. The data was first manually plotted to calculate initial aquifer transmissivity values using the Cooper-Jacob (1946) method. The data from the pumping test was imported into a commercial groundwater software program (Aqtesolv). This program was used to evaluate the data with several methods including the Cooper-Jacob (1946) and Neuman (1974) equations for an unconfined aquifer. The data was also evaluated for delayed-yield effects (common in highly stratified deposits) using the Tartakovsky-Neuman (2007) method. Delayed yield effects were observed in the data but no boundary conditions are observed.

The drawdown data was evaluated using the above methods. Based on this evaluation, we calculated the transmissivity of the aquifer to range from about 8 to 50 feet squared per minute (ft^2/min) when modeled as an unconfined aquifer. In evaluated curve fitting, it is our opinion that the average transmissivity is on the order of 40 ft^2/minute. Based on the conditions observed, Test Well TW-1 fully penetrates the productive portion of the aquifer. We estimate that the hydraulic conductivity of the aquifer is between 600 to 1,200 ft/day. This is consistent with a clean sand aquifer.

The pumping test revealed a high level of anisotropy (ratio of horizontal to vertical hydraulic conductivity). The average ratio indicated that the horizontal hydraulic conductivity is on the order of 1,000 times higher than the vertical hydraulic conductivity. This is consistent with our understanding of the complexly interbedded, alluvial aquifer at the site.

5.3 Results of Analytical Sampling

Based on the sampling conducted, none of the analytes tested were reported in the sample above the drinking water standards published in 40 CFR 261.24 for a Community Water System. Based on the testing, the water would be considered moderately to aggressively corrosive. Non-metallic piping and fittings should be used in the distribution system where

possible. The following table summarizes the detected constituents; the complete laboratory results are in Appendix A.

Analyte	Result	Maximum Contaminant Level (MCL)
Total Coliform – EPA 9223 Colilert P/A	Absent	**
E. Coli - EPA 9223 Colilert P/A	Absent	**
Nitrate – EPA Method 300.1	<0.235 mg/L	10 mg/L
Nitrite – EPA Method 300.1	<0.194 mg/L	1.0 mg/L
VOCs – EPA 524.2	ND	various
Chloride – EPA Method 300.0	10 mg/l	250 mg/L*
Sulfate - EPA Method 300.0	5.8 mg/L	250 mg/L
Iron – EPA Method 200.7	0.013 mg/L	0.3 mg/L*
Calcium – EPA Method 200.7	23 mg/L	NA
Sodium – EPA Method 200.7	5.0 mg/L	NA
Magnesium – EPA Method 200.7	3.1 mg/L	NA
Arsenic – EPA Method 200.8	1.2 µg/L	10 µg/L
Barium – EPA Method 200.8	9.1 µg/L	2,000 µg/L
Manganese – EPA Method 200.8	9.8 µg/L	50 µg/L*
Zinc – EPA Method 200.8	9.0 µg/L	5,000 µg/L*
Total Hardness as CaCo3 – SM 2340B	71 mg/L	NA
pH – EPA 150.1	7.5 SU	6.5-8.5*
Alkalinity Total – SM 3220B	60 mg/L	NA
Langelier Index – SM 2330B	-0.71	NA
Total Dissolved Solids – SM 2540C	110 mg/L	500 mg/L*
Fluoride – SM 4500F	0.070 mg/L	4.0 mg/L

NOTES:
1 mg/L – milligram per liter
2 µg/L – microgram per liter
3 ND – individual analytes not detected above reporting limits
4 Only detected inorganic contaminants presented in table
5 * - secondary MCL
6 ** - present in less than 5% of samples

6 DISCUSSION/RECOMMENDATIONS

The following sections summarize our conclusions and recommendations for the Talkeetna Municipal Well.

6.1 Production Well

Based on the physical and aquifer properties, a sustainable, continuous pumping rate for a 12-inch diameter production well near Test Well TW-1 is estimated to be between 800 and 1,100 gpm (Sichart, 1930) or about 1.1 to 1.6 million gallons per day (MGD). The flow rate could be increased by 1/3 for short (less than about 4 hours in a 24 hour period) pumping events. These estimates are based on a maximum drawdown of about one-third of the aquifer thickness.

While the projected 2050 ADD and MDD could be met with a smaller diameter well, we recommend that the production well have a minimum casing diameter of 12-inches. This diameter will allow easier pump/motor retrieval for maintenance, more options to maximize pump/motor combinations for efficiency, and easier installation of instrumentation.

The radius of influence (ROI) of a well pumping at the above rates is estimated to be on the order of 150 feet after one day of continuous pumping. The ROI increases to about 400 feet after a week of continuous pumping with about 5 feet of drawdown estimated at a distance of 150 feet from the well. Based on this information, it is our opinion that there is a low probability of negatively impacting other current users of the aquifer.

6.2 Aquifer

Alluvial aquifers are typically very heterogenous; significantly different conditions may be observed over relatively small vertical or horizontal distances. At the Test Well TW-1 location we encountered a significant amount of sand, heaving sand, and produced more aquifer material than was required to install the well. If not closely controlled by the drilling contractor, these conditions can result in the development of a sinkhole near or around the well casing. The drilling contractor should be made aware of these conditions so that they can select appropriate drilling and well development techniques.

7 CLOSURE/LIMITATIONS

This report was prepared for the exclusive use of our client and their representatives for evaluating the site as it relates to the hydrogeological aspects discussed herein. The conclusions presented are only applicable to the pumping rate during the test and the

aquifer/climatic conditions at the time of the test. Different conclusions may be reached for different pumping rates or duration or different aquifer/climatic conditions. Groundwater levels and recharge vary by season and from year to year. The available water in the aquifer, and the water quality, could vary substantially from what was observed during this study.

Shannon & Wilson has prepared the attachments in Appendix C Important Information About Your Geotechnical/Environmental Report to assist you and others in understanding the use and limitations of the reports. Per Alaska State Law, the owner of a well is required to submit a well log to DNR. This can be accomplished by emailing a copy of the log to: dnr.water.reports@alaska.gov.

Copies of documents that may be relied upon by our client are limited to the printed copies (also known as hard copies) that are signed or sealed by Shannon & Wilson with a wet, blue ink signature. Files provided in electronic media format are furnished solely for the convenience of the client. Any conclusion or information obtained or derived from such electronic files shall be at the user's sole risk.

8 REFERENCES

Cooper, H.H. and Jacob, C.E., 1946, *A generalized graphical method for evaluating formation constants and summarizing well field history*: American Geophysical Union Transactions, v. 27, p. 526-534.

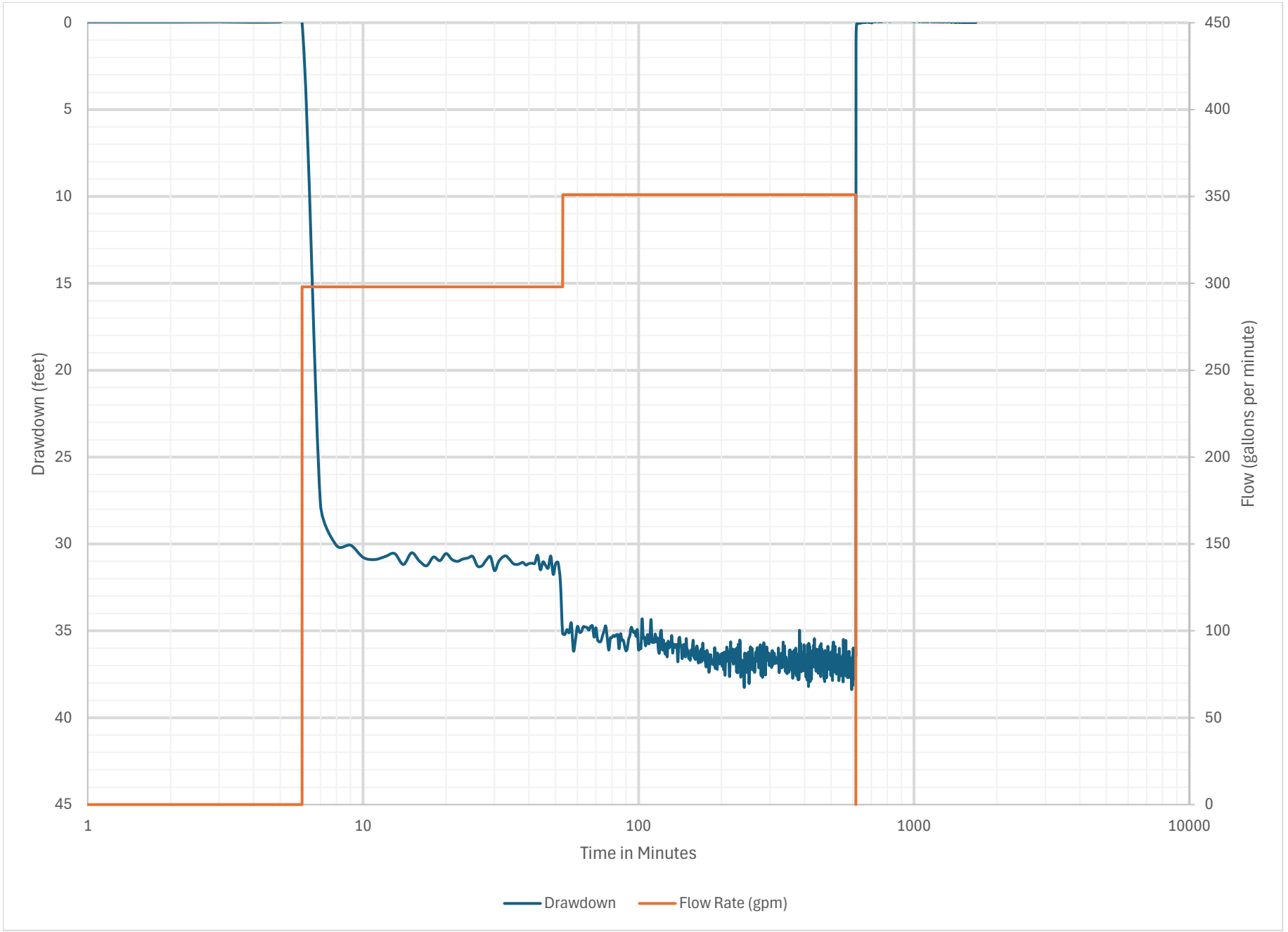
HDR, 2023, *Preliminary Engineering Report, Talkeetna Water Systems Upgrades*, for Matanuska-Susitna Borough, July 19, 40p.

Neuman, S.P., 1974, *Effect of partial penetration on flow in unconfined aquifers considering delayed gravity response*: Water Resources Research, v. 10, no. 2, p. 303-312.

Sichart, W. and Kyrieleis, W., 1930. *Grundwasser absekungen bei fundierungsarbeiten*. Berlin, Germany

Tartakovsky, G.D. and Neuman, S.P., 2007, *Three-dimensional saturated-unsaturated flow with axial symmetry to a partially penetrating well in a compressible unconfined aquifer*: Water Resources Research, v. 43, no. 1, p. W01410.

CHART 1 - TEST WELL TW-1 PUMPING TEST



0 5 10 20

APPROXIMATE SCALE IN MILES

N

Municipal Test Well
Talkeetna, Alaska

VICINITY MAP

November 2024 113591-001

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. 1

MAP ADAPTED FROM MSB MYPROPERTY, 2020 IMAGRY.

LEGEND

TW-I Approximate Location of Test Well TW-1, Advanced by Shannon & Wilson, August 2024.

0 100 200
APPROXIMATE SCALE IN FEET

N

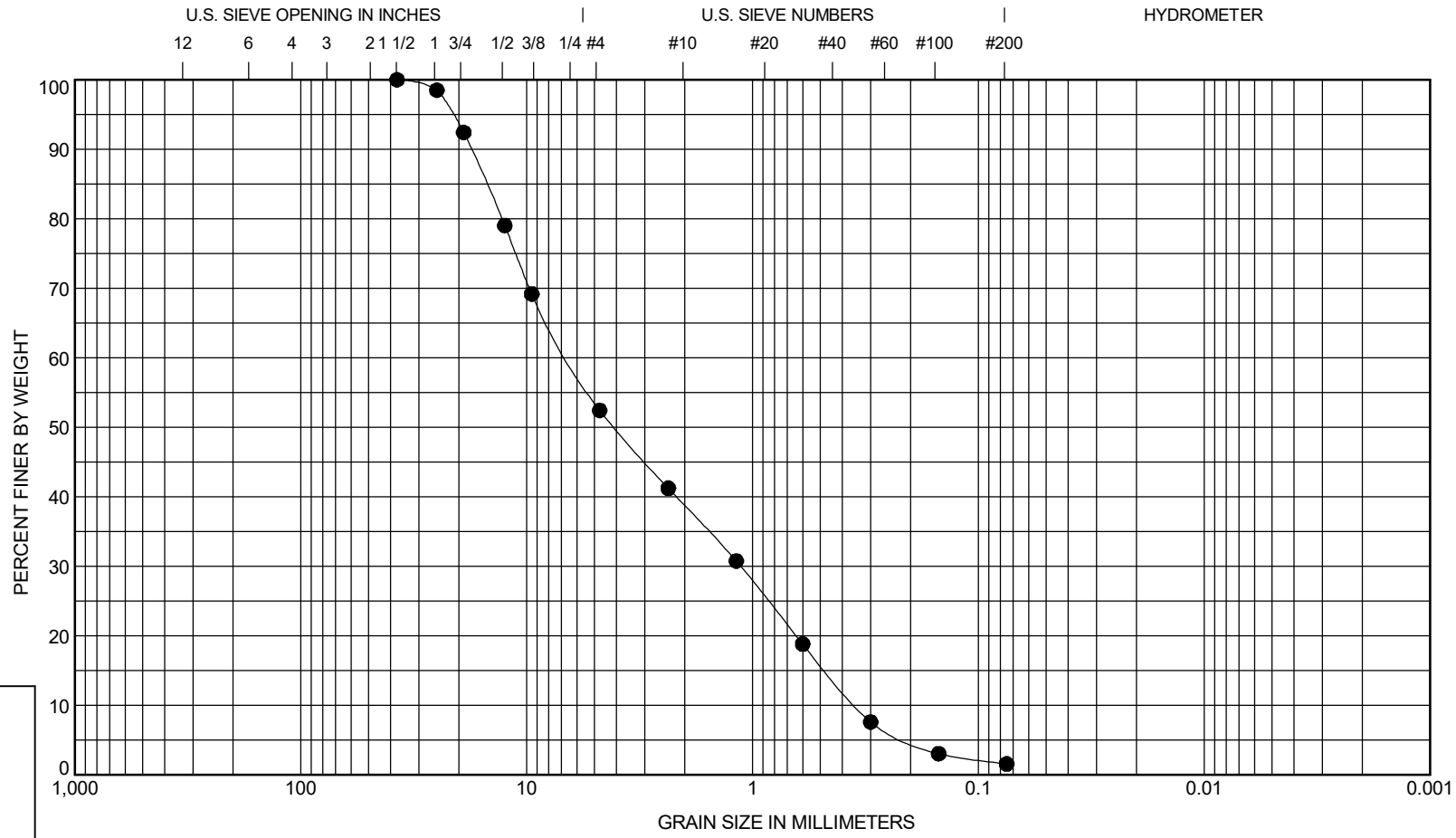
Municipal Test Well
Talkeetna, Alaska

SITE PLAN

November 2024 113591-001

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. 2



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Sample	Depth, Ft	USCS Classification	LL	PL	PI	Cc	Cu
● TW-1 S1	80.0 - 81.5	**Poorly graded, gravelly SAND**				**0.6**	**18.7**

Sample	Depth, Ft	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● TW-1 S1	80.0 - 81.5	**37.5**	**6.5**	**1.13**	**0.35**	**48**	**51**	**2**	

GRAIN SIZE CLASSIFICATION

Municipal Test Well
Talketna, Alaska

November 2024

113591-001

FIG. 3

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Appendix A

Analytical Results from Mat-Su Test Lab

APPENDIX A: ANALYTICAL RESULTS FROM MAT-SU TEST LAB

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Lynne Hill
Mat-Su Test Lab, LLC
9161 East Frontage Road
Palmer, Alaska 99645

Generated 8/29/2024 4:48:34 AM

JOB DESCRIPTION

DW Noncompliance-M240779 - Shannon + Wilson Test W

JOB NUMBER

810-117213-1

Eurofins Eaton Analytical South Bend
110 S Hill Street
South Bend IN 46617

See page two for job notes and contact information.

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Eaton Analytical, LLC Project Manager.

Authorization

Generated
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Authorized for release by
Traci Chlebowski, Senior Project Manager
Traci.Chlebowski@et.eurofinsus.com
(574)233-4777

Table of Contents

Cover Page 1
Table of Contents 3
Definitions/Glossary 4
Case Narrative 5
Detection Summary 6
Client Sample Results 7
QC Sample Results 8
QC Association Summary 10
Lab Chronicle 11
Certification Summary 12
Method Summary 13
Sample Summary 14
Chain of Custody 15
Receipt Checklists 17

Definitions/Glossary

Client: Mat-Su Test Lab, LLC
Job ID: 810-117213-1
Project/Site: DW Noncompliance-M240779 - Shannon + Wilson
Test W

Qualifiers

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 810-117213-1 Eurofins Eaton Analytical South Bend

Job Narrative
810-117213-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable.

- Matrix QC may not be reported if insufficient sample is provided or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The sample was received on 8/22/2024 8:00 AM. Unless otherwise noted below, the sample arrived in good condition, and, where required, properly preserved and on ice.

Metals
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Detection Summary

Client: Mat-Su Test Lab, LLC
Job ID: 810-117213-1
Project/Site: DW Noncompliance-M240779 - Shannon + Wilson
Test W

Client Sample ID: Shannon + Wilson Test Well 1
Lab Sample ID: 810-117213-1

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Iron	74		0.010		mg/L	1		200.7	Total Recoverable
Arsenic	34		1.0		ug/L	1		200.8	Total Recoverable
Manganese	2100		2.0		ug/L	1		200.8	Total Recoverable

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Mat-Su Test Lab, LLC
Job ID: 810-117213-1
Project/Site: DW Noncompliance-M240779 - Shannon + Wilson
Test W

Client Sample ID: Shannon + Wilson Test Well 1

Lab Sample ID: 810-117213-1

Date Collected: 08/16/24 12:55

Matrix: Drinking Water

Date Received: 08/22/24 08:00

Method: EPA 200.7 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Iron	74		0.010		mg/L		08/27/24 13:25	08/28/24 11:24	1

Method: EPA 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	34		1.0		ug/L		08/27/24 13:25	08/28/24 13:57	1
Manganese	2100		2.0		ug/L		08/27/24 13:25	08/28/24 13:57	1

QC Sample Results

Client: Mat-Su Test Lab, LLC
Job ID: 810-117213-1
Project/Site: DW Noncompliance-M240779 - Shannon + Wilson
Test W

Method: 200.7 - Metals (ICP)

Lab Sample ID: MB 810-112299/1-A
Matrix: Drinking Water
Analysis Batch: 112423
Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 112299

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Iron	<0.010		0.010		mg/L		08/27/24 13:25	08/28/24 11:09	1

Lab Sample ID: LCS 810-112299/4-A
Matrix: Drinking Water
Analysis Batch: 112423
Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 112299

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Iron			5.00	4.82		mg/L		96	85 - 115		

Lab Sample ID: LLCS 810-112299/2-A
Matrix: Drinking Water
Analysis Batch: 112423
Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 112299

Analyte			Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits		
Iron			0.0100	0.0119		mg/L		119	50 - 150		

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 810-112310/1-A
Matrix: Drinking Water
Analysis Batch: 112477
Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 112310

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<1.0		1.0		ug/L		08/27/24 13:25	08/28/24 13:40	1
Manganese	<2.0		2.0		ug/L		08/27/24 13:25	08/28/24 13:40	1

Lab Sample ID: LCS 810-112310/6-A
Matrix: Drinking Water
Analysis Batch: 112477
Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 112310

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Arsenic			50.0	49.1		ug/L		98	85 - 115		
Manganese			50.0	49.8		ug/L		100	85 - 115		

Lab Sample ID: LLCS 810-112310/2-A
Matrix: Drinking Water
Analysis Batch: 112477
Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 112310

Analyte			Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits		
Arsenic			0.300	<0.59		ug/L		82	50 - 150		
Manganese			0.300	<0.63		ug/L		102	50 - 150		

Lab Sample ID: LLCS 810-112310/3-A
Matrix: Drinking Water
Analysis Batch: 112477
Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 112310

Analyte			Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits		
Arsenic			1.00	1.11		ug/L		111	50 - 150		
Manganese			1.00	1.01	J	ug/L		101	50 - 150		

Client: Mat-Su Test Lab, LLC
Job ID: 810-117213-1
Project/Site: DW Noncompliance-M240779 - Shannon + Wilson
Test W

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: LLCS 810-112310/4-A
Matrix: Drinking Water
Analysis Batch: 112477

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 112310

Analyte			Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits		
Manganese			2.00	1.94	J	ug/L		97	50 - 150		

QC Association Summary

Client: Mat-Su Test Lab, LLC
Job ID: 810-117213-1
Project/Site: DW Noncompliance-M240779 - Shannon + Wilson
Test W

Metals

Prep Batch: 112299

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-117213-1	Shannon + Wilson Test Well 1	Total Recoverable	Drinking Water	200.2	
MB 810-112299/1-A	Method Blank	Total Recoverable	Drinking Water	200.2	
LCS 810-112299/4-A	Lab Control Sample	Total Recoverable	Drinking Water	200.2	
LLCS 810-112299/2-A	Lab Control Sample	Total Recoverable	Drinking Water	200.2	

Prep Batch: 112310

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-117213-1	Shannon + Wilson Test Well 1	Total Recoverable	Drinking Water	200.8	
MB 810-112310/1-A	Method Blank	Total Recoverable	Drinking Water	200.8	
LCS 810-112310/6-A	Lab Control Sample	Total Recoverable	Drinking Water	200.8	
LLCS 810-112310/2-A	Lab Control Sample	Total Recoverable	Drinking Water	200.8	
LLCS 810-112310/3-A	Lab Control Sample	Total Recoverable	Drinking Water	200.8	
LLCS 810-112310/4-A	Lab Control Sample	Total Recoverable	Drinking Water	200.8	

Analysis Batch: 112423

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-117213-1	Shannon + Wilson Test Well 1	Total Recoverable	Drinking Water	200.7	112299
MB 810-112299/1-A	Method Blank	Total Recoverable	Drinking Water	200.7	112299
LCS 810-112299/4-A	Lab Control Sample	Total Recoverable	Drinking Water	200.7	112299
LLCS 810-112299/2-A	Lab Control Sample	Total Recoverable	Drinking Water	200.7	112299

Analysis Batch: 112477

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-117213-1	Shannon + Wilson Test Well 1	Total Recoverable	Drinking Water	200.8	112310
MB 810-112310/1-A	Method Blank	Total Recoverable	Drinking Water	200.8	112310
LCS 810-112310/6-A	Lab Control Sample	Total Recoverable	Drinking Water	200.8	112310
LLCS 810-112310/2-A	Lab Control Sample	Total Recoverable	Drinking Water	200.8	112310
LLCS 810-112310/3-A	Lab Control Sample	Total Recoverable	Drinking Water	200.8	112310
LLCS 810-112310/4-A	Lab Control Sample	Total Recoverable	Drinking Water	200.8	112310

Lab Chronicle

Client: Mat-Su Test Lab, LLC
Job ID: 810-117213-1
Project/Site: DW Noncompliance-M240779 - Shannon + Wilson
Test W

Client Sample ID: Shannon + Wilson Test Well 1
Lab Sample ID: 810-117213-1
Date Collected: 08/16/24 12:55
Matrix: Drinking Water
Date Received: 08/22/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.2			112299	NB	EA SB	08/27/24 13:25
Total Recoverable	Analysis	200.7		1	112423	AC	EA SB	08/28/24 11:24
Total Recoverable	Prep	200.8			112310	NB	EA SB	08/27/24 13:25
Total Recoverable	Analysis	200.8		1	112477	NB	EA SB	08/28/24 13:57

Laboratory References:

EA SB = Eurofins Eaton Analytical South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Accreditation/Certification Summary

Client: Mat-Su Test Lab, LLC
Job ID: 810-117213-1
Project/Site: DW Noncompliance-M240779 - Shannon + Wilson
Test W

Laboratory: Eurofins Eaton Analytical South Bend

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska	State	IN00035	06-30-25

Method Summary

Client: Mat-Su Test Lab, LLC
Job ID: 810-117213-1
Project/Site: DW Noncompliance-M240779 - Shannon + Wilson
Test W

Method	Method Description	Protocol	Laboratory
200.7	Metals (ICP)	EPA	EA SB
200.8	Metals (ICP/MS)	EPA	EA SB
200.2	Preparation, Total Recoverable Metals	EPA	EA SB
200.8	Preparation, Total Recoverable Metals	EPA	EA SB

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

EA SB = Eurofins Eaton Analytical South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Sample Summary

Client: Mat-Su Test Lab, LLC
Job ID: 810-117213-1
Project/Site: DW Noncompliance-M240779 - Shannon + Wilson
Test W

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
810-117213-1	Shannon + Wilson Test Well 1	Drinking Water	08/16/24 12:55	08/22/24 08:00

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110 S. Hill Street
South Bend, IN 46617
T: 1.800.332.4345
F: 1.574.233.8207

810-117213 Chain of Custody

Order # JUL 0820

Batch # 2

www.EurofinsUS.com/Eaton

CHAIN OF CUSTODY RECORD

Shaded area for EEA use only

REPORT TO:	SAMPLER (Signature)	PWS ID #	STATE (sample origin)	PROJECT NAME	PO#
Lynne Hill		—	AK		

BILL TO:	COMPLIANCE MONITORING	Yes	No	POPULATION SERVED	SOURCE WATER
Mat-Su Test Lab			X		DW

	LAB Number	COLLECTION DATE	COLLECTION TIME	AM	PM	SAMPLING SITE	TEST NAME	SAMPLE REMARKS	CHLORINATED YES	CHLORINATED NO	# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME
1	M240779	8/16/24	12:55		Y	Shannon + Wilson Test Well #1	200.8 - As, Fe, Mn				1	DW	SW
2							Type text here						
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													

500 ml

14

RELINQUISHED BY:(Signature)	DATE	TIME	RECEIVED BY:(Signature)	DATE	TIME
	8/20/24	11 AM PM	Kameron Williams	8/22/24	0900 AM PM
RELINQUISHED BY:(Signature)	DATE	TIME	RECEIVED BY:(Signature)	DATE	TIME
		AM PM			AM PM
RELINQUISHED BY:(Signature)	DATE	TIME	RECEIVED FOR LABORATORY BY:	DATE	TIME
		AM PM			AM PM

LAB RESERVES THE RIGHT TO RETURN UNUSED PORTIONS OF NON-AQUEOUS SAMPLES TO CLIENT

LAB COMMENTS: pH verified <2

200.8 + KW 8/22/24
200.7

CONDITIONS UPON RECEIPT (check one):

— Iced: Wet/Blue — Ambient — °C Upon Receipt — N/A

MATRIX CODES:

DW-DRINKING WATER
RW-REAGENT WATER
GW-GROUND WATER
EW-EXPOSURE WATER
SW-SURFACE WATER
PW-POOL WATER
WW-WASTE WATER

TURN-AROUND TIME (TAT) - SURCHARGES

SW = Standard Written: (15 working days)	0%	IV* = Immediate Verbal: (3 working days)	100%
RV* = Rush Verbal: (5 working days)	50%	IW* =Immediate Written: (3 working days)	125%
RW* = Rush Written: (5 working days)	75%	SP* = Weekend, Holiday	CALL
		STAT* = Less than 48 hours	CALL

Samples received unannounced with less than 48 hours holding time remaining may be subject to additional charges.

* Please call, expedited service not available for all testing

Mat-Su Test Lab, LLC

Water Quality Testing

Mile 3.2 Palmer-Wasilla Highway
Midtown Community Business Park
Phone: (907) 745-3005

Email: matsutestlab.office@gmail.com

9131 East Frontage Road, Suite 15
Palmer, AK 99645
Fax: (907) 745-3010

Name: Shannon & Wilson Inc / Stafford

Mailing Address: 247 S. Alaska Street 99645

Phone#: 907 433 3214

Results/Invoice (Please choose at least one):

✓ Email: Stafford.Glasher@shanwil.com

___ Fax: _____

___ Hard Copy (To be mailed to address listed above)

PUBLIC WATER SYSTEM (PWS) ID#: _____

Information needed for DEC, from your monitoring summary

Facility ID: _____

Sample Pt. ID: _____

Circle One:

Routine Test / Repeat Test / Special Purpose

Analysis Requested: Fe, Mn, As EPA 200.8

Iron, Manganese, Arsenic

Legal Description: Talkeetna

Sample Site Location: Test well 1

(I.E. – mechanical room, kitchen sink, well house, bathroom sink)

Date Sampled: 8/16/24 Time Sampled: 1255 Sampled By: SS. Delivered By: SS

Received: AUG 19 2024 1048 By: JS Lab #: M240779

Temperature: _____ °C

Preserved: Yes or No

Cooling Media Present: Yes or No

COPY

Login Sample Receipt Checklist

Client: Mat-Su Test Lab, LLC

Job Number: 810-117213-1

Login Number: 117213

List Source: Eurofins Eaton Analytical South Bend

List Number: 1

Creator: Williams, Kameron

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
Samples were received on ice.	False	Thermal preservation not required.
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	False	Thermal preservation not required.
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Samples do not require splitting or compositing.	True	
Container provided by EEA	True	

Mat-Su Test Lab, LLC

Midtown Community Business Park
9131 East Frontage Road, Suite 15
Palmer, Alaska 99645
Phone: 745-3005 / Fax: 745-3010
Website: www.matsutestlab.com E-Mail: matsutestlab.office@gmail.com

Drinking Water Analysis Report

Total Coliform Bacteria (SM9223B by Colilert)

See Reverse Side For Instructions

Client: Shannon & Wilson Inc	
Mailing Address: 5430 Fairbanks St Ste 3 Anchorage 99518	
	PUBLIC WATER SYSTEM (PWS) ID#:
Phone#: 907 433 3214	
	Information needed for DEC, from your monitoring summary*
Results/Invoice (Please choose at least one):	Facility ID:
____ Fax:	Sample Pt. ID:
____ Email: Stafford	
____ Hard copy (To be mailed to address listed above)	Cl Residual (if applicable):

Legal Description of Property: Community Well Water System

Sample Site Location: 113591-001, Talkeetna test well (I.E.: bathroom sink, outside hose bib) Delivered by: SJG

Date Sampled: 10/10/24 Time Sampled: 1300 Sampled by: SG

Circle One: Standard Test / Rush Test **Circle One:** Routine Test / Repeat Test / Special Purpose

---

This Section to Be Completed by Lab

Analysis Results: **Lab ID #** ____ **M240990** ____

☒ Satisfactory
☐ Unsatisfactory
☐ Sample Rejected – Reason: _____

Part of Class A

Chromogenic/Fluorogenic Method Results: INCUBATOR # 2-2

A Total Coliform Present (P)/Absent (A) (Yellow / No Color)

A E. Coli Present (P)/Absent (A) (Fluorescence / No Fluorescence)

Received :	~~OCT 10 2024~~ ~~10 OCT 1130~~ JS	1503	**By:** JS
Started :	OCT 10 2024	1540	**By:** JS
Finished :	OCT 11 2024	1541	**By:** JS

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ANALYTICAL REPORT

PREPARED FOR

Attn: Lynne Hill
Mat-Su Test Lab, LLC
9161 East Frontage Road
Palmer, Alaska 99645

Generated 10/29/2024 9:18:26 AM

JOB DESCRIPTION

DW Compliance-M240990

JOB NUMBER

810-124353-1

Eurofins Eaton Analytical South Bend
110 S Hill Street
South Bend IN 46617

See page two for job notes and contact information.

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Eaton Analytical, LLC Project Manager.

Authorization

Generated
10/29/2024 9:18:26 AM

Authorized for release by
Traci Chlebowski, Senior Project Manager
Traci.Chlebowski@et.eurofinsus.com
(574)233-4777

Table of Contents

Cover Page 1
Table of Contents 3
Definitions/Glossary 4
Case Narrative 5
Detection Summary 6
Client Sample Results 7
Surrogate Summary 10
QC Sample Results 11
QC Association Summary 19
Lab Chronicle 22
Certification Summary 23
Method Summary 24
Sample Summary 25
Chain of Custody 26
Receipt Checklists 28

Definitions/Glossary

Client: Mat-Su Test Lab, LLC
Job ID: 810-124353-1
Project/Site: DW Compliance-M240990

Qualifiers

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time. This does not meet regulatory requirements.
H3	Sample was received and analyzed past holding time. This does not meet regulatory requirements.
HF	Parameter with a holding time of 15 minutes. Test performed by laboratory at client's request. Sample was analyzed outside of hold time.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 810-124353-1 — Eurofins Eaton Analytical South Bend

Job Narrative
810-124353-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable.

- Matrix QC may not be reported if insufficient sample is provided or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 10/15/2024 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 4.2°C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

HPLC/IC
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Metals
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

General Chemistry
Method SM2330B: The Langlier Index result for M240990-Talkeetna Test Well (810-124353-1) was calculated using Lab pH and Default Temperature of 20 Degrees Celsius.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Detection Summary

Client: Mat-Su Test Lab, LLC
Project/Site: DW Compliance-M240990

Job ID: 810-124353-1

Client Sample ID: M240990-Talkeetna Test Well — Lab Sample ID: 810-124353-1

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Chloride	10		2.0		mg/L	1		300.0	Total/NA
Sulfate	5.8		5.0		mg/L	1		300.0	Total/NA
Iron	0.013		0.010		mg/L	1		200.7	Total/NA
Calcium	23		0.10		mg/L	1		200.7	Total/NA
Sodium	5.0		0.10		mg/L	1		200.7	Total/NA
Magnesium	3.1		0.10		mg/L	1		200.7	Total/NA
Arsenic	1.2		1.0		ug/L	1		200.8	Total/NA
Barium	9.1		2.0		ug/L	1		200.8	Total/NA
Manganese	9.8		2.0		ug/L	1		200.8	Total/NA
Zinc	9.0		5.0		ug/L	1		200.8	Total/NA
Total hardness as CaCO3	71		0.66		mg/L	1		SM 2340B	Total/NA
pH	7.5	HF	0.1		SU	1		150.1	Total/NA
Alkalinity, Total	60		1.0		mg/L	1		SM 2320B	Total/NA
Langelier Index	-0.71				LangSU	1		SM 2330B	Total/NA
Total Dissolved Solids	110		10		mg/L	1		SM 2540C	Total/NA
Temperature	20	H H3			Degrees C	1		SM 2550B	Total/NA
Fluoride	0.070		0.050		mg/L	1		SM 4500 F C	Total/NA

Client Sample ID: LTB - 8/10/24 — Lab Sample ID: 810-124353-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: Mat-Su Test Lab, LLC
Project/Site: DW Compliance-M240990

Job ID: 810-124353-1

Client Sample ID: M240990-Talkeetna Test Well
Date Collected: 10/10/24 13:00
Date Received: 10/15/24 10:00

Lab Sample ID: 810-124353-1
Matrix: Drinking Water

Method: EPA-DW 524.2 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	<0.50		0.50		ug/L			10/17/24 15:48	1
1,1,2-Trichloroethane	<0.50		0.50		ug/L			10/17/24 15:48	1
1,1-Dichloroethene	<0.50		0.50		ug/L			10/17/24 15:48	1
1,2,4-Trichlorobenzene	<0.50		0.50		ug/L			10/17/24 15:48	1
1,2-Dichlorobenzene	<0.50		0.50		ug/L			10/17/24 15:48	1
1,2-Dichloroethane	<0.50		0.50		ug/L			10/17/24 15:48	1
1,2-Dichloropropane	<0.25		0.25		ug/L			10/17/24 15:48	1
1,4-Dichlorobenzene	<0.50		0.50		ug/L			10/17/24 15:48	1
Benzene	<0.50		0.50		ug/L			10/17/24 15:48	1
Carbon tetrachloride	<0.50		0.50		ug/L			10/17/24 15:48	1
Chlorobenzene	<0.50		0.50		ug/L			10/17/24 15:48	1
cis-1,2-Dichloroethylene	<0.50		0.50		ug/L			10/17/24 15:48	1
Dichloromethane	<0.50		0.50		ug/L			10/17/24 15:48	1
Ethylbenzene	<0.50		0.50		ug/L			10/17/24 15:48	1
m-Xylene & p-Xylene	<0.50		0.50		ug/L			10/17/24 15:48	1
o-Xylene	<0.50		0.50		ug/L			10/17/24 15:48	1
Styrene	<0.50		0.50		ug/L			10/17/24 15:48	1
Tetrachloroethene	<0.50		0.50		ug/L			10/17/24 15:48	1
Toluene	<0.50		0.50		ug/L			10/17/24 15:48	1
trans-1,2-Dichloroethylene	<0.50		0.50		ug/L			10/17/24 15:48	1
Trichloroethylene	<0.50		0.50		ug/L			10/17/24 15:48	1
Vinyl chloride	<0.20		0.20		ug/L			10/17/24 15:48	1
Xylenes, Total	<0.50		0.50		ug/L			10/17/24 15:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichlorobenzene-d4 (Surr)	*88*		*70 - 130*		*10/17/24 15:48*	*1*
1,2-Dichloroethane-d4 (Surr)	*106*		*70 - 130*		*10/17/24 15:48*	*1*
4-Bromofluorobenzene (Surr)	*87*		*70 - 130*		*10/17/24 15:48*	*1*
Toluene-d8 (Surr)	*98*		*70 - 130*		*10/17/24 15:48*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**10**		2.0		mg/L			10/16/24 00:35	1
Sulfate	**5.8**		5.0		mg/L			10/16/24 00:35	1

Method: EPA 200.7 - Metals (ICP)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Iron	**0.013**		0.010		mg/L			10/16/24 11:51	1
Calcium	**23**		0.10		mg/L			10/16/24 11:51	1
Sodium	**5.0**		0.10		mg/L			10/16/24 11:51	1
Magnesium	**3.1**		0.10		mg/L			10/16/24 11:51	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<20		20		ug/L			10/17/24 09:37	1
Antimony	<1.0		1.0		ug/L			10/16/24 18:20	1
Arsenic	**1.2**		1.0		ug/L			10/16/24 18:20	1
Barium	**9.1**		2.0		ug/L			10/16/24 18:20	1
Beryllium	<0.30		0.30		ug/L			10/16/24 18:20	1
Cadmium	<0.50		0.50		ug/L			10/16/24 18:20	1

Client Sample ID: M240990-Talkeetna Test Well

Lab Sample ID: 810-124353-1

Date Collected: 10/10/24 13:00

Matrix: Drinking Water

Date Received: 10/15/24 10:00

Method: EPA 200.8 - Metals (ICP/MS) (Continued)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	<0.90		0.90		ug/L			10/16/24 18:20	1
Copper	<2.0		2.0		ug/L			10/16/24 18:20	1
Manganese	**9.8**		2.0		ug/L			10/16/24 18:20	1
Selenium	<2.0		2.0		ug/L			10/16/24 18:20	1
Silver	<0.50		0.50		ug/L			10/16/24 18:20	1
Thallium	<0.30		0.30		ug/L			10/16/24 18:20	1
Zinc	**9.0**		5.0		ug/L			10/16/24 18:20	1
Nickel	<5.0		5.0		ug/L			10/16/24 18:20	1

Method: EPA 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.20		0.20		ug/L		10/18/24 12:47	10/18/24 18:42	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total hardness as CaCO3	**71**		0.66		mg/L			10/16/24 11:13	1

General Chemistry

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
pH (EPA 150.1)	**7.5**	**HF**	0.1		SU			10/22/24 13:15	1
Cyanide, Total (EPA 335.4)	<0.0050		0.0050		mg/L		10/17/24 08:19	10/17/24 10:54	1
Alkalinity, Total (SM 2320B)	**60**		1.0		mg/L			10/16/24 13:16	1
Langelier Index (SM 2330B)	**-0.71**				LangSU			10/23/24 09:35	1
Total Dissolved Solids (SM 2540C)	**110**		10		mg/L			10/15/24 17:00	1
Temperature (SM 2550B)	**20**	**H H3**			Degrees C			10/21/24 08:52	1
Fluoride (SM 4500 F C)	**0.070**		0.050		mg/L			10/18/24 08:23	1

Client Sample ID: LTB - 8/10/24

Lab Sample ID: 810-124353-2

Date Collected: 10/10/24 00:00

Matrix: Drinking Water

Date Received: 10/15/24 10:00

Method: EPA-DW 524.2 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	<0.50		0.50		ug/L			10/17/24 16:12	1
1,1,2-Trichloroethane	<0.50		0.50		ug/L			10/17/24 16:12	1
1,1-Dichloroethylene	<0.50		0.50		ug/L			10/17/24 16:12	1
1,2,4-Trichlorobenzene	<0.50		0.50		ug/L			10/17/24 16:12	1
1,2-Dichlorobenzene	<0.50		0.50		ug/L			10/17/24 16:12	1
1,2-Dichloroethane	<0.50		0.50		ug/L			10/17/24 16:12	1
1,2-Dichloropropane	<0.25		0.25		ug/L			10/17/24 16:12	1
1,4-Dichlorobenzene	<0.50		0.50		ug/L			10/17/24 16:12	1
Benzene	<0.50		0.50		ug/L			10/17/24 16:12	1
Carbon tetrachloride	<0.50		0.50		ug/L			10/17/24 16:12	1
Chlorobenzene	<0.50		0.50		ug/L			10/17/24 16:12	1
cis-1,2-Dichloroethylene	<0.50		0.50		ug/L			10/17/24 16:12	1
Dichloromethane	<0.50		0.50		ug/L			10/17/24 16:12	1
Ethylbenzene	<0.50		0.50		ug/L			10/17/24 16:12	1
m-Xylene & p-Xylene	<0.50		0.50		ug/L			10/17/24 16:12	1
o-Xylene	<0.50		0.50		ug/L			10/17/24 16:12	1
Styrene	<0.50		0.50		ug/L			10/17/24 16:12	1
Tetrachloroethylene	<0.50		0.50		ug/L			10/17/24 16:12	1

Client: Mat-Su Test Lab, LLC
Project/Site: DW Compliance-M240990

Job ID: 810-124353-1

Client Sample ID: LTB - 8/10/24
Date Collected: 10/10/24 00:00
Date Received: 10/15/24 10:00

Lab Sample ID: 810-124353-2
Matrix: Drinking Water

Method: EPA-DW 524.2 - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Toluene	<0.50		0.50		ug/L			10/17/24 16:12	1
trans-1,2-Dichloroethylene	<0.50		0.50		ug/L			10/17/24 16:12	1
Trichloroethylene	<0.50		0.50		ug/L			10/17/24 16:12	1
Vinyl chloride	<0.20		0.20		ug/L			10/17/24 16:12	1
Xylenes, Total	<0.50		0.50		ug/L			10/17/24 16:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichlorobenzene-d4 (Surr)	*88*		*70 - 130*		*10/17/24 16:12*	*1*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 130*		*10/17/24 16:12*	*1*
4-Bromofluorobenzene (Surr)	*90*		*70 - 130*		*10/17/24 16:12*	*1*
Toluene-d8 (Surr)	*99*		*70 - 130*		*10/17/24 16:12*	*1*

Surrogate Summary

Client: Mat-Su Test Lab, LLC
Project/Site: DW Compliance-M240990

Job ID: 810-124353-1

Method: 524.2 - Volatile Organic Compounds (GC/MS)

Matrix: Drinking Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCZ	DCA	BFB	TOL
Lab Sample ID	Client Sample ID	(70-130)	(70-130)	(70-130)	(70-130)
810-124353-1	M240990-Talkeetna Test Well	88	106	87	98
810-124353-2	LTB - 8/10/24	88	102	90	99
MB 810-119255/5	Method Blank	99	106	99	102

Surrogate Legend

DCZ = 1,2-Dichlorobenzene-d4 (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)

Method: 524.2 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 810-119255/5
Matrix: Drinking Water
Analysis Batch: 119255

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	<0.50		0.50		ug/L			10/17/24 09:00	1
1,1,2-Trichloroethane	<0.50		0.50		ug/L			10/17/24 09:00	1
1,1-Dichloroethene	<0.50		0.50		ug/L			10/17/24 09:00	1
1,1-Dichloroethylene	<0.50		0.50		ug/L			10/17/24 09:00	1
1,2,4-Trichlorobenzene	<0.50		0.50		ug/L			10/17/24 09:00	1
1,2-Dichlorobenzene	<0.50		0.50		ug/L			10/17/24 09:00	1
1,2-Dichloroethane	<0.50		0.50		ug/L			10/17/24 09:00	1
1,2-Dichloropropane	<0.25		0.25		ug/L			10/17/24 09:00	1
1,4-Dichlorobenzene	<0.50		0.50		ug/L			10/17/24 09:00	1
Benzene	<0.50		0.50		ug/L			10/17/24 09:00	1
Carbon tetrachloride	<0.50		0.50		ug/L			10/17/24 09:00	1
Chlorobenzene	<0.50		0.50		ug/L			10/17/24 09:00	1
cis-1,2-Dichloroethylene	<0.50		0.50		ug/L			10/17/24 09:00	1
Dichloromethane	<0.50		0.50		ug/L			10/17/24 09:00	1
Ethylbenzene	<0.50		0.50		ug/L			10/17/24 09:00	1
m-Xylene & p-Xylene	<0.50		0.50		ug/L			10/17/24 09:00	1
o-Xylene	<0.50		0.50		ug/L			10/17/24 09:00	1
Styrene	<0.50		0.50		ug/L			10/17/24 09:00	1
Tetrachloroethene	<0.50		0.50		ug/L			10/17/24 09:00	1
Tetrachloroethylene	<0.50		0.50		ug/L			10/17/24 09:00	1
Toluene	<0.50		0.50		ug/L			10/17/24 09:00	1
trans-1,2-Dichloroethylene	<0.50		0.50		ug/L			10/17/24 09:00	1
Trichloroethylene	<0.50		0.50		ug/L			10/17/24 09:00	1
Vinyl chloride	<0.20		0.20		ug/L			10/17/24 09:00	1
Xylenes, Total	<0.50		0.50		ug/L			10/17/24 09:00	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichlorobenzene-d4 (Surr)	*99*		*70 - 130*		*10/17/24 09:00*	*1*
1,2-Dichloroethane-d4 (Surr)	*106*		*70 - 130*		*10/17/24 09:00*	*1*
4-Bromofluorobenzene (Surr)	*99*		*70 - 130*		*10/17/24 09:00*	*1*
Toluene-d8 (Surr)	*102*		*70 - 130*		*10/17/24 09:00*	*1*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 810-119131/4
Matrix: Drinking Water
Analysis Batch: 119131

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<2.0		2.0		mg/L			10/15/24 18:32	1
Sulfate	<5.0		5.0		mg/L			10/15/24 18:32	1

Lab Sample ID: LCS 810-119131/5
Matrix: Drinking Water
Analysis Batch: 119131

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			10.0	10.3		mg/L		103	90 - 110		
Sulfate			25.0	25.4		mg/L		102	90 - 110		

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: LLCS 810-119131/3
Matrix: Drinking Water
Analysis Batch: 119131

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	2.00	2.10		mg/L		105	50 - 150
Sulfate	5.00	5.17		mg/L		103	50 - 150

Method: 200.7 - Metals (ICP)

Lab Sample ID: MBL 810-119150/12
Matrix: Drinking Water
Analysis Batch: 119150

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MBL Result	MBL Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Iron	<0.0095		0.010		mg/L			10/16/24 11:25	1
Calcium	<0.034		0.10		mg/L			10/16/24 11:25	1
Sodium	<0.035		0.10		mg/L			10/16/24 11:25	1
Magnesium	<0.037		0.10		mg/L			10/16/24 11:25	1

Lab Sample ID: LCS 810-119150/15
Matrix: Drinking Water
Analysis Batch: 119150

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Iron	5.00	4.90		mg/L		98	85 - 115
Calcium	5.00	4.91		mg/L		98	85 - 115
Sodium	5.00	4.85		mg/L		97	85 - 115
Magnesium	5.00	4.95		mg/L		99	85 - 115

Lab Sample ID: LLCS 810-119150/11
Matrix: Drinking Water
Analysis Batch: 119150

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Iron	0.0100	0.00980	J	mg/L		98	50 - 150
Calcium	0.0100	<0.034		mg/L		120	50 - 150
Sodium	0.0100	<0.035		mg/L		104	50 - 150
Magnesium	0.0100	<0.037		mg/L		97	50 - 150

Lab Sample ID: LLCS 810-119150/13
Matrix: Drinking Water
Analysis Batch: 119150

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	0.100	0.0884	J	mg/L		88	50 - 150
Sodium	0.100	0.0970	J	mg/L		97	50 - 150
Magnesium	0.100	0.0982	J	mg/L		98	50 - 150

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MBL 810-119232/14
Matrix: Drinking Water
Analysis Batch: 119232

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MBL Result	MBL Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<1.7		20		ug/L			10/16/24 17:27	1
Antimony	<0.079		1.0		ug/L			10/16/24 17:27	1
Arsenic	<0.59		1.0		ug/L			10/16/24 17:27	1
Barium	<0.21		2.0		ug/L			10/16/24 17:27	1
Beryllium	<0.075		0.30		ug/L			10/16/24 17:27	1
Cadmium	<0.16		0.50		ug/L			10/16/24 17:27	1
Chromium	<0.29		0.90		ug/L			10/16/24 17:27	1
Copper	<0.33		2.0		ug/L			10/16/24 17:27	1
Manganese	<0.63		2.0		ug/L			10/16/24 17:27	1
Selenium	<1.4		2.0		ug/L			10/16/24 17:27	1
Silver	<0.34		0.50		ug/L			10/16/24 17:27	1
Thallium	<0.053		0.30		ug/L			10/16/24 17:27	1
Zinc	<2.3		5.0		ug/L			10/16/24 17:27	1
Nickel	<0.77		5.0		ug/L			10/16/24 17:27	1

Lab Sample ID: LCS 810-119232/15
Matrix: Drinking Water
Analysis Batch: 119232

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Aluminum			50.0	48.3		ug/L		97	85 - 115		
Antimony			50.0	49.2		ug/L		98	85 - 115		
Arsenic			50.0	48.8		ug/L		98	85 - 115		
Barium			50.0	49.7		ug/L		99	85 - 115		
Beryllium			50.0	49.1		ug/L		98	85 - 115		
Cadmium			50.0	48.9		ug/L		98	85 - 115		
Chromium			50.0	49.8		ug/L		100	85 - 115		
Copper			50.0	48.9		ug/L		98	85 - 115		
Manganese			50.0	49.5		ug/L		99	85 - 115		
Selenium			50.0	48.8		ug/L		98	85 - 115		
Silver			50.0	48.7		ug/L		97	85 - 115		
Thallium			50.0	50.3		ug/L		101	85 - 115		
Zinc			50.0	48.7		ug/L		97	85 - 115		
Nickel			50.0	49.7		ug/L		99	85 - 115		

Lab Sample ID: LLCS 810-119232/11
Matrix: Drinking Water
Analysis Batch: 119232

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits		
Antimony			0.300	0.329	J	ug/L		110	50 - 150		
Arsenic			0.300	<0.59		ug/L		85	50 - 150		
Barium			0.300	0.285	J	ug/L		95	50 - 150		
Beryllium			0.300	0.329		ug/L		110	50 - 150		
Cadmium			0.300	0.307	J	ug/L		102	50 - 150		
Chromium			0.300	0.293	J	ug/L		98	50 - 150		
Copper			0.300	<0.33		ug/L		81	50 - 150		
Manganese			0.300	<0.63		ug/L		86	50 - 150		
Selenium			0.300	<1.4		ug/L		98	50 - 150		

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: LLCS 810-119232/11
Matrix: Drinking Water
Analysis Batch: 119232

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Silver	0.300	<0.34		ug/L		85	50 - 150
Thallium	0.300	0.290	J	ug/L		97	50 - 150
Nickel	0.300	<0.77		ug/L		96	50 - 150

Lab Sample ID: LLCS 810-119232/12
Matrix: Drinking Water
Analysis Batch: 119232

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	1.00	0.993	J	ug/L		99	50 - 150
Arsenic	1.00	0.946	J	ug/L		95	50 - 150
Barium	1.00	0.970	J	ug/L		97	50 - 150
Copper	1.00	0.844	J	ug/L		84	50 - 150
Manganese	1.00	0.909	J	ug/L		91	50 - 150
Selenium	1.00	<1.4		ug/L		97	50 - 150
Zinc	1.00	<2.3		ug/L		70	50 - 150
Nickel	1.00	0.866	J	ug/L		87	50 - 150

Lab Sample ID: LLCS 810-119232/13
Matrix: Drinking Water
Analysis Batch: 119232

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Aluminum	5.00	3.33	J	ug/L		67	50 - 150
Zinc	5.00	4.76	J	ug/L		95	50 - 150
Nickel	5.00	4.76	J	ug/L		95	50 - 150

Lab Sample ID: 810-124353-1 MS
Matrix: Drinking Water
Analysis Batch: 119232

Client Sample ID: M240990-Talkeetna Test Well
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	<1.0		50.0	51.7		ug/L		103	70 - 130
Arsenic	1.2		50.0	52.9		ug/L		103	70 - 130
Barium	9.1		50.0	61.2		ug/L		104	70 - 130
Beryllium	<0.30		50.0	52.8		ug/L		106	70 - 130
Cadmium	<0.50		50.0	52.8		ug/L		106	70 - 130
Chromium	<0.90		50.0	52.8		ug/L		105	70 - 130
Copper	<2.0		50.0	51.9		ug/L		102	70 - 130
Manganese	9.8		50.0	62.2		ug/L		105	70 - 130
Selenium	<2.0		50.0	52.7		ug/L		105	70 - 130
Silver	<0.50		50.0	52.7		ug/L		105	70 - 130
Thallium	<0.30		50.0	53.7		ug/L		107	70 - 130
Zinc	9.0		50.0	62.7		ug/L		107	70 - 130
Nickel	<5.0		50.0	51.5		ug/L		103	70 - 130

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: 810-124353-1 MSD
Matrix: Drinking Water
Analysis Batch: 119232

Client Sample ID: M240990-Talkeetna Test Well
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Antimony	<1.0		50.0	52.4		ug/L		105	70 - 130	1	20
Arsenic	1.2		50.0	53.0		ug/L		104	70 - 130	0	20
Barium	9.1		50.0	61.8		ug/L		105	70 - 130	1	20
Beryllium	<0.30		50.0	53.2		ug/L		106	70 - 130	1	20
Cadmium	<0.50		50.0	52.9		ug/L		106	70 - 130	0	20
Chromium	<0.90		50.0	53.2		ug/L		105	70 - 130	1	20
Copper	<2.0		50.0	52.0		ug/L		103	70 - 130	0	20
Manganese	9.8		50.0	62.6		ug/L		106	70 - 130	1	20
Selenium	<2.0		50.0	52.5		ug/L		105	70 - 130	0	20
Silver	<0.50		50.0	53.1		ug/L		106	70 - 130	1	20
Thallium	<0.30		50.0	55.2		ug/L		110	70 - 130	3	20
Zinc	9.0		50.0	63.1		ug/L		108	70 - 130	1	20
Nickel	<5.0		50.0	51.9		ug/L		104	70 - 130	1	20

Lab Sample ID: MBL 810-119292/12
Matrix: Drinking Water
Analysis Batch: 119292

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MBL Result	MBL Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<1.7		20		ug/L			10/17/24 09:12	1
Arsenic	<0.59		1.0		ug/L			10/17/24 09:12	1
Selenium	<1.4		2.0		ug/L			10/17/24 09:12	1
Thallium	<0.053		0.30		ug/L			10/17/24 09:12	1

Lab Sample ID: LCS 810-119292/13
Matrix: Drinking Water
Analysis Batch: 119292

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Aluminum			50.0	48.3		ug/L		97	85 - 115		
Arsenic			50.0	48.3		ug/L		97	85 - 115		
Selenium			50.0	48.5		ug/L		97	85 - 115		
Thallium			50.0	49.4		ug/L		99	85 - 115		

Lab Sample ID: LLCS 810-119292/11
Matrix: Drinking Water
Analysis Batch: 119292

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits		
Aluminum			0.300	<1.7		ug/L		149	50 - 150		
Arsenic			0.300	<0.59		ug/L		112	50 - 150		
Selenium			0.300	<1.4		ug/L		89	50 - 150		
Thallium			0.300	0.297	J	ug/L		99	50 - 150		

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: 810-124353-1 MS
Matrix: Drinking Water
Analysis Batch: 119292

Client Sample ID: M240990-Talkeetna Test Well
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Aluminum	<20		50.0	51.2		ug/L		97	70 - 130
Arsenic	1.3		50.0	51.9		ug/L		101	70 - 130
Selenium	<2.0		50.0	51.7		ug/L		103	70 - 130
Thallium	<0.30		50.0	53.4		ug/L		107	70 - 130

Lab Sample ID: 810-124353-1 MSD
Matrix: Drinking Water
Analysis Batch: 119292

Client Sample ID: M240990-Talkeetna Test Well
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Aluminum	<20		50.0	51.7		ug/L		98	70 - 130	1	20
Arsenic	1.3		50.0	52.2		ug/L		102	70 - 130	1	20
Selenium	<2.0		50.0	51.6		ug/L		103	70 - 130	0	20
Thallium	<0.30		50.0	53.9		ug/L		108	70 - 130	1	20

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 810-119515/1-A
Matrix: Drinking Water
Analysis Batch: 119664

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 119515

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.20		0.20		ug/L		10/18/24 12:47	10/18/24 17:48	1

Lab Sample ID: LCS 810-119515/3-A
Matrix: Drinking Water
Analysis Batch: 119664

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 119515

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury			1.00	1.08		ug/L		108	85 - 115

Lab Sample ID: LLCS 810-119515/2-A
Matrix: Drinking Water
Analysis Batch: 119664

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 119515

Analyte			Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury			0.100	0.126	J	ug/L		126	50 - 150

Method: 150.1 - pH (Electrometric)

Lab Sample ID: LCSSRM 810-119869/4
Matrix: Drinking Water
Analysis Batch: 119869

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCSSRM Result	LCSSRM Qualifier	Unit	D	%Rec	%Rec Limits
pH			9.00	9.0		SU		100.2	98.9 - 101.1

Method: 150.1 - pH (Electrometric) (Continued)

Lab Sample ID: LCSSRM 810-119869/9
Matrix: Drinking Water
Analysis Batch: 119869

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCSSRM Result	LCSSRM Qualifier	Unit	D	%Rec	%Rec Limits
pH	9.00	9.0		SU		100.4	98.9 - 101.1

Method: 335.4 - Cyanide, Total

Lab Sample ID: MBL 810-119257/5-A
Matrix: Drinking Water
Analysis Batch: 119308

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 119257

Analyte	MBL Result	MBL Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	<0.0016		0.0050	mg/L		10/17/24 07:47	10/17/24 10:48	1

Lab Sample ID: LCS 810-119257/2-A
Matrix: Drinking Water
Analysis Batch: 119308

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 119257

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Cyanide, Total	0.100	0.104		mg/L		104	90 - 110

Lab Sample ID: LLCS 810-119257/3-A
Matrix: Drinking Water
Analysis Batch: 119308

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 119257

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Cyanide, Total	0.00500	0.00450	J	mg/L		90	50 - 150

Method: SM 2320B - Alkalinity

Lab Sample ID: MBL 810-119213/7
Matrix: Drinking Water
Analysis Batch: 119213

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MBL Result	MBL Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity, Total	<1.0		1.0	mg/L			10/16/24 10:49	1

Lab Sample ID: LCS 810-119213/5
Matrix: Drinking Water
Analysis Batch: 119213

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Alkalinity, Total	100	92.0		mg/L		92	78 - 114

Lab Sample ID: LLCS 810-119213/6
Matrix: Drinking Water
Analysis Batch: 119213

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Alkalinity, Total	1.00	1.28		mg/L		128	50 - 150

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MBL 810-119011/1
Matrix: Drinking Water
Analysis Batch: 119011

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MBL Result	MBL Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<10		10		mg/L			10/15/24 16:27	1

Lab Sample ID: LCS 810-119011/2
Matrix: Drinking Water
Analysis Batch: 119011

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Total Dissolved Solids			1000	1030		mg/L		103	85 - 115		

Method: SM 4500 F C - Fluoride

Lab Sample ID: MBL 810-119466/6
Matrix: Drinking Water
Analysis Batch: 119466

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MBL Result	MBL Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	<0.020		0.050		mg/L			10/18/24 08:08	1

Lab Sample ID: LCS 810-119466/4
Matrix: Drinking Water
Analysis Batch: 119466

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Fluoride			2.00	2.09		mg/L		105	90 - 110		

Lab Sample ID: LLCS 810-119466/5
Matrix: Drinking Water
Analysis Batch: 119466

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits		
Fluoride			0.0500	0.0600		mg/L		120	50 - 150		

QC Association Summary

Client: Mat-Su Test Lab, LLC
Project/Site: DW Compliance-M240990

Job ID: 810-124353-1

GC/MS VOA

Analysis Batch: 119255

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-124353-1	M240990-Talkeetna Test Well	Total/NA	Drinking Water	524.2	
810-124353-2	LTB - 8/10/24	Total/NA	Drinking Water	524.2	
MB 810-119255/5	Method Blank	Total/NA	Drinking Water	524.2	

HPLC/IC

Analysis Batch: 119131

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-124353-1	M240990-Talkeetna Test Well	Total/NA	Drinking Water	300.0	
MB 810-119131/4	Method Blank	Total/NA	Drinking Water	300.0	
LCS 810-119131/5	Lab Control Sample	Total/NA	Drinking Water	300.0	
LLCS 810-119131/3	Lab Control Sample	Total/NA	Drinking Water	300.0	

Metals

Analysis Batch: 119122

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-124353-1	M240990-Talkeetna Test Well	Total/NA	Drinking Water	SM 2340B	

Analysis Batch: 119150

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-124353-1	M240990-Talkeetna Test Well	Total/NA	Drinking Water	200.7	
MBL 810-119150/12	Method Blank	Total/NA	Drinking Water	200.7	
LCS 810-119150/15	Lab Control Sample	Total/NA	Drinking Water	200.7	
LLCS 810-119150/11	Lab Control Sample	Total/NA	Drinking Water	200.7	
LLCS 810-119150/13	Lab Control Sample	Total/NA	Drinking Water	200.7	

Analysis Batch: 119232

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-124353-1	M240990-Talkeetna Test Well	Total/NA	Drinking Water	200.8	
MBL 810-119232/14	Method Blank	Total/NA	Drinking Water	200.8	
LCS 810-119232/15	Lab Control Sample	Total/NA	Drinking Water	200.8	
LLCS 810-119232/11	Lab Control Sample	Total/NA	Drinking Water	200.8	
LLCS 810-119232/12	Lab Control Sample	Total/NA	Drinking Water	200.8	
LLCS 810-119232/13	Lab Control Sample	Total/NA	Drinking Water	200.8	
810-124353-1 MS	M240990-Talkeetna Test Well	Total/NA	Drinking Water	200.8	
810-124353-1 MSD	M240990-Talkeetna Test Well	Total/NA	Drinking Water	200.8	

Analysis Batch: 119292

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-124353-1	M240990-Talkeetna Test Well	Total/NA	Drinking Water	200.8	
MBL 810-119292/12	Method Blank	Total/NA	Drinking Water	200.8	
LCS 810-119292/13	Lab Control Sample	Total/NA	Drinking Water	200.8	
LLCS 810-119292/11	Lab Control Sample	Total/NA	Drinking Water	200.8	
810-124353-1 MS	M240990-Talkeetna Test Well	Total/NA	Drinking Water	200.8	
810-124353-1 MSD	M240990-Talkeetna Test Well	Total/NA	Drinking Water	200.8	

Prep Batch: 119515

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-124353-1	M240990-Talkeetna Test Well	Total/NA	Drinking Water	245.1	
MB 810-119515/1-A	Method Blank	Total/NA	Drinking Water	245.1	
LCS 810-119515/3-A	Lab Control Sample	Total/NA	Drinking Water	245.1	

Metals (Continued)

Prep Batch: 119515 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LLCS 810-119515/2-A	Lab Control Sample	Total/NA	Drinking Water	245.1	

Analysis Batch: 119664

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-124353-1	M240990-Talkeetna Test Well	Total/NA	Drinking Water	245.1	119515
MB 810-119515/1-A	Method Blank	Total/NA	Drinking Water	245.1	119515
LCS 810-119515/3-A	Lab Control Sample	Total/NA	Drinking Water	245.1	119515
LLCS 810-119515/2-A	Lab Control Sample	Total/NA	Drinking Water	245.1	119515

General Chemistry

Analysis Batch: 119011

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-124353-1	M240990-Talkeetna Test Well	Total/NA	Drinking Water	SM 2540C	
MBL 810-119011/1	Method Blank	Total/NA	Drinking Water	SM 2540C	
LCS 810-119011/2	Lab Control Sample	Total/NA	Drinking Water	SM 2540C	

Analysis Batch: 119213

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-124353-1	M240990-Talkeetna Test Well	Total/NA	Drinking Water	SM 2320B	
MBL 810-119213/7	Method Blank	Total/NA	Drinking Water	SM 2320B	
LCS 810-119213/5	Lab Control Sample	Total/NA	Drinking Water	SM 2320B	
LLCS 810-119213/6	Lab Control Sample	Total/NA	Drinking Water	SM 2320B	

Prep Batch: 119257

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-124353-1	M240990-Talkeetna Test Well	Total/NA	Drinking Water	Distill/CN	
MBL 810-119257/5-A	Method Blank	Total/NA	Drinking Water	Distill/CN	
LCS 810-119257/2-A	Lab Control Sample	Total/NA	Drinking Water	Distill/CN	
LLCS 810-119257/3-A	Lab Control Sample	Total/NA	Drinking Water	Distill/CN	

Analysis Batch: 119308

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-124353-1	M240990-Talkeetna Test Well	Total/NA	Drinking Water	335.4	119257
MBL 810-119257/5-A	Method Blank	Total/NA	Drinking Water	335.4	119257
LCS 810-119257/2-A	Lab Control Sample	Total/NA	Drinking Water	335.4	119257
LLCS 810-119257/3-A	Lab Control Sample	Total/NA	Drinking Water	335.4	119257

Analysis Batch: 119466

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-124353-1	M240990-Talkeetna Test Well	Total/NA	Drinking Water	SM 4500 F C	
MBL 810-119466/6	Method Blank	Total/NA	Drinking Water	SM 4500 F C	
LCS 810-119466/4	Lab Control Sample	Total/NA	Drinking Water	SM 4500 F C	
LLCS 810-119466/5	Lab Control Sample	Total/NA	Drinking Water	SM 4500 F C	

Analysis Batch: 119630

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-124353-1	M240990-Talkeetna Test Well	Total/NA	Drinking Water	SM 2550B	

QC Association Summary

Client: Mat-Su Test Lab, LLC
Project/Site: DW Compliance-M240990

Job ID: 810-124353-1

General Chemistry

Analysis Batch: 119869

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-124353-1	M240990-Talkeetna Test Well	Total/NA	Drinking Water	150.1	
LCSSRM 810-119869/4	Lab Control Sample	Total/NA	Drinking Water	150.1	
LCSSRM 810-119869/9	Lab Control Sample	Total/NA	Drinking Water	150.1	

Analysis Batch: 119940

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-124353-1	M240990-Talkeetna Test Well	Total/NA	Drinking Water	SM 2330B	

Lab Chronicle

Client: Mat-Su Test Lab, LLC
Project/Site: DW Compliance-M240990

Job ID: 810-124353-1

Client Sample ID: M240990-Talkeetna Test Well

Lab Sample ID: 810-124353-1

Date Collected: 10/10/24 13:00

Matrix: Drinking Water

Date Received: 10/15/24 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	524.2		1	119255	AC	EA SB	10/17/24 15:48
Total/NA	Analysis	300.0		1	119131	NR	EA SB	10/16/24 00:35
Total/NA	Analysis	200.7		1	119150	AC	EA SB	10/16/24 11:51
Total/NA	Analysis	200.8		1	119232	NB	EA SB	10/16/24 18:20
Total/NA	Analysis	200.8		1	119292	CA	EA SB	10/17/24 09:37
Total/NA	Prep	245.1			119515	AC	EA SB	10/18/24 12:47
Total/NA	Analysis	245.1		1	119664	AC	EA SB	10/18/24 18:42
Total/NA	Analysis	SM 2340B		1	119122	AC	EA SB	10/16/24 11:13
Total/NA	Analysis	150.1		1	119869	AN	EA SB	10/22/24 13:15
Total/NA	Prep	Distill/CN			119257	KH	EA SB	10/17/24 08:19
Total/NA	Analysis	335.4		1	119308	KH	EA SB	10/17/24 10:54
Total/NA	Analysis	SM 2320B		1	119213	KH	EA SB	10/16/24 13:16
Total/NA	Analysis	SM 2330B		1	119940	KH	EA SB	10/23/24 09:35
Total/NA	Analysis	SM 2540C		1	119011	KH	EA SB	10/15/24 17:00
Total/NA	Analysis	SM 2550B		1	119630	KH	EA SB	10/21/24 08:52
Total/NA	Analysis	SM 4500 F C		1	119466	KH	EA SB	10/18/24 08:23

Client Sample ID: LTB - 8/10/24

Lab Sample ID: 810-124353-2

Date Collected: 10/10/24 00:00

Matrix: Drinking Water

Date Received: 10/15/24 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	524.2		1	119255	AC	EA SB	10/17/24 16:12

Laboratory References:

EA SB = Eurofins Eaton Analytical South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Accreditation/Certification Summary

Client: Mat-Su Test Lab, LLC
Job ID: 810-124353-1
Project/Site: DW Compliance-M240990

Laboratory: Eurofins Eaton Analytical South Bend

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Alaska	State	IN00035	06-30-25

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
524.2		Drinking Water	m-Xylene & p-Xylene
524.2		Drinking Water	o-Xylene
SM 2330B		Drinking Water	Langelier Index
SM 2550B		Drinking Water	Temperature

Method Summary

Client: Mat-Su Test Lab, LLC
Project/Site: DW Compliance-M240990

Job ID: 810-124353-1

Method	Method Description	Protocol	Laboratory
524.2	Volatile Organic Compounds (GC/MS)	EPA-DW	EA SB
300.0	Anions, Ion Chromatography	EPA	EA SB
200.7	Metals (ICP)	EPA	EA SB
200.8	Metals (ICP/MS)	EPA	EA SB
245.1	Mercury (CVAA)	EPA	EA SB
SM 2340B	Total Hardness (as CaCO3) by calculation	SM	EA SB
150.1	pH (Electrometric)	EPA	EA SB
335.4	Cyanide, Total	EPA	EA SB
SM 2320B	Alkalinity	SM	EA SB
SM 2330B	Corrosivity, LSI Calculation	SM	EA SB
SM 2540C	Solids, Total Dissolved (TDS)	SM	EA SB
SM 2550B	Temperature	SM	EA SB
SM 4500 F C	Fluoride	SM	EA SB
245.1	Preparation, Mercury	EPA	EA SB
Distill/CN	Distillation, Cyanide	None	EA SB

Protocol References:

EPA = US Environmental Protection Agency

EPA-DW = "Methods For The Determination Of Organic Compounds In Drinking Water", EPA/600/4-88/039, December 1988 And Its Supplements.

None = None

SM = "Standard Methods For The Examination Of Water And Wastewater"

Laboratory References:

EA SB = Eurofins Eaton Analytical South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Sample Summary

Client: Mat-Su Test Lab, LLC
Project/Site: DW Compliance-M240990

Job ID: 810-124353-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
810-124353-1	M240990-Talkeetna Test Well	Drinking Water	10/10/24 13:00	10/15/24 10:00
810-124353-2	LTB - 8/10/24	Drinking Water	10/10/24 00:00	10/15/24 10:00

eurofins | Eaton Analytical

810-124353 Chain of Custody

110 S. Hill Street
South Bend, IN 46617
F: 1.574.233.8207

Order # Jul 1014 T: 1.8
Batch # 1

www.EurofinsUS.com/Eaton

CHAIN OF CUSTODY RECORD

Page 1 of 2

Shaded area for EEA use only

REPORT TO:	SAMPLER (Signature)	PWS ID #	STATE (sample origin)	PROJECT NAME	PO#
Lynne Hill		—	AK		
BILL TO: Mat-Su Test Lab	COMPLIANCE MONITORING: Yes X / No	POPULATION SERVED	SOURCE WATER: DW		

	LAB Number	COLLECTION DATE	TIME	AM	PM	SAMPLING SITE	TEST NAME	SAMPLE REMARKS	CHLORINATED YES	CHLORINATED NO	# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME
1	M240990	10/10/24	1300		X	Talkeetna Test Well	Arsenic, Barium, Cadmium, Chromium, Mercury, Selenium, Antimony, Beryllium, Nickel, Thallium, Aluminum, Calcium, Copper, Iron, Manganese, Magnesium, Silver, Sodium, Zinc and Hardness	Preserved with HNO3			1	DW	SW
2													
3													
4	"	"	"			"	Fluoride, Chloride, Sulfate, Alkalinity, Corrosivity, TDS	Unpreserved			1	DW	SW
5													
6	"	"	"			"	Cyanide	Preserved NaOH			1	DW	SW
7	"	"	"			" LTB-8110124	VOC/VOC Trip Blank	Preserved HCl			6	DW	SW
8													
9													
10													
11													
12													
13													

RELINQUISHED BY:(Signature)	DATE	TIME AM/PM	RECEIVED BY:(Signature)	DATE	TIME AM/PM
	10/14/24	911	Kameron Williams	10/15/24	1000
RELINQUISHED BY:(Signature)	DATE	TIME AM/PM	RECEIVED BY:(Signature)	DATE	TIME AM/PM
RELINQUISHED BY:(Signature)	DATE	TIME AM/PM	RECEIVED FOR LABORATORY BY:	DATE	TIME AM/PM

LAB RESERVES THE RIGHT TO RETURN UNUSED PORTIONS OF NON-AQUEOUS SAMPLES TO CLIENT

LAB COMMENTS

Initial Temp: 4.4
Corrected Temp: 4.2
IR Gun # 25 BLUE

pH verified <2
200.7, 200.8, 245.1
2340B * KW 10/15/24

CONDITIONS UPON RECEIPT (check one):

___ Iced: Wet/Blue ___ Ambient ___ °C Upon Receipt ___ N/A

MATRIX CODES:

DW-DRINKING WATER
RW-REAGENT WATER
GW-GROUND WATER
EW-EXPOSURE WATER
SW-SURFACE WATER
PW-POOL WATER
WW-WASTE WATER

TURN-AROUND TIME (TAT) - SURCHARGES

SW = Standard Written: (15 working days)	0%	IV* = Immediate Verbal: (3 working days)	100%
RV* = Rush Verbal: (5 working days)	50%	IW* =Immediate Written: (3 working days)	125%
RW* = Rush Written: (5 working days)	75%	SP* = Weekend, Holiday	CALL
		STAT* = Less than 48 hours	CALL

* Please call, expedited service not available for all testing

Samples received unannounced with less than 48 hours holding time remaining may be subject to additional charges.

Mat-Su Test Lab, LLC

Water Quality Testing

Mile 3.2 Palmer-Wasilla Highway
Midtown Community Business Park
Phone: (907) 745-3005

Email: matsutestlab.office@gmail.com

9131 East Frontage Road, Suite 15
Palmer, AK 99645
Fax: (907) 745-3010

Name: Shannon & Wilson Inc

Mailing Address: 5430 Fairbanks St, Ste 3 Anchorage 99518

Phone#: 907 433-3214

Results/Invoice (Please choose at least one):

X Email: Stafford.Glushy@shanwil.com

___ Fax: _____

___ Hard Copy (To be mailed to address listed above)

PUBLIC WATER SYSTEM (PWS) ID#: NA

Information needed for DEC, from your monitoring summary

Facility ID: NA

Sample Pt. ID: Test well

Circle One:

Routine Test / Repeat Test / Special Purpose

Analysis Requested: Community Water System ("Class A")

Legal Description: 113591-001

Sample Site Location: Tailbectng Test well

(I.E. – mechanical room, kitchen sink, well house, bathroom sink)

Date Sampled: 10/10/24 Time Sampled: 1300 Sampled By: SSC Delivered By: SSC

Received: ~~OCT 0 7 1300~~ JS 1503 By: JS Lab #: M240990

OCT 10 2024

Temperature: _____ °C

Preserved: Yes or No

Cooling Media Present: Yes or No

Nitrate as N: 0.230 mg/L OCT 11 2024 JS

Nitrite as N: 0.036 mg/L OCT 11 2024 JS

Login Sample Receipt Checklist

Client: Mat-Su Test Lab, LLC

Job Number: 810-124353-1

Login Number: 124353

List Source: Eurofins Eaton Analytical South Bend

List Number: 1

Creator: Williams, Kameron

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Samples do not require splitting or compositing.	True	
Container provided by EEA	True	

281 N Main St, STE 101
Wasilla, AK 99654
907-373-6130

Alaska Laboratory AK01000

Client Matsu Test Lab

Contact Lynn Hill

Project Name Analytical Testing

AWL # AWL-24-02918

PWS # Non PWS

Please direct any questions regarding the final report to your Project Manager Alex@AKWaterLabs.com or Amanda@AKWaterLabs.com, or call.

The results presented in this report meet the requirement of the laboratory's certifications and internal QC processes. Any exceptions will be noted in the case narratives attached. Subcontract data will be entered into AWL final reports. Full subcontract reports are available upon request.

The attached should contain analytical results for the analyses submitted on the client chain of custody. The information includes no opinions of the analysts or labs, data is represented after meeting certified testing requirements, and quality control measures.

Reproduction of the report requires the written approval of the laboratory.

_____ _____

AWL Laboratory Management Date

Alaska Water Laboratories

281 N Main St, STE 101
Wasilla, AK 99654
907-373-6130

Alaska Laboratory #AK01000

Client Project Name	Analytical Testing	AWL #	AWL-24-02918
Receipt Date and Time	10/10/2024 15:44	Due Date	10/24/2024 16:00
Cooler Temperature (C)	15.9	Sampler Initials	SJG
Sample receipt comments	Sample received by NKM on 10/10/2024 at 15.9C RT1 on frozen ice by hand within 24hrs of sampling.		
Log In	VJG 10/11/2024	DQO	CMN 10/11/2024

Samples Received

Sample Location	AWL ID	Collection Date/Time	Analysis Date/Time	Analysis	Notes
M240990	AWL-24-02918-001	10/10/2024 13:00	10/10/24 16:05	SM4500H+B	
M240990	AWL-24-02918-002	10/10/2024 13:00	10/10/24 16:01	SM2120B	

Analytical Methods

Analyte	Analytical Method	Comments
Color, Apparent	SM2120B Color	
pH	SM4500-H-B pH	

Certification: Alaska Drinking Water
CMDP Job ID: n/a

Comments:

Alaska Water Laboratories

281 N Main St, STE 101
Wasilla, AK 99654
907-373-6130

Alaska Laboratory #AK01000

Definitions:

DUP: Sample Duplicate
LCS/LCSD: Laboratory Control Sample/Laboratory Control Sample Duplicate
MRL: Method Reporting Limit
MB: Method Blank
MCL: Maximum Contaminant Limit
MDL: Method Detection Limit
MS/MSD: Matrix Spike/Matrix Spike Duplicate
N/A: Not Applicable
TNTC: Cell count is Too Numerous To Count
<MDL: Result recovery is below the laboratory detectable limit, listed as the MDL.

Data Qualifiers:

B: The result of both the method blank and the target sample were recovered above the MDL.
D: Sample was diluted prior to analysis.
J: The reported result was recovered below the MRL (Method Reporting Limit), but above the MDL (Method Detection Limit), and should be considered an estimate.
U: Result was recovered below the MDL, MRL, LOD, and LOQ.
*: The LCS/LCSD or DUP was recovered outside method specified control limits.
H: Sample was recieved or analyzed outside of method specified holding time.
E: Sample recovery is equal to or exceeded the MCL.
Q: One or more Quality Control criteria was recovered outside of control limits.

General Comments:

1.0) Basis: "As Received" = Analyzed as received from client. "Dry" = dried piror to being analyzed. "Dry Weight Corrected" = analyzed as received, result corrected for percent moisture.

Alaska Water Laboratories

281 N Main St, STE 101
Wasilla, AK 99654
907-373-6130

Alaska Laboratory #AK01000

Analytical Results

Client	Matsu Test Lab	Project	Analytical Testing
Contact	Lynn Hill	PWS #	Non PWS
Project	Analytical Testing		

Sample Location:	M240990	SPID:	n/a	Collection Date/Time:	10/10/2024 13:00		
		FCID:	n/a				
AWL ID/ Fraction:	AWL-24-02918-001	Matrix:	DW	Batch ID:	101024-01-pH		

Analyte	Result	Units	MRL	MDL	MCL	DF	Flags	Method	Analyst	Analysis Date/Time
pH	7.1	SU	0	0		1		SM4500H+ B pH	BKC	10/10/24 16:05
Comments:										

Sample Location:	M240990	SPID:	n/a	Collection Date/Time:	10/10/2024 13:00		
		FCID:	n/a				
AWL ID/ Fraction:	AWL-24-02918-002	Matrix	DW	Batch ID:	101024-01-Color		

Analyte	Result	Units	MRL	MDL	MCL	DF	Flags	Method	Analyst	Analysis Date/Time
Apparent Color	5	mg/L	5	5		1		SM2120B	BKC	10/10/24 16:01
Comments:	pH is 7.1. BKC 10/11/24									

Alaska Water Laboratories

281 N Main St, STE 101
Wasilla, AK 99654
907-373-6130

Alaska Laboratory #AK01000

Analysis QC

pH SM4500 H+ B	
Batch ID	101024-01-pH

LCS

Analyte	LCS	Flags	Spike Amount	Limits	Analyst	Date/Time
pH	8.04		8.0	±0.05 pH units from the spike amount	BKC	10/10/24 16:05

Sample Duplicate **Parent ID:** AWL-24-02899-004

Analyte	Sample Duplicate	Flags	Parent Sample	Limits	Analyst	Date/Time
pH	7.30		7.29	±0.1 pH units from the parent sample	BKC	10/10/24 16:05

Apparent Color	
Batch ID:	101024-01-Color

LCS

Analyte	LCS	Flags	Spike Amount	Percent Recovery	Limits	Analyst	Date/Time
Apparent Color	5		5	100	90-110	BKC	10/10/24 16:01

Sample Duplicate **Parent ID:** AWL-24-02918-002

Analyte	Sample Duplicate	Flags	Parent Sample	RPD	Limits	Analyst	Date/Time
Apparent Color	5		5	0	≤20	BKC	10/10/24 16:01

AWL Chain of Custody

Custody form MUST be signed
Please provide as much information as possible

Alaska Water Laboratories

Alaska Water Laboratories

AWL-24- 02918

Client/Company Name & Address: Mat-Su Test Lab	**PWS ID:**	**AWL Staff**
	Project Name/ID :	**Quote Number** **AWL #**
	Turnaround Time (TAT) for Results	**Account #:** **Check** **Credit**
Contact Person: Patience Obermann	___ Standard ___ Expedited (prior authorization required) *Specify Requested Due Date if not standard	**Invoice Contact Name & Address & Phone:**
Phone No: 907-745-3005	**Requested Date for Results:**	
Fax No:	**Results to STATE: Yes No**	**Routine Non-Routine**
E-mail: results@matsutestlab.com	Specify if REPEAT sample	**PO/Contract No.:**

Special Instructions/Requirements: Must be DEC Compliant Methods

Requested Analysis/Method

Kit Preparation/Shipping Charge:

Page 6 of 7	Client Sample Identification (Name, Designation, Location, etc.)	Date Sampled	Time Sampled	Matrix (DW, WW, SO)	No. of Containers	Cl Residual	Preservative Lot#	Preservative Lot#	Preservative Lot#	Preservative Lot#	Preservative Lot#	Preservative Lot#	State Pt. Sampling ID	Facility ID	Trigger/ Repeat/ Special
1	M240990	10/10/24	1300	DW	2	-	pH 001	color 002							
2															
3															
4															
5															
6															
7															
8															
9															
10															

Relinquished by:	Date	Time	Received by:	Date	Time
	10/10/24	15:17	NKM	10/10/2024	
Relinquished by:	Date	Time	Received by:	Date	Time
			NKM	10/10/2024	15:44
Relinquished by:	Date	Time	Received by:	Date	Time
Name of Sampler: (printed)	SJG				

Section To Be Completed by AWL

Custody Seal (circle): Intact Broken Absent

Temperature on arrival: 15.9 °C

Thermo ID RT1

Recv Notes:

Temp TB (Cooler)

Ice (Frozen) Wet

Delivery Method (Circle) Courier USPS/Mail (Hand)

Version 0 1 12 21

Client brought in samples in own bottles. NKM 10/10/2024

Sample received on ice w/in 24 hrs. of sampling.

Mat-Su Test Lab, LLC

Water Quality Testing

Mile 3.2 Palmer-Wasilla Highway
Midtown Community Business Park
Phone: (907) 745-3005

Email: matsutestlab.office@gmail.com

9131 East Frontage Road, Suite 15
Palmer, AK 99645
Fax: (907) 745-3010

Name: Shannon & Wilson Inc

Mailing Address: 5430 Fairbanks St, Ste 3 Anchorage 99518

Phone#: 907 433-3214

Results/Invoice (Please choose at least one):

X Email: Stafford.Glushy@shanwil.com

___ Fax: _____

___ Hard Copy (To be mailed to address listed above)

PUBLIC WATER SYSTEM (PWS) ID#: NA

Information needed for DEC, from your monitoring summary

Facility ID: NA

Sample Pt. ID: Test well

Circle One:

Routine Test / Repeat Test / Special Purpose

Analysis Requested: Community Water System ("Class A")

Legal Description: 113591-001

Sample Site Location: Tailings Test well

(I.E. – mechanical room, kitchen sink, well house, bathroom sink)

Date Sampled: 10/10/24 Time Sampled: 1300 Sampled By: SJC Delivered By: SJC

Received: ~~4202 OCT 10~~ JS 1503 By: JS Lab #: M240990

OCT 10 2024

Temperature: _____ °C

Preserved: Yes or No

Cooling Media Present: Yes or No

COPY

Appendix B

Test Well Log and TWUA

APPENDIX B: TEST WELL LOG AND TWUA

Wheaton Water Well, Inc.

1190 N. Wasilla-Fishhook Road
Wasilla, AK 99654
(907)376-2041

Name:	Matsu Borough Talkeetna Test Well		
Address:			
City:	Talkeetna	**State:** AK	**Zip Code:** 99676
Well Site:	21950 S. G Street		**Lot/Block:**
Additional:			

Well Depth:	97ft
Below Ground:	95ft
Above Ground:	2 ft.
Gal/Min:	400+
Static Level:	9ft
Casing:	78ft
Liner Pipe:	N/A
Screened:	78'-93', 0.060 Slot
Perforated:	N/A
Grouted:	Dry Grout
Depth:	20'+
Develop. Method:	Air
Use of Well:	Commercial
Drilling Method:	Rotary
Misc:	1.5' neck/4' tail on screen
Other:	Cut casing at 93'

From:	To:	Formation:
0	2	Stick Up
2	3	Fill
3	4	Organics
4	9	Gravel/Sand
9	32	Water/Gravel/Sand
32	94	Water/Gravel/Sand
94	96	Water/Gravel/Silt
96	140	Water/Gravel/Sand/Silt

The well was pumped 5' off the bottom with 100% draw down for 2 hours and recovered at 400+gpm .

Date Drilled:	10/5/2024	**Driller:**	Brandon Moore

ALASKA DEPARTMENT OF NATURAL RESOURCES
Division of Mining, Land, and Water
Water Resources Section
550 West 7th Avenue, Suite 1020, Anchorage, AK 99501-3562

TEMPORARY WATER USE AUTHORIZATION
TWUA A2024-120

Pursuant to AS 46.15, as amended and the rules and regulations promulgated thereunder, permission is hereby granted to The Matanuska-Susitna Borough (hereinafter authorization holder), 350 E Dahlia Ave. Palmer, Alaska 99645 and their contractors, **to withdraw up to the amounts listed below from the described source(s) of water.** Water is to be used for a pump and water quality test followed by a new drinking water well if the tests come up positive. This water use is associated with the New Municipal Well, Talkeetna, Alaska. The season of use is year round. Effective date is September 25, 2024.

SOURCES & AMOUNT OF WATER

Withdrawals from groundwater well in aquifer at approximately 150 ft depth in Section 24, Township 26 North, Range 5 West, of the Seward Meridian.

- 6 inch Test Well
  - 216,000 gallons per day, with a maximum combined seasonal withdrawal of 216,000 gallons.
  - Season of use of September 25, 2024 to July 31, 2025

- 12 inch Municipal Production Well – (if installed)
  - 145,000 gallons per day, with a maximum combined seasonal withdrawal of 52,900,000 gallons.
  - Season of use of year round

ADVISORY

The water use area is near two Drinking Water Protection Areas. **Please see Condition 31.**

STRUCTURES TO BE CONSTRUCTED AND USED

Changes in the natural state of water are to be made as stated herein and for the purposes indicated. As described in the application materials:

A test well will be constructed and pumped for approximately 12 hours using a 4 inch pump intake at up to 300 gpm. Water will be discharged to the ground surface at least 100 feet away and allowed to infiltrate.

If the results of the test well are favorable, a separate MSB project will install a new, municipal supply well with a 10 inch, up to 1,525gpm pump intake and treatment at the site. ADEC approval to construct will be sought and received before installation. Discharge will be to the Talkeetna WWTP.

CONDITIONS

During the effective period of this authorization, the authorization holder shall comply with the following conditions:

1. This authorization does not authorize the authorization holder to enter upon any lands until proper rights-of-way, easements, or permission documents from the appropriate landowner have been obtained.

2. Follow acceptable engineering standards in exercising the privilege granted herein.

3. Comply with all applicable laws, and any rules and/or regulations issued thereunder.

4. Notify the Water Resources Section upon change of address.

5. Failure to respond to a request for additional information during the term of the authorization may result in the termination of this authorization.

6. Except for claims or losses arising solely from negligence of the State, defend and indemnify the State, the State's agents, and the State's employees against and hold each of them harmless from any and all claims, demands, suits, loss, liability, and expense, including attorney fees, for injury to or death of persons and damages to or loss of property arising out of or connected with the exercise of the privileges covered by this authorization.

7. The Water Resources Section may modify this authorization to include different limitations, expand monitoring requirements, evaluate impacts, or require restoration at the site.

8. The authorization holder is responsible for obtaining and complying with other permits/leases/approvals/rights of way (state, federal, or local) that may be required prior to beginning activities pursuant to this authorization.

9. The authorization holder shall allow an authorized representative of the Water Resources Section to inspect, at reasonable times, any facilities, equipment, practices, or operators regulated or required under this authorization.

10. This authorization, or a copy thereof, shall be kept at the site of the authorized project described herein. The authorization holder is responsible for the actions of contractors, agents, or other persons who perform work to accomplish the approved project and shall ensure that workers are familiar with the requirements and conditions of this authorization.

11. Any false statements or representations, in any application, record, report, plan, or other document filed or required to be maintained under this authorization, may result in the termination of this authorization.

12. Pursuant to AS 46.15.155(f), the Department may impose conditions or limitations on an authorization to protect the water rights of other persons or to protect fish and wildlife habitat, human health, or other public interests.

13. Pursuant to AS 46.15.155(i), 11 AAC 93.210(b) and 11 AAC 93.220(f), temporary authorizations are subject to amendment, modification, suspension, or revocation to supply water to lawful appropriators of record, protect the water rights of other persons or the public interest.

14. All equipment used at or adjacent to water bodies and water sources must always be clean and free from contamination and invasive species (terrestrial and aquatic) to prevent the introduction of contamination and invasive species to the water body.

15. Operations shall be conducted in such a way as to prevent any petroleum products or hazardous substances from contaminating surface or ground water. Pumps will not be fueled or serviced within 100 feet of a pond, lake, stream, river or other water body unless the pumps are situated within a catch basin designed to contain any spills. Vehicles will not

be fueled or serviced within 100 feet of a pond, lake, stream, river or other water body. Equipment shall not be stored or serviced within 100 feet of any water body. In case of accidental spills, absorbent pads and spill response kits shall be readily available. Appropriate disposal methods for waste products shall be followed.

16. Operations shall not cause or contribute to the spread of preexisting or authorization holder caused contaminant plumes. All spills and contamination encountered or known must be reported to the Alaska Department of Environmental Conservation (ADEC) and the Alaska Department of Natural Resources (DNR). Authorization holder shall cooperate with lawful prohibitions, restrictions, instructions, stop work orders or work plan requirements issued by ADEC for authorization holder's projects.

17. Deviations from the project description submitted with the application which affect water amounts, operation or point of discharge or use must be approved by DNR in writing prior to implementation.

18. Record and immediately report to this office all complaints relating to pumping activities and discharge, including requests for information from residents, should the situation occur.

19. Only water use is being authorized with this authorization. No ground disturbance, clearing, mulching, mowing, rutting or other land use can occur in conjunction with the activities in this authorization without the express approval of the land manager/owner.

20. Per 11 AAC 05.260(e), an annual administrative service fee shall be assessed on this authorization.

21. A well that is permanently decommissioned by the owner of the well must be in compliance with the requirements of 18 AAC 80.015(e) and 11 AAC 93.140. An abandonment report shall be submitted to this office and to the ADEC within 45 days of well decommissioning. As an alternative to permanent decommissioning, the authorization holder is encouraged to consider using the well to participate in the voluntary DNR, Alaska Hydrologic Survey, groundwater monitoring program. For further information on this program, contact dnr.water.reports@alaska.gov.

22. In accordance with 11 AAC 93.140 (a), a water well log and pump performance information shall be filed with this office within 45 days of pump installation. Well logs may be filed by email to dnr.water.reports@alaska.gov and dnr.twua@alaska.gov.

23. When the well is placed into production, monitoring and reporting of water withdrawal shall begin when the water withdrawal starts. Submit monthly water use reports quarterly to this office in electronic form. Electronic reports shall be e-mailed to: dnr.water.reports@alaska.gov and dnr.twua@alaska.gov.

24. Authorization holder will ensure that the well is metered and monitors and reports water withdrawals to DNR. Monitor daily water use for quantities of water withdrawn. Permittee shall prepare an annual report including, but not limited to, daily water use, the cumulative amount of water used during the entire year, any maintenance details, any issues with the production well and raw static water level data collected during any off season. The annual report for January 1-December 31 will be submitted by January 31st of the following year to DNR via email to dnr.water.reports@alaska.gov and dnr.twua@alaska.gov.

25. Notify the Division of any major well maintenance work performed and submit a report to this office within 45 days of completion that includes testing data, maintenance results, date

when the well was shut down and restarted, static water level, name of contractor who performed the work and the dates of work.

26. Cessation of withdrawal and/or reinjection activities will be implemented should levels of any constituent be detected during water quality sampling that meet or exceed levels specified by the US Environmental Protection Agency or State of Alaska ADEC drinking water standards for water quality (whichever is stricter).

27. The water sources in this authorization must be tested for PFAS using EPA Method 1633 prior to any use or discharge to the surface. Authorization holder may place water within a containment system while awaiting testing results.

28. Discharged water shall not create erosion, sedimentation or other hazards within adjacent or nearby properties, road rights-of-way, stormwater drainage systems, sanitary sewer systems or water bodies.

29. For the pump tests: monitoring and reporting of water withdrawal shall begin when the water withdrawal starts. Upon completion of the test, raw data including instrument calibration and/or manual verification checks, cork plan (if available), baseline data, pumping data, recovery data, monitoring well identifications and coordinates, well lithologic logs and geophysical logs (if available) shall be submitted to the DNR-Water Resources Section within 45 days. Upon completion of the test, a final written report that includes the raw and processed data, including the analysis(es) shall be submitted to the DNR-Water Resources Section within 6 months or at the time of application or request for amendment for use of this well as a production well, whichever is sooner. Reports shall be emailed to dnr.water.reports@alaska.gov and dnr.twua@alaska.gov.

30. If any well owner notes interference during any pumping associated with this authorization, pumping is to immediately cease and DNR-Water contacted. Pumping is not to resume until authorized in writing by DNR-Water.

31. Comply with 18 AAC 80, adhere to the ADEC, Division of Environmental Health-Drinking Water Program Recommendations for General Project Activities Associated with, or near, a Public Water System Source, maintain direct contact with the region's ADEC-DW point-of-contact, where applicable.

This Temporary Water Use Authorization is issued pursuant to 11 AAC 93.220. No water right or priority is established by a temporary water use authorization issued pursuant to AS 46.15.155(c). Water so used is subject to appropriation by others.

This authorization shall expire on September 24, 2029.

Date issued: September 19, 2024

Approved: Jessie Zimmerman

Jessie Zimmerman, Manager
Water Resources Section

Appendix C: Important Information

Appendix C

Important Information about your Geotechnical/Environmental Report

IMPORTANT INFORMATION

IMPORTANT INFORMATION

Important Information

About Your Geotechnical/Environmental Report

IMPORTANT INFORMATION

CONSULTING SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

Consultants prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your consultant prepared your report expressly for you and expressly for the purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the consultant. No party should apply this report for any purpose other than that originally contemplated without first conferring with the consultant.

THE CONSULTANT'S REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

A geotechnical/environmental report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. Depending on the project, these may include the general nature of the structure and property involved; its size and configuration; its historical use and practice; the location of the structure on the site and its orientation; other improvements such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask the consultant to evaluate how any factors that change subsequent to the date of the report may affect the recommendations. Unless your consultant indicates otherwise, your report should not be used (1) when the nature of the proposed project is changed (for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one, or chemicals are discovered on or near the site); (2) when the size, elevation, or configuration of the proposed project is altered; (3) when the location or orientation of the proposed project is modified; (4) when there is a change of ownership; or (5) for application to an adjacent site. Consultants cannot accept responsibility for problems that may occur if they are not consulted after factors that were considered in the development of the report have changed.

SUBSURFACE CONDITIONS CAN CHANGE.

Subsurface conditions may be affected as a result of natural processes or human activity. Because a geotechnical/environmental report is based on conditions that existed at the time of subsurface exploration, construction decisions should not be based on a report whose adequacy may have been affected by time. Ask the consultant to advise if additional tests are desirable before construction starts; for example, groundwater conditions commonly vary seasonally.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical/environmental report. The consultant should be kept apprised of any such events and should be consulted to determine if additional tests are necessary.

MOST RECOMMENDATIONS ARE PROFESSIONAL JUDGMENTS.

Site exploration and testing identifies actual surface and subsurface conditions only at those points where samples are taken. The data were extrapolated by your consultant, who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent such situations, you and your consultant can work together to help reduce their impacts. Retaining your consultant to observe subsurface construction operations can be particularly beneficial in this respect.

A REPORT'S CONCLUSIONS ARE PRELIMINARY.

The conclusions contained in your consultant's report are preliminary, because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site. Actual subsurface conditions can be discerned only during earthwork; therefore, you should

IMPORTANT INFORMATION

retain your consultant to observe actual conditions and to provide conclusions. Only the consultant who prepared the report is fully familiar with the background information needed to determine whether or not the report's recommendations based on those conclusions are valid and whether or not the contractor is abiding by applicable recommendations. The consultant who developed your report cannot assume responsibility or liability for the adequacy of the report's recommendations if another party is retained to observe construction.

THE CONSULTANT'S REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when other design professionals develop their plans based on misinterpretation of a geotechnical/environmental report. To help avoid these problems, the consultant should be retained to work with other project design professionals to explain relevant geotechnical, geological, hydrogeological, and environmental findings, and to review the adequacy of their plans and specifications relative to these issues.

BORING LOGS AND/OR MONITORING WELL DATA SHOULD NOT BE SEPARATED FROM THE REPORT.

Final boring logs developed by the consultant are based upon interpretation of field logs (assembled by site personnel), field test results, and laboratory and/or office evaluation of field samples and data. Only final boring logs and data are customarily included in geotechnical/environmental reports. These final logs should not, under any circumstances, be redrawn for inclusion in architectural or other design drawings, because drafters may commit errors or omissions in the transfer process.

To reduce the likelihood of boring log or monitoring well misinterpretation, contractors should be given ready access to the complete geotechnical engineering/environmental report prepared or authorized for their use. If access is provided only to the report prepared for you, you should advise contractors of the report's limitations, assuming that a contractor was not one of the specific persons for whom the report was prepared, and that developing construction cost estimates was not one of the specific purposes for which it was prepared. While a contractor may gain important knowledge from a report prepared for another party, the contractor should discuss the report with your consultant and perform the additional or alternative work believed necessary to obtain the data specifically appropriate for construction cost estimating purposes. Some clients hold the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems and the adversarial attitudes that aggravate them to a disproportionate scale.

READ RESPONSIBILITY CLAUSES CLOSELY.

Because geotechnical/environmental engineering is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, consultants have developed a number of clauses for use in their contracts, reports, and other documents. These responsibility clauses are not exculpatory clauses designed to transfer the consultant's liabilities to other parties; rather, they are definitive clauses that identify where the consultant's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

The preceding paragraphs are based on information provided by the ASFE/Association of Engineering Firms Practicing in the Geosciences, Silver Spring, Maryland