

Victoria County Groundwater Conservation District

Victoria Aquifer Storage and Recovery Demonstration Project

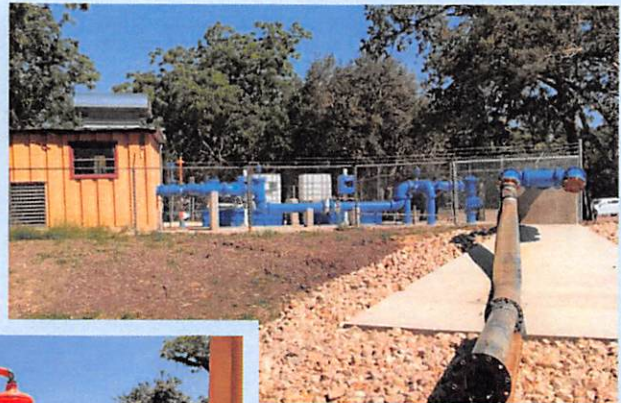
TWDB Contract No. 1600011958

By Arcadis U.S., Inc., ASR Systems LLC

RECEIVED
JUN 27 2019
TWDB CONTRACTS

June 2019

FINAL



Victoria County Groundwater Conservation District

Victoria Aquifer Storage and Recovery Demonstration Project

TWDB Contract No. 1600011958

By Arcadis U.S., Inc., ASR Systems LLC

June 2019

FINAL



Texas Water Development Board

Victoria County Groundwater Conservation District: Victoria Aquifer Storage and Recovery Demonstration Project

By:

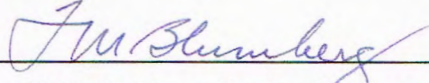
Arcadis U.S., Inc.

ASR Systems LLC

June 2019

The contents of this report (including figures and tables) document the work of the following professionals.

Arcadis U.S., Inc.

By: 
Fred M. Blumberg, Project Manager

ASR Systems, LLC

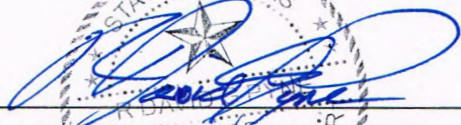
By: 
David G. Pyne, P.E.


Table of Contents

1	Executive summary.....	1
2	Introduction.....	5
2.1	Background on Demonstration Projects for Alternative Water Supplies funding ...	6
2.2	Project participants	7
2.3	Scope of work, and roles and responsibilities	7
3	Study objectives	13
4	Study area.....	14
5	Permitting.....	16
6	Retrofit of Well 19	18
6.1	ASR facilities design	18
6.1.1	Original well design and capacity.....	18
6.1.2	Well retrofit design	18
6.2	Rehabilitation and construction.....	19
7	Operations and maintenance manual, and training	24
8	Cycle testing and assessment	25
8.1	ASR - aquifer recharge.....	25
8.2	ASR - storage period	28
8.3	ASR - recovery	28
8.3.1	Water quality tracers.....	29
8.3.2	Disinfection byproducts.....	30
8.3.3	Arsenic	30
8.3.4	Field measurements of water quality	31
8.3.5	Corrosion considerations	31
8.3.6	Well clogging and backflushing	32
8.3.7	Trickle flow.....	33
8.3.8	Monitor Well No. 21.....	33
9	Conclusions and recommendations.....	35
9.1	Conclusions	35
9.1.1	Project tasks	35

9.1.2	Project objectives	35
9.1.3	Successful production well retrofit for ASR.....	36
9.1.4	TCEQ permitting	36
9.1.5	Coordination with local groundwater conservation district.....	36
9.1.6	Unit cost bid schedule.....	37
9.1.7	Construction contractors	37
9.1.8	Trickle flow pipeline.....	37
9.1.9	TCEQ design requirements.....	37
9.1.10	TCEQ plan review	37
9.1.11	Training and O&M manual.....	37
9.1.12	Recovery operations during testing	38
9.1.13	Conclusion	38
9.2	Recommendations	38
9.2.1	Phase 3 of ASR program development.....	38
9.2.2	Following phases of ASR development.....	38
9.2.3	Storage of water and continued cycle testing in Well No. 19.....	38
9.2.4	Water quality sampling and data collection.....	39
9.2.5	Disinfection processes	39
9.2.6	Post demonstration well phase tasks.....	39
10	Acknowledgements.....	41
11	References.....	42
12	Appendices.....	43
12.1	Appendix A. TCEQ authorization.....	44
12.2	Appendix B. Preliminary design report.....	45
12.3	Appendix C. Final plans and specifications	46
12.4	Appendix D. Equipment manuals	48
12.5	Appendix E. Operations and maintenance manual	50
12.6	Appendix F. Training program (PPT)	52
12.7	Appendix G. Water quality and hydraulic data.....	53
12.8	Appendix H. TWDB review of draft report 06/03/2019	54

List of Tables

Table 8-1. Cycle test water quality data.....27

List of Figures

Figure 2-1. Excerpt from Texas Water 2018 presentation.....12
Figure 4-1. Project study area15
Figure 6-1. Well No. 19 repair diagram.....22

List of Acronyms and Abbreviations

µg/L	micrograms per liter
AF	acre-feet
ANSI/ASME	American National Standards Institute / American Society of Mechanical Engineers
Arcadis	Arcadis U.S., Inc.
As	arsenic
ASR	aquifer storage and recovery
AWWA	American Water Works Association
bgs	below ground surface
CIP	Capital Improvements Program
City	city of Victoria, Texas
CSMR	chloride-sulfate mass ratio
DBP	disinfection byproducts
District	Victoria County Groundwater Conservation District
DO	dissolved oxygen
Fe	iron
ft/day	feet per day
ft ² /day	square-feet per day
GCDs	groundwater conservation districts
gpm	gallons per minute
gpm/ft	gallons per minute per foot
HAA5	Haloacetic Acids
HB 1	House Bill
MCL	Maximum Contaminant Limit
Mercer	Mercer Construction Co.
MG	million gallons
mgd	million gallons per day
mg/L	milligrams per liter
Mn	manganese
msl	mean sea level
NTU	Nephelometric Turbidity Units

O&M Manual	Aquifer Storage Recovery Facilities for ASR Well 19 and Monitor Well 21 Startup and Cycle Testing Operations Manual
O&M	operations and maintenance
ORP	oxidation-reduction potential
POE	Point of Entry
Project	Victoria Aquifer Storage and Recovery Demonstration Project for Alternative Water Supply
psi	pounds per square inch
RISD	Radial Injection Surge Development
SDADA	supervisory control and data acquisition
SWTP	Surface Water Treatment Plant
TCEQ	Texas Commission on Environmental Quality
TDS	total dissolved solids
TSV	Target Storage Volume
TTHM(s)	Total Trihalomethane(s)
TWDB	Texas Water Development Board
UIC	Underground Injection Control
VCGCD	Victoria County Groundwater Conservation District
Weisinger	Weisinger, Inc.

1 Executive summary

After experiencing the severe drought in late 2010 and early 2011, the City of Victoria, working with other water providers and users in the Golden Crescent Region of Texas, began to explore strategies to diversify the inventory of water sources in the region. A feasibility study evaluating aquifer storage and recovery (ASR) was completed with funding assistance from the Texas Water Development Board (TWDB). The study evaluated how ASR could improve water supply reliability in Victoria, Jackson, and Calhoun counties, and make more efficient use of the run-of-river water rights in the lower Guadalupe River Basin. The technical study, conducted by Arcadis U.S., Inc. (Arcadis) and ASR Systems, LLC (the “Arcadis team”) concluded that the hydrogeology in the Victoria area would be suitable for an ASR project, due to the sandy deposits in the Gulf Coast Aquifer formation. The City of Victoria was especially well-suited because reliable hydrogeological data and municipal wells already exist in the area.

The 84th Texas Legislature appropriated \$1,000,000 from General Revenue to the TWDB to fund grants for demonstration projects for alternative water supplies (House Bill 1, General Appropriations Act, 2015 Legislature, Regular Session, page VI-60, Rider 25). The grants funded groundwater conservation districts (GCDs) for demonstration projects or feasibility studies that increased public knowledge of ASR and other technologies.

The Victoria County Groundwater Conservation District (VCGCD) and the City of Victoria (the “City”) received funding provided through the TWDB to perform the Victoria Aquifer Storage and Recovery Demonstration Project for Alternative Water Supply (“the Project”). Tasks to be performed as part of this Project included: converting an existing City groundwater well, Well No. 19, into a full-scale operational ASR well; recharging and recovering treated water from the City’s public water distribution system; providing operations and maintenance (O&M) and data collection training for the City, VCGCD, and the TWDB; conducting cycle testing by recharging and recovering treated water; delivering both an O&M manual and a final report documenting the Project and the data collection; and disseminating the research results through professional papers and presentations.

In April 2017, the City received a 5X25 authorization from the Texas Commission on Environmental Quality (TCEQ) for the operation of Well No. 19 as an experimental demonstration well. This authorization allows the City to inject and store up to 3,908 acre-feet of water from the City’s distribution system during up to two cycle periods.

Well No. 19 was originally a production well with a pumping capacity of about 1,520 gallons per minute (gpm). As part of the Project, the retrofit included first rehabilitating the existing Well No. 19, equipping it with a new pump, motor, and electrical control panel, and installing the wellhead and disinfection facilities necessary for ASR operations. Because the well was a retrofit, many of the automation features generally included with design of a new ASR well were excluded for budgetary reasons.

During the early stages of Well No. 19’s rehabilitation, video logging revealed severe corrosion damage to the well’s liner at 587 feet below ground surface (bgs) and partial well blockage at about 834 feet bgs. Due to these discoveries, the Arcadis team modified the rehabilitation techniques to make them less intrusive (i.e., using air lifting and acidification instead of sonic jetting and wire brushing, as originally planned). After this was completed, the new pump and motor were installed, and interim recharge commenced in April 2018. Over the course of a

month, the total volume recharged was 19.8 million gallons (MG). Well redevelopment then began, as part of the City's training program; however, testing by recovering stored water was terminated after 30 minutes because the pump had discharged about two cubic yards of sand and some gravel with the produced water.

The City engaged the contractor to investigate the possible causes of the sand and gravel production. After the investigation, the contractor made repairs and modifications to the well. The contractor also replaced: two 10-foot sections of column pipe, which were in poor condition; rubber inserts, which were damaged by the sand; the pump bowl shaft; bowl bearings; suction case bearings; bowl wear rings; mechanical seal; and, suction strainer. After these repairs to the pump and pump column were made in the ASR well, a second round of pump testing began. This pump test totaled about six hours and indicated that the new well was capable of producing up to 1,600 gpm with a specific capacity of 7.5 gpm/foot, almost equivalent to the original specific capacity for the well (10 gpm/foot).

Of the 19.8 MG recharged in the initial recharge period, it is unclear how much of this water can be recovered. As part of the well modifications, the well was plugged to 830 feet bgs; although any water below this depth is not recoverable, it is believed that much of the remaining stored water will indeed be recoverable.

Following modifications to the well and repair of the pump, recharge recommenced in January 2019. The total recharged volume in this second period was 19.2 MG. Of the stored water volume, about half is initially assumed to be recoverable.

The City began recovering stored water after a storage period of seven days. Because the storage period was shortened from the originally planned month, ammonia levels in the recovered water were similar to those in the treated drinking water leaving the City's Surface Water Treatment Plant (SWTP). The recovery flow rate was reduced to account for these ammonia levels. The final volume recovered from storage was 6.7 MG. Laboratory testing of the recovered water indicated that the quality of the water recharged and recovered was generally the same.

Because of the successful recharge and recovery at Well No. 19, there is strong technical support for the City to move forward with the next phase of implementation for its ASR program. The City's Class V 5X25 authorization from TCEQ permits the City to conduct up to two cycle tests at Well No. 19. TCEQ representatives have indicated that, if needed, additional cycle tests would also be allowed to gather more data for future permitting and operations.

Conclusions from the demonstration Project for the Well No. 19 ASR retrofit include the following:

- The successful ASR retrofit of an existing production well demonstrated that existing municipal groundwater production wells can be modified for ASR use (although a new well construction specifically for ASR purposes would still be preferable, in general). Before a well is selected for conversion, an investigation should be conducted to examine the condition of the well, through pulling the pump and pump column and video logging.
- Applying for a TCEQ Class V 5X25 Experimental Injection Well authorization is acceptable when retrofitting a well, rather than applying for a Class V Underground Injection Control (UIC) permit for ASR. This Class V Experimental Injection Well authorization allowed the City to complete the Project and gather additional data needed in the future for a full ASR permit after the testing period.

- Coordination with the local groundwater conservation district fosters a productive relationship between the entity developing the ASR project and the groundwater conservation district. A good working relationship between the City and VCGCD allowed the parties to share the data needed to properly design and operate the ASR well.
- The provision of unit bid cost schedules allows the owner and engineer to modify the construction requirements to better suit the field conditions as the project progresses. This is ideal for projects with high levels of uncertainty, such as the rehabilitation of an existing well when the condition is unknown.
- Using multiple construction contractors can be managed if the owner is actively engaged in the construction management of the project, as the City was; however, using one qualified prime general contractor for the entire project is generally preferred.
- Trickle flow pipelines are necessary to ensure that a disinfectant residual is maintained in the ASR well. The Arcadis team recommended that, in parallel to the 12-inch treated water pipeline connecting the City's distribution system to Well No. 19, a 2-inch pipeline be constructed specifically to provide a trickle flow into the well during storage periods.
- Compliance with TCEQ design requirements and active TCEQ plan review involvement are necessary, because the TCEQ Plan Review Team does not have extensive experience with ASR system design. Additional time should be scheduled for review and approval of ASR plans and specifications.
- An emphasis on proper training and an O&M manual translates to ASR well operators being better able to guide startup, operations, maintenance and cycle testing. Classroom and field training for the City and a representative of TWDB was provided by ASR Systems.
- Recovery operations during testing took longer than planned because of a lower recovery flow rate. In this case, the recovered water flow rate is affected by the elevated water storage levels and the line pressures in the City's distribution system. It is important to consider these variations in the distribution system operations when developing the cycle testing program.

Based on the data collected and analyzed in this Project, the Arcadis team recommends moving forward with the next phases of the Victoria ASR program. Recommended next steps include the following:

- Moving into Phase 3 of the Victoria ASR program which will include a study to confirm the location of a new ASR well and any recommended monitoring wells, as well as an evaluation of whether the City's distribution system will need to be improved to accommodate the new ASR well.
- Preparing for Phase 4 of the ASR program, which will include permitting, designing, and constructing a third ASR well and wellhead facilities and any recommended monitor wells, and modifying the City's distribution system to better suit the ASR system, if needed.

- Continuing to cycle test and operate ASR Well No. 19 until December 31, 2020. Additional testing will provide the City with water level, pressure and volume data necessary for future ASR permitting.
- Conducting water quality testing on lab and field samples produced during the additional cycle testing. Supplementary water quality data will serve as the basis for the TCEQ permitting for permanent operation of Well No. 19 and the future ASR well, and can alert the City of the potential for nitrification and corrosion in its distribution system. Further evaluation should also include the establishment of a distribution system water quality monitoring plan, in addition to sampling the recharged and recovered water.
- Evaluating minor changes to the wellhead disinfection process and associated piping that account for the wide range of ammonia concentrations currently being seen in the water recovered from ASR storage. It would also be beneficial to provide the option to add the chlorine either before or after adding the ammonia, depending on the recovered water's ammonia levels.

As part of Phases 3 and 4 of the City's ASR program it would be valuable to develop a hydrogeologic analytical model to evaluate the recoverability of the stored water and the potential impacts, if any, of the operation of Well No. 19 and the new ASR Well. Such a model will likely be necessary before the wells are put into permanent operation under a TCEQ Class V UIC permit, and will provide a foundation for permitting future Victoria ASR wells.

2 Introduction

The severe drought starting in late 2010 and early 2011 had a significant impact on water utilities, wholesale water providers and industries, including those within the Golden Crescent Region of Texas, centered on the city of Victoria (the “City” or “Victoria”). Although water providers within the region have developed a diverse inventory of surface water and groundwater supply sources, meeting future water demand requirements will be challenging as municipal and industrial use continues to increase, even during periods of drought.

In order to address these issues in a strategic manner, a group of water providers and users in the region joined together to evaluate the potential for using aquifer storage and recovery (ASR) as a water management strategy. A feasibility study completed in July 2014 focused on the use of ASR to stretch existing water supplies and improve reliability, especially during periods of severe drought. The focus of the evaluation was to maximize the efficient use of existing run-of-river water rights in the Guadalupe River Basin.

The study area for the feasibility assessment consisted of Victoria, Jackson and Calhoun Counties. The study participants included:

- Victoria
- Victoria County Groundwater Conservation District (VCGCD or the “District”)
- Guadalupe-Blanco River Authority
- Lavaca-Navidad River Authority
- Port of Victoria

The feasibility study was partially funded by a Regional Facility Planning Grant from the Texas Water Development Board (TWDB). The City of Victoria was the applicant for the TWDB grant.

The evaluation concluded that the hydrogeology in the study area is conducive to successful implementation of an ASR project. A primary reason for the suitability of the area is the sandy deposits that comprise the aquifer formations in the Gulf Coast Aquifer.

The technical study team for the feasibility assessment included Arcadis U.S., Inc. (Arcadis) and ASR Systems, LLC (the “Arcadis team”). The Arcadis team’s analyses of the lithologic sequences indicated that sand beds with thicknesses greater than 40 feet are prevalent. Based on analyses of transmissivity values from aquifer tests, the thicker sand beds in the formations typically have hydraulic conductivity values between 8 feet per day (ft/day) and 40 ft/day, which translate into transmissivity values between 320 square-feet per day (ft²/day) and 1,600 ft²/day for a 40-foot thick sand bed. Application of the Theis solution for pumping groundwater from deposits within this transmissivity range indicated sustainable pumping rates of at least 160 gallons per minute (gpm) to 800 gpm for a pressure head of about 200 feet and a single 40-foot sand bed.

The feasibility study also confirmed that ASR development in Victoria County, especially in or near the City of Victoria, had additional benefits. Prior to switching to a surface water supply from the Guadalupe River, Victoria relied on groundwater wells in the Gulf Coast Aquifer. Therefore, the City had considerable existing data on the hydrogeology of the area, and the production capacity of municipal wells. In addition, water stored in an ASR wellfield within

Victoria could be easily managed by the City. Any uncertainty about the impact on local municipal wells is manageable because the pumping of these wells is within Victoria's control.

In Victoria, the study determined that the targeted storage interval should be the Upper Goliad formation at approximately -200 feet mean sea level (msl) to -1,000 feet msl. Sand beds with thicknesses of at least 40 feet are prevalent. ASR wells would likely be screened in the middle to lower sections of the formation.

The aquifer properties of the Upper Goliad formation of the Gulf Coast Aquifer underlying the City are characterized with a high level of confidence as a result of: transmissivity estimates from 15 aquifer tests; consistency in the lithology and sand bed profiles from 14 geophysical logs; and significant water quality data. This information was provided in a report to the TWDB in completion of Contract No. 1348321576, entitled "Summary Report for the Development of a Regional Plan for Aquifer Storage and Recovery and Off Channel Storage in the Golden Crescent Region of Texas (Naismith Eng, Oct 2014).

The feasibility study recommended that Victoria initiate an ASR test program at or near two sites, one of which was the Victoria Surface Water Treatment Plant (SWTP). The test/demonstration program could include construction, testing and operation of a new full-scale ASR well and/or retrofitting of one of the existing production wells owned and operated by the City.

Because the feasibility study included a recommendation to initiate an ASR program for the City by rehabilitating and retrofitting one of the City's existing wells, the City decided to pursue that approach. Following the feasibility study, the City began discussions with the VCGCD about participating in an ASR demonstration project. The City also determined that a logical first step would be retrofitting Well No. 19 as an ASR well because: that production well is near the SWTP and a relatively new potable water pipeline; and the well was already scheduled for an overhaul under the City's Capital Improvements Program (CIP).

The purpose of this current report is to provide the results of the effort to document the process and issues related to modifying an existing groundwater production well for ASR purposes.

2.1 Background on Demonstration Projects for Alternative Water Supplies funding

In 2011 the Arcadis team completed a state-wide assessment of ASR for the TWDB. The focus of that effort was a technical, institutional and legal analysis of why ASR had not been implemented more often in Texas, when it was being widely used as a management strategy in other states. The results of that study indicated that the impediments to ASR development in Texas were legal and institutional, not technical. The study also concluded that there was a lack of education on ASR's benefits as a water management and storage strategy.

Following the 2011 study, the TWDB increased education about the benefits of ASR and how the technology was being implemented in other states. The Texas Legislature also increased funding for studies and demonstration projects.

The 84th Texas Legislature appropriated \$1,000,000 from General Revenue to the TWDB to fund grants for demonstration projects for alternative water supplies (House Bill 1 [HB 1], General Appropriation Act, 2015 Legislature, Regular Session, page VI-60, Rider 25). The grants would fund groundwater conservation districts (GCDs) for demonstration projects or feasibility studies

that will prove up aquifer storage and recovery. The legislation required that the applicants for funding must be GCDs and that the applicants must provide matching funds. The TWDB was to issue an application notice by September 22, 2015, with applications due on November 3, 2015.

The TWDB determined that projects would be selected for funding based on the following criteria: overall approach and organization; methodology; qualifications and resources of the applicant's team; the reports and deliverables to be provided to the TWDB; and the applicants ability to perform and complete the project.

The TWDB received six applications, including an application prepared by the Arcadis team for VCGCD and the City. The TWDB awarded three grants, including the demonstration project proposed by VCGCD and the City. The proposed VCGCD/City project had a total budget of \$570,225, with support from the TWDB being limited to \$285,112.

On September 26, 2016, the TWDB and VCGCD executed a contract (Contract No. 1600011958) for the performance of the Victoria Aquifer Storage and Recovery Demonstration Project for Alternative Water Supply (the "Project"). In the contract, VCGCD is shown as the Contractor, and the City is shown as a Participant. The results of that demonstration project are described in the following sections.

2.2 Project participants

As discussed above, the primary participants were VCGCD and the City of Victoria. They were supported by the Arcadis technical team comprised of:

- Arcadis U.S., Inc.; and
- ASR Systems, LLC from Gainesville, Florida.

As the project progressed, the following entities also participated in the demonstration project:

- Lynn Short, President of LSPS Solutions, who supported the City staff with construction management and inspection;
- Weisinger, Inc., (Weisinger) the contractor selected for the rehabilitation of Well No. 19; and
- Mercer Construction Co., (Mercer) the contractor selected for construction of the above-ground ASR facilities, including the metering and disinfection equipment.

2.3 Scope of work, and roles and responsibilities

The Project included the effort necessary to adequately and appropriately:

- Convert an existing City groundwater well into a full-scale operational ASR well;
- Recharge and recover treated water from the City's distribution system;
- Provide operations and maintenance (O&M) and data-collection training for the City, the VCGCD and the TWDB;
- Conduct cycle testing (and related data collection) by recharging and recovering treated water;
- Deliver both an O&M manual and a final report documenting the Project, the data collected, and the conclusions and recommendations of the demonstration; and

- Disseminate the research results through professional papers and presentations.

More specifically, the nine tasks making up the scope of work for the Project included the following:

Task 1: Project Management

Arcadis provided overall project management, which consisted of: communication among the City and VCGCD, and with the TWDB; project tracking; invoicing; scheduling; deliverables oversight; and quality control. This task also included scheduling and attending periodic meetings and conference calls with TWDB staff and among the Project team.

Task 2: Permitting

An Underground Injection Control (UIC) permit from the Texas Commission on Environmental Quality (TCEQ) was required to recharge treated water from the City's public distribution system. Arcadis initially submitted an application with supporting information from the feasibility study to TCEQ for a New Class V UIC Authorization for an ASR Project. However, after further discussions with TCEQ and agreement by the City and VCGCD, Arcadis amended the application. The amended application resulted in TCEQ issuing the City an Authorization for a Class V Injection Well as a 5X25 experimental well. That authorization was issued on April 28, 2017. The authorization is shown in **Appendix A**.

ASR Systems also submitted the plans and specifications for the well retrofit to TCEQ for the agency's approval.

Task 3: ASR Facilities Design

ASR Systems prepared the plans, specifications and bid documents necessary for the City to select and engage qualified contractors to convert Well No. 19 into a full-scale, operational ASR well. The design effort included:

- Evaluation of the existing facilities at Well No. 19, including a video log of the well;
- Preliminary design;
- Final design drawings, specifications and cost estimate; and
- Provision of design documents to TCEQ as part of the permitting process.

Copies of the plans and specifications were provided to the VCGCD and the TWDB.

Task 4: Retrofit of Well No. 19

With support from the Arcadis team, the City used its standard procurement procedures to advertise, evaluate and select qualified contractors to use the plans and specifications developed in Task 3 to convert Well No. 19 into an operational ASR well. The City selected Weisinger to do the below-ground work to rehabilitate the well. Weisinger also provided the new pump, pump column and motor for the ASR well. The City selected Mercer to construct the above-ground ASR and disinfection facilities, including all piping, valves and meters. The contractors provided the required bonds and insurance, stormwater protection plan, local permits, safety programs, equipment manuals, and as-built drawings and warranties.

4 Study area

The study area for the Project generally included Well No. 19 and the surrounding area, including the Victoria SWTP, Well No. 21 and the alignment of the potable water pipelines laid along West Red River Street from North Bluff Street to Well No. 19. As discussed above, the Victoria SWTP was the source of the treated water used for recharge into Well No. 19; and Well No. 21 served as a monitoring well for the Project.

Figure 4-1 shows the study area and the major components of the Project.

User: TAYLORV, Sheet: AUS-HCS00D, File: C:\USERS\TAYLORV\DESKTOP\VICTORIA ASR FIG 4-LDWG, Scale: 1:72, Saved Date: 10/17/2018, Time: 11:26 AM, Plot Date: Taylor, Vertical: 11/2/2015, 10:05, Layout: FIG 4-1



**VICTORIA ASR DEMONSTRATION
PROJECT FOR ALTERNATIVE WATER SUPPLY**

PROJECT STUDY AREA
SCALE: 1" = 1000'

OCTOBER 2018
FIGURE 4-1

Figure 4-1. Project study area

5 Permitting

Because Well No. 19 was already permitted by the VCGCD for groundwater production, no additional permits were required from the District. The two major authorizations required for the Project were an injection permit from TCEQ, and approval by TCEQ of the plans and specifications for the well retrofit.

On November 8, 2016 the Arcadis team conducted a pre-application meeting with the TCEQ UIC permitting team. The purposes of the meeting were to introduce the team members, brief TCEQ on the feasibility study and the proposed Project, and to get guidance on submitting an application for recharge of water through the retrofitted Well No. 19.

Arcadis initially prepared an application for a Class V UIC Well for Aquifer Storage and Recovery. After additional discussions with TCEQ, the Arcadis team and the City decided to use the technical information gathered for the initial application to support an application for a Class V Injection Well authorization under the provisions for a 5X25 experimental well. Permitting Well No. 19 as an experimental well under TCEQ's rules significantly reduced the time required to get the authorization needed to inject water through the retrofitted well. The authorization also allowed the City to gather some of the additional data it will likely need to obtain the Class V UIC ASR well authorization required for long-term operation of Well No. 19 as an ASR well.

On April 25, 2017 the City submitted a letter with supporting information requesting a Class V Injection Well Authorization for the conversion and operation of the City's existing Well No. 19 as an ASR experimental demonstration well. The letter also described the scope of work for the Project, and the proposed cycle testing program.

On April 28, 2017, the City received an authorization from TCEQ for the operation of Well No. 19 as an experimental demonstration well. The purposes of the injection well authorization was to conduct cycle testing to determine the feasibility of storing water in the Evangeline aquifer for later recovery, and to determine the effects resulting from injection and recovery on water quality in the storage aquifer. The following were included among the authorizations and requirements by TCEQ:

- The City can inject and store up to 3,908 acre-feet of water at any one time from the City's distribution system at Well No. 19 during the Project and during up to two cycle testing periods;
- TCEQ authorized the City to inject, store and recover the water during a period from May 17, 2017 through September 30, 2020; and
- The City must submit quarterly reports, a well completion report and cycle testing reports to TCEQ.

The TCEQ authorization letter is **Appendix A**.

On May 15, 2017 ASR Systems submitted the following documents to TCEQ Water Supply Division Plan Review Team for its design review:

- Transmittal Letter
- Public Water System (PWS) Plan Review Submittal Form
- Bid Documents, including plans and specifications

- Preliminary Design Technical Memorandum

On July 17, 2017 ASR Systems received from TCEQ a Conditional Approval Letter for the detailed design and construction of the ASR facilities. The conditions included compliance with the UIC authorization.

6 Retrofit of Well 19

6.1 ASR facilities design

The ASR design task was authorized by the City with issuance of a Notice to Proceed effective October 27, 2016. Existing municipal production Well No. 19 had been previously selected by the City as the demonstration well for ASR rehabilitation, retrofit and cycle testing, with monitoring to be conducted at Well No. 21. Well No. 19 was a standby production well, constructed in 1970, that was utilized when needed to supplement flows diverted from the Guadalupe River to the City's SWTP. Well No. 21, located 3,200 feet from Well No. 19, is also a standby production well. As shown on **Figure 4-1**, Well No. 19 is located in the City's Riverside Park, near the Guadalupe River. The nearby SWTP is also located on City-owned property contiguous with the Park.

6.1.1 Original well design and capacity

From the original well construction records, Well No. 19 had an 18-inch carbon steel casing to 450 feet bgs and a 10-inch carbon steel liner from 408 ft to 1,082 feet bgs with seven wire-wrapped screen intervals in the Evangeline aquifer, set opposite small holes drilled in the liner. Total screen length was 270 feet. The following screen intervals (all bgs) were obtained from well construction records provided by the City: 460 – 510 feet; 544 – 594 feet; 642 – 694 feet; 780 – 804 feet; 852 – 904 feet; 988 – 1,008 feet, and 1,026 – 1,048 feet. Screen slot size was 0.035 inches. Gravel pack surrounded the screen within an under-reamed borehole below the bottom of the 18-inch casing.

The well was originally capable of producing about 1,520 gpm with a pumping water level of 242 feet after 24 hours, as measured during a 24-hour pumping test in March 1970. Static water level prior to the test was not reported; however, two hours after the end of the test, water levels had recovered to 95 feet bgs, yielding a specific capacity of up to approximately 10.3 gallons per minute per foot (gpm/ft).

Prior to the beginning of this ASR demonstration project, the pump column was suspected of having one or more holes due to corrosion because the then-current production rate from the well in 2016 was significantly reduced. This was confirmed when the pump was subsequently pulled.

6.1.2 Well retrofit design

Well No. 19 was equipped with a new pump, motor and electrical control panel in addition to ASR-related wellhead and disinfection facilities. A new 12-inch pipeline was constructed to bring treated drinking water from the City's distribution system to the wellhead. A parallel 2-inch trickle-flow pipeline was constructed to bring treated drinking water to the wellhead during any extended storage periods exceeding about one week. The trickle-flow pipeline enables the City to maintain a disinfectant residual in the well to control microbial growth in the casing and screen. A concrete pad with riprap was provided for occasional discharge of backflush water to an adjacent drainage swale. Disinfection facilities were provided so that water recovered from the well could be provided with a chloramine residual prior to entering the distribution system. Wellhouse modifications were also provided to accommodate the new facilities.

Certain features common to most designs for new ASR wells were not provided in order to manage costs. These features included: an adjustable frequency drive; a downhole flow control valve; wellhead piping design to provide for recharge down the casing annulus; a bypass filter; and supervisory control and data acquisition (SCADA) improvements to provide for remote control of ASR operations. All operation was therefore designed to be manual at Well No. 19.

Well rehabilitation was conducted prior to retrofitting Well No. 19. The rehabilitation was planned to include several different techniques to improve well yield. In addition, three video logs were to be obtained. The rehabilitation included the following general sequence of steps:

- Remove existing pump
- Remove any residual oil found in the well
- Video log well (initial)
- Wire and nylon brush well casing, screen and blank pipe sections
- Bail and/or airlift any debris to full depth of well
- Video log well (intermediate)
- Sonar jet the well
- Acidize, swab and air lift removal of debris
- Gentle swab or surge block well screens while airlifting
- Bail and/or airlift debris to full depth of well
- Video log well (final)
- Well casing repair (optional)
- Install new pumping and related equipment
- Chlorinate well
- Pump test and documentation

Depending upon initial results during the well rehabilitation process, provision was included in the specifications to delete or modify some of the subsequent sequence of steps, as appropriate.

Bid documents, including plans and specifications, were prepared. Through a conventional public bidding process, the City awarded construction contracts to Weisinger for work relating to the well and pump, and to Mercer for work relating to construction of wellhead facilities. The pre-construction meeting was held on August 10, 2017.

Copies of the technical plans and specifications have been provided to the TWDB and are not included in this report.

6.2 Rehabilitation and construction

The motor, pump and pump column were first removed from the well. Several holes were found in the pump column near the connection to the vertical turbine pump. Oil floating in the well from the oil-lubricated pump was removed. The well was flushed with potable water overnight through a 2-inch hose at a low flow rate estimated at less than 250 gpm. The flushing was to improve visibility for the subsequent video logging on September 14, 2017. Even at the low flow rate utilized for well flushing, the well overflowed. Subsequently the static water level was determined to be about 40 feet below the top of casing, much higher than previously reported.

Historic records had indicated static water levels of approximately 80 to 100 feet bgs. Because the well overflowed during flushing at a rate less than 250 gpm, the Arcadis Team believed that the well was clogged.

From the subsequent video log, severe corrosion damage to the liner was evident at 587 feet bgs, with almost complete loss of the carbon steel, revealing the stainless steel, wire-wrap screen wrapped around the 10-inch liner. The screen appeared to be intact and undamaged. Visibility below about 600 feet bgs was poor and below 800 feet bgs was negligible. There were many places where the holes in the liner appeared to be completely encrusted and clogged, and other places where corrosion was evident. Calcium carbonate precipitation was widely evident.

Based upon analysis of the video log, the previously-planned well rehabilitation program required modification. Aggressive cleaning techniques such as sonic jetting and wire-brushing were deleted from the rehabilitation program because they could further damage or collapse the casing and liner. Less aggressive techniques were implemented, including acidification and air-lifting, followed by a second video log.

The second video confirmed a previously-apparent partial well blockage at about 843 feet bgs, which was not opposite a screened interval. The well rehabilitation had definitely improved the condition of the liner and screened intervals; however, visibility was still minimal in the lower portions of the well, and corrosion damage was evident.

Following the modified rehabilitation process, the City, the Arcadis team and Weisinger determined that retrofitting of the well could continue. Weisinger completed installation of the pump and welding the flange on the top of the casing pipe during the week of January 22, 2018. Weisinger began installing the new motor on March 26, 2018.

Mercer began work on the ASR above-ground piping and facilities in early February 2018. Despite some continual light rain, Mercer made reasonable progress. Most of the work was completed by the week of March 12, 2018.

Interim recharge commenced on April 9, 2018. Potable water from the City's distribution system was recharged down the pump column while the remaining wellhead facilities were still under construction. The intention was to start getting some water into storage at as early a date as possible, prior to planned well redevelopment using the Radial Injection Surge Development (RISD) method. The RISD has been consistently effective at improving well performance, for both recharge and recovery.

Recharge continued at flow rates of 424 to 596 gpm and wellhead pressures of 38 to 64 pounds per square inch (psi) in the pump column at the wellhead. Casing annulus pressures varied from 10 to 20 psi at the wellhead, indicating substantial head loss through the pump column and pump bowls. The total volume recharged was 19.8 MG by the time that interim recharge was ended on May 7, 2018. No backflushing was conducted during this approximately one-month recharge period.

Well redevelopment was initiated on May 9, 2018 as part of the training program for the City. The purpose of redevelopment was to improve well performance and to verify the hydraulics (specific capacity during production and specific injectivity during recharge, gpm/ft) of the modified well during recharge and also during pumping. Cycle testing was to begin immediately following the redevelopment process.

The initial pump testing was terminated after about 30 minutes due to about two cubic yards of sand and some gravel in the produced water, which was being discharged to waste. During previous production the well had produced water that was sand-free. It was unclear at the time whether the produced material was due to a casing collapse resulting from the well rehabilitation, or failure of whatever plug or packing may have capped the gravel pack between the original 18-inch casing and the top of the 10-inch liner and well screen. Subsequent sounding of the gravel pack in the space between the casing and the liner indicated that gravel was absent from the top of the 10-inch liner at 400 feet bgs to a depth of 457 feet bgs, very near the top of the uppermost screen at 460 feet bgs. Uphole flow within the annular space had presumably mobilized and flushed out the gravel pack, suggesting that the original well construction did not include any K-packer or grout cap to hold the gravel pack in place.

Subsequently, the city council of Victoria approved a proposal from Weisinger to remove the pump and investigate the reason for the production of sand. Weisinger began work on this investigation effort on July 11, 2018. Weisinger pulled the motor and disassembled the pump; and sounded the well to the bottom, finding little sand. Inspection indicated some damage to the pump and pump column assembly and epoxy coating, caused by pumping the sand and gravel. In particular, the suction screen was bent, with pieces of gravel embedded in the wire screen.

On July 20, 2018 Weisinger took another video of the well. The gravel appeared to be angular and of various sizes, perhaps from the formation, not rounded and well-sorted gravel pack. The bottom of the well was at 1,027 feet bgs, 14 feet higher than the previous log in September 2017. An obstruction that appeared to include a hole in the casing was evident at 843 feet, partially but not totally blocking the well.

The City requested proposals from Weisinger to make necessary repairs to the well and the pump. Those proposals were provided to the City on August 9 and 15, 2018. On August 15, 2018 the City approved Weisinger making repairs to the well and the pump. Weisinger began work on the well on September 7, 2018.

The well repairs were implemented by Weisinger, as shown on **Figure 6-1** on page 19. The well was plugged back to 845 feet bgs with bentonite and then capped with coarse gravel to 835 feet bgs. Gravel (size 12-20) was utilized to refill the annular space between 400 and 457 feet bgs between the under-reamed 18-inch borehole below 450 feet bgs, the 18-inch casing from 400 to 450 feet bgs, and the original 10-inch liner. A 6-inch carbon steel liner was then set from 403 ft to 814 feet bgs, screened opposite four formation intervals, as provided by Weisinger (465 to 521 feet; 551 to 605 feet; 647 to 705 feet, and 785 to 814 feet bgs). A 14-inch carbon steel liner was set from the wellhead to the base of the 18-inch casing at 400 feet bgs and swaged to the top of the new 6-inch liner. The annular space between the original and new liners/casings was filled with 12-20 gravel and capped with a welded steel “doughnut” a few inches below the wellhead flange.

Weisinger found the pump to be in reusable condition. Two 10-foot sections of column pipe were in poor condition and had to be replaced. The rubber inserts in the spider bearings were also damaged by sand and were replaced. The following pump parts were also replaced: pump bowl shaft; bowl bearings; suction case bearing; bowl wear rings; mechanical seal; and suction strainer. Weisinger also balanced the impellers.

MODIFICATIONS TO WELL 19
CITY OF VICTORIA TEXAS

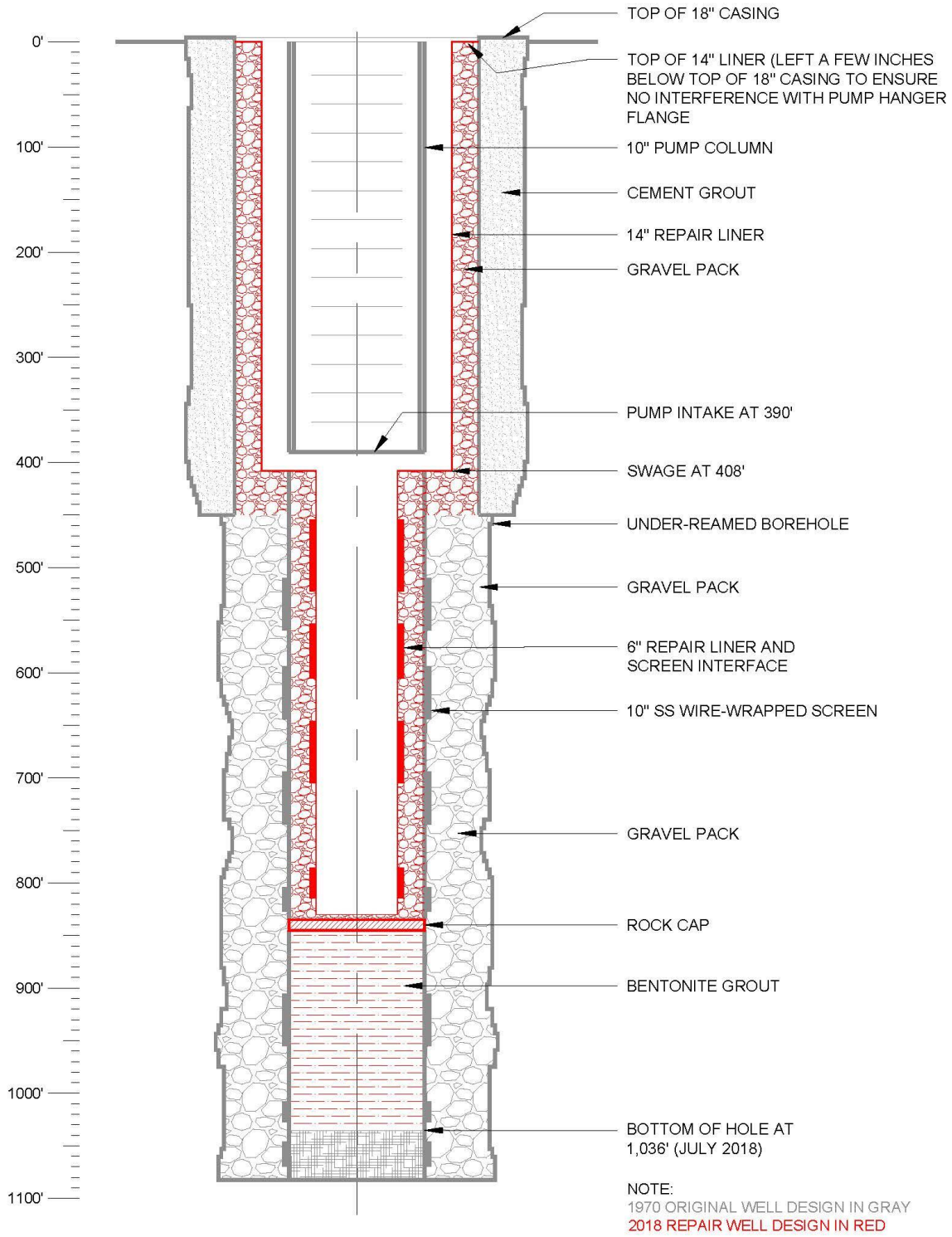


Figure 6-1. Well No. 19 repair diagram

On December 10, 2018 Weisinger began re-installing the repaired pump and pump column into the ASR well. On December 13, 2018 Weisinger re-installed the motor. On December 18, 2018, Mercer began re-installing the building and the above-ground piping.

A brief pump test in two parts, totaling about six hours had been conducted on November 13-14, 2018. That test indicated that the well produced 1,600 gpm with a specific capacity of 7.5 gpm/ft. Static water level was 44 feet bgs and pumping water level was 258 feet bgs. The original specific capacity of the well in 1970 was about 10 gpm/ft.

Figure 6-1 suggests that there may be misalignment between the original (1970) well screen intervals in the 10-inch liner, the new (2018) well screen intervals in the 6-inch liner, and sand intervals as described in the original drillers log. Since the well was originally very productive and remains quite productive, a reasonable presumption is that the well was constructed appropriately but that the original drillers log has an incorrect diagram.

The small annular space between the 10-inch pump column and the 14-inch liner precluded installation of a transducer or measurements of depth to water level using a steel tape or electric tape. A bubbler tube attached to the pump column provides the only viable means for measuring depth to water level. A nitrogen tank is utilized for operation of the bubbler tube.

7 Operations and maintenance manual, and training

Toward the end of the well rehabilitation, reconstruction and redevelopment period a guidance document was prepared for City operations staff, to be utilized during cycle testing and initial operation of the ASR demonstration facilities. The document was titled *Aquifer Storage Recovery Facilities for ASR Well 19 and Monitor Well 21 Startup and Cycle Testing Operations Manual* and was dated April 2018 (the “O&M Manual”).

Manual operation procedures were described in the O&M Manual for the various operating modes including: backflushing the well to waste prior to starting recharge; manual flushing the recharge piping to waste prior to starting recharge; startup of recharge down the well; recovery to waste; trickle flow during extended storage periods to control downhole microbial activity, and recovery of stored water to the water distribution system. Interim recharge goals and procedures were described, and the plans for well redevelopment at the end of the interim recharge period were discussed. The planned cycle testing program was presented, extending over a period of several months and including monitor program elements such as sample locations; constituents to be sampled; sampling frequencies; measurement of flows, pressures, volumes, water levels, etc. A format was provided for recording the data. Appendices included baseline water quality data for the recharge water, and the native groundwater from Wells No. 19 and 21. Appendices also included copies of applicable permits.

A copy of the O&M Manual was provided to the TWDB. Therefore, the O&M Manual is not included in this report.

A training program was conducted for Victoria operations staff and one representative of the TWDB on May 8, 2018. The training program was conducted by Tom Morris of ASR Systems. The classroom training was conducted at the Victoria SWTP. The training program consisted of four hours of classroom instruction, followed by approximately three hours of field instruction at Well No. 19.

The planned training at Well No. 19 was to include the start of RISD well redevelopment, which was expected to require a few hours and to be followed by starting the cycle testing program. As described in Section 6.2, the well redevelopment program was terminated after approximately 30 minutes due to sand and gravel in the produced water. This set up the need for design modifications and reconstruction of the well, as described above in Section 6.2.

Recharge of water from the City distribution system resumed on January 18, 2019.

8 Cycle testing and assessment

A single cycle test was conducted during this Project, reflecting the limitations imposed by the TWDB reporting schedule and the extensive time (eight months) spent rehabilitating and repairing Well 19. The cycle test was conducted by City water operations staff. Lab samples collected by the City were analyzed through B Environmental Lab, Victoria TX. Data were collected regarding flows, volumes, pressures, water levels and water quality at Well No. 19 and also at monitor Well No. 21. The data are presented in **Appendix G**. Cycle testing will continue following completion of this Project and is being implemented by the City.

The City's Class V 5X25 authorization from TCEQ (see **Appendix A**) permits the City to conduct up to two cycle tests at Well No. 19 through December 31, 2020. In recent discussions, TCEQ representatives have indicated their willingness to amend the authorization to allow the City to conduct additional cycle tests if needed to gather more data for future permitting and operations.

8.1 ASR - aquifer recharge

Recharge recommenced on January 18, 2019 at a recharge flow rate of 525 gpm and a wellhead pump column pressure of 42 psi. At that point 19.4 MG (59.5 AF) had already been recharged during April and May 2018, prior to apparent failure of the casing due to corrosion, combined with loss of the seal between the base of the inner casing at 400 feet bgs and the top screen interval outside the liner at 450 feet bgs. After the initial recharge period, well repairs required about eight months. It is unknown how much of the volume stored at that time is recoverable since the bottom of the original well was plugged back to 830 feet bgs to close off a possible hole in the casing below that depth. It is believed, but unconfirmed, that much of the water stored during April and May 2018 entered the top two screened intervals and is therefore recoverable.

Static water level in the casing annulus on January 18, 2019 was estimated at a depth of about 35 feet bgs. During the first week of recharge, wellhead pressure in the pump column was increased incrementally to match distribution system pressure of about 60 to 64 psi. The recharge flow rate varied from 542 to 582 gpm, showing a slow decline with time. Casing annulus pressure slowly increased from 8 psi to 17 psi, most likely reflecting well clogging and also local mounding of water levels. Due to the anticipated short duration of the cycle test, no backflushing was conducted. Recharge was terminated on February 12, 2019, at which point an additional 19.2 MG had been recharged.

The total recharged volume as of February 12, 2019 is between 19.2 and 39.0 MG (equivalent to between 59 and 120 acre-feet [AF]), reflecting uncertainty regarding the location of the previous volume of drinking water stored during April and May 2018. The most likely location of the initially-stored water is within the upper two screen intervals, particularly the upper screen interval because water would have been recharged through the screen and also through the annular space between the 18-inch borehole and the 10-inch liner, within which the gravel had been completely removed down to the top of the upper screened interval. However, some of the recharge flow may have entered the aquifer through the possible casing break at about 830 feet bgs or through other holes in the corroded 10-inch liner. Any water stored below 830 feet bgs would be lost for recovery purposes because the well was plugged back to that depth.

Although this may appear to be a substantial range of uncertainty as to the volume recharged to date, it should be compared with the estimated preliminary Target Storage Volume (TSV) for an ASR well at or near this location, as described in the *Victoria Area ASR Feasibility Report* (Arcadis, 2014). The TSV was estimated at 10,381 AF for a single ASR well (3,382 MG), associated with ensuring water supply reliability during a repeat of the Drought of Record for the Victoria area (1947 to 1957). This was at the upper end of a range of ASR options evaluated for the City. The estimated TSV radius was 1,560 feet, underlying an area of about 173 acres. Therefore, the cumulative volume stored to date is approximately 1 percent of the TSV for this well. As discussed below, about half of the volume of stored water is assumed to be recoverable as potable water for use in the City's distribution system. Actual recoverability will be determined during subsequent cycle testing for longer periods of time. The radial extent of the TSV will be determined on the basis of data collected from one or more monitoring wells.

Of the stored water volume, half is initially assumed to comprise the buffer zone and the remaining half would be recoverable. The radius of the recoverable water volume would be about 1,100 feet. The buffer zone volume should not be recovered. If it is recovered, the recovered water quality would tend to steadily transition from the recharge water quality (treated surface water) to the native groundwater quality, with potentially increasing concentrations of some constituents such as total dissolved solids (TDS). The buffer zone is analogous to the walls of a tank, separating the stored water from the surrounding ambient groundwater. Data from cycle testing and initial operations provides a basis for updating these preliminary estimates for the TSV, buffer zone volume, and associated radial distances. The more water in storage prior to achieving the TSV, the higher the level of water supply reliability that will have been achieved.

Three samples of the recharged water were collected at the Well No. 19 wellhead for lab analysis: one at the beginning of recharge on January 18, 2019; one at the middle of recharge on January 30, 2019 and one at the end of recharge on February 12, 2019. Lab results are summarized in **Table 8-1** and are included in **Appendix G**. Samples were also obtained at monitoring Well No. 21 prior to beginning recharge and at the end of cycle testing. The results of that sampling effort are also included in **Appendix G**.

Table 8-1. Cycle test water quality data

Constituent	Units	Drinking Water Standard		Water Treatment Plant POE			Recharge Water at Wellhead			ASR Well 19	Recovered Water at Wellhead			Monitor Well 21	
		Primary	Secondary	2016	2017	2018	Beginning	Middle	End	Baseline	Beginning	Middle	End	Baseline	End
							1.18.2019	1.30.2019	2.11.2019	2017	2.19.2019	3.12.2019	3.18.2019	2017	3.21.2019
Date	Lab Sample ID			-	-	-	79978	80442	80885	-	81230	82163	82436	-	82604
Lab Measurements															
Fluoride	mg/l	4.00	2.00	0.62	0.46	0.50	0.63	0.55	0.83	0.53	0.75	0.56	0.50	0.54	0.38
Turbidity	NTU	1	-	-	-	-	<0.3	-	<0.3	-	1.1	0.4	<0.3	-	19.5
Chloride	mg/l	-	300	49.0	37.0	49.0	59.6	54.6	62.8	108	61.8	58.8	59.4	92.0	111
Sulfate	mg/l	-	300	22.0	33.0	41.0	20.4	20.9	22.9	19.1	22.5	21.8	23.7	<2.00	0.6
Total Dissolved Solids	mg/l	-	1,000	305.0	266	309	364	308	336	504	328	324	308	455	488
Aluminum, Total	mg/l	-	0.05 to 0.2	-	-	-	0.004	0.009	0.009	-	0.036	0.012	0.003	-	3.26
Ammonia, as N	mg/l	-	-	0.010	-	-	0.631	0.483	0.855	0.2	0.462	0.229	0.158	<0.10	0.090
Total Alkalinity, as CaCO ₃	mg/l	-	-	166	-	-	183	177	197	260	176	170	174	271	285
Total Suspended Solids	mg/l	-	-	0.06	-	-	<2.00	<2.00	2.00	0.13	<2.00	2.20	<2.00	1.17	41.7
Calcium	mg/l	-	-	48.0	50.2	62.8	39.1	42.5	43.5	22.3	42.4	41.7	39.5	35.2	36.3
Magnesium	mg/l	-	-	9.62	14.4	16.7	9.45	9.64	9.36	7.48	9.54	9.44	9.43	9.54	9.82
Sodium	mg/l	-	-	50.8	24.3	35.8	55.6	55.7	61.7	226	56.6	59.1	71.4	130	115
Potassium	mg/l	-	-	3.45	3.19	2.83	5.73	5.17	5.05	2.60	4.48	4.71	4.87	2.10	2.62
Total Silica, SiO ₂	mg/l	-	-	19.0	-	-	22.3	13.1	14.0	30.0	13.5	12.5	13.5	27.0	28.7
Total Hardness, as CaCO ₃	mg/l	-	-	159	185	226	137	146	147	88.0	145	143	137	135	131
Phosphorus	mg/l	-	-	1.08	-	-	-	-	-	0.07	0.24	0.24	0.14	0.03	0.04
Total Organic Carbon	mg/l	-	-	1.50	-	-	2.65	2.68	2.37	<1.00	2.73	2.35	1.90	<1.00	0.65
Total Trihalomethanes	µg/l	80	-	43.8	42.7	38.3	54.9	50.0	38.0	2.00	44.0	60.5	56.6	2.00	<0.001
Haloacetic Acids 5	µg/l	60	-	16.4	16.6	16.5	7.0	29.0	10.0	<1.00	47.8	23.4	9.7	<1.00	<0.005
Bromate	µg/l	10	-	<0.002	-	-	<5.00	<5.00	<5.00	<0.002	<5.00	-	<5.00	<0.002	<5.00
Arsenic (filtered)	µg/l	10	-	<2.00	-	-	-	-	-	<0.005	18.7	2.1	3.4	0.0072	16.4
Arsenic (unfiltered)	µg/l	10	-	0.0021	-	-	-	-	-	<0.0029	18.6	2.5	3.76	0.0156	28.5
Iron (filtered)	mg/l	-	0.3	<20.00	-	-	-	-	-	<0.005	0.012	<0.005	0.01	0.0143	0.06
Iron (unfiltered)	mg/l	-	0.3	<0.010	0.2	-	-	-	-	0.20	0.2	0.1	0.05	0.70	3.12
Manganese (filtered)	mg/l	-	0.05	<0.005	-	-	-	-	-	0.0068	<2.63	0.013	0.00	0.0888	0.104
Manganese (unfiltered)	mg/l	-	0.05	<0.0010	-	-	-	-	-	0.0076	<2.64	0.013	0.007	0.096	0.138
Lead	mg/l	0.015	-	<0.00100	0.01000	-	-	-	-	<0.00090	-	<0.00025	<0.00025	0.00680	0.00414
Field Measurements															
Dissolved Oxygen	mg/l	-	-	9.10	-	-	9.51	9.60	-	3.10	-	7.40	7.10	1.30	-
Oxidation Reduction Potential	mv	-	-	442	-	-	455	472	-	131	-	355	286	201	-
Temperature	°C	-	-	-	-	-	17.8	16.1	-	-	-	20.2	20.4	-	-
pH	unit	-	>7	7.50	-	-	8.90	8.70	-	7.86	-	8.40	8.50	7.36	-
Conductivity	µS	-	-	592	504	644	556	422	-	-	-	469	444	-	721
Chlorine Residual	mg/l	-	-	-	-	-	3.20	3.00	-	-	-	0.100	0.030	-	-
Chloride	mg/l	-	-	-	-	-	80.0	100	-	-	-	100	100	-	220

Notes:

1. "-" signifies no data are available.
2. Units are reported as confirmed by the laboratory. Report authors suspect some units may be incorrect (e.g., Arsenic concentration of 0.0021 µg/L when the detection limit on the same day is noted as 2 µg/L).
3. The SWTP POE data are from annual water quality analyses at the POE to the distribution system, except TTHM and HAA5.
4. The Recharge Water at the Wellhead data are from samples obtained at the Well 19 wellhead at the beginning, middle and end of recharge.
5. The ASR Well 19 Data are from a baseline sample from Well 19, pumped in 2017 prior to initiating any recharge.
6. The Recovered Water at Wellhead data are from samples collected at the Well 19 wellhead at the beginning, middle and end of recovery.
7. The Monitor Well 21 data are from samples pumped from Monitor Well 21 in 2017 prior to recharge at Well 19, and also at the end of the Well 19 cycle test recovery.
8. Rows beginning with "Fluoride" and ending with "Bromate" are List A constituents from the April 2018 ASR Operations and Maintenance Manual.
9. Rows beginning with "Arsenic (filtered)" and ending with "Lead" are List B constituents from the April 2018 ASR Operations and Maintenance Manual.
10. TTHM and HAA5 data presented are averages of eight sampling points in the distribution system.

8.2 ASR - storage period

A one-week storage period was planned, with recovery to start on February 19, 2019. The brief storage period was necessitated by the need to complete the Project by the TWDB contractual date. The original Project schedule called for a storage period of about one month.

For chlorine disinfection at a water treatment plant, the chlorine is typically added ahead of the ammonia feed point so that complete mixing and breakpoint disinfection can occur, prior to establishing a chloramine residual for flows entering the distribution system. For restoration of a chloramine residual in a distribution system where a chloramine residual already exists, the ammonia is added first and then the chlorine, thereby boosting the chloramine residual. Depending on the duration of ASR storage, the ammonia content of the recovered water may contain variable concentrations of ammonia in the form of chloramine. Cycle testing and operational experience at Victoria will indicate the likely concentration of ammonia in the recovered water, ranging from close to the recharge concentration associated with a very short storage period, to zero concentration after a long storage period of several weeks to months. Flexibility will need to be built into the design, operation and control systems for any ASR wellfield expansion to address these potentially changing needs. TCEQ Chapter 290.38 regulations address these requirements.

As a result of the shorter storage period, ammonia was present in the recovered water at concentrations similar to those in the treated drinking water leaving the Victoria SWTP, creating the need for more chlorine, or reduced recovery flow rates, in order to restore the chloramine residual in recovered water flows going to the distribution system.

8.3 ASR - recovery

Recovery of the stored water was restarted on February 21, 2019, after a storage period of seven days. Water quality data are provided for the beginning, middle and end of recovery. Laboratory results are included in **Appendix G** and a summary is provided in **Table 8-1**. Also shown in this table are representative water quality data for the SWTP at the Point of Entry (POE) to the distribution system, as obtained from the TCEQ Drinking Water Watch Database and baseline groundwater quality data for Wells No. 19 and 21 prior to beginning ASR recharge at Well No. 19.

After collection of the initial recovered water samples on February 21, 2019, a delay in recovery occurred due to operational constraints that became apparent after the start of recovery. One of the re-disinfection chemical feed pumps at the wellhead was not producing at the required rate and had to be replaced. Recovery was resumed on March 8, 2019 after replacement of the feed pump. The recovery flow rate was initially throttled and then gradually increased as the ammonia content of the recovered water steadily attenuated, requiring less chlorine to achieve breakpoint chlorination and establish the target chloramine residual for the distribution system. The middle of recovery and end of recovery samples were obtained March 12 and March 18, 2019. Total volume recovered was 6.7 MG, compared to the approximately 10 MG recovery volume previously planned.

8.3.1 Water quality tracers

Constituents of particular interest due to their value as conservative tracers include chloride and TDS, in that order of reliability. Substantial differences also exist in recharge water and groundwater concentrations for total alkalinity and sodium; however, both of these are less useful as tracers because changes in concentrations between ASR recharge and recovery may be due to either mixing or geochemical reactions, or both. Concentrations of all four parameters in the recovered water were similar to the SWTP POE and recharged water quality, and lower than the baseline groundwater quality. These data suggest that the quality of the water recharged and recovered was maintained.

8.3.1.1 Chloride

Chloride concentrations at the SWTP POE (i.e., 49 milligrams per liter (mg/L), 37 mg/L, and 49 mg/L for single samples obtained in 2016, 2017 and 2018, respectively) were similar to chloride concentrations in the recharged water measured at Well No. 19 at the beginning, middle and end of recharge (i.e., 60 mg/L, 55 mg/L and 63 mg/L, respectively). Baseline chloride concentrations at Wells No. 19 and 21 prior to beginning ASR operations were higher (i.e., 108 mg/L and 92 mg/L, respectively). Chloride concentrations in the recovered water at the beginning, middle and end of recovery (i.e., 62 mg/L, 59 mg/L and 59 mg/L, respectively) were similar to the recharged water and SWTP POE concentrations, and lower than the baseline groundwater concentrations.

8.3.1.2 Total dissolved solids

TDS concentrations at the SWTP POE (i.e., 305 mg/L, 266 mg/L and 309 mg/L for single samples obtained in 2016, 2017 and 2018, respectively) were similar to TDS concentrations in the recharged water measured at Well No. 19 at the beginning, middle and end of recharge (i.e., 364 mg/L, 308 mg/L and 336 mg/L, respectively). Baseline groundwater TDS concentrations at Wells No. 19 and 21 prior to beginning ASR operations were higher (i.e., 504 mg/L and 455 mg/L, respectively). TDS concentrations in the recovered water at the beginning, middle and end of recovery (i.e., 328 mg/L, 324 mg/L and 308 mg/L, respectively) were similar to the recharged water and SWTP POE concentrations, and lower than the baseline groundwater concentrations.

8.3.1.3 Total alkalinity

The alkalinity at the SWTP POE (i.e., 166 mg/L as CaCO₃ reported for a single sample in 2016) was similar to the alkalinity in the recharged water measured at Well No. 19 (i.e., a range of 177 to 197 mg/L as CaCO₃). Baseline groundwater concentrations at Wells No. 19 and 21 prior to beginning ASR operations were higher (i.e., 260 and 271 mg/L as CaCO₃, respectively). Total alkalinity in the recovered water at the beginning, middle and end of recovery (i.e., a range of 170 to 176 mg/L as CaCO₃) were similar to the recharged water and SWTP POE concentrations, and lower than the baseline groundwater concentrations.

8.3.1.4 Sodium

Sodium concentrations at the SWTP POE (i.e., a range of 24 mg/L to 51 mg/L for single samples collected in 2016, 2017 and 2018, respectively) were similar to sodium concentrations in the recharged water measured at Well No. 19 at the beginning, middle and end of recharge (i.e., a range of 56 mg/L to 62 mg/L). Baseline groundwater concentrations at Wells No. 19 and 21 prior to beginning ASR operations were higher (i.e., 226 and 130 mg/L, respectively). Sodium concentrations in the recovered water at the beginning, middle and end of recovery (i.e., a range

of 57 to 72 mg/L as CaCO₃) were similar to the recharged water and SWTP POE concentrations, and lower than the baseline groundwater concentrations.

8.3.2 Disinfection byproducts

Disinfection byproducts (DBPs), including total trihalomethanes (TTHMs) and haloacetic acids (HAA5), were also measured during recharge and recovery. Extensive published research supplemented by field observations has shown attenuation of preformed THMs over a period of several weeks during aquifer storage. After oxygen in the recharged water has been consumed due to microbial and geochemical reactions in the aquifer, anaerobic microbial activity results in attenuation of preformed THMs. Under anaerobic (not aerobic) conditions, recovered water TTHM concentrations are typically negligible after a few weeks of storage.

TTHM concentrations at the SWTP POE (i.e., a range of 38 micrograms per liter (µg/L) to 44 µg/L for single samples obtained in 2016, 2017 and 2018, respectively) were similar to the TTHM concentrations in the recharged water measured at Well No. 19 at the beginning, middle and end of recharge (i.e., a range of 38 to 55 µg/L). These concentrations are below the Maximum Contaminant Limit (MCL) of 80 µg/L. TTHMs in the recovered water at the beginning, middle and end of recovery were 44 µg/L, 61 µg/L and 57 µg/L, respectively. Attenuation of TTHMs during ASR storage is typically expected over time. However, due to the variation in the recharged water quality and the short duration of this Project's cycle test, no clear trends are apparent.

HAA5 concentrations are typically reduced to below detection limits within a few days of recharge due to aerobic microbial activity fed by oxygen present in recharge water. HAA5 concentrations at the SWTP POE (i.e., a range of 16 µg/L to 17 µg/L for single samples obtained in 2016, 2017 and 2018, respectively) were similar to the HAA5 concentration in the recharged water measured at Well No. 19 at the beginning of recharge (i.e., a range of 7 µg/L to 29 µg/L). These concentrations are below the MCL of 60 µg/L. Total HAAs in the recovered water at the beginning, middle and end of recovery were 48 µg/L, 23 µg/L and 10 µg/L. Although the trends in the recovered water suggest rapid attenuation during ASR storage, the large variation in the recharged water quality confounds these results. However, a reduction in HAA5 concentrations during the first few days of ASR storage has been observed for other ASR sites in the United States. The same trend is anticipated to be confirmed at Well No. 19 through additional cycle testing and monitoring.

8.3.3 Arsenic

The total arsenic concentration measured at the beginning, middle and end of recovery was 19, 2.1 and 3.4 µg/L. Only the first recovered sample was above the 10 µg/L MCL for drinking water. As similar concentrations were measured in both filtered and unfiltered samples, the arsenic was primarily dissolved. Thus, the arsenic was not associated with any particulate(s) in the recovered water (e.g., a small piece of arsenopyrite or a particle of rust from a corroded steel casing with an arsenic impurity). However, as the arsenic concentration in subsequent samples was below 4 µg/L, it is possible that the high initial measurement reflected insufficient time to purge the well before beginning recovery (i.e., collecting the initial recovery sample).

Experience at many other operating ASR wells indicates that formation and maintenance of an adequate buffer zone is generally effective at controlling arsenic concentrations in the recovered

water. Arsenic moves naturally underground as a “rolling front.” It is mobilized from arsenopyrite by oxygen in the recharge water, moves laterally with groundwater flow, adsorbs onto ferric hydroxide floc formed when oxygen in the recharge water combines with the iron that is also released from dissolution of the pyrite, and then gets physically trapped or adsorbed in the aquifer at a greater distance from the ASR well. An adequate buffer zone pushes this “front” a sufficient distance from the ASR well so that arsenic concentrations in the recovered water are well below the MCL. Research investigations into arsenic mobilization and attenuation in Florida ASR wells (ASRS, 2007; Pyne and others, 2008) showed that ASR wells with a storage volume sufficient to meet demands for 70 days or more did not have arsenic at detectable concentrations in the recovered water. An inverse linear relationship existed between the cumulative storage volume and arsenic concentration. These studies indicated that the “rolling front” of mobilized arsenic typically moved less than 200 feet in limestone aquifers. The movement would likely be less in a sand and gravel aquifer as the stored water typically extends further radially. Data from nearby monitor wells will be needed to better understand the potential for arsenic mobilization near Well No. 19.

For the initial recovered water sample from Well No. 19, the cumulative volume in storage was between 20 MG and 40 MG, as discussed above. At a probable recovery flow rate of about 2 mgd, this would be equivalent to 10 to 20 days of recovery capacity. Although the local hydrogeology is different than that of Florida, adding extra storage volume underground (i.e., creating a greater buffer) is expected to similarly reduce arsenic concentrations. Furthermore, creating a greater buffer is simpler and much less expensive than treating the recharge water to remove oxygen and, thereby, controlling arsenic mobilization. Additional cycle testing during the next year will provide a more thorough analysis of the potential for arsenic mobilization in Well No. 19.

8.3.4 Field measurements of water quality

Field measurements of water quality were obtained during the cycle test, including dissolved oxygen (DO), oxidation-reduction potential (ORP), temperature, pH, chloride, chlorine residual and conductivity. These measurements are utilized to aid in understanding any changes in water quality occurring during aquifer storage, whether due to physical changes, microbial activity or geochemical reactions. Reflecting the small volume stored and recovered, and the short duration of storage for the cycle test, no significant changes in water quality were evident between recharge and recovery, other than the apparent decline in ammonia concentration and the rapid attenuation of chlorine.

Careful control of chloramines in the recovered water will be important for preventing nitrification. Longer storage periods should ease operational control requirements as a result of lower ammonia concentrations in the recovered water.

Field measurements of turbidity were not collected, but are recommended. Laboratory measurements show elevated turbidity concentrations, but are limited to a high detection limit of 0.3 NTU. Turbidity data should be collected in the field during future recharge and recovery events to evaluate the recovered water turbidity concentrations.

8.3.5 Corrosion considerations

The City’s corrosion control strategy includes maintaining a finished water pH between 7.6 and 8.1 and dosing orthophosphate at a concentration of 2.5 mg/L. The Arcadis Team conducted a

cursory evaluation of the concentration of common corrosion control water quality parameters during ASR recovery as compared to finished water quality. The results are summarized in the bulleted paragraphs below.

Because data were very limited and the duration of storage was short, a more detailed evaluation should be conducted by the City as it continues to recover stored water from Well No. 19 (i.e., the absence of differences in water quality presented in the brief evaluation as part of this Project does not imply optimal corrosion control conditions).

- **pH:** The pH of the recharged water (i.e., 8.7 to 8.9) was similar to the pH of the recovered water (i.e., 8.4 to 8.5). However, it should be noted that during both of these sampling events, the pH was above the target range noted by the City.
- **Alkalinity:** The alkalinity of the recharged water (i.e., 177 mg/L as CaCO₃ to 197 mg/L as CaCO₃) was similar to the alkalinity of the recovered water (i.e., 170 mg/L as CaCO₃ to 176 mg/L as CaCO₃).
- **Calcium and Hardness:** The calcium and hardness of the recharged water was similar to the hardness of the recovered water.
- **Lead and Copper:** Lead concentrations in the recovered water were below the detection limit of 0.25 µg/L. Copper concentrations were not measured in this evaluation.
- **Chloride-to-Sulfate-Mass-Ratio (CSMR):** The CSMR is used to predict shifts in corrosion in premise plumbing (i.e., impacts on brass fixtures and galvanic corrosion) rather than in the distribution system. The CSMR of the recharged water ranged from 2.6 to 2.9. The CSMR of the recovered water ranged from 2.5 to 2.7. Thus, the CSMR of the recharged and recovered water was similar.
- **Chlorine Residual:** Although the chlorine residual in the recovered water was low, a chemical system is available at the well for boosting the chloramine concentration in the recovered water. Careful control of total chlorine, monochloramine, and free ammonia concentrations will be critical prior to distribution.
- **Orthophosphate:** The phosphorus concentrations in the recovered water ranged from 0.14 mg/L to 0.24 mg/L. These concentrations are below the City's target concentration of 2.5 mg/L for orthophosphate. Phosphorus attenuation typically occurs during ASR storage over periods of several months. This is believed to be due to subsurface microbial activity and sometimes supplemented by geochemical reactions.
- **Other Corrosion Parameters:** No corrosion indices (e.g., calcium carbonate precipitation potential or Langelier Saturation Index) were evaluated. Additionally, lead and copper solubility were not evaluated.

The largest difference in the above parameters in the recharged and recovered water was due to declining phosphorus concentrations. The impact of reduced orthophosphate concentrations on corrosion control from ASR storage requires additional analysis and should consider potential blending ratios and the duration of recovery.

8.3.6 Well clogging and backflushing

Well No.19 was backflushed on March 27, 2019. The casing annulus pressure at the wellhead had increased slowly, reaching 19.5 psi on the previous day. A reference point of 20 psi had been established prior to cycle testing, above which backflushing would be implemented. Since the final recovered water sample was collected on March 18, 2019, recharge had continued, with

casing annulus pressures climbing from 13 psi on March 21 to 19.5 psi on March 27, 2019. Recharge flow rates had declined from 534 gpm to 513 gpm during this same period. The trend may have been due to mounding in pressures in the surrounding aquifer as a result of recharge, or well clogging, or a combination of both factors. Considering the recent history of this well, clogging is expected to be the predominant mechanism.

Specific injectivity is defined as the recharge flow rate in gpm divided by the pressure in the casing annulus as measured at the wellhead in psi. Specific injectivity of the well during the period of March 21 to March 27, 2019 declined from 41 gpm/psi to 26 gpm/psi, as measured at the wellhead. There are no field measurements of static water level in this well, other than for April 9, 2018, when a taped measurement was 24 feet below the wellhead flange. Incidental static water level measurements obtained during geophysical logging and well rehabilitation during 2018 were in the general range of 30 to 40 feet below the wellhead flange. Historic measurements of static water level were in the range of 80 to 100 feet below the wellhead.

During the March 27, 2019, backflushing, 43,620 gallons of stored water was pumped from the well. The flow rate or duration was not recorded, however a production rate of about 1,000 to 1,500 gpm is probably a reasonable estimate for discharge to waste at the wellhead with the new pump. Recharge resumed after the backflushing, with specific injectivity estimates of 39 gpm/psi and 46 gpm/psi during the following two days, at recharge flow rates of 399 gpm and 369 gpm. Wellhead pressures were 9.5 psi and 8.0 psi, respectively. Backflushing was successful for restoring recharge capacity.

Measurements of depth to water level are currently made with a bubbler tube extending to near the top of the pump and strapped to the pump column. Well modifications implemented during 2018 precluded installation of a transducer, or taped measurement of water levels. Future periodic measurements of static water level during ASR cycle testing and operations would enable calculation of a better-accepted, conventional measurement of specific injectivity in terms of gpm per foot of water level rise above static water level.

8.3.7 *Trickle flow*

A trickle flow of drinking water was intended to be directed into the well during storage periods exceeding about one week, with the goal of controlling downhole microbial activity. This occurred during April and May 2018 and may have also been implemented during March 2019 when recovery cycle testing was interrupted for approximately two weeks. Trickle flow was not shown on the daily records for the well. The flow rate was estimated by City personnel at about 6.5 gpm. The trickle flow is introduced through the pump shaft water lube tubing at the wellhead.

8.3.8 *Monitor Well No. 21*

Well No. 21 is located about 3,000 feet from Well No. 19. It is utilized infrequently by the City, supplementing surface water supplies from the Guadalupe River when needed.

As shown in **Table 8-1**, a baseline water sample was obtained from Well No. 21 during 2017, prior to any recharge into Well No. 19. A second sample was obtained from Well No. 21 three days after completion of the first recovery at Well No. 19. All but three water quality constituents were essentially unchanged.

Two of the three constituents showing change were total suspended solids (42 mg/L) and turbidity (20 NTU), both of which were high for groundwater. Well No. 21 had been idle for an unknown period of time and was pumped to waste for about 30 minutes prior to sampling. Considering that this is a very old, mild steel cased well, it is probable that 30 minutes was insufficient time to adequately purge the well of rusty water.

The third constituent with an elevated concentration was arsenic (28 µg/L unfiltered; 16 µg/L filtered). The baseline sample had results of total arsenic of 15.6 µg/L and dissolved arsenic of 7.2 µg/L.

In the most recent sample, the filtered concentration is lower than the unfiltered concentration. This indicates that at least some of the arsenic was associated with particulates in the sampled water. The remaining arsenic may have been associated with the original composition of the mild steel casing, and therefore present in the water pumped from the well. It is highly unlikely that ASR cycle testing at Well No. 19 caused any geochemical mobilization of arsenic at Well No. 21 given the distance between the two wells.

9 Conclusions and recommendations

One of the many advantages of ASR as a water management strategy is the opportunity to plan and implement an ASR program in incremental steps, with each phase building upon the knowledge gained in previous stages. In 2014 Victoria completed an ASR feasibility study that recommended moving to the next phase with the permitting and construction of a new ASR well, or the rehabilitation and retrofit of an existing City production well. The overall objectives of this Project were to provide data and information on the issues and costs associated with retrofitting an existing groundwater production well for ASR purposes. As discussed in this report, the Project fulfilled those objectives. The paragraphs below summarize the conclusions founded on the analysis of data and information, and provide recommendations based on those conclusions.

9.1 Conclusions

Summarized below are the major conclusions drawn from the data and information collected from the retrofit of Well No. 19 and from an abbreviated initial testing cycle.

9.1.1 Project tasks

The Project tasks were completed in conformance with the application submitted to the TWDB in November 2015, and Contract No. 1600011958 between the TWDB and Victoria County GCD. The completed tasks included: TCEQ permitting; design of ASR facilities; retrofit of Well No. 19 as an ASR well; construction of a potable water connection to the ASR well; training and preparation of an O&M manual; cycle testing and assessment of data; preparation of draft and final reports; and engagement in presentations with the TWDB related to the Project.

The City successfully completed a single cycle test at Well No. 19, demonstrating that recovered water quality was similar to the recharged water quality for most parameters, with the exception of orthophosphate, chlorine (prior to chemical addition), and ammonia. Because of the abbreviated cycle test, further testing is appropriate to build a basis of experience upon which to develop and implement an ASR program to provide water supply capacity and reliability for the City.

9.1.2 Project objectives

The objectives of the Project were met by providing data and information on the issues and costs associated with rehabilitating Well No. 19 and retrofitting that groundwater production well for ASR purposes. Despite the problems encountered during well rehabilitation and the cycle testing phase, the Project afforded valuable information for other municipalities and for others considering the conversion of production wells for ASR purposes.

During the cycle-testing phase the Project was able to address some of the potential impacts of operating an ASR well and storing water within the City, and potential concerns about the viability of the Gulf Coast Aquifer as a potential storage location. The analysis of water quality data allowed the study team to lay a foundation for addressing potential issues with mobilization of iron, manganese and arsenic in the native groundwater.

Through the professional papers and presentations described above, the TWDB, GCDs, water utilities, environmental groups and the general public benefited from the data and information collected during the Project.

The final report and presentations generated by the Project should provide valuable feedback through the TWDB to the Texas Legislature on the successful achievement of the Legislature's goals and legislative intent when it passed funding groundwater conservation districts for ASR demonstration projects (House Bill 1, General Appropriations Act, 2015 Legislature, Regular Session, page VI-60, Rider 25).

9.1.3 Successful production well retrofit for ASR

Existing municipal groundwater production wells can be successfully modified and used as operational ASR wells. It is important to have adequate information and investigate the wells prior to selecting a candidate for conversion. The investigation should include pulling the pump and pump column, and video-logging the selected well to confirm its condition. For this Project, Victoria selected Well No. 19 because it was scheduled and budgeted for maintenance and replacement of the pump and motor. Also, the City did not realize the well was in such bad condition.

Despite the problems encountered during rehabilitation of Well No. 19, the modified and retrofitted well is as productive as the original well, yielding up to about 1,500 gpm,

Although retrofitting an existing production well for ASR purposes can be successful, construction of a new well is typically preferable. There are several features of ASR well and wellhead design that are unique. One of the more important features is selection of construction materials that are not subject to corrosion under alternating recharge and recovery conditions. In addition, well diameters and selection of storage intervals tend to be different for ASR wells compared to production wells. Incorporating these features into the design and operation increases the potential for ASR success.

9.1.4 TCEQ permitting

In this Project the City initially applied to TCEQ for a Class V ASR permit because it had a significant amount of existing data about the groundwater and the existing production wells in the Victoria area. However, after subsequent discussions with TCEQ, the City and the Arcadis Team decided to use the submitted application data to request a Class V 5X25 Experimental Injection Well authorization. That authorization gave the City everything it needed for the Project and is allowing the City to gather additional data on recoverability during the cycle testing phase. The data gathered during this demonstration project and in subsequent test cycles should make it faster and easier to go back to TCEQ for a full ASR permit after the testing period.

9.1.5 Coordination with local groundwater conservation district

It is important to coordinate with any local groundwater conservation district. Under recent state legislation, TCEQ has sole permitting authority for ASR wells so long as water is not recovered from storage in excess of the cumulative volume previously stored. However, communicating with or partnering with the local groundwater district maintains a good working relationship and provides the opportunity to share data needed to properly design and operate the ASR well.

9.1.6 Unit cost bid schedule

For projects with uncertainty, such as this demonstration project, it is important to use unit costs in the bid schedule. Having the bidders provide prices for units (e.g. feet of pump column; hours for wire brushing the casing pipe) allows the owner and its engineer to modify the construction requirements to fit the conditions found in the field as the project progresses.

9.1.7 Construction contractors

For this Project different contractors were used for the downhole well work and for the ASR wellhead and disinfection facilities. Having two contractors worked well for Victoria because the City was actively engaged in the construction management of the Project, and the City had previous successful experience with both contractors. However, when possible it is preferable to have one qualified prime general contractor responsible for the entire project.

9.1.8 Trickle flow pipeline

It is important to maintain some disinfectant residual in the ASR well. A major component of the Project was construction of 2,000 feet of new 12-inch treated water pipeline to connect the City's distribution system with Well No. 19. During storage periods between recharge and recovery operations, it is possible that the chloramine residual could be lost in the pipeline such that the pipeline cannot be used for trickle flow into the well to maintain a disinfectant. In the preliminary design process, the Arcadis Team recommended that a parallel 2-inch pipeline be constructed specifically to provide a trickle flow into the well during storage periods. The City constructed both pipelines at the same time.

9.1.9 TCEQ design requirements

The construction standards for Class V injection wells found in the TCEQ rules at 30TAC §331.132 (f) state that wells should not generally be located within the 100-year floodplain. Although Well No. 19 is within the 100-year floodplain of the Guadalupe River, as determined on FEMA Flood Hazard Maps, the well is located on an elevated earthen berm, and the top of the casing is 3.34 feet above the flood elevation of 63.60 feet mean sea level. In addition, the steel casing is fitted with a welded ANSI/ASME pattern flange for connection to the new pump. The flanged wellhead connection seals the well and allows recharge rates that may pressurize the well.

9.1.10 TCEQ plan review

Because the TCEQ Plan Review Team is not as familiar with ASR systems as the agency is with other water and wastewater facilities, it is prudent to schedule additional time for review and approval of ASR plans and specifications. ASR Systems submitted its design documents on May 18, 2017, and TCEQ approval was received on July 17, 2017.

9.1.11 Training and O&M manual

It is important for the design engineer to provide the ASR well operator with proper training and an O&M manual to guide startup, operations, maintenance and cycle testing. Classroom and field training for the City was provided by ASR Systems. The presentation used for the training program is **Appendix F**.

9.1.12 Recovery operations during testing

It is important to consider potential variations in public distribution system operations in the cycle testing program. During the initial cycle testing, there were periods of time when elevated storage levels and line pressures in the City's distribution system affected the ability to recover water, and the recovered water flow rate. The City had to recover water for a longer-than-planned period because there were days when recovery had to be stopped or the flow rate decreased.

9.1.13 Conclusion

Based on the successful recharge and recovery at Well No. 19, and the data collection and analysis performed during the Project, there is strong technical support for Victoria moving ahead with the next phase in the implementation of its ASR program.

9.2 Recommendations

The following paragraphs describe the recommendations for the City's ASR program based on the results of the conclusions from the Project.

9.2.1 Phase 3 of ASR program development

The data collected and analyzed in this Project provide a basis for recommendations moving forward with the Victoria ASR program, and for design of proposed ASR facilities to be constructed during the following phases of the program. The next (third) phase will include a study to confirm the location for a new ASR well and any recommended monitoring wells, and to evaluate any improvements needed to the City's distribution system to accommodate the new ASR well. Phase 3 will also include completion of cycle testing and collection of data at Well No. 19, which will be needed for TCEQ permitting of both Well No. 19 (for permanent operation) and the new ASR well.

9.2.2 Following phases of ASR development

In the fourth phase, the City will permit, design and construct a new ASR well and wellhead facilities, any monitor wells needed to properly operate Well No. 19 and the new ASR well, and any needed improvements or modifications to the City's water distribution system.

9.2.3 Storage of water and continued cycle testing in Well No. 19

Under its current TCEQ 5X25 authorization, the City can continue to operate ASR Well No. 19 until December 31, 2020. The City can store water for recovery when needed to meet peak demand or during periods of drought. Although TCEQ has currently authorized only two cycle tests, TCEQ staff has stated that Victoria can request an amendment so it can conduct additional tests within the authorization period.

The City should continue ASR cycle testing, storing as much water as possible prior to needing the water to meet summer peak demands. The City could recover up to half of the cumulative volume in storage. The City will leave the remaining volume in storage as a contribution toward subsequent formation of a buffer zone and achieving the Target Storage Volume for this well. The City should continue the current practice of backflushing the well whenever the casing

annulus pressure at the wellhead reaches 20 psi. With TCEQ's approval, the City can conduct additional cycle tests as needed to operate the ASR well and gather data for permitting.

During these ASR operations, the City will gather water level, pressure and volume data, and provide quarterly reports to comply with the TCEQ requirements. A final report to TCEQ is also required at the end of each test cycle.

9.2.4 Water quality sampling and data collection

While the City is conducting the additional cycle testing, the Arcadis Team recommends that it continue to collect water quality lab samples and field data. The data collected during the cycle testing can serve as the basis for TCEQ permitting for permanent operation of ASR Well No. 19 and for permitting and design of the new ASR well. The data will also support the projections of recoverability that are important for Class V UIC permitting of an ASR well.

Measurement of both laboratory and field water quality constituents should continue to be incorporated into the ASR testing program. Monthly measurements together with data at the beginning and end of recharge and recovery periods will improve the understanding of any water quality changes during ASR storage of larger volumes and for longer storage times. Also, the City should monitor static water levels and pumping water levels when water samples are obtained.

The City should review and update the current format for ASR record keeping to better facilitate future data analysis. Similarly, it is prudent for the City to review and update the laboratory analytical list of constituents to be analyzed so that it best matches the City's ASR needs and objectives. Record keeping should allow for rapid decision-making based upon water quality and water level data.

The City should also use the existing data and the additional data recommended above to evaluate the impact of water quality differences (e.g., lower orthophosphate concentrations) during ASR recovery on the potential for nitrification and corrosion in the distribution system. The evaluation process should consider blending ratios and distribution system materials in the regions of the distribution system where recovered water will be distributed. The evaluation should also establish a distribution system water quality monitoring plan, in addition to monitoring the recharged and recovered water.

9.2.5 Disinfection processes

The City should evaluate possible minor changes to the wellhead disinfection process and associated piping that reflect variable ammonia concentrations in the water recovered from ASR storage. The ammonia concentration will vary, depending on storage time in the aquifer. It might also be helpful to provide the operational flexibility to add the chlorine either before or after adding the ammonia and/or to change the distance between the chemical feed points in the wellhead piping during ASR recovery. The City should also consider amending its Nitrification Action Plan to include specific triggers for actions relating to the recovered ASR water and the areas of the distribution system where stored water will likely be distributed.

9.2.6 Post demonstration well phase tasks

Later tasks should include construction of an hydrogeologic analytical computer model to evaluate recoverability of stored water, and the potential impacts, if any, of the operation of Well

No. 19 and the new ASR well. That model will likely be needed before Well No. 19 is put into permanent operation under a TCEQ Class V UIC permit. That model and all previous work will also be used as the basis for permitting the new ASR well and any future Victoria ASR wells.

10 Acknowledgements

The Arcadis team sincerely appreciates the support and cooperation of the leaders and staffs of the City and the Victoria County GCD; the TWDB; Mr. Lynn Short, President of LSPS Solutions, LLC; and contractors Weisinger and Mercer.

At the City, specific acknowledgement and appreciation go to: Director of Public Works Donald Reese; Operations & Maintenance Manager Roland Rodriguez; SWTP Manager Stephen Robinson; SWTP Construction/Project Manager Barry Huebner; SWTP Chief Operator Kevin Post; City Engineer Ken Gill, P.E.; and Public Works Engineer Darrell Seibert, P.E. We especially appreciate the leadership of Mr. Reese, and the time, effort and information provided by Barry Huebner during the rehabilitation, retrofit and cycle testing of Well No. 19.

Special thanks go to Mr. Lynn Short, President of LSPS Solutions. As former Director of Public Works for the City, Mr. Short was instrumental in getting the ASR feasibility study initiated, and he provided valuable leadership and assistance in the application to the TWDB for funding a portion of this demonstration project. During the well rehabilitation process and the retrofit of Well No. 19, Mr. Short provided very valuable construction supervision and technical input.

At the Victoria County GCD, we appreciate the support, input and continual cooperation of General Manager Tim Andruss.

At the TWDB, we particularly appreciate the support and valuable input of Ms. Erika Mancha, Manager of the Innovative Water Technologies Division.

Weisinger, Inc. of Willis, Texas has been a family-owned business since 1975. That company was responsible for the down-hole well rehabilitation and retrofit, as well as the necessary repairs to Well No. 19. We particularly appreciate the leadership and cooperation of President/CEO Scott Weisinger, and the technical input and assistance of Randy Hagen, B.J. Alldredge and Francisco Ochoa.

Mercer Construction Co. of Edna, Texas was responsible for the construction of the above-ground ASR facilities. We greatly appreciate the leadership of President David Gregory and the technical construction support provided by David Gabrysch.

11 References

Arcadis, U.S., Inc., July 2014, Victoria area ASR feasibility study final report: prepared under subcontract for Naismith Engineering, Inc. under TWDB Contract No. 1348321576.

ASR Systems LLC, November 2007, Evaluation of arsenic mobilization processes occurring during aquifer storage recovery activities (H-046): report prepared for Southwest Florida Water Management District. Brooksville, Florida.

Pyne, R.D.G., Brown, C.J., Powell, G.M. and Stuyfzand, P.J., July 2008, ASR arsenic surrogate model: Achieving high recovery efficiency and reducing arsenic concentrations in ASR wells through formation and maintenance of a buffer zone: report prepared for the South Florida Water Management District. West Palm Beach, Florida.

Pyne, R.D.G., 2005, Aquifer storage recovery: A guide to groundwater recharge through wells. ASR Press, 608 p.

Texas Water Development Board, February 2011, An assessment of aquifer storage and recovery in Texas. Report No. 0904830940.

12 Appendices

12.1 Appendix A. TCEQ authorization

Bryan W. Shaw, Ph.D., P.E., *Chairman*
Toby Baker, *Commissioner*
Jon Niermann, *Commissioner*
Richard A. Hyde, P.E., *Executive Director*



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

April 28, 2017

Ms. Charmelle Garrett
City Manager
City of Victoria, Texas
PO Box 1758
Victoria, Texas 77902

RE: Authorization of a Class V Injection Well
City of Victoria
TCEQ Authorization No. 5X2500127
CN600243257/RN109688143
Underground Injection Control

Dear Ms. Garrett:

The Underground Injection Control (UIC) staff has completed review of the City of Victoria's April 25, 2017 letter requesting an authorization for a Class V UIC experimental well for the City's existing Water Well No.19. As requested in this letter, this authorization is based on information provided in the April 25, 2017 letter and on information provided in the city's application for Class V Underground Injection Control (UIC) Wells for an Aquifer Storage and Recovery (ASR) Project (proposed authorization no. 5R2100049), received on March 1, 2017, which was prepared by Arcadis U.S., Inc. The purpose of this injection well authorization is to conduct cycle testing to determine the feasibility of storing water in the Evangeline Aquifer for later recovery (aquifer storage and recovery, or ASR), and to determine any effects resulting from injection and recovery on water quality in the receiving aquifer.

Based on our review, approval is hereby given for operation of the City of Victoria's Water Well No. 19 for injection of water into the Evangeline Aquifer from 460 feet to 1,066 feet below ground level. Injection and recovery of water shall be in accordance with the information submitted in the April 25, 2017 letter and in the ASR Project application received March 1, 2017. In order to maintain authorization by rule for the injection operations, the project must meet all requirements of the UIC rules provided by 30 Texas Administrative Code (TAC) Chapter 331. Requirements for the authorization include:

1. The injection well must meet the standards provided in 30 TAC §331.132 or as approved otherwise.
2. All activities conducted under this authorization shall be completed by December 31, 2020.
3. Injected water must be from the City of Victoria's public water supply system.
4. The cumulative volume of injected water, including the buffer zone, shall not exceed 3,908 acre-feet at any one time.
5. The City of Victoria shall provide the following information to the UIC Permits Section, Radioactive Materials Division, at mail code MC233:

- a. Quarterly progress reports to include, injection volumes, recovery volumes, injection rates, maximum injection pressure, and results of injectate and groundwater sampling and analysis;
 - b. A well completion report detailing all conversion work performed Well No. 19
 - c. Two paper copies of the project final report on the results of Cycle Test No. 1; and
 - d. Two pager copies of the project final report on the results of Cycle Test No. 2, if Cycle Test No. 2 is conducted.
6. A report detailing all results from cycle testing and analyses, and all conclusions reached from this information, shall be submitted to the TCEQ UIC Permits Section within 60 days of completion of such testing and analyses for Cycle 1, and for Cycle 2, if performed.
 7. Changes to the authorization including but not limited to the addition of wells or temporary injection points, different injectate, operational and status changes, or additional time to complete injection activities, shall be requested and approved by the UIC Permits Section by amending the authorization. Unless otherwise amended, this authorization expires December 31, 2020.
 8. Closure (plugging) of injection wells, as applicable, shall comply with standards provided in 30 TAC §331.133. Closure reports including injection well monitoring data (injection volumes, pressures, and results) and plugging reports shall be submitted to the UIC Permits Section, Radioactive Materials Division, at mail code MC233 within 60 days of conclusion of injection activities.
 9. All engineering and geoscience plans, specifications, calculations, analyses, reports and other related engineering and geoscience documents must be prepared, sealed, signed, and dated by a Texas professional engineer (P.E.) or a Texas professional geoscientist (P.G.), as appropriate.
 10. All analytical data submitted to the TCEQ must be generated by a lab that the Texas Laboratory Accreditation Program (TLAP) has accredited under the National Environmental Laboratory Accreditation Conference (NELAC) standard for matrices, methods, and parameters of analysis, unless: (1) the lab is an in-house lab and either the lab performs work for its owner, for another company with a unit located on the same site, or without compensation for a governmental agency or charitable organization, or the lab is in another state and is accredited or inspected by that state; (2) the lab is accredited under federal law; (3) the data are needed for emergency-response activities and no TLAP-accredited lab is available; or (4) the lab supplies data for which the TCEQ does not offer accreditation. Refer to the [list of laboratories](#)¹ accredited by the State of Texas under the National Environmental Laboratory Accreditation Program (NELAP) on the TCEQ website.

Any information to be submitted under this authorization that the City of Victoria deems confidential shall be provided as a separate collective document and clearly labeled "**Confidential.**" The designation of material as confidential is frequently carried to excess. The Commission has a responsibility to provide a copy of each associated document to other review agencies and to interested persons upon request and to safeguard confidential material from becoming public knowledge. Thus, the

¹ www.tceq.texas.gov/assets/public/compliance/compliance_support/qa/txnelap_lab_list.pdf

Ms. Charmelle Garrett
Page 3
April 28, 2017

Commission requests that the regulated entity (1) be prudent in the designation of material as confidential and (2) submit this material only when it might be essential to the staff in their development of a recommendation.

If you have any questions or comments regarding this matter please contact me at david.murry@tceq.texas.gov or (512) 239-6080. If you will be responding by letter, please include mail code MC233 in the mailing address.

Sincerely,



David H. Murry, P.G., Project Manager
Underground Injection Control Permits Section
Radioactive Materials Division
Texas Commission on Environmental Quality

DHM/krh-d

cc: Fred Blumberg, Arcadis U.S., Inc.
David Pyne, ASR Systems, LLC
David Vance, Arcadis, U.S., Inc.

12.2 Appendix B. Preliminary design report



Preliminary Design for the Aquifer Storage Recovery System (ASR) Demonstration Project for Alternative Water Supply for the City of Victoria, Texas

TO: Lynn Short/City of Victoria

FROM: Fred Blumberg/Arcadis
R. David G. Pyne, P.E./ASRS
Ted L. Belser, P.E./ASRS

DATE: January 5, 2017



Digitally signed by Ted L. Belser, P.E.
DN: cn=Ted L. Belser, P.E., o=Integrated Project Delivery Services, LLC, ou=IPDS, email=tbelser@atlantic.net, c=US
Date: 2017.01.05 14:10:22 -05'00'

CONTENTS

BACKGROUND & PURPOSE	2
SCOPE OF DESIGN	3
CONFIGURATION OF THE ASR FACILITIES	4
BASIC OPERATIONAL CONCEPTS	5
<i>Site Configuration and Access (See Drawing C-1)</i>	6
<i>Existing Well No. 19</i>	7
<i>Recharge Piping Facilities and Appurtenances (See Drawings FD-1 & M-1)</i>	8
<i>Recovery Pump, Piping Facilities, and Appurtenances (See Drawings FD-1 & M-1)</i>	9
<i>Well Flushing (See Drawings FD-1 & M-1)</i>	11
<i>Storage (Trickle Flow) (See Drawings FD-1 & M-1)</i>	11
<i>Chloramine Disinfection – Using NaOCl and NH₄OH</i>	12
<i>Electrical System</i>	14
<i>Instrumentation and Controls</i>	14
ATTACHMENT - PRELIMINARY DRAWINGS.....	17
C-1 Location Map & Site Map	
FD-1 ASR Flow Diagram	
M-1 Wellhead Piping – Plan & Section	

Background & Purpose

In recent years a drought in Texas created the need to assess the viability of a continuous water supply for the City of Victoria. In order to address the water supply issue the City joined other water providers in the region to evaluate the potential of using Aquifer Storage Recovery (ASR) as a water management strategy. The evaluation focused on the use of ASR and/or Off-Channel Storage (OCS) for management of existing water supplies. Refer to the report titled: *Victoria Area ASR Feasibility Study Final Report (ASR FS), July 2014*.

This project will concentrate on the implementation of a demonstration facility for the ASR option for water storage and recovery. The demonstration facility will consist of conversion of Well No. 19, which is one of the City's existing production wells, to serve as an ASR well. Refer to the detailed ASR FS for more detailed information pertaining to the overall study¹. The converted well will include all features required for the various modes of ASR operations; however, due to budget limitations for the demonstration project, full automation utilizing motor operated process control valves will not be included. The City can add the motor operators and controls in the future when funds are available.

During an ASR Workshop on 12 September 2013 the study team discussed potential ASR applications believed to be beneficial to the operations of the City of Victoria system. The prioritized list of ASR applications for the City includes:

1. Seasonal storage to meet peak seasonal demands.
2. Long-term storage to increase system reliability during a drought.
3. Deferment of expansion of the City's existing water treatment plant (WTP) or the construction of a second WTP.
4. Emergency storage for relief during severe flooding or other events.
5. Reduction of disinfection by-product (DBP) concentrations within the system.

Water supply reliability is defined in terms of the number of days during a repeat of the Drought of Record (DOR) that the water system demands can be fully met, as a percentage of the total number of days during the DOR. The seventy-two year period of record from January 1940 through December 2012 was selected for the analysis. The period included the DOR for the area which included the ten-year period from 1947 to 1957, and 2011 which was one of the driest years on record. In order to achieve total reliability using ASR, a sufficient water volume must be

¹ In Section 8, page 137, Table 8-1, of the ASR FS the City's existing production Well No. 14 was identified as the first well to convert as a part of the Phase 2 work. However, the City later decided to utilize Well No. 19 instead. The Well No. 14 conversion will be included as a part of a future phase..

maximum feed rate would result in an average consumption of approximately 72 gallons per day⁷. The corresponding ammonia feed system will be capable of the industry standard recommendation for a chlorine:ammonia mass ratio in the range of 4.2:1 to 5:1.. Based upon the stoichiometric ratio of 4.2:1, the ammonia system will be initially configured to supply ammonia at a rate of 0.95 mg/liter or 17.2 pounds per day. Therefore, for ammonia delivered as 38% liquid ammonium sulfate (NH₄)₂SO₄ (LAS) the resulting feed rate to deliver 17.2 pounds of NH₃ per day would be approximately 6.6 gallons of LAS per day⁸. If the recovery pump is controlled by an AFD allowing lower recovery rates, the corresponding chemical feed rates and on-site storage requirements⁹ for 275 gallon totes would be as shown in the table below.

Recovery Flowrate		NaOCl Feed Rate	275 gal Totes	38%LAS Feed Rate	275 gal Totes
(gpm)	(mgd)	(gpd)	for 15 days	(gpd)	for 15 days
1,500	2.16	72.0	4.0	6.6	0.36
1,200	1.73	57.6	3.2	5.2	0.28
1,000	1.44	48.0	2.6	4.4	0.24

The chlorine and ammonia feed systems will each consist of simple weatherproof enclosures that will house a feed pump with connection to bulk containers of each of the chemicals located on an adjacent covered concrete slab. The 12.5% sodium hypochlorite (NaOCl) and the 38% LAS will each be delivered in 275 gallon totes which will require secondary containment¹¹. The NaOCl totes will be stacked 2-high for a total of 4 totes to meet the 15 day storage requirement. The secondary containment for each chemical will consist of a duplex container heavy-duty plastic sump with capacity to contain the complete tote volume, and grating to support the totes. The two chemicals should never come in contact with each other because contact can result in an adverse reaction or even an explosion. Therefore, the storage areas for the totes will be separated by an 8" masonry partition wall.

The NaOCl feed pump and the LAS feed pump will be mounted adjacent to their respective containers. Each of the chemical feed pumps will be housed in individual weatherproof enclosures as shown on Drawing M-1. The chlorine feed system will utilize a positive displacement feed pump with degassing feature designed for 12.5% NaOCl delivery service. The system will be capable of rate adjustment over the range of the unit. The ammonia feed system will utilize a positive displacement peristaltic hose-type feed pump. The feed pump will be

⁷ Quantity of 12.5% NaOCl for a 4 ppm residual = 2.16 mgd x 4 ppm x 8.34 lb/mg/ppm = 72 lb/day; 12.5% NaOCl has 1 lb chlorine /gallon; therefore = 72 gal/day.

⁸ 38% LAS, SG=1.23, 3.86 lb of LAS contains 1 lb NH₃. Therefore, 17.2 x 3.86 = 66.4 lb LAS required = 66.4/(8.34 x 1.23) = 6.48 gal/day

⁹ Minimum storage of a 15-day supply required as per TCEQ RG-195 §290.42(f)(1)(A).

¹¹ Containment facilities are required for NaOCl and LAS containers of more than 55 gal per TCEQ RG-195 §290.42(f)(1)(E)(ii)(IV).

specifically selected for 38% LAS. Injectors designed for easy removal for cleaning will be provided at each of the injection points to the process piping.

Electrical System

The existing pumping system utilizes a 480-volt, 3-phase, 60 Hz electrical service of sufficient capacity for the new 200 hp (240 amps full-load current) ASR recovery pump and appurtenances. The existing 400 amp disconnect for the well pump motor will be retained, and a new motor starter for the new ASR recovery pump will be included in the design. The base bid will be for a



Existing Electrical Equipment & Control Panel

AFD which will provide a “soft-start” for the 200 hp motor, and will allow adjustment of the pump speed/pumping rate for recovery operations. In order to address budget limitations, a standard reduced-voltage starter will be included as a deduct alternate.

The existing 480V:208/120V transformer and panels for lighting, receptacles, controls, and appurtenances will remain in service. A new exhaust fan/inlet louver will provide additional ventilation and will be powered from this system. However; in the future if valve motor operators are added for automatic operation of the system, a new larger transformer and panelboard will be required for the additional load.

Instrumentation and Controls

ASR facilities are typically automated to sequence the valves and pump for ease of operation. However; for this demonstration project the various modes of operation for the ASR Well No. 19 will initially be manually controlled. It is anticipated that the City may wish to automate operations in the future when funds are available. As much as possible, the design will include provisions to facilitate system automation in the future.

The well currently has capability to monitor flow and water level. These functions will be retained through use of the existing PLC control panel, working with a new bi-directional magmeter for flow and a submersible pressure transducer for well water level.

The well head will be fitted with a submersible pressure transducer that will be set inside a 1.25-inch polyethylene tube strapped to the pump column. The pressure transducer will be installed below the lowest water level expected in the casing during recovery and will be capable of reading the range of water levels (hydraulic grade line) within the well casing during recovery and recharge.

A pressure gauge on the well casing will provide local indication of pressure in the casing during recharge. A separate port on the wellhead flange connected to an empty tube strapped to the pump column will enable independent water level measurement via an electric tape, in case the pressure transducer fails.

The various modes of operation for the system are described below. The operator will choose from the following:

1. **Recharge Mode:**

For this mode of operation the ASR well will be used to store potable water from the City distribution system by diversion of a portion of the water through the new 12-inch pipeline.

2. **Flushing Mode:**

This mode of operation will be initiated at the operator's discretion prior to operating the ASR well in the Recharge Mode or Recovery Mode, or for periodic back flushing to control well clogging. Water from the well will be wasted to the on-site adjacent drainage ditch. An air-gap between the discharge pipe and the ditch will be provided to avoid cross connection with the potable system.

3. **Recovery Mode:**

This mode of operation will use the recovery pump to recover previously stored water from the ASR well and pump it into the existing distribution system. The recovered water will be disinfected with chlorine and ammonia to provide a residual of chloramines.

4. **Storage Mode:**

During this mode of operation no recharge or recovery occurs. A trickle flow of treated drinking water will be directed into the ASR well to maintain a small disinfectant residual in the casing, borehole and adjacent portion of the aquifer.

5. **Off Mode:**

During this mode of operation the system is completely off, with all valves in the closed position the recovery pump and the chemical feed pumps are off.

The control scheme as described above will enable the City to meet the daily and seasonal needs of the service area. A detailed description of the operation of the facilities will be provided in the final O&M manual. The status of the various items of equipment during each of the five modes of operation will be as described in the following table.

TAG	EQUIPMENT ITEM	ASR SYSTEM MODE OF OPERATION				
		RECHARGE MODE	FLUSHING MODE	RECOVERY MODE	STORAGE MODE	OFF MODE
P-19-1	ASR RECOVERY PUMP	OFF	ON	ON	OFF	OFF
FCV-19-1	RECHARGE VALVE	OPEN (throttled)	CLOSED	CLOSED	CLOSED	CLOSED
FV-19-2	RECHARGE VALVE	OPEN	CLOSED	CLOSED	CLOSED	CLOSED
FV-19-3	AQUIFER FLUSH VALVE	CLOSED	OPEN	CLOSED	CLOSED	CLOSED
FV-19-4	RECOVERY VALVE	CLOSED	CLOSED	OPEN	CLOSED	CLOSED
FP-19-1	NaOCI FEED PUMP	OFF	OFF	ON	OFF	OFF
FP-19-2	(NH ₄) ₂ SO ₄ . FEED PUMP	OFF	OFF	ON	OFF	OFF
FV-19-5	TRICKLE FLOW	CLOSED	CLOSED	CLOSED	OPEN	CLOSED

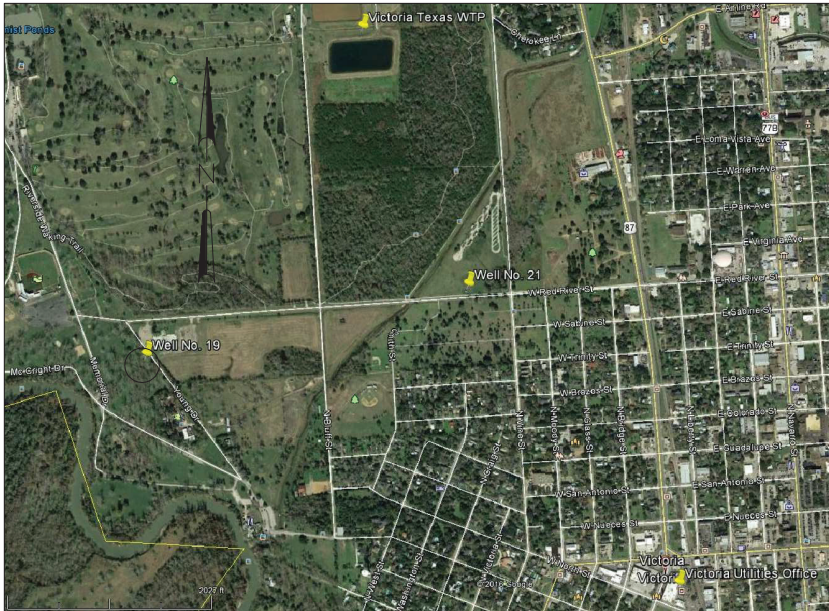
Attachment - Preliminary Drawings

C-1 Location Map & Site Map

FD-1 ASR Flow Diagram

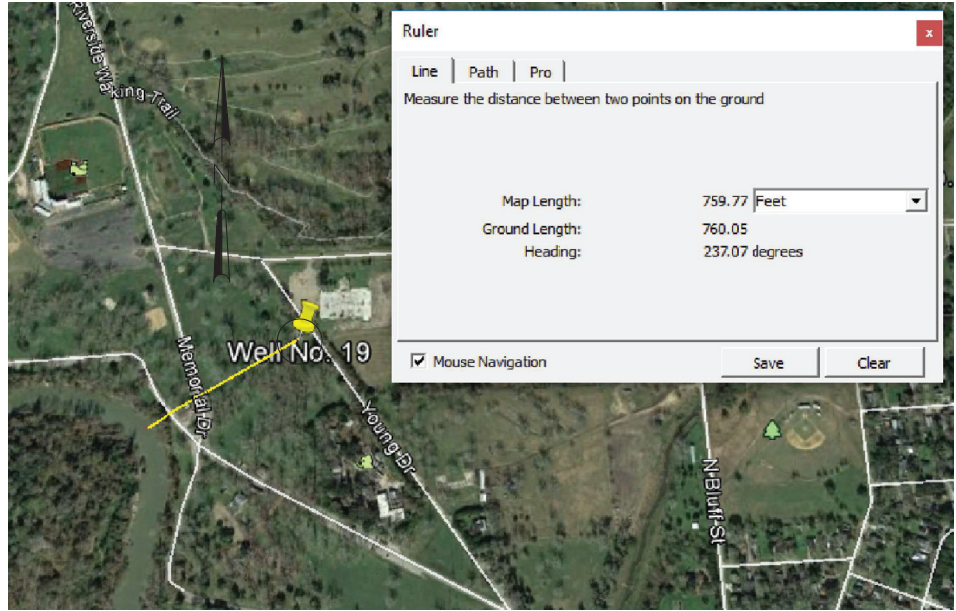
M-1 Wellhead Piping – Plan & Section

FILE PATH: G:\Drawings_backup\7-19-13\Victoria TX\ASR Well-19\Victoria TX.PDPTM Drawings.dwg LAST SAVE DATE: 1/20/17 9:52 AM BY: HP A6600



LOCATION MAP

NOT TO SCALE



SITE MAP

NOT TO SCALE

NO.	DATE	DR	CHK	REVISION	BY	APVD



Demonstration Project for Alternative Water Supply
 Conversion of Existing Well No. 19 to ASR-19
 City of Victoria, Texas - Department of Public Works

LOCATION MAP & SITE MAP

VERIFY SCALE	
BAR IS ONE INCH ON ORIGINAL DRAWING.	
DATE	01-02-2017
PROJ	
DWG	
SHEET	C-1

Plan sheets "FD-1 ASR Flow Diagram" and "M-1 Wellhead Piping - Plan & Section" were previously provided to the TWDB.

12.3 Appendix C. Final plans and specifications

Previously provided to TWDB by separate transmittal.

12.4 Appendix D. Equipment manuals

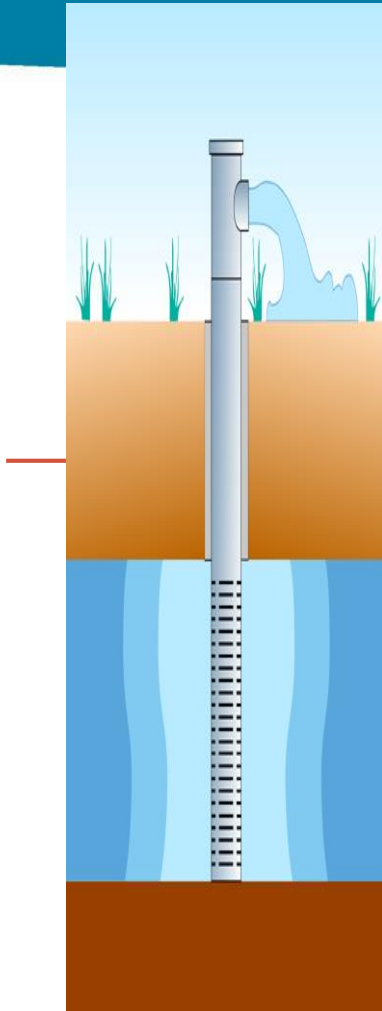
Equipment Manuals provided to TWDB as a separate electronic deliverable.

Equipment Warranties were provided to the City of Victoria by the Contractors.

12.5 Appendix E. Operations and maintenance manual

Previously provided to TWDB by separate transmittal.

12.6 Appendix F. Training program (PPT)



**CITY OF VICTORIA, TEXAS AQUIFER STORAGE
RECOVERY
WELL ASR-19**

OPERATIONS & MAINTENANCE TRAINING SESSION

Introduction to ASR

R. David G. Pyne, P.E. and Ted Belser, P.E.
ASR Systems LLC
Gainesville, Florida

May 8, 2018



Global implementation of ASR since 1985 to achieve water supply sustainability and reliability

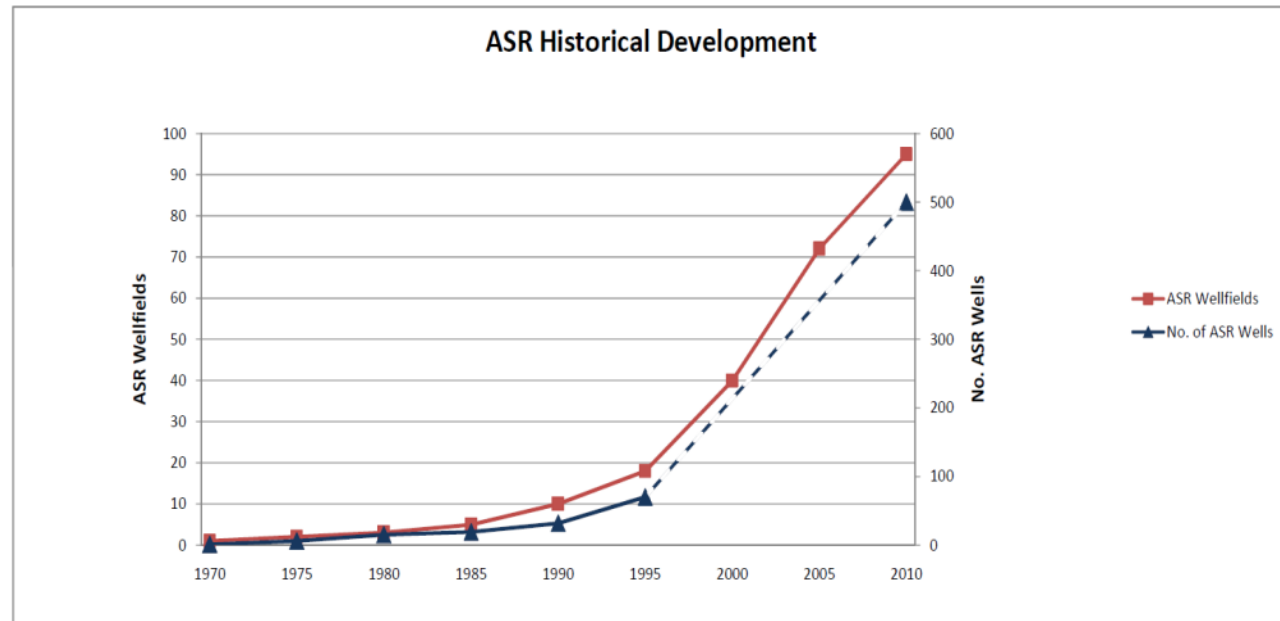
- Australia
- India
- Israel
- Canada
- England
- Netherlands
- South Africa
- Namibia
- United Arab Emirates
- Bangladesh
- And others in development (Kuwait, Taiwan, Indonesia, Qatar, Serbia, China, Oman)



Adelaide, Australia ASR Well

ASR Development in the U.S. has been rapid during the past twenty years

- 29 different ASR applications
- Many different types of water sources for aquifer recharge
- Storage in many different types of aquifers and lithologic settings



Texas ASR Experience

- Operational ASR Wellfields
 - El Paso Water Utilities
 - City of Kerrville
 - San Antonio Water System
- ASR Wellfields in Development
 - City of Victoria
 - New Braunfels Utilities
 - City of Corpus Christi
 - City of Buda
- ASR Feasibility studies underway or completed
 - Barton Springs, Port Lavaca, Laredo, Lubbock, GBRA, HGSD
 - Several others

A broad range of water sources and storage zones is utilized for ASR

- Water sources for ASR storage
 - Drinking water
 - Reclaimed water (AZ, TX, FL, NJ, CA)
 - Seasonally-available stormwater
 - Groundwater from overlying, underlying or nearby aquifers
- Storage zones
 - Fresh, brackish and saline aquifers
 - Confined, semi-confined and unconfined aquifers
 - Sand, clayey sand, gravel, sandstone, limestone, dolomite, basalt, conglomerates, glacial deposits
 - Vertical “stacking” of storage zones



Chandler, AZ

Tumbleweed ASR Wellfield
Storing Reclaimed Water for
Aquifer Recharge

ASR Operating Ranges

- Well depths
 - 30 to 3,000 feet
- Storage interval thickness
 - 20 to 400 feet
- Storage zone Total Dissolved Solids
 - 30 mg/L to 39,000 mg/L
- Storage Volumes
 - 100 AF to 60,000 AF
 - (30 MG to 20 BG)
- Bubble radius usually less than 1000 ft
- Individual wells up to 8 MGD capacity
- Wellfield capacity up to 157 MGD



Calleguas MWD, California

ASR Well

ASR has many applications to meet local needs

- **Seasonal storage**
- **Peak, diurnal and emergency water needs**
- **Water banking, or long term storage**
- Restore groundwater levels
- Reduce subsidence
- **Maintain distribution system flows and pressures**
- **Improve water quality**
- Prevent seawater intrusion
- Protect endangered species
- Agricultural water supply
- Temperature control
- Hydraulic control of contaminant plumes
- Defer expansion of water facilities
- **Disinfection Byproduct reduction**
-several other applications to date
-29 different applications to date



Kiawah Island, South Carolina,
ASR-2

Identifying and prioritizing these applications is a logical first step in ASR planning

Several factors have contributed to ASR global implementation

- **Economics**
 - Typically less than half the capital cost of alternative water supply sources
 - Phased implementation
 - Marginal cost pricing
- **Proven Success**
 - About 120 wellfields in over 20 states with over 500 operating, fully permitted ASR wells
- **Environmental and Water Quality Benefits**
 - Maintain minimum flows
 - Small storage footprint compared to surface reservoirs
- **Adaptability to Different Situations**
 - Fresh, brackish or saline storage aquifers
 - Drinking water, reclaimed water, stormwater or groundwater storage
 - Over 29 different applications



Mt Pleasant, SC – Well ASR-2

Three case studies illustrate the range of applications for ASR to meet end-user needs

- San Antonio, Texas
- Orangeburg, South Carolina
- Hilton Head, South Carolina



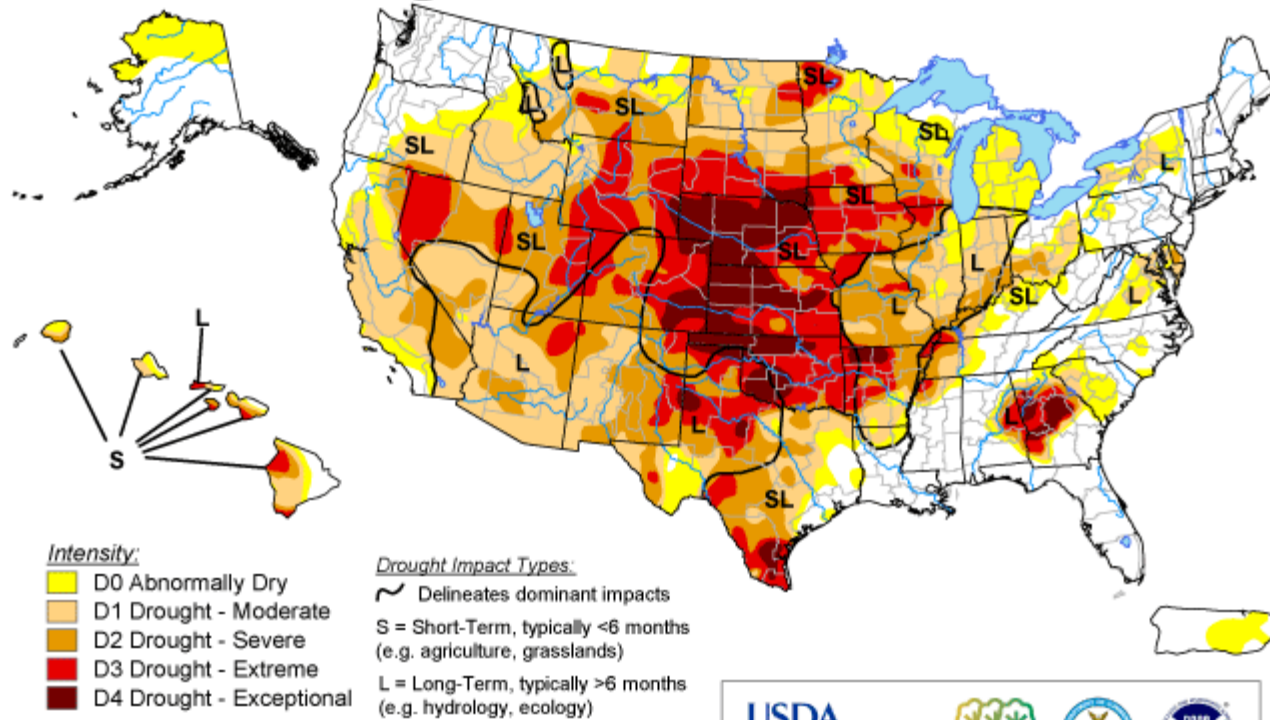
Highlands Ranch, CO

One of 26 ASR wells underground in vaults, storing drinking water to help meet peak summer demands

Severe to Extreme Drought Affected 40% of the U.S. as of 8/31/12

U.S. Drought Monitor

September 25, 2012
Valid 7 a.m. EDT



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

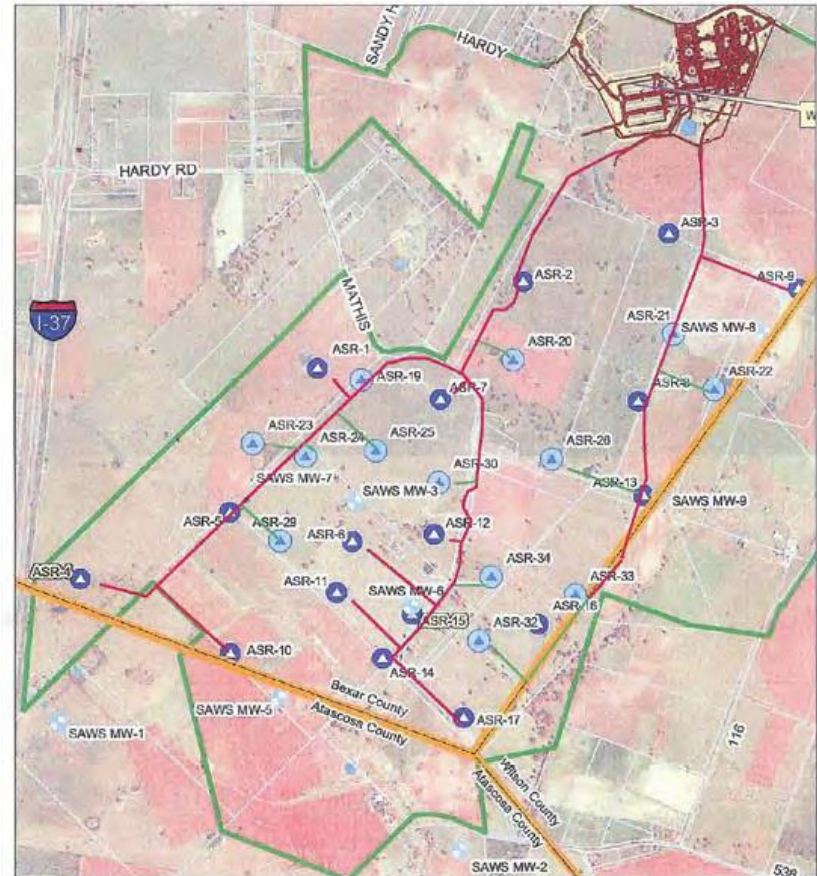
<http://droughtmonitor.unl.edu/>

Released Thursday, September 27, 2012
Author: Anthony Artusa, NOAA/NWS/NCEP/CPC

San Antonio Water System, Texas

- Twin Oaks WTP and ASR wellfield
- Wellfield area is 3,200 acres
- 29 ASR wells and 3 production wells
- 1,800 to 2,500 gpm/well
- Total recovery capacity – 60 mgd
- Third largest ASR wellfield in U.S.
- Carrizo-Wilcox is a semi-confined sand aquifer
- Began recharge in 2004; up to about 100,000 AF stored to date
- Total construction cost: \$238M
ASR wellfield cost: \$52M
ASR unit capital cost:

US\$0.87/gpd recovery capacity



SAWS ASR Wellfield, 2005

San Antonio Water System (SAWS)

- ASR objectives are long term storage to meet the “Drought of Record” and providing emergency water supplies
- During the 2010-2011 extreme drought the SAWS ASR wellfield produced 40 mgd to augment local water supplies for several months, relieving pressure on groundwater withdrawals from the Edwards Aquifer which supplies Comal and San Marcos Springs, plus all local water supplies



SAWS Flow Control Facilities and Ground Storage Reservoir at Twin Oaks WTP and ASR Wellfield

San Antonio Water System ASR

- Water recovered from ASR wells normally does not require retreatment other than disinfection
- Water pumped from the three production wells requires full treatment for Fe and Mn removal, plus disinfection
- Toward the end of the drought ASR recovered water required treatment for Fe and Mn removal, due to blending with ambient groundwater

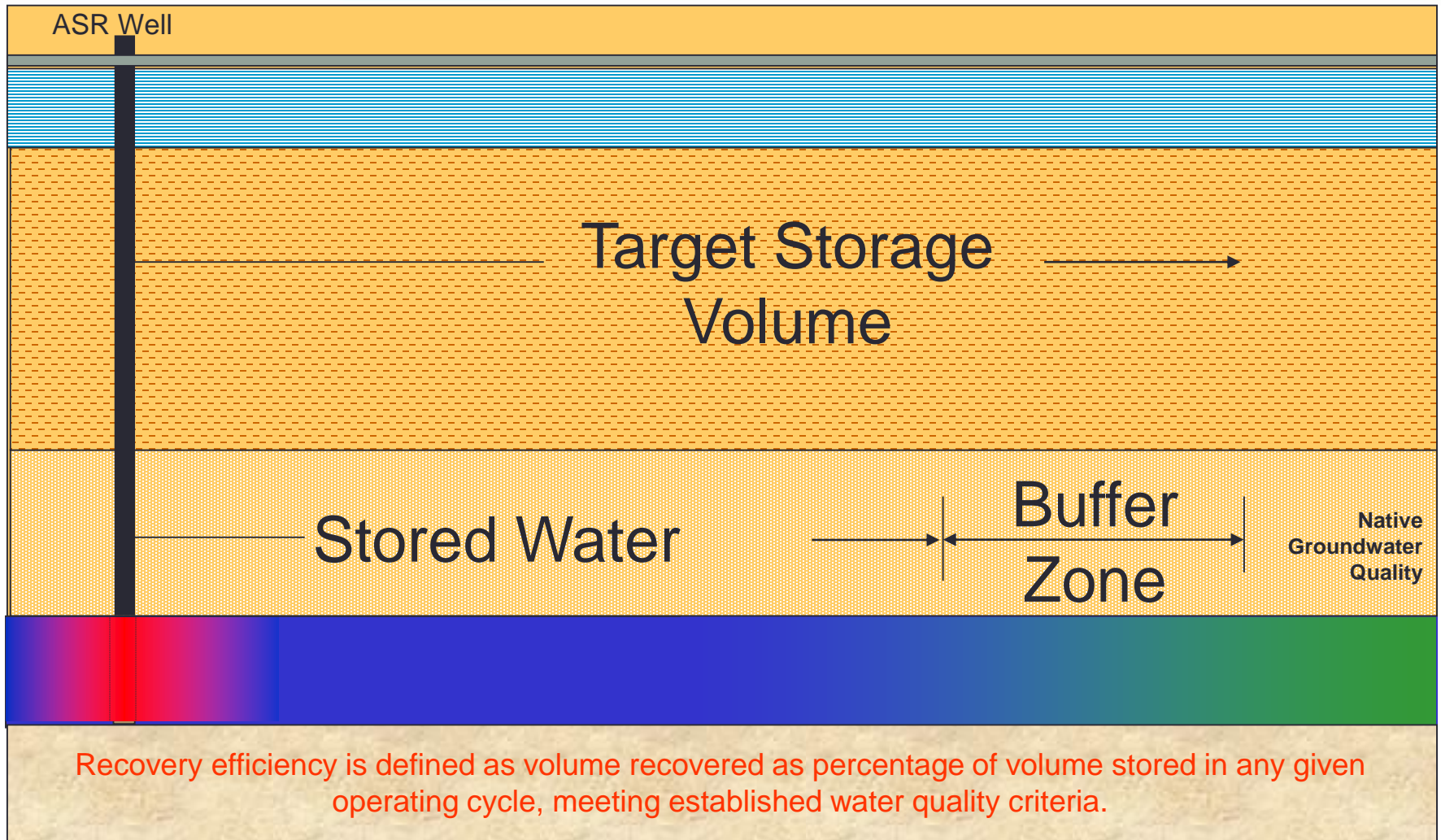


SAWS Twin Oaks Water
Treatment Plant at the ASR
Wellfield, 2006

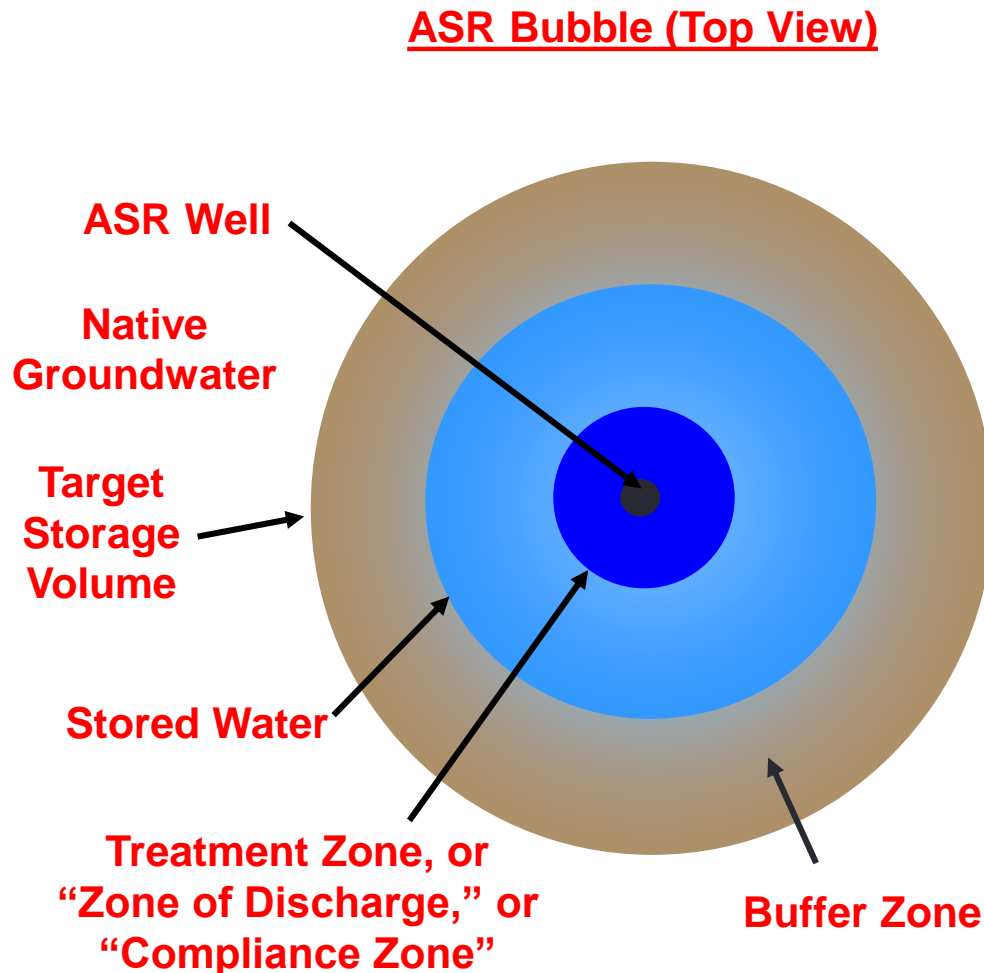
SAWS ASR: Lessons Learned

- Successful performance during the extreme drought a few years ago received enthusiastic local support and was noted by water managers statewide, galvanizing interest in ASR in Texas
- Mitigation plan has been effective for dealing with perceived offsite adverse impacts upon wells and groundwater levels
- An operating plan is needed to guide decisions regarding when to start and stop recharge and recovery; when is the “tank” full, etc.
- Legislation and rule-making has boosted interest in ASR development in Texas by addressing governance constraints.

Target Storage Volume



In addition to water storage, treatment occurs in an aquifer due to natural processes.



- $\text{NO}_3, \text{NH}_3, \text{P}$
- THMs
- HAAs
- H_2S
- Fe, Mn, As
- Gross Alpha Rad.
- Bacteria
- Protozoa
- Viruses

Other ASR Issues for Consideration

- Interim Recharge
- Trickle flow
- Wellhead Pressure (pump column, casing annulus)
- Backflushing w/ VFD (frequency, procedures)
- Radial Injection Surge Development (RISD)
- Recharge flow rate variability
- Recovery flow rate variability
- Water level variability
- Water level and pressure measurement
- Lateral velocity of stored water movement
- Recovery efficiency
- Tracer testing
- Monitor well utilization (cycle testing; long term)
- Historian and manual data collection and reporting

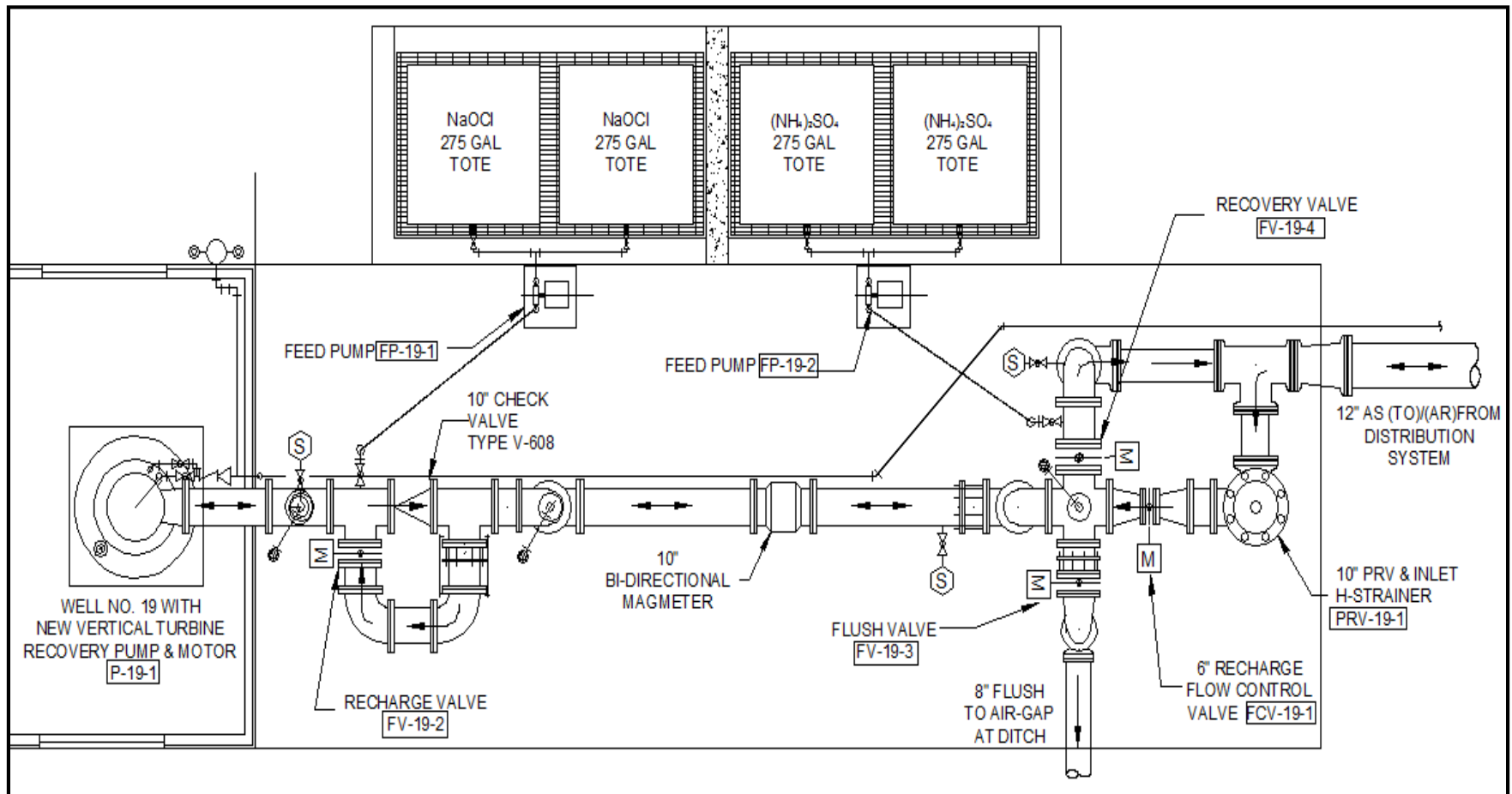
Well ASR 19

- Constructed 1970; rehabilitated 1992, 2017
- 18-inch carbon steel casing to 400 ft
- Bottom hole depth 1,068 ft
- Pump set at 375 ft; design yield is 1,500 gpm
- Screened in Evangeline aquifer (clay, sand, gravel)
- 10-inch pipe-based, wire-wrap screens
 - Total length 270 ft; **effective length 82 ft**
 - **460 to 510 ft effective**
 - **544 to 594 ft effective**
 - 642 to 694 ft
 - 780 to 804 ft
 - 852 to 904 ft
 - 988 to 1,008 ft
 - 1,026 to 1,048 ft

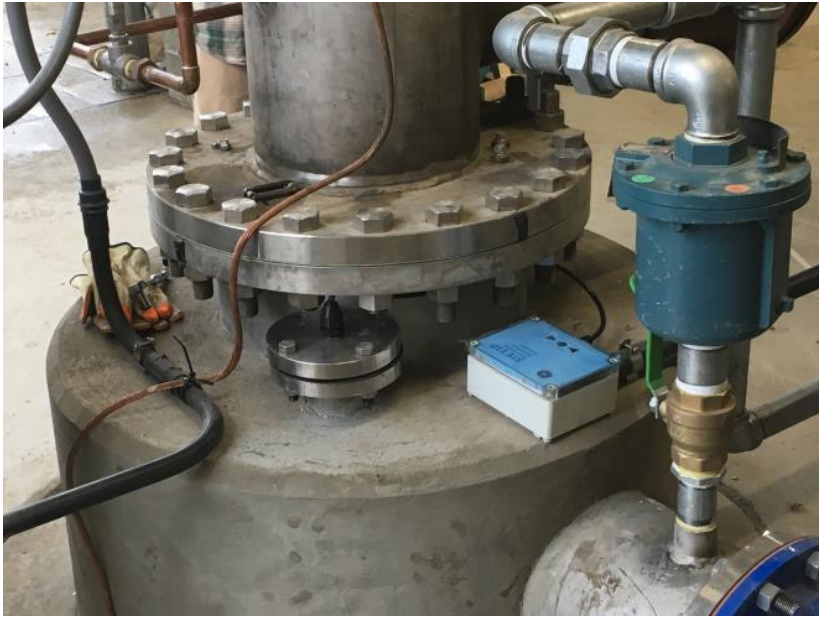


Video Log:
Pipe base at 587 ft has
corroded and/or eroded, and
is missing, exposing screen

ASR Well 19 Piping Diagram



Sampling and Water Level Measurement



Water Level
Transducer, ASR-30

Water Level & Sampling for
Monitor Well 21

Well ASR-30 Wellhead Facilities



View at Strainer/PRV
End of Wellhead Piping

View at Well End of
Wellhead Piping



Air Release Valves



The Problem of Air Entrainment During Recharge of ASR Well

Downhole Velocity
 $V < 1 \text{ ft/sec}$

No Problem

If downward velocity is less than 1 ft/sec the air bubbles will rise to the top and be vented from the well.



Downhole Velocity
 $V > 1 \text{ ft/sec}$

Air Entrainment Problem

If downward velocity is more than 1 ft/sec the air bubbles will be carried down the well casing and into the formation of the aquifer.

Disinfection Equipment



NaOCl and LAS
Storage Tanks and
Feed Pumps



Chlorine Residual Analyzer

Field Instruments: Pressure, Flowrate, Level



Electrical System Panels



Recovery Pump
Adjustable Frequency Drive

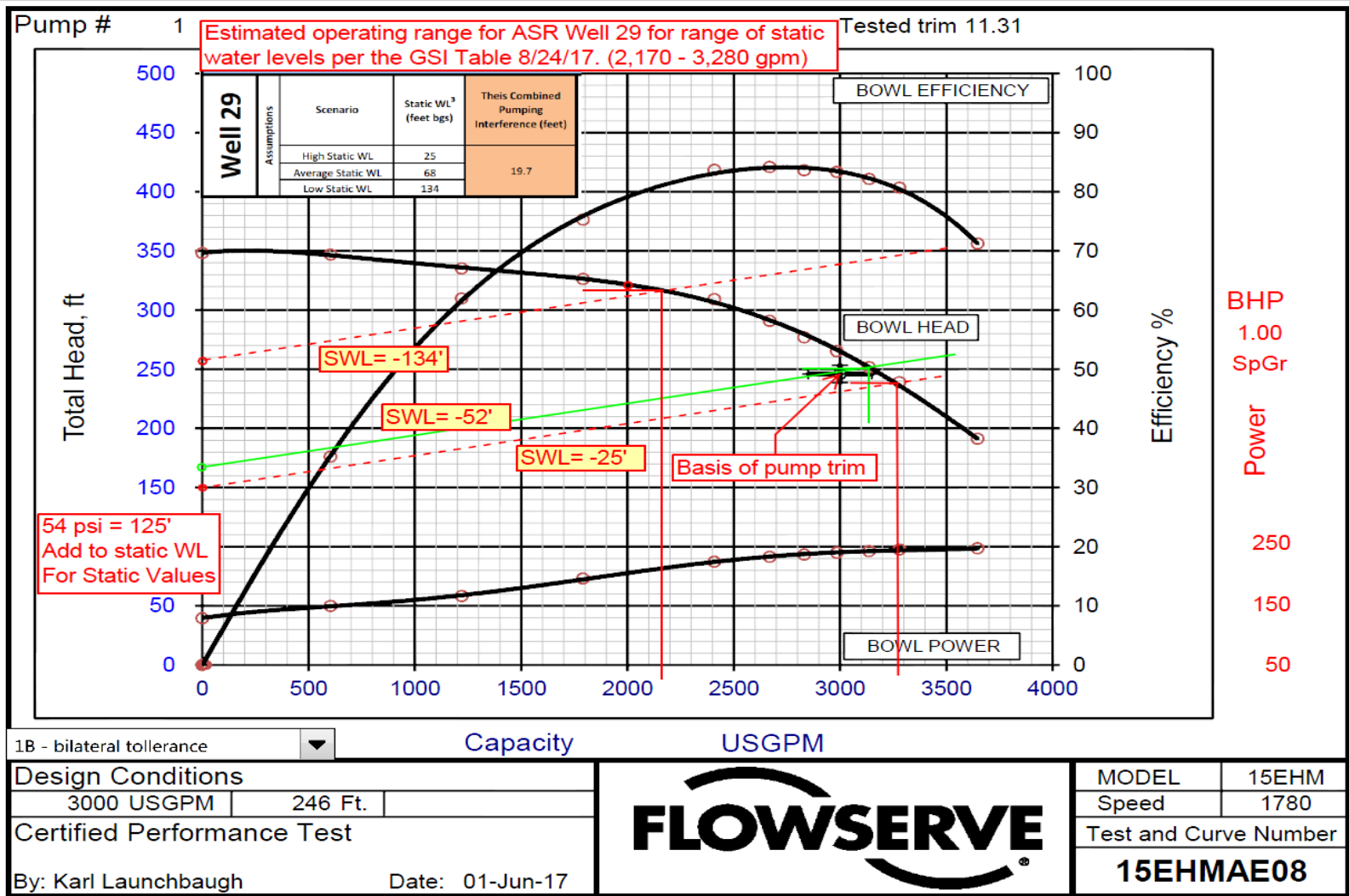


Motor Control Center

Flushing System Air-Gap Discharge



Well ASR-29 Recovery Pump Curve



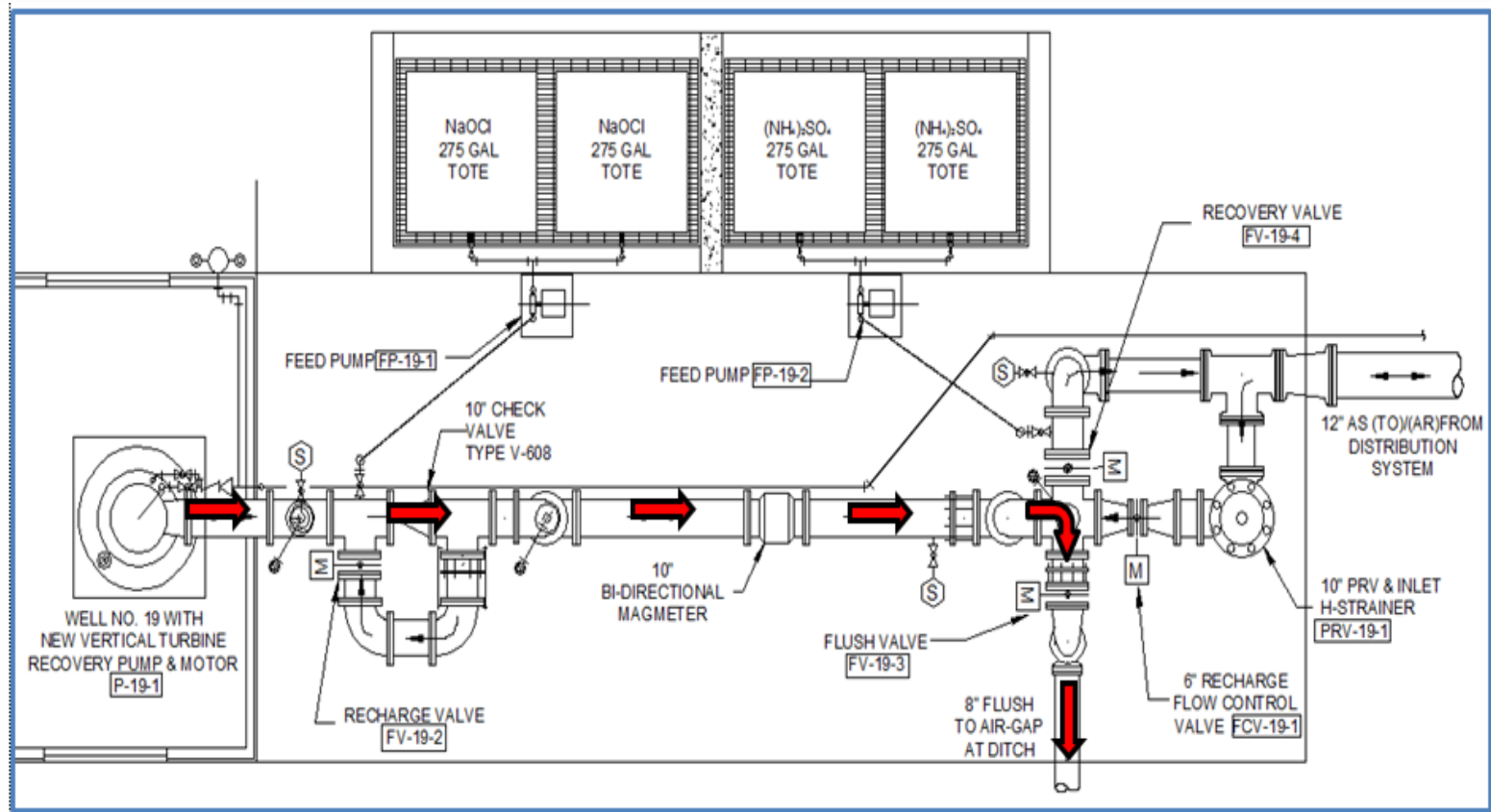
Pump & Valve Status for Various Modes of Operation

Tag No.	Item	Recharge	Storage/TF	Flush	Recovery
PRV-19-1	Pressure Reducing Valve	Operating	N/A	N/A	N/A
FCV-19-1	Recharge Flow Control Valve	Manual Modulation	Closed	Closed	Closed
FV-19-2	Column Recharge Valve	Open*	Closed	Closed	Closed
FV-19-3	Flushing Valve	Closed	Closed	Open	Closed
FV-19-4	Recovery Valve	Closed	Closed	Closed	Open
P-19-1	ASR Pump	Off	Off	On - AFD	On - AFD
FP-19-1	NaOCl Pump	Off	Off	Off	On
FP-19-2	LAS Pump	Off	Off	Off	On

Exhibit 2 – Equipment Status Summary

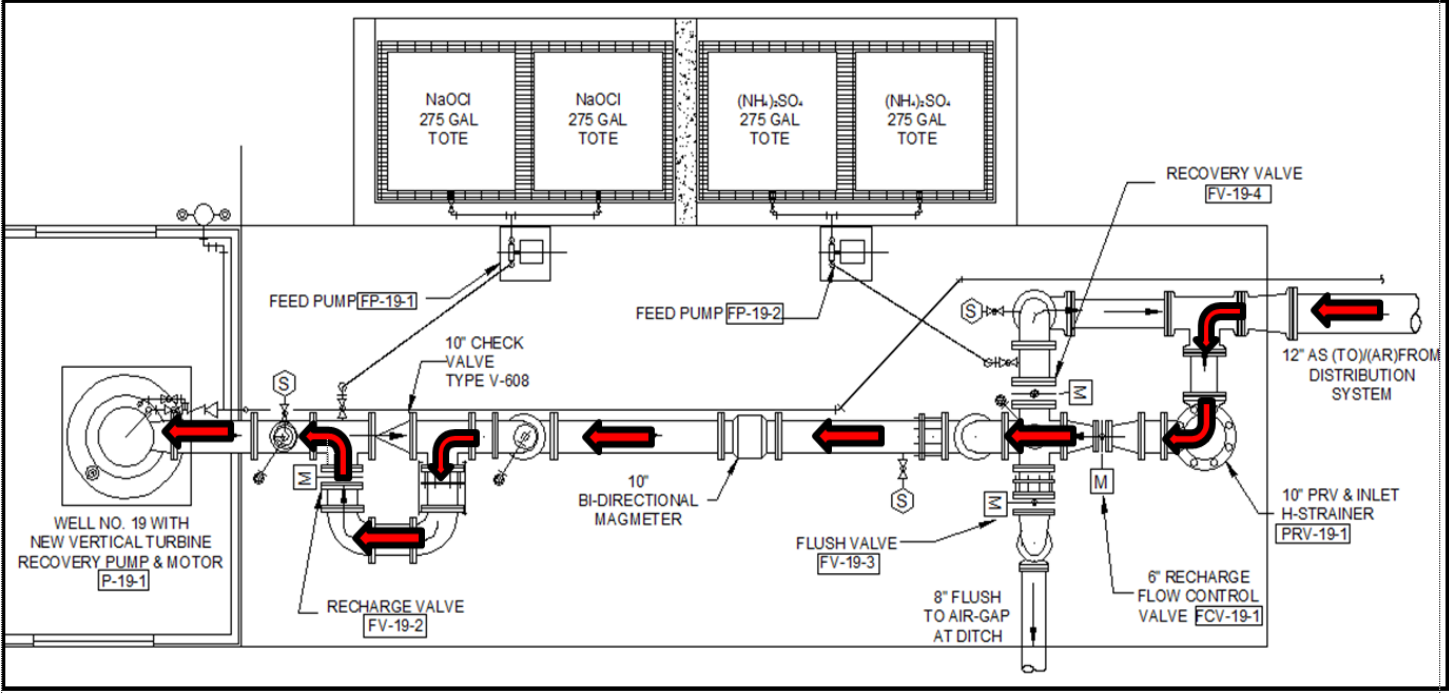
* Open only after purging air from wellhead piping by manual control of FCV-19-1.

Operating Mode: Manual Backflush of Well



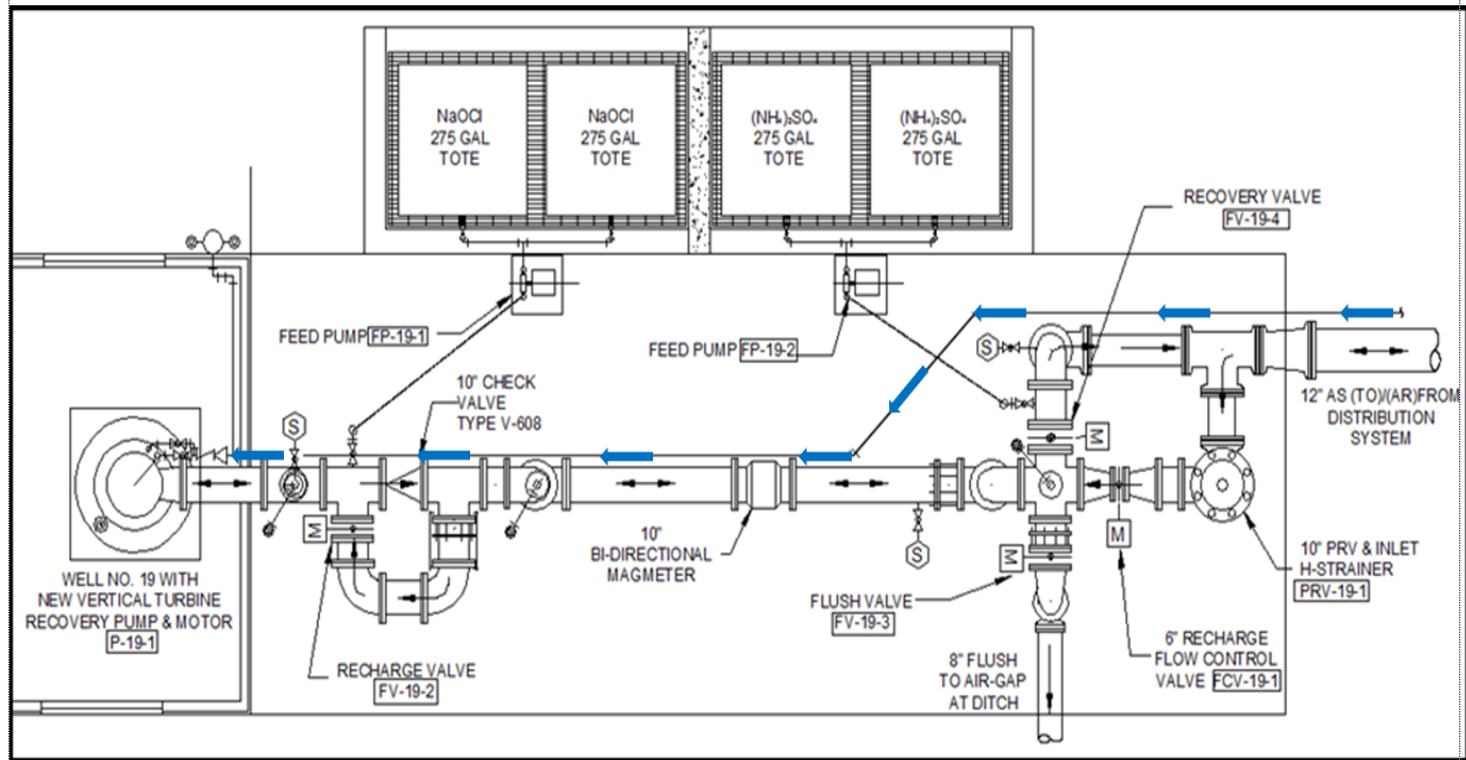
See Exhibit 3 on p. 5

Recharge of Water from Distribution System



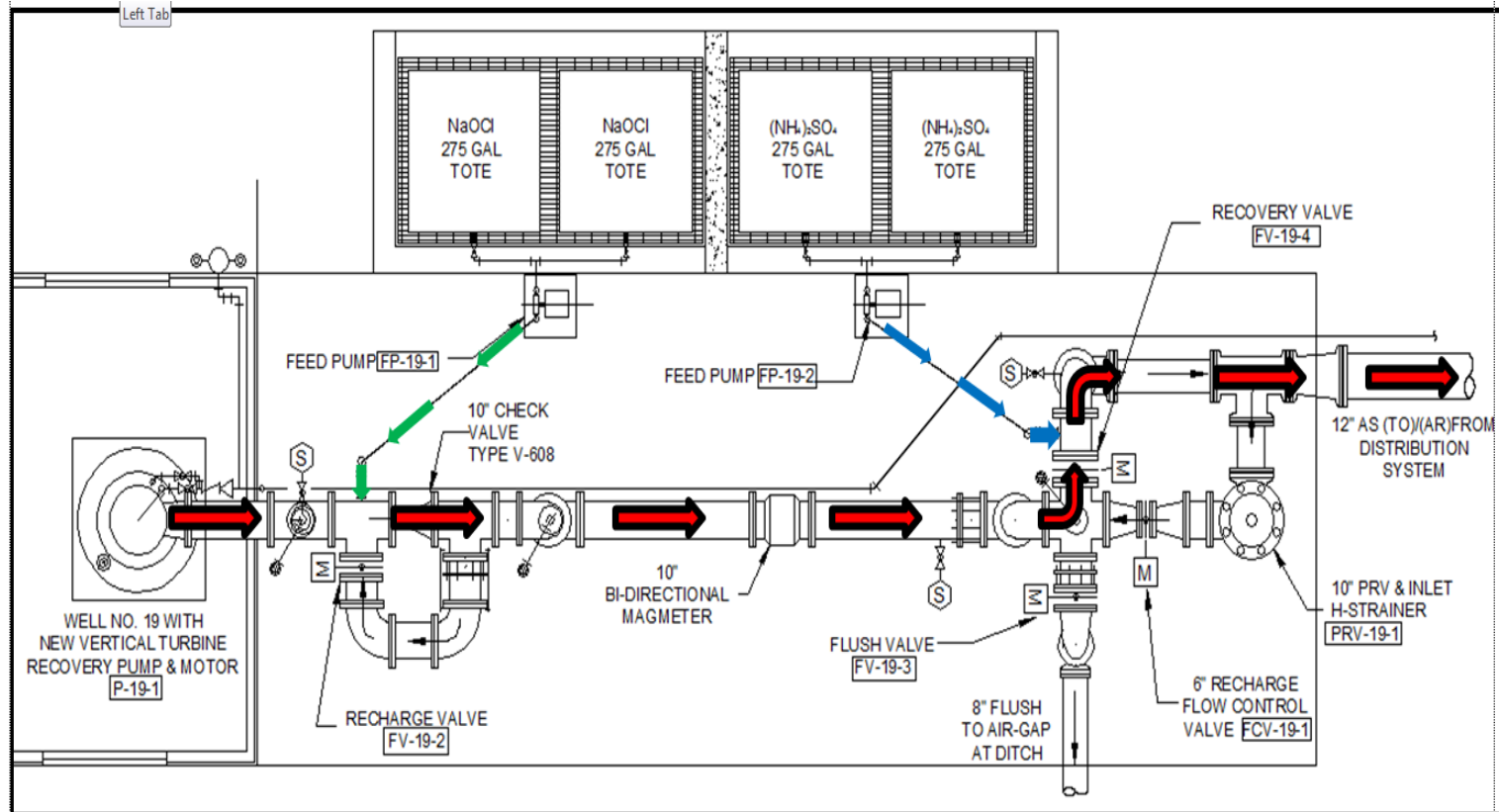
See Exhibit 5 on p. 8

Storage and Trickle Flow



See Exhibit 6 on p. 10

Recovery to Distribution System



See Exhibit 7 on p. 11

Cycle Testing Program

ASR Cycle Testing Plan								
City of Woodland Well ASR-29								
November 2017 to September 2019								
Activity	Approximate Duration (days)				Estimated Volume (MG)			Comments
	Recharge	Storage	Recovery	Cumulative	Recharge	Recovery	Cumulative	
Cycle Test One	60	2	5	67	120	15	105	November 2017 to February 2018
Cycle Test Two	70	60	35	165	140	105	140	March 2018 to September 2018
Cycle Three	180	60	100		360	300	200	October 2018 to September 2019
Notes:								
1. Assumes average recharge flow rate of 2.0 MGD, varying between 1.5 and 2.5 MGD								
2. Assumes recovery flow rate averaging 3.0 MGD, varying between 2.5 and 3.5 MGD								
3. Assumes Cycle One occurs during November 2017 to February 2018 with recovery to waste								
4. Assumes Cycles 2 and 3 recover water to the distribution system								
5. Flow rates, durations and volumes will vary to match operational needs, constraints and opportunities								
6. Assumed Target Storage Volume is 500 MG, of which 324 MG is available for recovery and 176 MG is buffer zone								

Cycle One

- Performance Testing (See p.5 – 12 of Operations Manual)
- Startup (See p. 20-23 of Operations Manual)
- Duration: April 2018 to December 2018 (tentative)
 - Recharge April to mid-October (about six months)
 - Storage period (about two weeks)
 - Recovery period (about one month)
 - Resume recharge for Summer 2019 (at option of City)
- Recharge rate 350 to 500 gpm (estimated)
- Recovery rate 1,500 gpm (design, adjustable)
 - Recover half of cumulative stored water volume, forming buffer zone
- August 2018 pause to confirm recovered water quality
 - Stop recharge for one week
 - Pump out 2 to 4 MG and get sample for PDWS and SDWS analysis
 - Resume recharge

Cycle Testing Monitoring Program

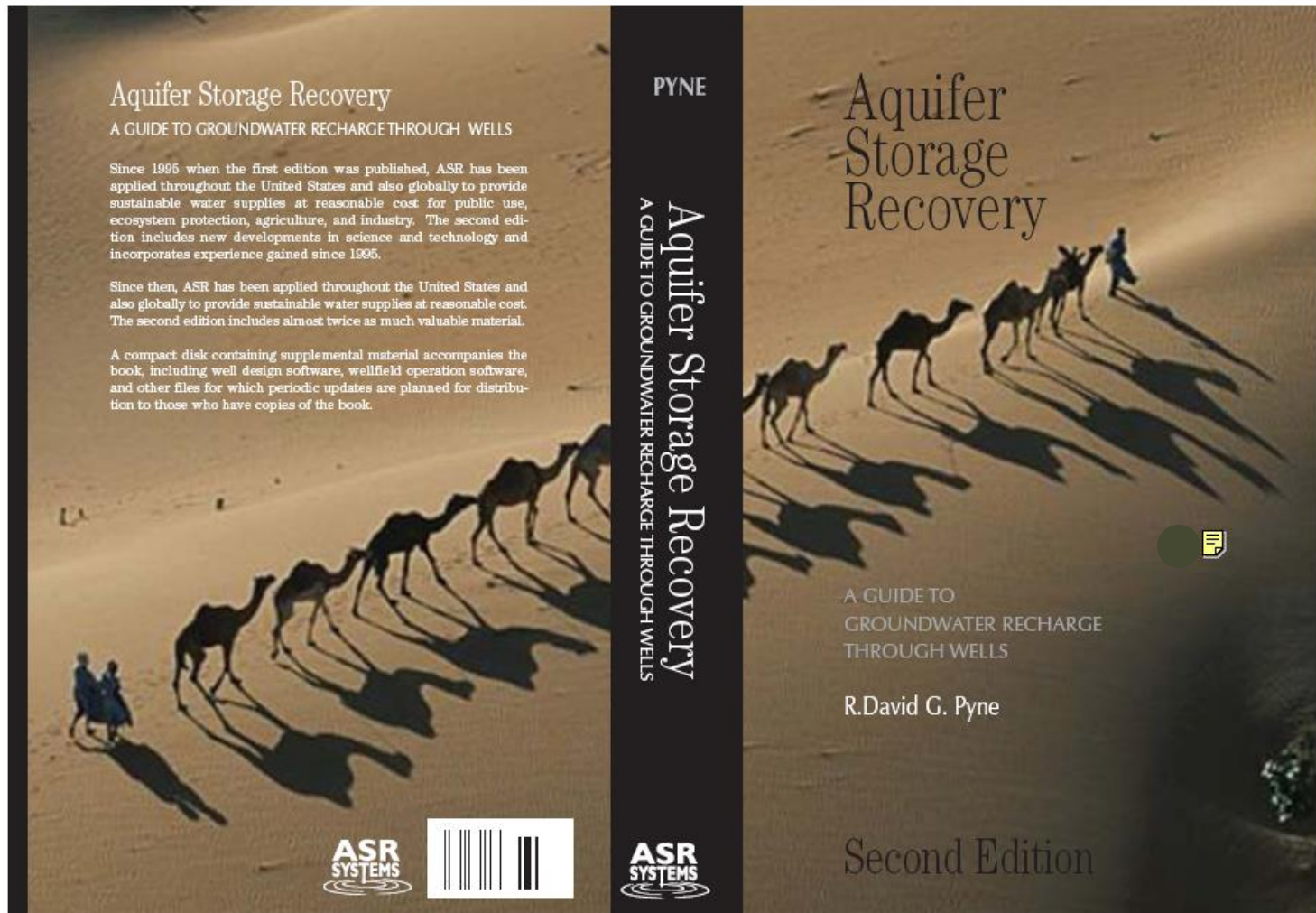
- See Operations Manual (pages 6-9, 6-10)
- List A constituents: beginning, end of recharge and monthly in between at Well 19 (about 6 samples)
- List B constituents from Well 19 at beginning, middle and end of recovery (3 samples)
- List C constituents from Well 19 at end of recovery (repeat complete Appendix A baseline analysis – 1 sample)
- List D constituents from Well 21 at beginning, middle, end of recharge into Well 19 (about six samples)
plus
- Data Collection Form (Appendix B) (flows, levels, volumes, pressures, field water quality constituents)

Appendix C – Permits and Authorizations

- TCEQ Construction Permit
- TCEQ Underground Injection Control (UIC) authorization for Class V Experimental Well
- UIC permit application pending upon completion of cycle testing, 2019

ASR Book, Second Edition

www.asrforum.com



12.7 Appendix G. Water quality and hydraulic data

DOCUMENT UNDER REVIEW

CITY OF VICTORIA, TEXAS
 ASR WELL 19 CYCLE TESTING PROGRAM DATA
 APRIL 2018 TO CURRENT

Date	Time	Lab Sampling Yes/No	Recharge/ Recovery Meter Reading	Mode of Operation	Flow Rate (gpm)	Recharge Volume (gallons)	Recovery Volume (gallons)	Backflush Volume (gallons)	Trickle Flow Meter Reading	Trickle Flow Volume (gallons)	Daily Volume (gallons)	Cumulative Volume (gallons)	Casing Annulus Wellhead Pressure (psi)	Pump Column Wellhead Pressure (psi)	Depth to Water Level Bubbler (ft)	Field DO (mg/l)	Field ORP (mv)	Field Conductivity (µScm)	Field TCl ₂ (mg/l)	Field Free Cl ₂ (mg/L)	Field Temperature (°C)	Field pH (SU)	Field Chloride (mg/l)
04/01/18		No		Off		0	0	0		0	0	0											
04/02/18		No		Off		0	0	0		0	0	0											
04/03/18		No		Off		0	0	0		0	0	0											
04/04/18		No		Off		0	0	0		0	0	0											
04/05/18		No		Off		0	0	0		0	0	0											
04/06/18		No		Off		0	0	0		0	0	0											
04/07/18		No		Off		0	0	0		0	0	0											
04/08/18		No		Off		0	0	0		0	0	0											
04/09/18	2:30 PM	No	461179	Recharge	250	0	0	0		0	0	0		0		7.96	595	607		3.25	21.8	8.32	90
04/10/18	9:00 AM	No	125940	Recharge	450	335239	0	0		0	335239	335239		40	#N/A	7.97	613.3	588		3.21	22.2	7.43	90
04/11/18	9:00 AM	No	-542249	Recharge	450	668189	0	0		0	668189	1003428		38	#N/A	9.47	652	597		3.25	22.4	7.5	120
04/12/18	9:15 AM	No	-1172891	Recharge	438	630642	0	0		0	630642	1634070		40	#N/A	9.49	694.6	607		3.23	22.7	7.47	100
04/13/18	10:39 AM	No	-1840939	Recharge	437	668048	0	0		0	668048	2302117		40	#N/A	9.8	677	583		2.52	22.9	7.51	100
04/14/18	10:20 AM	No	-2459603	Recharge	436	618664	0	0		0	618664	2920782		40	#N/A	10	691	646		2.89	20.8	7.57	100
04/15/18	10:40 AM	No	-3091399	Recharge	434	631796	0	0		0	631796	3552578		40	#N/A	9.57	707.2	644		2.8	21.4	7.55	100
04/16/18	10:03 AM	No	-3699598	Recharge	433	608199	0	0		0	608199	4160776		40	#N/A	9.55	709.2	630		2.82	22.4	7.55	100
04/17/18	10:49 AM	No	-4343629	Recharge	434	644032	0	0		0	644032	4804808		40	#N/A	9.76	704	575		2.9	23.2	7.59	100
04/18/18	9:37 AM	No	-4917261	Recharge	435	573632	0	0		0	573632	5378440		39	#N/A	9.41	716.9	590		2.71	23.1	7.06	100
04/19/18	11:00 AM	No	-5576743	Recharge	433	659482	0	0		0	659482	6037921		40	#N/A	10.11	711.1	593		2.89	22.6	7.57	100
04/20/18	9:18 AM	No	-6155261	Recharge	434	578519	0	0		0	578519	6616440		40	#N/A	9.33	722.1	586		2.44	22	7.54	100
04/21/18	1:45 PM	No	-6847242	Recharge	433	691981	0	0		0	691981	7308421		40	#N/A	9.85	735.3	570		2.96	23.2	7.53	100
04/22/18	3:05 PM	No	-7496934	Recharge	426	649692	0	0		0	649692	7958113		40	#N/A	9.83	721.1	526		2.75	23.6	7.4	100
04/23/18	10:00 AM	No	-7986444	Recharge	424	489510	0	0		0	489510	8447623		40	#N/A	10.37	713.2	516		2.65	24.2	7.3	100
04/24/18	8:30 AM	No	-8679103	Recharge	512	692659	0	0		0	692659	9140282	20	56	#N/A	10.47	713	506		2.55	22.4	7.54	80
04/25/18	10:31 AM	No	-9503835	Recharge	540	824732	0	0		0	824732	9965014	20	62	#N/A	10.15	727	541		2.99	23.5	7.57	80
04/26/18	10:36 AM	No	-10334190	Recharge	567	830355	0	0		0	830355	10795369	10	56	#N/A	10.13	727.5	544		2.71	22.3	7.79	80
04/27/18	7:25 AM	No	-11050744	Recharge	585	716554	0	0	2724	2724	719278	11514647	10	60	#N/A	9.62	740	565		3.12	22.5	7.16	80
04/28/18	7:45 AM	No	-11889958	Recharge	560	839214	0	0	7264	4540	843754	12358401	10	55	#N/A	10.11	733.6	569		2.64	22.8	7.34	80
04/29/18	7:07 AM	No	-12700291	Recharge	593	810333	0	0	12358	5094	815427	13173828	10	62	#N/A	9.95	743	545		2.91	22.9	7.21	80
04/30/18	8:00 AM	No	-13555366	Recharge	569	855075	0	0	17572	5214	860289	14034117	10	58	#N/A	9.77	735.4	555		2.49	23.3	6.76	80
5/1/2018	11:30 AM	No	-14511023	Recharge	596	955657	0	0	23552	5980	961637	14995754	10	64	#N/A	9.86	480.6	5.49	1.59		24.2	7.8	100
5/2/2018	11:02 AM	No	-15316121	Recharge	557	805098	0	0	28414	4862	809960	15805714	12	56	#N/A	10.05	453.7	564	1.06		24.8	8.1	100
5/3/2018	10:28 AM	No	-16126308	Recharge	568	810187	0	0	33444	5030	815217	16620931	10	58	#N/A	10.36	459.2	560	1.88		25.6	7.9	100
5/4/2018	9:27 AM	No	-16913798	Recharge	582	787490	0	0	38187	4743	792233	17413164	10	60	#N/A	8.2	482.1	559	3.1		24.6	7.3	100
5/5/2018	10:05 AM	No	-17744980	Recharge	588	831182	0	0	43003	4816	835998	18249162	10	62	#N/A	7.8	493.6	580	3.11		24.5	7.83	100
5/6/2018	10:40 AM	No	-18581912	Recharge	580	836932	0	0	48000	4997	841929	19091091	10	60	#N/A	8.4	472.4	574	2.53		25.5	7.99	100
5/7/2018	9:20 AM	No	-19335938	Recharge	574	754026	0	0	52499	4499	758525	19849616	12	60	#N/A	8.1	467.5	559	3.15		25	8.06	100
5/8/2018		No		Off		0	0	0		0	0	19849616											
5/9/2018		No		Off		0	0	0		0	0	19849616											
5/10/2018		No		Off		0	0	0		0	0	19849616											
5/11/2018		No		Off		0	0	0		0	0	19849616											
5/12/2018		No		Off		0	0	0		0	0	19849616											
5/13/2018		No		Off		0	0	0		0	0	19849616											
5/14/2018		No		Off		0	0	0		0	0	19849616											
5/15/2018		No		Off		0	0	0		0	0	19849616											
5/16/2018		No		Off		0	0	0		0	0	19849616											
5/17/2018		No		Off		0	0	0		0	0	19849616											
5/18/2018		No		Off		0	0	0		0	0	19849616											
5/19/2018		No		Off		0	0	0		0	0	19849616											
5/20/2018		No		Off		0	0	0		0	0	19849616											
5/21/2018		No		Off		0	0	0		0	0	19849616											
5/22/2018		No		Off		0	0	0		0	0	19849616											
5/23/2018		No		Off		0	0	0		0	0	19849616											
5/24/2018		No		Off		0	0	0		0	0	19849616											

DOCUMENT UNDER REVIEW

CITY OF VICTORIA, TEXAS
 ASR WELL 19 CYCLE TESTING PROGRAM DATA
 APRIL 2018 TO CURRENT

Date	Time	Lab Sampling Yes/No	Recharge/ Recovery Meter Reading	Mode of Operation	Flow Rate (gpm)	Recharge Volume (gallons)	Recovery Volume (gallons)	Backflush Volume (gallons)	Trickle Flow Meter Reading	Trickle Flow Volume (gallons)	Daily Volume (gallons)	Cumulative Volume (gallons)	Casing Annulus Wellhead Pressure (psi)	Pump Column Wellhead Pressure (psi)	Depth to Water Level Bubbler (ft)	Field DO (mg/l)	Field ORP (mv)	Field Conductivity (µScm)	Field TCl ₂ (mg/l)	Field Free Cl ₂ (mg/L)	Field Temperature (°C)	Field pH (SU)	Field Chloride (mg/l)
5/25/2018		No		Off		0	0	0		0	0	19849616											
5/26/2018		No		Off		0	0	0		0	0	19849616											
5/27/2018		No		Off		0	0	0		0	0	19849616											
5/28/2018		No		Off		0	0	0		0	0	19849616											
5/29/2018		No		Off		0	0	0		0	0	19849616											
5/30/2018		No		Off		0	0	0		0	0	19849616											
5/31/2018		No		Off		0	0	0		0	0	19849616											
1/1/2019		No		Off		0	0	0		0	0	19849616											
1/2/2019		No		Off		0	0	0		0	0	19849616											
1/3/2019		No		Off		0	0	0		0	0	19849616											
1/4/2019		No		Off		0	0	0		0	0	19849616											
1/5/2019		No		Off		0	0	0		0	0	19849616											
1/6/2019		No		Off		0	0	0		0	0	19849616											
1/7/2019		No		Off		0	0	0		0	0	19849616											
1/8/2019		No		Off		0	0	0		0	0	19849616											
1/9/2019		No		Off		0	0	0		0	0	19849616											
1/10/2019		No		Off		0	0	0		0	0	19849616											
1/11/2019		No		Off		0	0	0		0	0	19849616											
1/12/2019		No		Off		0	0	0		0	0	19849616											
1/13/2019		No		Off		0	0	0		0	0	19849616											
1/14/2019		No		Off		0	0	0		0	0	19849616											
1/15/2019		No		Off		0	0	0		0	0	19849616											
1/16/2019		No		Off		0	0	0		0	0	19849616											
1/17/2019		No		Off		0	0	0		0	0	19849616											
1/18/2019	14:16	Yes	-19788288	Recharge	522	452350	0	0		0	452350	20301966	0	42	100	9.51	455.1	556	3.16		17.8	8.94	80
1/19/2019	14:02	No	-20503836	Recharge	496	715548	0	0		0	715548	21017514		41	85	9.35	503.6	551	3.27		17.4	8.77	100
1/20/2019	11:23	No	-21117704	Recharge	489	613868	0	0		0	613868	21631382		41	165	9.03	490.9	548	3.18		15.6	9.26	80
1/21/2019	14:00	No	-21916456	Recharge	576	798752	0	0		0	798752	22430134	0	58	165	9.82	488.1	527	3.3		18.2	8.71	80
1/22/2019		No		Recharge	577	346200	0	0		0	346200	22776334	8										
1/23/2019		No		Recharge	575	828000	0	0		0	828000	23604334	10										
1/24/2019		No		Recharge	576	828965	0	0		0	828965	24433298	10										
1/25/2019		No		Recharge	582	837504	0	0		0	837504	25270802	10										
1/26/2019		No		Recharge		0	0	0		0	0	25270802											
1/27/2019		No		Recharge		0	0	0		0	0	25270802											
1/28/2019		No		Recharge	570	820858	0	0		0	820858	26091660	10										
1/29/2019		No		Recharge	551	794030	0	0		0	794030	26885690	13										
1/30/2019	14:40	Yes	-29012807	Recharge	546	2640794	0	0		0	2640794	29526485	14	58	135	9.65	472	422	3		16.1	8.73	100
1/31/2019		No	-28799996	Recharge	570	-212811	0	0		0	-212811	29313674	14										
2/1/2019		No	-30413548	Recharge	563	1613552	0	0		0	1613552	30927226	14	62									
2/2/2019		No		Recharge		0	0	0		0	0	30927226											
2/3/2019		No		Recharge		0	0	0		0	0	30927226											
2/4/2019		No	-32829166	Recharge	556	2415618	0	0		0	2415618	33342844	14	62									
2/5/2019		No	-33640304	Recharge	558	811138	0	0		0	811138	34153982	14	62									
2/6/2019	8:00 AM	No	-34392120	Recharge	557	751816	0	0		0	751816	34905798	14	62	82	9.76	487	449	3.17		18.7	8.48	80
2/7/2019		No	-35280016	Recharge	558	887896	0	0		0	887896	35793694	14	62									
2/8/2019		No	-36190840	Recharge	542	910824	0	0		0	910824	36704518	16	62									
2/9/2019		No		Recharge		0	0	0		0	0	36704518											
2/10/2019		No		Recharge		0	0	0		0	0	36704518											
2/11/2019		Yes		Recharge		0	0	0		0	0	36704518	17	62									
2/12/2019		No	-39122140	Recharge	558	2931300	0	0		0	2931300	39635818	17	64									
2/13/2019		No		Storage		0	0	0		0	0	39635818											
2/14/2019		No		Storage		0	0	0		0	0	39635818											
2/15/2019		No		Storage		0	0	0		0	0	39635818											
2/16/2019		No		Storage		0	0	0		0	0	39635818											
2/17/2019		No		Storage		0	0	0		0	0	39635818											

DOCUMENT UNDER REVIEW

CITY OF VICTORIA, TEXAS
 ASR WELL 19 CYCLE TESTING PROGRAM DATA
 APRIL 2018 TO CURRENT

Date	Time	Lab Sampling Yes/No	Recharge/ Recovery Meter Reading	Mode of Operation	Flow Rate (gpm)	Recharge Volume (gallons)	Recovery Volume (gallons)	Backflush Volume (gallons)	Trickle Flow Meter Reading	Trickle Flow Volume (gallons)	Daily Volume (gallons)	Cumulative Volume (gallons)	Casing Annulus Wellhead Pressure (psi)	Pump Column Wellhead Pressure (psi)	Depth to Water Level Bubbler (ft)	Field DO (mg/l)	Field ORP (mv)	Field Conductivity (µScm)	Field TCl ₂ (mg/l)	Field Free Cl ₂ (mg/L)	Field Temperature (°C)	Field pH (SU)	Field Chloride (mg/l)
2/18/2019		No		Storage		0	0	0		0	0	39635818											
2/19/2019		Yes	-39122140	Recovery	1071 /1035	0	0	0		0	0	39635818	0	4									
2/20/2019		No		Recovery		0	0	0		0	0	39635818											
2/21/2019		No		Recovery	1006 / 980	0	0	0		0	0	39635818	0	70									
2/22/2019	10:35 AM	No	-37565588	Recovery	935	0	1556552	0		0	-1556552	38079266											
2/23/2019		No		Storage		0	0	0		0	0	38079266											
2/24/2019		No		Storage		0	0	0		0	0	38079266											
2/25/2019		No		Storage		0	0	0		0	0	38079266											
2/26/2019		No		Storage		0	0	0		0	0	38079266											
2/27/2019		No		Storage		0	0	0		0	0	38079266											
2/28/2019		No	-37350028	Storage		0	0	0		0	0	38079266											
3/1/2019		No		Storage		0	0	0		0	0	38079266											
3/2/2019		No		Storage		0	0	0		0	0	38079266											
3/3/2019		No		Storage		0	0	0		0	0	38079266											
3/4/2019		No		Storage		0	0	0		0	0	38079266											
3/5/2019		No		Storage		0	0	0		0	0	38079266											
3/6/2019		No		Storage		0	0	0		0	0	38079266											
3/7/2019		No		Storage		0	0	0		0	0	38079266											
3/8/2019	10:35 AM	No	-37114208	Recovery		0	235820	0		0	-235820	37843446											
3/9/2019		No		Recovery		0	0	0		0	0	37843446											
3/10/2019		No		Recovery		0	0	0		0	0	37843446											
3/11/2019		No		Recovery		0	0	0		0	0	37843446											
3/12/2019	9:20 AM	Yes	-36987940	Recovery	1071	0	126268	0		0	-126268	37717178			135	7.4	354.9	469	0.13		20.2	8.43	100
3/13/2019	8:02 AM	No	-36097516	Recovery	636	0	890424	0		0	-890424	36826754			105								
3/14/2019	10:10 AM	No	-35119604	Recovery	619	0	977912	0		0	-977912	35848842			105								
3/15/2019	8:32 AM	No	-33797940	Recovery	983	0	1321664	0		0	-1321664	34527178			85								
3/16/2019	11:37 AM	No	-32988326	Recovery	619	0	809614	0		0	-809614	33717564			105								
3/16/2019	11:00 PM	No	-32569444	Recovery	637	0	418882	0		0	-418882	33298682			105								
3/18/2019	15:25	Yes	-32413934	Recovery	668	0	155510	0		0	-155510	33143172			105	7.1	285.5	444	0.03		20.4	8.48	100
3/19/2019	8:27	No	-31753178	Recovery	632	0	660756	0		0	-660756	32482416			105								
3/20/2019	9:20	No	-30798752	Recovery	625	0	954426	0		0	-954426	31527990			105	7.9	269.1	569	0.02		20.7	7.34	100
3/21/2019	12:44	Yes	-31715196	Recharge	534	916444	0	0		0	916444	32444434	13	59	60	8.9	470.9	479	2.58		18.8	8.68	80
3/22/2019	2:44 PM	No	-32556840	Recharge	530	841644	0	0		0	841644	33286078	14	58	87								
3/23/2019	1:00 PM	No	-33305598	Recharge	534	748758	0	0		0	748758	34034836	14.5	60	115								
3/24/2019	1:00 PM	No	-33988728	Recharge	528	683130	0	0		0	683130	34717966	15	60	75								
3/25/2019	1:00 PM	No	-34696244	Recharge	515	707516	0	0		0	707516	35425482	16	56	62								
3/26/2019	1:00 PM	No	-35418396	Recharge	511	722152	0	0		0	722152	36147634	18	60	120								
3/27/2019	10:22 AM	No	-36118664	Recharge	513	700268	0	0		0	700268	36847902	19.5	61	78								
3/27/2019	10:29 AM	No	-36075044	Backflush		0	0	43620		0	-43620	36804282											
3/27/2019	11:13 AM	No	-36078804	Recharge	399	3760	0	0		0	3760	36808042	5	32	165	9.2	474.1	447	3.17		19.2	8.5	80
3/28/2019	7:53 AM	No	-36537564	Recharge	369	458760	0	0		0	458760	37266802	9.5	31	146								
3/29/2019	10:39 AM	No	-37195368	Recharge	365	657804	0	0		0	657804	37924606	8	31	105								
3/30/2019	10:42	No	-37601756	Recharge	364	406388	0	0		0	406388	38330994	8	31	135								
3/30/2019	11:13 AM	No	-37604132	Recharge	0	2376	0	0		0	2376	38333370	0	69	127								

DOCUMENT UNDER REVIEW

**CITY OF VICTORIA, TEXAS
MONITOR WELL 21 CYCLE TESTING PROGRAM DATA
APRIL 2018 TO DECEMBER 2018**

DATE	TIME	FLOWMETER (GALLONS)	DEPTH TO WATER TAPE (FT)	FIELD CONDUCTIVITY (μScm)	FIELD TDS (mg/L)	LAB CHLORIDE (mg/l)
1/20/2019	11:30			871	566.15	140
1/21/2019	14:30			878	570.7	120
1/30/2019	15:30			874	568.1	120
2/6/2019	8:45			876	569.4	120
2/12/2019	10:35			872	566.8	120
3/21/2019	13:30			721	468.65	220



WELL CAMERA SURVEY REPORT

Customer:	City of Victoria	Date:	9/14/2017
Well Name:	Well #19	Work Order #:	
Performed By:	Bobby McClure	Witnessed By:	Francisco Ochoa
Well Case Lapping:	410' - 470'	Surface Oil:	Trace
Static Water Level:	24'	Total Depth:	1041'

Well Inspection Notes		Casing / Screen Intervals	
Depth	Comments	Depth	Description
84'	Collar rub	0' - 410'	18" Blank
129'	Corrosion	410'	Top of 12" liner
250' +	Cloudy, poor visibility	410' - 470'	10" Blank
290'	Welded joint	470' - 520'	10" Screen (pipe-based)
311', 324'+	Possible Scale	520' - 554'	10" Blank
423', 463', 503'	Welded joint	554' - 604'	10" Screen (pipe-based)
544', 665', 835'	Welded joint	604' - 652'	10" Blank
498', 502'	enlarged holes in pipe-base	652' - 704'	10" Screen (pipe-based)
504', 538'	Heavy corrosion	704' - 790'	10" Blank
505', 510', 515'	Enlarged holes, questionable area	790' - ???	10" Screen (pipe-based)
518', 555'-561'	Enlarged holes, questionable area	??? - 863'	10" Blank
567', 583', 653'	Enlarged holes, questionable area	863' - 915'	10" Screen (pipe-based)
554'	Questionable area	915' - 1000'	10" Blank
586'	Pipe-base screen deteriorated	1000' - ???	10" Screen (pipe-based)
586'	Possible break in screen	1041'	Total depth viewed
667'	Questionable area		
701'	Tape		
815'	Questionable area		

COMMENTS

Water was run into the well for better visibility. Upon arrival, water was coming out of the top, therefore the static water level is questionable.



WELL CAMERA SURVEY REPORT

Customer:	City Of Victoria	Date:	1/9/2018
Well Name:	#19	Work Order #:	
Performed By:	Daniel Foerster	Witnessed By:	Francisco Ochoa

Well Case Lapping:	408' - 468'	Surface Oil:	None
Static Water Level:	22'	Total Depth:	1035' (soft bottom)

Well Inspection Notes		Casing / Screen Intervals	
Depth	Comments	Depth	Description
84'	Collar rub	0' - 408'	18" Blank
300 +	Minor scales	408'	Top of 12" liner
378', 408'	Scale build up	408' - 468'	12" Blank
494' - 664'	Elongated holes in screen	468' - 518'	12" Screen (pipe-based)
587'	Pipe base erroded	518' - 554'	12" Blank
694' +	Cloudy	554' - 602'	12" Screen (pipe-based)
734' +	Poor visibility	602' - 650'	12" Blank
850' +	Little to no visibility	650' - 702'	12" Screen (pipe-based)
967', 971'	Minor scale build up	702' - 788'	12" Blank
		788' - 811'	12" Screen (pipe-based)
		811' - 859'	12" Blank
		859' - 913'	12" Screen (pipe-based)
		913' - 1000'	12" Blank
		1000' - 1020'	12" Screen (pipe-based)
		1020' - 1035'	12" Blank
		1035'	Total depth viewed

COMMENTS



P.O. Box 2848 • Conroe, TX 77305 • (936)756-7721

PERFORMANCE TEST REPORT

Customer: City of Victoria	Date: 4/4/2018
Well Number: Well 19 ASR	Work Order No.:

MOTOR DATA

Manufacturer: USEM	Serial no.: Y19-811847-0001CF 01	Horsepower: 250
Frame: H445TP	Full Load Amps: 283	Volts:
EFFICIENCY Standard:	Energy efficient:	Premium: 95.80%
		Nameplate RPM: 1,780

WELL PUMP DATA

Manufacturer: American-Marsh	Serial No.: W01981	Model: 13MC
Design Point: 1,500 g.p.m. @	385 ft. TDH	No. of stages: 7
Column Size (in.): 10"	Tube/Shaft (in.): 1 11/16" W/L	Setting (ft.): 375

PERFORMANCE TEST DATA

Static water level (ft.):	21.57	Orifice: 10 x 8	System psi:						
Discharge pressure (psi):	6	60	30						
Pumping Rate (g.p.m.):	1,845	1,623	1,757						
Pumping water level (ft.):	217.9	197.1	213.3						
Drawdown (ft.):	196.4	175.6	191.7						
Specific capacity (g.p.m./ft.):	9.4	9.2	9.2						
Sand production (p.p.m.):	0.05	trace	trace						
Water color:	clear	clear	clear						
Field Head (ft.):	231.8	335.7	282.6						
Water horsepower:	108.0	137.6	125.4						
Wire/water efficiency:	54.5%	66.4%	62.2%						
Horsepower input:	198.3	207.3	201.5						
Kilowatt input:	147.9	154.7	150.3						
Voltage (per lead):	473	474	473	471	472	471	472	473	472
Amperage (per lead):	212.8	213.8	213.9	223.1	225.4	224.2	217.2	216.9	218.2
Time (minutes):	30 minutes			45 minutes			30 minutes		

ADDITIONAL DATA

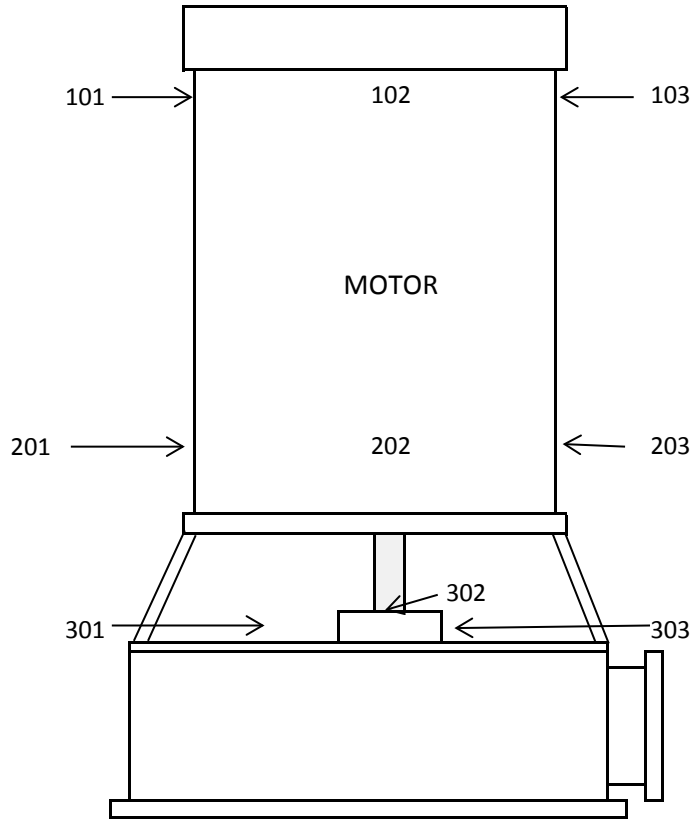
Pump submergence (ft.): 177.9	Metal: None	Start-up Sand: .1 ML
Flow meter accuracy:	Abnormal vibration: No	Airline functional: Yes
Amperage imbalance: 0.5%	H.P. utilization: 198.1	Oil (drops/min): N/A
Kwh/million gallons: 1,593.6	Abnormal noise: No	Vent Screen:
Flow meter reading:		

Comments:

Technician: Roy Mejia	Witnessed by:
------------------------------	----------------------

VIBRATION ANALYSIS REPORT

Customer:	City of Victoria	Date: 4/4/2018
Well Number:	Well 19 ASR	Work Order No.:



MOTOR DATA

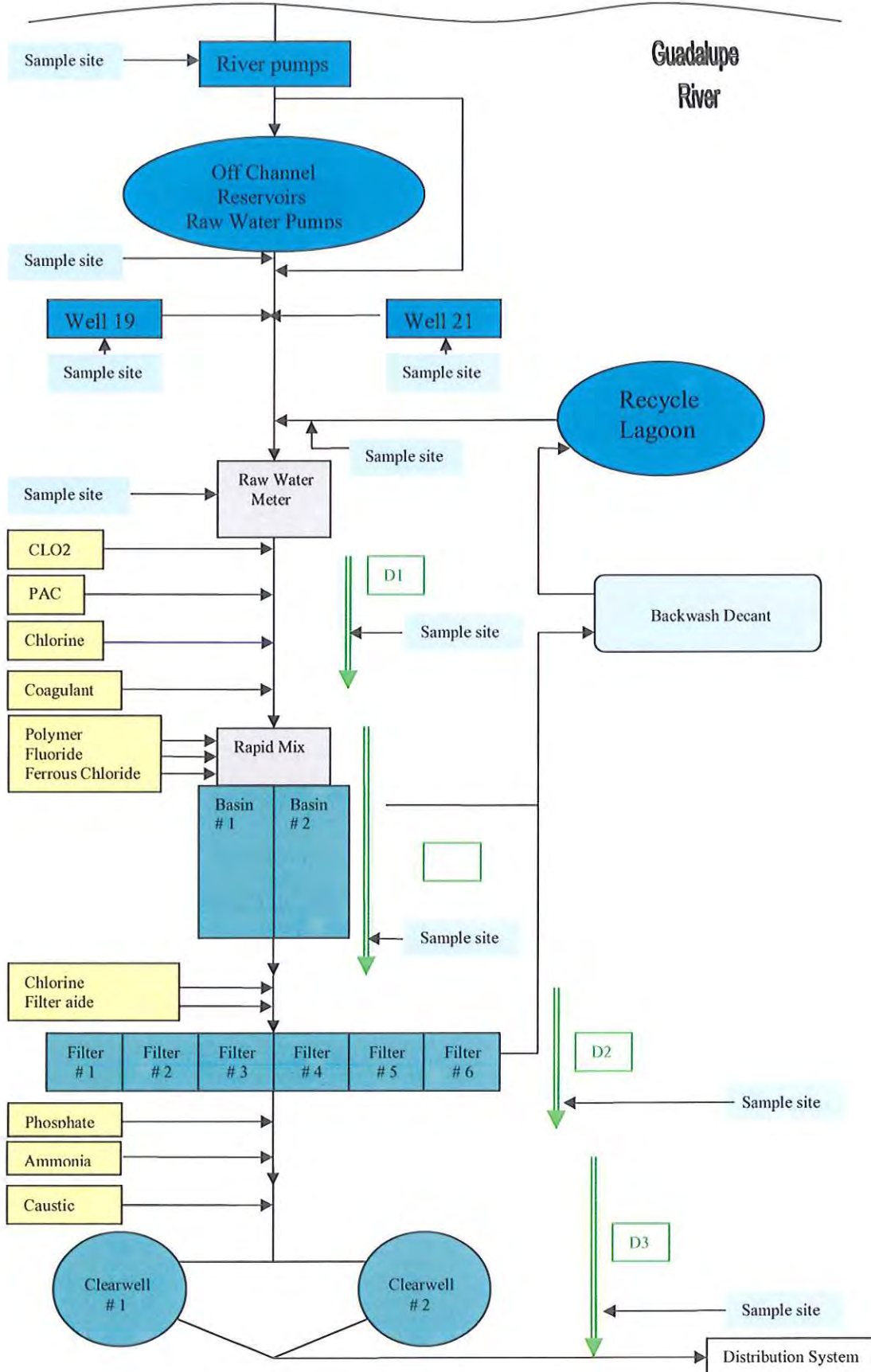
Horsepower:	250	Frame:	H445TP	RPM:	1,780	F.L.A.	283	Serial #:	Y19-811847-0001CF 01
-------------	-----	--------	--------	------	-------	--------	-----	-----------	----------------------

VIBRATION READINGS



Category	Point	Description	Reading		
MOTOR Outboard readings:	101	Upper motor bearing- HORIZONTAL:	0.15		
	102	Upper motor bearing- VERTICAL:	0.17		
	103	Upper motor bearing- AXIAL:	0.16		
MOTOR Inboard readings:	201	Lower motor bearing- HORIZONTAL:	0.07		
	202	Lower motor bearing- VERTICAL:	0.09		
	203	Lower motor bearing- AXIAL:	0.06		
PUMP SHAFT Axial readings: 3 @ 90 degrees apart	301	Pump upper bearing- HORIZONTAL:	0.03		
	302	Pump upper bearing- VERTICAL:	0.03		
	303	Pump upper bearing- AXIAL:	0.03		

Comments:	Motor running smooth at this time.
Field Technician:	Roy Mejia

City of Victoria
SWTP Treatment Scheme



Laboratory Reports

TCEQ		MICROBIAL MONITORING FORM												ENVIRODYNE LABORATORIES, INC 11011 BROOKLET, STE 230 HOUSTON, TX 77099 (281) 568-7880 NELAP Certificate # T104704265													
Public/Private Water System Identification & Sample Collection Information (Please type or use block print)														TCEQ Lab ID: TX-288				Test results meet all requirements of NELAC unless stated otherwise.									
Public Water System ID:																											
Public Water System Name:																											
County:														LABORATORY USE ONLY - DO NOT MARK TO THE RIGHT OF THE BOLD CENTER LINE													
Send Results To:	Name:	City of Victoria - Lynn Short												Sample Iced?		Received By:		Date / Time Received:									
	Address:	700 Main Center												<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		ES		1/4/17 at 5:00pm		17:00							
	City:	Victoria												If no, temperature receipt?		Tested By:		Date / Time Tested:									
	State:	TX		Zip:		77901						°C		Reported By:		Date / Time Reported:		1-10-17 @ 1554									
Phone #:		361-485-3381				Fax #:		lshort@victoriatx.org						Report Approval Signature/Title:													
Sampler Name:		David Burger												Approving Technical Director:		<input checked="" type="checkbox"/> LB		Date of Approval									
Sampler Contact #:		361-485-3415				<input type="checkbox"/> Owner		<input checked="" type="checkbox"/> Operator		<input type="checkbox"/> Other:																	
System Type: (V)				Water Source: (V)										Chlorine Residual		Lab Results				Laboratory Sample ID Number							
<input checked="" type="checkbox"/> Public		<input type="checkbox"/> Private		<input type="checkbox"/> Bottled/Vended		<input checked="" type="checkbox"/> Groundwater		<input type="checkbox"/> Surface Water		<input type="checkbox"/> Other:		Note: All test results relate only to the samples as received.															
Sample Identification/Location		Collected			Sample Type: (V)							Free mg/L		Unsuitable Sample - Please Resubmit*		Test Method		Total Coliform		E. coli							
Use Specific Address/Location		Date	Time		Distribution	Construction	Raw Well	Special	Repeat	Include Lab ID of Originating Positive on all Repeat and Triggered Samples		Total mg/L		Rejection Criteria #		Present	Absent					Present	Absent				
NOT SITE #		Month	Day	Year	Please circle AM or PM																						
Raw Wells Use Source ID for Well Sampled Ex: G1234567A																											
Well # 19		1	3	17	1322		am	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0				<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	17A0724-01						
							pm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
							am	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
							pm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
							am	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
							pm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
							am	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
							pm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
							am	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
							pm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
							am	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
							pm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
TCEQ Form: 10525 05/2012		*Unsuitable Sample Analysis- Rejection Criteria # Definitions		1) Sample too old. Exceeded hold time.				2) Insufficient volume				3) Excessive chlorine present in sample.				4) Heavy silt/turbidity present.				5) Form Incomplete / Date Discrepancy (Errors Circled)				6) Other:			



Envirodyne Laboratories, Inc
11011 Brooklet Dr., # 230
Houston, TX 77099
281.568.7880 Phone
www.envirodyne.com

21 January 2017

Victoria, City of
Lynn Short
700 Main Center
Victoria, TX 77901

Victoria, City of - Surface and Raw Water Testing

Enclosed are the results of analyses for samples received by the laboratory on 04-Jan-17 07:00. The analytical data provided relates only to the samples as received in this laboratory report.

ELI certifies that all results are NELAP compliant and performed in accordance with the referenced method except as noted in the Case Narrative or as noted with a qualifier. Any reproductions of this laboratory report should be in full and only with the written authorization from the client.

The total number of pages in this report is 18

Thank you for selecting ELI for your analytical needs. If you have any questions regarding this report, please contact us.

Sincerely,

A handwritten signature in blue ink that reads 'Monica Smith'.

Monica Smith
Project Manager



Certificate No: TX104704265



Envirodyne Laboratories, Inc
11011 Brooklet Dr., # 230
Houston, TX 77099
281.568.7880 Phone
www.envirodyne.com

Client: Victoria, City of
Project: Victoria, City of - Surface and Raw Water Testing
Work Order: 17A0767

Reported:
21-Jan-17 17:30

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Raw	17A0767-01	Water	03-Jan-17 12:57	04-Jan-17 07:00

L - Analyzed by NELAP certified lab: T104704215-15-19
L - Sample analyzed by NELAP certified lab: T104704218
L - Sample analyzed by NELAC certified lab: T104704527-14-1
L - Sample analyzed by NELAP accredited lab: T104704466-11-5

Envirodyne Laboratories, Inc.

Monica Smith, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Envirodyne Laboratories, Inc
 11011 Brooklet Dr., # 230
 Houston, TX 77099
 281.568.7880 Phone
 www.envirodyne.com

Client: Victoria, City of
Project: Victoria, City of - Surface and Raw Water Testing
Work Order: 17A0767

Reported:
 21-Jan-17 17:30

Raw

17A0767-01 (Water) Sampled: 03-Jan-17 12:57

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Analyst	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	--------	---------	-------

Envirodyne Laboratories, Inc.

Mercury by EPA 245.1

Mercury	<0.20	0.20	ug/L	1	B7A1322	10-Jan-17	10-Jan-17 11:33	EPA 245.1	IZW	L
---------	-------	------	------	---	---------	-----------	-----------------	-----------	-----	---

Wet Chemistry

Acidity	<20	20	mg/L	1	B7A2440	19-Jan-17	19-Jan-17 16:46	SM 2310B	XQH	
Alkalinity (m) as CaCO3	168	20	mg/L	1	B7A2433	19-Jan-17	19-Jan-17 16:15	SM 2320 B	MPS	
Alkalinity (p) as CaCO3	<20	20	mg/L	1	B7A2433	19-Jan-17	19-Jan-17 16:15	SM 2320 B	MPS	
Total Alkalinity as CaCO3	168	20	mg/L	1	[CALC]	19-Jan-17	19-Jan-17 16:15	[CALC]	MPS	
Ammonia-N (NH3-N)	0.22	0.10	mg/L	1	B7A0851	10-Jan-17	10-Jan-17 08:19	SM 4500-NH3 D	JAS	
Bicarbonate Alkalinity as HCO3-	205	1.0	mg/L	1	B7A2462	19-Jan-17	19-Jan-17 18:57	Calc	MPS	
Bromate	<0.002	0.002	mg/L	1	B7A2051	11-Jan-17	11-Jan-17 00:00	EPA 300.1	IZW	L
Bromide	0.34	0.12	mg/L	1	B7A2051	03-Jan-17	03-Jan-17 12:57	EPA 300.0	CLT	L
Carbonate Alkalinity as CO3 2-	0.0		mg/L	1	B7A2620	19-Jan-17	19-Jan-17 18:57	Calc	CLO	
Chloride	108	3.0	mg/L	1	B7A1118	10-Jan-17	11-Jan-17 06:58	SM4500-Cl B	XQH	
Color	<1.0	1.0	Color Units	1	B7A0648	06-Jan-17	06-Jan-17 11:50	SM2120C	XQH	H
Cyanide, Total	<0.005	0.005	mg/L	1	B7A1301	09-Jan-17	09-Jan-17 13:30	EPA 335.4	IZW	L
Dissolved Oxygen (DO)	12.0		mg/L	1	B7A2051	03-Jan-17	03-Jan-17 13:00	SM4500-O C	CLT	
pH	7.86		SU	1	B7A2051	03-Jan-17	03-Jan-17 13:00	SM4500H+ B	CLT	
Temperature	25.2	10.0	°C	1	B7A2051	03-Jan-17	03-Jan-17 13:00	SM2250 B	CLT	
Fluoride	0.53	0.10	mg/L	1	B7A1541	12-Jan-17	20-Jan-17 14:51	SM 4500-F C	JAS	
Hydrogen Sulfide	0.0220	0.0100	mg/L	1	B7A2622	09-Jan-17	09-Jan-17 13:32	Calc	IZW	
Nitrate-N	24.5	0.10	mg/L	1	B7A0627	04-Jan-17	04-Jan-17 19:46	SM 4500-NO3 D	JAS	
Nitrite-N	<0.05	0.05	mg/L	1	B7A0426	05-Jan-17	05-Jan-17 10:30	SM 4500-NO2 B	XQH	
ORP	131	1.0	mV	1	B7A2448	19-Jan-17	19-Jan-17 16:50	SM2580 B	JMM	
OrthoPhosphate as P	<0.10	0.10	mg/L	1	B7A0630	06-Jan-17	06-Jan-17 11:10	SM4500-P E	XQH	H
Silica	0.67	0.10	mg/L	0.5	B7A1158	09-Jan-17	10-Jan-17 15:34	EPA 200.5	ACB	Q
Sulfate	19.1	2.00	mg/L	1	B7A1132	10-Jan-17	10-Jan-17 11:50	ASTM D516-07	XQH	
Sulfide	0.02	0.01	mg/L	1	B7A0980	09-Jan-17	09-Jan-17 13:32	SM4500-S2 D	XQH	B
TDS	568	10.0	mg/L	1	B7A0619	06-Jan-17	06-Jan-17 16:30	SM2540 C	BFM	
Total Organic Carbon (TOC)	<1.00	1.00	mg/L	1	B7A2017	09-Jan-17	09-Jan-17 16:40	SM 5310 C	IZW	L

Envirodyne Laboratories, Inc.

Monica Smith

Monica Smith, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Envirodyne Laboratories, Inc
 11011 Brooklet Dr., # 230
 Houston, TX 77099
 281.568.7880 Phone
 www.envirodyne.com

Client: Victoria, City of
Project: Victoria, City of - Surface and Raw Water Testing
Work Order: 17A0767

Reported:
 21-Jan-17 17:30

Raw
17A0767-01 (Water) Sampled: 03-Jan-17 12:57

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Analyst	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	--------	---------	-------

Envirodyne Laboratories, Inc.

Wet Chemistry

Total Phosphorus	1.70	0.20	mg/L	2	B7A0673	06-Jan-17	06-Jan-17 16:40	SM4500-P E	AT	
TSS	17.0	2.0	mg/L	1	B7A0929	09-Jan-17	09-Jan-17 13:50	SM2540 D	AA	
Turbidity	0.63	0.10	NTU	1	B7A1055	06-Jan-17	06-Jan-17 09:37	SM 2130 B	XQH	H

Total Metals by ICP

Aluminum	0.0158	0.0018	mg/L	1	B7A0974	09-Jan-17	10-Jan-17 20:51	EPA 200.7	JMM	
Antimony	<0.0018	0.0018	mg/L	1	B7A0974	09-Jan-17	10-Jan-17 20:22	EPA 200.7	JMM	
Arsenic	<0.0029	0.0029	mg/L	1	B7A0974	09-Jan-17	10-Jan-17 20:22	EPA 200.7	JMM	
Arsenic, Dissolved	<0.00500	0.00500	mg/L	1	B7A1837	16-Jan-17	18-Jan-17 19:40	EPA 200.7	ACB	
Barium	0.190	0.0005	mg/L	1	B7A0974	09-Jan-17	10-Jan-17 20:22	EPA 200.7	JMM	
Beryllium	<0.0005	0.0005	mg/L	1	B7A0974	09-Jan-17	10-Jan-17 20:22	EPA 200.7	JMM	
Cadmium	<0.00050	0.00050	mg/L	1	B7A0974	09-Jan-17	10-Jan-17 20:22	EPA 200.7	JMM	
Calcium	22.3	2.00	mg/L	1	B7A0979	09-Jan-17	10-Jan-17 11:30	EPA 200.7	ACB	
Calcium as CaCO3	55.6		mg/L	1	[CALC]	09-Jan-17	10-Jan-17 11:30	Calc	ACB	
Chromium	0.0006	0.0005	mg/L	1	B7A0974	09-Jan-17	10-Jan-17 20:22	EPA 200.7	JMM	
Copper	0.0041	0.0006	mg/L	1	B7A0974	09-Jan-17	10-Jan-17 20:22	EPA 200.7	JMM	B
Total Hardness as CaCO3	86.4	13.2	mg/L	1	[CALC]	09-Jan-17	10-Jan-17 11:30	Calc.	ACB	
Iron	0.198	0.0018	mg/L	1	B7A0974	09-Jan-17	10-Jan-17 20:22	EPA 200.7	JMM	B
Iron, Dissolved	<0.0050	0.0050	mg/L	1	B7A1837	16-Jan-17	18-Jan-17 19:40	EPA 200.7	ACB	
Lead	<0.0009	0.0009	mg/L	1	B7A0974	09-Jan-17	10-Jan-17 20:22	EPA 200.7	JMM	
Magnesium	7.48	2.00	mg/L	1	B7A0979	09-Jan-17	10-Jan-17 11:30	EPA 200.7	ACB	
Magnesium as CaCO3	30.8	8.23	mg/L	1	[CALC]	09-Jan-17	10-Jan-17 11:30	EPA 200.7	ACB	
Manganese	0.0076	0.0004	mg/L	1	B7A0974	09-Jan-17	10-Jan-17 20:22	EPA 200.7	JMM	
Manganese, Dissolved	0.0068	0.0050	mg/L	1	B7A1837	16-Jan-17	18-Jan-17 19:40	EPA 200.7	JMM	
Nickel	<0.0005	0.0005	mg/L	1	B7A0974	09-Jan-17	10-Jan-17 20:22	EPA 200.7	JMM	
Potassium	2.6	2.0	mg/L	1	B7A0979	09-Jan-17	10-Jan-17 11:30	EPA 200.7	ACB	
Selenium	<0.0038	0.0038	mg/L	1	B7A0974	09-Jan-17	10-Jan-17 20:22	EPA 200.7	JMM	
Silver	<0.0005	0.0005	mg/L	1	B7A0978	09-Jan-17	10-Jan-17 09:33	EPA 200.7	ACB	
Sodium	226	2.0	mg/L	1	B7A0979	09-Jan-17	10-Jan-17 11:30	EPA 200.7	ACB	E, Q
Thallium	<0.0020	0.0020	mg/L	1	B7A0974	09-Jan-17	10-Jan-17 20:22	EPA 200.7	JMM	

Envirodyne Laboratories, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Monica Smith

Monica Smith, Project Manager



Envirodyne Laboratories, Inc
11011 Brooklet Dr., # 230
Houston, TX 77099
281.568.7880 Phone
www.envirodyne.com

Client: Victoria, City of
Project: Victoria, City of - Surface and Raw Water Testing
Work Order: 17A0767

Reported:
 21-Jan-17 17:30

Raw

17A0767-01 (Water) Sampled: 03-Jan-17 12:57

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Analyst	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	--------	---------	-------

Envirodyne Laboratories, Inc.

Total Metals by ICP

Zinc	<0.0032	0.0032	mg/L	1	B7A0974	09-Jan-17	10-Jan-17 20:22	EPA 200.7	JMM	
------	---------	--------	------	---	---------	-----------	-----------------	-----------	-----	--

Miscellaneous Subcontracted Analyses

Dibromoacetic acid	<1.00	1.00	ug/L	1	B7A2015	11-Jan-17	12-Jan-17 20:00	EPA 552.2	IZW	L
Dichloroacetic acid	<1.00	1.00	ug/L	1	B7A2015	11-Jan-17	12-Jan-17 20:00	EPA 552.2	IZW	L
HAA-5	<1.00	1.00	ug/L	1	[CALC]	11-Jan-17	12-Jan-17 20:00	EPA 524.2	IZW	
Monobromoacetic acid	<1.00	1.00	ug/L	1	B7A2015	11-Jan-17	12-Jan-17 20:00	EPA 552.2	IZW	L
Monochloroacetic acid	<1.00	1.00	ug/L	1	B7A2015	11-Jan-17	12-Jan-17 20:00	EPA 552.2	IZW	L
Trichloroacetic acid	<1.00	1.00	ug/L	1	B7A2015	11-Jan-17	12-Jan-17 20:00	EPA 552.2	IZW	L

Envirodyne Laboratories, Inc.

Monica Smith

Monica Smith, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



CERTIFICATE OF ANALYSIS

CLIENT:	City of Victoria	LAB NUMBER:	17A0767B
DATE COLLECTED:	03-Jan-17	DATE RECEIVED:	04-Jan-17
DATE COMPLETED:	09-Jan-17	SAMPLED BY:	COV

LOCATION:	Raw Water @ 1313	MDL LIMITS (ug/l)
PARAMETERS:		
VINYL CHLORIDE (ug/l)	0.5 U	0.5
trans-1,2-DICHLOROETHYLENE (ug/l)	0.5 U	0.5
1,1,1-TRICHLOROETHANE (ug/l)	0.5 U	0.5
CARBON TETRACHLORIDE (ug/l)	0.5 U	0.5
1,2-DICHLOROETHANE (ug/l)	0.5 U	0.5
BENZENE (ug/l)	0.5 U	0.5
1,2-DICHLOROPROPANE (ug/l)	0.5 U	0.5
TOLUENE (ug/l)	0.5 U	0.5
1,1,2-TRICHLOROETHANE (ug/l)	0.5 U	0.5
CHLOROBENZENE (ug/l)	0.5 U	0.5
ETHYLBENZENE (ug/l)	0.5 U	0.5
XYLENE (ug/l)	1.5 U	1.5
1,2,4-TRICHLOROBENZENE (ug/l)	0.5 U	0.5
DICHLOROMETHANE (ug/l)	0.5 U	0.5
o-DICHLOROBENZENE (ug/l)	0.5 U	0.5
p-DICHLOROBENZENE (ug/l)	0.5 U	0.5
1,1- DICHLOROETHYLENE (ug/l)	0.5 U	0.5
TRICHLOROETHYLENE (ug/l)	0.5 U	0.5
TETRACHLOROETHYLENE (ug/l)	0.5 U	0.5
STYRENE (ug/l)	0.5 U	0.5
cis- 1,2-DICHLOROETHYLENE (ug/l)	0.5 U	0.5
ETHYLENE DIBROMIDE (ug/l)	0.5 U	0.5
DIBROMOCHLOROPROPANE (ug/l)	0.5 U	0.5

Ref. EPA-8260C (VOLATILES)
 U - Analyte Not Detected at the Listed Detection Limit
 J - Analyte Present but Below Detection Limit

Monica Smith
 LAB REPRESENTATIVE



DOH Certification #E84025
Cert.# T104704527-14-1

Report Date: January 18, 2017

Envirodyne Laboratories, Inc.
11011 Brooklet, Ste 230
Houston, TX 77099-3543

Field Custody: Client
Client/Field ID: Envirodyne
City of Victoria
Raw Water
Sample Collection: 1-3-17/1310
Lab ID No: 17.169
Lab Custody Date: 1-6-17/1430
Sample description: Water

CERTIFICATE OF ANALYSIS

Parameter	Units	Results	Analysis Date	Method	Detection Limit
Gross Alpha	pCi/l	6.5 ± 0.8	1-13-17/1634	EPA 900.0	2.5
Gross Beta	pCi/l	3.5 ± 1.3	1-13-17/1634	EPA 900.0	2.8
Radium-226	pCi/l	0.8 ± 0.3	1-17-17/1013	EPA 903.0	0.4
Radium-228	pCi/l	0.0 ± 0.4	1-16-17/1112	EPA Ra-05	0.7
Uranium	pCi/l	4.9 J ± 0.7	1-16-17/1553	EPA 908.0	0.6
Uranium	ug/l	7.3 ± 1.0	calc	EPA 908.0	0.9

Alpha Standard: Th-230
Beta Standard: Cs-137

J = the reported value failed to meet the established quality control criteria for either precision or accuracy.

James W. Hayes
Laboratory Manager

Test results meet all requirements of the NELAC standards. Statement of estimated uncertainty available upon request. Test results refer only to sample(s) listed. Contact person: Jim Hayes (813) 229-2879.

Page 1 of 1



Envirodyne Laboratories, Inc.
 11011 Brooklet, Ste. 230
 Houston, Texas 77099-3543
 Phone (281)568-7880 - Fax (281)568-8004

E A162020

Page _____ Of _____

TCEQ Certification # T104704265

Name: Envirodyne Laboratories Inc. Analysis Request and Chain of Custody Record
 Address: 11011 Brooklet Dr. Ste 230
 City: Houston, TX 77099
 Contact: Laura Bonjonia Phone: 281-568-7880 Fax: 281-568-8004

Project No.		Client/Project						pH	D.O.	Temp.	Analysis Time
Lab ID No.	Field Sample No./ Identification	Date & Time	Grab	Comp	Sample Container (Size/Mat'l)	Sample Type (Liquid, Sludge, etc.)	Preservative				
	RAW WATER	1-8-17 1310	✓		1 GAL cube	Liquid	ICE HNO3	G. Alpha, G. Beta, T. U., RA 226-228			
											
17.169											
* STANDARD TAT											
9/1-19-17											

Samplers: (Signature)	Relinquished by: (Signature) <i>Travis</i>	Date: 1-5-17 Time: 16:15	Received by: (Signature) <i>Phyllis</i>	Date: 1-5-17 Time: 16:15	Seal Intact?
Affiliation	Relinquished by: (Signature) <i>Rene</i>	Date: 1-5-17 Time: 16:15	Received by: (Signature) <i>Phyllis</i>	Date: 1-6-17 Time: 14:30	Seal Intact?
Remarks:	Relinquished by: (Signature)	Date: _____ Time: _____	Received by Lab: (Signature)	Date: _____ Time: _____	Seal Intact?
SUB TO <i>KE</i> KNL	FLOW: _____	Arrival Temp.	Data Results To:	Laboratory No.	
	Meter Reading: _____		1.		
	Cl ₂ Residual: _____		Site Representative:	Date:	
	Mn Correction: _____			Time:	
	Cl ₂ Corrected				



Envirodyne Laboratories, Inc
 11011 Brooklet Dr., # 230
 Houston, TX 77099
 281.568.7880 Phone
 www.envirodyne.com

Client: Victoria, City of
Project: Victoria, City of - Surface and Raw Water Testing
Work Order: 17A0767

Reported:
 21-Jan-17 17:30

Wet Chemistry - Quality Control
Envirodyne Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B7A0426 - Inorganics										
Blank (B7A0426-BLK1)				Prepared & Analyzed: 05-Jan-17						
Nitrite-N	<0.05	0.05	mg/L							
LCS (B7A0426-BS1)				Prepared & Analyzed: 05-Jan-17						
Nitrite-N	0.09		mg/L	0.0997		94.3	90-110			
Matrix Spike (B7A0426-MS1)				Source: 17A0585-01		Prepared & Analyzed: 05-Jan-17				
Nitrite-N	0.12	0.05	mg/L	0.0997	ND	115	80-120			
Matrix Spike Dup (B7A0426-MSD1)				Source: 17A0585-01		Prepared & Analyzed: 05-Jan-17				
Nitrite-N	0.11	0.05	mg/L	0.0997	ND	114	80-120	0.873	20	
Batch B7A0619 - Inorganics										
Blank (B7A0619-BLK1)				Prepared & Analyzed: 06-Jan-17						
TDS	<10.0	10.0	mg/L							
Duplicate (B7A0619-DUP1)				Source: 17A0450-01		Prepared & Analyzed: 06-Jan-17				
TDS	468	10.0	mg/L		480			2.53	20	
Batch B7A0627 - Inorganics										
Blank (B7A0627-BLK1)				Prepared & Analyzed: 04-Jan-17						
Nitrate-N	<0.10	0.10	mg/L							
LCS (B7A0627-BS1)				Prepared & Analyzed: 04-Jan-17						
Nitrate-N	24.0		mg/L	25.0		96.0	90-110			

Envirodyne Laboratories, Inc.

Monica Smith, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Envirodyne Laboratories, Inc
 11011 Brooklet Dr., # 230
 Houston, TX 77099
 281.568.7880 Phone
 www.envirodyne.com

Client: Victoria, City of
Project: Victoria, City of - Surface and Raw Water Testing
Work Order: 17A0767

Reported:
 21-Jan-17 17:30

Wet Chemistry - Quality Control
Envirodyne Laboratories, Inc.

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

Batch B7A0627 - Inorganics

Matrix Spike (B7A0627-MS1)	Source: 17A0450-04			Prepared & Analyzed: 04-Jan-17						
Nitrate-N	26.4	0.10	mg/L	25.0	ND	106	80-120			

Matrix Spike Dup (B7A0627-MSD1)	Source: 17A0450-04			Prepared & Analyzed: 04-Jan-17						
Nitrate-N	26.2	0.10	mg/L	25.0	ND	105	80-120	0.760	20	

Batch B7A0630 - Inorganics

Blank (B7A0630-BLK1)	Prepared & Analyzed: 06-Jan-17									
OrthoPhoshate as P	<0.10	0.10	mg/L							

LCS (B7A0630-BS1)	Prepared & Analyzed: 06-Jan-17									
OrthoPhoshate as P	0.320		mg/L	0.333		96.1	80-120			

Matrix Spike (B7A0630-MS1)	Source: 17A0767-01			Prepared & Analyzed: 06-Jan-17						
OrthoPhoshate as P	0.330	0.10	mg/L	0.330	ND	100	80-120			

Matrix Spike Dup (B7A0630-MSD1)	Source: 17A0767-01			Prepared & Analyzed: 06-Jan-17						
OrthoPhoshate as P	<0.10	0.10	mg/L	0.330	<0.10	93.9	80-120	6.25	20	

Batch B7A0648 - Inorganics

Blank (B7A0648-BLK1)	Prepared & Analyzed: 06-Jan-17									
Color	<1.0	1.0	Color Units							

LCS (B7A0648-BS1)	Prepared & Analyzed: 06-Jan-17									
Color	41.8		Color Units	40.0		105	80-120			

Envirodyne Laboratories, Inc.

Monica Smith

Monica Smith, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Envirodyne Laboratories, Inc
 11011 Brooklet Dr., # 230
 Houston, TX 77099
 281.568.7880 Phone
 www.envirodyne.com

Client: Victoria, City of
Project: Victoria, City of - Surface and Raw Water Testing
Work Order: 17A0767

Reported:
 21-Jan-17 17:30

Wet Chemistry - Quality Control
Envirodyne Laboratories, Inc.

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

Batch B7A0648 - Inorganics

Duplicate (B7A0648-DUP1)		Source: 17A0767-01		Prepared & Analyzed: 06-Jan-17						
Color	<1.0	1.0	Color Units	<1.0				0	20	

Batch B7A0673 - Inorganics

Blank (B7A0673-BLK1)		Prepared & Analyzed: 06-Jan-17								
Total Phosphorus	<0.10	0.10	mg/L							

LCS (B7A0673-BS1)		Prepared & Analyzed: 06-Jan-17								
Total Phosphorus	3.13		mg/L	3.00		104	80-120			

Matrix Spike (B7A0673-MS1)		Source: 17A0146-01		Prepared & Analyzed: 06-Jan-17						
Total Phosphorus	7.32	0.20	mg/L	1.50	2.90	295	80-120			Q

Matrix Spike Dup (B7A0673-MSD1)		Source: 17A0146-01		Prepared & Analyzed: 06-Jan-17						
Total Phosphorus	6.58	0.20	mg/L	1.50	2.90	245	80-120	10.6	20	Q

Batch B7A0851 - Inorganics

Blank (B7A0851-BLK1)		Prepared & Analyzed: 10-Jan-17								
Ammonia-N (NH3-N)	<0.10	0.10	mg/L							

LCS (B7A0851-BS1)		Prepared & Analyzed: 10-Jan-17								
Ammonia-N (NH3-N)	5.11		mg/L	5.00		102	90-110			

Matrix Spike (B7A0851-MS1)		Source: 17A0754-01		Prepared & Analyzed: 10-Jan-17						
Ammonia-N (NH3-N)	4.18	0.10	mg/L	4.10	ND	102	80-120			

Envirodyne Laboratories, Inc.

Monica Smith

Monica Smith, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Envirodyne Laboratories, Inc
 11011 Brooklet Dr., # 230
 Houston, TX 77099
 281.568.7880 Phone
 www.envirodyne.com

Client: Victoria, City of
Project: Victoria, City of - Surface and Raw Water Testing
Work Order: 17A0767

Reported:
 21-Jan-17 17:30

Wet Chemistry - Quality Control
Envirodyne Laboratories, Inc.

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

Batch B7A0851 - Inorganics

Matrix Spike Dup (B7A0851-MSD1)	Source: 17A0754-01			Prepared & Analyzed: 10-Jan-17						
Ammonia-N (NH3-N)	4.11	0.10	mg/L	4.10	ND	100	80-120	1.69	20	

Batch B7A0929 - Inorganics

Blank (B7A0929-BLK1)	Prepared & Analyzed: 09-Jan-17									
TSS	<2.0	2.0	mg/L							

Duplicate (B7A0929-DUP1)

Source: 17A0028-03			Prepared & Analyzed: 09-Jan-17							
TSS	163	2.0	mg/L		178			8.80	20	

Batch B7A0980 - Inorganics

Blank (B7A0980-BLK1)	Prepared & Analyzed: 09-Jan-17									
Sulfide	0.0210	0.01	mg/L							B

LCS (B7A0980-BS1)

			Prepared & Analyzed: 09-Jan-17							
Sulfide	0.368		mg/L	0.400		92.0	90-110			B

Duplicate (B7A0980-DUP1)

Source: 17A0767-01			Prepared & Analyzed: 09-Jan-17							
Sulfide	0.0210	0.01	mg/L		0.0210			0.00	20	B

Batch B7A1055 - Inorganics

Blank (B7A1055-BLK1)	Prepared & Analyzed: 06-Jan-17									
Turbidity	<0.10	0.10	NTU							

Envirodyne Laboratories, Inc.

Monica Smith

Monica Smith, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Envirodyne Laboratories, Inc
 11011 Brooklet Dr., # 230
 Houston, TX 77099
 281.568.7880 Phone
 www.envirodyne.com

Client: Victoria, City of
Project: Victoria, City of - Surface and Raw Water Testing
Work Order: 17A0767

Reported:
 21-Jan-17 17:30

Wet Chemistry - Quality Control
Envirodyne Laboratories, Inc.

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

Batch B7A1055 - Inorganics

LCS (B7A1055-BS1)		Prepared & Analyzed: 06-Jan-17								
Turbidity	19.8		NTU	20.0		99.0	80-120			
Duplicate (B7A1055-DUP1)		Source: 17A0536-01		Prepared & Analyzed: 06-Jan-17						
Turbidity	1.06	0.10	NTU		1.03			2.87	20	

Batch B7A1118 - Inorganics

Blank (B7A1118-BLK1)		Prepared: 10-Jan-17 Analyzed: 11-Jan-17								
Chloride	<3.0	3.0	mg/L							
LCS (B7A1118-BS1)		Prepared: 10-Jan-17 Analyzed: 11-Jan-17								
Chloride	94.0		mg/L	100		94.0	80-120			
Matrix Spike (B7A1118-MS1)		Source: 16L3304-01		Prepared: 10-Jan-17 Analyzed: 11-Jan-17						
Chloride	48.0	3.0	mg/L	20.0	29.9	90.4	80-120			
Matrix Spike Dup (B7A1118-MSD1)		Source: 16L3304-01		Prepared: 10-Jan-17 Analyzed: 11-Jan-17						
Chloride	48.0	3.0	mg/L	20.0	29.9	90.4	80-120	0.00	20	

Batch B7A1132 - Inorganics

Blank (B7A1132-BLK1)		Prepared & Analyzed: 10-Jan-17								
Sulfate	<2.00	2.00	mg/L							
LCS (B7A1132-BS1)		Prepared & Analyzed: 10-Jan-17								
Sulfate	18.0		mg/L	20.0		90.2	90-110			

Envirodyne Laboratories, Inc.

Monica Smith

Monica Smith, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Envirodyne Laboratories, Inc
 11011 Brooklet Dr., # 230
 Houston, TX 77099
 281.568.7880 Phone
 www.envirodyne.com

Client: Victoria, City of
Project: Victoria, City of - Surface and Raw Water Testing
Work Order: 17A0767

Reported:
 21-Jan-17 17:30

Wet Chemistry - Quality Control
Envirodyne Laboratories, Inc.

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

Batch B7A1132 - Inorganics

Matrix Spike (B7A1132-MS1)		Source: 17A0585-01		Prepared & Analyzed: 10-Jan-17						
Sulfate	32.0	2.00	mg/L	20.0	16.0	80.2	80-120			

Matrix Spike Dup (B7A1132-MSD1)		Source: 17A0585-01		Prepared & Analyzed: 10-Jan-17						
Sulfate	38.1	2.00	mg/L	20.0	16.0	111	80-120	17.4	20	

Batch B7A1158 - Metals - EPA 200.2

Blank (B7A1158-BLK1)		Prepared: 09-Jan-17 Analyzed: 10-Jan-17								
Silica	<0.10	0.10	mg/L							

LCS (B7A1158-BS1)		Prepared: 09-Jan-17 Analyzed: 10-Jan-17								
Silica	4.97		mg/L	5.00		99.4	90-110			

Matrix Spike (B7A1158-MS1)		Source: 17A0767-01		Prepared: 09-Jan-17 Analyzed: 10-Jan-17						
Silica	9.65	0.10	mg/L	10.8	0.670	83.1	85-115			Q

Matrix Spike Dup (B7A1158-MSD1)		Source: 17A0767-01		Prepared: 09-Jan-17 Analyzed: 10-Jan-17						
Silica	9.65	0.10	mg/L	10.8	0.670	83.1	85-115	0.00	20	Q

Batch B7A1541 - Inorganics

Blank (B7A1541-BLK1)		Prepared: 12-Jan-17 Analyzed: 20-Jan-17								
Fluoride	<0.10	0.10	mg/L							

Blank (B7A1541-BLK2)		Prepared: 12-Jan-17 Analyzed: 20-Jan-17								
Fluoride	<0.10	0.10	mg/L							

Envirodyne Laboratories, Inc.

Monica Smith

Monica Smith, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Envirodyne Laboratories, Inc
 11011 Brooklet Dr., # 230
 Houston, TX 77099
 281.568.7880 Phone
 www.envirodyne.com

Client: Victoria, City of
Project: Victoria, City of - Surface and Raw Water Testing
Work Order: 17A0767

Reported:
 21-Jan-17 17:30

Wet Chemistry - Quality Control
Envirodyne Laboratories, Inc.

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

Batch B7A1541 - Inorganics

LCS (B7A1541-BS1)		Prepared: 12-Jan-17 Analyzed: 20-Jan-17								
Fluoride	0.52		mg/L	0.500		104	90-110			
Matrix Spike (B7A1541-MS1)		Source: 17A0270-01		Prepared: 12-Jan-17 Analyzed: 20-Jan-17						
Fluoride	2.29	0.10	mg/L	0.500	1.77	104	80-120			
Matrix Spike Dup (B7A1541-MSD1)		Source: 17A0270-01		Prepared: 12-Jan-17 Analyzed: 20-Jan-17						
Fluoride	2.30	0.10	mg/L	0.500	1.77	106	80-120	0.436	20	

Batch B7A2433 - Inorganics

Blank (B7A2433-BLK1)		Prepared & Analyzed: 19-Jan-17								
Alkalinity (m) as CaCO3	<20	20	mg/L							
Alkalinity (p) as CaCO3	<20	20	"							
LCS (B7A2433-BS1)		Prepared & Analyzed: 19-Jan-17								
Alkalinity (m) as CaCO3	52		mg/L	50.0		104	80-120			
Alkalinity (p) as CaCO3	49		"	50.0		98.0	80-120			
Duplicate (B7A2433-DUP1)		Source: 17A1467-01		Prepared & Analyzed: 19-Jan-17						
Alkalinity (m) as CaCO3	61	20	mg/L		62			1.63	20	
Alkalinity (p) as CaCO3	<20	20	"		<20			0	20	

Batch B7A2440 - Inorganics

Blank (B7A2440-BLK1)		Prepared & Analyzed: 19-Jan-17								
Acidity	<20	20	mg/L							

Envirodyne Laboratories, Inc.

Monica Smith

Monica Smith, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Envirodyne Laboratories, Inc
 11011 Brooklet Dr., # 230
 Houston, TX 77099
 281.568.7880 Phone
 www.envirodyne.com

Client: Victoria, City of
Project: Victoria, City of - Surface and Raw Water Testing
Work Order: 17A0767

Reported:
 21-Jan-17 17:30

Wet Chemistry - Quality Control
Envirodyne Laboratories, Inc.

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

Batch B7A2440 - Inorganics

LCS (B7A2440-BS1)				Prepared & Analyzed: 19-Jan-17						
Acidity	980		mg/L	1000		98.0	80-120			

Duplicate (B7A2440-DUP1)				Source: 17A0767-01		Prepared & Analyzed: 19-Jan-17				
Acidity	<20	20	mg/L		<20			0	20	H

Batch B7A2448 - Inorganics

Blank (B7A2448-BLK1)				Prepared & Analyzed: 19-Jan-17						
ORP	<1.0	1.0	mV							

Duplicate (B7A2448-DUP1)				Source: 17A0767-01		Prepared & Analyzed: 19-Jan-17				
ORP	130	1.0	mV		131			0.766	20	

Envirodyne Laboratories, Inc.

Monica Smith

Monica Smith, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Envirodyne Laboratories, Inc
 11011 Brooklet Dr., # 230
 Houston, TX 77099
 281.568.7880 Phone
 www.envirodyne.com

Client: Victoria, City of
Project: Victoria, City of - Surface and Raw Water Testing
Work Order: 17A0767

Reported:
 21-Jan-17 17:30

Total Metals by ICP - Quality Control
Envirodyne Laboratories, Inc.

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

Batch B7A0974 - Metals - EPA 200.2

Blank (B7A0974-BLK1)

Prepared: 09-Jan-17 Analyzed: 10-Jan-17

Copper	0.00723	0.0006	mg/L							B
Zinc	<0.0032	0.0032	"							
Aluminum	<0.0018	0.0018	"							
Lead	<0.0009	0.0009	"							
Thallium	<0.0020	0.0020	"							
Chromium	<0.0005	0.0005	"							
Iron	0.00893	0.0018	"							B
Manganese	<0.0004	0.0004	"							
Cadmium	<0.00050	0.00050	"							
Beryllium	<0.0005	0.0005	"							
Barium	<0.0005	0.0005	"							
Arsenic	<0.0029	0.0029	"							
Nickel	<0.0005	0.0005	"							
Selenium	<0.0038	0.0038	"							
Antimony	<0.0018	0.0018	"							

LCS (B7A0974-BS1)

Prepared: 09-Jan-17 Analyzed: 10-Jan-17

Cadmium	240		ug/L	250		96.8	85-115			
Beryllium	246		"	250		98.2	85-115			
Barium	242		"	250		96.7	85-115			
Chromium	243		"	250		97.3	85-115			
Arsenic	243		"	250		97.1	85-115			
Aluminum	0.246	0.0018	mg/L				85-115			
Copper	247		ug/L	250		98.8	85-115			B
Iron	245		"	250		98.1	85-115			B
Manganese	243		"	250		97.1	85-115			
Zinc	251		"	250		100	85-115			
Thallium	233		"	250		93.0	85-115			
Lead	240		"	250		96.4	85-115			
Nickel	243		"	250		97.1	85-115			
Selenium	244		"	250		97.8	85-115			
Antimony	245		"	250		98.2	85-115			

Envirodyne Laboratories, Inc.

Monica Smith

Monica Smith, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Envirodyne Laboratories, Inc
 11011 Brooklet Dr., # 230
 Houston, TX 77099
 281.568.7880 Phone
 www.envirodyne.com

Client: Victoria, City of
Project: Victoria, City of - Surface and Raw Water Testing
Work Order: 17A0767

Reported:
 21-Jan-17 17:30

Total Metals by ICP - Quality Control
Envirodyne Laboratories, Inc.

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

Batch B7A0974 - Metals - EPA 200.2

Matrix Spike (B7A0974-MS1)	Source: 17A0767-01			Prepared: 09-Jan-17 Analyzed: 10-Jan-17						
Nickel	0.477	0.0005	mg/L	0.500	ND	95.3	70-130			
Cadmium	0.48	0.00050	"	0.500	ND	96.0	70-130			
Beryllium	0.479	0.0005	"	0.500	ND	95.8	70-130			
Barium	0.669	0.0005	"	0.500	0.190	95.7	70-130			
Manganese	0.489	0.0004	"	0.500	0.00757	96.2	70-130			
Arsenic	0.501	0.0029	"	0.500	ND	100	70-130			
Aluminum	0.547	0.0018	"		0.0158		70-130			
Zinc	0.483	0.0032	"	0.500	ND	96.6	70-130			
Selenium	0.493	0.0038	"	0.500	ND	98.6	70-130			
Chromium	0.474	0.0005	"	0.500	0.000575	94.8	70-130			
Iron	0.681	0.0018	"	0.500	0.198	96.6	70-130			B
Copper	0.517	0.0006	"	0.500	0.00406	103	70-130			B
Lead	0.49	0.0009	"	0.500	ND	98.6	70-130			
Thallium	0.491	0.0020	"	0.500	ND	98.2	70-130			
Antimony	0.508	0.0018	"	0.500	ND	102	70-130			

Matrix Spike Dup (B7A0974-MSD1)	Source: 17A0767-01			Prepared: 09-Jan-17 Analyzed: 10-Jan-17						
Lead	0.50	0.0009	mg/L	0.500	ND	100	70-130	1.71	20	
Thallium	0.500	0.0020	"	0.500	ND	100	70-130	1.88	20	
Iron	0.681	0.0018	"	0.500	0.198	96.6	70-130	0.00457	20	B
Barium	0.681	0.0005	"	0.500	0.190	98.2	70-130	1.83	20	
Nickel	0.483	0.0005	"	0.500	ND	96.6	70-130	1.31	20	
Arsenic	0.510	0.0029	"	0.500	ND	102	70-130	1.83	20	
Beryllium	0.486	0.0005	"	0.500	ND	97.3	70-130	1.51	20	
Selenium	0.511	0.0038	"	0.500	ND	102	70-130	3.57	20	
Cadmium	0.49	0.00050	"	0.500	ND	97.8	70-130	1.90	20	
Manganese	0.497	0.0004	"	0.500	0.00757	98.0	70-130	1.79	20	
Aluminum	0.546	0.0018	"		0.0158		70-130	0.242	20	
Copper	0.525	0.0006	"	0.500	0.00406	104	70-130	1.52	20	B
Zinc	0.495	0.0032	"	0.500	ND	99.0	70-130	2.47	20	
Chromium	0.485	0.0005	"	0.500	0.000575	96.8	70-130	2.12	20	
Antimony	0.520	0.0018	"	0.500	ND	104	70-130	2.35	20	

Envirodyne Laboratories, Inc.

Monica Smith

Monica Smith, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Envirodyne Laboratories, Inc
 11011 Brooklet Dr., # 230
 Houston, TX 77099
 281.568.7880 Phone
 www.envirodyne.com

Client: Victoria, City of
Project: Victoria, City of - Surface and Raw Water Testing
Work Order: 17A0767

Reported:
 21-Jan-17 17:30

Total Metals by ICP - Quality Control
Envirodyne Laboratories, Inc.

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

Batch B7A0978 - Metals - EPA 200.2

Blank (B7A0978-BLK1)										
					Prepared: 09-Jan-17 Analyzed: 10-Jan-17					
Silver	<0.0005	0.0005	mg/L							
LCS (B7A0978-BS1)										
					Prepared: 09-Jan-17 Analyzed: 10-Jan-17					
Silver	52.7		ug/L	50.0		105	85-115			
Matrix Spike (B7A0978-MS1)										
					Source: 17A0767-01		Prepared: 09-Jan-17 Analyzed: 10-Jan-17			
Silver	0.0582	0.0005	mg/L	0.0500	ND	116	70-130			
Matrix Spike Dup (B7A0978-MSD1)										
					Source: 17A0767-01		Prepared: 09-Jan-17 Analyzed: 10-Jan-17			
Silver	0.0577	0.0005	mg/L	0.0500	ND	115	70-130	0.863	20	

Batch B7A0979 - Metals - EPA 200.2

Blank (B7A0979-BLK1)										
					Prepared & Analyzed: 10-Jan-17					
Sodium	<2.0	2.0	mg/L							
Potassium	<2.0	2.0	"							
Magnesium	<2.00	2.00	"							
Calcium	<2.00	2.00	"							
LCS (B7A0979-BS1)										
					Prepared & Analyzed: 10-Jan-17					
Sodium	21.5		mg/L	20.0		107	85-115			
Potassium	19.6		"	20.0		97.9	85-115			
Magnesium	19.9		"	20.0		99.6	85-115			
Calcium	20.5		"	20.0		103	85-115			
Matrix Spike (B7A0979-MS1)										
					Source: 17A0767-01		Prepared & Analyzed: 10-Jan-17			
Potassium	23.0	2.0	mg/L	20.0	2.57	102	70-130			
Calcium	43.0	2.00	"	20.0	22.3	103	70-130			
Sodium	261	2.0	"	20.0	226	173	70-130			E, Q
Magnesium	27.3	2.00	"	20.0	7.48	99.0	70-130			

Envirodyne Laboratories, Inc.

Monica Smith

Monica Smith, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Envirodyne Laboratories, Inc
 11011 Brooklet Dr., # 230
 Houston, TX 77099
 281.568.7880 Phone
 www.envirodyne.com

Client: Victoria, City of
Project: Victoria, City of - Surface and Raw Water Testing
Work Order: 17A0767

Reported:
 21-Jan-17 17:30

Total Metals by ICP - Quality Control
Envirodyne Laboratories, Inc.

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

Batch B7A0979 - Metals - EPA 200.2

Matrix Spike Dup (B7A0979-MSD1)		Source: 17A0767-01			Prepared & Analyzed: 10-Jan-17					
Calcium	42.3	2.00	mg/L	20.0	22.3	100	70-130	1.52	20	
Potassium	22.8	2.0	"	20.0	2.57	101	70-130	0.524	20	
Magnesium	27.2	2.00	"	20.0	7.48	98.7	70-130	0.220	20	
Sodium	254	2.0	"	20.0	226	142	70-130	2.41	20	E, Q

Batch B7A1837 - Metals - EPA 200.2

Blank (B7A1837-BLK1)		Prepared & Analyzed: 18-Jan-17								
Arsenic, Dissolved	<0.00500	0.00500	mg/L							
Manganese, Dissolved	<0.0050	0.0050	"							
Iron, Dissolved	<0.0050	0.0050	"							

LCS (B7A1837-BS1)		Prepared & Analyzed: 18-Jan-17								
Arsenic, Dissolved	0.247	0.00500	mg/L				85-115			
Manganese, Dissolved	0.244	0.0050	"				85-115			
Iron, Dissolved	0.244	0.0050	"				85-115			

Matrix Spike (B7A1837-MS1)		Source: 17A1078-03			Prepared & Analyzed: 18-Jan-17					
Arsenic, Dissolved	0.509	0.00500	mg/L		ND		70-130			
Manganese, Dissolved	0.493	0.0050	"		0.00493		70-130			
Iron, Dissolved	0.574	0.0050	"		0.0968		70-130			

Matrix Spike Dup (B7A1837-MSD1)		Source: 17A1078-03			Prepared & Analyzed: 18-Jan-17					
Manganese, Dissolved	0.488	0.0050	mg/L		0.00493		70-130	1.02	20	
Iron, Dissolved	0.567	0.0050	"		0.0968		70-130	1.23	20	
Arsenic, Dissolved	0.501	0.00500	"		ND		70-130	1.58	20	

Envirodyne Laboratories, Inc.

Monica Smith

Monica Smith, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Envirodyne Laboratories, Inc
11011 Brooklet Dr., # 230
Houston, TX 77099
281.568.7880 Phone
www.envirodyne.com

Client: Victoria, City of
Project: Victoria, City of - Surface and Raw Water Testing
Work Order: 17A0767

Reported:
21-Jan-17 17:30

Notes and Definitions

Q QC did not meet ELI acceptance criteria
L Analyzed by third party laboratory
H Hold time exceeded
E Estimated value
B Target detected in method blank
- -
DET Analyte DETECTED
ND Analyte NOT DETECTED at or above the reporting limit
NR Not Reported
dry Sample results reported on a dry weight basis
RPD Relative Percent Difference
CLT Client Representative

Envirodyne Laboratories, Inc.

A handwritten signature in blue ink that reads "Monica Smith".

Monica Smith, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



174067

Envirodyne Laboratories, Inc.
 11011 Brooklet, Ste. 230
 Houston, Texas 77099-3543
 Phone (281)568-7880 - Fax (281)568-8004

E A162129
 65m1-8-17
 Page 2 Of 32

TCEQ Certification # T104704265

Name: City of Victoria
 Address: 700 Main Center
 City: Victoria, TX 77901
 Contact: Mr. Lynn Short
 Phone: 361-485-3381 Fax: 361-485-3385

Analysis Request and Chain of Custody Record

Project No.		Client/Project							pH	D.O.	Temp.	Analysis Time	
		RAW WATER											
Lab ID No.	Field Sample No./ Identification	Date & Time	Grab	Comp	Sample Container (Size/Mat'l)	Sample Type (Liquid, Sludge, etc.)	Preservative	ANALYSIS REQUESTED					
	Raw	1/3/17 12:57 PM	✓		1L/P	Liquid	NA	pH, Temperature, H ₂ S, DO (Field) ^{total sulfide}	17.86	12.0	25.2	1300	
		1/3/17 1311	✓		500 ml/P	Liquid	Ice, HNO ₃	Sb, Fe, Al, As, Mn, Be, Cd, Cr, Ca, Cu, Pb, Mg,					
						Liquid	Ice, HNO ₃	Ni, Se, Ag, Tl, Zn, Ba, K, Na, Hg, Si, Hardness					
			1/3/17 1311	✓		500 ml/P	Liquid	Ice, NaOH	Cyanide				
			1/3/17 1310	✓		1 gal/cubie	Liquid	Ice, HNO ₃	G.alpha, G.beta, T.U, Ra226-228				
			1/3/17 1313	✓		40ml/vial	Liquid	Ice, HCl	VOC				
			1/3/17 1315	✓		3-1 lt/amb	Liquid	Ice	SOCs (BNA, Pest, PCBs)				
							Liquid						

Samplers: (Signature)	Relinquished by: (Signature) S.R	Date: 1-3-17 Time: 1530	Received by: (Signature)	Date: _____ Time: _____	Seal Intact?
Affiliation	Relinquished by: (Signature)	Date: _____ Time: _____	Received by: (Signature)	Date: _____ Time: _____	Seal Intact?
Remarks:	Relinquished by: (Signature) LSD	Date: 1-4-17 Time: 1700	Received by Lab: (Signature) Elise Shiplett	Date: 1-4-17 Time: 1700	Seal Intact?
	FLOW: _____ Meter Reading: _____ Cl ₂ Residual: _____ Mn Correction: _____ Cl ₂ Corrected: _____	Arrival Temp. 4.2/35 JWAS	Data Results To: 1. Site Representative: _____	Date: _____ Time: _____	Laboratory No.



17A0767

Envirodyne Laboratories, Inc.
11011 Brooklet, Ste. 230
Houston, Texas 77099-3543
Phone (281)568-7880 - Fax (281)568-8004

E A162129
85m/1517
Page 1 Of 32

TCEQ Certification # T104704265

Name: City of Victoria
Address: 700 Main Center
City: Victoria, TX 77901
Contact: Mr. Lynn Short
Phone: 361-485-3381 Fax: 361-485-3385

Analysis Request and Chain of Custody Record

Project No. Client/Project RAW WATER

Lab ID No.	Field Sample No./ Identification	Date & Time	Grab	Comp	Sample Container (Size/Mat'l)	Sample Type (Liquid, Sludge, etc.)	Preservative	ANALYSIS REQUESTED	pH	D.O.	Temp.	Analysis Time
	Raw	11/3/17 1316	✓		1 Lt/P	Liquid	Ice	Alk, (HCO3 & CO3) NO3N, NO2N, Color, ORP ✓				
								Cl, OPO4, SO4, Bromate, Bromide, TSS, P ✓				
								TDS, Turb. Acidity, S2, Diss. Fe, As & Mn ✓				
		11/3/17 1316	✓		1 Lt/P	Liquid	Ice, H2SO4	NH3N, TPO4 ✓				
		11/3/17 1317	✓		1 Lt/Amb	Liquid	Ice, H2SO4	TOC ✓				
		11/3/17 1320	✓		40ml/Amb VOA	Liquid	Ice, NH4Cl	HAA5 ✓				

Samplers: (Signature) Relinquished by: S.R Date: 11/3/17 Time: 1530 Received by: (Signature) Date: Time: Seal Intact?

Affiliation Relinquished by: (Signature) Date: Time: Received by: (Signature) Date: Time: Seal Intact?

Relinquished by: LSO Date: 11/3/17 Time: 1530 Received by Lab: Elise Shiplett Date: 11/3/17 Time: 1700 Seal Intact?

Remarks: FLOW: Meter Reading: Cl, Residual: Mn Correction: Cl, Corrected Arrival Temp. 4.2/35 Date: 11/3/17 Time: 1700 Data Results To: 1. Site Representative: Date: Time: Laboratory No.



Envirodyne Laboratories, Inc
11011 Brooklet Dr., # 230
Houston, TX 77099
281.568.7880 Phone
www.envirodyne.com

20 January 2017

Victoria, City of
Lynn Short
700 Main Center
Victoria, TX 77901

Victoria, City of - Surface and Raw Water Testing

Enclosed are the results of analyses for samples received by the laboratory on 04-Jan-17 17:00. The analytical data provided relates only to the samples as received in this laboratory report.

ELI certifies that all results are NELAP compliant and performed in accordance with the referenced method except as noted in the Case Narrative or as noted with a qualifier. Any reproductions of this laboratory report should be in full and only with the written authorization from the client.

The total number of pages in this report is 5

Thank you for selecting ELI for your analytical needs. If you have any questions regarding this report, please contact us.

Sincerely,

A handwritten signature in blue ink that reads 'Monica Smith'.

Monica Smith
Project Manager



Certificate No: TX104704265



Envirodyne Laboratories, Inc
11011 Brooklet Dr., # 230
Houston, TX 77099
281.568.7880 Phone
www.envirodyne.com

Client: Victoria, City of
Project: Victoria, City of - Surface and Raw Water Testing
Work Order: 17A0768

Reported:
20-Jan-17 16:53

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Surface Water	17A0768-01	Water	03-Jan-17 15:00	04-Jan-17 17:00

L - Analyzed by NELAP certified lab: T104704215-15-19

L - Sample analyzed by NELAC certified lab: T104704527-14-1

L - Sample analyzed by NELAP accredited lab: T104704466-11-5

Envirodyne Laboratories, Inc.

Monica Smith, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Envirodyne Laboratories, Inc
 11011 Brooklet Dr., # 230
 Houston, TX 77099
 281.568.7880 Phone
 www.envirodyne.com

Client: Victoria, City of
Project: Victoria, City of - Surface and Raw Water Testing
Work Order: 17A0768

Reported:
 20-Jan-17 16:53

Surface Water

17A0768-01 (Water) Sampled: 03-Jan-17 15:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Analyst	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	--------	---------	-------

Envirodyne Laboratories, Inc.

Metals by ICP-MS

Arsenic, Dissolved	<2.00	2.00	ug/L	1	B7A2331	18-Jan-17	18-Jan-17 16:11	EPA 200.8	IZW	L
Iron, Dissolved	<20.0	20.0	ug/L	1	B7A2331	18-Jan-17	18-Jan-17 16:11	EPA 200.8	IZW	L

Wet Chemistry

Bromate	<0.002	0.002	mg/L	1	B7A2051	11-Jan-17	11-Jan-17 00:00	EPA 300.1	IZW	L
Bromide	<0.12	0.12	mg/L	1	B7A2051	11-Jan-17	16-Jan-17 00:00	EPA 300.0	IZW	L
Cyanide, Total	<0.005	0.005	mg/L	1	B7A2022	09-Jan-17	09-Jan-17 13:37	EPA 335.4	IZW	L
Hydrogen Sulfide	0.0230	0.0100	mg/L	1	B7A2622	09-Jan-17	09-Jan-17 13:32	Calc	IZW	
Sulfide	0.02	0.01	mg/L	1	B7A0980	09-Jan-17	09-Jan-17 13:32	SM4500-S2 D	XQH	B

Organochlorine Pesticides and PCBs by EPA 608

Arochlor-1016	<0.51	0.51	ug/L	1	B7A2021	09-Jan-17	11-Jan-17 14:42	EPA 608	IZW	L
Arochlor-1221	<0.51	0.51	ug/L	1	B7A2021	09-Jan-17	11-Jan-17 14:42	EPA 608	IZW	L
Arochlor-1232	<0.51	0.51	ug/L	1	B7A2021	09-Jan-17	11-Jan-17 14:42	EPA 608	IZW	L
Arochlor-1242	<0.51	0.51	ug/L	1	B7A2021	09-Jan-17	11-Jan-17 14:42	EPA 608	IZW	L
Arochlor-1248	<0.51	0.51	ug/L	1	B7A2021	09-Jan-17	11-Jan-17 14:42	EPA 608	IZW	L
Arochlor-1254	<0.51	0.51	ug/L	1	B7A2021	09-Jan-17	11-Jan-17 14:42	EPA 608	IZW	L
Arochlor-1260	<0.51	0.51	ug/L	1	B7A2021	09-Jan-17	11-Jan-17 14:42	EPA 608	IZW	L

Envirodyne Laboratories, Inc.

Monica Smith

Monica Smith, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



DOH Certification #E84025
Cert.# T104704527-14-1

Report Date: January 18, 2017

Envirodyne Laboratories, Inc.
11011 Brooklet, Ste 230
Houston, TX 77099-3543

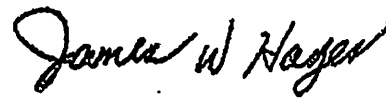
Field Custody: Client
Client/Field ID: Envirodyne
City of Victoria
Surface Water
Sample Collection: 1-3-17/1500
Lab ID No: 17.170
Lab Custody Date: 1-6-17/1430
Sample description: Water

CERTIFICATE OF ANALYSIS

Parameter	Units	Results	Analysis Date	Method	Detection Limit
Gross Alpha	pCi/l	0.7 ± 0.9	1-13-17/1634	EPA 900.0	1.9
Gross Beta	pCi/l	3.1 ± 1.1	1-13-17/1634	EPA 900.0	2.4
Radium-226	pCi/l	0.4 ± 0.2	1-16-17/1216	EPA 903.0	0.3
Radium-228	pCi/l	1.0 ± 0.4	1-17-17/0938	EPA Ra-05	0.6
Uranium	pCi/l	0.2 J ± 0.3	1-16-17/1553	EPA 908.0	0.7
Uranium	ug/l	0.3 ± 0.5	calc	EPA 908.0	1.0

Alpha Standard: Th-230
Beta Standard: Cs-137

J =the reported value failed to meet the established quality control criteria for either precision or accuracy.


James W. Hayes

Test results meet all requirements of the NELAC standards. Statement of estimated uncertainty available upon request. Test results refer only to sample(s) listed. Contact person: Jim Hayes (813) 229-2879.



Envirodyne Laboratories, Inc.
 11011 Brooklet, Ste. 230
 Houston, Texas 77099-3543
 Phone (281)568-7880 - Fax (281)568-8004

E A162017

Page _____ Of _____

TCEQ Certification # T104704265

Name: Envirodyne Laboratories Inc. Analysis Request and Chain of Custody Record
 Address: 11011 Brooklet Dr. Ste 230
 City: Houston, TX 77099
 Contact: Laura Bonjonia Phone: 281-568-7880 Fax: 281-568-8004

Project No.		Client/Project						pH	D.O.	Temp.	Analysis Time
Lab ID No.	Field Sample No./ Identification	Date & Time	Grab	Comp	Sample Container (Size/Mat'l)	Sample Type (Liquid, Sludge, etc)	Preservative				
	SURFACE WATER TEST	1-3-17 1500	✓		1 GAL Cube	Liquid	FDA HNO3	Gross Alkal, Gross P ₂ +A.T.V. RA 226-228			
								17.170			
										* Standard TAT	
										JAT 1-19-17	

Samplers: (Signature)	Relinquished by: (Signature) <i>FRidge #8</i>	Date: 1-5-17 Time: 16:15	Received by: (Signature) <i>Per... ..</i>	Date: 1-5-17 Time: 16:15	Seal Intact?	
	Affiliation	Relinquished by: (Signature) <i>Per...</i>	Date: 1-5-17 Time: 16:15	Received by: (Signature)	Date: Time:	Seal Intact?
	Remarks: <i>SUB TO KNL</i>	Relinquished by: (Signature)	Date: Time:	Received by Lab: (Signature) <i>...</i>	Date: 1-6-17 Time: 14:30	Seal Intact?
	FLOW: _____ Meter Reading: _____ Cl ₂ Residual: _____ Mn Correction: _____ Cl ₂ Corrected	Arrival Temp.	Data Results To: 1.	Site Representative:	Date: Time:	Laboratory No.



Envirodyne Laboratories, Inc
 11011 Brooklet Dr., # 230
 Houston, TX 77099
 281.568.7880 Phone
 www.envirodyne.com

Client: Victoria, City of
Project: Victoria, City of - Surface and Raw Water Testing
Work Order: 17A0768

Reported:
 20-Jan-17 16:53

Wet Chemistry - Quality Control
Envirodyne Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B7A0980 - Inorganics										
Blank (B7A0980-BLK1)										
Prepared & Analyzed: 09-Jan-17										
Sulfide	0.0210	0.01	mg/L							B
LCS (B7A0980-BS1)										
Prepared & Analyzed: 09-Jan-17										
Sulfide	0.368		mg/L	0.400		92.0	90-110			B
Duplicate (B7A0980-DUP1)										
Source: 17A0767-01										
Prepared & Analyzed: 09-Jan-17										
Sulfide	0.0210	0.01	mg/L		0.0210			0.00	20	B

Envirodyne Laboratories, Inc.

Monica Smith

Monica Smith, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Envirodyne Laboratories, Inc
11011 Brooklet Dr., # 230
Houston, TX 77099
281.568.7880 Phone
www.envirodyne.com

Client: Victoria, City of
Project: Victoria, City of - Surface and Raw Water Testing
Work Order: 17A0768

Reported:
20-Jan-17 16:53

Notes and Definitions

L Analyzed by third party laboratory
B Target detected in method blank
DET Analyte DETECTED
ND Analyte NOT DETECTED at or above the reporting limit
NR Not Reported
dry Sample results reported on a dry weight basis
RPD Relative Percent Difference
CLT Client Representative

Envirodyne Laboratories, Inc.

Monica Smith, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



17A0768

Envirodyne Laboratories, Inc.
 11011 Brooklet, Ste. 230
 Houston, Texas 77099-3543
 Phone (281)568-7880 - Fax (281)568-8004

E A162129
 Page 31 ^{Bsm 15.17} Of 31

TCEQ Certification # T104704265

Name: City of Victoria
 Address: 700 Main Center
 City: Victoria, TX 77901
 Contact: Mr. Lynn Short
 Phone: 361-485-3381 Fax: 361-485-3385

Analysis Request and Chain of Custody Record

Project No.		Water WeLL Test					Client/Project			Surface Water Test				
Lab ID No.	Field Sample No./ Identification	Date & Time	Grab	Comp	Sample Container (Size/Mat)	Sample Type (Liquid, Sludge, etc.)	Preservative	ANALYSIS REQUESTED			pH	D.O.	Temp.	Analysis Time
	Surface Water	1-3-17 1500	-		NA	NA	NA	H2S (Field) total sulfide						
		1-3-17 1500	-		500 ml/P	Liquid	Ice	As (Dissolved), Fe (Dissolved)						
		1-3-17 1500	-		500 ml/P	Liquid	Ice	Bromate, Bromide						
		1-3-17 1500	-		1 gal/cubie	Liquid	Ice, HNO3	Gross Alpha, Gross Beta, T.U, Ra 226-228						
		1-3-17 1500	-		1Lt/Amb	Liquid	Ice	PCBs						
		1-3-17 1500	-		500 ml/P	Liquid	Ice, NaOH	Cyanide						
Samplers: (Signature)		Relinquished by:				Date:	Received by:			Date:	Seal Intact?			
<i>Stephan Robinson</i>		(Signature) <i>Stephan Robinson</i>				1-3-17	(Signature)							
(S.R.)						Time: 1530								
Affiliation		Relinquished by:				Date:	Received by:			Date:	Seal Intact?			
		(Signature) <i>LSO</i>					(Signature) <i>Elise Shiplett</i>							
						1-4-17				1-4-17				
						Time: 1700				Time: 1700				
Remarks:		FLOW: _____ Meter Reading: _____ Cl ₂ Residual: _____ Mn Correction: _____ Cl ₂ Corrected: _____				Arrival Temp: 4.2 / 3.5		Data Results To: 1.			Laboratory No.			
						<i>LSO</i>		Site Representative:			Date: _____ Time: _____			

BatchNo: 79978

SAMPLE REPORT



T104704328-18-15

Business

Victoria, City of - Stephen Robinson
P O Box 1758
Victoria Tx 77902
Att: Stephen Robinson



Laboratory

B Environmental, LLC.
1606 E Brazos, Suite D
Victoria TX 77901
ph. 361-572-8224

Reference Information

Project: ASR Tabl 1, List A
Printed: Friday,
February 01,
2019

Re: Victoria, City of - Stephen Robinson

Dear: Stephen Robinson

Attached are the results for sample(s) received on 1/18/2019

The analytical results relate only to the samples tested.

All supporting quality data meets the requirements of NELAC unless noted in the case narrative section of the report.

This report contains 25 pages (including the cover page)

If you have any questions concerning this report, please do not hesitate to call (361) 572-8224 or Fax us at (361) 572-4115

Respectfully Submitted,

Kevin Baros

Laboratory Director



B Environmental, LLC.
1606 E Brazos, Suite D
Victoria TX 77901

BatchNo: 79978

Batch No:

Sample Receipt Checklist

Date Received:

Project

Received By:

Login completed by:

Carrier Name

- YES NO Not Present
- YES NO Not Present
- YES NO Not Present
- YES NO
- YES NO
- YES NO
- YES NO
- YES NO
- YES NO
- YES NO
- YES NO >0 <6 °C On Ice
- YES NO No VOA Vials submitted
- YES NO Not Applicable

*TEMP pH Adjusted? Checked By

Any No and/or N/A (not applicable) response must be detailed in the comments section below.

Client contacted PersonContacted

Contacted by: Date Contacted:

Regarding

Comments

Corrective Action





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Printed: 01/31/2019

Page 1 of 9

Results

Report To

Victoria, City of

Account
BENV-G

Project
859740

B-Environmental
Kevin C. Baros
1606 E Brazos St., Suite D
Victoria, TX 77901

Results

1752260 Well 19

Received: 01/19/2019

Drinking Water

Collected by: Client B-Environmental
Taken: 01/18/2019 14:34:00

PO:

Calculation	Prepared:	01/23/2019	10:11:43	Calculated	01/23/2019	10:11:43	CAL
Parameter	Results	Units	RL	Flag	CAS	Bottle	
z Phosphorus (as Phosphate)	0.802	mg/L	0.306				
EPA 200.7 4.4							
Prepared:	819264	01/22/2019	12:45:00	Analyzed	819372	01/22/2019	16:44:00 LPS
Parameter	Results	Units	RL	Flag	CAS	Bottle	
N Phosphorus	0.262	mg/L	0.100		7723-14-0	13	
z Silicon Recoverable	6.30	mg/L	0.100		7740-21-3	13	
EPA 200.7 4.4							
Prepared:	819264	01/22/2019	12:45:00	Analyzed	819407	01/23/2019	09:48:00 LPS
Parameter	Results	Units	RL	Flag	CAS	Bottle	
N Calcium	39.1	mg/L	0.500		7440-70-2	13	
N Magnesium, Total	9.45	mg/L	0.020		7439-95-4	13	
N Potassium	5.73	mg/L	0.500		7440-09-7	13	
EPA 200.7 4.4							
Prepared:	819264	01/22/2019	12:45:00	Analyzed	819476	01/23/2019	10:32:00 LPS
Parameter	Results	Units	RL	Flag	CAS	Bottle	
N Sodium	55.6	mg/L	2.50		7440-23-5	13	
EPA 200.7 4.4 - Calc							
Prepared:		01/23/2019	10:11:43	Calculated		01/23/2019	10:11:43 CAL
Parameter	Results	Units	RL	Flag	CAS	Bottle	
N Silica (SiO2)	13.5	mg/L	0.214				
EPA 200.8 5.4							
Prepared:	819264	01/22/2019	12:45:00	Analyzed	819379	01/22/2019	20:55:00 JBP
Parameter	Results	Units	RL	Flag	CAS	Bottle	
N Aluminum, Total	0.00436	mg/L	0.005	J	7429-90-5	13	
EPA 300.0 2.1							
Prepared:	819462	01/22/2019	14:41:00	Analyzed	819462	01/22/2019	14:41:00 AMB
Parameter	Results	Units	RL	Flag	CAS	Bottle	
N Chloride	59.6	mg/L	1.50			01	
N Fluoride	0.625	mg/L	0.500			01	

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Printed: 01/31/2019

Page 2 of 9

Results

1752260 Well 19		Received: 01/19/2019						
Drinking Water		Collected by: Client	B-Environmental		PO:			
		Taken: 01/18/2019	14:34:00					
EPA 300.0 2.1		Prepared: 819462	01/22/2019	14:41:00	Analyzed 819462	01/22/2019	14:41:00	AMB
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Sulfate	20.4	mg/L	1.50			01		
EPA 300.1 1		Prepared: 820679	01/30/2019	15:30:00	Analyzed 820679	01/30/2019	15:30:00	AMB
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Bromate	<5.00	ug/L	5.00			09		
EPA 350.1 2		Prepared: 818925	01/21/2019	09:30:00	Analyzed 819204	01/22/2019	09:00:00	RSV
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Ammonia (as N)	0.631	mg/L	0.020			10		
EPA 524.2 4.1		Prepared: 819140	01/21/2019	18:36:00	Analyzed 819140	01/21/2019	18:36:00	KLB
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Bromodichloromethane	20.8	ug/L	1.00		75-27-4	04		
N Bromoform	2.61	ug/L	1.00		75-25-2	04		
N Chloroform	15.1	ug/L	1.00		67-66-3	04		
N Dibromochloromethane	16.4	ug/L	1.00		124-48-1	04		
EPA 524.2 4.1		Prepared: 819140	01/22/2019	13:30:30	Calculated 819140	01/22/2019	13:30:30	CAL
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Trihalomethanes	0.05491	mg/L	0.001			04		
EPA 552.2 1		Prepared: 819669	01/24/2019	11:50:27	Analyzed 820069	01/25/2019	22:25:00	EMT
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Bromoacetic acid	<5.00	ug/L	5.00		79-08-3	16		
N Chloroacetic acid	<5.00	ug/L	5.00		79-11-8	16		
N Dibromoacetic acid	<5.00	ug/L	5.00		631-64-1	16		
N Dichloroacetic acid	6.57	ug/L	5.00		79-43-6	16		
N Trichloroacetic acid	<5.00	ug/L	5.00		76-03-9	16		
EPA 552.2 1		Prepared: 819669	01/24/2019	11:50:27	Calculated 820069	01/28/2019	13:47:59	CAL
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N HAA5	0.00657	mg/L	0.005			16		
SM 2130 B-2001		Prepared: 819053	01/20/2019	14:25:00	Analyzed 819053	01/20/2019	14:25:00	DWN
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Turbidity	<0.300	NTU	0.300			01		





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Printed: 01/31/2019

Page 3 of 9

Results

1752260 Well 19		Received: 01/19/2019							
Drinking Water	Collected by: Client	B-Environmental			PO:				
	Taken: 01/18/2019 14:34:00								
SM 2320 B-2011		Prepared: 819494	01/23/2019	09:11:00	Analyzed 819494	01/23/2019	09:11:00	ELS	
Parameter	Results	Units	RL	Flag	CAS	Bottle			
N Total Alkalinity (as CaCO3)	183	mg/L	1.00			01			
SM 2340 B-97		Prepared:	01/23/2019	12:06:24	Calculated	01/23/2019	12:06:24	CAL	
Parameter	Results	Units	RL	Flag	CAS	Bottle			
N Total Hardness as CaCO3 -Ca/MgEq	137	mg/L	0.500						
SM 2540 C-97		Prepared: 819495	01/22/2019	06:15:00	Analyzed 819495	01/22/2019	06:15:00	TH2	
Parameter	Results	Units	RL	Flag	CAS	Bottle			
N Total Dissolved Solids	364	mg/L	20.0			01			
SM 2540 D-97		Prepared: 819626	01/23/2019	14:00:00	Analyzed 819626	01/23/2019	14:00:00	ALW	
Parameter	Results	Units	RL	Flag	CAS	Bottle			
N Total Suspended Solids	<2.00	mg/L	2.00			01			
SM 5310 C-2000		Prepared: 819450	01/22/2019	10:46:00	Analyzed 819450	01/22/2019	10:46:00	ALH	
Parameter	Results	Units	RL	Flag	CAS	Bottle			
N Total Organic Carbon	2.65	mg/L	0.500			08			

1752261 Well 21		Received: 01/19/2019							
Drinking Water	Collected by: Client	B-Environmental			PO:				
	Taken: 01/18/2019 15:11:00								
Calculation		Prepared:	01/23/2019	10:11:43	Calculated	01/23/2019	10:11:43	CAL	
Parameter	Results	Units	RL	Flag	CAS	Bottle			
z Phosphorus (as Phosphate)	<0.119	mg/L	0.119						
EPA 200.7 4.4		Prepared: 819264	01/22/2019	12:45:00	Analyzed 819372	01/22/2019	16:52:00	LPS	
Parameter	Results	Units	RL	Flag	CAS	Bottle			
N Phosphorus	<0.0388	mg/L	0.0388		7723-14-0	11			
EPA 200.7 4.4		Prepared: 819264	01/22/2019	12:45:00	Analyzed 819476	01/23/2019	10:18:00	LPS	
Parameter	Results	Units	RL	Flag	CAS	Bottle			
N Magnesium, Total	10.0	mg/L	0.020		7439-95-4	11			
N Potassium	3.40	mg/L	0.500		7440-09-7	11			

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Printed: 01/31/2019

Page 4 of 9

Results

1752261 Well 21		Received: 01/19/2019						
Drinking Water		Collected by: Client	B-Environmental		PO:			
		Taken: 01/18/2019 15:11:00						
EPA 200.7 4.4		Prepared: 819264	01/22/2019	12:45:00	Analyzed 819476	01/23/2019	10:42:00	LPS
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Sodium	120	mg/L	5.00		7440-23-5	11		
EPA 200.7 4.4		Prepared: 819264	01/22/2019	12:45:00	Analyzed 819587	01/23/2019	17:22:00	LPS
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Calcium	31.8	mg/L	5.00		7440-70-2	11		
EPA 200.7 4.4		Prepared: 819264	01/22/2019	12:45:00	Analyzed 819905	01/25/2019	11:23:00	LPS
Parameter	Results	Units	RL	Flag	CAS	Bottle		
Z Silicon Recoverable	10.4	mg/L	0.500		7740-21-3	11		
EPA 200.7 4.4 - Calc		Prepared:	01/25/2019	16:00:22	Calculated	01/25/2019	16:00:22	CAL
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Silica (SiO2)	22.3	mg/L	1.07					
EPA 200.8 5.4		Prepared: 819264	01/22/2019	12:45:00	Analyzed 819379	01/22/2019	21:06:00	JBP
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Aluminum, Total	<0.0025	mg/L	0.0025		7429-90-5	11		
EPA 300.0 2.1		Prepared: 819462	01/22/2019	15:04:00	Analyzed 819462	01/22/2019	15:04:00	AMB
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Chloride	115	mg/L	1.50			01		
N Fluoride	0.550	mg/L	0.500			01		
N Sulfate	7.85	mg/L	1.50			01		
EPA 300.1 1		Prepared: 820679	01/30/2019	15:43:00	Analyzed 820679	01/30/2019	15:43:00	AMB
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Bromate	<5.00	ug/L	5.00			08		
EPA 350.1 2		Prepared: 818925	01/21/2019	09:30:00	Analyzed 819204	01/22/2019	09:00:00	RSV
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Ammonia (as N)	0.034	mg/L	0.020			10		
EPA 524.2 4.1		Prepared: 819140	01/21/2019	18:58:00	Analyzed 819140	01/21/2019	18:58:00	KLB
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Bromodichloromethane	<1.00	ug/L	1.00		75-27-4	04		
N Bromoform	<1.00	ug/L	1.00		75-25-2	04		
N Chloroform	<1.00	ug/L	1.00		67-66-3	04		

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Printed: 01/31/2019

Page 5 of 9

Results

1752261 Well 21		Received: 01/19/2019						
Drinking Water		Collected by: Client	B-Environmental		PO:			
		Taken: 01/18/2019 15:11:00						
EPA 524.2 4.1		Prepared: 819140	01/21/2019	18:58:00	Analyzed 819140	01/21/2019	18:58:00	KLB
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Dibromochloromethane	<1.00	ug/L	1.00		124-48-1	04		
EPA 524.2 4.1		Prepared: 819140	01/22/2019	13:30:31	Calculated 819140	01/22/2019	13:30:31	CAL
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Trihalomethanes	<0.001	mg/L	0.001			04		
EPA 552.2 1		Prepared: 819669	01/24/2019	11:50:27	Analyzed 820069	01/25/2019	22:55:00	EMT
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Bromoacetic acid	<5.00	ug/L	5.00		79-08-3	12		
N Chloroacetic acid	<5.00	ug/L	5.00		79-11-8	12		
N Dibromoacetic acid	<5.00	ug/L	5.00		631-64-1	12		
N Dichloroacetic acid	<5.00	ug/L	5.00		79-43-6	12		
N Trichloroacetic acid	<5.00	ug/L	5.00		76-03-9	12		
EPA 552.2 1		Prepared: 819669	01/24/2019	11:50:27	Calculated 820069	01/28/2019	13:47:59	CAL
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N HAA5	<0.005	mg/L	0.005			12		
SM 2130 B-2001		Prepared: 819053	01/21/2019	14:00:00	Analyzed 819053	01/21/2019	14:00:00	DWN
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Turbidity	1.80	NTU	0.300	H		01		
SM 2320 B-2011		Prepared: 819494	01/23/2019	09:11:00	Analyzed 819494	01/23/2019	09:11:00	ELS
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Total Alkalinity (as CaCO3)	300	mg/L	1.00			01		
SM 2340 B-97		Prepared:	01/24/2019	12:47:33	Calculated	01/24/2019	12:47:33	CAL
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Total Hardness as CaCO3 -Ca/MgEq	121	mg/L	5.00					
SM 2540 C-97		Prepared: 819495	01/22/2019	06:15:00	Analyzed 819495	01/22/2019	06:15:00	TH2
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Total Dissolved Solids	470	mg/L	50.0			01		
SM 2540 D-97		Prepared: 819626	01/23/2019	14:00:00	Analyzed 819626	01/23/2019	14:00:00	ALW
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Total Suspended Solids	<2.00	mg/L	2.00			01		

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Printed: 01/31/2019

Page 6 of 9

Results

1752261 Well 21 Received: 01/19/2019
 Drinking Water Collected by: Client B-Environmental PO:
 Taken: 01/18/2019 15:11:00

SM 5310 C-2000	Prepared: 819450	01/22/2019	11:10:00	Analyzed 819450	01/22/2019	11:10:00	ALH
Parameter	Results	Units	RL	Flag	CAS	Bottle	
N Total Organic Carbon	0.620	mg/L	0.500			07	

Sample Preparation

1752260 Well 19 Received: 01/19/2019

	Prepared: 818907	01/19/2019	00:00:00	Analyzed 818907	01/19/2019	00:00:00	KAT
z Bottle pH	<2	SU				02	
z Bottle pH	<2	SU				03	
z Bottle pH	<2	SU				08	
Cooler Temperature	0.8	degrees C				01	
Cooler Temperature	0.8	degrees C				02	
Cooler Temperature	0.8	degrees C				03	
Cooler Temperature	0.8	degrees C				07	
Cooler Temperature	0.8	degrees C				08	
Cooler Temperature	0.8	degrees C				09	
Cooler Temperature	0.8	degrees C				04	
Cooler Temperature	0.8	degrees C				05	
Cooler Temperature	0.8	degrees C				06	

EPA 200.2 2.8 Prepared: 819264 01/22/2019 12:45:00 Analyzed 819264 01/22/2019 12:45:00 TES

N Liquid Metals Digestion 50/50 ml 02

EPA 350.2, Rev. 2.0 Prepared: 818925 01/21/2019 09:30:00 Analyzed 818925 01/21/2019 09:30:00 JAL

N Ammonia Distillation 50/50 ml 03





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Printed: 01/31/2019

Page 7 of 9

Results

1752260	Well 19								Received: 01/19/2019
EPA 524.2 4.1		Prepared: 819140	01/21/2019	18:36:00	Analyzed 819140	01/21/2019	18:36:00	KLB	
N Trihalomethane Expansion Code	Entered								04
EPA 552.2 1		Prepared: 819669	01/24/2019	11:50:27	Analyzed 819669	01/24/2019	11:50:27	EMT	
N Haloacetic Acids Extraction	3/40 ml								07
EPA 552.2 1		Prepared: 819669	01/24/2019	11:50:27	Analyzed 820069	01/25/2019	22:25:00	EMT	
N Haloacetic Acids (HAA5)	Entered								16
SM 2540 C-97		Prepared: 819006	01/22/2019	06:15:00	Analyzed 819006	01/22/2019	06:15:00	TH2	
N Total Dissolved Solids Started	Started								
SM 2540 D-1997		Prepared: 819373	01/23/2019	14:00:00	Analyzed 819373	01/23/2019	14:00:00	ALW	
N TSS Set Started	Started								

1752261	Well 21								Received: 01/19/2019
		Prepared: 818907	01/19/2019	00:00:00	Analyzed 818907	01/19/2019	00:00:00	KAT	
z Bottle pH	<2	SU							02
z Bottle pH	<2	SU							03
z Bottle pH	<2	SU							07
Cooler Temperature	0.8	degrees							01
		C							
Cooler Temperature	0.8	degrees							02
		C							
Cooler Temperature	0.8	degrees							03
		C							
Cooler Temperature	0.8	degrees							07
		C							
Cooler Temperature	0.8	degrees							08
		C							

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Printed: 01/31/2019

Page 8 of 9

Results

1752261 Well 21		Received: 01/19/2019								
		Prepared:	818907	01/19/2019	00:00:00	Analyzed	818907	01/19/2019	00:00:00	KAT
Cooler Temperature	0.8			degrees						09
Cooler Temperature	0.8			degrees						04
Cooler Temperature	0.8			degrees						05
Cooler Temperature	0.8			degrees						06
EPA 200.2 2.8		Prepared:	819264	01/22/2019	12:45:00	Analyzed	819264	01/22/2019	12:45:00	TES
N Liquid Metals Digestion	50/50			ml						02
EPA 350.2, Rev. 2.0		Prepared:	818925	01/21/2019	09:30:00	Analyzed	818925	01/21/2019	09:30:00	JAL
N Ammonia Distillation	50/50			ml						03
EPA 524.2 4.1		Prepared:	819140	01/21/2019	18:58:00	Analyzed	819140	01/21/2019	18:58:00	KLB
N Trihalomethane Expansion Code	Entered									04
EPA 552.2 1		Prepared:	819669	01/24/2019	11:50:27	Analyzed	819669	01/24/2019	11:50:27	EMT
N Haloacetic Acids Extraction	3/40			ml						09
EPA 552.2 1		Prepared:	819669	01/24/2019	11:50:27	Analyzed	820069	01/25/2019	22:55:00	EMT
N Haloacetic Acids (HAA5)	Entered									12
SM 2540 C-97		Prepared:	819006	01/22/2019	06:15:00	Analyzed	819006	01/22/2019	06:15:00	TH2
N Total Dissolved Solids Started	Started									
SM 2540 D-1997		Prepared:	819373	01/23/2019	14:00:00	Analyzed	819373	01/23/2019	14:00:00	ALW
N TSS Set Started	Started									





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Printed: 01/31/2019

Page 9 of 9

Results

Qualifiers:

J - Analyte detected below quantitation limit

H - Sample started outside recommended holding time

We report results on an As Received or wet basis unless marked Dry Weight. Unless otherwise noted, testing was performed at Ana-labs corporate laboratory that holds the following Federal and State certificates: EPA Lab Number TX00063, US Department of Agriculture Soil Import Permit P330-17-00117, Texas Commission on Environmental Quality Commercial Drinking Water Lab Approval (Lab ID: TX219), Texas Commission on Environmental Quality NELAP T104704201-18-14, Louisiana Department of Environmental Quality Laboratory Certification (NELAP, LELAP) #02008, Louisiana Department of Health and Hospitals Drinking Water (NELAP) Certificate No LA026, Oklahoma Department of Environmental Quality TNI Laboratory Accreditation Program Certificate No. 2018-126, Arkansas Department of Environmental Quality Certification #18-068-0. The Accredited column designates accreditation by N -- NELAC, or z -- not covered under NELAC scope of accreditation.

These analytical results relate to the sample tested. This report may NOT be reproduced EXCEPT in FULL without written approval of Ana-Lab Corp. Unless otherwise specified, these test results meet the requirements of NELAC.

RL is the Reporting Limit (sample specific quantitation limit) and is at or above the Method Detection Limit (MDL). CAS is Chemical Abstract Service number. RL is our Reporting Limit, or Minimum Quantitation Level. The RL takes into account the Instrument Detection Limit (IDL), Method Detection Limit (MDL), and Practical Quantitation Limit (PQL), and any dilutions and/or concentrations performed during sample preparation (EQL). Our analytical result must be above this RL before we report a value in the 'Results' column of our report (without a 'J' flag). Otherwise, we report ND (Not Detected above RL), because the result is "<" (less than) the number in the RL column.

MAL is Minimum Analytical Level and is typically from regulatory agencies. Unless we report a result in the result column, or interferences prevent it, we work to have our RL at or below the MAL.

Trey Peery, MA, Project Manager



NELAP-accredited #T104704201



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

I,ELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 01/31/2019

Page 1 of 13

1
2

Report To

B-Environmental
Kevin C. Baros
1606 E Brazos St., Suite D
Victoria, TX 77901

Victoria City of

Account
BENV-G

Project
859740

Analytical Set **819204**

EPA 350.1 2

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Ammonia (as N)	818925	ND	0.00356	0.020	mg/L	119524204

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Ammonia (as N)	2.05	2.00	mg/L	102	90.0 - 110	119524203
	2.04	2.00	mg/L	102	90.0 - 110	119524213
	2.16	2.00	mg/L	108	90.0 - 110	119524224

Duplicate

Parameter	Sample	Result	Unknown	Unit	RPD	Limit%
Ammonia (as N)	1752178	0.057	0.052	mg/L	9.17	20.0
	1752260	0.660	0.631	mg/L	4.49	20.0

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Ammonia (as N)	1.92	2.00	mg/L	96.0	90.0 - 110	119524202

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Ammonia (as N)	818925	1.83	1.82	2.00	90.0 - 110	91.5	91.0	mg/L	0.548	20.0

Mat. Spike

Parameter	Sample	Spike	Unknown	Known	Units	Recovery %	Limits %	File
Ammonia (as N)	1752178	2.24	0.052	2.00	mg/L	109	80.0 - 120	119524209
	1752260	2.42	0.631	2.00	mg/L	89.4	80.0 - 120	119524212

Analytical Set **819495**

SM 2540 C-97

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Total Dissolved Solids	819495	ND	5.00	5.00	mg/L	119530265

ControlBlk

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Total Dissolved Solids	819495	0.0001			grams	119530252

Duplicate

Parameter	Sample	Result	Unknown	Unit	RPD	Limit%
Total Dissolved Solids	1751748	1070	1040	mg/L	2.84	20.0

LCS

Parameter	PrepSet	Reading	Known	Units	Recover%	Limits	File
Total Dissolved Solids	819495	204	200	mg/L	102	85.0 - 115	119530266

Standard

Parameter	Sample	Reading	Known	Units	Recover%	Limits%	File
-----------	--------	---------	-------	-------	----------	---------	------





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 01/31/2019

Page 2 of 13

1
2

Standard

Parameter	Sample	Reading	Known	Units	Recover%	Limits%	File
Total Dissolved Solids		100	100	mg/L	100	90.0 - 110	119530253

Analytical Set **819626**

SM 2540 D-97

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Total Suspended Solids	819626	ND	2	2	mg/L	119533218

ControlBlk

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Total Suspended Solids	819626	0.0002			grams	119533217

Duplicate

Parameter	Sample	Result	Unknown	Unit	RPD	Limit%
Total Suspended Solids	1752088	545	695	mg/L	24.2	20.0
	1752145	24.5	21.5	mg/L	13.0	20.0
	1752163	378	362	mg/L	4.32	20.0

LCS

Parameter	PrepSet	Reading	Known	Units	Recover%	Limits	File
Total Suspended Solids	819626	53.0	50.0	mg/L	106	90.0 - 110	119533251

Standard

Parameter	Sample	Reading	Known	Units	Recover%	Limits%	File
Total Suspended Solids		108	100	mg/L	108	90.0 - 110	119533250

Analytical Set **819462**

EPA 300.0 2.1

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Chloride	819462	0.086	0.0053	0.300	mg/L	119529658
Fluoride	819462	ND	0.00863	0.050	mg/L	119529658
Sulfate	819462	0.096	0.00775	0.300	mg/L	119529658

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Chloride	10.6	10.0	mg/L	106	90.0 - 110	119529654
	10.4	10.0	mg/L	104	90.0 - 110	119529668
Fluoride	10.8	10.0	mg/L	108	90.0 - 110	119529654
	10.7	10.0	mg/L	107	90.0 - 110	119529668
Sulfate	10.6	10.0	mg/L	106	90.0 - 110	119529654
	10.4	10.0	mg/L	104	90.0 - 110	119529668

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Chloride	819462	5.10	4.91	5.00	85.0 - 110	102	98.2	mg/L	3.80	20.0
Fluoride	819462	5.20	5.06	5.00	88.0 - 110	104	101	mg/L	2.73	20.0
Sulfate	819462	5.27	5.19	5.00	88.0 - 110	105	104	mg/L	1.53	20.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Chloride	1752542	14.0	13.8	5.36	10.0	80.0 - 120	86.4	84.4	mg/L	2.34	20.0
Fluoride	1752542	9.00	8.95	0.520	10.0	80.0 - 120	84.8	84.3	mg/L	0.591	20.0
Sulfate	1752542	56.9	55.9	48.1	10.0	80.0 - 120	88.0	78.0 *	mg/L	12.0	20.0





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 01/31/2019

Page 3 of 13

Analytical Set **820679**

EPA 300.1 1

AWRL/MRL C

<u>Parameter</u>	<u>Reading</u>	<u>Known</u>	<u>Units</u>	<u>Recover%</u>	<u>Limits%</u>	<u>File</u>
Bromate	5.54	5.00	ug/L	111	75.0 - 125	119555148

Blank

<u>Parameter</u>	<u>PrepSet</u>	<u>Reading</u>	<u>MDL</u>	<u>MDL</u>	<u>Units</u>	<u>File</u>
Bromate	820679	ND	2.06	5.00	ug/L	119555147
	820679	ND	2.06	5.00	ug/L	119555151

CCV

<u>Parameter</u>	<u>Reading</u>	<u>Known</u>	<u>Units</u>	<u>Recover%</u>	<u>Limits%</u>	<u>File</u>
Bromate	509	500	ug/L	102	85.0 - 115	119555146
	489	500	ug/L	97.8	85.0 - 115	119555166
	513	500	ug/L	103	85.0 - 115	119555179

LCS Dup

<u>Parameter</u>	<u>PrepSet</u>	<u>LCS</u>	<u>LCSD</u>	<u>Known</u>	<u>Limits%</u>	<u>LCS%</u>	<u>LCSD%</u>	<u>Units</u>	<u>RPD</u>	<u>Limit%</u>
Bromate	820679	111	105	100	85.0 - 115	111	105	ug/L	5.56	25.0
	820679	111	110	100	85.0 - 115	111	110	ug/L	0.905	25.0
	820679	111	111	100	85.0 - 115	111	111	ug/L	0	25.0

MSD

<u>Parameter</u>	<u>Sample</u>	<u>MS</u>	<u>MSD</u>	<u>UNK</u>	<u>Known</u>	<u>Limits</u>	<u>MS%</u>	<u>MSD%</u>	<u>Units</u>	<u>RPD</u>	<u>Limit%</u>
Bromate	1753784	229	248	ND	200	80.0 - 120	114	124 *	ug/L	7.97	20.0
	1754555	173	167	ND	200	80.0 - 120	86.5	83.5	ug/L	3.53	20.0

Analytical Set **819372**

EPA 200.7 4.4

Blank

<u>Parameter</u>	<u>PrepSet</u>	<u>Reading</u>	<u>MDL</u>	<u>MDL</u>	<u>Units</u>	<u>File</u>
Phosphorus	819264	ND	0.0388	0.100	mg/L	119527288
Silicon Recoverable	819264	ND	0.0148	0.100	mg/L	119527288

CCV

<u>Parameter</u>	<u>Reading</u>	<u>Known</u>	<u>Units</u>	<u>Recover%</u>	<u>Limits%</u>	<u>File</u>
Phosphorus	10.9	10.0	mg/L	109	90.0 - 110	119527291
	10.2	10.0	mg/L	102	90.0 - 110	119527295
	10.4	10.0	mg/L	104	90.0 - 110	119527302
Silicon Recoverable	5.44	5.00	mg/L	109	90.0 - 110	119527291
	4.96	5.00	mg/L	99.2	90.0 - 110	119527295
	5.14	5.00	mg/L	103	90.0 - 110	119527302

ICL

<u>Parameter</u>	<u>Reading</u>	<u>Known</u>	<u>Units</u>	<u>Recover%</u>	<u>Limits%</u>	<u>File</u>
Phosphorus	24.7	25.0	mg/L	98.8	95.0 - 105	119527286
Silicon Recoverable	10.0	10.0	mg/L	100	95.0 - 105	119527286

ICV

<u>Parameter</u>	<u>Reading</u>	<u>Known</u>	<u>Units</u>	<u>Recover%</u>	<u>Limits%</u>	<u>File</u>
Phosphorus	9.79	10.0	mg/L	97.9	90.0 - 110	119527287
Silicon Recoverable	4.80	5.00	mg/L	96.0	90.0 - 110	119527287

LCS Dup

<u>Parameter</u>	<u>PrepSet</u>	<u>LCS</u>	<u>LCSD</u>	<u>Known</u>	<u>Limits%</u>	<u>LCS%</u>	<u>LCSD%</u>	<u>Units</u>	<u>RPD</u>	<u>Limit%</u>
------------------	----------------	------------	-------------	--------------	----------------	-------------	--------------	--------------	------------	---------------





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 01/31/2019

Page 4 of 13

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Phosphorus	819264	4.34	4.41	4.00	85.0 - 115	108	110	mg/L	1.60	25.0
Silicon Recoverable	819264	4.06	4.06	4.00	85.0 - 115	102	102	mg/L	0	25.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Phosphorus	1751532	4.18	4.09	ND	4.00	75.0 - 125	104	102	mg/L	2.18	25.0
Silicon Recoverable	1751532	10.4	10.2	6.47	4.00	75.0 - 125	98.2	93.2	mg/L	5.22	25.0
Phosphorus	1752260	4.41	4.31	0.262	4.00	75.0 - 125	104	101	mg/L	2.44	25.0
Silicon Recoverable	1752260	10.6	10.3	6.30	4.00	75.0 - 125	108	100	mg/L	7.23	25.0

Analytical Set 819379

EPA 200.8 5.4

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Aluminum, Total	819264	ND	0.0025	0.005	mg/L	119527692

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Aluminum, Total	0.0517	0.05	mg/L	103	90.0 - 110	119527674
	0.0513	0.05	mg/L	103	90.0 - 110	119527684
	0.0497	0.05	mg/L	99.4	90.0 - 110	119527694
	0.053	0.05	mg/L	106	90.0 - 110	119527705
	0.051	0.05	mg/L	102	90.0 - 110	119527715

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Aluminum, Total	0.0481	0.05	mg/L	96.2	90.0 - 110	119527648

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Aluminum, Total	819264	0.514	0.490	0.500	85.0 - 115	103	98.0	mg/L	4.78	20.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Aluminum, Total	1751532	0.493	0.486	ND	0.500	70.0 - 130	98.6	97.2	mg/L	1.43	20.0
	1752260	0.495	0.553	0.00436	0.500	70.0 - 130	98.1	110	mg/L	11.2	20.0

Analytical Set 819407

EPA 200.7 4.4

AWRL/MRL C

Parameter	Reading	Known	Units	Recover%	Limits%	File
Calcium	0.845	0.500	mg/L	169	25.0 - 175	119528618
Magnesium, Total	0.556	0.500	mg/L	111	25.0 - 175	119528618
Potassium	0.573	0.500	mg/L	115	25.0 - 175	119528618

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Calcium	819264	0.383	0.0419	0.500	mg/L	119528620
Magnesium, Total	819264	0.0437	0.0102	0.020	mg/L	119528620
Potassium	819264	0.0848	0.0765	0.500	mg/L	119528620

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Calcium	25.1	25.0	mg/L	100	90.0 - 110	119528619





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 01/31/2019

Page 5 of 13

1
2

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Calcium	25.0	25.0	mg/L	100	90.0 - 110	119528629
Magnesium, Total	25.1	25.0	mg/L	100	90.0 - 110	119528619
	25.5	25.0	mg/L	102	90.0 - 110	119528629
Potassium	23.4	25.0	mg/L	93.6	90.0 - 110	119528619
	23.8	25.0	mg/L	95.2	90.0 - 110	119528629

ICL

Parameter	Reading	Known	Units	Recover%	Limits%	File
Calcium	51.5	50.0	mg/L	103	95.0 - 105	119528614
Magnesium, Total	51.4	50.0	mg/L	103	95.0 - 105	119528614
Potassium	51.2	50.0	mg/L	102	95.0 - 105	119528614

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Calcium	25.3	25.0	mg/L	101	90.0 - 110	119528617
Magnesium, Total	25.5	25.0	mg/L	102	90.0 - 110	119528617
Potassium	24.1	25.0	mg/L	96.4	90.0 - 110	119528617

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Calcium	819264	4.86	4.99	5.00	85.0 - 115	97.2	99.8	mg/L	2.64	25.0
Magnesium, Total	819264	5.27	5.40	5.00	85.0 - 115	105	108	mg/L	2.44	25.0
Potassium	819264	5.24	5.37	5.00	85.0 - 115	105	107	mg/L	2.45	25.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Calcium	1752260	46.9	44.4	39.1	5.00	75.0 - 125	156 *	106	mg/L	38.2 *	25.0
Magnesium, Total	1752260	15.3	14.3	9.45	5.00	75.0 - 125	117	97.0	mg/L	18.7	25.0
Potassium	1752260	11.4	10.7	5.73	5.00	75.0 - 125	113	99.4	mg/L	13.2	25.0

Analytical Set 819450

SM 5310 C-2000

AWRL/MRL C

Parameter	Reading	Known	Units	Recover%	Limits%	File
Total Organic Carbon	2.00	2.00	mg/L	100	75.0 - 125	119529450

Blank

Parameter	PrepSet	Reading	MDL	MDL	Units	File
Total Organic Carbon	819450	0.064	0.0618	0.500	mg/L	119529449

CCB

Parameter	PrepSet	Reading	MDL	MDL	Units	File
Total Organic Carbon	819450	0.124	0.0618	0.500	mg/L	119529443
	819450	0.0738	0.0618	0.500	mg/L	119529455
	819450	0.0852	0.0618	0.500	mg/L	119529460
	819450	ND	0.0618	0.500	mg/L	119529464

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Total Organic Carbon	9.80	10.0	mg/L	98.0	90.0 - 110	119529446
	9.63	10.0	mg/L	96.3	90.0 - 110	119529456
	9.58	10.0	mg/L	95.8	90.0 - 110	119529461
	9.32	10.0	mg/L	93.2	90.0 - 110	119529465





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 01/31/2019

Page 6 of 13

ICL

Parameter	Reading	Known	Units	Recover%	Limits%	File
Total Organic Carbon	19.3	20.0	mg/L	96.5	90.0 - 110	119529445

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Total Organic Carbon	10.4	10.0	mg/L	104	90.0 - 110	119529447

LCS

Parameter	PrepSet	Reading	Known	Units	Recover%	Limits	File
Total Organic Carbon	819450	5.20	5.00	mg/L	104	89.8 - 111	119529451

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Total Organic Carbon	1751978	14.7	14.7	4.10	10.0	92.5 - 112	106	106	mg/L	0	20.0
	1752217	13.4	13.4	2.84	10.0	92.5 - 112	106	106	mg/L	0	20.0

Standard

Parameter	Sample	Reading	Known	Units	Recover%	Limits%	File
Total Organic Carbon		47.9	50.0	mg/L	95.8	90.0 - 110	119529444

Analytical Set 819476

EPA 200.7 4.4

AWRL/MRL C

Parameter	Reading	Known	Units	Recover%	Limits%	File
Magnesium, Total	0.556	0.500	mg/L	111	25.0 - 175	119529833
Potassium	0.573	0.500	mg/L	115	25.0 - 175	119529833
Sodium	0.571	0.500	mg/L	114	25.0 - 175	119529833

Blank

Parameter	PrepSet	Reading	MDL	MDL	Units	File
Magnesium, Total	819264	0.0437	0.0102	0.020	mg/L	119529834
Potassium	819264	0.0848	0.0765	0.500	mg/L	119529834
Sodium	819264	0.0908	0.0315	0.500	mg/L	119529834

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Magnesium, Total	25.5	25.0	mg/L	102	90.0 - 110	119529839
	26.8	25.0	mg/L	107	90.0 - 110	119529841
	27.4	25.0	mg/L	110	90.0 - 110	119529851
Potassium	23.8	25.0	mg/L	95.2	90.0 - 110	119529839
	25.1	25.0	mg/L	100	90.0 - 110	119529841
	25.4	25.0	mg/L	102	90.0 - 110	119529851
Sodium	23.7	25.0	mg/L	94.8	90.0 - 110	119529839
	24.7	25.0	mg/L	98.8	90.0 - 110	119529841
	25.4	25.0	mg/L	102	90.0 - 110	119529851

Dir. SPKD

Parameter	Sample	DSPK	DSPKD	UNK	Known	Limits%	DSPK%	DSPKD%	Units	RPD	Limit%
Magnesium, Total	1752260	34.7	35.2	10.1	25.0	75.0 - 125	98.4	100	mg/L	1.43	25.0
Potassium	1752260	30.7	31.2	4.95	25.0	75.0 - 125	103	105	mg/L	1.62	25.0
Sodium	1752260	75.0	75.2	55.6	25.0	75.0 - 125	77.6	78.4	mg/L	0.266	25.0

Direct SPK

Parameter	Sample	DSPK	UNK	Known	Limits%	DSPK%	Units
Magnesium, Total	1752260	34.7	10.1	25.0	75.0 - 125	98.4	mg/L





Quality Control

Printed 01/31/2019

Page 7 of 13

Direct SPK

Parameter	Sample	DSPK	UNK	Known	Limits%	DSPK%	Units	
Potassium	1752260	30.7	4.95	25.0	75.0 - 125	103	mg/L	25.0
Sodium	1752260	75.0	55.6	25.0	75.0 - 125	77.6	mg/L	25.0

ICL

Parameter	Reading	Known	Units	Recover%	Limits%	File
Magnesium, Total	51.4	50.0	mg/L	103	95.0 - 105	119529829
Potassium	51.2	50.0	mg/L	102	95.0 - 105	119529829
Sodium	50.8	50.0	mg/L	102	95.0 - 105	119529829

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Magnesium, Total	25.5	25.0	mg/L	102	90.0 - 110	119529832
Potassium	24.1	25.0	mg/L	96.4	90.0 - 110	119529832
Sodium	23.7	25.0	mg/L	94.8	90.0 - 110	119529832

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Magnesium, Total	819264	5.27	5.40	5.00	85.0 - 115	105	108	mg/L	2.44	25.0
Potassium	819264	5.24	5.37	5.00	85.0 - 115	105	107	mg/L	2.45	25.0
Sodium	819264	5.01	5.13	5.00	85.0 - 115	100	103	mg/L	2.37	25.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Magnesium, Total	1752260	15.3	14.3	9.45	5.00	75.0 - 125	117	97.0	mg/L	18.7	25.0
Potassium	1752260	11.4	10.7	5.73	5.00	75.0 - 125	113	99.4	mg/L	13.2	25.0
Sodium	1752260	66.2	62.8	57.1	5.00	75.0 - 125	182 *	114	mg/L	45.9 *	25.0

Analytical Set 819587

EPA 200.7 4.4

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Calcium	819264	0.216	0.0419	0.500	mg/L	119532095

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Calcium	26.2	25.0	mg/L	105	90.0 - 110	119532073
	25.0	25.0	mg/L	100	90.0 - 110	119532080
	24.8	25.0	mg/L	99.2	90.0 - 110	119532081
	26.0	25.0	mg/L	104	90.0 - 110	119532092
	26.0	25.0	mg/L	104	90.0 - 110	119532102
	26.7	25.0	mg/L	107	90.0 - 110	119532112
	25.8	25.0	mg/L	103	90.0 - 110	119532118

Dir. SPKD

Parameter	Sample	DSPK	DSPKD	UNK	Known	Limits%	DSPK%	DSPKD%	Units	RPD	Limit%
Calcium	1752260	64.5	65.2	39.5	25.0	75.0 - 125	100	103	mg/L	1.08	25.0

Direct SPK

Parameter	Sample	DSPK	UNK	Known	Limits%	DSPK%	Units
Calcium	1752260	64.5	39.5	25.0	75.0 - 125	100	mg/L

ICL

Parameter	Reading	Known	Units	Recover%	Limits%	File
Calcium	51.5	50.0	mg/L	103	95.0 - 105	119532068





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 01/31/2019

Page 8 of 13

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Calcium	25.3	25.0	mg/L	101	90.0 - 110	119532071

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Calcium	819264	4.98	5.04	5.00	85.0 - 115	99.6	101	mg/L	1.20	25.0

Analytical Set 819905

EPA 200.7 4.4

Blank

Parameter	PrepSet	Reading	MDL	MDL	Units	File
Phosphorus	819264	ND	0.0388	0.100	mg/L	119539202
Silicon Recoverable	819264	0.0346	0.0148	0.100	mg/L	119539202

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Silicon Recoverable	4.89	5.00	mg/L	97.8	90.0 - 110	119539198
	4.85	5.00	mg/L	97.0	90.0 - 110	119539204
	4.97	5.00	mg/L	99.4	90.0 - 110	119539216

ICL

Parameter	Reading	Known	Units	Recover%	Limits%	File
Silicon Recoverable	10.1	10.0	mg/L	101	95.0 - 105	119539192

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Silicon Recoverable	4.86	5.00	mg/L	97.2	90.0 - 110	119539191

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Phosphorus	819264	3.91	4.07	4.00	85.0 - 115	97.8	102	mg/L	4.01	25.0
Silicon Recoverable	819264	3.77	3.92	4.00	85.0 - 115	94.2	98.0	mg/L	3.90	25.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Phosphorus	1751532	4.09	3.95	ND	4.00	75.0 - 125	102	98.8	mg/L	3.48	25.0
Silicon Recoverable	1751532	10.3	9.91	6.24	4.00	75.0 - 125	102	91.8	mg/L	10.1	25.0

Analytical Set 819140

EPA 524.2 4.1

BFB

Parameter	Sample	RefMass	Reading	%	Limits%	File
BFB Mass 173	819140	174	0	0.0	0 - 2.00	119523378
BFB Mass 174	819140	95.0	22557	56.1	50.0 - 100	119523378
BFB Mass 175	819140	174	1713	7.6	5.00 - 9.00	119523378
BFB Mass 176	819140	174	21752	96.4	95.0 - 101	119523378
BFB Mass 177	819140	176	1532	7.0	5.00 - 9.00	119523378
BFB Mass 50	819140	95.0	10071	25.1	15.0 - 40.0	119523378
BFB Mass 75	819140	95.0	23152	57.6	30.0 - 80.0	119523378
BFB Mass 95	819140	95.0	40197	100.0	100 - 100	119523378
BFB Mass 96	819140	95.0	2461	6.1	5.00 - 9.00	119523378

Blank

Parameter	PrepSet	Reading	MDL	MDL	Units	File
Bromodichloromethane	819140	ND	0.308	1.00	ug/L	119523382





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 01/31/2019

Page 9 of 13

Blank

Parameter	PrepSet	Reading	MDL	MDL	Units	File
Bromoform	819140	ND	0.418	1.00	ug/L	119523382
Chloroform	819140	ND	0.213	1.00	ug/L	119523382
Dibromochloromethane	819140	ND	0.327	1.00	ug/L	119523382

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Bromodichloromethane	19.6	20.0	ug/L	97.9	70.0 - 130	119523379
Bromoform	18.6	20.0	ug/L	93.2	70.0 - 130	119523379
Chloroform	19.6	20.0	ug/L	98.2	70.0 - 130	119523379
Dibromochloromethane	20.0	20.0	ug/L	100	70.0 - 130	119523379

IS Areas

Parameter	Sample	Type	Reading	CCVISM	Low	High	File	PrepSet
1,4-DichlorobenzeneD4 (ISTD)	819140	CCV	150200	150200	75100	225300	119523379	819140
	819140	LCS	153700	150200	75100	225300	119523380	819140
	819140	LCS Dup	162700	150200	75100	225300	119523381	819140
	819140	Blank	126800	150200	75100	225300	119523382	819140
ChlorobenzeneD5 (ISTD)	819140	CCV	252800	252800	126400	379300	119523379	819140
	819140	LCS	257100	252800	126400	379300	119523380	819140
	819140	LCS Dup	277900	252800	126400	379300	119523381	819140
	819140	Blank	233700	252800	126400	379300	119523382	819140
1,4-DichlorobenzeneD4 (ISTD)	1752260	UNKNOWN	155200	150200	75100	225300	119523384	819140
ChlorobenzeneD5 (ISTD)	1752260	UNKNOWN	288600	252800	126400	379300	119523384	819140
1,4-DichlorobenzeneD4 (ISTD)	1752261	UNKNOWN	130300	150200	75100	225300	119523385	819140
ChlorobenzeneD5 (ISTD)	1752261	UNKNOWN	243800	252800	126400	379300	119523385	819140
1,4-DichlorobenzeneD4 (ISTD)	1752280	MS	166000	150200	75100	225300	119523387	819140
ChlorobenzeneD5 (ISTD)	1752280	MSD	169300	150200	75100	225300	119523388	819140
	1752280	MS	291600	252800	126400	379300	119523387	819140
	1752280	MSD	290300	252800	126400	379300	119523388	819140

IS RetTime

Parameter	Sample	Type	Reading	CCVISM	Low	High	File	PrepSet
1,4-DichlorobenzeneD4 (ISTD)	819140	CCV	11.18	11.18	11.12	11.24	119523379	819140
	819140	LCS	11.18	11.18	11.12	11.24	119523380	819140
	819140	LCS Dup	11.18	11.18	11.12	11.24	119523381	819140
	819140	Blank	11.18	11.18	11.12	11.24	119523382	819140
ChlorobenzeneD5 (ISTD)	819140	CCV	8.818	8.818	8.758	8.878	119523379	819140
	819140	LCS	8.818	8.818	8.758	8.878	119523380	819140
	819140	LCS Dup	8.818	8.818	8.758	8.878	119523381	819140
	819140	Blank	8.818	8.818	8.758	8.878	119523382	819140
1,4-DichlorobenzeneD4 (ISTD)	1752260	UNKNOWN	11.18	11.18	11.12	11.24	119523384	819140
ChlorobenzeneD5 (ISTD)	1752260	UNKNOWN	8.818	8.818	8.758	8.878	119523384	819140
1,4-DichlorobenzeneD4 (ISTD)	1752261	UNKNOWN	11.18	11.18	11.12	11.24	119523385	819140
ChlorobenzeneD5 (ISTD)	1752261	UNKNOWN	8.818	8.818	8.758	8.878	119523385	819140
1,4-DichlorobenzeneD4 (ISTD)	1752280	MS	11.18	11.18	11.12	11.24	119523387	819140
	1752280	MSD	11.18	11.18	11.12	11.24	119523388	819140

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201



Quality Control

IS RetTime

Parameter	Sample	Type	Reading	CCVISM	Low	High	File	PrepSet
ChlorobenzeneD5 (ISTD)	1752280	MS	8.818	8.818	8.758	8.878	119523387	819140
	1752280	MSD	8.818	8.818	8.758	8.878	119523388	819140

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Bromodichloromethane	819140	21.3	19.5	20.0	70.0 - 130	106	97.5	ug/L	8.35	30.0
Bromoform	819140	20.8	18.6	20.0	70.0 - 130	104	93.0	ug/L	11.2	30.0
Chloroform	819140	20.2	18.2	20.0	70.0 - 130	101	91.0	ug/L	10.4	30.0
Dibromochloromethane	819140	21.1	18.9	20.0	70.0 - 130	106	94.5	ug/L	11.5	30.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Bromodichloromethane	1752280	14.6	16.0	2.44	16.0	67.1 - 133	76.0	84.8	ug/L	10.9	30.0
Bromoform	1752280	17.4	18.6	5.03	16.0	58.4 - 125	77.3	84.8	ug/L	9.25	30.0
Chloroform	1752280	14.1	15.4	1.48	16.0	62.8 - 138	78.9	87.0	ug/L	9.80	30.0
Dibromochloromethane	1752280	15.2	16.4	2.59	16.0	60.7 - 129	78.8	86.3	ug/L	9.08	30.0

Surrogate

Parameter	Sample	Type	Reading	Known	Units	Recover%	Limits%	File
1,2-DCA-d4 (SURR)	819140	CCV	17.8	20.0	ug/L	89.0	70.0 - 130	119523379
	819140	LCS	17.9	20.0	ug/L	89.5	70.0 - 130	119523380
	819140	LCS Dup	17.0	20.0	ug/L	85.0	70.0 - 130	119523381
	819140	Blank	17.9	20.0	ug/L	89.5	70.0 - 130	119523382
Bromofluorobenzene (SURR)	819140	CCV	19.9	20.0	ug/L	99.5	70.0 - 130	119523379
	819140	LCS	19.9	20.0	ug/L	99.5	70.0 - 130	119523380
	819140	LCS Dup	20.1	20.0	ug/L	100	70.0 - 130	119523381
	819140	Blank	18.3	20.0	ug/L	91.5	70.0 - 130	119523382
Dibromofluoromethane (SURR)	819140	CCV	17.4	20.0	ug/L	87.0	70.0 - 130	119523379
	819140	LCS	18.2	20.0	ug/L	91.0	70.0 - 130	119523380
	819140	LCS Dup	18.0	20.0	ug/L	90.0	70.0 - 130	119523381
	819140	Blank	18.5	20.0	ug/L	92.5	70.0 - 130	119523382
TolueneD8 (SURR)	819140	CCV	17.4	20.0	ug/L	87.0	70.0 - 130	119523379
	819140	LCS	18.1	20.0	ug/L	90.5	70.0 - 130	119523380
	819140	LCS Dup	17.5	20.0	ug/L	87.5	70.0 - 130	119523381
	819140	Blank	16.4	20.0	ug/L	82.0	70.0 - 130	119523382
1,2-DCA-d4 (SURR)	1752260	UNKNOWN	17.1	20.0	ug/L	85.5	70.0 - 130	119523384
Bromofluorobenzene (SURR)	1752260	UNKNOWN	20.5	20.0	ug/L	102	70.0 - 130	119523384
Dibromofluoromethane (SURR)	1752260	UNKNOWN	18.0	20.0	ug/L	90.0	70.0 - 130	119523384
TolueneD8 (SURR)	1752260	UNKNOWN	17.1	20.0	ug/L	85.5	70.0 - 130	119523384
1,2-DCA-d4 (SURR)	1752261	UNKNOWN	17.5	20.0	ug/L	87.5	70.0 - 130	119523385
Bromofluorobenzene (SURR)	1752261	UNKNOWN	19.6	20.0	ug/L	98.0	70.0 - 130	119523385
Dibromofluoromethane (SURR)	1752261	UNKNOWN	18.4	20.0	ug/L	92.0	70.0 - 130	119523385
TolueneD8 (SURR)	1752261	UNKNOWN	16.6	20.0	ug/L	83.0	70.0 - 130	119523385
1,2-DCA-d4 (SURR)	1752280	MS	16.5	20.0	ug/L	82.5	70.0 - 130	119523387
	1752280	MSD	17.0	20.0	ug/L	85.0	70.0 - 130	119523388
Bromofluorobenzene (SURR)	1752280	MS	20.3	20.0	ug/L	102	70.0 - 130	119523387





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 01/31/2019

Page 11 of 13

Surrogate

Parameter	Sample	Type	Reading	Known	Units	Recover%	Limits%	File
Bromofluorobenzene (SURR)	1752280	MSD	20.0	20.0	ug/L	100	70.0 - 130	119523388
Dibromofluoromethane (SURR)	1752280	MS	17.9	20.0	ug/L	89.5	70.0 - 130	119523387
	1752280	MSD	17.2	20.0	ug/L	86.0	70.0 - 130	119523388
TolueneD8 (SURR)	1752280	MS	17.7	20.0	ug/L	88.5	70.0 - 130	119523387
	1752280	MSD	17.6	20.0	ug/L	88.0	70.0 - 130	119523388

Analytical Set 820069

EPA 552.2 1

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Bromoacetic acid	819669	ND	0.275	5.00	ug/L	119543332
Chloroacetic acid	819669	0.560	0.559	5.00	ug/L	119543332
Dibromoacetic acid	819669	ND	0.198	5.00	ug/L	119543332
Dichloroacetic acid	819669	ND	0.244	5.00	ug/L	119543332
Trichloroacetic acid	819669	ND	0.191	5.00	ug/L	119543332

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Bromoacetic acid	22.0	20.0	ug/L	110	70.0 - 130	119543331
	22.6	20.0	ug/L	113	70.0 - 130	119543349
	22.5	20.0	ug/L	113	70.0 - 130	119543359
Chloroacetic acid	20.3	20.0	ug/L	101	70.0 - 130	119543331
	22.4	20.0	ug/L	112	70.0 - 130	119543349
	22.3	20.0	ug/L	111	70.0 - 130	119543359
Dibromoacetic acid	20.4	20.0	ug/L	102	70.0 - 130	119543331
	21.4	20.0	ug/L	107	70.0 - 130	119543349
	21.5	20.0	ug/L	108	70.0 - 130	119543359
Dichloroacetic acid	20.3	20.0	ug/L	102	70.0 - 130	119543331
	21.4	20.0	ug/L	107	70.0 - 130	119543349
	21.3	20.0	ug/L	107	70.0 - 130	119543359
Trichloroacetic acid	20.7	20.0	ug/L	103	70.0 - 130	119543331
	22.7	20.0	ug/L	114	70.0 - 130	119543349
	23.0	20.0	ug/L	115	70.0 - 130	119543359

IS Areas

Parameter	Sample	Type	Reading	CCVISM	Low	High	File	PrepSet
1,2,3-Trichloropropane (IS)		CCV	858100	858100	600700	1116000	119543331	820069
		CCV	582600	858100	600700	1116000	119543349	820069
		CCV	628400	858100	600700	1116000	119543359	820069
		Blank	853100	858100	600700	1116000	119543332	819669
		LCS	796800	858100	600700	1116000	119543333	819669
		MS	909500	858100	600700	1116000	119543336	819669
		MSD	814100	858100	600700	1116000	119543337	819669
		MS	863000	858100	600700	1116000	119543339	819669
		MSD	902800	858100	600700	1116000	119543340	819669
		UNKNOWN864200	858100	600700	1116000	119543351	819669	
		UNKNOWN863700	858100	600700	1116000	119543352	819669	

IS RetTime

Parameter	Sample	Type	Reading	CCVISM	Low	High	File	PrepSet
1,2,3-Trichloropropane (IS)		CCV	8.800	8.800	8.740	8.860	119543331	820069

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201



Quality Control

Printed 01/31/2019

Page 12 of 13

IS RetTime

Parameter	Sample	Type	Reading	CCVISM	Low	High	File	PrepSet
1,2,3-Trichloropropane (IS)		CCV	8.800	8.800	8.740	8.860	119543349	820069
		CCV	8.800	8.800	8.740	8.860	119543359	820069
	819669	Blank	8.800	8.800	8.740	8.860	119543332	819669
	819669	LCS	8.800	8.800	8.740	8.860	119543333	819669
	1751375	MS	8.800	8.800	8.740	8.860	119543336	819669
	1751375	MSD	8.800	8.800	8.740	8.860	119543337	819669
	1752099	MS	8.800	8.800	8.740	8.860	119543339	819669
	1752099	MSD	8.800	8.800	8.740	8.860	119543340	819669
	1752260	UNKNOWN	8.800	8.800	8.740	8.860	119543351	819669
	1752261	UNKNOWN	8.800	8.800	8.740	8.860	119543352	819669

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Bromoacetic acid	819669	20.0	22.7	20.0	70.0 - 130	100	114	ug/L	13.1	30.0
Chloroacetic acid	819669	18.8	21.6	20.0	70.0 - 130	94.0	108	ug/L	13.9	30.0
Dibromoacetic acid	819669	19.8	21.6	20.0	70.0 - 130	99.0	108	ug/L	8.70	30.0
Dichloroacetic acid	819669	18.9	21.6	20.0	70.0 - 130	94.5	108	ug/L	13.3	30.0
Trichloroacetic acid	819669	21.1	23.3	20.0	70.0 - 130	106	116	ug/L	9.01	30.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Bromoacetic acid	1751375	14.1	16.4	ND	20.0	30.0 - 150	70.5	82.0	ug/L	15.1	30.0
Chloroacetic acid	1751375	18.9	20.9	1.89	20.0	15.0 - 150	85.0	95.0	ug/L	11.1	30.0
Dibromoacetic acid	1751375	15.4	17.5	1.26	20.0	30.0 - 150	70.7	81.2	ug/L	13.8	30.0
Dichloroacetic acid	1751375	12.8	15.5	ND	20.0	30.0 - 150	64.0	77.5	ug/L	19.1	30.0
Trichloroacetic acid	1751375	14.5	16.9	ND	20.0	30.0 - 150	72.5	84.5	ug/L	15.3	30.0
Bromoacetic acid	1752099	14.1	13.2	ND	20.0	30.0 - 150	70.5	66.0	ug/L	6.59	30.0
Chloroacetic acid	1752099	24.2	22.8	4.72	20.0	15.0 - 150	97.4	90.4	ug/L	7.45	30.0
Dibromoacetic acid	1752099	16.9	16.0	0.673	20.0	30.0 - 150	81.1	76.6	ug/L	5.70	30.0
Dichloroacetic acid	1752099	35.3	31.7	21.5	20.0	30.0 - 150	69.0	51.0	ug/L	30.0	30.0
Trichloroacetic acid	1752099	24.4	23.4	6.24	20.0	30.0 - 150	90.8	85.8	ug/L	5.66	30.0

Surrogate

Parameter	Sample	Type	Reading	Known	Units	Recover%	Limits%	File
2,3-Dibromopropionic (Surr)		CCV	21.3	20.0	ug/L	106	70.0 - 130	119543331
		CCV	22.2	20.0	ug/L	111	70.0 - 130	119543349
		CCV	22.3	20.0	ug/L	112	70.0 - 130	119543359
	819669	Blank	21.7	20.0	ug/L	108	70.0 - 130	119543332
	819669	LCS	20.6	20.0	ug/L	103	70.0 - 130	119543333
	819669	LCS Dup	20.5	20.0	ug/L	102	70.0 - 130	119543334
	1751375	MS	16.8	20.0	ug/L	84.0	70.0 - 130	119543336
	1751375	MSD	18.8	20.0	ug/L	94.0	70.0 - 130	119543337
	1752099	MS	16.8	20.0	ug/L	84.0	70.0 - 130	119543339
	1752099	MSD	15.2	20.0	ug/L	76.0	70.0 - 130	119543340
	1752260	UNKNOWN	15.6	20.0	ug/L	78.0	70.0 - 130	119543351
	1752261	UNKNOWN	20.8	20.0	ug/L	104	70.0 - 130	119543352

Analytical Set 819053

SM 2130 B-2001

AWRL/MRL C

Parameter	Reading	Known	Units	Recover%	Limits%	File
Turbidity	0.29	0.30	NTU	96.7	70.0 - 130	119521326





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 01/31/2019

Page 13 of 13

Blank

Parameter	PrepSet	Reading	MDL	SQL	Units	File
Turbidity	819053	ND	0.300	0.300	NTU	119521324

Duplicate

Parameter	Sample	Result	Unknown	Unit	RPD	Limit%
Turbidity	1752260	ND	ND	NTU		20.0

Mat. Spike

Parameter	Sample	Spike	Unknown	Known	Units	Recovery %	Limits %	File
Turbidity	1752260	40.5	ND	40.0	NTU	101	70.0 - 130	119521330

Standard

Parameter	Sample	Reading	Known	Units	Recover%	Limits%	File
Turbidity	819053	9.78	10.0	NTU	97.8	90.0 - 110	119521325
	819053	96.8	100	NTU	96.8	90.0 - 110	119521327
	819053	9.98	10.0	NTU	99.8	90.0 - 110	119521331
	819053	9.84	10.0	NTU	98.4	90.0 - 110	119521333

Analytical Set **819494**

SM 2320 B-2011

Blank

Parameter	PrepSet	Reading	MDL	SQL	Units	File
Total Alkalinity (as CaCO3)	819494	ND	1.00	1.00	mg/L	119530269

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Total Alkalinity (as CaCO3)	26.6	25.0	mg/L	106	90.0 - 110	119530268
	26.6	25.0	mg/L	106	90.0 - 110	119530282
	26.6	25.0	mg/L	106	90.0 - 110	119530295

Duplicate

Parameter	Sample	Result	Unknown	Unit	RPD	Limit%
Total Alkalinity (as CaCO3)	1752167	203	205	mg/L	0.980	20.0
	1752663	29.0	29.0	mg/L	0	20.0

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Total Alkalinity (as CaCO3)	26.6	25.0	mg/L	106	90.0 - 110	119530267

Mat. Spike

Parameter	Sample	Spike	Unknown	Known	Units	Recovery %	Limits %	File
Total Alkalinity (as CaCO3)	1752167	240	205	25.0	mg/L	140	70.0 - 130	119530272
	1752663	53.2	29.0	25.0	mg/L	96.8	70.0 - 130	119530285

* Out RPD is Relative Percent Difference: $\frac{\text{abs}(r1-r2)}{\text{mean}(r1,r2)} * 100\%$

Recover% is Recovery Percent: $\frac{\text{result}}{\text{known}} * 100\%$

Blank - Method Blank; AWRL/MRL C - Ambient Water Reporting Limit/Minimum Reporting Limit Check Std; CCV - Continuing Calibration Verification; BFB - GC/MS Tuning Compound; ICV - Initial Calibration Verification; LCS - Laboratory Control Sample; CCB - Continuing Calibration Blank



NELAP-accredited #T104704201

Environmental Laboratory, LLC
 1606 E Brazos Suite D, Victoria, Texas 77901 Ph. (361) 572-8224

Chain Of Custody Record

Batch # **79978** TEMP UN-C: **22.0** Page **1** of **1**
 THERM ID # **4** TEMP Corr: **22.0**

Check box if Billing is the same as Report Information

Billing Information

Name: **Victoria, City of** Address: _____
 Attention: **Stephen Robinson** PO # _____
 Project: **AGR-Table 1, List A**
 Comments: **Well 19 & 21**

Requested Analysis: _____ Completed By laboratory: _____
 Phone: _____ FAX: _____
 EMAIL: _____

Sample Information

Collected By:	Client / Field Sample ID	Collected		Matrix	Container			Preservative	Custody Seals Present
		Date	Time		NUMBER	TYPE	Size		
	Well 19	1/18/19	1434	W	P	9	250	<input checked="" type="checkbox"/> H2SO4 <input type="checkbox"/> H3PO4 <input checked="" type="checkbox"/> ICE <input checked="" type="checkbox"/> SDA <input type="checkbox"/> Na2SO3	Yes <input type="checkbox"/> No <input type="checkbox"/> Intact Yes <input type="checkbox"/> No <input type="checkbox"/> LAB Sample Number: S190181600
	Well 21	1/18/19	1511	W	P	9	250	<input checked="" type="checkbox"/> H2SO4 <input type="checkbox"/> H3PO4 <input type="checkbox"/> ICE <input checked="" type="checkbox"/> SDA <input type="checkbox"/> Na2SO3	Yes <input type="checkbox"/> No <input type="checkbox"/> Intact Yes <input type="checkbox"/> No <input type="checkbox"/> LAB Sample Number: S190181604
								<input type="checkbox"/> H2SO4 <input type="checkbox"/> H3PO4 <input type="checkbox"/> ICE <input type="checkbox"/> SDA <input type="checkbox"/> Na2SO3	
								<input type="checkbox"/> H2SO4 <input type="checkbox"/> H3PO4 <input type="checkbox"/> ICE <input type="checkbox"/> SDA <input type="checkbox"/> Na2SO3	
								<input type="checkbox"/> H2SO4 <input type="checkbox"/> H3PO4 <input type="checkbox"/> ICE <input type="checkbox"/> SDA <input type="checkbox"/> Na2SO3	
								<input type="checkbox"/> H2SO4 <input type="checkbox"/> H3PO4 <input type="checkbox"/> ICE <input type="checkbox"/> SDA <input type="checkbox"/> Na2SO3	
								<input type="checkbox"/> H2SO4 <input type="checkbox"/> H3PO4 <input type="checkbox"/> ICE <input type="checkbox"/> SDA <input type="checkbox"/> Na2SO3	
								<input type="checkbox"/> H2SO4 <input type="checkbox"/> H3PO4 <input type="checkbox"/> ICE <input type="checkbox"/> SDA <input type="checkbox"/> Na2SO3	
								<input type="checkbox"/> H2SO4 <input type="checkbox"/> H3PO4 <input type="checkbox"/> ICE <input type="checkbox"/> SDA <input type="checkbox"/> Na2SO3	

Required Turnaround: Routine (6-10 Business days) Expedite / Rush: 1 Business Day 2 Business Days 3 Business Days 5 Business days Other

Remarks: _____

Surcharge will apply to RUSH TAT Authorized BY: _____

Relinquished By: **Stephen Robinson** Date: **1/18/19** Time: **1542**
 Relinquished By: _____ Date: _____ Time: _____

Relinquished By: _____ Date: _____ Time: _____

Relinquished By: _____ Date: _____ Time: _____

*1-18-19 per S. Robinson
 Turbidity & Phosphan
 will be checked by Cov*

BatchNo: 80442

SAMPLE REPORT



T104704328-18-15

Business

Victoria, City of - Stephen Robinson
P O Box 1758
Victoria Tx 77902
Att: Stephen Robinson



Laboratory

B Environmental, LLC.
1606 E Brazos, Suite D
Victoria TX 77901
ph. 361-572-8224

Reference Information

Project: ASR Table 1, List A
Printed: Monday,
February 11,
2019

Re: Victoria, City of - Stephen Robinson

Dear: Stephen Robinson

Attached are the results for sample(s) received on 1/30/2019

The analytical results relate only to the samples tested.
All supporting quality data meets the requirements of NELAC unless noted in the case narrative section of the report.

This report contains 25 pages (including the cover page)

If you have any questions concerning this report, please do not hesitate to call (361) 572-8224 or Fax us at (361) 572-4115

Respectfully Submitted,

Kevin Baros
Laboratory Director



B Environmental, LLC.
1606 E Brazos, Suite D
Victoria TX 77901

BatchNo: 80442

Batch No:

Sample Receipt Checklist

Date Received:

Project

Received By:

Login completed by:

- YES NO Not Present
- YES NO Not Present
- YES NO Not Present
- YES NO
- YES NO
- YES NO
- YES NO
- YES NO
- YES NO
- YES NO
- YES NO >0 <6 °C On Ice
- YES NO No VOA Vials submitted
- YES NO Not Applicable

*TEMP pH Adjusted? Checked By

Any No and/or N/A (not applicable) response must be detailed in the comments section below.

Client contacted PersonContacted

Contacted by: Date Contacted:

Regarding

Comments

Corrective Action





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Printed: 02/08/2019

Page 1 of 9

Results

Report To

B-Environmental
 Kevin C. Baros
 1606 E Brazos St., Suite D
 Victoria, TX 77901

Account
BENV-G

Project
860921

Results

1754878	S190301553	Received: 01/31/2019	
Drinking Water	Collected by: Client	B-Environmental	PO:
	Taken: 01/30/2019 15:00:00		
<hr/>			
<i>Calculation</i>	<i>Prepared:</i>	02/07/2019 16:47:54	<i>Calculated</i> 02/07/2019 16:47:54 <i>CAL</i>
<i>Parameter</i>	<i>Results</i>	<i>Units</i> <i>RL</i>	<i>Flag</i> <i>CAS</i> <i>Bottle</i>
z Phosphorus (as Phosphate)	0.946	mg/L 0.306	
<hr/>			
EPA 200.7 4.4	<i>Prepared:</i> 821236	02/04/2019 12:45:00	<i>Analyzed</i> 821820 02/06/2019 23:02:00 <i>JBP</i>
<i>Parameter</i>	<i>Results</i>	<i>Units</i> <i>RL</i>	<i>Flag</i> <i>CAS</i> <i>Bottle</i>
N Potassium	5.17	mg/L 0.500	7440-09-7 11
<hr/>			
EPA 200.7 4.4	<i>Prepared:</i> 821236	02/04/2019 12:45:00	<i>Analyzed</i> 822021 02/07/2019 15:00:00 <i>JBP</i>
<i>Parameter</i>	<i>Results</i>	<i>Units</i> <i>RL</i>	<i>Flag</i> <i>CAS</i> <i>Bottle</i>
N Phosphorus	0.309	mg/L 0.100	7723-14-0 11
z Silicon Recoverable	6.13	mg/L 0.100	7740-21-3 11
<hr/>			
EPA 200.7 4.4	<i>Prepared:</i> 821236	02/04/2019 12:45:00	<i>Analyzed</i> 822107 02/07/2019 22:39:00 <i>JBP</i>
<i>Parameter</i>	<i>Results</i>	<i>Units</i> <i>RL</i>	<i>Flag</i> <i>CAS</i> <i>Bottle</i>
N Sodium	55.7	mg/L 2.50	7440-23-5 11
<hr/>			
EPA 200.7 4.4	<i>Prepared:</i> 821236	02/04/2019 12:45:00	<i>Analyzed</i> 822107 02/07/2019 22:49:00 <i>JBP</i>
<i>Parameter</i>	<i>Results</i>	<i>Units</i> <i>RL</i>	<i>Flag</i> <i>CAS</i> <i>Bottle</i>
N Calcium	42.5	mg/L 0.500	P 7440-70-2 11
N Magnesium, Total	9.64	mg/L 0.020	7439-95-4 11
<hr/>			
EPA 200.7 4.4 - Calc	<i>Prepared:</i>	02/07/2019 16:47:54	<i>Calculated</i> 02/07/2019 16:47:54 <i>CAL</i>
<i>Parameter</i>	<i>Results</i>	<i>Units</i> <i>RL</i>	<i>Flag</i> <i>CAS</i> <i>Bottle</i>
N Silica (SiO2)	13.1	mg/L 0.214	
<hr/>			
EPA 200.8 5.4	<i>Prepared:</i> 821236	02/04/2019 12:45:00	<i>Analyzed</i> 821607 02/05/2019 18:15:00 <i>LPS</i>
<i>Parameter</i>	<i>Results</i>	<i>Units</i> <i>RL</i>	<i>Flag</i> <i>CAS</i> <i>Bottle</i>
N Aluminum, Total	0.00893	mg/L 0.0025	B 7429-90-5 11





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Printed: 02/08/2019

Page 2 of 9

Results

Sample ID	Client ID	Received
1754878	S190301553	01/31/2019
Drinking Water	Collected by: Client	B-Environmental
	Taken: 01/30/2019 15:00:00	PO:
EPA 300.0 2.1		
Prepared: 821189 02/01/2019 14:53:00 Analyzed 821189 02/01/2019 14:53:00 AMB		
Parameter	Results	Units RL
N Chloride	54.6	mg/L 1.50
N Fluoride	0.545	mg/L 0.500
N Sulfate	20.9	mg/L 1.50
EPA 300.1 1		
Prepared: 821844 02/06/2019 15:56:00 Analyzed 821844 02/06/2019 15:56:00 AMB		
Parameter	Results	Units RL
N Bromate	<5.00	ug/L 5.00
EPA 350.1 2		
Prepared: 820913 02/01/2019 09:30:00 Analyzed 821049 02/01/2019 00:00:00 MLC		
Parameter	Results	Units RL
N Ammonia (as N)	0.483	mg/L 0.020
EPA 524.2 4.1		
Prepared: 821503 02/05/2019 13:46:00 Analyzed 821503 02/05/2019 13:46:00 KLB		
Parameter	Results	Units RL
N Bromodichloromethane	19.1	ug/L 1.00
N Bromoform	2.14	ug/L 1.00
N Chloroform	14.4	ug/L 1.00
N Dibromochloromethane	14.2	ug/L 1.00
EPA 524.2 4.1		
Prepared: 821503 02/06/2019 13:42:20 Calculated 821503 02/06/2019 13:42:20 CAL		
Parameter	Results	Units RL
N Trihalomethanes	0.04984	mg/L 0.001
EPA 552.2 1		
Prepared: 821248 02/04/2019 14:02:02 Analyzed 821745 02/05/2019 17:47:00 EMT		
Parameter	Results	Units RL
N Bromoacetic acid	<5.00	ug/L 5.00
N Chloroacetic acid	<5.00	ug/L 5.00
N Dibromoacetic acid	7.56	ug/L 5.00
N Dichloroacetic acid	12.9	ug/L 5.00
N Trichloroacetic acid	8.62	ug/L 5.00
EPA 552.2 1		
Prepared: 821248 02/04/2019 14:02:02 Calculated 821745 02/08/2019 07:15:41 CAL		
Parameter	Results	Units RL
N HAA5	0.02908	mg/L 0.005
SM 2130 B-2001		
Prepared: 821080 01/31/2019 14:20:00 Analyzed 821080 01/31/2019 14:20:00 DWN		
Parameter	Results	Units RL
N Turbidity	<0.30	NTU 0.30

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Printed: 02/08/2019

Page 3 of 9

Results

1754878	S190301553							Received: 01/31/2019
Drinking Water	Collected by: Client	B-Environmental		PO:				
	Taken: 01/30/2019 15:00:00							
<hr/>								
SM 2320 B-2011	Prepared: 820769	01/31/2019	11:35:00	Analyzed	820769	01/31/2019	11:35:00 ELS	
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Total Alkalinity (as CaCO3)	177	mg/L	1.00			01		
<hr/>								
SM 2340 B-97	Prepared:	02/08/2019	10:27:45	Calculated	02/08/2019	10:27:45	CAL	
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Total Hardness as CaCO3 -Ca/MgEq	146	mg/L	0.500					
<hr/>								
SM 2540 C-97	Prepared: 821613	02/05/2019	07:00:00	Analyzed	821613	02/05/2019	07:00:00 TH2	
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Total Dissolved Solids	308	mg/L	20.0			01		
<hr/>								
SM 2540 D-97	Prepared: 821190	02/01/2019	13:45:00	Analyzed	821190	02/01/2019	13:45:00 TH2	
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Total Suspended Solids	<2.00	mg/L	2.00			01		
<hr/>								
SM 5310 C-2000	Prepared: 820941	01/31/2019	16:06:00	Analyzed	820941	01/31/2019	16:06:00 ALH	
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Total Organic Carbon	2.68	mg/L	0.500			05		

1754879	S190301554							Received: 01/31/2019
Drinking Water	Collected by: Client	B-Environmental		PO:				
	Taken: 01/30/2019 15:25:00							
<hr/>								
Calculation	Prepared:	02/07/2019	16:47:54	Calculated	02/07/2019	16:47:54	CAL	
Parameter	Results	Units	RL	Flag	CAS	Bottle		
Z Phosphorus (as Phosphate)	<0.119	mg/L	0.119					
<hr/>								
EPA 200.7 4.4	Prepared: 821236	02/04/2019	12:45:00	Analyzed	821820	02/06/2019	23:15:00 JBP	
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Potassium	2.71	mg/L	0.500		7440-09-7	11		
<hr/>								
EPA 200.7 4.4	Prepared: 821236	02/04/2019	12:45:00	Analyzed	822021	02/07/2019	15:08:00 JBP	
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Phosphorus	<0.0388	mg/L	0.0388		7723-14-0	11		





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Printed: 02/08/2019

Page 4 of 9

Results

1754879 S190301554		Received: 01/31/2019						
Drinking Water	Collected by: Client	B-Environmental			PO:			
	Taken: 01/30/2019 15:25:00							
EPA 200.7 4.4		Prepared: 821236	02/04/2019	12:45:00	Analyzed 822021	02/07/2019	15:21:00	JBP
Parameter	Results	Units	RL	Flag	CAS	Bottle		
z Silicon Recoverable	10.9	mg/L	0.500		7740-21-3	11		
EPA 200.7 4.4		Prepared: 821236	02/04/2019	12:45:00	Analyzed 822107	02/07/2019	22:59:00	JBP
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Sodium	135	mg/L	2.50		7440-23-5	11		
EPA 200.7 4.4		Prepared: 821236	02/04/2019	12:45:00	Analyzed 822107	02/07/2019	23:03:00	JBP
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Calcium	28.6	mg/L	0.500		7440-70-2	11		
N Magnesium, Total	9.14	mg/L	0.020		7439-95-4	11		
EPA 200.7 4.4 - Calc		Prepared:	02/07/2019	16:47:54	Calculated	02/07/2019	16:47:54	CAL
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Silica (SiO2)	23.3	mg/L	1.07					
EPA 200.8 5.4		Prepared: 821236	02/04/2019	12:45:00	Analyzed 821607	02/05/2019	18:26:00	LPS
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Aluminum, Total	0.00548	mg/L	0.0025	B	7429-90-5	11		
EPA 300.0 2.1		Prepared: 821189	02/01/2019	15:16:00	Analyzed 821189	02/01/2019	15:16:00	AMB
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Chloride	111	mg/L	1.50			01		
N Fluoride	0.600	mg/L	0.500			01		
N Sulfate	7.80	mg/L	1.50			01		
EPA 300.1 1		Prepared: 821844	02/06/2019	16:10:00	Analyzed 821844	02/06/2019	16:10:00	AMB
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Bromate	<5.00	ug/L	5.00			04		
EPA 350.1 2		Prepared: 820913	02/01/2019	09:30:00	Analyzed 821049	02/01/2019	00:00:00	MLC
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Ammonia (as N)	0.012	mg/L	0.020	J		10		
EPA 524.2 4.1		Prepared: 821503	02/05/2019	14:08:00	Analyzed 821503	02/05/2019	14:08:00	KL B
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Bromodichloromethane	<1.00	ug/L	1.00		75-27-4	09		
N Bromoform	<1.00	ug/L	1.00		75-25-2	09		

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Printed: 02/08/2019

Page 5 of 9

Results

Sample ID	Client ID	Received
1754879	S190301554	01/31/2019
Drinking Water	Collected by: Client	B-Environmental
	Taken: 01/30/2019 15:25:00	PO:
EPA 524.2 4.1		
Prepared:	821503 02/05/2019 14:08:00	Analyzed 821503 02/05/2019 14:08:00
KL B		
Parameter	Results	Units RL Flag CAS Bottle
N Chloroform	<1.00	ug/L 1.00 67-66-3 09
N Dibromochloromethane	<1.00	ug/L 1.00 P 124-48-1 09
EPA 524.2 4.1		
Prepared:	821503 02/06/2019 13:42:20	Calculated 821503 02/06/2019 13:42:20
CAL		
Parameter	Results	Units RL Flag CAS Bottle
N Trihalomethanes	<0.001	mg/L 0.001 09
EPA 552.2 1		
Prepared:	821248 02/04/2019 14:02:02	Analyzed 821745 02/05/2019 19:19:00
EMT		
Parameter	Results	Units RL Flag CAS Bottle
N Bromoacetic acid	<5.00	ug/L 5.00 79-08-3 12
N Chloroacetic acid	<5.00	ug/L 5.00 79-11-8 12
N Dibromoacetic acid	<5.00	ug/L 5.00 631-64-1 12
N Dichloroacetic acid	<5.00	ug/L 5.00 79-43-6 12
N Trichloroacetic acid	<5.00	ug/L 5.00 76-03-9 12
EPA 552.2 1		
Prepared:	821248 02/04/2019 14:02:02	Calculated 821745 02/08/2019 07:15:41
CAL		
Parameter	Results	Units RL Flag CAS Bottle
N HAA5	<0.005	mg/L 0.005 12
SM 2130 B-2001		
Prepared:	821080 01/31/2019 14:20:00	Analyzed 821080 01/31/2019 14:20:00
DWN		
Parameter	Results	Units RL Flag CAS Bottle
N Turbidity	2.24	NTU 0.30 01
SM 2320 B-2011		
Prepared:	820769 01/31/2019 11:35:00	Analyzed 820769 01/31/2019 11:35:00
ELS		
Parameter	Results	Units RL Flag CAS Bottle
N Total Alkalinity (as CaCO3)	287	mg/L 1.00 01
SM 2340 B-97		
Prepared:	02/08/2019 10:27:45	Calculated 02/08/2019 10:27:45
CAL		
Parameter	Results	Units RL Flag CAS Bottle
N Total Hardness as CaCO3 -Ca/MgEq	109	mg/L 0.500
SM 2540 C-97		
Prepared:	821181 02/01/2019 11:30:00	Analyzed 821181 02/01/2019 11:30:00
ALW		
Parameter	Results	Units RL Flag CAS Bottle
N Total Dissolved Solids	420	mg/L 50.0 01
SM 2540 D-97		
Prepared:	821190 02/01/2019 13:45:00	Analyzed 821190 02/01/2019 13:45:00
TH2		
Parameter	Results	Units RL Flag CAS Bottle

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Printed: 02/08/2019

Page 6 of 9

Results

1754879	S190301554							Received: 01/31/2019
Drinking Water	Collected by: Client	B-Environmental		PO:				
	Taken: 01/30/2019 15:25:00							
<hr/>								
SM 2540 D-97	Prepared: 821190	02/01/2019	13:45:00	Analyzed	821190	02/01/2019	13:45:00 TH2	
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Total Suspended Solids	<2.00	mg/L	2.00			01		
<hr/>								
SM 5310 C-2000	Prepared: 820941	01/31/2019	16:22:00	Analyzed	820941	01/31/2019	16:22:00 ALH	
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Total Organic Carbon	0.389	mg/L	0.500	J		05		

Sample Preparation

1754878	S190301553							Received: 01/31/2019
<hr/>								
	Prepared: 820663	01/31/2019	00:00:00	Analyzed	820663	01/31/2019	00:00:00 KAT	
z Bottle pH	<2	SU					02	
z Bottle pH	<2	SU					03	
z Bottle pH	<2	SU					05	
Cooler Temperature	0.2	degrees C					01	
Cooler Temperature	0.2	degrees C					02	
Cooler Temperature	0.2	degrees C					03	
Cooler Temperature	0.2	degrees C					04	
Cooler Temperature	0.2	degrees C					05	
Cooler Temperature	0.2	degrees C					06	
Cooler Temperature	0.2	degrees C					07	
Cooler Temperature	0.2	degrees C					08	
Cooler Temperature	0.2	degrees C					09	
<hr/>								
EPA 200.2 2.8	Prepared: 821236	02/04/2019	12:45:00	Analyzed	821236	02/04/2019	12:45:00 TES	
N Liquid Metals Digestion	50/50	ml					02	





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Printed: 02/08/2019

Page 7 of 9

Results

1754878	S190301553								Received: 01/31/2019
<hr/>									
EPA 350.2, Rev. 2.0	Prepared: 820913	02/01/2019	09:30:00	Analyzed	820913	02/01/2019	09:30:00	CRS	
N Ammonia Distillation	50/50	ml						03	
<hr/>									
EPA 524.2 4.1	Prepared: 821503	02/05/2019	13:46:00	Analyzed	821503	02/05/2019	13:46:00	KLB	
N Trihalomethane Expansion Code	Entered							08	
<hr/>									
EPA 552.2 1	Prepared: 821248	02/04/2019	14:02:02	Analyzed	821248	02/04/2019	14:02:02	EMT	
N Haloacetic Acids Extraction	3/40	ml						06	
<hr/>									
EPA 552.2 1	Prepared: 821248	02/04/2019	14:02:02	Analyzed	821745	02/05/2019	17:47:00	EMT	
<hr/>									
N Haloacetic Acids (HAA5)	Entered							14	
<hr/>									
SM 2540 C-97	Prepared: 820914	02/01/2019	10:00:00	Analyzed	820914	02/01/2019	10:00:00	JWK	
<hr/>									
N Total Dissolved Solids Started	Started								
<hr/>									
SM 2540 C-97	Prepared: 821224	02/05/2019	07:00:00	Analyzed	821224	02/05/2019	07:00:00	DWN	
<hr/>									
N Total Dissolved Solids Started	Started								
<hr/>									
SM 2540 D-1997	Prepared: 820959	02/01/2019	13:45:00	Analyzed	820959	02/01/2019	13:45:00	TH2	
<hr/>									
N TSS Set Started	Started								

1754879	S190301554								Received: 01/31/2019
<hr/>									
<hr/>									
<hr/>									
<hr/>									
<hr/>									
<hr/>									
<hr/>									
<hr/>									
<hr/>									
<hr/>									
<hr/>									
z Bottle pH	<2	SU						02	
z Bottle pH	<2	SU						03	
z Bottle pH	<2	SU						05	

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Const Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Printed: 02/08/2019

Page 8 of 9

Results

1754879		S190301554							Received: 01/31/2019	
				Prepared: 820663	01/31/2019	00:00:00	Analyzed 820663	01/31/2019	00:00:00	KAT
Cooler Temperature	0.2		degrees							01
			C							
Cooler Temperature	0.2		degrees							02
			C							
Cooler Temperature	0.2		degrees							03
			C							
Cooler Temperature	0.2		degrees							04
			C							
Cooler Temperature	0.2		degrees							05
			C							
Cooler Temperature	0.2		degrees							06
			C							
Cooler Temperature	0.2		degrees							07
			C							
Cooler Temperature	0.2		degrees							08
			C							
Cooler Temperature	0.2		degrees							09
			C							
EPA 200.2 2.8				Prepared: 821236	02/04/2019	12:45:00	Analyzed 821236	02/04/2019	12:45:00	TES
N Liquid Metals Digestion	50/50		ml							02
EPA 350.2, Rev. 2.0				Prepared: 820913	02/01/2019	09:30:00	Analyzed 820913	02/01/2019	09:30:00	CRS
N Ammonia Distillation	50/50		ml							03
EPA 524.2 4.1				Prepared: 821503	02/05/2019	14:08:00	Analyzed 821503	02/05/2019	14:08:00	KLB
N Trihalomethane Expansion Code	Entered									09
EPA 552.2 1				Prepared: 821248	02/04/2019	14:02:02	Analyzed 821248	02/04/2019	14:02:02	EMT
N Haloacetic Acids Extraction	3/40		ml							06
EPA 552.2 1				Prepared: 821248	02/04/2019	14:02:02	Analyzed 821745	02/05/2019	19:19:00	EMT
N Haloacetic Acids (HAA5)	Entered									12
SM 2540 C-97				Prepared: 820914	02/01/2019	10:00:00	Analyzed 820914	02/01/2019	10:00:00	JWK

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Printed: 02/08/2019

Page 9 of 9

Results

1754879	S190301554							Received: 01/31/2019
SM 2540 C-97	Prepared: 820914	02/01/2019	10:00:00	Analyzed 820914	02/01/2019	10:00:00	JWK	
N Total Dissolved Solids Started	Started							
SM 2540 D-1997	Prepared: 820959	02/01/2019	13:45:00	Analyzed 820959	02/01/2019	13:45:00	TH2	
N TSS Set Started	Started							

Qualifiers:

- J - Analyte detected below quantitation limit
- B - Analyte detected in the associated method blank
- P - Spike recovery outside control limits due to matrix effects.

We report results on an As Received or wet basis unless marked Dry Weight. Unless otherwise noted, testing was performed at Ana-labs corporate laboratory that holds the following Federal and State certificates: EPA Lab Number TX00063, US Department of Agriculture Soil Import Permit P330-17-00117, Texas Commission on Environmental Quality Commercial Drinking Water Lab Approval (Lab ID: TX219), Texas Commission on Environmental Quality NELAP T104704201-19-15, Louisiana Department of Environmental Quality Laboratory Certification (NELAP, LELAP) #02008, Louisiana Department of Health and Hospitals Drinking Water (NELAP) Certificate No LA026, Oklahoma Department of Environmental Quality TNI Laboratory Accreditation Program Certificate No. 2018-126, Arkansas Department of Environmental Quality Certification #18-068-0. The Accredited column designates accreditation by N -- NELAC, or z -- not covered under NELAC scope of accreditation.

These analytical results relate to the sample tested. This report may NOT be reproduced EXCEPT in FULL without written approval of Ana-Lab Corp. Unless otherwise specified, these test results meet the requirements of NELAC.

RL is the Reporting Limit (sample specific quantitation limit) and is at or above the Method Detection Limit (MDL). CAS is Chemical Abstract Service number. RL is our Reporting Limit, or Minimum Quantitation Level. The RL takes into account the Instrument Detection Limit (IDL), Method Detection Limit (MDL), and Practical Quantitation Limit (PQL), and any dilutions and/or concentrations performed during sample preparation (EQL). Our analytical result must be above this RL before we report a value in the 'Results' column of our report (without a 'J' flag). Otherwise, we report ND (Not Detected above RL), because the result is "<" (less than) the number in the RL column.

MAL is Minimum Analytical Level and is typically from regulatory agencies. Unless we report a result in the result column, or interferences prevent it, we work to have our RL at or below the MAL.

Trey Peery, MA, Project Manager





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 02/08/2019

Page 1 of 13

Report To

B-Environmental
 Kevin C. Baros
 1606 E Brazos St., Suite D
 Victoria, TX 77901

Account
BENV-G

Project
860921

Analytical Set **821049**

EPA 350.1 2

Blank						
Parameter	PrepSet	Reading	MDL	SQL	Units	File
Ammonia (as N)	820913	ND	0.00356	0.020	mg/L	119561712

CCV						
Parameter	Reading	Known	Units	Recover%	Limits%	File
Ammonia (as N)	2.10	2.00	mg/L	105	90.0 - 110	119561673
	2.03	2.00	mg/L	102	90.0 - 110	119561682
	2.15	2.00	mg/L	108	90.0 - 110	119561693
	2.08	2.00	mg/L	104	90.0 - 110	119561700
	1.94	2.00	mg/L	97.0	90.0 - 110	119561707
	1.96	2.00	mg/L	98.0	90.0 - 110	119561717
	2.18	2.00	mg/L	109	90.0 - 110	119561728
	2.12	2.00	mg/L	106	90.0 - 110	119561734
	2.05	2.00	mg/L	102	90.0 - 110	119561742
	2.10	2.00	mg/L	105	90.0 - 110	119561743

Duplicate						
Parameter	Sample	Result	Unknown	Unit	RPD	Limit%
Ammonia (as N)	1754826	0.018	0.022	mg/L	20.0	20.0
	1754827	0.014	0.012	mg/L	15.4	20.0

ICV						
Parameter	Reading	Known	Units	Recover%	Limits%	File
Ammonia (as N)	2.04	2.00	mg/L	102	90.0 - 110	119561672

LCS Dup										
Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Ammonia (as N)	820913	1.91	1.86	2.00	90.0 - 110	95.5	93.0	mg/L	2.65	20.0

Mat. Spike								
Parameter	Sample	Spike	Unknown	Known	Units	Recovery %	Limits %	File
Ammonia (as N)	1754826	1.80	0.022	2.00	mg/L	88.9	80.0 - 120	119561718
	1754827	1.74	0.012	2.00	mg/L	87.0	80.0 - 120	119561721

Analytical Set **821181**

SM 2540 C-97

Blank						
Parameter	PrepSet	Reading	MDL	SQL	Units	File
Total Dissolved Solids	821181	ND	5.00	5.00	mg/L	119564809

ControlBlk						
Parameter	PrepSet	Reading	MDL	SQL	Units	File
Total Dissolved Solids	821181	0.0004			grams	119564796

Duplicate						
Parameter	Sample	Result	Unknown	Unit	RPD	Limit%

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 02/08/2019

Page 2 of 13

Duplicate

Parameter	Sample	Result	Unknown	Unit	RPD	Limit%
Total Dissolved Solids	1754286	2420	2480	mg/L	2.45	20.0

LCS

Parameter	PrepSet	Reading	Known	Units	Recover%	Limits	File
Total Dissolved Solids	821181	202	200	mg/L	101	85.0 - 115	119564810

Standard

Parameter	Sample	Reading	Known	Units	Recover%	Limits%	File
Total Dissolved Solids		102	100	mg/L	102	90.0 - 110	119564797

Analytical Set 821190

SM 2540 D-97

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Total Suspended Solids	821190	ND	2	2	mg/L	119564977

ControlBlk

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Total Suspended Solids	821190	0			grams	119564976

Duplicate

Parameter	Sample	Result	Unknown	Unit	RPD	Limit%
Total Suspended Solids	1754844	4.80	4.27	mg/L	11.7	20.0
	1754871	7.56	7.78	mg/L	2.87	20.0
	1755500	8.57	8.57	mg/L	0	20.0

LCS

Parameter	PrepSet	Reading	Known	Units	Recover%	Limits	File
Total Suspended Solids	821190	54.0	50.0	mg/L	108	90.0 - 110	119565010

Standard

Parameter	Sample	Reading	Known	Units	Recover%	Limits%	File
Total Suspended Solids		98.0	100	mg/L	98.0	90.0 - 110	119565009

Analytical Set 821613

SM 2540 C-97

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Total Dissolved Solids	821613	ND	5.00	5.00	mg/L	119572430

ControlBlk

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Total Dissolved Solids	821613	0.0004			grams	119572417

Duplicate

Parameter	Sample	Result	Unknown	Unit	RPD	Limit%
Total Dissolved Solids	1754287	2190	2190	mg/L	0	20.0

LCS

Parameter	PrepSet	Reading	Known	Units	Recover%	Limits	File
Total Dissolved Solids	821613	202	200	mg/L	101	85.0 - 115	119572431

Standard

Parameter	Sample	Reading	Known	Units	Recover%	Limits%	File
Total Dissolved Solids		96.0	100	mg/L	96.0	90.0 - 110	119572418





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 02/08/2019

Page 3 of 13

Analytical Set **821189**

EPA 300.0 2.1

AWRL/MRL C

Parameter	Reading	Known	Units	Recover%	Limits%	File
Fluoride	0.135	0.100	mg/L	135	50.0 - 150	119564951

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Chloride	821189	0.059	0.0053	0.300	mg/L	119564950
Fluoride	821189	ND	0.00863	0.050	mg/L	119564950
Sulfate	821189	0.080	0.00775	0.300	mg/L	119564950

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Chloride	10.2	10.0	mg/L	102	90.0 - 110	119564947
	10.3	10.0	mg/L	103	90.0 - 110	119564961
	10.3	10.0	mg/L	103	90.0 - 110	119564975
Fluoride	10.4	10.0	mg/L	104	90.0 - 110	119564947
	10.5	10.0	mg/L	105	90.0 - 110	119564961
	10.4	10.0	mg/L	104	90.0 - 110	119564975
Sulfate	10.0	10.0	mg/L	100	90.0 - 110	119564947
	10.3	10.0	mg/L	103	90.0 - 110	119564961
	10.1	10.0	mg/L	101	90.0 - 110	119564975

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Chloride	821189	4.92	4.93	5.00	85.0 - 110	98.4	98.6	mg/L	0.203	20.0
Fluoride	821189	5.09	5.08	5.00	88.0 - 110	102	102	mg/L	0.197	20.0
Sulfate	821189	5.12	5.14	5.00	88.0 - 110	102	103	mg/L	0.390	20.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Chloride	1754304	13.9	14.0	5.79	10.0	80.0 - 120	81.1	82.1	mg/L	1.23	20.0
Fluoride	1754304	9.23	9.18	0.670	10.0	80.0 - 120	85.6	85.1	mg/L	0.586	20.0
Sulfate	1754304	23.4	23.6	14.5	10.0	80.0 - 120	89.0	91.0	mg/L	2.22	20.0
Chloride	1755441	35.9	35.6	27.6	10.0	80.0 - 120	83.0	80.0	mg/L	3.68	20.0
Fluoride	1755441	9.00	9.00	0.400	10.0	80.0 - 120	86.0	86.0	mg/L	0	20.0
Sulfate	1755441	18.6	17.8	9.11	10.0	80.0 - 120	94.9	86.9	mg/L	8.80	20.0

Analytical Set **821844**

EPA 300.1 1

AWRL/MRL C

Parameter	Reading	Known	Units	Recover%	Limits%	File
Bromate	5.00	5.00	ug/L	100	75.0 - 125	119577294

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Bromate	821844	ND	2.06	5.00	ug/L	119577295
Bromate	821844	ND	2.06	5.00	ug/L	119577298

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Bromate	556	500	ug/L	111	85.0 - 115	119577291
	552	500	ug/L	110	85.0 - 115	119577309
	532	500	ug/L	106	85.0 - 115	119577322





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 02/08/2019

Page 4 of 13

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Bromate	821844	94.7	99.8	100	85.0 - 115	94.7	99.8	ug/L	5.24	25.0
	821844	94.7	103	100	85.0 - 115	94.7	103	ug/L	8.40	25.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Bromate	1755571	216	211	ND	200	80.0 - 120	108	106	ug/L	2.34	20.0
	1755572	196	217	ND	200	80.0 - 120	98.0	108	ug/L	10.2	20.0

Analytical Set 820941

SM 5310 C-2000

AWRL/MRL C

Parameter	Reading	Known	Units	Recover%	Limits%	File
Total Organic Carbon	2.16	2.00	mg/L	108	75.0 - 125	119560062

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Total Organic Carbon	820941	ND	0.0618	0.500	mg/L	119560061

CCB

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Total Organic Carbon	820941	ND	0.0618	0.500	mg/L	119560055
	820941	ND	0.0618	0.500	mg/L	119560070

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Total Organic Carbon	9.82	10.0	mg/L	98.2	90.0 - 110	119560058
	9.57	10.0	mg/L	95.7	90.0 - 110	119560071

ICL

Parameter	Reading	Known	Units	Recover%	Limits%	File
Total Organic Carbon	19.1	20.0	mg/L	95.5	90.0 - 110	119560057

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Total Organic Carbon	9.55	10.0	mg/L	95.5	90.0 - 110	119560059

LCS

Parameter	PrepSet	Reading	Known	Units	Recover%	Limits	File
Total Organic Carbon	820941	5.07	5.00	mg/L	101	89.8 - 111	119560060

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Total Organic Carbon	1755045	11.2	11.2	0.872	10.0	92.5 - 112	103	103	mg/L	0	20.0

Standard

Parameter	Sample	Reading	Known	Units	Recover%	Limits%	File
Total Organic Carbon		50.0	50.0	mg/L	100	90.0 - 110	119560056

Analytical Set 821607

EPA 200.8 5.4

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Aluminum, Total	821236	0.00347	0.00204	0.0025	mg/L	119572213

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
-----------	---------	-------	-------	----------	---------	------

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 02/08/2019

Page 5 of 13

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Aluminum, Total	0.0485	0.05	mg/L	97.0	90.0 - 110	119572172
	0.048	0.05	mg/L	96.0	90.0 - 110	119572179
	0.0486	0.05	mg/L	97.2	90.0 - 110	119572189
	0.0479	0.05	mg/L	95.8	90.0 - 110	119572211
	0.0465	0.05	mg/L	93.0	90.0 - 110	119572221
	0.0469	0.05	mg/L	93.8	90.0 - 110	119572232

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Aluminum, Total	0.0515	0.05	mg/L	103	90.0 - 110	119572138

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Aluminum, Total	821236	0.492	0.500	0.500	85.0 - 115	98.4	100	mg/L	1.61	20.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Aluminum, Total	1754878	0.489	0.498	0.00893	0.500	70.0 - 130	96.0	97.8	mg/L	1.86	20.0
	1754888	0.485	0.484	0.00477	0.500	70.0 - 130	96.0	95.8	mg/L	0.208	20.0

Analytical Set 821820

EPA 200.7 4.4

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Calcium	821236	0.245	0.0419	0.500	mg/L	119576384
Magnesium, Total	821236	ND	0.0102	0.020	mg/L	119576384
Potassium	821236	0.116	0.0765	0.500	mg/L	119576384

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Potassium	26.4	25.0	mg/L	106	90.0 - 110	119576380
	27.4	25.0	mg/L	110	90.0 - 110	119576390
	25.0	25.0	mg/L	100	90.0 - 110	119576401
	24.7	25.0	mg/L	98.8	90.0 - 110	119576412
	24.6	25.0	mg/L	98.4	90.0 - 110	119576422

ICL

Parameter	Reading	Known	Units	Recover%	Limits%	File
Potassium	51.8	50.0	mg/L	104	95.0 - 105	119576315

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Potassium	25.9	25.0	mg/L	104	90.0 - 110	119576318

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Calcium	821236	5.25	5.19	5.00	85.0 - 115	105	104	mg/L	1.15	25.0
Magnesium, Total	821236	5.55	5.56	5.00	85.0 - 115	111	111	mg/L	0.180	25.0
Potassium	821236	5.40	5.38	5.00	85.0 - 115	108	108	mg/L	0.371	25.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Calcium	1754878	52.4	52.5	46.4	5.00	75.0 - 125	120	122	mg/L	1.65	25.0
Magnesium, Total	1754878	15.7	16.0	9.93	5.00	75.0 - 125	115	121	mg/L	5.07	25.0

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 02/08/2019

Page 6 of 13

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Potassium	1754878	10.8	10.9	5.17	5.00	75.0 - 125	113	115	mg/L	1.76	25.0
Calcium	1754888	128	124	121	5.00	75.0 - 125	140 *	60.0 *	mg/L	80.0 *	25.0
Magnesium, Total	1754888	53.9	52.7	48.6	5.00	75.0 - 125	106	82.0	mg/L	25.5 *	25.0
Potassium	1754888	23.5	22.8	15.6	5.00	75.0 - 125	158 *	144 *	mg/L	9.27	25.0

Analytical Set 822021

EPA 200.7 4.4

Blank

Parameter	PrepSet	Reading	MDL	MDL	Units	File
Phosphorus	821236	ND	0.0388	0.100	mg/L	119580721
Silicon Recoverable	821236	0.0764	0.0148	0.100	mg/L	119580721

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Phosphorus	9.90	10.0	mg/L	99.0	90.0 - 110	119580712
	9.34	10.0	mg/L	93.4	90.0 - 110	119580723
	9.42	10.0	mg/L	94.2	90.0 - 110	119580734
Silicon Recoverable	4.91	5.00	mg/L	98.2	90.0 - 110	119580712
	4.81	5.00	mg/L	96.2	90.0 - 110	119580723
	4.70	5.00	mg/L	94.0	90.0 - 110	119580734

ICL

Parameter	Reading	Known	Units	Recover%	Limits%	File
Phosphorus	24.9	25.0	mg/L	99.6	95.0 - 105	119580710
Silicon Recoverable	10.0	10.0	mg/L	100	95.0 - 105	119580710

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Phosphorus	10.2	10.0	mg/L	102	90.0 - 110	119580711
Silicon Recoverable	5.14	5.00	mg/L	103	90.0 - 110	119580711

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Phosphorus	821236	3.81	3.86	4.00	85.0 - 115	95.2	96.5	mg/L	1.30	25.0
Silicon Recoverable	821236	3.68	3.74	4.00	85.0 - 115	92.0	93.5	mg/L	1.62	25.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Phosphorus	1754878	4.10	4.17	0.309	4.00	75.0 - 125	94.8	96.5	mg/L	1.83	25.0
Silicon Recoverable	1754878	9.70	9.56	6.13	4.00	75.0 - 125	89.2	85.8	mg/L	4.00	25.0
Phosphorus	1754888	4.12	4.12	ND	4.00	75.0 - 125	103	103	mg/L	0	25.0
Silicon Recoverable	1754888	21.5	21.5	17.0	4.00	75.0 - 125	112	112	mg/L	0	25.0

Analytical Set 822107

EPA 200.7 4.4

Blank

Parameter	PrepSet	Reading	MDL	MDL	Units	File
Calcium	821236	0.130	0.0419	0.500	mg/L	119582476
Magnesium, Total	821236	ND	0.0102	0.020	mg/L	119582476
Sodium	821236	0.939	0.0315	0.500	mg/L	119582476

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Calcium	24.9	25.0	mg/L	99.6	90.0 - 110	119582412

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 02/08/2019

Page 7 of 13

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File	
Calcium	24.4	25.0	mg/L	97.6	90.0 - 110	119582424	
	24.5	25.0	mg/L	98.0	90.0 - 110	119582434	
	25.8	25.0	mg/L	103	90.0 - 110	119582445	
	24.8	25.0	mg/L	99.2	90.0 - 110	119582456	
	26.0	25.0	mg/L	104	90.0 - 110	119582467	
	24.9	25.0	mg/L	99.6	90.0 - 110	119582477	
	24.8	25.0	mg/L	99.2	90.0 - 110	119582488	
	24.0	25.0	mg/L	96.0	90.0 - 110	119582498	
	Magnesium, Total	26.8	25.0	mg/L	107	90.0 - 110	119582467
		25.6	25.0	mg/L	102	90.0 - 110	119582477
26.3		25.0	mg/L	105	90.0 - 110	119582488	
26.1		25.0	mg/L	104	90.0 - 110	119582498	
Sodium		24.1	25.0	mg/L	96.4	90.0 - 110	119582412
	23.6	25.0	mg/L	94.4	90.0 - 110	119582424	
	24.4	25.0	mg/L	97.6	90.0 - 110	119582434	
	25.6	25.0	mg/L	102	90.0 - 110	119582445	
	24.5	25.0	mg/L	98.0	90.0 - 110	119582456	
	25.8	25.0	mg/L	103	90.0 - 110	119582467	
	24.7	25.0	mg/L	98.8	90.0 - 110	119582477	
	25.4	25.0	mg/L	102	90.0 - 110	119582488	
	25.2	25.0	mg/L	101	90.0 - 110	119582498	
	24.4	25.0	mg/L	97.6	90.0 - 110	119582509	
	24.2	25.0	mg/L	96.8	90.0 - 110	119582520	
	24.2	25.0	mg/L	96.8	90.0 - 110	119582531	
	24.1	25.0	mg/L	96.4	90.0 - 110	119582541	

Dir. SPKD

Parameter	Sample	DSPK	DSPKD	UNK	Known	Limits%	DSPK%	DSPKD%	Units	RPD	Limit%
Sodium	1754878	75.0	75.5	55.7	25.0	75.0 - 125	77.2	79.2	mg/L	0.664	25.0

Direct SPK

Parameter	Sample	DSPK	UNK	Known	Limits%	DSPK%	Units
Sodium	1754878	75.0	55.7	25.0	75.0 - 125	77.2	mg/L 25.0

ICL

Parameter	Reading	Known	Units	Recover%	Limits%	File
Calcium	50.6	50.0	mg/L	101	95.0 - 105	119582395
Magnesium, Total	51.8	50.0	mg/L	104	95.0 - 105	119582395
Sodium	51.7	50.0	mg/L	103	95.0 - 105	119582395

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Calcium	24.7	25.0	mg/L	98.8	90.0 - 110	119582398
Magnesium, Total	25.6	25.0	mg/L	102	90.0 - 110	119582398
Sodium	23.9	25.0	mg/L	95.6	90.0 - 110	119582398

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Calcium	821236	4.89	5.10	5.00	85.0 - 115	97.8	102	mg/L	4.20	25.0
Magnesium, Total	821236	4.81	5.02	5.00	85.0 - 115	96.2	100	mg/L	4.27	25.0
Sodium	821236	4.68	4.84	5.00	85.0 - 115	93.6	96.8	mg/L	3.36	25.0





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 02/08/2019

Page 8 of 13

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Calcium	1754878	46.7	45.9	42.5	5.00	75.0 - 125	84.0	68.0 *	mg/L	21.1	25.0
Magnesium, Total	1754878	14.8	14.4	9.64	5.00	75.0 - 125	103	95.2	mg/L	8.06	25.0
Sodium	1754878	60.0	59.3	55.2	5.00	75.0 - 125	96.0	82.0	mg/L	15.7	25.0
Calcium	1754888	102	104	102	5.00	75.0 - 125	0 *	40.0 *	mg/L	200 *	25.0
Magnesium, Total	1754888	46.4	47.5	43.7	5.00	75.0 - 125	54.0 *	76.0	mg/L	33.8 *	25.0
Sodium	1754888	894	920	940	5.00	75.0 - 125	-920 *	-400 *	mg/L	2.87	25.0

Analytical Set 821503

EPA 524.2 4.1

BFB

Parameter	Sample	RefMass	Reading	%	Limits%	File
BFB Mass 173	821503	174	18	0.4	0 - 2.00	119570315
BFB Mass 174	821503	95.0	4946	61.0	50.0 - 100	119570315
BFB Mass 175	821503	174	280	5.7	5.00 - 9.00	119570315
BFB Mass 176	821503	174	4736	95.8	95.0 - 101	119570315
BFB Mass 177	821503	176	286	6.0	5.00 - 9.00	119570315
BFB Mass 50	821503	95.0	1926	23.8	15.0 - 40.0	119570315
BFB Mass 75	821503	95.0	4699	58.0	30.0 - 80.0	119570315
BFB Mass 95	821503	95.0	8104	100.0	100 - 100	119570315
BFB Mass 96	821503	95.0	532	6.6	5.00 - 9.00	119570315

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Bromodichloromethane	821503	ND	0.308	1.00	ug/L	119570319
	821503	ND	0.308	1.00	ug/L	119573200
Bromoform	821503	ND	0.418	1.00	ug/L	119570319
	821503	ND	0.418	1.00	ug/L	119573200
Chloroform	821503	ND	0.213	1.00	ug/L	119570319
	821503	ND	0.213	1.00	ug/L	119573200
Dibromochloromethane	821503	ND	0.327	1.00	ug/L	119570319
	821503	ND	0.327	1.00	ug/L	119573200

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Bromodichloromethane	18.8	20.0	ug/L	93.8	70.0 - 130	119570316
Bromoform	17.5	20.0	ug/L	87.6	70.0 - 130	119570316
Chloroform	19.5	20.0	ug/L	97.6	70.0 - 130	119570316
Dibromochloromethane	17.2	20.0	ug/L	85.9	70.0 - 130	119570316

IS Areas

Parameter	Sample	Type	Reading	CCVISM	Low	High	File	PrepSet
1,4-DichlorobenzeneD4 (ISTD)	821503	CCV	122100	122100	61050	183100	119570316	821503
	821503	LCS	126600	122100	61050	183100	119570317	821503
	821503	LCS Dup	124400	122100	61050	183100	119570318	821503
	821503	Blank	104300	122100	61050	183100	119570319	821503
	821503	Blank	122000	122100	61050	183100	119573200	821503
ChlorobenzeneD5 (ISTD)	821503	CCV	242200	242200	121100	363300	119570316	821503
	821503	LCS	251300	242200	121100	363300	119570317	821503
	821503	LCS Dup	242800	242200	121100	363300	119570318	821503
	821503	Blank	221300	242200	121100	363300	119570319	821503
	821503	Blank	262000	242200	121100	363300	119573200	821503

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201



Quality Control

Printed 02/08/2019

Page 9 of 13

IS Areas

Parameter	Sample	Type	Reading	CCVISM	Low	High	File	PrepSet
1,4-DichlorobenzeneD4 (ISTD)	1754878	UNKNOWN	108000	122100	61050	183100	119573192	821503
ChlorobenzeneD5 (ISTD)	1754878	UNKNOWN	228800	242200	121100	363300	119573192	821503
1,4-DichlorobenzeneD4 (ISTD)	1754879	UNKNOWN	108100	122100	61050	183100	119573193	821503
	1754879	MS	134500	122100	61050	183100	119573198	821503
	1754879	MSD	137200	122100	61050	183100	119573199	821503
ChlorobenzeneD5 (ISTD)	1754879	UNKNOWN	231900	242200	121100	363300	119573193	821503
	1754879	MS	271200	242200	121100	363300	119573198	821503
	1754879	MSD	281100	242200	121100	363300	119573199	821503

IS RetTime

Parameter	Sample	Type	Reading	CCVISM	Low	High	File	PrepSet
1,4-DichlorobenzeneD4 (ISTD)	821503	CCV	11.18	11.18	11.12	11.24	119570316	821503
	821503	LCS	11.18	11.18	11.12	11.24	119570317	821503
	821503	LCS Dup	11.18	11.18	11.12	11.24	119570318	821503
	821503	Blank	11.18	11.18	11.12	11.24	119570319	821503
	821503	Blank	11.18	11.18	11.12	11.24	119573200	821503
ChlorobenzeneD5 (ISTD)	821503	CCV	8.818	8.818	8.758	8.878	119570316	821503
	821503	LCS	8.818	8.818	8.758	8.878	119570317	821503
	821503	LCS Dup	8.818	8.818	8.758	8.878	119570318	821503
	821503	Blank	8.818	8.818	8.758	8.878	119570319	821503
	821503	Blank	8.818	8.818	8.758	8.878	119573200	821503
1,4-DichlorobenzeneD4 (ISTD)	1754878	UNKNOWN	11.18	11.18	11.12	11.24	119573192	821503
ChlorobenzeneD5 (ISTD)	1754878	UNKNOWN	8.818	8.818	8.758	8.878	119573192	821503
1,4-DichlorobenzeneD4 (ISTD)	1754879	UNKNOWN	11.18	11.18	11.12	11.24	119573193	821503
	1754879	MS	11.18	11.18	11.12	11.24	119573198	821503
	1754879	MSD	11.17	11.18	11.12	11.24	119573199	821503
ChlorobenzeneD5 (ISTD)	1754879	UNKNOWN	8.818	8.818	8.758	8.878	119573193	821503
	1754879	MS	8.818	8.818	8.758	8.878	119573198	821503
	1754879	MSD	8.818	8.818	8.758	8.878	119573199	821503

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Bromodichloromethane	821503	18.8	19.4	20.0	70.0 - 130	94.0	97.0	ug/L	3.14	30.0
Bromoform	821503	17.7	18.1	20.0	70.0 - 130	88.5	90.5	ug/L	2.23	30.0
Chloroform	821503	18.8	19.2	20.0	70.0 - 130	94.0	96.0	ug/L	2.11	30.0
Dibromochloromethane	821503	16.8	17.2	20.0	70.0 - 130	84.0	86.0	ug/L	2.35	30.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Bromodichloromethane	1754879	13.9	15.2	ND	20.0	67.1 - 133	69.5	76.0	ug/L	8.93	30.0
Bromoform	1754879	12.6	14.2	ND	20.0	58.4 - 125	63.0	71.0	ug/L	11.9	30.0
Chloroform	1754879	14.3	15.5	ND	20.0	62.8 - 138	71.5	77.5	ug/L	8.05	30.0
Dibromochloromethane	1754879	11.8	13.2	ND	20.0	60.7 - 129	59.0 *	66.0	ug/L	11.2	30.0

Surrogate

Parameter	Sample	Type	Reading	Known	Units	Recover%	Limits%	File
1,2-DCA-d4 (SURR)	821503	CCV	19.8	20.0	ug/L	99.0	70.0 - 130	119570316
	821503	LCS	20.0	20.0	ug/L	100	70.0 - 130	119570317





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 02/08/2019

Page 10 of 13

Surrogate

Parameter	Sample	Type	Reading	Known	Units	Recover%	Limits%	File
1,2-DCA-d4 (SURR)	821503	LCS Dup	20.0	20.0	ug/L	100	70.0 - 130	119570318
	821503	Blank	21.0	20.0	ug/L	105	70.0 - 130	119570319
	821503	Blank	20.4	20.0	ug/L	102	70.0 - 130	119573200
Bromofluorobenzene (SURR)	821503	CCV	20.7	20.0	ug/L	104	70.0 - 130	119570316
	821503	LCS	20.9	20.0	ug/L	104	70.0 - 130	119570317
	821503	LCS Dup	20.5	20.0	ug/L	102	70.0 - 130	119570318
	821503	Blank	19.6	20.0	ug/L	98.0	70.0 - 130	119570319
Dibromofluoromethane (SURR)	821503	Blank	19.5	20.0	ug/L	97.5	70.0 - 130	119573200
	821503	CCV	20.4	20.0	ug/L	102	70.0 - 130	119570316
	821503	LCS	20.2	20.0	ug/L	101	70.0 - 130	119570317
	821503	LCS Dup	20.2	20.0	ug/L	101	70.0 - 130	119570318
TolueneD8 (SURR)	821503	Blank	21.7	20.0	ug/L	108	70.0 - 130	119570319
	821503	Blank	20.4	20.0	ug/L	102	70.0 - 130	119573200
	821503	CCV	20.4	20.0	ug/L	102	70.0 - 130	119570316
	821503	LCS	20.4	20.0	ug/L	102	70.0 - 130	119570317
1,2-DCA-d4 (SURR)	821503	LCS Dup	20.4	20.0	ug/L	102	70.0 - 130	119570318
	821503	Blank	20.2	20.0	ug/L	101	70.0 - 130	119570319
	821503	Blank	20.0	20.0	ug/L	100	70.0 - 130	119573200
	821503	Blank	20.0	20.0	ug/L	100	70.0 - 130	119573200
1,2-DCA-d4 (SURR)	1754878	UNKNOWN	21.0	20.0	ug/L	105	70.0 - 130	119573192
Bromofluorobenzene (SURR)	1754878	UNKNOWN	20.6	20.0	ug/L	103	70.0 - 130	119573192
Dibromofluoromethane (SURR)	1754878	UNKNOWN	21.1	20.0	ug/L	106	70.0 - 130	119573192
TolueneD8 (SURR)	1754878	UNKNOWN	20.3	20.0	ug/L	102	70.0 - 130	119573192
1,2-DCA-d4 (SURR)	1754879	UNKNOWN	21.3	20.0	ug/L	106	70.0 - 130	119573193
Bromofluorobenzene (SURR)	1754879	MS	19.9	20.0	ug/L	99.5	70.0 - 130	119573198
	1754879	MSD	19.4	20.0	ug/L	97.0	70.0 - 130	119573199
	1754879	UNKNOWN	19.8	20.0	ug/L	99.0	70.0 - 130	119573193
	1754879	MS	21.6	20.0	ug/L	108	70.0 - 130	119573198
Dibromofluoromethane (SURR)	1754879	MSD	22.0	20.0	ug/L	110	70.0 - 130	119573199
	1754879	UNKNOWN	20.8	20.0	ug/L	104	70.0 - 130	119573193
	1754879	MS	20.0	20.0	ug/L	100	70.0 - 130	119573198
TolueneD8 (SURR)	1754879	MSD	19.8	20.0	ug/L	99.0	70.0 - 130	119573199
	1754879	UNKNOWN	20.2	20.0	ug/L	101	70.0 - 130	119573193
	1754879	MS	20.9	20.0	ug/L	104	70.0 - 130	119573198
1754879	MSD	20.8	20.0	ug/L	104	70.0 - 130	119573199	

Analytical Set 821745

EPA 552.2 1

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Bromoacetic acid	821248	ND	0.275	5.00	ug/L	119574565
Chloroacetic acid	821248	ND	0.559	5.00	ug/L	119574565
Dibromoacetic acid	821248	ND	0.198	5.00	ug/L	119574565
Dichloroacetic acid	821248	ND	0.244	5.00	ug/L	119574565
Trichloroacetic acid	821248	ND	0.191	5.00	ug/L	119574565

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
-----------	---------	-------	-------	----------	---------	------



NELAP-accredited #T104704201



Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 02/08/2019

Page 11 of 13

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Bromoacetic acid	25.8	20.0	ug/L	129	70.0 - 130	119574539
	25.9	20.0	ug/L	129	70.0 - 130	119574564
Chloroacetic acid	21.2	20.0	ug/L	106	70.0 - 130	119574539
	21.8	20.0	ug/L	109	70.0 - 130	119574564
Dibromoacetic acid	20.6	20.0	ug/L	103	70.0 - 130	119574539
	21.6	20.0	ug/L	108	70.0 - 130	119574564
Dichloroacetic acid	24.4	20.0	ug/L	122	70.0 - 130	119574539
	25.4	20.0	ug/L	127	70.0 - 130	119574564
Trichloroacetic acid	19.6	20.0	ug/L	98.1	70.0 - 130	119574539
	20.8	20.0	ug/L	104	70.0 - 130	119574564

IS Areas

Parameter	Sample	Type	Reading	CCVISM	Low	High	File	PrepSet	
1,2,3-Trichloropropane (IS)		CCV	765500	765500	535900	995200	119574539	821745	
		CCV	650900	765500	535900	995200	119574564	821745	
		821248	LCS	843400	765500	535900	995200	119574540	821248
		821248	Blank	541200	765500	535900	995200	119574565	821248
		1754878	UNKNOWN	824200	765500	535900	995200	119574542	821248
		1754878	MS	831300	765500	535900	995200	119574543	821248
		1754878	MSD	887400	765500	535900	995200	119574544	821248
		1754879	UNKNOWN	650800	765500	535900	995200	119574545	821248
		1754879	MS	710800	765500	535900	995200	119574546	821248
		1754879	MSD	663600	765500	535900	995200	119574547	821248

IS RetTime

Parameter	Sample	Type	Reading	CCVISM	Low	High	File	PrepSet	
1,2,3-Trichloropropane (IS)		CCV	8.790	8.790	8.730	8.850	119574539	821745	
		CCV	8.800	8.790	8.730	8.850	119574564	821745	
		821248	LCS	8.800	8.790	8.730	8.850	119574540	821248
		821248	Blank	8.800	8.790	8.730	8.850	119574565	821248
		1754878	UNKNOWN	8.790	8.790	8.730	8.850	119574542	821248
		1754878	MS	8.790	8.790	8.730	8.850	119574543	821248
		1754878	MSD	8.790	8.790	8.730	8.850	119574544	821248
		1754879	UNKNOWN	8.790	8.790	8.730	8.850	119574545	821248
		1754879	MS	8.800	8.790	8.730	8.850	119574546	821248
		1754879	MSD	8.800	8.790	8.730	8.850	119574547	821248

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Bromoacetic acid	821248	24.1	22.8	20.0	70.0 - 130	120	114	ug/L	5.13	30.0
Chloroacetic acid	821248	20.8	19.9	20.0	70.0 - 130	104	99.5	ug/L	4.42	30.0
Dibromoacetic acid	821248	21.1	20.7	20.0	70.0 - 130	106	104	ug/L	1.90	30.0
Dichloroacetic acid	821248	23.7	22.5	20.0	70.0 - 130	118	112	ug/L	5.22	30.0
Trichloroacetic acid	821248	19.7	19.4	20.0	70.0 - 130	98.5	97.0	ug/L	1.53	30.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Bromoacetic acid	1754878	19.5	19.6	ND	20.0	30.0 - 150	97.5	98.0	ug/L	0.512	30.0
Chloroacetic acid	1754878	19.0	21.8	1.23	20.0	15.0 - 150	88.8	103	ug/L	14.6	30.0
Dibromoacetic acid	1754878	19.7	21.3	7.56	20.0	30.0 - 150	60.7	68.7	ug/L	12.4	30.0
Dichloroacetic acid	1754878	31.6	32.9	12.9	20.0	30.0 - 150	93.5	100	ug/L	6.72	30.0





Quality Control

Printed 02/08/2019

Page 12 of 13

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Trichloroacetic acid	1754878	20.1	21.8	8.62	20.0	30.0 - 150	57.4	65.9	ug/L	13.8	30.0
Bromoacetic acid	1754879	21.4	21.4	ND	20.0	30.0 - 150	107	107	ug/L	0	30.0
Chloroacetic acid	1754879	20.4	20.2	ND	20.0	15.0 - 150	102	101	ug/L	0.985	30.0
Dibromoacetic acid	1754879	20.1	19.2	ND	20.0	30.0 - 150	100	96.0	ug/L	4.58	30.0
Dichloroacetic acid	1754879	22.5	22.4	ND	20.0	30.0 - 150	112	112	ug/L	0.445	30.0
Trichloroacetic acid	1754879	20.1	18.9	ND	20.0	30.0 - 150	100	94.5	ug/L	6.15	30.0

Surrogate

Parameter	Sample	Type	Reading	Known	Units	Recover%	Limits%	File
2,3-Dibromopropionic (Surr)		CCV	16.0	20.0	ug/L	80.0	70.0 - 130	119574539
		CCV	16.0	20.0	ug/L	80.0	70.0 - 130	119574564
	821248	LCS	17.9	20.0	ug/L	89.5	70.0 - 130	119574540
	821248	LCS Dup	18.3	20.0	ug/L	91.5	70.0 - 130	119574541
	821248	Blank	20.4	20.0	ug/L	102	70.0 - 130	119574565
	1754878	UNKNOWN	17.2	20.0	ug/L	86.0	70.0 - 130	119574542
	1754878	MS	14.3	20.0	ug/L	71.5	70.0 - 130	119574543
	1754878	MSD	16.5	20.0	ug/L	82.5	70.0 - 130	119574544
	1754879	UNKNOWN	19.0	20.0	ug/L	95.0	70.0 - 130	119574545
	1754879	MS	18.8	20.0	ug/L	94.0	70.0 - 130	119574546
	1754879	MSD	16.9	20.0	ug/L	84.5	70.0 - 130	119574547

Analytical Set 820769

SM 2320 B-2011

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Total Alkalinity (as CaCO3)	820769	ND	1.00	1.00	mg/L	119556290

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Total Alkalinity (as CaCO3)	27.0	25.0	mg/L	108	90.0 - 110	119556289
	25.1	25.0	mg/L	100	90.0 - 110	119556302
	26.5	25.0	mg/L	106	90.0 - 110	119556315

Duplicate

Parameter	Sample	Result	Unknown	Unit	RPD	Limit%
Total Alkalinity (as CaCO3)	1754418	43.0	43.0	mg/L	0	20.0
	1754420	44.0	45.4	mg/L	3.13	20.0

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Total Alkalinity (as CaCO3)	26.5	25.0	mg/L	106	90.0 - 110	119556288

Mat. Spike

Parameter	Sample	Spike	Unknown	Known	Units	Recovery %	Limits %	File
Total Alkalinity (as CaCO3)	1754418	65.8	43.0	25.0	mg/L	91.2	70.0 - 130	119556293
	1754420	69.5	45.4	25.0	mg/L	96.4	70.0 - 130	119556305

Analytical Set 821080

SM 2130 B-2001

AWRL/MRL C

Parameter	Reading	Known	Units	Recover%	Limits%	File
Turbidity	0.28	0.30	NTU	93.3	70.0 - 130	119562290





Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com
Employee Owned Integrity Caring

LELAP-accredited #02008
Continual Improvement

Quality Control

Printed 02/08/2019

Page 13 of 13

1
2

Blank								
Parameter	PrepSet	Reading	MDL	SQL	Units		File	
Turbidity	821080	ND	0.30	0.30	NTU		119562288	
Duplicate								
Parameter	Sample	Result	Unknown		Unit	RPD	Limit%	
Turbidity	1754878	ND	ND		NTU		20.0	
Mat. Spike								
Parameter	Sample	Spike	Unknown	Known	Units	Recovery %	Limits %	File
Turbidity	1754878	40.9	ND	40.0	NTU	102	70.0 - 130	119562294
Standard								
Parameter	Sample	Reading	Known	Units	Recover%	Limits%	File	
Turbidity	821080	9.50	10.0	NTU	95.0	90.0 - 110	119562289	
	821080	98.7	100	NTU	98.7	90.0 - 110	119562291	
	821080	9.50	10.0	NTU	95.0	90.0 - 110	119562296	
	821080	9.70	10.0	NTU	97.0	90.0 - 110	119562299	

* Out RPD is Relative Percent Difference: $\text{abs}(r1-r2) / \text{mean}(r1,r2) * 100\%$
Recover% is Recovery Percent: $\text{result} / \text{known} * 100\%$
Blank - Method Blank; CCV - Continuing Calibration Verification; ICV - Initial Calibration Verification; LCS - Laboratory Control Sample; CCB - Continuing Calibration Blank; AWRL/MRL C - Ambient Water Reporting Limit/Minimum Reporting Limit Check Std; BFB - GC/MS Tuning Compound



BatchNo: 80885

SAMPLE REPORT



T104704328-18-15

Business

Victoria, City of - Stephen Robinson
P O Box 1758
Victoria Tx 77902
Att: Stephen Robinson



Laboratory

B Environmental, LLC.
1606 E Brazos, Suite D
Victoria TX 77901
ph. 361-572-8224

Reference Information

Project: ASR Table 1, List A
Printed: Tuesday,
February 19,
2019

Re: Victoria, City of - Stephen Robinson

Dear: Stephen Robinson

Attached are the results for sample(s) received on 2/11/2019

The analytical results relate only to the samples tested.

All supporting quality data meets the requirements of NELAC unless noted in the case narrative section of the report.

This report contains 26 pages (including the cover page)

If you have any questions concerning this report, please do not hesitate to call (361) 572-8224 or Fax us at (361) 572-4115

Respectfully Submitted,

Kevin Baros

Laboratory Director



B Environmental, LLC. 1606 E Brazos, Suite D Victoria TX 77901

This report shall not be reproduced except in full, without written approval of the laboratory

B Environmental, LLC.

BatchNo:

80885

1606 E Brazos, Suite D

Victoria TX 77901

Batch No: 80885

Sample Receipt Checklist

Date Received: 2/11/2019

Project ASR Table 1, List A

Received By: Vahrenkamp

Login completed by: Vahrenkamp 2/11/2019

Signature LoginDate:

Carrier Name Walk In

- Shipping container/cooler in good condition? YES NO Not Present
- Custody seals intact on shipping container/cooler? YES NO Not Present
- Custody seals intact on sample bottles? YES NO Not Present
- Chain of Custody present? YES NO
- Chain of Custody signed when relinquished and received YES NO
- Chain of Custody agrees with sample labels? YES NO
- Samples in proper container/bottles? YES NO
- Sample containers intact? YES NO
- Sufficient sample volume for indicated tests? YES NO
- All samples received within holding times? YES NO
- Container/Temp Blank - temperature in compliance? YES NO >0 <6 °C On Ice
- Water - VOA vials have zero headspace? Bubble < 6mm? YES NO No VOA Vials submitted
- Water - pH acceptable upon receipt? YES NO Not Applicable

*TEMP 9.9/9.9 pH Adjusted? No Checked By L. Vahrenkamp

Any No and/or N/A (not applicable) response must be detailed in the comments section below.

Client contacted PersonContacted

Contacted by: Date Contacted:

Regarding

Comments

Therm #4. The samples were recieved the same day they were collected and were in the process of cooling.

Corrective Action





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Printed: 02/18/2019

Page 1 of 9

Results

Report To:

B-Environmental
 Kevin C. Baros
 1606 E Brazos St., Suite D
 Victoria, TX 77901

ASR-Table 1, List A

Account
BENV-G

Project
862362

Results

1758057	S190421401	Received: 02/12/2019							
Drinking Water	Collected by: Client	B-Environmental	PO:						
	Taken: 02/11/2019 11:09:00								
Calculation	Prepared:	02/14/2019	10:41:24	Calculated	02/14/2019	10:41:24	CAL		
<i>Parameter</i>	<i>Results</i>	<i>Units</i>	<i>RL</i>	<i>Flag</i>	<i>CAS</i>	<i>Bottle</i>			
N Ammonia	0.855	mg/L	0.0242						
EPA 200.7 4.4	Prepared:	822885	02/13/2019	11:00:00	Analyzed	822989	02/13/2019	14:47:00	JBP
<i>Parameter</i>	<i>Results</i>	<i>Units</i>	<i>RL</i>	<i>Flag</i>	<i>CAS</i>	<i>Bottle</i>			
Z Silicon Recoverable	6.55	mg/L	0.100				7740-21-3	11	
EPA 200.7 4.4	Prepared:	822885	02/13/2019	11:00:00	Analyzed	823039	02/13/2019	19:27:00	JBP
<i>Parameter</i>	<i>Results</i>	<i>Units</i>	<i>RL</i>	<i>Flag</i>	<i>CAS</i>	<i>Bottle</i>			
N Calcium	43.5	mg/L	0.500				7440-70-2	11	
N Magnesium, Total	9.36	mg/L	0.020				7439-95-4	11	
EPA 200.7 4.4	Prepared:	822885	02/13/2019	11:00:00	Analyzed	823305	02/14/2019	17:55:00	JBP
<i>Parameter</i>	<i>Results</i>	<i>Units</i>	<i>RL</i>	<i>Flag</i>	<i>CAS</i>	<i>Bottle</i>			
N Sodium	61.7	mg/L	2.50	PD			7440-23-5	11	
EPA 200.7 4.4	Prepared:	822885	02/13/2019	11:00:00	Analyzed	823305	02/14/2019	18:05:00	JBP
<i>Parameter</i>	<i>Results</i>	<i>Units</i>	<i>RL</i>	<i>Flag</i>	<i>CAS</i>	<i>Bottle</i>			
N Potassium	5.05	mg/L	0.500				7440-09-7	11	
EPA 200.7 4.4	Prepared:	822885	02/13/2019	11:00:00	Analyzed	823744	02/18/2019	12:03:00	JBP
<i>Parameter</i>	<i>Results</i>	<i>Units</i>	<i>RL</i>	<i>Flag</i>	<i>CAS</i>	<i>Bottle</i>			
N Phosphorus	0.262	mg/L	0.100				7723-14-0	11	
EPA 200.7 4.4 - Calc	Prepared:	02/13/2019	17:02:28	Calculated	02/13/2019	17:02:28	CAL		
<i>Parameter</i>	<i>Results</i>	<i>Units</i>	<i>RL</i>	<i>Flag</i>	<i>CAS</i>	<i>Bottle</i>			
N Silica (SiO2)	14.0	mg/L	0.214						
EPA 200.8 5.4	Prepared:	822885	02/13/2019	11:00:00	Analyzed	823384	02/15/2019	09:58:00	LPS
<i>Parameter</i>	<i>Results</i>	<i>Units</i>	<i>RL</i>	<i>Flag</i>	<i>CAS</i>	<i>Bottle</i>			
N Aluminum, Total	0.0086	mg/L	0.005	B			7429-90-5	11	

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Printed: 02/18/2019

Page 2 of 9

Results

1758057 **S190421401** *Received:* 02/12/2019
 Drinking Water *Collected by:* Client B-Environmental *PO:*
Taken: 02/11/2019 11:09:00

EPA 300.0 2.1 *Prepared:* 823051 02/12/2019 17:55:00 *Analyzed* 823051 02/12/2019 17:55:00 *AMB*

Parameter	Results	Units	RL	Flag	CAS	Bottle
N Chloride	62.8	mg/L	1.50			01
N Fluoride	0.830	mg/L	0.500			01
N Sulfate	22.9	mg/L	1.50			01

EPA 300.1 1 *Prepared:* 823610 02/15/2019 17:14:00 *Analyzed* 823610 02/15/2019 17:14:00 *AMB*

Parameter	Results	Units	RL	Flag	CAS	Bottle
N Bromate	<5.00	ug/L	5.00			01

EPA 350.1 2 *Prepared:* 822830 02/13/2019 09:00:00 *Analyzed* 822954 02/13/2019 11:00:00 *RSV*

Parameter	Results	Units	RL	Flag	CAS	Bottle
N Ammonia (as N)	0.707	mg/L	0.020			10

EPA 524.2 4.1 *Prepared:* 822893 02/12/2019 20:07:00 *Analyzed* 822893 02/12/2019 20:07:00 *KLB*

Parameter	Results	Units	RL	Flag	CAS	Bottle
N Bromodichloromethane	12.2	ug/L	1.00		75-27-4	07
N Bromoform	4.09	ug/L	1.00		75-25-2	07
N Chloroform	8.21	ug/L	1.00		67-66-3	07
N Dibromochloromethane	13.5	ug/L	1.00		124-48-1	07

EPA 524.2 4.1 *Prepared:* 822893 02/13/2019 17:02:28 *Calculated* 822893 02/13/2019 17:02:28 *CAL*

Parameter	Results	Units	RL	Flag	CAS	Bottle
N Trihalomethanes	0.038	mg/L	0.001			07

EPA 552.2 1 *Prepared:* 823109 02/14/2019 10:23:46 *Analyzed* 823715 02/18/2019 11:20:00 *EMT*

Parameter	Results	Units	RL	Flag	CAS	Bottle
N Bromoacetic acid	<5.00	ug/L	5.00		79-08-3	14
N Chloroacetic acid	<5.00	ug/L	5.00		79-11-8	14
N Dibromoacetic acid	10.0	ug/L	5.00		631-64-1	14
N Dichloroacetic acid	<5.00	ug/L	5.00		79-43-6	14
N Trichloroacetic acid	<5.00	ug/L	5.00		76-03-9	14

EPA 552.2 1 *Prepared:* 823109 02/14/2019 10:23:46 *Calculated* 823715 02/18/2019 13:05:25 *CAL*

Parameter	Results	Units	RL	Flag	CAS	Bottle
N HAA5	0.01	mg/L	0.005			14

SM 2130 B-2001 *Prepared:* 822934 02/12/2019 10:58:00 *Analyzed* 822934 02/12/2019 10:58:00 *ELS*

Parameter	Results	Units	RL	Flag	CAS	Bottle
N Turbidity	<0.30	NTU	0.30			01

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Printed: 02/18/2019

Page 3 of 9

Results

1758057		S190421401						Received: 02/12/2019
Drinking Water		Collected by: Client		B-Environmental		PO:		
		Taken: 02/11/2019 11:09:00						
SM 2320 B-2011		Prepared: 823223 02/14/2019 08:26:00		Analyzed 823223 02/14/2019 08:26:00		ELS		
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Total Alkalinity (as CaCO3)	197	mg/L	1.00			01		
SM 2340 B-97		Prepared: 02/14/2019 16:33:12		Calculated 02/14/2019 16:33:12		CAL		
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Total Hardness as CaCO3 -Ca/MgEq	147	mg/L	0.500					
SM 2540 C-97		Prepared: 823210 02/13/2019 08:15:00		Analyzed 823210 02/13/2019 08:15:00		TH2		
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Total Dissolved Solids	336	mg/L	20.0			01		
SM 2540 D-97		Prepared: 822952 02/12/2019 13:30:00		Analyzed 822952 02/12/2019 13:30:00		ALW		
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Total Suspended Solids	2.00	mg/L	2.00			01		
SM 5310 C-2000		Prepared: 823363 02/15/2019 00:30:00		Analyzed 823363 02/15/2019 00:30:00		ALH		
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Total Organic Carbon	2.37	mg/L	0.500			04		

1758058		S190421402						Received: 02/12/2019
Drinking Water		Collected by: Client		B-Environmental		PO:		
		Taken: 02/11/2019 11:56:00						
Calculation		Prepared: 02/14/2019 10:41:25		Calculated 02/14/2019 10:41:25		CAL		
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Ammonia	0.0145	mg/L	0.0242					
EPA 200.7 4.4		Prepared: 822885 02/13/2019 11:00:00		Analyzed 823039 02/13/2019 19:37:00		JBP		
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Calcium	31.0	mg/L	0.500		7440-70-2	11		
N Magnesium, Total	8.78	mg/L	0.020		7439-95-4	11		
EPA 200.7 4.4		Prepared: 822885 02/13/2019 11:00:00		Analyzed 823305 02/14/2019 17:48:00		JBP		
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Sodium	139	mg/L	2.50		7440-23-5	11		

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Printed: 02/18/2019

Page 4 of 9

Results

1758058	S190421402								Received: 02/12/2019
Drinking Water	Collected by: Client	B-Environmental			PO:				
	Taken: 02/11/2019 11:56:00								
<hr/>									
EPA 200.7 4.4	Prepared: 822885	02/13/2019	11:00:00	Analyzed	823305	02/14/2019	17:51:00	JBP	
Parameter	Results	Units	RL	Flag	CAS	Bottle			
N Potassium	3.00	mg/L	0.500		7440-09-7	11			
<hr/>									
EPA 200.7 4.4	Prepared: 822885	02/13/2019	11:00:00	Analyzed	823744	02/18/2019	12:25:00	JBP	
Parameter	Results	Units	RL	Flag	CAS	Bottle			
N Phosphorus	<0.194	mg/L	0.194		7723-14-0	11			
z Silicon Recoverable	10.3	mg/L	0.500		7740-21-3	11			
<hr/>									
EPA 200.7 4.4 - Calc	Prepared:	02/18/2019	17:29:53	Calculated		02/18/2019	17:29:53	CAL	
Parameter	Results	Units	RL	Flag	CAS	Bottle			
N Silica (SiO2)	22.0	mg/L	1.07						
<hr/>									
EPA 200.8 5.4	Prepared: 822885	02/13/2019	11:00:00	Analyzed	823634	02/15/2019	19:48:00	CLK	
Parameter	Results	Units	RL	Flag	CAS	Bottle			
N Aluminum, Total	0.00681	mg/L	0.005	B	7429-90-5	11			
<hr/>									
EPA 300.0 2.1	Prepared: 823051	02/12/2019	18:21:00	Analyzed	823051	02/12/2019	18:21:00	AMB	
Parameter	Results	Units	RL	Flag	CAS	Bottle			
N Chloride	61.7	mg/L	1.50			01			
N Fluoride	0.485	mg/L	0.500	J		01			
N Sulfate	3.83	mg/L	1.50			01			
<hr/>									
EPA 300.1 1	Prepared: 823610	02/15/2019	17:01:00	Analyzed	823610	02/15/2019	17:01:00	AMB	
Parameter	Results	Units	RL	Flag	CAS	Bottle			
N Bromate	<5.00	ug/L	5.00			01			
<hr/>									
EPA 350.1 2	Prepared: 822830	02/13/2019	09:00:00	Analyzed	822954	02/13/2019	11:00:00	RSV	
Parameter	Results	Units	RL	Flag	CAS	Bottle			
N Ammonia (as N)	0.012	mg/L	0.020	J		10			
<hr/>									
EPA 524.2 4.1	Prepared: 823133	02/13/2019	17:32:00	Analyzed	823133	02/13/2019	17:32:00	KLB	
Parameter	Results	Units	RL	Flag	CAS	Bottle			
N Bromodichloromethane	<1.00	ug/L	1.00		75-27-4	07			
N Bromoform	<1.00	ug/L	1.00		75-25-2	07			
N Chloroform	<1.00	ug/L	1.00		67-66-3	07			
N Dibromochloromethane	<1.00	ug/L	1.00		124-48-1	07			





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Printed: 02/18/2019

Page 5 of 9

Results

1758058 S190421402		Received: 02/12/2019						
Drinking Water	Collected by: Client	B-Environmental			PO:			
	Taken: 02/11/2019 11:56:00							
EPA 524.2 4.1		Prepared: 823133	02/14/2019	16:42:25	Calculated 823133	02/14/2019	16:42:25	CAL
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Trihalomethanes	<0.001	mg/L	0.001			07		
EPA 552.2 1		Prepared: 823109	02/14/2019	10:23:46	Analyzed 823715	02/18/2019	11:51:00	EMT
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Bromoacetic acid	<5.00	ug/L	5.00		79-08-3	12		
N Chloroacetic acid	<5.00	ug/L	5.00		79-11-8	12		
N Dibromoacetic acid	<5.00	ug/L	5.00		631-64-1	12		
N Dichloroacetic acid	<5.00	ug/L	5.00		79-43-6	12		
N Trichloroacetic acid	<5.00	ug/L	5.00		76-03-9	12		
EPA 552.2 1		Prepared: 823109	02/14/2019	10:23:46	Calculated 823715	02/18/2019	13:05:26	CAL
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N HAA5	<0.005	mg/L	0.005			12		
SM 2130 B-2001		Prepared: 822934	02/12/2019	10:58:00	Analyzed 822934	02/12/2019	10:58:00	ELS
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Turbidity	1.92	NTU	0.30			01		
SM 2320 B-2011		Prepared: 823223	02/14/2019	08:26:00	Analyzed 823223	02/14/2019	08:26:00	ELS
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Total Alkalinity (as CaCO3)	292	mg/L	1.00			01		
SM 2340 B-97		Prepared:	02/14/2019	16:33:12	Calculated	02/14/2019	16:33:12	CAL
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Total Hardness as CaCO3 -Ca/MgEq	114	mg/L	0.500					
SM 2540 C-97		Prepared: 823210	02/13/2019	08:15:00	Analyzed 823210	02/13/2019	08:15:00	TH2
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Total Dissolved Solids	510	mg/L	50.0			01		
SM 2540 D-97		Prepared: 822952	02/12/2019	13:30:00	Analyzed 822952	02/12/2019	13:30:00	ALW
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Total Suspended Solids	3.00	mg/L	2.00			01		
SM 5310 C-2000		Prepared: 823363	02/15/2019	00:47:00	Analyzed 823363	02/15/2019	00:47:00	ALH
Parameter	Results	Units	RL	Flag	CAS	Bottle		

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Printed: 02/18/2019

Page 6 of 9

Results

1758058 S190421402

Received: 02/12/2019

Drinking Water

Collected by: Client B-Environmental

PO:

Taken: 02/11/2019 11:56:00

SM 5310 C-2000 Prepared: 823363 02/15/2019 00:47:00 Analyzed 823363 02/15/2019 00:47:00 ALH

Parameter	Results	Units	RL	Flag	CAS	Bottle
N Total Organic Carbon	0.368	mg/L	0.500	J		04

Sample Preparation

1758057 S190421401

Received: 02/12/2019

Prepared: 822603 02/12/2019 00:00:00 Analyzed 822603 02/12/2019 00:00:00 AAJ

z Bottle pH	<2	SU				02
z Bottle pH	<2	SU				04
z Bottle pH	<2	SU				06
Cooler Temperature	1.0	degrees C				01
Cooler Temperature	1.0	degrees C				02
Cooler Temperature	1.0	degrees C				03
Cooler Temperature	1.0	degrees C				04
Cooler Temperature	1.0	degrees C				05
Cooler Temperature	1.0	degrees C				06
Cooler Temperature	1.0	degrees C				07
Cooler Temperature	1.0	degrees C				08
Cooler Temperature	1.0	degrees C				09

EPA 200.2 2.8 Prepared: 822885 02/13/2019 11:00:00 Analyzed 822885 02/13/2019 11:00:00 TES

N Liquid Metals Digestion	50/50	ml				02
---------------------------	-------	----	--	--	--	----

EPA 350.2, Rev. 2.0 Prepared: 822830 02/13/2019 09:00:00 Analyzed 822830 02/13/2019 09:00:00 JAL

N Ammonia Distillation	50/50	ml				06
------------------------	-------	----	--	--	--	----

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Printed: 02/18/2019

Page 7 of 9

Results

1758057 S190421401 Received: 02/12/2019

EPA 524.2 4.1	Prepared: 822893	02/12/2019	20:07:00	Analyzed 822893	02/12/2019	20:07:00	KL B
N Trihalomethane Expansion Code	Entered						07
EPA 552.2 1	Prepared: 823109	02/14/2019	10:23:46	Analyzed 823109	02/14/2019	10:23:46	LSD
N Haloacetic Acids Extraction	3/40	ml					05
EPA 552.2 1	Prepared: 823109	02/14/2019	10:23:46	Analyzed 823715	02/18/2019	11:20:00	EMT
N Haloacetic Acids (HAA5)	Entered						14
SM 2540 C-97	Prepared: 822451	02/13/2019	08:15:00	Analyzed 822451	02/13/2019	08:15:00	TH2
N Total Dissolved Solids Started	Started						
SM 2540 D-1997	Prepared: 822553	02/12/2019	13:30:00	Analyzed 822553	02/12/2019	13:30:00	ALW
N TSS Set Started	Started						

1758058 S190421402 Received: 02/12/2019

	Prepared: 822603	02/12/2019	00:00:00	Analyzed 822603	02/12/2019	00:00:00	AAJ
Z Bottle pH	<2	SU					02
Z Bottle pH	<2	SU					04
Z Bottle pH	<2	SU					06
Cooler Temperature	1.0	degrees C					01
Cooler Temperature	1.0	degrees C					02
Cooler Temperature	1.0	degrees C					03
Cooler Temperature	1.0	degrees C					04
Cooler Temperature	1.0	degrees C					05

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Printed: 02/18/2019

Page 8 of 9

Results

1758058 S190421402

Received: 02/12/2019

	Prepared:			00:00:00	Analyzed			00:00:00	AAJ
Cooler Temperature	1.0	degrees							06
Cooler Temperature	1.0	degrees							07
Cooler Temperature	1.0	degrees							08
Cooler Temperature	1.0	degrees							09
<hr/>									
EPA 200.2 2.8	Prepared:	822603	02/12/2019	11:00:00	Analyzed	822603	02/12/2019	11:00:00	TES
N Liquid Metals Digestion	50/50	ml							02
<hr/>									
EPA 350.2, Rev. 2.0	Prepared:	822830	02/13/2019	09:00:00	Analyzed	822830	02/13/2019	09:00:00	JAL
N Ammonia Distillation	50/50	ml							06
<hr/>									
EPA 524.2 4.1	Prepared:	823133	02/13/2019	17:32:00	Analyzed	823133	02/13/2019	17:32:00	KLB
N Trihalomethane Expansion Code	Entered								07
<hr/>									
EPA 552.2 1	Prepared:	823109	02/14/2019	10:23:46	Analyzed	823109	02/14/2019	10:23:46	LSD
N Haloacetic Acids Extraction	3/40	ml							03
<hr/>									
EPA 552.2 1	Prepared:	823109	02/14/2019	10:23:46	Analyzed	823715	02/18/2019	11:51:00	EMT
N Haloacetic Acids (HAA5)	Entered								12
<hr/>									
SM 2540 C-97	Prepared:	822451	02/13/2019	08:15:00	Analyzed	822451	02/13/2019	08:15:00	TH2
N Total Dissolved Solids Started	Started								
<hr/>									
SM 2540 D-1997	Prepared:	822553	02/12/2019	13:30:00	Analyzed	822553	02/12/2019	13:30:00	ALW
N TSS Set Started	Started								





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Printed: 02/18/2019

Page 9 of 9

Results

Qualifiers:

J - Analyte detected below quantitation limit
D - Duplicate RPD was higher than expected

B - Analyte detected in the associated method blank
P - Spike recovery outside control limits due to matrix effects.

We report results on an As Received or wet basis unless marked Dry Weight. Unless otherwise noted, testing was performed at Ana-labs corporate laboratory that holds the following Federal and State certificates: EPA Lab Number TX00063, US Department of Agriculture Soil Import Permit P330-17-00117, Texas Commission on Environmental Quality Commercial Drinking Water Lab Approval (Lab ID: TX219), Texas Commission on Environmental Quality NELAP T104704201-19-15, Louisiana Department of Environmental Quality Laboratory Certification (NELAP, LELAP) #02008, Louisiana Department of Health and Hospitals Drinking Water (NELAP) Certificate No LA026, Oklahoma Department of Environmental Quality TNI Laboratory Accreditation Program Certificate No. 2018-126, Arkansas Department of Environmental Quality Certification #18-068-0. The Accredited column designates accreditation by N -- NELAC, or z -- not covered under NELAC scope of accreditation.

These analytical results relate to the sample tested. This report may NOT be reproduced EXCEPT in FULL without written approval of Ana-Lab Corp. Unless otherwise specified, these test results meet the requirements of NELAC.

RL is the Reporting Limit (sample specific quantitation limit) and is at or above the Method Detection Limit (MDL). CAS is Chemical Abstract Service number. RL is our Reporting Limit, or Minimum Quantitation Level. The RL takes into account the Instrument Detection Limit (IDL), Method Detection Limit (MDL), and Practical Quantitation Limit (PQL), and any dilutions and/or concentrations performed during sample preparation (EQL). Our analytical result must be above this RL before we report a value in the 'Results' column of our report (without a 'J' flag). Otherwise, we report ND (Not Detected above RL), because the result is "<" (less than) the number in the RL column. MAL is Minimum Analytical Level and is typically from regulatory agencies. Unless we report a result in the result column, or interferences prevent it, we work to have our RL at or below the MAL.

Trey Peery, MA, Project Manager





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 02/18/2019

Page 1 of 14

Report To:

B-Environmental
 Kevin C. Baros
 1606 E Brazos St., Suite D
 Victoria, TX 77901

Account
BENV-G

Project
862362

Analytical Set **822954**

EPA 350.1 2

Blank

<i>Parameter</i>	<i>PrepSet</i>	<i>Reading</i>	<i>MDL</i>	<i>MQL</i>	<i>Units</i>	<i>File</i>
Ammonia (as N)	822830	ND	0.00356	0.020	mg/L	119600884

CCV

<i>Parameter</i>	<i>Reading</i>	<i>Known</i>	<i>Units</i>	<i>Recover%</i>	<i>Limits%</i>	<i>File</i>
Ammonia (as N)	2.03	2.00	mg/L	102	90.0 - 110	119600883
	1.86	2.00	mg/L	93.0	90.0 - 110	119600893
	1.97	2.00	mg/L	98.5	90.0 - 110	119600902
	1.97	2.00	mg/L	98.5	90.0 - 110	119600908
	2.01	2.00	mg/L	100	90.0 - 110	119600912

Duplicate

<i>Parameter</i>	<i>Sample</i>	<i>Result</i>	<i>Unknown</i>	<i>Unit</i>	<i>RPD</i>	<i>Limit%</i>
Ammonia (as N)	1758015	0.180	0.183	mg/L	1.65	20.0
	1758174	0.118	0.103	mg/L	13.6	20.0

ICV

<i>Parameter</i>	<i>Reading</i>	<i>Known</i>	<i>Units</i>	<i>Recover%</i>	<i>Limits%</i>	<i>File</i>
Ammonia (as N)	2.05	2.00	mg/L	102	90.0 - 110	119600882

LCS Dup

<i>Parameter</i>	<i>PrepSet</i>	<i>LCS</i>	<i>LCSD</i>	<i>Known</i>	<i>Limits%</i>	<i>LCS%</i>	<i>LCSD%</i>	<i>Units</i>	<i>RPD</i>	<i>Limit%</i>
Ammonia (as N)	822830	2.02	2.03	2.00	90.0 - 110	101	102	mg/L	0.494	20.0

Mat. Spike

<i>Parameter</i>	<i>Sample</i>	<i>Spike</i>	<i>Unknown</i>	<i>Known</i>	<i>Units</i>	<i>Recovery %</i>	<i>Limits %</i>	<i>File</i>
Ammonia (as N)	1758015	2.38	0.183	2.00	mg/L	110	80.0 - 120	119600892
	1758174	2.21	0.103	2.00	mg/L	105	80.0 - 120	119600889

Analytical Set **822952**

SM 2540 D-97

ControlBik

<i>Parameter</i>	<i>PrepSet</i>	<i>Reading</i>	<i>MDL</i>	<i>MQL</i>	<i>Units</i>	<i>File</i>
Total Suspended Solids	822952	0.0002			grams	119600847

Duplicate

<i>Parameter</i>	<i>Sample</i>	<i>Result</i>	<i>Unknown</i>	<i>Unit</i>	<i>RPD</i>	<i>Limit%</i>
Total Suspended Solids	1757976	144	142	mg/L	1.40	20.0
	1757979	68.0	65.0	mg/L	4.51	20.0
	1757980	26.5	27.0	mg/L	1.87	20.0

LCS

<i>Parameter</i>	<i>PrepSet</i>	<i>Reading</i>	<i>Known</i>	<i>Units</i>	<i>Recover%</i>	<i>Limits</i>	<i>File</i>
Total Suspended Solids	822952	47.0	50.0	mg/L	94.0	90.0 - 110	119600881

Standard

<i>Parameter</i>	<i>Sample</i>	<i>Reading</i>	<i>Known</i>	<i>Units</i>	<i>Recover%</i>	<i>Limits%</i>	<i>File</i>
------------------	---------------	----------------	--------------	--------------	-----------------	----------------	-------------

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 02/18/2019

Page 2 of 14

Standard

Parameter	Sample	Reading	Known	Units	Recover%	Limits%	File
Total Suspended Solids		108	100	mg/L	108	90.0 - 110	119600880

Analytical Set **823210**

SM 2540 C-97

ControlBlk

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Total Dissolved Solids	823210	-0.0001			grams	119606654

Duplicate

Parameter	Sample	Result	Unknown	Unit	RPD	Limit%
Total Dissolved Solids	1757618	1430	1440	mg/L	0.697	20.0

LCS

Parameter	PrepSet	Reading	Known	Units	Recover%	Limits	File
Total Dissolved Solids	823210	188	200	mg/L	94.0	85.0 - 115	119606668

Standard

Parameter	Sample	Reading	Known	Units	Recover%	Limits%	File
Total Dissolved Solids		100	100	mg/L	100	90.0 - 110	119606655

Analytical Set **823051**

EPA 300.0 2.1

AWRL/MRL C

Parameter	Reading	Known	Units	Recover%	Limits%	File
Fluoride	0.126	0.100	mg/L	126	50.0 - 150	119602911

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Chloride	823051	0.051	0.0196	0.300	mg/L	119602912
Fluoride	823051	ND	0.014	0.100	mg/L	119602912
Sulfate	823051	0.026	0.0109	0.300	mg/L	119602912

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Chloride	10.7	10.0	mg/L	107	90.0 - 110	119602908
	10.3	10.0	mg/L	103	90.0 - 110	119602923
	10.4	10.0	mg/L	104	90.0 - 110	119602934
Fluoride	9.91	10.0	mg/L	99.1	90.0 - 110	119602908
	10.1	10.0	mg/L	101	90.0 - 110	119602923
	9.96	10.0	mg/L	99.6	90.0 - 110	119602934
Sulfate	10.8	10.0	mg/L	108	90.0 - 110	119602908
	10.4	10.0	mg/L	104	90.0 - 110	119602923
	10.4	10.0	mg/L	104	90.0 - 110	119602934

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Chloride	823051	4.93	4.94	5.00	85.0 - 110	98.6	98.8	mg/L	0.203	20.0
Fluoride	823051	4.77	4.86	5.00	88.0 - 110	95.4	97.2	mg/L	1.87	20.0
Sulfate	823051	5.30	5.31	5.00	88.0 - 110	106	106	mg/L	0.189	20.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Chloride	1758161	41.7	41.6	32.2	10.0	80.0 - 120	95.0	94.0	mg/L	1.06	20.0
Fluoride	1758161	9.27	9.31	0.810	10.0	80.0 - 120	84.6	85.0	mg/L	0.472	20.0

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 02/18/2019

Page 3 of 14

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Sulfate	1758161	493	493	491	10.0	80.0 - 120	20.0 *	20.0 *	mg/L	0	20.0
Chloride	1758217	15.5	15.6	7.03	10.0	80.0 - 120	84.7	85.7	mg/L	1.17	20.0
Fluoride	1758217	8.92	8.95	ND	10.0	80.0 - 120	89.2	89.5	mg/L	0.336	20.0
Sulfate	1758217	15.3	15.4	7.22	10.0	80.0 - 120	80.8	81.8	mg/L	1.23	20.0

Analytical Set **823610**

EPA 300.1 1

AWRL/MRL C

Parameter	Reading	Known	Units	Recover%	Limits%	File
Bromate	5.73	5.00	ug/L	115	75.0 - 125	119616279

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Bromate	823610	ND	2.06	5.00	ug/L	119616278
	823610	ND	2.06	5.00	ug/L	119616282

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Bromate	520	500	ug/L	104	85.0 - 115	119616275
	520	500	ug/L	104	85.0 - 115	119616296
	524	500	ug/L	105	85.0 - 115	119616306

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Bromate	823610	92.9	88.5	100	85.0 - 115	92.9	88.5	ug/L	4.85	25.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Bromate	1757563	187	168	ND	200	80.0 - 120	93.5	84.0	ug/L	10.7	20.0
	1758067	155	138	ND	200	80.0 - 120	77.5 *	69.0 *	ug/L	11.6	20.0

Analytical Set **822989**

EPA 200.7 4.4

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Silicon Recoverable	822885	0.106	0.0148	0.100	mg/L	119601420

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Silicon Recoverable	4.53	5.00	mg/L	90.6	90.0 - 110	119601419
	4.94	5.00	mg/L	98.8	90.0 - 110	119601426

ICL

Parameter	Reading	Known	Units	Recover%	Limits%	File
Silicon Recoverable	9.80	10.0	mg/L	98.0	95.0 - 105	119601417

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Silicon Recoverable	5.00	5.00	mg/L	100	90.0 - 110	119601418

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Silicon Recoverable	822885	3.81	3.77	4.00	85.0 - 115	95.2	94.2	mg/L	1.06	25.0





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 02/18/2019

Page 4 of 14

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Silicon Recoverable	1758057	10.9	10.2	6.55	4.00	75.0 - 125	109	91.2	mg/L	17.5	25.0

Analytical Set 823039

EPA 200.7 4.4

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Calcium	822885	ND	0.0419	0.500	mg/L	119602251
Magnesium, Total	822885	ND	0.0102	0.020	mg/L	119602251

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Calcium	27.4	25.0	mg/L	110	90.0 - 110	119602221
	26.1	25.0	mg/L	104	90.0 - 110	119602228
	26.9	25.0	mg/L	108	90.0 - 110	119602229
	24.8	25.0	mg/L	99.2	90.0 - 110	119602239
	25.2	25.0	mg/L	101	90.0 - 110	119602248
	25.1	25.0	mg/L	100	90.0 - 110	119602259
	25.3	25.0	mg/L	101	90.0 - 110	119602270
	26.4	25.0	mg/L	106	90.0 - 110	119602280
	27.1	25.0	mg/L	108	90.0 - 110	119602291
	26.0	25.0	mg/L	104	90.0 - 110	119602298
	25.8	25.0	mg/L	103	90.0 - 110	119602302
	26.2	25.0	mg/L	105	90.0 - 110	119602308
	25.0	25.0	mg/L	100	90.0 - 110	119602319
	24.6	25.0	mg/L	98.4	90.0 - 110	119602326
Magnesium, Total	23.8	25.0	mg/L	95.2	90.0 - 110	119602248
	23.4	25.0	mg/L	93.6	90.0 - 110	119602259
	24.0	25.0	mg/L	96.0	90.0 - 110	119602270
	24.9	25.0	mg/L	99.6	90.0 - 110	119602280

ICL

Parameter	Reading	Known	Units	Recover%	Limits%	File
Calcium	50.7	50.0	mg/L	101	95.0 - 105	119602218
Magnesium, Total	49.7	50.0	mg/L	99.4	95.0 - 105	119602218

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Calcium	25.4	25.0	mg/L	102	90.0 - 110	119602219
Magnesium, Total	24.6	25.0	mg/L	98.4	90.0 - 110	119602219

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Calcium	822885	4.38	4.31	5.00	85.0 - 115	87.6	86.2	mg/L	1.61	25.0
Magnesium, Total	822885	4.66	4.63	5.00	85.0 - 115	93.2	92.6	mg/L	0.646	25.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Calcium	1758057	49.0	48.6	43.5	5.00	75.0 - 125	110	102	mg/L	7.55	25.0
Magnesium, Total	1758057	14.4	14.1	9.36	5.00	75.0 - 125	101	94.8	mg/L	6.13	25.0
Calcium	1758260	-0.191	117	110	5.00	75.0 - 125	-2200	140 *	mg/L		25.0
Magnesium, Total	1758260	-0.0639	22.6	17.1	5.00	75.0 - 125	-343	110	mg/L		25.0

Analytical Set 823305

EPA 200.7 4.4





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 02/18/2019

Page 5 of 14

AWRL/MRL C

Parameter	Reading	Known	Units	Recover%	Limits%	File
Calcium	0.706	0.500	mg/L	141	25.0 - 175	119608061
Magnesium, Total	0.532	0.500	mg/L	106	25.0 - 175	119608061
Potassium	0.655	0.500	mg/L	131	25.0 - 175	119608061
Sodium	0.854	0.500	mg/L	171	25.0 - 175	119608061

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Calcium	822885	0.212	0.0419	0.500	mg/L	119608063
Magnesium, Total	822885	0.0429	0.0102	0.020	mg/L	119608063
Potassium	822885	0.186	0.0765	0.500	mg/L	119608063
Sodium	822885	0.448	0.0315	0.500	mg/L	119608063

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Potassium	24.3	25.0	mg/L	97.2	90.0 - 110	119608062
	24.9	25.0	mg/L	99.6	90.0 - 110	119608073
	26.5	25.0	mg/L	106	90.0 - 110	119608084
Sodium	24.8	25.0	mg/L	99.2	90.0 - 110	119608062
	25.1	25.0	mg/L	100	90.0 - 110	119608073
	26.6	25.0	mg/L	106	90.0 - 110	119608084

Dir. SPKD

Parameter	Sample	DSPK	DSPKD	UNK	Known	Limits%	DSPK%	DSPKD%	Units	RPD	Limit%
Sodium	1758057	88.5	83.4	61.7	25.0	75.0 - 125	107	86.8	mg/L	5.93	25.0

Direct SPK

Parameter	Sample	DSPK	UNK	Known	Limits%	DSPK%	Units
Sodium	1758057	88.5	61.7	25.0	75.0 - 125	107	mg/L 25.0

ICL

Parameter	Reading	Known	Units	Recover%	Limits%	File
Potassium	51.9	50.0	mg/L	104	95.0 - 105	119608059
Sodium	52.3	50.0	mg/L	105	95.0 - 105	119608059

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Potassium	26.2	25.0	mg/L	105	90.0 - 110	119608060
Sodium	26.2	25.0	mg/L	105	90.0 - 110	119608060

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Calcium	822885	4.90	4.81	5.00	85.0 - 115	98.0	96.2	mg/L	1.85	25.0
Magnesium, Total	822885	4.82	4.76	5.00	85.0 - 115	96.4	95.2	mg/L	1.25	25.0
Potassium	822885	4.95	4.94	5.00	85.0 - 115	99.0	98.8	mg/L	0.202	25.0
Sodium	822885	4.51	4.43	5.00	85.0 - 115	90.2	88.6	mg/L	1.79	25.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Calcium	1758057	48.6	49.8	45.3	5.00	75.0 - 125	66.0 *	90.0	mg/L	30.8 *	25.0
Magnesium, Total	1758057	15.0	15.6	10.5	5.00	75.0 - 125	90.0	102	mg/L	12.5	25.0
Potassium	1758057	10.3	10.8	5.05	5.00	75.0 - 125	105	115	mg/L	9.09	25.0
Sodium	1758057	73.4	76.0	71.3	5.00	75.0 - 125	42.0 *	94.0	mg/L	76.5 *	25.0

Analytical Set 823363

SM 5310 C-2000

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 02/18/2019

Page 6 of 14

AWRL/MRL C

Parameter	Reading	Known	Units	Recover%	Limits%	File
Total Organic Carbon	1.80	2.00	mg/L	90.0	75.0 - 125	119609333

Blank

Parameter	PrepSet	Reading	MDL	MDL	Units	File
Total Organic Carbon	823363	0.0813	0.0168	0.500	mg/L	119609332

CCB

Parameter	PrepSet	Reading	MDL	MDL	Units	File
Total Organic Carbon	823363	0.104	0.0168	0.500	mg/L	119609325
	823363	0.0947	0.0168	0.500	mg/L	119609339
	823363	0.0728	0.0168	0.500	mg/L	119609347
	823363	0.0772	0.0168	0.500	mg/L	119609352
	823363	0.108	0.0168	0.500	mg/L	119609354

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Total Organic Carbon	9.92	10.0	mg/L	99.2	90.0 - 110	119609328
	9.97	10.0	mg/L	99.7	90.0 - 110	119609340
	9.83	10.0	mg/L	98.3	90.0 - 110	119609348
	9.76	10.0	mg/L	97.6	90.0 - 110	119609353
	9.83	10.0	mg/L	98.3	90.0 - 110	119609355

ICL

Parameter	Reading	Known	Units	Recover%	Limits%	File
Total Organic Carbon	19.9	20.0	mg/L	99.5	90.0 - 110	119609327

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Total Organic Carbon	10.0	10.0	mg/L	100	90.0 - 110	119609329

LCS

Parameter	PrepSet	Reading	Known	Units	Recover%	Limits	File
Total Organic Carbon	823363	4.88	5.00	mg/L	97.6	93.1 - 112	119609331

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Total Organic Carbon	1757651	12.8	12.9	3.09	10.0	89.5 - 116	97.1	98.1	mg/L	1.02	20.0
	1757894	12.8	12.7	3.08	10.0	89.5 - 116	97.2	96.2	mg/L	1.03	20.0

Standard

Parameter	Sample	Reading	Known	Units	Recover%	Limits%	File
Total Organic Carbon	51.7	50.0	mg/L	103	90.0 - 110	119609326	

Analytical Set **823384**

EPA 200.8 5.4

Blank

Parameter	PrepSet	Reading	MDL	MDL	Units	File
Aluminum, Total	822885	0.00574	0.0025	0.005	mg/L	119609881

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Aluminum, Total	0.0503	0.05	mg/L	101	90.0 - 110	119609877
	0.0498	0.05	mg/L	99.6	90.0 - 110	119609887
	0.0512	0.05	mg/L	102	90.0 - 110	119609896



NELAP-accredited #T104704201



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 02/18/2019

Page 7 of 14

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Aluminum, Total	0.0496	0.05	mg/L	99.2	90.0 - 110	119609869

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Aluminum, Total	822885	0.527	0.508	0.500	85.0 - 115	105	102	mg/L	3.67	20.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Aluminum, Total	1758057	0.523	0.507	0.0086	0.500	70.0 - 130	103	99.7	mg/L	3.16	20.0

Analytical Set 823634

EPA 200.8 5.4

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Aluminum, Total	822885	0.00588	0.0025	0.005	mg/L	119617652

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Aluminum, Total	0.052	0.05	mg/L	104	90.0 - 110	119617601
	0.051	0.05	mg/L	102	90.0 - 110	119617608
	0.0508	0.05	mg/L	102	90.0 - 110	119617618
	0.050	0.05	mg/L	100	90.0 - 110	119617628
	0.050	0.05	mg/L	100	90.0 - 110	119617639
	0.0495	0.05	mg/L	99.0	90.0 - 110	119617650
	0.0497	0.05	mg/L	99.4	90.0 - 110	119617660
	0.0531	0.05	mg/L	106	90.0 - 110	119617679
	0.0526	0.05	mg/L	105	90.0 - 110	119617690

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Aluminum, Total	0.0496	0.05	mg/L	99.2	90.0 - 110	119617597

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Aluminum, Total	822885	0.537	0.512	0.500	85.0 - 115	107	102	mg/L	4.77	20.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Aluminum, Total	1758057	0.528	0.509	0.00804	0.500	70.0 - 130	104	100	mg/L	3.72	20.0

Analytical Set 823744

EPA 200.7 4.4

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Phosphorus	822885	ND	0.0388	0.100	mg/L	119619734
Silicon Recoverable	822885	0.0539	0.0148	0.100	mg/L	119619734

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Phosphorus	9.78	10.0	mg/L	97.8	90.0 - 110	119619733
	10.0	10.0	mg/L	100	90.0 - 110	119619744
	10.2	10.0	mg/L	102	90.0 - 110	119619749
Silicon Recoverable	5.00	5.00	mg/L	100	90.0 - 110	119619733
	5.04	5.00	mg/L	101	90.0 - 110	119619744





Quality Control

Printed 02/18/2019

Page 8 of 14

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Silicon Recoverable	5.13	5.00	mg/L	103	90.0 - 110	119619749

ICL

Parameter	Reading	Known	Units	Recover%	Limits%	File
Phosphorus	24.8	25.0	mg/L	99.2	95.0 - 105	119619731
Silicon Recoverable	10.1	10.0	mg/L	101	95.0 - 105	119619731

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Phosphorus	9.91	10.0	mg/L	99.1	90.0 - 110	119619732
Silicon Recoverable	5.02	5.00	mg/L	100	90.0 - 110	119619732

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Phosphorus	822885	3.96	3.93	4.00	85.0 - 115	99.0	98.2	mg/L	0.760	25.0
Silicon Recoverable	822885	3.88	3.77	4.00	85.0 - 115	97.0	94.2	mg/L	2.88	25.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Phosphorus	1758057	4.40	4.26	0.262	4.00	75.0 - 125	103	100	mg/L	3.44	25.0
Silicon Recoverable	1758057	10.6	10.3	6.48	4.00	75.0 - 125	103	95.5	mg/L	7.56	25.0

Analytical Set 822893

EPA 524.2 4.1

BFB

Parameter	Sample	RefMass	Reading	%	Limits%	File
BFB Mass 173	822893	174	0	0.0	0 - 2.00	119599636
BFB Mass 174	822893	95.0	24936	59.3	50.0 - 100	119599636
BFB Mass 175	822893	174	1833	7.4	5.00 - 9.00	119599636
BFB Mass 176	822893	174	24325	97.5	95.0 - 101	119599636
BFB Mass 177	822893	176	1702	7.0	5.00 - 9.00	119599636
BFB Mass 50	822893	95.0	9791	23.3	15.0 - 40.0	119599636
BFB Mass 75	822893	95.0	24699	58.7	30.0 - 80.0	119599636
BFB Mass 95	822893	95.0	42051	100.0	100 - 100	119599636
BFB Mass 96	822893	95.0	2905	6.9	5.00 - 9.00	119599636

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Bromodichloromethane	822893	ND	0.308	1.00	ug/L	119599643
Bromoform	822893	ND	0.418	1.00	ug/L	119599643
Chloroform	822893	ND	0.213	1.00	ug/L	119599643
Dibromochloromethane	822893	ND	0.327	1.00	ug/L	119599643

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Bromodichloromethane	19.8	20.0	ug/L	99.2	70.0 - 130	119599637
Bromoform	17.0	20.0	ug/L	85.0	70.0 - 130	119599637
Chloroform	20.4	20.0	ug/L	102	70.0 - 130	119599637
Dibromochloromethane	17.4	20.0	ug/L	87.1	70.0 - 130	119599637

IS Areas

Parameter	Sample	Type	Reading	CCVISM	Low	High	File	PrepSet
1,4-DichlorobenzeneD4 (ISTD)	822893	CCV	122100	122100	61030	183100	119599637	822893





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 02/18/2019

Page 9 of 14

IS Areas

Parameter	Sample	Type	Reading	CCVISM	Low	High	File	PrepSet
1,4-DichlorobenzeneD4 (ISTD)	822893	LCS	120300	122100	61030	183100	119599638	822893
	822893	LCS Dup	116100	122100	61030	183100	119599639	822893
	822893	Blank	92510	122100	61030	183100	119599643	822893
ChlorobenzeneD5 (ISTD)	822893	CCV	243500	243500	121800	365300	119599637	822893
	822893	LCS	245100	243500	121800	365300	119599638	822893
	822893	LCS Dup	238700	243500	121800	365300	119599639	822893
	822893	Blank	198200	243500	121800	365300	119599643	822893
1,4-DichlorobenzeneD4 (ISTD)	1756344	MS	92680	122100	61030	183100	119599646	822893
	1756344	MSD	96490	122100	61030	183100	119599647	822893
ChlorobenzeneD5 (ISTD)	1756344	MS	174800	243500	121800	365300	119599646	822893
	1756344	MSD	181300	243500	121800	365300	119599647	822893
1,4-DichlorobenzeneD4 (ISTD)	1758057	UNKNOWN	78620	122100	61030	183100	119599644	822893
ChlorobenzeneD5 (ISTD)	1758057	UNKNOWN	178100	243500	121800	365300	119599644	822893

IS RetTime

Parameter	Sample	Type	Reading	CCVISM	Low	High	File	PrepSet
1,4-DichlorobenzeneD4 (ISTD)	822893	CCV	11.18	11.18	11.12	11.24	119599637	822893
	822893	LCS	11.18	11.18	11.12	11.24	119599638	822893
	822893	LCS Dup	11.18	11.18	11.12	11.24	119599639	822893
ChlorobenzeneD5 (ISTD)	822893	Blank	11.18	11.18	11.12	11.24	119599643	822893
	822893	CCV	8.818	8.818	8.758	8.878	119599637	822893
	822893	LCS	8.818	8.818	8.758	8.878	119599638	822893
	822893	LCS Dup	8.818	8.818	8.758	8.878	119599639	822893
1,4-DichlorobenzeneD4 (ISTD)	822893	Blank	8.818	8.818	8.758	8.878	119599643	822893
	1756344	MS	11.18	11.18	11.12	11.24	119599646	822893
	1756344	MSD	11.18	11.18	11.12	11.24	119599647	822893
ChlorobenzeneD5 (ISTD)	1756344	MS	8.818	8.818	8.758	8.878	119599646	822893
	1756344	MSD	8.818	8.818	8.758	8.878	119599647	822893
1,4-DichlorobenzeneD4 (ISTD)	1758057	UNKNOWN	1.18	11.18	11.12	11.24	119599644	822893
ChlorobenzeneD5 (ISTD)	1758057	UNKNOWN	8.818	8.818	8.758	8.878	119599644	822893

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Bromodichloromethane	822893	18.8	19.0	20.0	70.0 - 130	94.0	95.0	ug/L	1.06	30.0
Bromoform	822893	17.7	17.3	20.0	70.0 - 130	88.5	86.5	ug/L	2.29	30.0
Chloroform	822893	18.8	18.9	20.0	70.0 - 130	94.0	94.5	ug/L	0.531	30.0
Dibromochloromethane	822893	16.2	16.4	20.0	70.0 - 130	81.0	82.0	ug/L	1.23	30.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Bromodichloromethane	1756344	16.5	17.1	ND	20.0	67.1 - 133	82.5	85.5	ug/L	3.57	30.0
Bromoform	1756344	16.7	15.6	ND	20.0	58.4 - 125	83.5	78.0	ug/L	6.81	30.0
Chloroform	1756344	15.8	14.3	ND	20.0	62.8 - 138	79.0	71.5	ug/L	9.97	30.0
Dibromochloromethane	1756344	15.6	15.2	ND	20.0	60.7 - 129	78.0	76.0	ug/L	2.60	30.0

Surrogate

Parameter	Sample	Type	Reading	Known	Units	Recover%	Limits%	File
-----------	--------	------	---------	-------	-------	----------	---------	------

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 02/18/2019

Page 10 of 14

Surrogate

Parameter	Sample	Type	Reading	Known	Units	Recover%	Limits%	File
1,2-DCA-d4 (SURR)	822893	CCV	19.7	20.0	ug/L	98.5	70.0 - 130	119599637
	822893	LCS	20.0	20.0	ug/L	100	70.0 - 130	119599638
	822893	LCS Dup	19.7	20.0	ug/L	98.5	70.0 - 130	119599639
	822893	Blank	21.7	20.0	ug/L	108	70.0 - 130	119599643
Bromofluorobenzene (SURR)	822893	CCV	21.3	20.0	ug/L	106	70.0 - 130	119599637
	822893	LCS	21.5	20.0	ug/L	108	70.0 - 130	119599638
	822893	LCS Dup	21.6	20.0	ug/L	108	70.0 - 130	119599639
	822893	Blank	20.0	20.0	ug/L	100	70.0 - 130	119599643
Dibromofluoromethane (SURR)	822893	CCV	20.4	20.0	ug/L	102	70.0 - 130	119599637
	822893	LCS	20.6	20.0	ug/L	103	70.0 - 130	119599638
	822893	LCS Dup	20.2	20.0	ug/L	101	70.0 - 130	119599639
	822893	Blank	20.0	20.0	ug/L	100	70.0 - 130	119599643
TolueneD8 (SURR)	822893	CCV	21.0	20.0	ug/L	105	70.0 - 130	119599637
	822893	LCS	20.8	20.0	ug/L	104	70.0 - 130	119599638
	822893	LCS Dup	20.8	20.0	ug/L	104	70.0 - 130	119599639
	822893	Blank	20.2	20.0	ug/L	101	70.0 - 130	119599643
1,2-DCA-d4 (SURR)	1756344	MS	21.0	20.0	ug/L	105	70.0 - 130	119599646
	1756344	MSD	20.5	20.0	ug/L	102	70.0 - 130	119599647
Bromofluorobenzene (SURR)	1756344	MS	19.9	20.0	ug/L	99.5	70.0 - 130	119599646
	1756344	MSD	19.8	20.0	ug/L	99.0	70.0 - 130	119599647
Dibromofluoromethane (SURR)	1756344	MS	21.2	20.0	ug/L	106	70.0 - 130	119599646
	1756344	MSD	19.7	20.0	ug/L	98.5	70.0 - 130	119599647
TolueneD8 (SURR)	1756344	MS	20.2	20.0	ug/L	101	70.0 - 130	119599646
	1756344	MSD	20.5	20.0	ug/L	102	70.0 - 130	119599647
1,2-DCA-d4 (SURR)	1758057	UNKNOWN	21.1	20.0	ug/L	106	70.0 - 130	119599644
Bromofluorobenzene (SURR)	1758057	UNKNOWN	20.3	20.0	ug/L	102	70.0 - 130	119599644
Dibromofluoromethane (SURR)	1758057	UNKNOWN	21.2	20.0	ug/L	106	70.0 - 130	119599644
TolueneD8 (SURR)	1758057	UNKNOWN	20.2	20.0	ug/L	101	70.0 - 130	119599644

Analytical Set 823133

EPA 524.2 4.1

BFB

Parameter	Sample	RefMass	Reading	%	Limits%	File
BFB Mass 173	823133	174	0	0.0	0 - 2.00	119605624
BFB Mass 174	823133	95.0	2944	60.1	50.0 - 100	119605624
BFB Mass 175	823133	174	211	7.2	5.00 - 9.00	119605624
BFB Mass 176	823133	174	2928	99.5	95.0 - 101	119605624
BFB Mass 177	823133	176	177	6.0	5.00 - 9.00	119605624
BFB Mass 50	823133	95.0	1233	25.2	15.0 - 40.0	119605624
BFB Mass 75	823133	95.0	2932	59.9	30.0 - 80.0	119605624
BFB Mass 95	823133	95.0	4895	100.0	100 - 100	119605624
BFB Mass 96	823133	95.0	290	5.9	5.00 - 9.00	119605624

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Bromodichloromethane	823133	ND	0.308	1.00	ug/L	119605628
Bromoform	823133	ND	0.418	1.00	ug/L	119605628

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 02/18/2019

Page 11 of 14

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Chloroform	823133	ND	0.213	1.00	ug/L	119605628
Dibromochloromethane	823133	ND	0.327	1.00	ug/L	119605628

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Bromodichloromethane	19.4	20.0	ug/L	97.1	70.0 - 130	119605625
Bromoform	16.4	20.0	ug/L	82.1	70.0 - 130	119605625
Chloroform	21.3	20.0	ug/L	106	70.0 - 130	119605625
Dibromochloromethane	17.6	20.0	ug/L	87.9	70.0 - 130	119605625

IS Areas

Parameter	Sample	Type	Reading	CCVISM	Low	High	File	PrepSet
1,4-DichlorobenzeneD4 (ISTD)	823133	CCV	98000	98000	49000	147000	119605625	823133
	823133	LCS	95290	98000	49000	147000	119605626	823133
	823133	LCS Dup	99260	98000	49000	147000	119605627	823133
	823133	Blank	82230	98000	49000	147000	119605628	823133
ChlorobenzeneD5 (ISTD)	823133	CCV	186400	186400	93200	279600	119605625	823133
	823133	LCS	186600	186400	93200	279600	119605626	823133
	823133	LCS Dup	193900	186400	93200	279600	119605627	823133
	823133	Blank	182100	186400	93200	279600	119605628	823133
1,4-DichlorobenzeneD4 (ISTD)	1756879	MS	99910	98000	49000	147000	119605632	823133
	1756879	MSD	98870	98000	49000	147000	119605633	823133
ChlorobenzeneD5 (ISTD)	1756879	MS	192100	186400	93200	279600	119605632	823133
	1756879	MSD	189900	186400	93200	279600	119605633	823133
1,4-DichlorobenzeneD4 (ISTD)	1758058	UNKNOWN	107700	98000	49000	147000	119605629	823133
ChlorobenzeneD5 (ISTD)	1758058	UNKNOWN	214300	186400	93200	279600	119605629	823133

IS RetTime

Parameter	Sample	Type	Reading	CCVISM	Low	High	File	PrepSet
1,4-DichlorobenzeneD4 (ISTD)	823133	CCV	11.18	11.18	11.12	11.24	119605625	823133
	823133	LCS	11.18	11.18	11.12	11.24	119605626	823133
	823133	LCS Dup	11.18	11.18	11.12	11.24	119605627	823133
	823133	Blank	11.18	11.18	11.12	11.24	119605628	823133
ChlorobenzeneD5 (ISTD)	823133	CCV	8.818	8.818	8.758	8.878	119605625	823133
	823133	LCS	8.818	8.818	8.758	8.878	119605626	823133
	823133	LCS Dup	8.818	8.818	8.758	8.878	119605627	823133
	823133	Blank	8.818	8.818	8.758	8.878	119605628	823133
1,4-DichlorobenzeneD4 (ISTD)	1756879	MS	11.18	11.18	11.12	11.24	119605632	823133
	1756879	MSD	11.17	11.18	11.12	11.24	119605633	823133
ChlorobenzeneD5 (ISTD)	1756879	MS	8.818	8.818	8.758	8.878	119605632	823133
	1756879	MSD	8.818	8.818	8.758	8.878	119605633	823133
1,4-DichlorobenzeneD4 (ISTD)	1758058	UNKNOWN	11.18	11.18	11.12	11.24	119605629	823133
ChlorobenzeneD5 (ISTD)	1758058	UNKNOWN	8.818	8.818	8.758	8.878	119605629	823133

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Bromodichloromethane	823133	19.1	18.9	20.0	70.0 - 130	95.5	94.5	ug/L	1.05	30.0

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 02/18/2019

Page 12 of 14

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Bromoform	823133	20.4	17.8	20.0	70.0 - 130	102	89.0	ug/L	13.6	30.0
Chloroform	823133	24.0	19.6	20.0	70.0 - 130	120	98.0	ug/L	20.2	30.0
Dibromochloromethane	823133	17.2	17.0	20.0	70.0 - 130	86.0	85.0	ug/L	1.17	30.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Bromodichloromethane	1756879	160	161	ND	200	67.1 - 133	80.0	80.5	ug/L	0.623	30.0
Bromoform	1756879	162	152	ND	200	58.4 - 125	81.0	76.0	ug/L	6.37	30.0
Chloroform	1756879	163	158	ND	200	62.8 - 138	81.5	79.0	ug/L	3.12	30.0
Dibromochloromethane	1756879	162	160	ND	200	60.7 - 129	81.0	80.0	ug/L	1.24	30.0

Surrogate

Parameter	Sample	Type	Reading	Known	Units	Recover%	Limits%	File
1,2-DCA-d4 (SURR)	823133	CCV	21.0	20.0	ug/L	105	70.0 - 130	119605625
	823133	LCS	20.7	20.0	ug/L	104	70.0 - 130	119605626
	823133	LCS Dup	20.8	20.0	ug/L	104	70.0 - 130	119605627
	823133	Blank	21.7	20.0	ug/L	108	70.0 - 130	119605628
Bromofluorobenzene (SURR)	823133	CCV	20.2	20.0	ug/L	101	70.0 - 130	119605625
	823133	LCS	20.8	20.0	ug/L	104	70.0 - 130	119605626
	823133	LCS Dup	20.5	20.0	ug/L	102	70.0 - 130	119605627
	823133	Blank	20.3	20.0	ug/L	102	70.0 - 130	119605628
Dibromofluoromethane (SURR)	823133	CCV	21.3	20.0	ug/L	106	70.0 - 130	119605625
	823133	LCS	23.8	20.0	ug/L	119	70.0 - 130	119605626
	823133	LCS Dup	20.8	20.0	ug/L	104	70.0 - 130	119605627
	823133	Blank	20.1	20.0	ug/L	100	70.0 - 130	119605628
TolueneD8 (SURR)	823133	CCV	20.4	20.0	ug/L	102	70.0 - 130	119605625
	823133	LCS	19.4	20.0	ug/L	97.0	70.0 - 130	119605626
	823133	LCS Dup	20.5	20.0	ug/L	102	70.0 - 130	119605627
	823133	Blank	19.6	20.0	ug/L	98.0	70.0 - 130	119605628
1,2-DCA-d4 (SURR)	1756879	MS	20.9	20.0	ug/L	104	70.0 - 130	119605632
	1756879	MSD	21.4	20.0	ug/L	107	70.0 - 130	119605633
Bromofluorobenzene (SURR)	1756879	MS	19.8	20.0	ug/L	99.0	70.0 - 130	119605632
	1756879	MSD	20.0	20.0	ug/L	100	70.0 - 130	119605633
Dibromofluoromethane (SURR)	1756879	MS	20.4	20.0	ug/L	102	70.0 - 130	119605632
	1756879	MSD	21.2	20.0	ug/L	106	70.0 - 130	119605633
TolueneD8 (SURR)	1756879	MS	19.9	20.0	ug/L	99.5	70.0 - 130	119605632
	1756879	MSD	20.4	20.0	ug/L	102	70.0 - 130	119605633
1,2-DCA-d4 (SURR)	1758058	UNKNOWN	20.8	20.0	ug/L	104	70.0 - 130	119605629
Bromofluorobenzene (SURR)	1758058	UNKNOWN	20.6	20.0	ug/L	103	70.0 - 130	119605629
Dibromofluoromethane (SURR)	1758058	UNKNOWN	20.5	20.0	ug/L	102	70.0 - 130	119605629
TolueneD8 (SURR)	1758058	UNKNOWN	20.1	20.0	ug/L	100	70.0 - 130	119605629

Analytical Set 823715

EPA 552.2 1

Blank

Parameter	PrepSet	Reading	MDL	MDL	Units	File
Bromoacetic acid	823109	ND	0.275	5.00	ug/L	119619231



NELAP-accredited #T104704201



Quality Control

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Chloroacetic acid	823109	ND	0.559	5.00	ug/L	119619231
Dibromoacetic acid	823109	ND	0.198	5.00	ug/L	119619231
Dichloroacetic acid	823109	ND	0.244	5.00	ug/L	119619231
Trichloroacetic acid	823109	ND	0.191	5.00	ug/L	119619231

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Bromoacetic acid	25.5	20.0	ug/L	127	70.0 - 130	119619230
Chloroacetic acid	21.1	20.0	ug/L	106	70.0 - 130	119619230
Dibromoacetic acid	23.3	20.0	ug/L	117	70.0 - 130	119619230
Dichloroacetic acid	25.9	20.0	ug/L	129	70.0 - 130	119619230
Trichloroacetic acid	23.0	20.0	ug/L	115	70.0 - 130	119619230

IS Areas

Parameter	Sample	Type	Reading	CCVISM	Low	High	File	PrepSet
1,2,3-Trichloropropane (IS)		CCV	1014000	1014000	709500	1318000	119619230	823715
	823109	Blank	986600	1014000	709500	1318000	119619231	823109
	823109	LCS	1007000	1014000	709500	1318000	119619232	823109
	1758057	UNKNOWN	1063000	1014000	709500	1318000	119619234	823109
	1758058	UNKNOWN	867900	1014000	709500	1318000	119619235	823109

IS RetTime

Parameter	Sample	Type	Reading	CCVISM	Low	High	File	PrepSet
1,2,3-Trichloropropane (IS)		CCV	8.810	8.810	8.750	8.870	119619230	823715
	823109	Blank	8.800	8.810	8.750	8.870	119619231	823109
	823109	LCS	8.800	8.810	8.750	8.870	119619232	823109
	1758057	UNKNOWN	8.800	8.810	8.750	8.870	119619234	823109
	1758058	UNKNOWN	8.800	8.810	8.750	8.870	119619235	823109

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Bromoacetic acid	823109	21.9	23.7	20.0	70.0 - 130	110	118	ug/L	7.02	30.0
Chloroacetic acid	823109	19.1	20.4	20.0	70.0 - 130	95.5	102	ug/L	6.58	30.0
Dibromoacetic acid	823109	21.0	22.3	20.0	70.0 - 130	105	112	ug/L	6.45	30.0
Dichloroacetic acid	823109	22.3	23.9	20.0	70.0 - 130	112	120	ug/L	6.90	30.0
Trichloroacetic acid	823109	19.1	20.5	20.0	70.0 - 130	95.5	102	ug/L	6.58	30.0

Analytical Set 822934

SM 2130 B-2001

AWRL/MRL C

Parameter	Reading	Known	Units	Recover%	Limits%	File
Turbidity	0.30	0.30	NTU	100	70.0 - 130	119600439

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Turbidity	822934	ND	0.30	0.30	NTU	119600437

Duplicate

Parameter	Sample	Result	Unknown	Unit	RPD	Limit%
Turbidity	1758057	ND	ND	NTU		20.0

Mat. Spike

Parameter	Sample	Spike	Unknown	Known	Units	Recovery %	Limits %	File
Turbidity	1758057	39.7	ND	40.0	NTU	99.2	70.0 - 130	119600443





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 02/18/2019

Page 14 of 14

Standard

Parameter	Sample	Reading	Known	Units	Recover%	Limits%	File
Turbidity	822934	9.43	10.0	NTU	94.3	90.0 - 110	119600438
	822934	101	100	NTU	101	90.0 - 110	119600440
	822934	9.37	10.0	NTU	93.7	90.0 - 110	119600445
	822934	9.86	10.0	NTU	98.6	90.0 - 110	119600448
	822934	9.32	10.0	NTU	93.2	90.0 - 110	119600450

Analytical Set **823223**

SM 2320 B-2011

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Total Alkalinity (as CaCO3)	823223	ND	1.00	1.00	mg/L	119606785

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Total Alkalinity (as CaCO3)	26.1	25.0	mg/L	104	90.0 - 110	119606784
	26.1	25.0	mg/L	104	90.0 - 110	119606798
	26.1	25.0	mg/L	104	90.0 - 110	119606811

Duplicate

Parameter	Sample	Result	Unknown	Unit	RPD	Limit%
Total Alkalinity (as CaCO3)	1757415	21.5	22.5	mg/L	4.55	20.0
	1758722	259	261	mg/L	0.769	20.0

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Total Alkalinity (as CaCO3)	26.6	25.0	mg/L	106	90.0 - 110	119606783

Mat. Spike

Parameter	Sample	Spike	Unknown	Known	Units	Recovery %	Limits %	File
Total Alkalinity (as CaCO3)	1757415	46.6	22.5	25.0	mg/L	96.4	70.0 - 130	119606788
	1758722	279	261	25.0	mg/L	72.0	70.0 - 130	119606801

* Out RPD is Relative Percent Difference: $\text{abs}(r1-r2) / \text{mean}(r1,r2) * 100\%$

Recover% is Recovery Percent: $\text{result} / \text{known} * 100\%$

Blank - Method Blank; CCV - Continuing Calibration Verification; BFB - GC/MS Tuning Compound; AWRL/MRL C - Ambient Water Reporting Limit/Minimum Reporting Limit Check Std; LCS - Laboratory Control Sample; ICV - Initial Calibration Verification; CCB - Continuing Calibration Blank



Chain Of Custody Record

Batch # 80885 TEMP UN-C: 99 Page 1 of 1

Customer / Report Information

Billing Information

Check box if Billing is the same as Report Information

Therm ID# 4 TEMP CORR: 9.9

Name: Victoria City 88

Address:

PO #

Phone:

EMAIL:

FAX:

Attention: Stephan Robinson

Address:

PO #

Phone:

EMAIL:

FAX:

Project: ASR Table 1, List A

Comments: Well 19A21

Requested Analysis

C, F, SO4, TDS, TSS, Turbidity, Metals, Silica, NH3, H, K, Hard, PO4, Bromate, THM, HAA5, TOC

Completed By laboratory

Sample Information

Collected By:

Matrix

Container

Preservative

Custody Seals Present

Client / Field Sample ID

Collected

Date

Time

TYPE

NUMBER

Size

LAB Sample Number

Intact Yes No

C = Composite
 G = Grab
 L = Liquid
 W = Waste H2O
 W-Water

DW - Drinking H2O
 S - Solid
 SL - Sludge

Preservative

H2SO4 HNO3
 H3PO4 NaOH
 ICE HCL
 Na2SO3

H2SO4 HNO3
 H3PO4 NaOH
 ICE HCL
 Na2SO3

H2SO4 HNO3
 H3PO4 NaOH
 ICE HCL
 Na2SO3

H2SO4 HNO3
 H3PO4 NaOH
 ICE HCL
 Na2SO3

H2SO4 HNO3
 H3PO4 NaOH
 ICE HCL
 Na2SO3

Well 19

2/11/19

1159

W

9

XXXXXX

XXXXXX

XXXXXX

S190421401

Well 21

2/11/19

1159

W

9

XXXXXX

XXXXXX

XXXXXX

S190421402

Required Turnaround: Routine (6-10 Business days)

Expedite / Rush: 1 Business Day

2 Business Days

3 Business days

5 Business days

Other

REMARKS:

Surcharge will apply to RUSH TAT Authorized By:

Container Type: P=Plastic, G=Glass, V=Voa, O=Other

Carrier ID:

Relinquished By: [Signature]

Date: 02/11/19

Time: 1223

Received By: [Signature]

Date: 2-11-19

Time: 1223

Received By:

Date:

BatchNo: 81230

SAMPLE REPORT



T104704328-19-16

Business

Victoria, City of - Stephen Robinson
P O Box 1758
Victoria Tx 77902
Att: Stephen Robinson



Laboratory

B Environmental, LLC.
1606 E Brazos, Suite D
Victoria TX 77901
ph. 361-572-8224

Reference Information

Project: ASR Table 1, List A&B - Well #19
Printed: Tuesday, March 05, 2019

Re: Victoria, City of - Stephen Robinson

Dear: Stephen Robinson

Attached are the results for sample(s) received on 2/19/2019

The analytical results relate only to the samples tested.
All supporting quality data meets the requirements of NELAC unless noted in the case narrative section of the report.

This report contains 22 pages (including the cover page)

If you have any questions concerning this report, please do not hesitate to call (361) 572-8224 or Fax us at (361) 572-4115

Respectfully Submitted,
Kevin Baros

Kevin Baros
Laboratory Director



B Environmental, LLC.
1606 E Brazos, Suite D
Victoria TX 77901

BatchNo: 81230

Batch No:

Sample Receipt Checklist

Date Received:

Project

Received By:

Login completed by:

Carrier Name Walk In

- Shipping container/cooler in good condition? YES NO Not Present
- Custody seals intact on shipping container/cooler? YES NO Not Present
- Custody seals intact on sample bottles? YES NO Not Present
- Chain of Custody present? YES NO
- Chain of Custody signed when relinquished and received YES NO
- Chain of Custody agrees with sample labels? YES NO
- Samples in proper container/bottles? YES NO
- Sample containers intact? YES NO
- Sufficient sample volume for indicated tests? YES NO
- All samples received within holding times? YES NO
- Container/Temp Blank - temperature in compliance? YES NO >0 <6 °C On Ice
- Water - VOA vials have zero headspace? Bubble < 6mm? YES NO No VOA Vials submitted
- Water - pH acceptable upon receipt? YES NO Not Applicable

*TEMP pH Adjusted? Checked By

Any No and/or N/A (not applicable) response must be detailed in the comments section below.

Client contacted PersonContacted
Contacted by: Date Contacted:

Regarding

Comments
Therm #4. The sample was received the same day it was collected and was in the process of cooling. The sample was collected in bottles received from the subcontractor, Ana-Lab. pH Paper Lot # 2-63-7.

Corrective Action





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Printed: 03/01/2019

Page 1 of 6

Results

Report To

B-Environmental
 Kevin C. Baros
 1606 E Brazos St., Suite D
 Victoria, TX 77901

ASR-Table 1, List A & B

Account
BENV-G

Project
863477

Results

1760456	S190501542					Received: 02/20/2019	
Drinking Water	Collected by: Client	B-Environmental		PO:			
	Taken: 02/19/2019 14:54:00						
<hr/>							
<i>Calculation</i>	<i>Prepared:</i>	<i>02/22/2019</i>	<i>17:36:21</i>	<i>Calculated</i>	<i>02/22/2019</i>	<i>17:36:21</i>	<i>CAL</i>
<i>Parameter</i>	<i>Results</i>	<i>Units</i>	<i>RL</i>	<i>Flag</i>	<i>CAS</i>	<i>Bottle</i>	
N Ammonia	0.462	mg/L	0.0242				
<hr/>							
<i>Calculation</i>	<i>Prepared:</i>	<i>02/27/2019</i>	<i>10:53:14</i>	<i>Calculated</i>	<i>02/27/2019</i>	<i>10:53:14</i>	<i>CAL</i>
<i>Parameter</i>	<i>Results</i>	<i>Units</i>	<i>RL</i>	<i>Flag</i>	<i>CAS</i>	<i>Bottle</i>	
z Phosphorus (as Phosphate)	0.722	mg/L	0.306				
<hr/>							
EPA 200.7 4.4	<i>Prepared:</i>	824428	02/21/2019	13:30:00	<i>Analyzed</i>	824580	02/21/2019 23:07:00 JBP
<i>Parameter</i>	<i>Results</i>	<i>Units</i>	<i>RL</i>	<i>Flag</i>	<i>CAS</i>	<i>Bottle</i>	
N Calcium	42.4	mg/L	0.500		7440-70-2	16	
N Iron, Total	0.198	mg/L	0.025		7439-89-6	16	
N Magnesium, Total	9.54	mg/L	0.020		7439-95-4	16	
N Manganese	<0.00264	mg/L	0.00264		7439-96-5	16	
<hr/>							
EPA 200.7 4.4	<i>Prepared:</i>	824428	02/21/2019	13:30:00	<i>Analyzed</i>	825038	02/25/2019 20:09:00 JBP
<i>Parameter</i>	<i>Results</i>	<i>Units</i>	<i>RL</i>	<i>Flag</i>	<i>CAS</i>	<i>Bottle</i>	
N Sodium	56.6	mg/L	2.50		7440-23-5	16	
<hr/>							
EPA 200.7 4.4	<i>Prepared:</i>	824428	02/21/2019	13:30:00	<i>Analyzed</i>	825038	02/25/2019 20:19:00 JBP
<i>Parameter</i>	<i>Results</i>	<i>Units</i>	<i>RL</i>	<i>Flag</i>	<i>CAS</i>	<i>Bottle</i>	
N Potassium	4.48	mg/L	0.500		7440-09-7	16	
<hr/>							
EPA 200.7 4.4	<i>Prepared:</i>	824428	02/21/2019	13:30:00	<i>Analyzed</i>	825283	02/26/2019 16:57:00 JBP
<i>Parameter</i>	<i>Results</i>	<i>Units</i>	<i>RL</i>	<i>Flag</i>	<i>CAS</i>	<i>Bottle</i>	
N Phosphorus	0.236	mg/L	0.100		7723-14-0	16	
z Silicon Recoverable	6.31	mg/L	0.100		7740-21-3	16	
<hr/>							
EPA 200.7 4.4 - Calc	<i>Prepared:</i>	<i>02/27/2019</i>	<i>10:53:14</i>	<i>Calculated</i>	<i>02/27/2019</i>	<i>10:53:14</i>	<i>CAL</i>
<i>Parameter</i>	<i>Results</i>	<i>Units</i>	<i>RL</i>	<i>Flag</i>	<i>CAS</i>	<i>Bottle</i>	
N Silica (SiO2)	13.5	mg/L	0.214				





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Printed: 03/01/2019

Page 2 of 6

Results

1760456 S190501542		Received: 02/20/2019						
Drinking Water		Collected by: Client	B-Environmental		PO:			
		Taken: 02/19/2019 14:54:00						
EPA 200.7, Rev. 4.4		Prepared: 824206	02/20/2019	14:00:00	Analyzed 824610	02/21/2019	21:12:00	JBP
Parameter	Results	Units	RL	Flag	CAS	Bottle		
Z Dissolved Arsenic	0.0187	mg/L	0.050	JD	7440-38-2	12		
N Dissolved Iron	0.0118	mg/L	0.025	J	7439-89-6	12		
N Dissolved Manganese	<0.00264	mg/L	0.00264		7439-96-5	12		
EPA 200.7, Rev. 4.4		Prepared: 824428	02/21/2019	13:30:00	Analyzed 824580	02/21/2019	23:07:00	JBP
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Arsenic	0.0186	mg/L	0.010		7440-38-2	16		
EPA 200.8 5.4		Prepared: 824428	02/21/2019	13:30:00	Analyzed 824858	02/22/2019	18:32:00	LPS
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Aluminum, Total	0.0356	mg/L	0.005	B	7429-90-5	16		
EPA 300.0 2.1		Prepared: 825055	02/24/2019	01:51:00	Analyzed 825055	02/24/2019	01:51:00	AMB
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Chloride	61.8	mg/L	1.50			01		
N Fluoride	0.750	mg/L	0.500			01		
N Sulfate	22.5	mg/L	1.50			01		
EPA 300.1 1		Prepared: 825632	02/27/2019	13:42:00	Analyzed 825632	02/27/2019	13:42:00	AMB
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Bromate	<5.00	ug/L	5.00			04		
EPA 350.1 2		Prepared: 824293	02/21/2019	09:00:00	Analyzed 824522	02/21/2019	11:09:00	MLC
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Ammonia (as N)	0.382	mg/L	0.020			15		
EPA 524.2 4.1		Prepared: 824775	02/21/2019	14:08:00	Analyzed 824775	02/21/2019	14:08:00	KL B
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Bromodichloromethane	15.4	ug/L	1.00	D	75-27-4	10		
N Bromoform	2.94	ug/L	1.00	P	75-25-2	10		
N Chloroform	12.9	ug/L	1.00	D	67-66-3	10		
N Dibromochloromethane	12.8	ug/L	1.00	D	124-48-1	10		
EPA 524.2 4.1		Prepared: 824775	02/25/2019	10:53:36	Calculated 824775	02/25/2019	10:53:36	CAL
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Trihalomethanes	0.04404	mg/L	0.001			10		

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Printed: 03/01/2019

Page 3 of 6

Results

1760456 S190501542		Received: 02/20/2019						
Drinking Water		Collected by: Client	B-Environmental		PO:			
		Taken: 02/19/2019	14:54:00					
EPA 552.2 1		Prepared: 824870	02/25/2019	08:53:29	Analyzed 824983	02/25/2019	16:09:00	EMT
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Bromoacetic acid	<5.00	ug/L	5.00		79-08-3	19		
N Chloroacetic acid	10.2	ug/L	5.00		79-11-8	19		
N Dibromoacetic acid	10.8	ug/L	5.00		631-64-1	19		
N Dichloroacetic acid	17.6	ug/L	5.00		79-43-6	19		
N Trichloroacetic acid	9.17	ug/L	5.00		76-03-9	19		
EPA 552.2 1		Prepared: 824870	02/25/2019	08:53:29	Calculated 824983	02/26/2019	13:29:41	CAL
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N HAA5	0.04777	mg/L	0.005			19		
SM 2130 B-2001		Prepared: 824659	02/21/2019	12:00:00	Analyzed 824659	02/21/2019	12:00:00	DWN
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Turbidity	1.14	NTU	0.30			06		
SM 2320 B-2011		Prepared: 824410	02/21/2019	08:45:00	Analyzed 824410	02/21/2019	08:45:00	ELS
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Total Alkalinity (as CaCO3)	176	mg/L	1.00			01		
SM 2340 B-2011		Prepared:	02/22/2019	17:36:21	Calculated	02/22/2019	17:36:21	CAL
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Total Hardness as CaCO3 -Ca/MgEq	145	mg/L	0.500					
SM 2540 C-97		Prepared: 825174	02/22/2019	07:00:00	Analyzed 825174	02/22/2019	07:00:00	TH2
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Total Dissolved Solids	328	mg/L	20.0			01		
SM 2540 D-97		Prepared: 824730	02/21/2019	10:45:00	Analyzed 824730	02/21/2019	10:45:00	ALW
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Total Suspended Solids	<2.00	mg/L	2.00			01		
SM 5310 C-2000		Prepared: 824335	02/20/2019	14:58:00	Analyzed 824335	02/20/2019	14:58:00	ALH
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Total Organic Carbon	2.73	mg/L	0.500			03		

Sample Preparation

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Printed: 03/01/2019

Page 4 of 6

Results

1760456		S190501542						Received: 02/20/2019
		Prepared:	02/20/2019	11:43:00	Analyzed	02/20/2019	11:43:00	CCP
z	Bottle pH	<2	SU					07
		Prepared:	824145	02/20/2019	00:00:00	Analyzed	824145	02/20/2019
								00:00:00 CCP
z	Bottle pH	<2	SU					02
z	Bottle pH	<2	SU					03
z	Bottle pH	<2	SU					05
	Cooler Temperature	0.3	degrees					01
	Cooler Temperature	0.3	degrees					02
	Cooler Temperature	0.3	degrees					08
	Cooler Temperature	0.3	degrees					09
	Cooler Temperature	0.3	degrees					10
	Cooler Temperature	0.3	degrees					11
	Cooler Temperature	0.3	degrees					06
	Cooler Temperature	0.3	degrees					03
	Cooler Temperature	0.3	degrees					04
	Cooler Temperature	0.3	degrees					05
EPA 200.2 2.8		Prepared:	824428	02/21/2019	13:30:00	Analyzed	824428	02/21/2019
								13:30:00 TES
N	Liquid Metals Digestion	50/50	ml					02
EPA 350.2, Rev. 2.0		Prepared:	824293	02/21/2019	09:00:00	Analyzed	824293	02/21/2019
								09:00:00 CRS
N	Ammonia Distillation	50/50	ml					05
EPA 524.2 4.1		Prepared:	824775	02/21/2019	14:08:00	Analyzed	824775	02/21/2019
								14:08:00 KLB
N	Trihalomethane Expansion Code	Entered						10
EPA 552.2 1		Prepared:	824870	02/25/2019	08:53:29	Analyzed	824870	02/25/2019
								08:53:29 LSD

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Printed: 03/01/2019

Page 5 of 6

Results

1760456 S190501542

Received: 02/20/2019

EPA 552.2 1	Prepared: 824870	02/25/2019	08:53:29	Analyzed 824870	02/25/2019	08:53:29	LSD
N Haloacetic Acids Extraction	3/40	ml				08	
EPA 552.2 1	Prepared: 824870	02/25/2019	08:53:29	Analyzed 824983	02/25/2019	16:09:00	EMT
N Haloacetic Acids (HAA5)	Entered					19	
SM 2540 C-97	Prepared: 824539	02/22/2019	07:00:00	Analyzed 824539	02/22/2019	07:00:00	TH2
N Total Dissolved Solids Started	Started						
SM 2540 D-1997	Prepared: 824092	02/21/2019	10:45:00	Analyzed 824092	02/21/2019	10:45:00	ALW
N TSS Set Started	Started						
SM 3030 B-2004	Prepared: 824206	02/20/2019	14:00:00	Analyzed 824206	02/20/2019	14:00:00	ALB
N Dissolved Metals Filtering	50/50	ml				01	





Results

Qualifiers:

- J - Analyte detected below quantitation limit
- D - Duplicate RPD was higher than expected
- B - Analyte detected in the associated method blank
- P - Spike recovery outside control limits due to matrix effects.

We report results on an As Received or wet basis unless marked Dry Weight. Unless otherwise noted, testing was performed at Ana-labs corporate laboratory that holds the following Federal and State certificates: EPA Lab Number TX00063, US Department of Agriculture Soil Import Permit P330-17-00117, Texas Commission on Environmental Quality Commercial Drinking Water Lab Approval (Lab ID: TX219), Texas Commission on Environmental Quality NELAP T104704201-19-15, Louisiana Department of Environmental Quality Laboratory Certification (NELAP, LELAP) #02008, Louisiana Department of Health and Hospitals Drinking Water (NELAP) Certificate No LA026, Oklahoma Department of Environmental Quality TNI Laboratory Accreditation Program Certificate No. 2018-126, Arkansas Department of Environmental Quality Certification #18-068-0. The Accredited column designates accreditation by N -- NELAC, or z -- not covered under NELAC scope of accreditation.

These analytical results relate to the sample tested. This report may NOT be reproduced EXCEPT in FULL without written approval of Ana-Lab Corp. Unless otherwise specified, these test results meet the requirements of NELAC.

RL is the Reporting Limit (sample specific quantitation limit) and is at or above the Method Detection Limit (MDL). CAS is Chemical Abstract Service number. RL is our Reporting Limit, or Minimum Quantitation Level. The RL takes into account the Instrument Detection Limit (IDL), Method Detection Limit (MDL), and Practical Quantitation Limit (PQL), and any dilutions and/or concentrations performed during sample preparation (EQL). Our analytical result must be above this RL before we report a value in the 'Results' column of our report (without a 'J' flag). Otherwise, we report ND (Not Detected above RL), because the result is "<" (less than) the number in the RL column. MAL is Minimum Analytical Level and is typically from regulatory agencies. Unless we report a result in the result column, or interferences prevent it, we work to have our RL at or below the MAL.

Trey Peery, MA, Project Manager





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 03/01/2019

Page 1 of 13

1
2

Report To

B-Environmental
Kevin C. Baros
1606 E Brazos St., Suite D
Victoria, TX 77901

Account
BENV-G

Project
863477

Analytical Set **824522**

EPA 350.1 2

Blank

<u>Parameter</u>	<u>PrepSet</u>	<u>Reading</u>	<u>MDL</u>	<u>SQL</u>	<u>Units</u>	<u>File</u>
Ammonia (as N)	824293	ND	0.00356	0.020	mg/L	119637286

CCV

<u>Parameter</u>	<u>Reading</u>	<u>Known</u>	<u>Units</u>	<u>Recover%</u>	<u>Limits%</u>	<u>File</u>
Ammonia (as N)	2.06	2.00	mg/L	103	90.0 - 110	119637285
	2.12	2.00	mg/L	106	90.0 - 110	119637289
	2.08	2.00	mg/L	104	90.0 - 110	119637295
	2.16	2.00	mg/L	108	90.0 - 110	119637300
	2.14	2.00	mg/L	107	90.0 - 110	119637308
	2.07	2.00	mg/L	104	90.0 - 110	119637319
	2.17	2.00	mg/L	108	90.0 - 110	119637328
	2.16	2.00	mg/L	108	90.0 - 110	119637336
	2.16	2.00	mg/L	108	90.0 - 110	119637345
	2.13	2.00	mg/L	106	90.0 - 110	119637349

Duplicate

<u>Parameter</u>	<u>Sample</u>	<u>Result</u>	<u>Unknown</u>	<u>Unit</u>	<u>RPD</u>	<u>Limit%</u>
Ammonia (as N)	1760439	0.113	0.140	mg/L	21.3	20.0
	1760590	0.138	0.121	mg/L	13.1	20.0

ICV

<u>Parameter</u>	<u>Reading</u>	<u>Known</u>	<u>Units</u>	<u>Recover%</u>	<u>Limits%</u>	<u>File</u>
Ammonia (as N)	2.10	2.00	mg/L	105	90.0 - 110	119637284

LCS Dup

<u>Parameter</u>	<u>PrepSet</u>	<u>LCS</u>	<u>LCSD</u>	<u>Known</u>	<u>Limits%</u>	<u>LCS%</u>	<u>LCSD%</u>	<u>Units</u>	<u>RPD</u>	<u>Limit%</u>
Ammonia (as N)	824293	2.06	2.02	2.00	90.0 - 110	103	101	mg/L	1.96	20.0

Mat. Spike

<u>Parameter</u>	<u>Sample</u>	<u>Spike</u>	<u>Unknown</u>	<u>Known</u>	<u>Units</u>	<u>Recovery %</u>	<u>Limits %</u>	<u>File</u>
Ammonia (as N)	1760439	2.46	0.140	2.00	mg/L	116	80.0 - 120	119637343
	1760590	2.32	0.121	2.00	mg/L	110	80.0 - 120	119637340

Analytical Set **824730**

SM 2540 D-97

ControlBlk

<u>Parameter</u>	<u>PrepSet</u>	<u>Reading</u>	<u>MDL</u>	<u>SQL</u>	<u>Units</u>	<u>File</u>
Total Suspended Solids	824730	0.0002			grams	119642436

Duplicate

<u>Parameter</u>	<u>Sample</u>	<u>Result</u>	<u>Unknown</u>	<u>Unit</u>	<u>RPD</u>	<u>Limit%</u>
Total Suspended Solids	1760343	64.0	67.3	mg/L	5.03	20.0
	1760453	4940	5040	mg/L	2.00	20.0
	1760454	3840	3970	mg/L	3.33	20.0





Quality Control

Printed 03/01/2019

Page 2 of 13

LCS

Parameter	PrepSet	Reading	Known	Units	Recover%	Limits	File
Total Suspended Solids	824730	46.0	50.0	mg/L	92.0	90.0 - 110	119642470

Standard

Parameter	Sample	Reading	Known	Units	Recover%	Limits%	File
Total Suspended Solids		92.0	100	mg/L	92.0	90.0 - 110	119642469

Analytical Set **825174**

SM 2540 C-97

ControlBlk

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Total Dissolved Solids	825174	0			grams	119651444

Duplicate

Parameter	Sample	Result	Unknown	Unit	RPD	Limit%
Total Dissolved Solids	1760369	2700	2670	mg/L	1.12	20.0

LCS

Parameter	PrepSet	Reading	Known	Units	Recover%	Limits	File
Total Dissolved Solids	825174	202	200	mg/L	101	85.0 - 115	119651458

Standard

Parameter	Sample	Reading	Known	Units	Recover%	Limits%	File
Total Dissolved Solids		100	100	mg/L	100	90.0 - 110	119651445

Analytical Set **825055**

EPA 300.0 2.1

AWRL/MRL C

Parameter	Reading	Known	Units	Recover%	Limits%	File
Fluoride	0.135	0.100	mg/L	135	50.0 - 150	119649528

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Chloride	825055	ND	0.0196	0.300	mg/L	119649527
Fluoride	825055	ND	0.014	0.100	mg/L	119649527
Sulfate	825055	0.017	0.0109	0.300	mg/L	119649527

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Chloride	10.6	10.0	mg/L	106	90.0 - 110	119649524
	10.1	10.0	mg/L	101	90.0 - 110	119649539
	10.1	10.0	mg/L	101	90.0 - 110	119649553
Fluoride	10.0	10.0	mg/L	100	90.0 - 110	119649524
	9.92	10.0	mg/L	99.2	90.0 - 110	119649539
	9.96	10.0	mg/L	99.6	90.0 - 110	119649553
Sulfate	11.0	10.0	mg/L	110	90.0 - 110	119649524
	10.2	10.0	mg/L	102	90.0 - 110	119649539
	10.2	10.0	mg/L	102	90.0 - 110	119649553

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Chloride	825055	4.81	4.81	5.00	85.0 - 110	96.2	96.2	mg/L	0	20.0
Fluoride	825055	4.91	4.91	5.00	88.0 - 110	98.2	98.2	mg/L	0	20.0
Sulfate	825055	5.14	5.16	5.00	88.0 - 110	103	103	mg/L	0.388	20.0





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 03/01/2019

Page 3 of 13

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Chloride	1760428	25.9	25.8	17.3	10.0	80.0 - 120	86.0	85.0	mg/L	1.17	20.0
Fluoride	1760428	9.08	9.08	1.26	10.0	80.0 - 120	78.2 *	78.2 *	mg/L	0	20.0
Sulfate	1760428	19.9	19.1	10.4	10.0	80.0 - 120	95.0	87.0	mg/L	8.79	20.0
Chloride	1760429	25.7	25.6	17.4	10.0	80.0 - 120	83.0	82.0	mg/L	1.21	20.0
Fluoride	1760429	9.75	9.67	1.28	10.0	80.0 - 120	84.7	83.9	mg/L	0.949	20.0
Sulfate	1760429	19.5	19.3	10.4	10.0	80.0 - 120	91.0	89.0	mg/L	2.22	20.0

Analytical Set **825632**

EPA 300.1 1

AWRL/MRL C

Parameter	Reading	Known	Units	Recover%	Limits%	File
Bromate	5.11	5.00	ug/L	102	75.0 - 125	119659123

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Bromate	825632	ND	2.06	5.00	ug/L	119659122
	825632	ND	2.06	5.00	ug/L	119659125

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Bromate	548	500	ug/L	110	85.0 - 115	119659119
	535	500	ug/L	107	85.0 - 115	119659139
	530	500	ug/L	106	85.0 - 115	119659146

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Bromate	825632	94.9	95.3	100	85.0 - 115	94.9	95.3	ug/L	0.421	25.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Bromate	1760572	207	201	ND	200	80.0 - 120	104	100	ug/L	2.94	20.0
	1760573	189	192	ND	200	80.0 - 120	94.5	96.0	ug/L	1.57	20.0

Analytical Set **824335**

SM 5310 C-2000

AWRL/MRL C

Parameter	Reading	Known	Units	Recover%	Limits%	File
Total Organic Carbon	1.97	2.00	mg/L	98.5	75.0 - 125	119634219

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Total Organic Carbon	824335	0.0708	0.0618	0.500	mg/L	119634218
	824335	0.120	0.0618	0.500	mg/L	119634222
	824335	0.0701	0.0618	0.500	mg/L	119634244

CCB

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Total Organic Carbon	824335	0.139	0.0618	0.500	mg/L	119634212
	824335	0.0838	0.0618	0.500	mg/L	119634230
	824335	0.159	0.0618	0.500	mg/L	119634240
	824335	0.0795	0.0618	0.500	mg/L	119634242
	824335	0.121	0.0618	0.500	mg/L	119634253
	824335	0.136	0.0618	0.500	mg/L	119634255





Quality Control

Printed 03/01/2019

Page 4 of 13

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Total Organic Carbon	10.9	10.0	mg/L	109	90.0 - 110	119634215
	10.4	10.0	mg/L	104	90.0 - 110	119634224
	10.6	10.0	mg/L	106	90.0 - 110	119634231
	10.3	10.0	mg/L	103	90.0 - 110	119634241
	10.2	10.0	mg/L	102	90.0 - 110	119634243
	10.8	10.0	mg/L	108	90.0 - 110	119634254
	10.5	10.0	mg/L	105	90.0 - 110	119634256

ICL

Parameter	Reading	Known	Units	Recover%	Limits%	File
Total Organic Carbon	21.8	20.0	mg/L	109	90.0 - 110	119634214
	18.9	20.0	mg/L	94.5	90.0 - 110	119634220

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Total Organic Carbon	10.8	10.0	mg/L	108	90.0 - 110	119634216
	10.3	10.0	mg/L	103	90.0 - 110	119634221

LCS

Parameter	PrepSet	Reading	Known	Units	Recover%	Limits	File
Total Organic Carbon	824335	5.17	5.00	mg/L	103	89.8 - 111	119634217
	824335	4.92	5.00	mg/L	98.4	89.8 - 111	119634223
	824335	5.20	5.00	mg/L	104	89.8 - 111	119634245

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Total Organic Carbon	1760061	10.4	10.3	0.128	10.0	92.5 - 112	103	102	mg/L	0.978	20.0
	1760079	11.7	11.8	1.30	10.0	92.5 - 112	104	105	mg/L	0.957	20.0
	1760402	10.4	10.3	0.206	10.0	92.5 - 112	102	101	mg/L	0.986	20.0

Standard

Parameter	Sample	Reading	Known	Units	Recover%	Limits%	File
Total Organic Carbon	52.8	50.0	mg/L	106	90.0 - 110	119634213	

Analytical Set **824580**

EPA 200.7 4.4

AWRL/MRL C

Parameter	Reading	Known	Units	Recover%	Limits%	File
Calcium	0.745	0.500	mg/L	149	25.0 - 175	119639097
Iron, Total	0.060	0.050	mg/L	120	25.0 - 175	119639097
Magnesium, Total	0.536	0.500	mg/L	107	25.0 - 175	119639097
Manganese	0.0385	0.050	mg/L	77.0	25.0 - 175	119639097

Blank

Parameter	PrepSet	Reading	MDL	MDL	Units	File
Arsenic	824428	ND	0.0077	0.050	mg/L	119639181
Calcium	824428	0.259	0.0419	0.500	mg/L	119639181
Iron, Total	824428	ND	0.00504	0.025	mg/L	119639181
Magnesium, Total	824428	0.0227	0.0102	0.020	mg/L	119639181
Manganese	824428	ND	0.00264	0.050	mg/L	119639181
Sodium	824428	ND	0.0315	0.500	mg/L	119639181

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
-----------	---------	-------	-------	----------	---------	------





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 03/01/2019

Page 5 of 13

1
2

CCV

<u>Parameter</u>	<u>Reading</u>	<u>Known</u>	<u>Units</u>	<u>Recover%</u>	<u>Limits%</u>	<u>File</u>	
Arsenic	2.28	2.50	mg/L	91.2	90.0 - 110	119639175	
	2.33	2.50	mg/L	93.2	90.0 - 110	119639185	
	2.62	2.50	mg/L	105	90.0 - 110	119639194	
Calcium	27.0	25.0	mg/L	108	90.0 - 110	119639098	
	27.3	25.0	mg/L	109	90.0 - 110	119639106	
	27.4	25.0	mg/L	110	90.0 - 110	119639117	
	26.6	25.0	mg/L	106	90.0 - 110	119639128	
	26.3	25.0	mg/L	105	90.0 - 110	119639138	
	26.5	25.0	mg/L	106	90.0 - 110	119639149	
	26.1	25.0	mg/L	104	90.0 - 110	119639154	
	25.5	25.0	mg/L	102	90.0 - 110	119639164	
	25.5	25.0	mg/L	102	90.0 - 110	119639175	
	25.3	25.0	mg/L	101	90.0 - 110	119639185	
	26.3	25.0	mg/L	105	90.0 - 110	119639194	
	Iron, Total	2.37	2.50	mg/L	94.8	90.0 - 110	119639098
		2.30	2.50	mg/L	92.0	90.0 - 110	119639106
2.52		2.50	mg/L	101	90.0 - 110	119639117	
2.44		2.50	mg/L	97.6	90.0 - 110	119639128	
2.44		2.50	mg/L	97.6	90.0 - 110	119639138	
2.46		2.50	mg/L	98.4	90.0 - 110	119639149	
2.41		2.50	mg/L	96.4	90.0 - 110	119639154	
2.41		2.50	mg/L	96.4	90.0 - 110	119639164	
2.38		2.50	mg/L	95.2	90.0 - 110	119639175	
2.33		2.50	mg/L	93.2	90.0 - 110	119639185	
2.46		2.50	mg/L	98.4	90.0 - 110	119639194	
Magnesium, Total		24.7	25.0	mg/L	98.8	90.0 - 110	119639098
		24.3	25.0	mg/L	97.2	90.0 - 110	119639106
	25.8	25.0	mg/L	103	90.0 - 110	119639117	
	25.2	25.0	mg/L	101	90.0 - 110	119639128	
	25.0	25.0	mg/L	100	90.0 - 110	119639138	
	25.2	25.0	mg/L	101	90.0 - 110	119639149	
	24.9	25.0	mg/L	99.6	90.0 - 110	119639154	
	24.7	25.0	mg/L	98.8	90.0 - 110	119639164	
	24.6	25.0	mg/L	98.4	90.0 - 110	119639175	
	24.1	25.0	mg/L	96.4	90.0 - 110	119639185	
	25.3	25.0	mg/L	101	90.0 - 110	119639194	
	Manganese	2.45	2.50	mg/L	98.0	90.0 - 110	119639175
		2.40	2.50	mg/L	96.0	90.0 - 110	119639185
2.52		2.50	mg/L	101	90.0 - 110	119639194	

ICL

<u>Parameter</u>	<u>Reading</u>	<u>Known</u>	<u>Units</u>	<u>Recover%</u>	<u>Limits%</u>	<u>File</u>
Arsenic	5.13	5.00	mg/L	103	95.0 - 105	119639093
Calcium	51.0	50.0	mg/L	102	95.0 - 105	119639093
Iron, Total	5.09	5.00	mg/L	102	95.0 - 105	119639093
Magnesium, Total	51.3	50.0	mg/L	103	95.0 - 105	119639093
Manganese	5.07	5.00	mg/L	101	95.0 - 105	119639093

ICV

<u>Parameter</u>	<u>Reading</u>	<u>Known</u>	<u>Units</u>	<u>Recover%</u>	<u>Limits%</u>	<u>File</u>
Arsenic	2.58	2.50	mg/L	103	90.0 - 110	119639096

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 03/01/2019

Page 6 of 13

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Calcium	25.8	25.0	mg/L	103	90.0 - 110	119639096
Iron, Total	2.59	2.50	mg/L	104	90.0 - 110	119639096
Magnesium, Total	25.9	25.0	mg/L	104	90.0 - 110	119639096
Manganese	2.58	2.50	mg/L	103	90.0 - 110	119639096

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Arsenic	824428	0.481	0.449	0.500	85.0 - 115	96.2	89.8	mg/L	6.88	25.0
Calcium	824428	4.55	4.62	5.00	85.0 - 115	91.0	92.4	mg/L	1.53	25.0
Iron, Total	824428	0.473	0.471	0.500	85.0 - 115	94.6	94.2	mg/L	0.424	25.0
Magnesium, Total	824428	4.92	5.00	5.00	85.0 - 115	98.4	100	mg/L	1.61	25.0
Manganese	824428	0.476	0.480	0.500	85.0 - 115	95.2	96.0	mg/L	0.837	25.0
Sodium	824428	4.32	4.38	5.00	85.0 - 115	86.4	87.6	mg/L	1.38	25.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Arsenic	1760456	0.459	0.493	ND	0.500	75.0 - 125	91.8	98.6	mg/L	7.14	25.0
Calcium	1760456	47.6	47.9	42.4	5.00	75.0 - 125	104	110	mg/L	5.61	25.0
Iron, Total	1760456	0.657	0.655	0.198	0.500	75.0 - 125	91.8	91.4	mg/L	0.437	25.0
Magnesium, Total	1760456	13.6	13.8	9.54	5.00	75.0 - 125	81.2	85.2	mg/L	4.81	25.0
Manganese	1760456	0.459	0.461	ND	0.500	75.0 - 125	91.8	92.2	mg/L	0.435	25.0
Sodium	1760456	66.8	67.0	59.6	5.00	75.0 - 125	144 *	148 *	mg/L	2.74	25.0

Analytical Set 824610

EPA 200.7 4.4

Blank

Parameter	PrepSet	Reading	MDL	MDL	Units	File
Dissolved Arsenic	824206	0.0137	0.0077	0.050	mg/L	119640414
Dissolved Iron	824206	ND	0.00504	0.025	mg/L	119640414
Dissolved Manganese	824206	ND	0.00264	0.050	mg/L	119640414

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Dissolved Arsenic	2.68	2.50	mg/L	107	90.0 - 110	119640413
	2.38	2.50	mg/L	95.2	90.0 - 110	119640415
	2.59	2.50	mg/L	104	90.0 - 110	119640419
Dissolved Iron	2.46	2.50	mg/L	98.4	90.0 - 110	119640413
	2.41	2.50	mg/L	96.4	90.0 - 110	119640415
	2.41	2.50	mg/L	96.4	90.0 - 110	119640419
Dissolved Manganese	2.53	2.50	mg/L	101	90.0 - 110	119640413
	2.48	2.50	mg/L	99.2	90.0 - 110	119640415
	2.44	2.50	mg/L	97.6	90.0 - 110	119640419

ICL

Parameter	Reading	Known	Units	Recover%	Limits%	File
Dissolved Arsenic	5.13	5.00	mg/L	103	95.0 - 105	119640410
Dissolved Iron	5.09	5.00	mg/L	102	95.0 - 105	119640410
Dissolved Manganese	5.07	5.00	mg/L	101	95.0 - 105	119640410

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Dissolved Arsenic	2.58	2.50	mg/L	103	90.0 - 110	119640412
Dissolved Iron	2.59	2.50	mg/L	104	90.0 - 110	119640412





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 03/01/2019

Page 7 of 13

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Dissolved Manganese	2.58	2.50	mg/L	103	90.0 - 110	119640412

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Dissolved Arsenic	1760456	0.521	0.429	0.0187	0.500	75.0 - 125	100	82.1	mg/L	20.2 *	20.0
Dissolved Iron	1760456	0.492	0.500	0.0118	0.500	75.0 - 125	96.0	97.6	mg/L	1.65	20.0
Dissolved Manganese	1760456	0.494	0.497	ND	0.500	75.0 - 125	98.8	99.4	mg/L	0.605	20.0

Analytical Set 824858

EPA 200.8 5.4

Blank

Parameter	PrepSet	Reading	MDL	MDL	Units	File
Aluminum, Total	824428	0.00502	0.0025	0.005	mg/L	119644846

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Aluminum, Total	0.0497	0.05	mg/L	99.4	90.0 - 110	119644811
	0.0501	0.05	mg/L	100	90.0 - 110	119644819
	0.0501	0.05	mg/L	100	90.0 - 110	119644828
	0.0514	0.05	mg/L	103	90.0 - 110	119644845
	0.0499	0.05	mg/L	99.8	90.0 - 110	119644854
	0.0509	0.05	mg/L	102	90.0 - 110	119644865
	0.0509	0.05	mg/L	102	90.0 - 110	119644875
	0.0508	0.05	mg/L	102	90.0 - 110	119644886
	0.0503	0.05	mg/L	101	90.0 - 110	119644896

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Aluminum, Total	0.0493	0.05	mg/L	98.6	90.0 - 110	119644805

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Aluminum, Total	824428	0.469	0.473	0.500	85.0 - 115	93.8	94.6	mg/L	0.849	20.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Aluminum, Total	1760456	0.567	0.525	0.0356	0.500	70.0 - 130	106	97.9	mg/L	8.23	20.0
	1760779	0.499	0.497	0.0156	0.500	70.0 - 130	96.7	96.3	mg/L	0.415	20.0

Analytical Set 825038

EPA 200.7 4.4

Blank

Parameter	PrepSet	Reading	MDL	MDL	Units	File
Iron, Total	824428	ND	0.00504	0.025	mg/L	119648374
Magnesium, Total	824428	ND	0.0102	0.020	mg/L	119648374
Potassium	824428	ND	0.0765	0.500	mg/L	119648374
Sodium	824428	ND	0.0315	0.500	mg/L	119648374

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Potassium	24.9	25.0	mg/L	99.6	90.0 - 110	119648353
	24.2	25.0	mg/L	96.8	90.0 - 110	119648363
	24.8	25.0	mg/L	99.2	90.0 - 110	119648373
	24.7	25.0	mg/L	98.8	90.0 - 110	119648381





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 03/01/2019

Page 8 of 13

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Potassium	24.9	25.0	mg/L	99.6	90.0 - 110	119648391
	24.9	25.0	mg/L	99.6	90.0 - 110	119648401
Sodium	23.8	25.0	mg/L	95.2	90.0 - 110	119648353
	23.5	25.0	mg/L	94.0	90.0 - 110	119648363
	23.9	25.0	mg/L	95.6	90.0 - 110	119648373
	23.4	25.0	mg/L	93.6	90.0 - 110	119648381
	23.8	25.0	mg/L	95.2	90.0 - 110	119648391
	23.5	25.0	mg/L	94.0	90.0 - 110	119648401

Dir. SPKD

Parameter	Sample	DSPK	DSPKD	UNK	Known	Limits%	DSPK%	DSPKD%	Units	RPD	Limit%
Sodium	1760456	78.9	78.8	56.6	25.0	75.0 - 125	89.2	88.8	mg/L	0.127	25.0

Direct SPK

Parameter	Sample	DSPK	UNK	Known	Limits%	DSPK%	Units
Sodium	1760456	78.9	56.6	25.0	75.0 - 125	89.2	mg/L 25.0

ICL

Parameter	Reading	Known	Units	Recover%	Limits%	File
Potassium	49.1	50.0	mg/L	98.2	95.0 - 105	119648340
Sodium	49.3	50.0	mg/L	98.6	95.0 - 105	119648340

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Potassium	23.7	25.0	mg/L	94.8	90.0 - 110	119648343
Sodium	24.3	25.0	mg/L	97.2	90.0 - 110	119648343

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Iron, Total	824428	0.517	0.532	0.500	85.0 - 115	103	106	mg/L	2.86	25.0
Magnesium, Total	824428	4.75	4.81	5.00	85.0 - 115	95.0	96.2	mg/L	1.26	25.0
Potassium	824428	5.30	5.40	5.00	85.0 - 115	106	108	mg/L	1.87	25.0
Sodium	824428	5.21	5.33	5.00	85.0 - 115	104	107	mg/L	2.28	25.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Iron, Total	1760456	0.716	0.728	0.213	0.500	75.0 - 125	101	103	mg/L	2.36	25.0
Magnesium, Total	1760456	14.6	14.9	9.72	5.00	75.0 - 125	97.6	104	mg/L	5.96	25.0
Potassium	1760456	9.57	9.62	4.48	5.00	75.0 - 125	102	103	mg/L	0.978	25.0
Sodium	1760456	63.2	64.0	58.8	5.00	75.0 - 125	88.0	104	mg/L	16.7	25.0

Analytical Set **825283**

EPA 200.7 4.4

Blank

Parameter	PrepSet	Reading	MDL	MDL	Units	File
Phosphorus	824428	ND	0.0388	0.100	mg/L	119653453
Silicon Recoverable	824428	0.0551	0.0148	0.100	mg/L	119653453

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Phosphorus	9.48	10.0	mg/L	94.8	90.0 - 110	119653452
	9.37	10.0	mg/L	93.7	90.0 - 110	119653463
	9.69	10.0	mg/L	96.9	90.0 - 110	119653473
Silicon Recoverable	4.74	5.00	mg/L	94.8	90.0 - 110	119653452



NELAP-accredited #T104704201



Quality Control

Printed 03/01/2019

Page 9 of 13

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Silicon Recoverable	4.72	5.00	mg/L	94.4	90.0 - 110	119653463
	4.90	5.00	mg/L	98.0	90.0 - 110	119653473

ICL

Parameter	Reading	Known	Units	Recover%	Limits%	File
Phosphorus	24.7	25.0	mg/L	98.8	95.0 - 105	119653450
Silicon Recoverable	9.91	10.0	mg/L	99.1	95.0 - 105	119653450

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Phosphorus	9.83	10.0	mg/L	98.3	90.0 - 110	119653451
Silicon Recoverable	4.95	5.00	mg/L	99.0	90.0 - 110	119653451

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Phosphorus	824428	3.81	3.87	4.00	85.0 - 115	95.2	96.8	mg/L	1.56	25.0
Silicon Recoverable	824428	17.9	18.4	20.0	85.0 - 115	89.5	92.0	mg/L	2.75	25.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Phosphorus	1760456	4.10	4.08	0.236	4.00	75.0 - 125	96.6	96.1	mg/L	0.519	25.0
Silicon Recoverable	1760456	24.3	24.4	6.31	20.0	75.0 - 125	90.0	90.4	mg/L	0.554	25.0

Analytical Set 824775

EPA 524.2 4.1

BFB

Parameter	Sample	RefMass	Reading	%	Limits%	File
BFB Mass 173	824775	174	34	0.4	0 - 2.00	119643476
BFB Mass 174	824775	95.0	7989	61.8	50.0 - 100	119643476
BFB Mass 175	824775	174	633	7.9	5.00 - 9.00	119643476
BFB Mass 176	824775	174	8066	101.0	95.0 - 101	119643476
BFB Mass 177	824775	176	499	6.2	5.00 - 9.00	119643476
BFB Mass 50	824775	95.0	2483	19.2	15.0 - 40.0	119643476
BFB Mass 75	824775	95.0	6884	53.2	30.0 - 80.0	119643476
BFB Mass 95	824775	95.0	12934	100.0	100 - 100	119643476
BFB Mass 96	824775	95.0	933	7.2	5.00 - 9.00	119643476

Blank

Parameter	PrepSet	Reading	MDL	MDL	Units	File
Bromodichloromethane	824775	ND	0.307	1.00	ug/L	119643480
Bromoform	824775	ND	0.288	1.00	ug/L	119643480
Chloroform	824775	ND	0.211	1.00	ug/L	119643480
Dibromochloromethane	824775	ND	0.185	1.00	ug/L	119643480

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Bromodichloromethane	18.4	20.0	ug/L	92.2	70.0 - 130	119643477
Bromoform	14.8	20.0	ug/L	74.0	70.0 - 130	119643477
Chloroform	19.6	20.0	ug/L	97.9	70.0 - 130	119643477
Dibromochloromethane	16.8	20.0	ug/L	84.0	70.0 - 130	119643477

IS Areas

Parameter	Sample	Type	Reading	CCVISM	Low	High	File	PrepSet
-----------	--------	------	---------	--------	-----	------	------	---------





Quality Control

Printed 03/01/2019

Page 10 of 13

IS Areas

Parameter	Sample	Type	Reading	CCVISM	Low	High	File	PrepSet
1,4-DichlorobenzeneD4 (ISTD)	824775	CCV	133100	133100	66530	199600	119643477	824775
	824775	LCS	144600	133100	66530	199600	119643478	824775
	824775	LCS Dup	133100	133100	66530	199600	119643479	824775
	824775	Blank	130600	133100	66530	199600	119643480	824775
ChlorobenzeneD5 (ISTD)	824775	CCV	240100	240100	120100	360200	119643477	824775
	824775	LCS	259300	240100	120100	360200	119643478	824775
	824775	LCS Dup	245300	240100	120100	360200	119643479	824775
	824775	Blank	254100	240100	120100	360200	119643480	824775
1,4-DichlorobenzeneD4 (ISTD)	1760456	UNKNOWN1	18800	133100	66530	199600	119643481	824775
	1760456	MS	147600	133100	66530	199600	119643483	824775
	1760456	MSD	126500	133100	66530	199600	119643484	824775
ChlorobenzeneD5 (ISTD)	1760456	UNKNOWN2	35000	240100	120100	360200	119643481	824775
	1760456	MS	270800	240100	120100	360200	119643483	824775
	1760456	MSD	226400	240100	120100	360200	119643484	824775

IS RetTime

Parameter	Sample	Type	Reading	CCVISM	Low	High	File	PrepSet
1,4-DichlorobenzeneD4 (ISTD)	824775	CCV	11.94	11.94	11.88	12.00	119643477	824775
	824775	LCS	11.94	11.94	11.88	12.00	119643478	824775
	824775	LCS Dup	11.94	11.94	11.88	12.00	119643479	824775
	824775	Blank	11.94	11.94	11.88	12.00	119643480	824775
ChlorobenzeneD5 (ISTD)	824775	CCV	9.561	9.561	9.501	9.621	119643477	824775
	824775	LCS	9.561	9.561	9.501	9.621	119643478	824775
	824775	LCS Dup	9.561	9.561	9.501	9.621	119643479	824775
	824775	Blank	9.567	9.561	9.501	9.621	119643480	824775
1,4-DichlorobenzeneD4 (ISTD)	1760456	UNKNOWN1	1.94	11.94	11.88	12.00	119643481	824775
	1760456	MS	11.94	11.94	11.88	12.00	119643483	824775
	1760456	MSD	11.94	11.94	11.88	12.00	119643484	824775
ChlorobenzeneD5 (ISTD)	1760456	UNKNOWN9	5.61	9.561	9.501	9.621	119643481	824775
	1760456	MS	9.561	9.561	9.501	9.621	119643483	824775
	1760456	MSD	9.561	9.561	9.501	9.621	119643484	824775

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Bromodichloromethane	824775	17.6	18.1	20.0	70.0 - 130	88.0	90.5	ug/L	2.80	30.0
Bromoform	824775	14.4	15.7	20.0	70.0 - 130	72.0	78.5	ug/L	8.64	30.0
Chloroform	824775	18.6	19.2	20.0	70.0 - 130	93.0	96.0	ug/L	3.17	30.0
Dibromochloromethane	824775	15.9	16.9	20.0	70.0 - 130	79.5	84.5	ug/L	6.10	30.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Bromodichloromethane	1760456	29.5	35.2	15.4	20.0	67.1 - 133	70.5	99.0	ug/L	33.6 *	30.0
Bromoform	1760456	14.4	16.8	2.94	20.0	58.4 - 125	57.3 *	69.3	ug/L	19.0	30.0
Chloroform	1760456	26.9	32.1	12.9	20.0	62.8 - 138	70.0	96.0	ug/L	31.3 *	30.0
Dibromochloromethane	1760456	26.0	31.5	12.8	20.0	60.7 - 129	66.0	93.5	ug/L	34.5 *	30.0

Surrogate

Parameter	Sample	Type	Reading	Known	Units	Recover%	Limits%	File
1,2-DCA-d4 (SURR)	824775	CCV	18.0	20.0	ug/L	90.0	70.0 - 130	119643477





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 03/01/2019

Page 11 of 13

Surrogate

Parameter	Sample	Type	Reading	Known	Units	Recover%	Limits%	File
1,2-DCA-d4 (SURR)	824775	LCS	18.6	20.0	ug/L	93.0	70.0 - 130	119643478
	824775	LCS Dup	18.2	20.0	ug/L	91.0	70.0 - 130	119643479
	824775	Blank	19.0	20.0	ug/L	95.0	70.0 - 130	119643480
Bromofluorobenzene (SURR)	824775	CCV	19.0	20.0	ug/L	95.0	70.0 - 130	119643477
	824775	LCS	18.9	20.0	ug/L	94.5	70.0 - 130	119643478
	824775	LCS Dup	19.2	20.0	ug/L	96.0	70.0 - 130	119643479
Dibromofluoromethane (SURR)	824775	Blank	19.9	20.0	ug/L	99.5	70.0 - 130	119643480
	824775	CCV	18.8	20.0	ug/L	94.0	70.0 - 130	119643477
	824775	LCS	19.3	20.0	ug/L	96.5	70.0 - 130	119643478
TolueneD8 (SURR)	824775	LCS Dup	18.8	20.0	ug/L	94.0	70.0 - 130	119643479
	824775	Blank	18.4	20.0	ug/L	92.0	70.0 - 130	119643480
	824775	CCV	19.2	20.0	ug/L	96.0	70.0 - 130	119643477
1,2-DCA-d4 (SURR)	824775	LCS	19.7	20.0	ug/L	98.5	70.0 - 130	119643478
	824775	LCS Dup	19.1	20.0	ug/L	95.5	70.0 - 130	119643479
	824775	Blank	19.2	20.0	ug/L	96.0	70.0 - 130	119643480
Bromofluorobenzene (SURR)	1760456	UNKNOWN	18.0	20.0	ug/L	90.0	70.0 - 130	119643481
	1760456	MS	19.1	20.0	ug/L	95.5	70.0 - 130	119643483
	1760456	MSD	19.2	20.0	ug/L	96.0	70.0 - 130	119643484
Dibromofluoromethane (SURR)	1760456	UNKNOWN	19.9	20.0	ug/L	99.5	70.0 - 130	119643481
	1760456	MS	19.2	20.0	ug/L	96.0	70.0 - 130	119643483
	1760456	MSD	19.2	20.0	ug/L	96.0	70.0 - 130	119643484
TolueneD8 (SURR)	1760456	UNKNOWN	18.0	20.0	ug/L	90.0	70.0 - 130	119643481
	1760456	MS	20.1	20.0	ug/L	100	70.0 - 130	119643483
	1760456	MSD	19.7	20.0	ug/L	98.5	70.0 - 130	119643484
1,2-DCA-d4 (SURR)	1760456	UNKNOWN	18.9	20.0	ug/L	94.5	70.0 - 130	119643481
	1760456	MS	19.7	20.0	ug/L	98.5	70.0 - 130	119643483
	1760456	MSD	19.9	20.0	ug/L	99.5	70.0 - 130	119643484

Analytical Set **824983**

EPA 552.2 1

Blank

Parameter	PrepSet	Reading	MDL	MDL	Units	File
Bromoacetic acid	824870	0.321	0.275	5.00	ug/L	119647357
Chloroacetic acid	824870	ND	0.559	5.00	ug/L	119647357
Dibromoacetic acid	824870	ND	0.198	5.00	ug/L	119647357
Dichloroacetic acid	824870	ND	0.244	5.00	ug/L	119647357
Trichloroacetic acid	824870	ND	0.191	5.00	ug/L	119647357

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Bromoacetic acid	22.1	20.0	ug/L	110	70.0 - 130	119647356
	23.4	20.0	ug/L	117	70.0 - 130	119650346
Chloroacetic acid	19.5	20.0	ug/L	97.7	70.0 - 130	119647356
	21.5	20.0	ug/L	107	70.0 - 130	119650346
Dibromoacetic acid	22.9	20.0	ug/L	114	70.0 - 130	119647356
	24.2	20.0	ug/L	121	70.0 - 130	119650346
Dichloroacetic acid	24.7	20.0	ug/L	124	70.0 - 130	119647356
	25.9	20.0	ug/L	130	70.0 - 130	119650346





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 03/01/2019

Page 12 of 13

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Trichloroacetic acid	22.8	20.0	ug/L	114	70.0 - 130	119647356
	24.4	20.0	ug/L	122	70.0 - 130	119650346

IS Areas

Parameter	Sample	Type	Reading	CCVISM	Low	High	File	PrepSet
1,2,3-Trichloropropane (IS)		CCV	796300	796300	557400	1035000	119647356	824983
		CCV	611200	796300	557400	1035000	119650346	824983
	824870	Blank	795600	796300	557400	1035000	119647357	824870
	824870	LCS	721500	796300	557400	1035000	119650339	824870
	1760456	UNKNOWN	762900	796300	557400	1035000	119650341	824870
	1761329	MS	674700	796300	557400	1035000	119650344	824870
	1761329	MSD	749400	796300	557400	1035000	119650345	824870

IS RetTime

Parameter	Sample	Type	Reading	CCVISM	Low	High	File	PrepSet
1,2,3-Trichloropropane (IS)		CCV	8.800	8.800	8.740	8.860	119647356	824983
		CCV	8.800	8.800	8.740	8.860	119650346	824983
	824870	Blank	8.800	8.800	8.740	8.860	119647357	824870
	824870	LCS	8.800	8.800	8.740	8.860	119650339	824870
	1760456	UNKNOWN	8.800	8.800	8.740	8.860	119650341	824870
	1761329	MS	8.800	8.800	8.740	8.860	119650344	824870
	1761329	MSD	8.800	8.800	8.740	8.860	119650345	824870

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Bromoacetic acid	824870	23.5	23.8	20.0	70.0 - 130	118	119	ug/L	0.844	30.0
Chloroacetic acid	824870	23.3	23.2	20.0	70.0 - 130	116	116	ug/L	0	30.0
Dibromoacetic acid	824870	23.5	24.8	20.0	70.0 - 130	118	124	ug/L	4.96	30.0
Dichloroacetic acid	824870	25.3	25.8	20.0	70.0 - 130	126	129	ug/L	2.35	30.0
Trichloroacetic acid	824870	21.5	23.4	20.0	70.0 - 130	108	117	ug/L	8.00	30.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Bromoacetic acid	1761329	20.8	20.2	ND	20.0	30.0 - 150	104	101	ug/L	2.93	30.0
Chloroacetic acid	1761329	11.1	12.5	ND	20.0	15.0 - 150	55.5	62.5	ug/L	11.9	30.0
Dibromoacetic acid	1761329	19.1	20.1	0.395	20.0	30.0 - 150	93.5	98.5	ug/L	5.21	30.0
Dichloroacetic acid	1761329	24.6	24.4	ND	20.0	30.0 - 150	123	122	ug/L	0.816	30.0
Trichloroacetic acid	1761329	19.1	20.2	1.23	20.0	30.0 - 150	89.4	94.8	ug/L	5.97	30.0

Surrogate

Parameter	Sample	Type	Reading	Known	Units	Recover%	Limits%	File
2,3-Dibromopropionic (Surr)		CCV	23.4	20.0	ug/L	117	70.0 - 130	119647356
		CCV	25.5	20.0	ug/L	128	70.0 - 130	119650346
	824870	Blank	25.4	20.0	ug/L	127	70.0 - 130	119647357
	824870	LCS	22.9	20.0	ug/L	114	70.0 - 130	119650339
	824870	LCS Dup	24.7	20.0	ug/L	124	70.0 - 130	119650340
	1760456	UNKNOWN	21.0	20.0	ug/L	105	70.0 - 130	119650341
	1761329	MS	21.5	20.0	ug/L	108	70.0 - 130	119650344
	1761329	MSD	22.7	20.0	ug/L	114	70.0 - 130	119650345

Analytical Set 824410

SM 2320 B-2011





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 03/01/2019

Page 13 of 13

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Total Alkalinity (as CaCO3)	824410	ND	1.00	1.00	mg/L	119635475

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Total Alkalinity (as CaCO3)	26.6	25.0	mg/L	106	90.0 - 110	119635474
	26.6	25.0	mg/L	106	90.0 - 110	119635488
	26.6	25.0	mg/L	106	90.0 - 110	119635501

Duplicate

Parameter	Sample	Result	Unknown	Unit	RPD	Limit%
Total Alkalinity (as CaCO3)	1759921	358	374	mg/L	4.37	20.0
	1760145	90.1	99.3	mg/L	9.71	20.0

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Total Alkalinity (as CaCO3)	26.1	25.0	mg/L	104	90.0 - 110	119635473

Mat. Spike

Parameter	Sample	Spike	Unknown	Known	Units	Recovery %	Limits %	File
Total Alkalinity (as CaCO3)	1759921	384	374	25.0	mg/L	40.0	70.0 - 130	119635478 *
	1760145	115	99.3	25.0	mg/L	62.8	70.0 - 130	119635491 *

Analytical Set 824659

SM 2130 B-2001

AWRL/MRL C

Parameter	Reading	Known	Units	Recover%	Limits%	File
Turbidity	0.27	0.30	NTU	90.0	70.0 - 130	119641246

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Turbidity	824659	ND	0.300	0.300	NTU	119641244

Duplicate

Parameter	Sample	Result	Unknown	Unit	RPD	Limit%
Turbidity	1760456	1.13	1.14	NTU	0.881	20.0
	1761201	0.69	0.69	NTU	0	20.0

Mat. Spike

Parameter	Sample	Spike	Unknown	Known	Units	Recovery %	Limits %	File
Turbidity	1760456	40.7	1.14	40.0	NTU	98.9	70.0 - 130	119641250
	1761201	41.1	0.69	40.0	NTU	101	70.0 - 130	119641254

Standard

Parameter	Sample	Reading	Known	Units	Recover%	Limits%	File
Turbidity	824659	9.80	10.0	NTU	98.0	90.0 - 110	119641245
	824659	100	100	NTU	100	90.0 - 110	119641247
	824659	9.87	10.0	NTU	98.7	90.0 - 110	119641251
	824659	9.57	10.0	NTU	95.7	90.0 - 110	119641262

* Out RPD is Relative Percent Difference: $\frac{\text{abs}(r1-r2)}{\text{mean}(r1,r2)} * 100\%$

Recover% is Recovery Percent: $\text{result} / \text{known} * 100\%$

Blank - Method Blank; LCS - Laboratory Control Sample; CCB - Continuing Calibration Blank; CCV - Continuing Calibration Verification; ICV - Initial Calibration Verification; AWRL/MRL C - Ambient Water Reporting Limit/Minimum Reporting Limit Check Std; BFB - GC/MS Tuning Compound



al Laboratory, LLC
 1606 E Brazos Suite D Victoria, Texas 77901 ph. (361) 572-8224

Chain Of Custody Record

Batch # 81230 TEMP UN-C: 13.5 Page of
 THERM ID# 4 TEMP CORR: 13.5

Customer / Report Information Billing Information Check box if Billing is the same as Report Information

Name: City of Victoria Address: 2902 Bluff St. 77902 Phone:
 Attention: SWTP Attention: Victoria TX PO # EMAIL:
 Address: Attention: Stephen Robinson Project: ASR Table 1, List A & B Requested Analysis Completed By laboratory
 Comments: ASR Well #19

Client / Field Sample ID	Collected		Matrix	Container	Preservative	Custody Seals Present	
	Date	Time				Yes	No
<u>ASR Well #19</u> <u>Table 1, List A & B</u>	<u>2/19/19</u>	<u>1454</u>	<u>DW</u>	<input type="checkbox"/> H2SO4 <input type="checkbox"/> H3PO4 <input type="checkbox"/> ICE	<input type="checkbox"/> HNO3 <input type="checkbox"/> NaOH <input type="checkbox"/> HCL <input type="checkbox"/> Na2SO3	<input type="checkbox"/> HNO3 <input type="checkbox"/> NaOH <input type="checkbox"/> HCL <input type="checkbox"/> Na2SO3	Intact Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
				<input type="checkbox"/> H2SO4 <input type="checkbox"/> H3PO4 <input type="checkbox"/> ICE	<input type="checkbox"/> HNO3 <input type="checkbox"/> NaOH <input type="checkbox"/> HCL <input type="checkbox"/> Na2SO3	<input type="checkbox"/> HNO3 <input type="checkbox"/> NaOH <input type="checkbox"/> HCL <input type="checkbox"/> Na2SO3	
				<input type="checkbox"/> H2SO4 <input type="checkbox"/> H3PO4 <input type="checkbox"/> ICE	<input type="checkbox"/> HNO3 <input type="checkbox"/> NaOH <input type="checkbox"/> HCL <input type="checkbox"/> Na2SO3	<input type="checkbox"/> HNO3 <input type="checkbox"/> NaOH <input type="checkbox"/> HCL <input type="checkbox"/> Na2SO3	
				<input type="checkbox"/> H2SO4 <input type="checkbox"/> H3PO4 <input type="checkbox"/> ICE	<input type="checkbox"/> HNO3 <input type="checkbox"/> NaOH <input type="checkbox"/> HCL <input type="checkbox"/> Na2SO3	<input type="checkbox"/> HNO3 <input type="checkbox"/> NaOH <input type="checkbox"/> HCL <input type="checkbox"/> Na2SO3	

Sample Information

Collected By: Kevin Post

Required Turnaround: Routine (6-10 Business days) Expedite / Rush: 1 Business Day 2 Business Days 3 Business days 5 Business days Other

Surcharge will apply to RUSH TAT Authorized BY: Container Type: P=Plastic, G=Glass, V=Voa, O=Other Carrier ID:

Relinquished By: J.N. Alvarez Date: 2-19-19 Time: 3:30 PM Received By: Date: 2-19-19 Time: 15:30

Relinquished By: Date: Time: Received By: Date: Time:

REMARKS:

BatchNo: 82163

SAMPLE REPORT



T104704328-19-16

Business

Victoria, City of - Stephen Robinson
P O Box 1758
Victoria TX 77902
Att: Stephen Robinson



Laboratory

B Environmental, LLC.
1606 E Brazos, Suite D
Victoria TX 77901
ph. 361-572-8224

Reference Information

Project: ASR Well #19, Table 1, List A & B
Printed: Friday, March 22, 2019

Re: Victoria, City of - Stephen Robinson

Dear: Stephen Robinson

Attached are the results for sample(s) received on 3/12/2019

The analytical results relate only to the samples tested.
All supporting quality data meets the requirements of NELAC unless noted in the case narrative section of the report.

This report contains 23 pages (including the cover page)

If you have any questions concerning this report, please do not hesitate to call (361) 572-8224 or Fax us at (361) 572-4115

Respectfully Submitted,

Kevin Baros
Laboratory Director



B Environmental, LLC.

BatchNo:

82163

1606 E Brazos, Suite D

Victoria TX 77901

Batch No: 82163

Sample Receipt Checklist

Date Received: 3/12/2019

Project ASR Well #19, Table 1, List A & B

Received By: Honnen

Login completed by: Honnen 3/12/2019

Signature LoginDate:

Carrier Name Walk In

- Shipping container/cooler in good condition? YES NO Not Present
- Custody seals intact on shipping container/cooler? YES NO Not Present
- Custody seals intact on sample bottles? YES NO Not Present
- Chain of Custody present? YES NO
- Chain of Custody signed when relinquished and received YES NO
- Chain of Custody agrees with sample labels? YES NO
- Samples in proper container/bottles? YES NO
- Sample containers intact? YES NO
- Sufficient sample volume for indicated tests? YES NO
- All samples received within holding times? YES NO
- Container/Temp Blank - temperature in compliance? YES NO >0 <6 °C On Ice
- Water - VOA vials have zero headspace? Bubble < 6mm? YES NO No VOA Vials submitted
- Water - pH acceptable upon receipt? YES NO Not Applicable

*TEMP 6.0/6.0 pH Adjusted? NA Checked By L. Vahrenkamp

Any No and/or N/A (not applicable) response must be detailed in the comments section below.

Client contacted PersonContacted

Contacted by: Date Contacted:

Regarding

Comments

Therm #4.

Corrective Action





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Printed: 03/21/2019

Page 1 of 6

Results

Report To

B-Environmental
 Kevin C. Baros
 1606 E Brazos St., Suite D
 Victoria, TX 77901

Account
BENV-G

Project
866158

Results

1766348	82163	S190711424/S190711429			Received: 03/13/2019		
Drinking Water	Collected by: Client	B-Environmental		PO:			
	Taken: 03/12/2019 10:40:00						
<hr/>							
<i>Calculation</i>	<i>Prepared:</i>	<i>03/19/2019</i>	<i>09:05:10</i>	<i>Calculated</i>	<i>03/19/2019</i>	<i>09:05:10</i>	<i>CAL</i>
<i>Parameter</i>	<i>Results</i>	<i>Units</i>	<i>RL</i>	<i>Flag</i>	<i>CAS</i>	<i>Bottle</i>	
z Phosphorus (as Phosphate)	0.731	mg/L	0.306				
<hr/>							
<i>EPA 200.7 4.4</i>	<i>Prepared:</i>	<i>828028</i>	<i>03/14/2019</i>	<i>12:00:00</i>	<i>Analyzed</i>	<i>828568</i>	<i>03/18/2019</i>
<i>Parameter</i>	<i>Results</i>	<i>Units</i>	<i>RL</i>	<i>Flag</i>	<i>CAS</i>	<i>Bottle</i>	
N Phosphorus	0.239	mg/L	0.100		7723-14-0	14	
z Silicon Recoverable	5.83	mg/L	0.100		7740-21-3	14	
<hr/>							
<i>EPA 200.7 4.4</i>	<i>Prepared:</i>	<i>828028</i>	<i>03/14/2019</i>	<i>12:00:00</i>	<i>Analyzed</i>	<i>828620</i>	<i>03/19/2019</i>
<i>Parameter</i>	<i>Results</i>	<i>Units</i>	<i>RL</i>	<i>Flag</i>	<i>CAS</i>	<i>Bottle</i>	
N Calcium	41.7	mg/L	0.500	PD	7440-70-2	14	
N Iron, Total	0.109	mg/L	0.025		7439-89-6	14	
N Magnesium, Total	9.44	mg/L	0.020		7439-95-4	14	
N Potassium	4.71	mg/L	0.500		7440-09-7	14	
<hr/>							
<i>EPA 200.7 4.4</i>	<i>Prepared:</i>	<i>828028</i>	<i>03/14/2019</i>	<i>12:00:00</i>	<i>Analyzed</i>	<i>828691</i>	<i>03/19/2019</i>
<i>Parameter</i>	<i>Results</i>	<i>Units</i>	<i>RL</i>	<i>Flag</i>	<i>CAS</i>	<i>Bottle</i>	
N Sodium	59.1	mg/L	2.50	PD	7440-23-5	14	
<hr/>							
<i>EPA 200.7 4.4 - Calc</i>	<i>Prepared:</i>	<i>03/19/2019</i>	<i>09:05:10</i>	<i>Calculated</i>	<i>03/19/2019</i>	<i>09:05:10</i>	<i>CAL</i>
<i>Parameter</i>	<i>Results</i>	<i>Units</i>	<i>RL</i>	<i>Flag</i>	<i>CAS</i>	<i>Bottle</i>	
N Silica (SiO2)	12.5	mg/L	0.214				
<hr/>							
<i>EPA 200.7, Rev. 4.4</i>	<i>Prepared:</i>	<i>827952</i>	<i>03/13/2019</i>	<i>13:30:00</i>	<i>Analyzed</i>	<i>828289</i>	<i>03/15/2019</i>
<i>Parameter</i>	<i>Results</i>	<i>Units</i>	<i>RL</i>	<i>Flag</i>	<i>CAS</i>	<i>Bottle</i>	
N Dissolved Iron	<0.00504	mg/L	0.00504		7439-89-6	12	
<hr/>							
<i>EPA 200.8 5.4</i>	<i>Prepared:</i>	<i>827952</i>	<i>03/13/2019</i>	<i>13:30:00</i>	<i>Analyzed</i>	<i>828893</i>	<i>03/19/2019</i>
<i>Parameter</i>	<i>Results</i>	<i>Units</i>	<i>RL</i>	<i>Flag</i>	<i>CAS</i>	<i>Bottle</i>	
N Dissolved Arsenic	0.00209	mg/L	0.0005		7440-38-2	12	

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Printed: 03/21/2019

Page 2 of 6

Results

Sample ID	Batch #	Client ID	Received
1766348	82163	S190711424/S190711429	03/13/2019
Drinking Water	Collected by: Client	B-Environmental	PO:
	Taken: 03/12/2019 10:40:00		

EPA Method	Prepared	Units	RL	Flag	CAS	Bottle
EPA 200.8 5.4	827952 03/13/2019 13:30:00					
Parameter	Results	Units	RL	Flag	CAS	Bottle
N Dissolved Manganese	0.0126	mg/L	0.001	B	7439-96-5	12
EPA 200.8 5.4	828028 03/14/2019 12:00:00					
Parameter	Results	Units	RL	Flag	CAS	Bottle
N Aluminum, Total	0.0124	mg/L	0.005		7429-90-5	14
N Arsenic, Total	0.00248	mg/L	0.0005		7440-38-2	14
N Lead, Total	<0.00025	mg/L	0.00025		7439-92-1	14
N Manganese, Total	0.0126	mg/L	0.001		7439-96-5	14
EPA 300.0 2.1	828172 03/14/2019 20:32:00					
Parameter	Results	Units	RL	Flag	CAS	Bottle
N Chloride	58.8	mg/L	1.50			01
N Fluoride	0.560	mg/L	0.500			01
N Sulfate	21.8	mg/L	1.50			01
EPA 350.1 2	827964 03/14/2019 14:35:00					
Parameter	Results	Units	RL	Flag	CAS	Bottle
N Ammonia (as N)	0.229	mg/L	0.020			13
EPA 524.2 4.1	828564 03/18/2019 16:29:00					
Parameter	Results	Units	RL	Flag	CAS	Bottle
N Bromodichloromethane	21.2	ug/L	1.00		75-27-4	07
N Bromoform	3.69	ug/L	1.00		75-25-2	07
N Chloroform	18.1	ug/L	1.00		67-66-3	07
N Dibromochloromethane	17.5	ug/L	1.00		124-48-1	07
EPA 524.2 4.1	828564 03/19/2019 11:35:01					
Parameter	Results	Units	RL	Flag	CAS	Bottle
N Trihalomethanes	0.06049	mg/L	0.001			07
EPA 552.2 1	828157 03/15/2019 12:42:13					
Parameter	Results	Units	RL	Flag	CAS	Bottle
N Bromoacetic acid	<5.00	ug/L	5.00		79-08-3	17
N Chloroacetic acid	<5.00	ug/L	5.00		79-11-8	17
N Dibromoacetic acid	<5.00	ug/L	5.00		631-64-1	17
N Dichloroacetic acid	12.9	ug/L	5.00		79-43-6	17
N Trichloroacetic acid	10.5	ug/L	5.00		76-03-9	17





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Printed: 03/21/2019

Page 3 of 6

Results

Sample ID	Client ID	Sample Description	Collected by	Client	Environment	PO	Received
1766348	82163	Drinking Water		Client	B-Environmental		03/13/2019
S190711424/S190711429							
Taken: 03/12/2019 10:40:00							
EPA 552.2 1							
		Prepared:	828157	03/15/2019	12:42:13	Calculated	828698 03/21/2019 13:17:06 CAL
Parameter	Results	Units	RL	Flag	CAS	Bottle	
N HAA5	0.0234	mg/L	0.005			17	
SM 2130 B-2001							
		Prepared:	827763	03/13/2019	13:30:00	Analyzed	827763 03/13/2019 13:30:00 ELS
Parameter	Results	Units	RL	Flag	CAS	Bottle	
N Turbidity	0.410	NTU	0.300			11	
SM 2320 B-2011							
		Prepared:	828487	03/18/2019	08:52:00	Analyzed	828487 03/18/2019 08:52:00 ELS
Parameter	Results	Units	RL	Flag	CAS	Bottle	
N Total Alkalinity (as CaCO3)	170	mg/L	1.00			01	
SM 2340 B-2011							
		Prepared:		03/19/2019	11:46:59	Calculated	03/19/2019 11:46:59 CAL
Parameter	Results	Units	RL	Flag	CAS	Bottle	
N Total Hardness as CaCO3 -Ca/MgEq	143	mg/L	0.500				
SM 2540 C-97							
		Prepared:	828738	03/18/2019	11:45:00	Analyzed	828738 03/18/2019 11:45:00 TH2
Parameter	Results	Units	RL	Flag	CAS	Bottle	
N Total Dissolved Solids	324	mg/L	20.0			01	
SM 2540 D-97							
		Prepared:	828650	03/18/2019	13:10:00	Analyzed	828650 03/18/2019 13:10:00 ALW
Parameter	Results	Units	RL	Flag	CAS	Bottle	
N Total Suspended Solids	2.20	mg/L	2.00			01	
SM 5310 C-2000							
		Prepared:	828105	03/15/2019	02:46:00	Analyzed	828105 03/15/2019 02:46:00 ALH
Parameter	Results	Units	RL	Flag	CAS	Bottle	
N Total Organic Carbon	2.35	mg/L	0.500			03	

Sample Preparation

Sample ID	Client ID	Sample Description	Collected by	Client	Environment	PO	Received
1766348	82163						03/13/2019
S190711424/S190711429							
Prepared: 827727 03/13/2019 00:00:00 Analyzed 827727 03/13/2019 00:00:00 KAT							





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Printed: 03/21/2019

Page 4 of 6

Results

1766348 82163 S190711424/S190711429 Received: 03/13/2019

		Prepared: 827727	03/13/2019	00:00:00	Analyzed 827727	03/13/2019	00:00:00	KAT
z	Bottle pH	<2	SU					02
z	Bottle pH	<2	SU					03
z	Bottle pH	<2	SU					06
z	Bottle pH	<2	SU					10
	Cooler Temperature	1.6	degrees					01
			C					
	Cooler Temperature	1.6	degrees					02
			C					
	Cooler Temperature	1.6	degrees					03
			C					
	Cooler Temperature	1.6	degrees					04
			C					
	Cooler Temperature	1.6	degrees					05
			C					
	Cooler Temperature	1.6	degrees					06
			C					
	Cooler Temperature	1.6	degrees					07
			C					
	Cooler Temperature	1.6	degrees					08
			C					
	Cooler Temperature	1.6	degrees					09
			C					
	Cooler Temperature	1.6	degrees					10
			C					
	Cooler Temperature	1.6	degrees					11
			C					

Cooler Return Prepared: 03/18/2019 00:00:00 Analyzed 03/18/2019 00:00:00 MG3

z Return Cooler/No bottles Require Returned

EPA 200.2 2.8 Prepared: 828028 03/14/2019 12:00:00 Analyzed 828028 03/14/2019 12:00:00 TES

N Liquid Metals Digestion 50/50 ml 02

EPA 350.2, Rev. 2.0 Prepared: 827964 03/14/2019 14:35:00 Analyzed 827964 03/14/2019 14:35:00 MLC

N Ammonia Distillation 50/50 ml 06

EPA 524.2 4.1 Prepared: 828564 03/18/2019 16:29:00 Analyzed 828564 03/18/2019 16:29:00 KLB

N Trihalomethane Expansion Code Entered 07





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Printed: 03/21/2019

Page 5 of 6

Results

1

1766348 82163 S190711424/S190711429 Received: 03/13/2019

EPA 552.2 1	Prepared: 828157	03/15/2019	12:42:13	Analyzed 828157	03/15/2019	12:42:13	LSD
N Haloacetic Acids Extraction	3/40	ml				05	
EPA 552.2 1	Prepared: 828157	03/15/2019	12:42:13	Analyzed 828698	03/19/2019	11:21:00	EMT
N Haloacetic Acids (HAA5)	Entered					17	
SM 2540 C-97	Prepared: 828391	03/18/2019	11:45:00	Analyzed 828391	03/18/2019	11:45:00	TH2
N Total Dissolved Solids Started	Started						
SM 2540 D-1997	Prepared: 828339	03/18/2019	13:10:00	Analyzed 828339	03/18/2019	13:10:00	ALW
N TSS Set Started	Started						
SM 3030 B-2004	Prepared: 827952	03/13/2019	13:30:00	Analyzed 827952	03/13/2019	13:30:00	ALB
N Dissolved Metals Filtering	50/50	ml				01	





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Printed: 03/21/2019

Results

Qualifiers:

- B - Analyte detected in the associated method blank
- D - Duplicate RPD was higher than expected
- P - Spike recovery outside control limits due to matrix effects.

We report results on an As Received or wet basis unless marked Dry Weight. Unless otherwise noted, testing was performed at Ana-labs corporate laboratory that holds the following Federal and State certificates: EPA Lab Number TX00063, US Department of Agriculture Soil Import Permit P330-17-00117, Texas Commission on Environmental Quality Commercial Drinking Water Lab Approval (Lab ID: TX219), Texas Commission on Environmental Quality NELAP T104704201-19-15, Louisiana Department of Environmental Quality Laboratory Certification (NELAP, LELAP) #02008, Louisiana Department of Health and Hospitals Drinking Water (NELAP) Certificate No LA026, Oklahoma Department of Environmental Quality TNI Laboratory Accreditation Program Certificate No. 2018-126, Arkansas Department of Environmental Quality Certification #18-068-0. The Accredited column designates accreditation by N -- NELAC, or z -- not covered under NELAC scope of accreditation.

These analytical results relate to the sample tested. This report may NOT be reproduced EXCEPT in FULL without written approval of Ana-Lab Corp. Unless otherwise specified, these test results meet the requirements of NELAC.

RL is the Reporting Limit (sample specific quantitation limit) and is at or above the Method Detection Limit (MDL). CAS is Chemical Abstract Service number. RL is our Reporting Limit, or Minimum Quantitation Level. The RL takes into account the Instrument Detection Limit (IDL), Method Detection Limit (MDL), and Practical Quantitation Limit (PQL), and any dilutions and/or concentrations performed during sample preparation (EQL). Our analytical result must be above this RL before we report a value in the 'Results' column of our report (without a 'J' flag). Otherwise, we report ND (Not Detected above RL), because the result is "<" (less than) the number in the RL column. MAL is Minimum Analytical Level and is typically from regulatory agencies. Unless we report a result in the result column, or interferences prevent it, we work to have our RL at or below the MAL.

Bill Peery, MS, VP Technical Services





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 03/21/2019

Page 1 of 14

1
2

Report To

B-Environmental
Kevin C. Baros
1606 E Brazos St., Suite D
Victoria, TX 77901

Account
BENV-G

Project
866158

Analytical Set **828197**

EPA 350.1 2

Blank

<u>Parameter</u>	<u>PrepSet</u>	<u>Reading</u>	<u>MDL</u>	<u>MQL</u>	<u>Units</u>	<u>File</u>
Ammonia (as N)	827964	ND	0.00356	0.020	mg/L	119716772

CCV

<u>Parameter</u>	<u>Reading</u>	<u>Known</u>	<u>Units</u>	<u>Recover%</u>	<u>Limits%</u>	<u>File</u>
Ammonia (as N)	2.09	2.00	mg/L	104	90.0 - 110	119716771
	2.10	2.00	mg/L	105	90.0 - 110	119716781
	2.07	2.00	mg/L	104	90.0 - 110	119716790
	2.00	2.00	mg/L	100	90.0 - 110	119716801
	2.05	2.00	mg/L	102	90.0 - 110	119716812
	1.80	2.00	mg/L	90.0	90.0 - 110	119716819
	2.03	2.00	mg/L	102	90.0 - 110	119716827

Duplicate

<u>Parameter</u>	<u>Sample</u>	<u>Result</u>	<u>Unknown</u>	<u>Unit</u>	<u>RPD</u>	<u>Limit%</u>
Ammonia (as N)	1766189	0.260	0.286	mg/L	9.52	20.0
	1766783	0.167	0.168	mg/L	0.597	20.0

ICV

<u>Parameter</u>	<u>Reading</u>	<u>Known</u>	<u>Units</u>	<u>Recover%</u>	<u>Limits%</u>	<u>File</u>
Ammonia (as N)	2.03	2.00	mg/L	102	90.0 - 110	119716770

LCS Dup

<u>Parameter</u>	<u>PrepSet</u>	<u>LCS</u>	<u>LCSD</u>	<u>Known</u>	<u>Limits%</u>	<u>LCS%</u>	<u>LCSD%</u>	<u>Units</u>	<u>RPD</u>	<u>Limit%</u>
Ammonia (as N)	827964	2.11	2.14	2.00	90.0 - 110	106	107	mg/L	1.41	20.0

Mat. Spike

<u>Parameter</u>	<u>Sample</u>	<u>Spike</u>	<u>Unknown</u>	<u>Known</u>	<u>Units</u>	<u>Recovery %</u>	<u>Limits %</u>	<u>File</u>
Ammonia (as N)	1766189	2.61	0.286	2.00	mg/L	116	80.0 - 120	119716777
	1766783	2.17	0.168	2.00	mg/L	100	80.0 - 120	119716780

Analytical Set **828650**

SM 2540 D-97

Blank

<u>Parameter</u>	<u>PrepSet</u>	<u>Reading</u>	<u>MDL</u>	<u>MQL</u>	<u>Units</u>	<u>File</u>
Total Suspended Solids	828650	ND	2	2	mg/L	119726710

ControlBlk

<u>Parameter</u>	<u>PrepSet</u>	<u>Reading</u>	<u>MDL</u>	<u>MQL</u>	<u>Units</u>	<u>File</u>
Total Suspended Solids	828650	0.0001			grams	119726709

Duplicate

<u>Parameter</u>	<u>Sample</u>	<u>Result</u>	<u>Unknown</u>	<u>Unit</u>	<u>RPD</u>	<u>Limit%</u>
Total Suspended Solids	1766367	3630	3700	mg/L	1.91	20.0
	1766368	3360	3460	mg/L	2.93	20.0
	1766388	109	110	mg/L	0.913	20.0





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 03/21/2019

Page 2 of 14

LCS

Parameter	PrepSet	Reading	Known	Units	Recover%	Limits	File
Total Suspended Solids	828650	48.0	50.0	mg/L	96.0	90.0 - 110	119726743

Standard

Parameter	Sample	Reading	Known	Units	Recover%	Limits%	File
Total Suspended Solids	110	100	100	mg/L	110	90.0 - 110	119726742

Analytical Set **828738**

SM 2540 C-97

ControlBlk

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Total Dissolved Solids	828738	0			grams	119728221

Duplicate

Parameter	Sample	Result	Unknown	Unit	RPD	Limit%
Total Dissolved Solids	1766273	18.0	20.0	mg/L	10.5	20.0

LCS

Parameter	PrepSet	Reading	Known	Units	Recover%	Limits	File
Total Dissolved Solids	828738	188	200	mg/L	94.0	85.0 - 115	119728235

Standard

Parameter	Sample	Reading	Known	Units	Recover%	Limits%	File
Total Dissolved Solids	100	100	100	mg/L	100	90.0 - 110	119728222

Analytical Set **828172**

EPA 300.0 2.1

AWRL/MRL C

Parameter	Reading	Known	Units	Recover%	Limits%	File
Fluoride	0.118	0.100	mg/L	118	50.0 - 150	119716428

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Chloride	828172	ND	0.0196	0.300	mg/L	119716429
Fluoride	828172	ND	0.014	0.100	mg/L	119716429
Sulfate	828172	0.095	0.0109	0.300	mg/L	119716429

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Chloride	10.1	10.0	mg/L	101	90.0 - 110	119716425
	10.1	10.0	mg/L	101	90.0 - 110	119716440
	10.2	10.0	mg/L	102	90.0 - 110	119716455
Fluoride	10.3	10.0	mg/L	103	90.0 - 110	119716425
	10.3	10.0	mg/L	103	90.0 - 110	119716440
	10.4	10.0	mg/L	104	90.0 - 110	119716455
Sulfate	10.2	10.0	mg/L	102	90.0 - 110	119716425
	10.4	10.0	mg/L	104	90.0 - 110	119716440
	10.3	10.0	mg/L	103	90.0 - 110	119716455

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Chloride	828172	4.94	4.93	5.00	85.0 - 110	98.8	98.6	mg/L	0.203	20.0
Fluoride	828172	5.30	5.29	5.00	88.0 - 110	106	106	mg/L	0.189	20.0
Sulfate	828172	5.06	5.06	5.00	88.0 - 110	101	101	mg/L	0	20.0





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 03/21/2019

Page 3 of 14

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Chloride	1765886	26.3	26.5	16.4	10.0	80.0 - 120	99.0	101	mg/L	2.00	20.0
Fluoride	1765886	9.48	9.58	0.560	10.0	80.0 - 120	89.2	90.2	mg/L	1.11	20.0
Sulfate	1765886	31.2	31.0	23.5	10.0	80.0 - 120	77.0 *	75.0 *	mg/L	2.63	20.0
Chloride	1765887	43.1	43.4	33.2	10.0	80.0 - 120	99.0	102	mg/L	2.99	20.0
Fluoride	1765887	0	9.57	0.600	10.0	80.0 - 120	-6.00	89.7	mg/L	229 *	20.0
Sulfate	1765887	36.5	37.7	26.0	10.0	80.0 - 120	105	117	mg/L	10.8	20.0

Analytical Set **828105**

SM 5310 C-2000

AWRL/MRL C

Parameter	Reading	Known	Units	Recover%	Limits%	File
Total Organic Carbon	1.79	2.00	mg/L	89.5	75.0 - 125	119714907

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Total Organic Carbon	828105	0.0627	0.0618	0.500	mg/L	119714906
	828105	ND	0.0618	0.500	mg/L	119714933
	828105	0.0676	0.0618	0.500	mg/L	119714972

CCB

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Total Organic Carbon	828105	0.110	0.0618	0.500	mg/L	119714900
	828105	0.116	0.0618	0.500	mg/L	119714914
	828105	0.0998	0.0618	0.500	mg/L	119714918
	828105	0.110	0.0618	0.500	mg/L	119714931
	828105	0.116	0.0618	0.500	mg/L	119714950
	828105	0.142	0.0618	0.500	mg/L	119714970
	828105	0.120	0.0618	0.500	mg/L	119714986
	828105	0.118	0.0618	0.500	mg/L	119714998

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Total Organic Carbon	10.7	10.0	mg/L	107	90.0 - 110	119714903
	10.8	10.0	mg/L	108	90.0 - 110	119714916
	10.5	10.0	mg/L	105	90.0 - 110	119714920
	10.8	10.0	mg/L	108	90.0 - 110	119714932
	10.3	10.0	mg/L	103	90.0 - 110	119714953
	10.0	10.0	mg/L	100	90.0 - 110	119714971
	10.4	10.0	mg/L	104	90.0 - 110	119714988
	10.7	10.0	mg/L	107	90.0 - 110	119715000

ICL

Parameter	Reading	Known	Units	Recover%	Limits%	File
Total Organic Carbon	19.7	20.0	mg/L	98.5	90.0 - 110	119714902

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Total Organic Carbon	10.6	10.0	mg/L	106	90.0 - 110	119714904

LCS

Parameter	PrepSet	Reading	Known	Units	Recover%	Limits	File
Total Organic Carbon	828105	5.32	5.00	mg/L	106	89.8 - 111	119714905
	828105	5.17	5.00	mg/L	103	89.8 - 111	119714934





Quality Control

Printed 03/21/2019

Page 4 of 14

LCS

Parameter	PrepSet	Reading	Known	Units	Recover%	Limits	File
Total Organic Carbon	828105	4.97	5.00	mg/L	99.4	89.8 - 111	119714973

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Total Organic Carbon	1765958	13.9	13.8	3.48	10.0	92.5 - 112	104	103	mg/L	0.964	20.0
	1766096	13.9	13.8	3.44	10.0	92.5 - 112	105	104	mg/L	0.961	20.0
	1766191	14.2	14.2	3.74	10.0	92.5 - 112	105	105	mg/L	0	20.0
	1766428	13.4	13.5	3.26	10.0	92.5 - 112	101	102	mg/L	0.981	20.0

Standard

Parameter	Sample	Reading	Known	Units	Recover%	Limits%	File
Total Organic Carbon		50.9	50.0	mg/L	102	90.0 - 110	119714901

Analytical Set **828289**

EPA 200.7 4.4

Blank

Parameter	PrepSet	Reading	MDL	MDL	Units	File
Dissolved Iron	827952	ND	0.00504	0.025	mg/L	119718826

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Dissolved Iron	2.39	2.50	mg/L	95.6	90.0 - 110	119718827
	2.46	2.50	mg/L	98.4	90.0 - 110	119718833

ICL

Parameter	Reading	Known	Units	Recover%	Limits%	File
Dissolved Iron	4.95	5.00	mg/L	99.0	95.0 - 105	119718790

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Dissolved Iron	2.60	2.50	mg/L	104	90.0 - 110	119718794

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Dissolved Iron	1766014	0.547	0.578	0.0997	0.500	75.0 - 125	89.5	95.7	mg/L	6.70	20.0

Analytical Set **828568**

EPA 200.7 4.4

Blank

Parameter	PrepSet	Reading	MDL	MDL	Units	File
Phosphorus	828028	ND	0.0388	0.100	mg/L	119725321
Silicon Recoverable	828028	0.0842	0.0148	0.100	mg/L	119725321

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Phosphorus	10.1	10.0	mg/L	101	90.0 - 110	119725314
	10.2	10.0	mg/L	102	90.0 - 110	119725323
	9.96	10.0	mg/L	99.6	90.0 - 110	119725334
	9.68	10.0	mg/L	96.8	90.0 - 110	119725337
Silicon Recoverable	4.90	5.00	mg/L	98.0	90.0 - 110	119725314
	4.66	5.00	mg/L	93.2	90.0 - 110	119725323
	4.80	5.00	mg/L	96.0	90.0 - 110	119725334
	4.58	5.00	mg/L	91.6	90.0 - 110	119725337





Quality Control

Printed 03/21/2019

Page 5 of 14

ICL

Parameter	Reading	Known	Units	Recover%	Limits%	File
Phosphorus	24.6	25.0	mg/L	98.4	95.0 - 105	119725312
Silicon Recoverable	10.1	10.0	mg/L	101	95.0 - 105	119725312

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Phosphorus	9.87	10.0	mg/L	98.7	90.0 - 110	119725313
Silicon Recoverable	5.07	5.00	mg/L	101	90.0 - 110	119725313

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Phosphorus	828028	3.98	3.94	4.00	85.0 - 115	99.5	98.5	mg/L	1.01	25.0
Silicon Recoverable	828028	3.60	3.56	4.00	85.0 - 115	90.0	89.0	mg/L	1.12	25.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Phosphorus	1766348	4.03	4.14	0.239	4.00	75.0 - 125	94.8	97.5	mg/L	2.86	25.0
Silicon Recoverable	1766348	9.14	9.51	5.83	4.00	75.0 - 125	82.8	92.0	mg/L	10.6	25.0
Phosphorus	1766580	4.00	3.86	ND	4.00	75.0 - 125	100	96.5	mg/L	3.56	25.0
Silicon Recoverable	1766580	19.1	18.2	15.6	4.00	75.0 - 125	87.5	65.0 *	mg/L	29.5 *	25.0

Analytical Set **828620**

EPA 200.7 4.4

AWRL/MRL C

Parameter	Reading	Known	Units	Recover%	Limits%	File
Calcium	0.560	0.500	mg/L	112	25.0 - 175	119726008
Iron, Total	0.0397	0.050	mg/L	79.4	25.0 - 175	119726008
Magnesium, Total	0.467	0.500	mg/L	93.4	25.0 - 175	119726008
Potassium	0.492	0.500	mg/L	98.4	25.0 - 175	119726008
Sodium	0.457	0.500	mg/L	91.4	25.0 - 175	119726008

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Calcium	828028	0.0884	0.0419	0.500	mg/L	119726010
Iron, Total	828028	ND	0.00504	0.025	mg/L	119726010
Magnesium, Total	828028	ND	0.0102	0.020	mg/L	119726010
Potassium	828028	ND	0.0765	0.500	mg/L	119726010
Sodium	828028	ND	0.0315	0.500	mg/L	119726010

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Calcium	25.2	25.0	mg/L	101	90.0 - 110	119726009
Iron, Total	24.3	25.0	mg/L	97.2	90.0 - 110	119726019
Magnesium, Total	2.53	2.50	mg/L	101	90.0 - 110	119726009
Potassium	2.42	2.50	mg/L	96.8	90.0 - 110	119726019
Sodium	25.6	25.0	mg/L	102	90.0 - 110	119726009
Iron, Total	24.7	25.0	mg/L	98.8	90.0 - 110	119726019
Magnesium, Total	24.0	25.0	mg/L	96.0	90.0 - 110	119726009
Potassium	23.0	25.0	mg/L	92.0	90.0 - 110	119726019

ICL

Parameter	Reading	Known	Units	Recover%	Limits%	File
Calcium	48.8	50.0	mg/L	97.6	95.0 - 105	119726003
Iron, Total	4.91	5.00	mg/L	98.2	95.0 - 105	119726003

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 03/21/2019

Page 6 of 14

ICL

Parameter	Reading	Known	Units	Recover%	Limits%	File
Magnesium, Total	48.4	50.0	mg/L	96.8	95.0 - 105	119726003
Potassium	49.4	50.0	mg/L	98.8	95.0 - 105	119726003

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Calcium	24.9	25.0	mg/L	99.6	90.0 - 110	119726007
Iron, Total	2.46	2.50	mg/L	98.4	90.0 - 110	119726007
Magnesium, Total	24.9	25.0	mg/L	99.6	90.0 - 110	119726007
Potassium	23.4	25.0	mg/L	93.6	90.0 - 110	119726007

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Calcium	828028	4.88	4.75	5.00	85.0 - 115	97.6	95.0	mg/L	2.70	25.0
Iron, Total	828028	0.513	0.492	0.500	85.0 - 115	103	98.4	mg/L	4.18	25.0
Magnesium, Total	828028	5.04	4.96	5.00	85.0 - 115	101	99.2	mg/L	1.60	25.0
Potassium	828028	4.93	4.76	5.00	85.0 - 115	98.6	95.2	mg/L	3.51	25.0
Sodium	828028	4.82	4.65	5.00	85.0 - 115	96.4	93.0	mg/L	3.59	25.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Calcium	1766348	47.5	45.3	41.7	5.00	75.0 - 125	116	72.0 *	mg/L	46.8 *	25.0
Iron, Total	1766348	0.715	0.594	0.109	0.500	75.0 - 125	121	97.0	mg/L	22.2	25.0
Magnesium, Total	1766348	15.1	14.5	9.44	5.00	75.0 - 125	113	101	mg/L	11.2	25.0
Potassium	1766348	10.0	9.61	4.71	5.00	75.0 - 125	106	98.0	mg/L	7.65	25.0
Sodium	1766348	65.0	62.6	58.3	5.00	75.0 - 125	134 *	86.0	mg/L	43.6 *	25.0

Analytical Set 828691

EPA 200.7 4.4

AWRL/MRL C

Parameter	Reading	Known	Units	Recover%	Limits%	File
Calcium	0.560	0.500	mg/L	112	25.0 - 175	119727355
Iron, Total	0.0397	0.050	mg/L	79.4	25.0 - 175	119727355
Magnesium, Total	0.467	0.500	mg/L	93.4	25.0 - 175	119727355
Sodium	0.457	0.500	mg/L	91.4	25.0 - 175	119727355

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Calcium	828028	0.0884	0.0419	0.500	mg/L	119727357
Iron, Total	828028	ND	0.00504	0.025	mg/L	119727357
Magnesium, Total	828028	ND	0.0102	0.020	mg/L	119727357
Sodium	828028	ND	0.0315	0.500	mg/L	119727357

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Sodium	24.5	25.0	mg/L	98.0	90.0 - 110	119727356
	24.1	25.0	mg/L	96.4	90.0 - 110	119727363
	25.8	25.0	mg/L	103	90.0 - 110	119727364
	24.4	25.0	mg/L	97.6	90.0 - 110	119727372
	26.1	25.0	mg/L	104	90.0 - 110	119727383

Dir. SPKD

Parameter	Sample	DSPK	DSPKD	UNK	Known	Limits%	DSPK%	DSPKD%	Units	RPD	Limit%
Calcium	1766348	66.0	68.6	41.0	25.0	75.0 - 125	100	110	mg/L	3.86	25.0



NELAP-accredited #T104704201



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 03/21/2019

Page 7 of 14

Dir. SPKD

Parameter	Sample	DSPK	DSPKD	UNK	Known	Limits%	DSPK%	DSPKD%	Units	RPD	Limit%
Iron, Total	1766348	2.37	2.38	0.0405	2.50	75.0 - 125	93.2	93.6	mg/L	0.421	25.0
Magnesium, Total	1766348	35.6	37.2	9.93	25.0	75.0 - 125	103	109	mg/L	4.40	25.0
Sodium	1766348	82.1	86.1	59.1	25.0	75.0 - 125	92.0	108	mg/L	4.76	25.0
Calcium	1766580	389	362	132	250	75.0 - 125	103	92.0	mg/L	7.19	25.0
Iron, Total	1766580	21.6	22.0	ND	25.0	75.0 - 125	86.4	88.0	mg/L	1.83	25.0
Magnesium, Total	1766580	322	308	54.7	250	75.0 - 125	107	101	mg/L	4.44	25.0
Sodium	1766580	1360	1310	1070	250	75.0 - 125	116	96.0	mg/L	3.75	25.0

Direct SPK

Parameter	Sample	DSPK	UNK	Known	Limits%	DSPK%	Units
Calcium	1766348	66.0	41.0	25.0	75.0 - 125	100	mg/L 25.0
Iron, Total	1766348	2.37	0.0405	2.50	75.0 - 125	93.2	mg/L 25.0
Magnesium, Total	1766348	35.6	9.93	25.0	75.0 - 125	103	mg/L 25.0
Sodium	1766348	82.1	59.1	25.0	75.0 - 125	92.0	mg/L 25.0
Calcium	1766580	389	132	250	75.0 - 125	103	mg/L 25.0
Iron, Total	1766580	21.6	ND	25.0	75.0 - 125	86.4	mg/L 25.0
Magnesium, Total	1766580	322	54.7	250	75.0 - 125	107	mg/L 25.0
Sodium	1766580	1360	1070	250	75.0 - 125	116	mg/L 25.0

ICL

Parameter	Reading	Known	Units	Recover%	Limits%	File
Sodium	50.0	50.0	mg/L	100	95.0 - 105	119727350

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Sodium	24.1	25.0	mg/L	96.4	90.0 - 110	119727354

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Calcium	828028	4.88	4.75	5.00	85.0 - 115	97.6	95.0	mg/L	2.70	25.0
Iron, Total	828028	0.513	0.492	0.500	85.0 - 115	103	98.4	mg/L	4.18	25.0
Magnesium, Total	828028	5.04	4.96	5.00	85.0 - 115	101	99.2	mg/L	1.60	25.0
Sodium	828028	4.82	4.65	5.00	85.0 - 115	96.4	93.0	mg/L	3.59	25.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Calcium	1766348	47.5	45.3	41.7	5.00	75.0 - 125	116	72.0 *	mg/L	46.8 *	25.0
Iron, Total	1766348	0.715	0.594	0.109	0.500	75.0 - 125	121	97.0	mg/L	22.2	25.0
Magnesium, Total	1766348	15.1	14.5	9.44	5.00	75.0 - 125	113	101	mg/L	11.2	25.0
Sodium	1766348	65.0	62.6	58.3	5.00	75.0 - 125	134 *	86.0	mg/L	43.6 *	25.0
Calcium	1766580	135	137	136	5.00	75.0 - 125	-20.0 *	20.0 *	mg/L	1.47	25.0
Iron, Total	1766580	0.878	0.864	0.460	0.500	75.0 - 125	83.6	80.8	mg/L	3.41	25.0
Magnesium, Total	1766580	52.7	53.2	50.3	5.00	75.0 - 125	48.0 *	58.0 *	mg/L	18.9	25.0
Sodium	1766580	1260	1290	1310	5.00	75.0 - 125	-1000 *	-400 *	mg/L	2.35	25.0

Analytical Set 828772

EPA 200.8 5.4

Blank

Parameter	PrepSet	Reading	MDL	MDL	Units	File
Arsenic, Total	828028	ND	0.00025	0.0005	mg/L	119728817
Lead, Total	828028	ND	0.00025	0.0005	mg/L	119728817
Manganese, Total	828028	ND	0.00033	0.001	mg/L	119728817



NELAP-accredited #T104704201



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 03/21/2019

Page 8 of 14

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Arsenic, Total	0.0484	0.05	mg/L	96.8	90.0 - 110	119728816
	0.0493	0.05	mg/L	98.6	90.0 - 110	119728819
	0.0473	0.05	mg/L	94.6	90.0 - 110	119728830
Lead, Total	0.0499	0.05	mg/L	99.8	90.0 - 110	119728816
	0.0508	0.05	mg/L	102	90.0 - 110	119728819
	0.0498	0.05	mg/L	99.6	90.0 - 110	119728830
Manganese, Total	0.0504	0.05	mg/L	101	90.0 - 110	119728816
	0.0505	0.05	mg/L	101	90.0 - 110	119728819
	0.0495	0.05	mg/L	99.0	90.0 - 110	119728830

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Arsenic, Total	0.048	0.05	mg/L	96.0	90.0 - 110	119728813
Lead, Total	0.0497	0.05	mg/L	99.4	90.0 - 110	119728813
Manganese, Total	0.050	0.05	mg/L	100	90.0 - 110	119728813

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Arsenic, Total	828028	0.471	0.478	0.500	85.0 - 115	94.2	95.6	mg/L	1.48	20.0
Lead, Total	828028	0.521	0.524	0.500	85.0 - 115	104	105	mg/L	0.574	20.0
Manganese, Total	828028	0.495	0.516	0.500	85.0 - 115	99.0	103	mg/L	4.15	20.0

MRL Check

Parameter	Reading	Known	Units	Recover%	Limits%	File
Lead, Total	0.000991	0.001	mg/L	99.1	50.0 - 150	119728811
Manganese, Total	0.00104	0.001	mg/L	104	50.0 - 150	119728811

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Arsenic, Total	1766348	0.476	0.484	0.00248	0.500	70.0 - 130	94.7	96.3	mg/L	1.68	20.0
Lead, Total	1766348	0.512	0.516	ND	0.500	70.0 - 130	102	103	mg/L	0.778	20.0
Manganese, Total	1766348	0.508	0.518	0.0126	0.500	70.0 - 130	99.1	101	mg/L	2.00	20.0

Analytical Set 828816

EPA 200.8 5.4

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Aluminum, Total	828028	ND	0.0025	0.005	mg/L	119730055
Arsenic, Total	828028	ND	0.00025	0.0005	mg/L	119730055
Lead, Total	828028	ND	0.00025	0.0005	mg/L	119730055
Manganese, Total	828028	ND	0.00033	0.001	mg/L	119730055

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Aluminum, Total	0.0493	0.05	mg/L	98.6	90.0 - 110	119730054
	0.049	0.05	mg/L	98.0	90.0 - 110	119730057
	0.0472	0.05	mg/L	94.4	90.0 - 110	119730062
	0.0473	0.05	mg/L	94.6	90.0 - 110	119730069
	0.0464	0.05	mg/L	92.8	90.0 - 110	119730127
	0.0471	0.05	mg/L	94.2	90.0 - 110	119730144
	0.0452	0.05	mg/L	90.4	90.0 - 110	119730176
	0.0462	0.05	mg/L	92.4	90.0 - 110	119730186
	0.0471	0.05	mg/L	94.2	90.0 - 110	119730197





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 03/21/2019

Page 9 of 14

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Aluminum, Total	0.0456	0.05	mg/L	91.2	90.0 - 110	119730208

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Aluminum, Total	0.0481	0.05	mg/L	96.2	90.0 - 110	119730051

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Aluminum, Total	828028	0.496	0.530	0.500	85.0 - 115	99.2	106	mg/L	6.63	20.0
Arsenic, Total	828028	0.467	0.478	0.500	85.0 - 115	93.4	95.6	mg/L	2.33	20.0
Lead, Total	828028	0.509	0.524	0.500	85.0 - 115	102	105	mg/L	2.90	20.0
Manganese, Total	828028	0.492	0.516	0.500	85.0 - 115	98.4	103	mg/L	4.76	20.0

MRL Check

Parameter	Reading	Known	Units	Recover%	Limits%	File
Lead, Total	0.000991	0.001	mg/L	99.1	50.0 - 150	119730049
Manganese, Total	0.00104	0.001	mg/L	104	50.0 - 150	119730049

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Aluminum, Total	1766348	0.559	0.533	0.0124	0.500	70.0 - 130	109	104	mg/L	4.87	20.0
Arsenic, Total	1766348	0.476	0.484	0.00248	0.500	70.0 - 130	94.7	96.3	mg/L	1.68	20.0
Lead, Total	1766348	0.512	0.516	ND	0.500	70.0 - 130	102	103	mg/L	0.778	20.0
Manganese, Total	1766348	0.508	0.518	0.0126	0.500	70.0 - 130	99.1	101	mg/L	2.00	20.0
Aluminum, Total	1766580	0.534	0.559	0.0376	0.500	70.0 - 130	99.3	104	mg/L	4.91	20.0
Arsenic, Total	1766580	0.490	0.497	0.018	0.500	70.0 - 130	94.4	95.8	mg/L	1.47	20.0
Lead, Total	1766580	0.494	0.490	ND	0.500	70.0 - 130	98.8	98.0	mg/L	0.813	20.0
Manganese, Total	1766580	0.599	0.600	0.0923	0.500	70.0 - 130	101	102	mg/L	0.197	20.0

Analytical Set **828893**

EPA 200.8 5.4

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Dissolved Arsenic	827952	0.000377	0.000359	0.0005	mg/L	119732135

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Dissolved Arsenic	0.0532	0.05	mg/L	106	90.0 - 110	119732128
	0.0533	0.05	mg/L	107	90.0 - 110	119732137
	0.0525	0.05	mg/L	105	90.0 - 110	119732144

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Dissolved Arsenic	0.0505	0.05	mg/L	101	90.0 - 110	119732101

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Dissolved Arsenic	1766014	0.516	0.520	0.000523	0.500	70.0 - 130	103	104	mg/L	0.773	20.0

Analytical Set **829170**

EPA 200.8 5.4

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Dissolved Manganese	827952	0.00726	0.000105	0.001	mg/L	* 119739306





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 03/21/2019

Page 10 of 14

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Dissolved Manganese	0.0512	0.05	mg/L	102	90.0 - 110	119739304
	0.0512	0.05	mg/L	102	90.0 - 110	119739311

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Dissolved Manganese	0.0507	0.05	mg/L	101	90.0 - 110	119739290

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Dissolved Manganese	1766014	0.562	0.557	0.0585	0.500	70.0 - 130	101	99.7	mg/L	0.998	20.0

Analytical Set **828564**

EPA 524.2 4.1

BFB

Parameter	Sample	RefMass	Reading	%	Limits%	File
BFB Mass 173	828564	174	15	0.3	0 - 2.00	119725206
BFB Mass 174	828564	95.0	4971	70.5	50.0 - 100	119725206
BFB Mass 175	828564	174	352	7.1	5.00 - 9.00	119725206
BFB Mass 176	828564	174	4945	99.5	95.0 - 101	119725206
BFB Mass 177	828564	176	325	6.6	5.00 - 9.00	119725206
BFB Mass 50	828564	95.0	1593	22.6	15.0 - 40.0	119725206
BFB Mass 75	828564	95.0	2965	42.0	30.0 - 80.0	119725206
BFB Mass 95	828564	95.0	7054	100.0	100 - 100	119725206
BFB Mass 96	828564	95.0	498	7.1	5.00 - 9.00	119725206

Blank

Parameter	PrepSet	Reading	MDL	MDL	Units	File
Bromodichloromethane	828564	ND	0.186	1.00	ug/L	119725210
Bromoform	828564	ND	0.449	1.00	ug/L	119725210
Chloroform	828564	ND	0.294	1.00	ug/L	119725210
Dibromochloromethane	828564	ND	0.119	1.00	ug/L	119725210

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Bromodichloromethane	17.1	20.0	ug/L	85.3	70.0 - 130	119725207
Bromoform	14.8	20.0	ug/L	74.2	70.0 - 130	119725207
Chloroform	20.3	20.0	ug/L	102	70.0 - 130	119725207
Dibromochloromethane	17.8	20.0	ug/L	89.0	70.0 - 130	119725207

IS Areas

Parameter	Sample	Type	Reading	CCVISM	Low	High	File	PrepSet
1,4-DichlorobenzeneD4 (ISTD)	828564	CCV	42980	42980	21490	64470	119725207	828564
	828564	LCS	40660	42980	21490	64470	119725208	828564
	828564	LCS Dup	40160	42980	21490	64470	119725209	828564
	828564	Blank	37940	42980	21490	64470	119725210	828564
ChlorobenzeneD5 (ISTD)	828564	CCV	85650	85650	42830	128500	119725207	828564
	828564	LCS	86060	85650	42830	128500	119725208	828564
	828564	LCS Dup	87130	85650	42830	128500	119725209	828564
	828564	Blank	83700	85650	42830	128500	119725210	828564
1,4-DichlorobenzeneD4 (ISTD)	1766348	UNKNOWN	28280	42980	21490	64470	119725214	828564
ChlorobenzeneD5 (ISTD)	1766348	UNKNOWN	70320	85650	42830	128500	119725214	828564





Quality Control

Printed 03/21/2019

Page 11 of 14

IS Areas

Parameter	Sample	Type	Reading	CCVISM	Low	High	File	PrepSet
1,4-DichlorobenzeneD4 (ISTD)	1767157	MS	38040	42980	21490	64470	119725212	828564
	1767157	MSD	34760	42980	21490	64470	119725213	828564
ChlorobenzeneD5 (ISTD)	1767157	MS	77830	85650	42830	128500	119725212	828564
	1767157	MSD	72600	85650	42830	128500	119725213	828564

IS RetTime

Parameter	Sample	Type	Reading	CCVISM	Low	High	File	PrepSet
1,4-DichlorobenzeneD4 (ISTD)	828564	CCV	14.79	14.79	14.73	14.85	119725207	828564
	828564	LCS	14.80	14.79	14.73	14.85	119725208	828564
	828564	LCS Dup	14.80	14.79	14.73	14.85	119725209	828564
ChlorobenzeneD5 (ISTD)	828564	Blank	14.80	14.79	14.73	14.85	119725210	828564
	828564	CCV	11.09	11.09	11.03	11.15	119725207	828564
	828564	LCS	11.09	11.09	11.03	11.15	119725208	828564
1,4-DichlorobenzeneD4 (ISTD)	828564	LCS Dup	11.10	11.09	11.03	11.15	119725209	828564
	828564	Blank	11.10	11.09	11.03	11.15	119725210	828564
	1766348	UNKNOWN	14.82	14.79	14.73	14.85	119725214	828564
ChlorobenzeneD5 (ISTD)	1766348	UNKNOWN	11.11	11.09	11.03	11.15	119725214	828564
1,4-DichlorobenzeneD4 (ISTD)	1767157	MS	14.82	14.79	14.73	14.85	119725212	828564
	1767157	MSD	14.82	14.79	14.73	14.85	119725213	828564
ChlorobenzeneD5 (ISTD)	1767157	MS	11.11	11.09	11.03	11.15	119725212	828564
	1767157	MSD	11.11	11.09	11.03	11.15	119725213	828564

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Bromodichloromethane	828564	17.4	16.1	20.0	70.0 - 130	87.0	80.5	ug/L	7.76	30.0
Bromoform	828564	16.3	15.5	20.0	70.0 - 130	81.5	77.5	ug/L	5.03	30.0
Chloroform	828564	18.2	17.3	20.0	70.0 - 130	91.0	86.5	ug/L	5.07	30.0
Dibromochloromethane	828564	17.2	17.2	20.0	70.0 - 130	86.0	86.0	ug/L	0	30.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Bromodichloromethane	1767157	160	176	ND	200	67.1 - 133	80.0	88.0	ug/L	9.52	30.0
Bromoform	1767157	126	148	ND	200	58.4 - 125	63.0	74.0	ug/L	16.1	30.0
Chloroform	1767157	194	211	ND	200	62.8 - 138	97.0	106	ug/L	8.40	30.0
Dibromochloromethane	1767157	156	179	ND	200	60.7 - 129	78.0	89.5	ug/L	13.7	30.0

Surrogate

Parameter	Sample	Type	Reading	Known	Units	Recover%	Limits%	File
1,2-DCA-d4 (SURR)	828564	CCV	19.7	20.0	ug/L	98.5	70.0 - 130	119725207
	828564	LCS	19.8	20.0	ug/L	99.0	70.0 - 130	119725208
	828564	LCS Dup	18.4	20.0	ug/L	92.0	70.0 - 130	119725209
	828564	Blank	19.5	20.0	ug/L	97.5	70.0 - 130	119725210
Bromofluorobenzene (SURR)	828564	CCV	18.7	20.0	ug/L	93.5	70.0 - 130	119725207
	828564	LCS	18.9	20.0	ug/L	94.5	70.0 - 130	119725208
	828564	LCS Dup	19.0	20.0	ug/L	95.0	70.0 - 130	119725209
	828564	Blank	18.6	20.0	ug/L	93.0	70.0 - 130	119725210
Dibromofluoromethane (SURR)	828564	CCV	20.5	20.0	ug/L	102	70.0 - 130	119725207





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 03/21/2019

Page 12 of 14

Surrogate

Parameter	Sample	Type	Reading	Known	Units	Recover%	Limits%	File
Dibromofluoromethane (SURR)	828564	LCS	18.4	20.0	ug/L	92.0	70.0 - 130	119725208
	828564	LCS Dup	18.1	20.0	ug/L	90.5	70.0 - 130	119725209
	828564	Blank	17.2	20.0	ug/L	86.0	70.0 - 130	119725210
TolueneD8 (SURR)	828564	CCV	18.3	20.0	ug/L	91.5	70.0 - 130	119725207
	828564	LCS	17.9	20.0	ug/L	89.5	70.0 - 130	119725208
	828564	LCS Dup	17.9	20.0	ug/L	89.5	70.0 - 130	119725209
828564	Blank	18.3	20.0	ug/L	91.5	70.0 - 130	119725210	
1,2-DCA-d4 (SURR)	1766348	UNKNOWN	21.2	20.0	ug/L	106	70.0 - 130	119725214
Bromofluorobenzene (SURR)	1766348	UNKNOWN	19.7	20.0	ug/L	98.5	70.0 - 130	119725214
Dibromofluoromethane (SURR)	1766348	UNKNOWN	18.7	20.0	ug/L	93.5	70.0 - 130	119725214
TolueneD8 (SURR)	1766348	UNKNOWN	18.9	20.0	ug/L	94.5	70.0 - 130	119725214
1,2-DCA-d4 (SURR)	1767157	MS	18.8	20.0	ug/L	94.0	70.0 - 130	119725212
	1767157	MSD	19.8	20.0	ug/L	99.0	70.0 - 130	119725213
Bromofluorobenzene (SURR)	1767157	MS	18.0	20.0	ug/L	90.0	70.0 - 130	119725212
	1767157	MSD	18.9	20.0	ug/L	94.5	70.0 - 130	119725213
Dibromofluoromethane (SURR)	1767157	MS	18.8	20.0	ug/L	94.0	70.0 - 130	119725212
	1767157	MSD	18.9	20.0	ug/L	94.5	70.0 - 130	119725213
TolueneD8 (SURR)	1767157	MS	19.0	20.0	ug/L	95.0	70.0 - 130	119725212
	1767157	MSD	19.0	20.0	ug/L	95.0	70.0 - 130	119725213

Analytical Set 828698

EPA 552.2 1

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Bromoacetic acid	828157	0.310	0.275	5.00	ug/L	119727471
Chloroacetic acid	828157	ND	0.559	5.00	ug/L	119727471
Dibromoacetic acid	828157	0.289	0.198	5.00	ug/L	119727471
Dichloroacetic acid	828157	ND	0.244	5.00	ug/L	119727471
Trichloroacetic acid	828157	ND	0.191	5.00	ug/L	119727471

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Bromoacetic acid	20.5	20.0	ug/L	103	70.0 - 130	119727470
	20.5	20.0	ug/L	103	70.0 - 130	119738629
Chloroacetic acid	24.9	20.0	ug/L	125	70.0 - 130	119727470
	20.8	20.0	ug/L	104	70.0 - 130	119738629
Dibromoacetic acid	16.3	20.0	ug/L	81.5	70.0 - 130	119727470
	14.1	20.0	ug/L	70.5	70.0 - 130	119738629
Dichloroacetic acid	21.4	20.0	ug/L	107	70.0 - 130	119727470
	21.7	20.0	ug/L	109	70.0 - 130	119738629
Trichloroacetic acid	17.8	20.0	ug/L	89.1	70.0 - 130	119727470
	18.5	20.0	ug/L	92.4	70.0 - 130	119738629

IS Areas

Parameter	Sample	Type	Reading	CCVISM	Low	High	File	PrepSet
1,2,3-Trichloropropane (IS)		CCV	709000	709000	496300	921700	119727470	828698
		CCV	856600	709000	496300	921700	119738629	828698
	828157	Blank	778900	709000	496300	921700	119727471	828157

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201



Quality Control

Printed 03/21/2019

Page 13 of 14

IS Areas

Parameter	Sample	Type	Reading	CCVISM	Low	High	File	PrepSet
1,2,3-Trichloropropane (IS)	828157	LCS	748900	709000	496300	921700	119727472	828157
	1766348	UNKNOWN	828000	709000	496300	921700	119738617	828157
	1767092	MS	708900	709000	496300	921700	119738623	828698
	1767092	MSD	639800	709000	496300	921700	119738624	828157
	1767092	UNKNOWN	737400	709000	496300	921700	119738622	828157

IS RetTime

Parameter	Sample	Type	Reading	CCVISM	Low	High	File	PrepSet
1,2,3-Trichloropropane (IS)		CCV	8.800	8.800	8.740	8.860	119727470	828698
		CCV	8.810	8.800	8.740	8.860	119738629	828698
	828157	Blank	8.810	8.800	8.740	8.860	119727471	828157
	828157	LCS	8.810	8.800	8.740	8.860	119727472	828157
	1766348	UNKNOWN	8.800	8.800	8.740	8.860	119738617	828157
	1767092	MS	8.810	8.800	8.740	8.860	119738623	828698
	1767092	MSD	8.800	8.800	8.740	8.860	119738624	828157
	1767092	UNKNOWN	8.810	8.800	8.740	8.860	119738622	828157

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Bromoacetic acid	828157	24.2	23.5	20.0	70.0 - 130	121	118	ug/L	2.51	30.0
Chloroacetic acid	828157	24.3	24.6	20.0	70.0 - 130	122	123	ug/L	0.816	30.0
Dibromoacetic acid	828157	22.7	23.5	20.0	70.0 - 130	114	118	ug/L	3.45	30.0
Dichloroacetic acid	828157	24.7	25.3	20.0	70.0 - 130	124	126	ug/L	1.60	30.0
Trichloroacetic acid	828157	21.2	21.5	20.0	70.0 - 130	106	108	ug/L	1.87	30.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Bromoacetic acid	1767092	18.1	19.8	0.903	20.0	30.0 - 150	86.0	94.5	ug/L	9.42	30.0
Chloroacetic acid	1767092	23.1	30.3	3.66	20.0	15.0 - 150	97.2	133	ug/L	31.2 *	30.0
Dibromoacetic acid	1767092	4.79	21.5	1.68	20.0	30.0 - 150	15.6 *	99.1	ug/L	146 *	30.0
Dichloroacetic acid	1767092	32.0	37.2	19.5	20.0	30.0 - 150	62.5	88.5	ug/L	34.4 *	30.0
Trichloroacetic acid	1767092	22.0	25.9	8.60	20.0	30.0 - 150	67.0	86.5	ug/L	25.4	30.0

Surrogate

Parameter	Sample	Type	Reading	Known	Units	Recover%	Limits%	File
2,3-Dibromopropionic (Surr)		CCV	19.3	20.0	ug/L	96.5	70.0 - 130	119727470
		CCV	15.2	20.0	ug/L	76.0	70.0 - 130	119738629
	828157	Blank	18.8	20.0	ug/L	94.0	70.0 - 130	119727471
	828157	LCS	21.2	20.0	ug/L	106	70.0 - 130	119727472
	828157	LCS Dup	21.6	20.0	ug/L	108	70.0 - 130	119727473
	1766348	UNKNOWN	18.2	20.0	ug/L	91.0	70.0 - 130	119738617
	1767092	MS	6.05	20.0	ug/L	30.2 *	70.0 - 130	119738623
	1767092	MSD	21.7	20.0	ug/L	108	70.0 - 130	119738624
	1767092	UNKNOWN	14.3	20.0	ug/L	71.5	70.0 - 130	119738622

Analytical Set 827763

SM 2130 B-2001

AWRL/MRL C

Parameter	Reading	Known	Units	Recover%	Limits%	File
Turbidity	0.29	0.30	NTU	0	70.0 - 130	119708083

Blank

Parameter	PrepSet	Reading	MDL	SQL	Units	File
-----------	---------	---------	-----	-----	-------	------





Quality Control

Printed 03/21/2019

Page 14 of 14

Blank

Parameter	PrepSet	Reading	MDL	SQL	Units	File
Turbidity	827763	ND	0.30	0.300	NTU	119708080

Duplicate

Parameter	Sample	Result	Unknown	Unit	RPD	Limit%
Turbidity	1766150	3.74	3.75	NTU	0.267	20.0

Mat. Spike

Parameter	Sample	Spike	Unknown	Known	Units	Recovery %	Limits %	File
Turbidity	1766150	43.8	3.75	40.0	NTU	100	70.0 - 130	119708087

Standard

Parameter	Sample	Reading	Known	Units	Recover%	Limits%	File
Turbidity	827763	9.28	10.0	NTU	92.8	90.0 - 110	119708081
	827763	96.3	100	NTU	96.3	90.0 - 110	119708084
	827763	9.05	10.0	NTU	90.5	90.0 - 110	119708090
	827763	9.78	10.0	NTU	97.8	90.0 - 110	119708092

Analytical Set **828487**

SM 2320 B-2011

Blank

Parameter	PrepSet	Reading	MDL	SQL	Units	File
Total Alkalinity (as CaCO3)	828487	ND	1.00	1.00	mg/L	119723645

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Total Alkalinity (as CaCO3)	25.4	25.0	mg/L	102	90.0 - 110	119723644
	24.9	25.0	mg/L	99.6	90.0 - 110	119723654
	25.9	25.0	mg/L	104	90.0 - 110	119723666

Duplicate

Parameter	Sample	Result	Unknown	Unit	RPD	Limit%
Total Alkalinity (as CaCO3)	1766124	77.1	79.5	mg/L	3.07	20.0
	1766939	24.9	25.4	mg/L	1.99	20.0

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Total Alkalinity (as CaCO3)	24.5	25.0	mg/L	98.0	90.0 - 110	119723643

Mat. Spike

Parameter	Sample	Spike	Unknown	Known	Units	Recovery %	Limits %	File
Total Alkalinity (as CaCO3)	1766124	100	79.5	25.0	mg/L	82.0	70.0 - 130	119723648
	1766939	47.5	25.4	25.0	mg/L	88.4	70.0 - 130	119723657

* Out RPD is Relative Percent Difference: $\text{abs}(r1-r2) / \text{mean}(r1,r2) * 100\%$

Recover% is Recovery Percent: $\text{result} / \text{known} * 100\%$

Blank - Method Blank; AWRL/MRL C - Ambient Water Reporting Limit/Minimum Reporting Limit Check Std; LCS - Laboratory Control Sample; CCB - Continuing Calibration Blank; CCV - Continuing Calibration Verification; ICV - Initial Calibration Verification; BFB - GC/MS Tuning Compound; MRL Check - Minimum Reporting Limit Check Std



Environmental Laboratory, LLC

Chain Of Custody Record

Batch # 821163 TEMP UN-C: 6.0 Page of

1606 E Brazos Suite D Victoria, Texas 77901 ph. (361) 572-8224

Customer / Report Information

Batch # 821163 THERM ID# 4 TEMP Corr: 6.0

Name: City of Victoria SWTP

Address: PO Box 1758 Victoria, TX 77902

Phone: 361-485-3415 FAX:

Attention: Stephen Robinson

Attention: Stephen Robinson PO #

EMAIL: srobinson@victoria.tx.org

Address: 2902 Bluff St. Victoria, TX 77902

Project: ASR Well #19, Tbl 7, List A/B

Requested Analysis: cc: K post@victoria.tx.org

Sample Information

Collected By:

Collected Date: Time:

Matrix:

Container TYPE NUMBER Size

Preservative

Custody Seals Present Yes No

Intact Yes No

Client / Field Sample ID

ASR Table 1, List A

3/12/19 1040 AM

G DW 9

H2SO4 HNO3 NaOH HCL Na2SO3

Cl, F, SO4 TDS/Turbid. Al, Ca, Mg, Na, K NH3 /ALK. TSS/Silica Hard/P04, Brom. TTHM/HAA5 TOC/As, Fe, Mn, Diss. As, Fe, Mn

LAB Sample Number S190711424

ASR Table 1, List B

3/12/19 1040 AM

G DW 2

H2SO4 HNO3 NaOH HCL Na2SO3

LAB Sample Number S190711429

Required Turnaround:	Expedite / Rush:	1 Business Day	2 Business Days	3 Business days	5 Business days	Other	REMARKS:
<input type="checkbox"/> Routine (6-10 Business days)	<input type="checkbox"/> Expedite / Rush:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Surcharge will apply to RUSH TAT Authorized By: <u> </u> Container Type: P=Plastic, G=Glass, V=Voa, O=Other Carrier ID: <u> </u>							
Relinquished By: <u> </u>	Date: <u>3/12/19</u>	Time: <u>1325</u>	Received By: <u> </u>	Date: <u>3-12-19</u>	Time: <u>1325</u>		
Relinquished By: <u> </u>	Date: <u> </u>	Time: <u> </u>	Received By: <u> </u>	Date: <u> </u>	Time: <u> </u>		

BatchNo: 82436

SAMPLE REPORT



T104704328-19-16

Business

Victoria, City of - Stephen Robinson
P O Box 1758
Victoria TX 77902
Att: Stephen Robinson



Laboratory

B Environmental, LLC.
1606 E Brazos, Suite D
Victoria TX 77901
ph. 361-572-8224

Reference Information

Project: Well #19 ASR Table 1, List A & B
Printed: Tuesday, April
02, 2019

Re: Victoria, City of - Stephen Robinson

Dear: Stephen Robinson

Attached are the results for sample(s) received on 3/18/2019

The analytical results relate only to the samples tested.

All supporting quality data meets the requirements of NELAC unless noted in the case narrative section of the report.

This report contains 23 pages (including the cover page)

If you have any questions concerning this report, please do not hesitate to call (361) 572-8224 or Fax us at (361) 572-4115

Respectfully Submitted,

Kevin Baros
Laboratory Director



B Environmental, LLC. 1606 E Brazos, Suite D Victoria TX 77901

This report shall not be reproduced except in full, without written approval of the laboratory

Batch No:

Sample Receipt Checklist

Date Received:

Project

Received By:

Login completed by:

- YES NO Not Present
- YES NO Not Present
- YES NO Not Present
- YES NO
- YES NO
- YES NO
- YES NO
- YES NO
- YES NO
- YES NO
- YES NO >0 <6 °C On Ice
- YES NO No VOA Vials submitted
- YES NO Not Applicable

*TEMP pH Adjusted? Checked By

Any No and/or N/A (not applicable) response must be detailed in the comments section below.

Client contacted PersonContacted

Contacted by: Date Contacted:

Regarding

Comments

Corrective Action





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

1

Results

Printed: 04/02/2019 14:11

Page 1 of 7

Report To

B-Environmental
 Kevin C. Baros
 1606 E Brazos St., Suite D
 Victoria, TX 77901

Account
BENV-G

Project
866739

Results

1767563	S190771537			Received:	03/19/2019		
Drinking Water	Collected by: Client	B-Environmental		PO:			
	Taken: 03/18/2019 14:30:00						
<hr/>							
<i>Calculation</i>	<i>Prepared:</i>	<i>03/22/2019</i>	<i>09:49:54</i>	<i>Calculated</i>	<i>03/22/2019</i>	<i>09:49:54</i>	<i>CAL</i>
<i>Parameter</i>	<i>Results</i>	<i>Units</i>	<i>RL</i>	<i>Flag</i>	<i>CAS</i>	<i>Bottle</i>	
z Phosphorus (as Phosphate)	0.438	mg/L	0.306				
<hr/>							
EPA 200.7 4.4	Prepared: 828929	03/20/2019	10:30:00	Analyzed 829300	03/21/2019	15:28:00	LPS
Parameter	Results	Units	RL	Flag	CAS	Bottle	
N Phosphorus	0.143	mg/L	0.100		7723-14-0	13	
z Silicon Recoverable	6.31	mg/L	0.100		7740-21-3	13	
<hr/>							
EPA 200.7 4.4	Prepared: 828929	03/20/2019	10:30:00	Analyzed 829593	03/22/2019	20:06:00	LPS
Parameter	Results	Units	RL	Flag	CAS	Bottle	
N Calcium	39.5	mg/L	0.500		7440-70-2	13	
N Magnesium, Total	9.43	mg/L	0.020		7439-95-4	13	
N Potassium	4.87	mg/L	0.500		7440-09-7	13	
<hr/>							
EPA 200.7 4.4	Prepared: 828929	03/20/2019	10:30:00	Analyzed 829593	03/22/2019	20:45:00	LPS
Parameter	Results	Units	RL	Flag	CAS	Bottle	
N Sodium	71.4	mg/L	5.00	D	7440-23-5	13	
<hr/>							
EPA 200.7 4.4 - Calc	Prepared:	03/22/2019	09:49:54	Calculated	03/22/2019	09:49:54	CAL
Parameter	Results	Units	RL	Flag	CAS	Bottle	
N Silica (SiO2)	13.5	mg/L	0.214				
<hr/>							
EPA 200.8 5.4	Prepared: 828929	03/20/2019	10:30:00	Analyzed 828988	03/20/2019	14:23:00	JBP
Parameter	Results	Units	RL	Flag	CAS	Bottle	
N Aluminum, Total	0.00312	mg/L	0.005	JB	7429-90-5	13	
<hr/>							
EPA 300.0 2.1	Prepared: 829671	03/21/2019	18:03:00	Analyzed 829671	03/21/2019	18:03:00	AMB
Parameter	Results	Units	RL	Flag	CAS	Bottle	
N Chloride	59.4	mg/L	1.50			01	
N Fluoride	0.495	mg/L	0.500	J		01	

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201-19-15



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

1

Results

Printed: 04/02/2019 14:11

1767563 S190771537		Received: 03/19/2019						
Drinking Water		Collected by: Client	B-Environmental		PO:			
		Taken: 03/18/2019 14:30:00						
EPA 300.0 2.1		Prepared: 829671	03/21/2019	18:03:00	Analyzed 829671	03/21/2019	18:03:00	AMB
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Sulfate	23.7	mg/L	1.50			01		
EPA 300.1 1		Prepared: 830363	03/28/2019	11:05:00	Analyzed 830363	03/28/2019	11:05:00	AMB
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Bromate	<5.00	ug/L	5.00			05		
EPA 350.1 2		Prepared: 828696	03/19/2019	14:15:00	Analyzed 829017	03/20/2019	00:00:00	RSV
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Ammonia (as N)	0.158	mg/L	0.020			10		
EPA 524.2 4.1		Prepared: 828856	03/19/2019	19:39:00	Analyzed 828856	03/19/2019	19:39:00	KLB
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Bromodichloromethane	20.8	ug/L	1.00		75-27-4	07		
N Bromoform	3.24	ug/L	1.00		75-25-2	07		
N Chloroform	17.0	ug/L	1.00		67-66-3	07		
N Dibromochloromethane	15.6	ug/L	1.00		124-48-1	07		
EPA 524.2 4.1		Prepared: 828856	03/20/2019	10:25:52	Calculated 828856	03/20/2019	10:25:52	CAL
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Trihalomethanes	0.05664	mg/L	0.001			07		
EPA 552.2 1		Prepared: 829599	03/25/2019	09:05:41	Analyzed 831027	04/01/2019	23:35:00	EMT
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Bromoacetic acid	<5.00	ug/L	5.00		79-08-3	16		
N Chloroacetic acid	<5.00	ug/L	5.00		79-11-8	16		
N Dibromoacetic acid	<5.00	ug/L	5.00		631-64-1	16		
N Dichloroacetic acid	<5.00	ug/L	5.00		79-43-6	16		
N Trichloroacetic acid	9.73	ug/L	5.00		76-03-9	16		
EPA 552.2 1		Prepared: 829599	03/25/2019	09:05:41	Calculated 831027	04/02/2019	13:41:19	CAL
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N HAA5	0.00973	mg/L	0.005			16		
SM 2130 B-2001		Prepared: 828919	03/19/2019	11:27:00	Analyzed 828919	03/19/2019	11:27:00	NHL
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Turbidity	<0.30	NTU	0.30			01		





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Results

Printed: 04/02/2019 14:11

1767563 S190771537

Received: 03/19/2019

Drinking Water

Collected by: Client

B-Environmental

PO:

Taken: 03/18/2019 14:30:00

SM 2320 B-2011 Prepared: 829222 03/20/2019 13:20:00 Analyzed 829222 03/20/2019 13:20:00 NHL

Parameter	Results	Units	RL	Flag	CAS	Bottle
N Total Alkalinity (as CaCO3)	174	mg/L	1.00			01

SM 2340 B-2011 Prepared: 03/25/2019 09:59:20 Calculated 03/25/2019 09:59:20 CAL

Parameter	Results	Units	RL	Flag	CAS	Bottle
N Total Hardness as CaCO3 -Ca/MgEq	137	mg/L	0.500			

SM 2540 C-97 Prepared: 829081 03/20/2019 12:30:00 Analyzed 829081 03/20/2019 12:30:00 TH2

Parameter	Results	Units	RL	Flag	CAS	Bottle
N Total Dissolved Solids	308	mg/L	20.0			01

SM 2540 D-2011 Prepared: 829187 03/21/2019 09:35:00 Analyzed 829187 03/21/2019 09:35:00 ALW

Parameter	Results	Units	RL	Flag	CAS	Bottle
N Total Suspended Solids	<2.00	mg/L	2.00			01

SM 5310 C-2000 Prepared: 829138 03/20/2019 14:48:00 Analyzed 829138 03/20/2019 14:48:00 ALH

Parameter	Results	Units	RL	Flag	CAS	Bottle
N Total Organic Carbon	1.90	mg/L	0.500			04

1767576 S190771539

Received: 03/19/2019

Drinking Water

Collected by: Client

B-Environmental

PO:

Taken: 03/18/2019 14:30:00

EPA 200.7 4.4 Prepared: 828929 03/20/2019 10:30:00 Analyzed 829593 03/22/2019 20:17:00 LPS

Parameter	Results	Units	RL	Flag	CAS	Bottle
N Iron, Total	0.0514	mg/L	0.025		7439-89-6	03

EPA 200.7, Rev. 4.4 Prepared: 829883 03/26/2019 12:33:00 Analyzed 829883 03/26/2019 12:33:00 LPS

Parameter	Results	Units	RL	Flag	CAS	Bottle
N Dissolved Iron	0.0119	mg/L	0.025	J	7439-89-6	02

EPA 200.8 5.4 Prepared: 828929 03/20/2019 10:30:00 Analyzed 829055 03/21/2019 00:10:00 JBP

Parameter	Results	Units	RL	Flag	CAS	Bottle
N Arsenic, Total	0.00376	mg/L	0.0005	B	7440-38-2	03





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

1

Results

Printed: 04/02/2019 14:11

Page 4 of 7

1767576 S190771539

Received: 03/19/2019

Drinking Water Collected by: Client B-Environmental PO:
 Taken: 03/18/2019 14:30:00

EPA 200.8 5.4	Prepared:	828929	03/20/2019	10:30:00	Analyzed	829055	03/21/2019	00:10:00	JBP
Parameter	Results	Units	RL	Flag	CAS	Bottle			
N Manganese, Total	0.00743	mg/L	0.001		7439-96-5	03			
EPA 200.8 5.4	Prepared:	828929	03/20/2019	10:30:00	Analyzed	829311	03/22/2019	00:52:00	LPS
Parameter	Results	Units	RL	Flag	CAS	Bottle			
N Lead, Total	<0.00025	mg/L	0.00025		7439-92-1	03			
EPA 200.8 5.4	Prepared:	829871	03/26/2019	11:02:00	Analyzed	829871	03/26/2019	11:02:00	JBP
Parameter	Results	Units	RL	Flag	CAS	Bottle			
N Dissolved Arsenic	0.00338	mg/L	0.0005		7440-38-2	02			
N Dissolved Manganese	0.00112	mg/L	0.001		7439-96-5	02			

Sample Preparation

1767563 S190771537

Received: 03/19/2019

Prepared: 828617 03/19/2019 00:00:00 Analyzed 828617 03/19/2019 00:00:00 AAJ

z Bottle pH	<2	SU	03
z Bottle pH	<2	SU	02
z Bottle pH	<2	SU	04
Cooler Temperature	1.7	degrees C	01
Cooler Temperature	1.7	degrees C	03
Cooler Temperature	1.7	degrees C	02
Cooler Temperature	1.7	degrees C	04
Cooler Temperature	1.7	degrees C	05
Cooler Temperature	1.7	degrees C	06
Cooler Temperature	1.7	degrees C	07
Cooler Temperature	1.7	degrees C	08
Cooler Temperature	1.7	degrees C	09





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Results

Printed: 04/02/2019 14:11

1767563	S190771537							Received: 03/19/2019	
Cooler Return	Prepared:	03/19/2019	17:00:00	Analyzed	03/19/2019	17:00:00	MG3		
z Return Cooler/No bottles Require	Returned.								
EPA 200.2 2.8	Prepared:	828929	03/20/2019	10:30:00	Analyzed	828929	03/20/2019	10:30:00	TES
N Liquid Metals Digestion	50/50	ml						02	
EPA 350.2, Rev. 2.0	Prepared:	828696	03/19/2019	14:15:00	Analyzed	828696	03/19/2019	14:15:00	JAL
N Ammonia Distillation	50/50	ml						03	
EPA 524.2 4.1	Prepared:	828856	03/19/2019	19:39:00	Analyzed	828856	03/19/2019	19:39:00	KLB
N Trihalomethane Expansion Code	Entered							07	
EPA 552.2 1	Prepared:	829599	03/25/2019	09:05:41	Analyzed	829599	03/25/2019	09:05:41	LSD
N Haloacetic Acids Extraction	3/40	ml						06	
EPA 552.2 1	Prepared:	829599	03/25/2019	09:05:41	Analyzed	831027	04/01/2019	23:35:00	EMT
N Haloacetic Acids (HAA5)	Entered							16	
SM 2540 C-97	Prepared:	828933	03/20/2019	12:30:00	Analyzed	828933	03/20/2019	12:30:00	TH2
N Total Dissolved Solids Started	Started								
SM 2540 D-1997	Prepared:	828980	03/21/2019	09:35:00	Analyzed	828980	03/21/2019	09:35:00	ALW
N TSS Set Started	Started								
1767576	S190771539							Received: 03/19/2019	





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

1

Results

Printed: 04/02/2019 14:11

Page 6 of 7

1767576		S190771539						Received: 03/19/2019
		Prepared: 828617	03/19/2019	00:00:00	Analyzed 828617	03/19/2019	00:00:00	AAJ
z	Bottle pH	<2	SU					01
z	Bottle pH	<2	SU					02
	Cooler Temperature	1.7	degrees C					01
	Cooler Temperature	1.7	degrees C					02
		Prepared: 828623	03/18/2019	14:30:00	Analyzed 828623	03/18/2019	14:30:00	CLI
N	Client Field Filtration (Onsite)	Filtered						
		Prepared: 829777	03/26/2019	07:58:55	Analyzed 829777	03/26/2019	07:58:55	LPS
z	Transfer to ICP/MS	COMPLETE						
		Prepared: 828929	03/20/2019	10:30:00	Analyzed 828929	03/20/2019	10:30:00	TES
EPA 200.2 2.8								
N	Liquid Metals Digestion	50/50	ml					01





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Results

Printed: 04/02/2019 14:11

Page 7 of 7

Qualifiers:

J - Analyte detected below quantitation limit

B - Analyte detected in the associated method blank

D - Duplicate RPD was higher than expected

We report results on an As Received or wet basis unless marked Dry Weight. Unless otherwise noted, testing was performed at Ana-labs corporate laboratory that holds the following Federal and State certificates: EPA Lab Number TX00063, US Department of Agriculture Soil Import Permit P330-17-00117, Texas Commission on Environmental Quality Commercial Drinking Water Lab Approval (Lab ID: TX219), Texas Commission on Environmental Quality NELAP T104704201-19-15, Louisiana Department of Environmental Quality Laboratory Certification (NELAP, LELAP) #02008, Louisiana Department of Health and Hospitals Drinking Water (NELAP) Certificate No LA026, Oklahoma Department of Environmental Quality TNI Laboratory Accreditation Program Certificate No. 2018-126, Arkansas Department of Environmental Quality Certification #18-068-0. The Accredited column designates accreditation by N -- NELAC, or z -- not covered under NELAC scope of accreditation.

These analytical results relate to the sample tested. This report may NOT be reproduced EXCEPT in FULL without written approval of Ana-Lab Corp. Unless otherwise specified, these test results meet the requirements of NELAC.

RL is the Reporting Limit (sample specific quantitation limit) and is at or above the Method Detection Limit (MDL). CAS is Chemical Abstract Service number. RL is our Reporting Limit, or Minimum Quantitation Level. The RL takes into account the Instrument Detection Limit (IDL), Method Detection Limit (MDL), and Practical Quantitation Limit (PQL), and any dilutions and/or concentrations performed during sample preparation (EQL). Our analytical result must be above this RL before we report a value in the 'Results' column of our report (without a 'J' flag). Otherwise, we report ND (Not Detected above RL), because the result is "<" (less than) the number in the RL column.

MAL is Minimum Analytical Level and is typically from regulatory agencies. Unless we report a result in the result column, or interferences prevent it, we work to have our RL at or below the MAL.

Trey Peery, MA, Project Manager





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity

Caring

Continual Improvement

Quality Control

Printed 04/02/2019

Page 1 of 13

Report To

B-Environmental
Kevin C. Baros
1606 E Brazos St., Suite D
Victoria, TX 77901

Account
BENV-G

Project
866739

Analytical Set **829017**

EPA 350.1 2

Blank

<u>Parameter</u>	<u>PrepSet</u>	<u>Reading</u>	<u>MDL</u>	<u>MDL</u>	<u>MDL</u>	<u>Units</u>	<u>File</u>
Ammonia (as N)	828696	ND	0.00356	0.020		mg/L	119735626

CCV

<u>Parameter</u>	<u>Reading</u>	<u>Known</u>	<u>Units</u>	<u>Recover%</u>	<u>Limits%</u>	<u>File</u>
Ammonia (as N)	2.07	2.00	mg/L	104	90.0 - 110	119735625
	2.04	2.00	mg/L	102	90.0 - 110	119735635
	2.11	2.00	mg/L	106	90.0 - 110	119735644
	2.07	2.00	mg/L	104	90.0 - 110	119735654
	1.94	2.00	mg/L	97.0	90.0 - 110	119735663
	2.14	2.00	mg/L	107	90.0 - 110	119735670
	2.00	2.00	mg/L	100	90.0 - 110	119735679
	2.16	2.00	mg/L	108	90.0 - 110	119735684

Duplicate

<u>Parameter</u>	<u>Sample</u>	<u>Result</u>	<u>Unknown</u>	<u>Unit</u>	<u>RPD</u>	<u>Limit%</u>
Ammonia (as N)	1767563	0.149	0.158	mg/L	5.86	20.0
	1767613	0.023	0.023	mg/L	0	20.0

ICV

<u>Parameter</u>	<u>Reading</u>	<u>Known</u>	<u>Units</u>	<u>Recover%</u>	<u>Limits%</u>	<u>File</u>
Ammonia (as N)	1.98	2.00	mg/L	99.0	90.0 - 110	119735624

LCS Dup

<u>Parameter</u>	<u>PrepSet</u>	<u>LCS</u>	<u>LCSD</u>	<u>Known</u>	<u>Limits%</u>	<u>LCS%</u>	<u>LCSD%</u>	<u>Units</u>	<u>RPD</u>	<u>Limit%</u>
Ammonia (as N)	828696	2.00	1.99	2.00	90.0 - 110	100	99.5	mg/L	0.501	20.0

Mat. Spike

<u>Parameter</u>	<u>Sample</u>	<u>Spike</u>	<u>Unknown</u>	<u>Known</u>	<u>Units</u>	<u>Recovery %</u>	<u>Limits %</u>	<u>File</u>
Ammonia (as N)	1767563	2.39	0.158	2.00	mg/L	112	80.0 - 120	119735631
	1767613	2.17	0.023	2.00	mg/L	107	80.0 - 120	119735634

Analytical Set **829081**

SM 2540 C-97

ControlBlk

<u>Parameter</u>	<u>PrepSet</u>	<u>Reading</u>	<u>MDL</u>	<u>MDL</u>	<u>MDL</u>	<u>Units</u>	<u>File</u>
Total Dissolved Solids	829081	0.0004				grams	119737785

Duplicate

<u>Parameter</u>	<u>Sample</u>	<u>Result</u>	<u>Unknown</u>	<u>Unit</u>	<u>RPD</u>	<u>Limit%</u>
Total Dissolved Solids	1767530	4500	4290	mg/L	4.78	20.0

LCS

<u>Parameter</u>	<u>PrepSet</u>	<u>Reading</u>	<u>Known</u>	<u>Units</u>	<u>Recover%</u>	<u>Limits</u>	<u>File</u>
Total Dissolved Solids	829081	192	200	mg/L	96.0	85.0 - 115	119737799





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 04/02/2019

Page 2 of 13

1
2

Standard

Parameter	Sample	Reading	Known	Units	Recover%	Limits%	File
Total Dissolved Solids		96.0	100	mg/L	96.0	90.0 - 110	119737786

Analytical Set **829187**

SM 2540 D-2011

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Total Suspended Solids	829187	ND	2	2	mg/L	119739629

ControlBlk

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Total Suspended Solids	829187	0.0004			grams	119739628

Duplicate

Parameter	Sample	Result	Unknown	Unit	RPD	Limit%
Total Suspended Solids	1768357	4900	4900	mg/L	0	20.0
	1768361	7450	8350	mg/L	11.4	20.0

LCS

Parameter	PrepSet	Reading	Known	Units	Recover%	Limits	File
Total Suspended Solids	829187	55.0	50.0	mg/L	110	90.0 - 110	119739647

Standard

Parameter	Sample	Reading	Known	Units	Recover%	Limits%	File
Total Suspended Solids		108	100	mg/L	108	90.0 - 110	119739646

Analytical Set **830363**

EPA 300.1 1

AWRL/MRL C

Parameter	Reading	Known	Units	Recover%	Limits%	File
Bromate	3.84	5.00	ug/L	76.8	75.0 - 125	119765068

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Bromate	830363	ND	2.06	5.00	ug/L	119765067

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Bromate	525	500	ug/L	105	85.0 - 115	119765062
	534	500	ug/L	107	85.0 - 115	119765081

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Bromate	830363	89.2	93.6	100	85.0 - 115	89.2	93.6	ug/L	4.81	25.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Bromate	1768074	160	124	ND	200	80.0 - 120	80.0	62.0 *	ug/L	25.4 *	20.0

Analytical Set **828988**

EPA 200.8 5.4

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Aluminum, Total	828929	0.00565	0.0025	0.005	mg/L	119735054

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity

Caring

Continual Improvement

Quality Control

Printed 04/02/2019

Page 3 of 13

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Aluminum, Total	0.052	0.05	mg/L	104	90.0 - 110	119735035
	0.0519	0.05	mg/L	104	90.0 - 110	119735043
	0.0525	0.05	mg/L	105	90.0 - 110	119735053
	0.0518	0.05	mg/L	104	90.0 - 110	119735062

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Aluminum, Total	0.0467	0.05	mg/L	93.4	90.0 - 110	119735030

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Aluminum, Total	828929	0.565	0.490	0.500	85.0 - 115	113	98.0	mg/L	14.2	20.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Aluminum, Total	1767563	0.484	0.488	0.00312	0.500	70.0 - 130	96.2	97.0	mg/L	0.828	20.0

Analytical Set 829055

EPA 200.8 5.4

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Arsenic, Total	828929	0.000595	0.00025	0.0005	mg/L	119736904
Manganese, Total	828929	ND	0.00033	0.001	mg/L	119736904

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File	
Arsenic, Total	0.0482	0.05	mg/L	96.4	90.0 - 110	119736858	
	0.0476	0.05	mg/L	95.2	90.0 - 110	119736869	
	0.047	0.05	mg/L	94.0	90.0 - 110	119736879	
	0.0469	0.05	mg/L	93.8	90.0 - 110	119736889	
	0.0494	0.05	mg/L	98.8	90.0 - 110	119736902	
	0.0456	0.05	mg/L	91.2	90.0 - 110	119736912	
	0.0459	0.05	mg/L	91.8	90.0 - 110	119736923	
	0.048	0.05	mg/L	96.0	90.0 - 110	119736933	
	0.0475	0.05	mg/L	95.0	90.0 - 110	119736944	
	0.0474	0.05	mg/L	94.8	90.0 - 110	119736954	
	0.0469	0.05	mg/L	93.8	90.0 - 110	119736964	
	Manganese, Total	0.0509	0.05	mg/L	102	90.0 - 110	119736858
		0.0506	0.05	mg/L	101	90.0 - 110	119736869
		0.0501	0.05	mg/L	100	90.0 - 110	119736879
0.0505		0.05	mg/L	101	90.0 - 110	119736889	
0.051		0.05	mg/L	102	90.0 - 110	119736902	
0.0505		0.05	mg/L	101	90.0 - 110	119736912	
0.0503		0.05	mg/L	101	90.0 - 110	119736923	
0.0506		0.05	mg/L	101	90.0 - 110	119736933	

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Arsenic, Total	0.0514	0.05	mg/L	103	90.0 - 110	119736812
Manganese, Total	0.050	0.05	mg/L	100	90.0 - 110	119736812

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201-19-15



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 04/02/2019

Page 4 of 13

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Arsenic, Total	828929	0.459	0.458	0.500	85.0 - 115	91.8	91.6	mg/L	0.218	20.0
Manganese, Total	828929	0.525	0.523	0.500	85.0 - 115	105	105	mg/L	0.382	20.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Arsenic, Total	1767525	0.447	0.460	0.00501	0.500	70.0 - 130	88.4	91.0	mg/L	2.90	20.0
Manganese, Total	1767525	0.524	0.532	0.0102	0.500	70.0 - 130	103	104	mg/L	1.54	20.0
Arsenic, Total	1767563	0.460	0.467	0.00492	0.500	70.0 - 130	91.0	92.4	mg/L	1.53	20.0
Manganese, Total	1767563	0.521	0.520	0.00814	0.500	70.0 - 130	103	102	mg/L	0.195	20.0

Analytical Set **829138**

SM 5310 C-2000

AWRL/MRL C

Parameter	Reading	Known	Units	Recover%	Limits%	File
Total Organic Carbon	1.54	2.00	mg/L	77.0	75.0 - 125	119738780

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Total Organic Carbon	829138	0.0749	0.0168	0.500	mg/L	119738779
	829138	0.0603	0.0168	0.500	mg/L	119738795
	829138	0.077	0.0168	0.500	mg/L	119738801

CCB

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Total Organic Carbon	829138	0.132	0.0168	0.500	mg/L	119738773
	829138	0.119	0.0168	0.500	mg/L	119738787
	829138	0.0937	0.0168	0.500	mg/L	119738793
	829138	0.100	0.0168	0.500	mg/L	119738797
	829138	0.105	0.0168	0.500	mg/L	119738799
	829138	0.126	0.0168	0.500	mg/L	119738810

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Total Organic Carbon	10.2	10.0	mg/L	102	90.0 - 110	119738776
	10.3	10.0	mg/L	103	90.0 - 110	119738788
	9.98	10.0	mg/L	99.8	90.0 - 110	119738794
	10.2	10.0	mg/L	102	90.0 - 110	119738798
	9.86	10.0	mg/L	98.6	90.0 - 110	119738800
	10.1	10.0	mg/L	101	90.0 - 110	119738811

ICL

Parameter	Reading	Known	Units	Recover%	Limits%	File
Total Organic Carbon	19.5	20.0	mg/L	97.5	90.0 - 110	119738775

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Total Organic Carbon	10.2	10.0	mg/L	102	90.0 - 110	119738777

LCS

Parameter	PrepSet	Reading	Known	Units	Recover%	Limits	File
Total Organic Carbon	829138	4.98	5.00	mg/L	99.6	93.1 - 112	119738778
	829138	5.02	5.00	mg/L	100	93.1 - 112	119738796
	829138	4.92	5.00	mg/L	98.4	93.1 - 112	119738802

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201-19-15



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 04/02/2019

Page 5 of 13

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Total Organic Carbon	1767616	10.4	10.4	0.377	10.0	89.5 - 116	100	100	mg/L	0	20.0
	1767954	15.1	15.2	4.73	10.0	89.5 - 116	104	105	mg/L	0.960	20.0
	1768191	11.0	11.1	0.801	10.0	89.5 - 116	102	103	mg/L	0.976	20.0

Standard

Parameter	Sample	Reading	Known	Units	Recover%	Limits%	File
Total Organic Carbon		52.0	50.0	mg/L	104	90.0 - 110	119738774

Analytical Set **829300**

EPA 200.7 4.4

Blank

Parameter	PrepSet	Reading	MDL	MDL	Units	File
Phosphorus	828929	ND	0.0388	0.100	mg/L	119741982
Silicon Recoverable	828929	0.082	0.0148	0.100	mg/L	119741982

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Phosphorus	9.59	10.0	mg/L	95.9	90.0 - 110	119741981
	9.50	10.0	mg/L	95.0	90.0 - 110	119741992
	9.51	10.0	mg/L	95.1	90.0 - 110	119741994
Silicon Recoverable	4.91	5.00	mg/L	98.2	90.0 - 110	119741981
	4.67	5.00	mg/L	93.4	90.0 - 110	119741992
	4.68	5.00	mg/L	93.6	90.0 - 110	119741994

ICL

Parameter	Reading	Known	Units	Recover%	Limits%	File
Phosphorus	24.9	25.0	mg/L	99.6	95.0 - 105	119741979
Silicon Recoverable	10.0	10.0	mg/L	100	95.0 - 105	119741979

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Phosphorus	10.0	10.0	mg/L	100	90.0 - 110	119741980
Silicon Recoverable	5.00	5.00	mg/L	100	90.0 - 110	119741980

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Phosphorus	828929	3.90	3.80	4.00	85.0 - 115	97.5	95.0	mg/L	2.60	25.0
Silicon Recoverable	828929	3.64	3.62	4.00	85.0 - 115	91.0	90.5	mg/L	0.551	25.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Phosphorus	1767563	3.99	3.97	0.143	4.00	75.0 - 125	96.2	95.7	mg/L	0.521	25.0
Silicon Recoverable	1767563	9.81	9.69	6.31	4.00	75.0 - 125	87.5	84.5	mg/L	3.49	25.0

Analytical Set **829311**

EPA 200.8 5.4

Blank

Parameter	PrepSet	Reading	MDL	MDL	Units	File
Arsenic, Total	828929	0.000561	0.00025	0.0005	mg/L	119742795
Lead, Total	828929	ND	0.00025	0.0005	mg/L	119742795
Manganese, Total	828929	ND	0.00033	0.001	mg/L	119742795

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
-----------	---------	-------	-------	----------	---------	------





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 04/02/2019

Page 6 of 13

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Lead, Total	0.0518	0.05	mg/L	104	90.0 - 110	119742691
	0.0506	0.05	mg/L	101	90.0 - 110	119742697
	0.0502	0.05	mg/L	100	90.0 - 110	119742708
	0.0504	0.05	mg/L	101	90.0 - 110	119742728
	0.0506	0.05	mg/L	101	90.0 - 110	119742738
	0.0496	0.05	mg/L	99.2	90.0 - 110	119742758
	0.0489	0.05	mg/L	97.8	90.0 - 110	119742769
	0.0498	0.05	mg/L	99.6	90.0 - 110	119742778
	0.0497	0.05	mg/L	99.4	90.0 - 110	119742798
	0.0494	0.05	mg/L	98.8	90.0 - 110	119742809
	0.0484	0.05	mg/L	96.8	90.0 - 110	119742820
	0.049	0.05	mg/L	98.0	90.0 - 110	119742830
	0.0485	0.05	mg/L	97.0	90.0 - 110	119742841
	0.0494	0.05	mg/L	98.8	90.0 - 110	119742852
	0.0482	0.05	mg/L	96.4	90.0 - 110	119742855

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Lead, Total	0.0517	0.05	mg/L	103	90.0 - 110	119742686

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Arsenic, Total	828929	0.501	0.499	0.500	85.0 - 115	100	99.8	mg/L	0.400	20.0
Lead, Total	828929	0.532	0.530	0.500	85.0 - 115	106	106	mg/L	0.377	20.0
Manganese, Total	828929	0.508	0.502	0.500	85.0 - 115	102	100	mg/L	1.19	20.0

MRL Check

Parameter	Reading	Known	Units	Recover%	Limits%	File
Lead, Total	0.00101	0.001	mg/L	101	50.0 - 150	119742687

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Arsenic, Total	1767525	0.510	0.504	0.00409	0.500	70.0 - 130	101	100	mg/L	1.19	20.0
Lead, Total	1767525	0.487	0.491	ND	0.500	70.0 - 130	97.4	98.2	mg/L	0.818	20.0
Manganese, Total	1767525	0.495	0.504	0.0104	0.500	70.0 - 130	96.9	98.7	mg/L	1.84	20.0
Arsenic, Total	1767563	0.508	0.504	0.00329	0.500	70.0 - 130	101	100	mg/L	0.796	20.0
Lead, Total	1767563	0.506	0.510	0.000294	0.500	70.0 - 130	101	102	mg/L	0.788	20.0
Manganese, Total	1767563	0.498	0.498	0.00841	0.500	70.0 - 130	97.9	97.9	mg/L	0	20.0

Analytical Set 829593

EPA 200.7 4.4

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Calcium	828929	0.0965	0.0419	0.500	mg/L	119747957
Iron, Total	828929	0.0111	0.00504	0.025	mg/L	119747957
Magnesium, Total	828929	ND	0.0102	0.020	mg/L	119747957
Potassium	828929	ND	0.0765	0.500	mg/L	119747957
Sodium	828929	0.0487	0.0315	0.500	mg/L	119747957

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Calcium	25.2	25.0	mg/L	101	90.0 - 110	119747925
	26.1	25.0	mg/L	104	90.0 - 110	119747936





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 04/02/2019

Page 7 of 13

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Calcium	25.4	25.0	mg/L	102	90.0 - 110	119747945
	25.9	25.0	mg/L	104	90.0 - 110	119747956
	25.5	25.0	mg/L	102	90.0 - 110	119747966
	25.8	25.0	mg/L	103	90.0 - 110	119747976
	26.2	25.0	mg/L	105	90.0 - 110	119747986
	25.5	25.0	mg/L	102	90.0 - 110	119747987
Iron, Total	2.46	2.50	mg/L	98.4	90.0 - 110	119747915
	2.55	2.50	mg/L	102	90.0 - 110	119747925
	2.49	2.50	mg/L	99.6	90.0 - 110	119747936
	2.49	2.50	mg/L	99.6	90.0 - 110	119747945
	2.50	2.50	mg/L	100	90.0 - 110	119747956
	2.44	2.50	mg/L	97.6	90.0 - 110	119747966
	2.48	2.50	mg/L	99.2	90.0 - 110	119747976
	2.52	2.50	mg/L	101	90.0 - 110	119747986
	2.43	2.50	mg/L	97.2	90.0 - 110	119747987
	26.2	25.0	mg/L	105	90.0 - 110	119747925
Magnesium, Total	26.3	25.0	mg/L	105	90.0 - 110	119747936
	25.8	25.0	mg/L	103	90.0 - 110	119747945
	26.2	25.0	mg/L	105	90.0 - 110	119747956
	25.5	25.0	mg/L	102	90.0 - 110	119747966
	26.2	25.0	mg/L	105	90.0 - 110	119747976
	26.6	25.0	mg/L	106	90.0 - 110	119747986
	25.9	25.0	mg/L	104	90.0 - 110	119747987
	24.6	25.0	mg/L	98.4	90.0 - 110	119747925
	24.5	25.0	mg/L	98.0	90.0 - 110	119747936
	24.6	25.0	mg/L	98.4	90.0 - 110	119747956
Potassium	24.4	25.0	mg/L	97.6	90.0 - 110	119747966
	25.8	25.0	mg/L	103	90.0 - 110	119747976
	25.0	25.0	mg/L	100	90.0 - 110	119747986
	24.2	25.0	mg/L	96.8	90.0 - 110	119747987
	24.8	25.0	mg/L	99.2	90.0 - 110	119747925
	25.9	25.0	mg/L	104	90.0 - 110	119747936
	25.2	25.0	mg/L	101	90.0 - 110	119747945
	25.1	25.0	mg/L	100	90.0 - 110	119747956
Sodium	25.8	25.0	mg/L	103	90.0 - 110	119747966
	26.1	25.0	mg/L	104	90.0 - 110	119747976
	25.8	25.0	mg/L	103	90.0 - 110	119747986
	25.4	25.0	mg/L	102	90.0 - 110	119747987

Dir. SPKD

Parameter	Sample	DSPK	DSPKD	UNK	Known	Limits%	DSPK%	DSPKD%	Units	RPD	Limit%
Calcium	1767563	90.8	89.9	37.4	50.0	75.0 - 125	107	105	mg/L	0.996	25.0
Iron, Total	1767563	4.58	4.70	0.0308	5.00	75.0 - 125	91.0	93.4	mg/L	2.59	25.0
Magnesium, Total	1767563	60.3	59.6	9.94	50.0	75.0 - 125	101	99.3	mg/L	1.17	25.0
Potassium	1767563	61.4	60.2	12.3	50.0	75.0 - 125	98.2	95.8	mg/L	1.97	25.0
Sodium	1767563	118	117	71.4	50.0	75.0 - 125	93.2	91.2	mg/L	0.851	25.0

Direct SPK

Parameter	Sample	DSPK	UNK	Known	Limits%	DSPK%	Units
Calcium	1767563	90.8	37.4	50.0	75.0 - 125	107	mg/L
Iron, Total	1767563	4.58	0.0308	5.00	75.0 - 125	91.0	mg/L

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201-19-15



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 04/02/2019

Page 8 of 13

Direct SPK

Parameter	Sample	DSPK	UNK	Known	Limits%	DSPK%	Units	
Magnesium, Total	1767563	60.3	9.94	50.0	75.0 - 125	101	mg/L	25.0
Potassium	1767563	61.4	12.3	50.0	75.0 - 125	98.2	mg/L	25.0
Sodium	1767563	118	71.4	50.0	75.0 - 125	93.2	mg/L	25.0

ICL

Parameter	Reading	Known	Units	Recover%	Limits%	File
Calcium	50.0	50.0	mg/L	100	95.0 - 105	119747909
Iron, Total	4.94	5.00	mg/L	98.8	95.0 - 105	119747909
Magnesium, Total	49.7	50.0	mg/L	99.4	95.0 - 105	119747909
Potassium	49.6	50.0	mg/L	99.2	95.0 - 105	119747909
Sodium	49.8	50.0	mg/L	99.6	95.0 - 105	119747909

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Calcium	26.0	25.0	mg/L	104	90.0 - 110	119747913
Iron, Total	2.50	2.50	mg/L	100	90.0 - 110	119747913
Magnesium, Total	26.0	25.0	mg/L	104	90.0 - 110	119747913
Potassium	24.1	25.0	mg/L	96.4	90.0 - 110	119747913
Sodium	25.1	25.0	mg/L	100	90.0 - 110	119747913

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Calcium	828929	4.95	4.84	5.00	85.0 - 115	99.0	96.8	mg/L	2.25	25.0
Iron, Total	828929	0.512	0.501	0.500	85.0 - 115	102	100	mg/L	2.17	25.0
Magnesium, Total	828929	5.23	5.24	5.00	85.0 - 115	105	105	mg/L	0.191	25.0
Potassium	828929	5.20	5.12	5.00	85.0 - 115	104	102	mg/L	1.55	25.0
Sodium	828929	5.06	4.96	5.00	85.0 - 115	101	99.2	mg/L	2.00	25.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Calcium	1767525	146	151	147	5.00	75.0 - 125	-20.0 *	80.0	mg/L	333 *	25.0
Iron, Total	1767525	0.451	0.461	0.0399	0.500	75.0 - 125	82.2	84.2	mg/L	2.40	25.0
Magnesium, Total	1767525	58.1	59.2	55.6	5.00	75.0 - 125	50.0 *	72.0 *	mg/L	36.1 *	25.0
Potassium	1767525	23.3	24.1	16.7	5.00	75.0 - 125	132 *	148 *	mg/L	11.4	25.0
Sodium	1767525	1350	1390	1390	5.00	75.0 - 125	-800 *	0 *	mg/L	2.92	25.0
Calcium	1767563	43.4	44.1	39.5	5.00	75.0 - 125	78.0	92.0	mg/L	16.5	25.0
Iron, Total	1767563	0.525	0.527	0.0527	0.500	75.0 - 125	94.5	94.9	mg/L	0.423	25.0
Magnesium, Total	1767563	14.6	14.8	9.43	5.00	75.0 - 125	103	107	mg/L	3.80	25.0
Potassium	1767563	9.82	9.92	4.87	5.00	75.0 - 125	99.0	101	mg/L	2.00	25.0
Sodium	1767563	70.3	71.8	66.4	5.00	75.0 - 125	78.0	108	mg/L	32.3 *	25.0

Analytical Set 829871

EPA 200.8 5.4

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Dissolved Arsenic	0.0502	0.05	mg/L	100	90.0 - 110	119754769
	0.0501	0.05	mg/L	100	90.0 - 110	119754778
Dissolved Manganese	0.0498	0.05	mg/L	99.6	90.0 - 110	119754769
	0.0498	0.05	mg/L	99.6	90.0 - 110	119754778

Dir. SPKD

Parameter	Sample	DSPK	DSPKD	UNK	Known	Limits%	DSPK%	DSPKD%	Units	RPD	Limit%
Dissolved Arsenic	1767576	0.498	0.480	0.00338	0.500	70.0 - 130	98.9	95.3	mg/L	3.68	30.0

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201-19-15



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 04/02/2019

Page 9 of 13

Dir. SPKD

Parameter	Sample	DSPK	DSPKD	UNK	Known	Limits%	DSPK%	DSPKD%	Units	RPD	Limit%
Dissolved Manganese	1767576	0.512	0.498	0.00112	0.500	70.0 - 130	102	99.4	mg/L	2.77	30.0

Direct SPK

Parameter	Sample	DSPK	UNK	Known	Limits%	DSPK%	Units
Dissolved Arsenic	1767576	0.498	0.00338	0.500	70.0 - 130	98.9	mg/L
Dissolved Manganese	1767576	0.512	0.00112	0.500	70.0 - 130	102	mg/L

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Dissolved Arsenic	0.0494	0.05	mg/L	98.8	90.0 - 110	119754764
Dissolved Manganese	0.0502	0.05	mg/L	100	90.0 - 110	119754764

Analytical Set 829883

EPA 200.7 4.4

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Dissolved Iron	2.53	2.50	mg/L	101	90.0 - 110	119755117
	2.65	2.50	mg/L	106	90.0 - 110	119755127
	2.50	2.50	mg/L	100	90.0 - 110	119755133
	2.41	2.50	mg/L	96.4	90.0 - 110	119755140

Dir. SPKD

Parameter	Sample	DSPK	DSPKD	UNK	Known	Limits%	DSPK%	DSPKD%	Units	RPD	Limit%
Dissolved Iron	1767618	4.99	5.18	ND	5.00	75.0 - 125	99.8	104	mg/L	3.74	20.0

Direct SPK

Parameter	Sample	DSPK	UNK	Known	Limits%	DSPK%	Units
Dissolved Iron	1767618	4.99	ND	5.00	75.0 - 125	99.8	mg/L

ICL

Parameter	Reading	Known	Units	Recover%	Limits%	File
Dissolved Iron	5.21	5.00	mg/L	104	95.0 - 105	119755111

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Dissolved Iron	2.61	2.50	mg/L	104	90.0 - 110	119755115

Analytical Set 828856

EPA 524.2 4.1

BFB

Parameter	Sample	RefMass	Reading	%	Limits%	File
BFB Mass 173	828856	174	0	0.0	0 - 2.00	119730739
BFB Mass 174	828856	95.0	37773	78.3	50.0 - 100	119730739
BFB Mass 175	828856	174	2612	6.9	5.00 - 9.00	119730739
BFB Mass 176	828856	174	36219	95.9	95.0 - 101	119730739
BFB Mass 177	828856	176	2522	7.0	5.00 - 9.00	119730739
BFB Mass 50	828856	95.0	9726	20.2	15.0 - 40.0	119730739
BFB Mass 75	828856	95.0	24176	50.1	30.0 - 80.0	119730739
BFB Mass 95	828856	95.0	48229	100.0	100 - 100	119730739
BFB Mass 96	828856	95.0	3331	6.9	5.00 - 9.00	119730739

Blank

Parameter	PrepSet	Reading	MDL	MDL	Units	File
Bromodichloromethane	828856	ND	0.308	1.00	ug/L	119730743





Quality Control

Blank

Parameter	PrepSet	Reading	MDL	SQL	Units	File
Bromoform	828856	ND	0.418	1.00	ug/L	119730743
Chloroform	828856	ND	0.213	1.00	ug/L	119730743
Dibromochloromethane	828856	ND	0.327	1.00	ug/L	119730743

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Bromodichloromethane	19.7	20.0	ug/L	98.3	70.0 - 130	119730740
Bromoform	19.1	20.0	ug/L	95.5	70.0 - 130	119730740
Chloroform	17.7	20.0	ug/L	88.6	70.0 - 130	119730740
Dibromochloromethane	20.0	20.0	ug/L	99.8	70.0 - 130	119730740

IS Areas

Parameter	Sample	Type	Reading	CCVISM	Low	High	File	PrepSet	
1,4-DichlorobenzeneD4 (ISTD)	828856	CCV	241800	241800	120900	362800	119730740	828856	
	828856	LCS	239400	241800	120900	362800	119730741	828856	
	828856	LCS Dup	219400	241800	120900	362800	119730742	828856	
	828856	Blank	171700	241800	120900	362800	119730743	828856	
ChlorobenzeneD5 (ISTD)	828856	CCV	405000	405000	202500	607500	119730740	828856	
	828856	LCS	410900	405000	202500	607500	119730741	828856	
	828856	LCS Dup	385700	405000	202500	607500	119730742	828856	
	828856	Blank	351000	405000	202500	607500	119730743	828856	
1,4-DichlorobenzeneD4 (ISTD)	1765712	MS	289800	241800	120900	362800	119730749	828856	
	1765712	MSD	282900	241800	120900	362800	119730750	828856	
ChlorobenzeneD5 (ISTD)	1765712	MS	528400	405000	202500	607500	119730749	828856	
	1765712	MSD	511500	405000	202500	607500	119730750	828856	
1,4-DichlorobenzeneD4 (ISTD)	1767563	UNKNOWN	24900	241800	120900	362800	119730758	828856	
ChlorobenzeneD5 (ISTD)	1767563	UNKNOWN	27400	405000	202500	607500	*	119730758	828856

IS RetTime

Parameter	Sample	Type	Reading	CCVISM	Low	High	File	PrepSet
1,4-DichlorobenzeneD4 (ISTD)	828856	CCV	11.18	11.18	11.12	11.24	119730740	828856
	828856	LCS	11.18	11.18	11.12	11.24	119730741	828856
	828856	LCS Dup	11.18	11.18	11.12	11.24	119730742	828856
	828856	Blank	11.18	11.18	11.12	11.24	119730743	828856
ChlorobenzeneD5 (ISTD)	828856	CCV	8.818	8.818	8.758	8.878	119730740	828856
	828856	LCS	8.818	8.818	8.758	8.878	119730741	828856
	828856	LCS Dup	8.818	8.818	8.758	8.878	119730742	828856
	828856	Blank	8.818	8.818	8.758	8.878	119730743	828856
1,4-DichlorobenzeneD4 (ISTD)	1765712	MS	11.18	11.18	11.12	11.24	119730749	828856
	1765712	MSD	11.18	11.18	11.12	11.24	119730750	828856
ChlorobenzeneD5 (ISTD)	1765712	MS	8.818	8.818	8.758	8.878	119730749	828856
	1765712	MSD	8.818	8.818	8.758	8.878	119730750	828856
1,4-DichlorobenzeneD4 (ISTD)	1767563	UNKNOWN	11.18	11.18	11.12	11.24	119730758	828856
ChlorobenzeneD5 (ISTD)	1767563	UNKNOWN	8.818	8.818	8.758	8.878	119730758	828856

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
-----------	---------	-----	------	-------	---------	------	-------	-------	-----	--------





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 04/02/2019

Page 11 of 13

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Bromodichloromethane	828856	20.0	21.0	20.0	70.0 - 130	100	105	ug/L	4.88	30.0
Bromoform	828856	19.4	21.3	20.0	70.0 - 130	97.0	106	ug/L	8.87	30.0
Chloroform	828856	17.6	18.1	20.0	70.0 - 130	88.0	90.5	ug/L	2.80	30.0
Dibromochloromethane	828856	19.3	20.3	20.0	70.0 - 130	96.5	102	ug/L	5.54	30.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Bromodichloromethane	1765712	7640	8020	ND	10000	67.1 - 133	76.4	80.2	ug/L	4.85	30.0
Bromoform	1765712	8040	8560	ND	10000	58.4 - 125	80.4	85.6	ug/L	6.27	30.0
Chloroform	1765712	6520	6720	ND	10000	62.8 - 138	65.2	67.2	ug/L	3.02	30.0
Dibromochloromethane	1765712	7850	8160	ND	10000	60.7 - 129	78.5	81.6	ug/L	3.87	30.0

Surrogate

Parameter	Sample	Type	Reading	Known	Units	Recover%	Limits%	File
1,2-DCA-d4 (SURR)	828856	CCV	19.8	20.0	ug/L	99.0	70.0 - 130	119730740
	828856	LCS	20.0	20.0	ug/L	100	70.0 - 130	119730741
	828856	LCS Dup	20.4	20.0	ug/L	102	70.0 - 130	119730742
	828856	Blank	20.8	20.0	ug/L	104	70.0 - 130	119730743
Bromofluorobenzene (SURR)	828856	CCV	19.7	20.0	ug/L	98.5	70.0 - 130	119730740
	828856	LCS	19.8	20.0	ug/L	99.0	70.0 - 130	119730741
	828856	LCS Dup	20.0	20.0	ug/L	100	70.0 - 130	119730742
	828856	Blank	18.5	20.0	ug/L	92.5	70.0 - 130	119730743
Dibromofluoromethane (SURR)	828856	CCV	20.4	20.0	ug/L	102	70.0 - 130	119730740
	828856	LCS	20.2	20.0	ug/L	101	70.0 - 130	119730741
	828856	LCS Dup	20.5	20.0	ug/L	102	70.0 - 130	119730742
	828856	Blank	21.5	20.0	ug/L	108	70.0 - 130	119730743
TolueneD8 (SURR)	828856	CCV	19.7	20.0	ug/L	98.5	70.0 - 130	119730740
	828856	LCS	19.8	20.0	ug/L	99.0	70.0 - 130	119730741
	828856	LCS Dup	19.8	20.0	ug/L	99.0	70.0 - 130	119730742
	828856	Blank	18.6	20.0	ug/L	93.0	70.0 - 130	119730743
1,2-DCA-d4 (SURR)	1765712	MS	18.4	20.0	ug/L	92.0	70.0 - 130	119730749
	1765712	MSD	19.3	20.0	ug/L	96.5	70.0 - 130	119730750
Bromofluorobenzene (SURR)	1765712	MS	20.8	20.0	ug/L	104	70.0 - 130	119730749
	1765712	MSD	20.4	20.0	ug/L	102	70.0 - 130	119730750
Dibromofluoromethane (SURR)	1765712	MS	19.1	20.0	ug/L	95.5	70.0 - 130	119730749
	1765712	MSD	19.1	20.0	ug/L	95.5	70.0 - 130	119730750
TolueneD8 (SURR)	1765712	MS	20.2	20.0	ug/L	101	70.0 - 130	119730749
	1765712	MSD	20.4	20.0	ug/L	102	70.0 - 130	119730750
1,2-DCA-d4 (SURR)	1767563	UNKNOWN	18.3	20.0	ug/L	91.5	70.0 - 130	119730758
Bromofluorobenzene (SURR)	1767563	UNKNOWN	21.4	20.0	ug/L	107	70.0 - 130	119730758
Dibromofluoromethane (SURR)	1767563	UNKNOWN	18.6	20.0	ug/L	93.0	70.0 - 130	119730758
TolueneD8 (SURR)	1767563	UNKNOWN	19.3	20.0	ug/L	96.5	70.0 - 130	119730758

Analytical Set 831027

EPA 552.2 1

Blank

Parameter	PrepSet	Reading	MDL	MDL	Units	File
-----------	---------	---------	-----	-----	-------	------





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 04/02/2019

Page 12 of 13

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Bromoacetic acid	829599	ND	0.275	5.00	ug/L	119778517
Chloroacetic acid	829599	0.928	0.559	5.00	ug/L	119778517
Dibromoacetic acid	829599	ND	0.198	5.00	ug/L	119778517
Dichloroacetic acid	829599	ND	0.244	5.00	ug/L	119778517
Trichloroacetic acid	829599	ND	0.191	5.00	ug/L	119778517

IS Areas

Parameter	Sample	Type	Reading	CCVISM	Low	High	File	PrepSet
1,2,3-Trichloropropane (IS)	829599	Blank	452000	531300	371900	690700	119778517	829599
	829599	LCS	458800	531300	371900	690700	119778518	829599
	1767563	UNKNOWN	82200	531300	371900	690700	119778520	829599

IS RetTime

Parameter	Sample	Type	Reading	CCVISM	Low	High	File	PrepSet
1,2,3-Trichloropropane (IS)	829599	Blank	8.400	8.400	8.340	8.460	119778517	829599
	829599	LCS	8.400	8.400	8.340	8.460	119778518	829599
	1767563	UNKNOWN	8.400	8.400	8.340	8.460	119778520	829599

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Bromoacetic acid	829599	25.7	25.3	20.0	70.0 - 130	128	126	ug/L	1.57	30.0
Chloroacetic acid	829599	25.1	24.6	20.0	70.0 - 130	126	123	ug/L	2.41	30.0
Dibromoacetic acid	829599	24.1	23.5	20.0	70.0 - 130	120	118	ug/L	1.68	30.0
Dichloroacetic acid	829599	25.3	25.9	20.0	70.0 - 130	126	130	ug/L	3.12	30.0
Trichloroacetic acid	829599	22.8	21.6	20.0	70.0 - 130	114	108	ug/L	5.41	30.0

Surrogate

Parameter	Sample	Type	Reading	Known	Units	Recover%	Limits%	File
2,3-Dibromopropionic (Surr)	829599	Blank	9.47	20.0	ug/L	47.4 *	70.0 - 130	119778517
	829599	LCS	23.4	20.0	ug/L	117	70.0 - 130	119778518
	829599	LCS Dup	20.6	20.0	ug/L	103	70.0 - 130	119778519
	1767563	UNKNOWN	7.5	20.0	ug/L	87.5	70.0 - 130	119778520

Analytical Set 828919

SM 2130 B-2001

AWRL/MRL C

Parameter	Reading	Known	Units	Recover%	Limits%	File
Turbidity	0.300	0.30	NTU	100	70.0 - 130	119733400

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Turbidity	828919	ND	0.30	0.30	NTU	119733398

Duplicate

Parameter	Sample	Result	Unknown	Unit	RPD	Limit%
Turbidity	1767563	ND	ND	NTU		20.0

Mat. Spike

Parameter	Sample	Spike	Unknown	Known	Units	Recovery %	Limits %	File
Turbidity	1767563	39.6	ND	40.0	NTU	99.0	70.0 - 130	119733404

Standard

Parameter	Sample	Reading	Known	Units	Recover%	Limits%	File
Turbidity	828919	9.32	10.0	NTU	93.2	90.0 - 110	119733399





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 04/02/2019

Page 13 of 13

Standard

Parameter	Sample	Reading	Known	Units	Recover%	Limits%	File
Turbidity	828919	99.9	100	NTU	99.9	90.0 - 110	119733401
	828919	9.35	10.0	NTU	93.5	90.0 - 110	119733405
	828919	10.1	10.0	NTU	101	90.0 - 110	119733409

Analytical Set 829222

SM 2320 B-2011

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Total Alkalinity (as CaCO3)	829222	ND	1.00	1.00	mg/L	119740176

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Total Alkalinity (as CaCO3)	26.1	25.0	mg/L	104	90.0 - 110	119740175
	26.1	25.0	mg/L	104	90.0 - 110	119740189
	25.6	25.0	mg/L	102	90.0 - 110	119740202
	26.1	25.0	mg/L	104	90.0 - 110	119740215

Duplicate

Parameter	Sample	Result	Unknown	Unit	RPD	Limit%
Total Alkalinity (as CaCO3)	1766953	48.6	50.6	mg/L	4.03	20.0
	1767051	20.5	20.5	mg/L	0	20.0
	1767526	66.1	68.1	mg/L	2.98	20.0

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Total Alkalinity (as CaCO3)	26.6	25.0	mg/L	106	90.0 - 110	119740174

Mat. Spike

Parameter	Sample	Spike	Unknown	Known	Units	Recovery %	Limits %	File
Total Alkalinity (as CaCO3)	1766953	71.1	50.6	25.0	mg/L	82.0	70.0 - 130	119740179
	1767051	45.6	20.5	25.0	mg/L	100	70.0 - 130	119740192
	1767526	93.7	68.1	25.0	mg/L	102	70.0 - 130	119740205

* Out RPD is Relative Percent Difference: $\frac{\text{abs}(r1-r2)}{\text{mean}(r1,r2)} * 100\%$

Recover% is Recovery Percent: $\text{result} / \text{known} * 100\%$

Blank - Method Blank; CCV - Continuing Calibration Verification; BFB - GC/MS Tuning Compound; AWRL/MRL C - Ambient Water Reporting Limit/Minimum Reporting Limit Check Std; ICV - Initial Calibration Verification; LCS - Laboratory Control Sample; CCB - Continuing Calibration Blank; MRL Check - Minimum Reporting Limit Check Std



Environmental Laboratory, LLC

Chain Of Custody Record

RUSH

1606 E Brazos Suite D Victoria, Texas 77901 ph. (361) 572-8224

Customer / Report Information

Billing Information

Check box if Billing is the same as Report Information

Batch # 88434 TEMP UN-C: 20.9 Page of
 THERM ID# 4 TEMP Corr: 20.9

Name: City of Victoria - SWRP

Address:

Attention: Stephen Robinson

Attention:

PO #

Phone: FAX:
 EMAIL: kpost@victoriatax.org

Address: 2902 Bluff St. Victoria, TX 77902

Project: Well #19 ASR Table 1, List A/B

Requested Analysis

Completed By laboratory

Sample Information

Collected By:

Matrix

Container

Preservative

Custody Seals Present

Client / Field Sample ID

Collected

Date

Time

TYPE

NUMBER

Size

Composite DW - Drinking H2O S - Solid Grab WW - Waste H2O L - Liquid SL - Sludge w - Water

H2SO4 HNO3 H3PO4 NaOH HCL Na2SO3

H2SO4 HNO3 H3PO4 NaOH HCL Na2SO3

H2SO4 HNO3 H3PO4 NaOH HCL Na2SO3

Yes No
 Intact Yes No
 LAB Sample Number

Well #19 ASR Table 1, List A

3/18/19

2:30 PM

G

9

H2SO4 HNO3 H3PO4 NaOH HCL Na2SO3

H2SO4 HNO3 H3PO4 NaOH HCL Na2SO3

H2SO4 HNO3 H3PO4 NaOH HCL Na2SO3

S190771537

Well #19 ASR Table 1, List B

3/18/19

2:30 PM

G

2

H2SO4 HNO3 H3PO4 NaOH HCL Na2SO3

H2SO4 HNO3 H3PO4 NaOH HCL Na2SO3

H2SO4 HNO3 H3PO4 NaOH HCL Na2SO3

S190771539

Required Turnaround: Routine (6-10 Business days)

Expedite / Rush: 1 Business Day 2 Business Days 3 Business days 5 Business days Other

REMARKS:

Surcharge will apply to RUSH TAT Authorized By:

Container Type: P=Plastic, G=Glass, V=Voa, O=Other Carrier ID:

Relinquished By:

[Signature]

Date:

3-18-19

Time:

3:30

Received By:

[Signature]

Date:

3-18-19

Time:

3:18:19pm

Relinquished By:

[Signature]

Date:

Time:

Received By:

[Signature]

Date:

Time:

BatchNo: 82604

SAMPLE REPORT



T104704328-19-16

Business

Victoria, City of - Stephen Robinson
P O Box 1758
Victoria Tx 77902
Att: Stephen Robinson



Laboratory

B Environmental, LLC.
1606 E Brazos, Suite D
Victoria TX 77901
ph. 361-572-8224

Reference Information

Project: Well #21 ASR Table 1 List A&B
Printed: Wednesday,
April 03, 2019

Re: Victoria, City of - Stephen Robinson

Dear: Stephen Robinson

Attached are the results for sample(s) received on 3/21/2019

The analytical results relate only to the samples tested.

All supporting quality data meets the requirements of NELAC unless noted in the case narrative section of the report.

This report contains 23 pages (including the cover page)

If you have any questions concerning this report, please do not hesitate to call (361) 572-8224 or Fax us at (361) 572-4115

Respectfully Submitted,

Kevin Baros

Laboratory Director



B Environmental, LLC. 1606 E Brazos, Suite D Victoria TX 77901

This report shall not be reproduced except in full, without written approval of the laboratory

B Environmental, LLC.

BatchNo:

82604

1606 E Brazos, Suite D

Victoria TX 77901

Batch No: 82604

Sample Receipt Checklist

Date Received: 3/21/2019

Project Well #21 ASR Table 1 List A&B Received By: Honnen

Login completed by: Honnen 3/21/2019
Signature LoginDate:

Carrier Name Walk In

- Shipping container/cooler in good condition? YES NO Not Present
- Custody seals intact on shipping container/cooler? YES NO Not Present
- Custody seals intact on sample bottles? YES NO Not Present
- Chain of Custody present? YES NO
- Chain of Custody signed when relinquished and received YES NO
- Chain of Custody agrees with sample labels? YES NO
- Samples in proper container/bottles? YES NO
- Sample containers intact? YES NO
- Sufficient sample volume for indicated tests? YES NO
- All samples received within holding times? YES NO
- Container/Temp Blank - temperature in compliance? YES NO >0 <6 °C On Ice
- Water - VOA vials have zero headspace? Bubble < 6mm? YES NO No VOA Vials submitted
- Water - pH acceptable upon receipt? YES NO Not Applicable

*TEMP 23.6/23.6 pH Adjusted? NA Checked By L. Vahrenkamp

Any No and/or N/A (not applicable) response must be detailed in the comments section below.

Client contacted PersonContacted

Contacted by: Date Contacted:

Regarding

Comments

Therm #4. The samples were recieved the same day they were collected and were in the process of cooling.

Corrective Action





Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Report Page 2 of 31

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Results

Printed: 04/03/2019 13:51

Page 1 of 6

Report To:

ASR-Table 1, List A&B

Account
BENV-G

Project
867455

B-Environmental
Kevin C. Baros
1606 E Brazos St., Suite D
Victoria, TX 77901

Results

1769090	S190801421/S190801422	Received: 03/22/2019					
Drinking Water	Collected by: Client	B-Environmental		PO:			
	Taken: 03/21/2019 13:24:00						
Calculation							
	Prepared:	03/28/2019	11:11:53	Calculated	03/28/2019	11:11:53	CAL
Parameter	Results	Units	RL	Flag	CAS	Bottle	
z Phosphorus (as Phosphate)	0.129	mg/L	0.306				
EPA 200.7 4.4							
	Prepared:	829849 03/26/2019	12:00:00	Analyzed	829989 03/26/2019	17:35:00	LPS
Parameter	Results	Units	RL	Flag	CAS	Bottle	
N Calcium	36.3	mg/L	0.500		7440-70-2	21	
N Iron, Total	3.12	mg/L	0.025		7439-89-6	21	
N Magnesium, Total	9.82	mg/L	0.020		7439-95-4	21	
N Potassium	2.62	mg/L	0.500		7440-09-7	21	
EPA 200.7 4.4							
	Prepared:	829849 03/26/2019	12:00:00	Analyzed	830144 03/27/2019	12:03:00	LPS
Parameter	Results	Units	RL	Flag	CAS	Bottle	
z Silicon Recoverable	13.4	mg/L	0.500		7740-21-3	21	
EPA 200.7 4.4							
	Prepared:	829849 03/26/2019	12:00:00	Analyzed	830219 03/27/2019	15:25:00	LPS
Parameter	Results	Units	RL	Flag	CAS	Bottle	
N Phosphorus	0.042	mg/L	0.100	J	7723-14-0	21	
EPA 200.7 4.4							
	Prepared:	829849 03/26/2019	12:00:00	Analyzed	830214 03/27/2019	17:41:00	LPS
Parameter	Results	Units	RL	Flag	CAS	Bottle	
N Sodium	115	mg/L	5.00		7440-23-5	21	
EPA 200.7 4.4 - Calc							
	Prepared:	03/28/2019	11:22:30	Calculated	03/28/2019	11:22:30	CAL
Parameter	Results	Units	RL	Flag	CAS	Bottle	
N Silica (SiO2)	28.7	mg/L	1.07				
EPA 200.7, Rev. 4.4							
	Prepared:	829497 03/22/2019	15:00:00	Analyzed	830215 03/27/2019	17:00:00	LPS
Parameter	Results	Units	RL	Flag	CAS	Bottle	
N Dissolved Iron	0.0628	mg/L	0.025		7439-89-6	15	

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #TI04704201-19-15



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Results

Printed: 04/03/2019 13:51

1769090 S190801421/S190801422		Received: 03/22/2019						
Drinking Water	Collected by: Client	B-Environmental			PO:			
	Taken: 03/21/2019 13:24:00							
EPA 200.8 5.4		Prepared: 829497	03/22/2019	15:00:00	Analyzed 829776	03/25/2019	22:17:00	JBP
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Dissolved Arsenic	0.0164	mg/L	0.0005		7440-38-2	15		
N Dissolved Manganese	0.104	mg/L	0.001		7439-96-5	15		
EPA 200.8 5.4		Prepared: 829849	03/26/2019	12:00:00	Analyzed 830001	03/26/2019	21:39:00	JBP
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Lead, Total	0.00414	mg/L	0.0005		7439-92-1	21		
N Manganese, Total	0.138	mg/L	0.001		7439-96-5	21		
EPA 200.8 5.4		Prepared: 829849	03/26/2019	12:00:00	Analyzed 830226	03/27/2019	18:26:00	JBP
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Arsenic, Total	0.0285	mg/L	0.0005		7440-38-2	21		
EPA 200.8 5.4		Prepared: 829849	03/26/2019	12:00:00	Analyzed 830339	03/28/2019	12:40:00	JBP
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Aluminum, Total	3.26	mg/L	0.250		7429-90-5	21		
EPA 300.0 2.1		Prepared: 830057	03/23/2019	18:16:00	Analyzed 830057	03/23/2019	18:16:00	AMB
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Chloride	111	mg/L	1.50			01		
N Fluoride	0.380	mg/L	0.500	J		01		
N Sulfate	0.635	mg/L	1.50	J		01		
EPA 300.1 1		Prepared: 830505	03/28/2019	14:06:00	Analyzed 830505	03/28/2019	14:06:00	AMB
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Bromate	<5.00	ug/L	5.00			05		
EPA 350.1 2		Prepared: 829874	03/26/2019	15:00:00	Analyzed 830322	03/28/2019	10:00:00	RSV
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Ammonia (as N)	0.090	mg/L	0.020			22		
EPA 524.2 4.1		Prepared: 829837	03/25/2019	17:33:00	Analyzed 829837	03/25/2019	17:33:00	KLB
Parameter	Results	Units	RL	Flag	CAS	Bottle		
N Bromodichloromethane	<1.00	ug/L	1.00		75-27-4	09		
N Bromoform	<1.00	ug/L	1.00		75-25-2	09		
N Chloroform	<1.00	ug/L	1.00		67-66-3	09		
N Dibromochloromethane	<1.00	ug/L	1.00		124-48-1	09		

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201-19-15



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Results

Printed: 04/03/2019 13:51

Sample ID	Client	Collected by	Received	PO
1769090 S190801421/S190801422	B-Environmental	Client	03/22/2019	
Drinking Water		03/21/2019 13:24:00		
EPA 524.2 4.1				
Prepared:	829837	03/26/2019	16:41:55	Calculated 829837 03/26/2019 16:41:55 CAL
Parameter	Results	Units	RL	Flag CAS Bottle
N Trihalomethanes	<0.001	mg/L	0.001	
EPA 552.2 1				
Prepared:	829599	03/25/2019	09:05:41	Analyzed 831027 04/02/2019 00:35:00 EMT
Parameter	Results	Units	RL	Flag CAS Bottle
N Bromoacetic acid	<5.00	ug/L	5.00	79-08-3 18
N Chloroacetic acid	<5.00	ug/L	5.00	79-11-8 18
N Dibromoacetic acid	<5.00	ug/L	5.00	631-64-1 18
N Dichloroacetic acid	<5.00	ug/L	5.00	79-43-6 18
N Trichloroacetic acid	<5.00	ug/L	5.00	76-03-9 18
EPA 552.2 1				
Prepared:	829599	03/25/2019	09:05:41	Calculated 831027 04/03/2019 13:25:37 CAL
Parameter	Results	Units	RL	Flag CAS Bottle
N HAA5	<0.005	mg/L	0.005	
SM 2130 B-2001				
Prepared:	829492	03/22/2019	14:30:00	Analyzed 829492 03/22/2019 14:30:00 ELS
Parameter	Results	Units	RL	Flag CAS Bottle
N Turbidity	19.5	NTU	0.30	
SM 2320 B-2011				
Prepared:	829672	03/25/2019	08:48:00	Analyzed 829672 03/25/2019 08:48:00 ELS
Parameter	Results	Units	RL	Flag CAS Bottle
N Total Alkalinity (as CaCO3)	285	mg/L	1.00	
SM 2340 B-2011				
Prepared:		03/27/2019	10:47:15	Calculated 03/27/2019 10:47:15 CAL
Parameter	Results	Units	RL	Flag CAS Bottle
N Total Hardness as CaCO3 -Ca/MgEq	131	mg/L	0.500	
SM 2540 C-97				
Prepared:	829907	03/25/2019	10:20:00	Analyzed 829907 03/25/2019 10:20:00 ALW
Parameter	Results	Units	RL	Flag CAS Bottle
N Total Dissolved Solids	488	mg/L	20.0	
SM 2540 D-2011				
Prepared:	830023	03/26/2019	14:50:00	Analyzed 830023 03/26/2019 14:50:00 TH2
Parameter	Results	Units	RL	Flag CAS Bottle
N Total Suspended Solids	41.7	mg/L	5.71	
SM 5310 C-2000				
Prepared:	829605	03/22/2019	21:32:00	Analyzed 829605 03/22/2019 21:32:00 ALH
Parameter	Results	Units	RL	Flag CAS Bottle

Corporate Shipping: 2600 Dudley Rd, Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201-19-15



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Report Page 5 of 31

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Results

Printed: 04/03/2019 13:51

Page 4 of 6

1769090 S190801421/S190801422 Received: 03/22/2019
 Drinking Water Collected by: Client B-Environmental PO:
 Taken: 03/21/2019 13:24:00

Parameter	Results	Units	RL	Flag	CAS	Bottle
N Total Organic Carbon	0.654	mg/L	0.500			03

Sample Preparation

1769090 S190801421/S190801422 Received: 03/22/2019

	Prepared: 829290	03/22/2019	00:00:00	Analyzed 829290	03/22/2019	00:00:00	KAT
z Bottle pH	<2	SU					06
z Bottle pH	<2	SU					04
z Bottle pH	<2	SU					03
Cooler Temperature	1.0	degrees					02
		C					
Cooler Temperature	1.0	degrees					07
		C					
Cooler Temperature	1.0	degrees					05
		C					
Cooler Temperature	1.0	degrees					06
		C					
Cooler Temperature	1.0	degrees					04
		C					
Cooler Temperature	1.0	degrees					03
		C					
Cooler Temperature	1.0	degrees					01
		C					
Cooler Temperature	1.0	degrees					10
		C					
Cooler Temperature	1.0	degrees					09
		C					
Cooler Temperature	1.0	degrees					08
		C					
Cooler Temperature	1.0	degrees					14
		C					
Cooler Temperature	1.0	degrees					13
		C					
Cooler Temperature	1.0	degrees					12
		C					
Cooler Temperature	1.0	degrees					11
		C					

Corporate Shipping: 2609 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201-19-15



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Results

Printed: 04/03/2019 13:51

1769090	S190801421/S190801422							Received: 03/22/2019
EPA 200.2 2.8		Prepared: 829849	03/26/2019	12:00:00	Analyzed 829849	03/26/2019	12:00:00	TES
N Liquid Metals Digestion		50/50		ml				04
EPA 350.2, Rev. 2.0		Prepared: 829874	03/26/2019	15:00:00	Analyzed 829874	03/26/2019	15:00:00	CRS
N Ammonia Distillation		50/50		ml				06
EPA 524.2 4.1		Prepared: 829837	03/25/2019	17:33:00	Analyzed 829837	03/25/2019	17:33:00	KLB
N Trihalomethane Expansion Code		Entered						09
EPA 552.2 1		Prepared: 829599	03/25/2019	09:05:41	Analyzed 829599	03/25/2019	09:05:41	LSD
N Haloacetic Acids Extraction		3/40		ml				07
EPA 552.2 1		Prepared: 829599	03/25/2019	09:05:41	Analyzed 831027	04/02/2019	00:35:00	EMT
N Haloacetic Acids (HAA5)		Entered						18
SM 2540 C-97		Prepared: 829577	03/25/2019	10:20:00	Analyzed 829577	03/25/2019	10:20:00	ALW
N Total Dissolved Solids Started		Started						
SM 2540 D-1997		Prepared: 829833	03/26/2019	14:50:00	Analyzed 829833	03/26/2019	14:50:00	TH2
N TSS Set Started		Started						
SM 3030 B-2004		Prepared: 829497	03/22/2019	15:00:00	Analyzed 829497	03/22/2019	15:00:00	ALB
N Dissolved Metals Filtering		50/50		ml				01

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201-19-15



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Report Page 7 of 31

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

Employee Owned Integrity Caring Continual Improvement

Results

Page 6 of 6

Printed: 04/03/2019 13:51

Qualifiers:

J - Analyte detected below quantitation limit

We report results on an As Received or wet basis unless marked Dry Weight. Unless otherwise noted, testing was performed at Ana-labs corporate laboratory that holds the following Federal and State certificates: EPA Lab Number TX00063, US Department of Agriculture Soil Import Permit P330-17-00117, Texas Commission on Environmental Quality Commercial Drinking Water Lab Approval (Lab ID: TX219), Texas Commission on Environmental Quality NELAP T104704201-19-15, Louisiana Department of Environmental Quality Laboratory Certification (NELAP, LELAP) #02008, Louisiana Department of Health and Hospitals Drinking Water (NELAP) Certificate No LA026, Oklahoma Department of Environmental Quality TNI Laboratory Accreditation Program Certificate No. 2018-126, Arkansas Department of Environmental Quality Certification #18-068-0. The Accredited column designates accreditation by N -- NELAC, or z -- not covered under NELAC scope of accreditation.

These analytical results relate to the sample tested. This report may NOT be reproduced EXCEPT in FULL without written approval of Ana-Lab Corp. Unless otherwise specified, these test results meet the requirements of NELAC.

RL is the Reporting Limit (sample specific quantitation limit) and is at or above the Method Detection Limit (MDL). CAS is Chemical Abstract Service number. RL is our Reporting Limit, or Minimum Quantitation Level. The RL takes into account the Instrument Detection Limit (IDL), Method Detection Limit (MDL), and Practical Quantitation Limit (PQL), and any dilutions and/or concentrations performed during sample preparation (EQL). Our analytical result must be above this RL before we report a value in the 'Results' column of our report (without a 'J' flag). Otherwise, we report ND (Not Detected above RL), because the result is "<" (less than) the number in the RL column. MAL is Minimum Analytical Level and is typically from regulatory agencies. Unless we report a result in the result column, or interferences prevent it, we work to have our RL at or below the MAL.

Trey Peery, MA, Project Manager



Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201-19-15



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 04/03/2019



B-Environmental
Kevin C. Baros
1606 E Brazos St., Suite D
Victoria, TX 77901

Account
BENV-G

Project
867455

Analytical Set **830322**

EPA 350.1 2

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Ammonia (as N)	829874	ND	0.00356	0.020	mg/L	119764162

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Ammonia (as N)	2.17	2.00	mg/L	108	90.0 - 110	119764161
	2.11	2.00	mg/L	106	90.0 - 110	119764171
	2.01	2.00	mg/L	100	90.0 - 110	119764180
	2.07	2.00	mg/L	104	90.0 - 110	119764189
	2.16	2.00	mg/L	108	90.0 - 110	119764200
	2.09	2.00	mg/L	104	90.0 - 110	119764208
	1.94	2.00	mg/L	97.0	90.0 - 110	119764217
	2.07	2.00	mg/L	104	90.0 - 110	119764226

Duplicate

Parameter	Sample	Result	Unknown	Unit	RPD	Limit%
Ammonia (as N)	1769090	0.084	0.090	mg/L	6.90	20.0
	1769520	0.060	0.068	mg/L	12.5	20.0

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Ammonia (as N)	2.12	2.00	mg/L	106	90.0 - 110	119764160

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Ammonia (as N)	829874	1.82	1.90	2.00	90.0 - 110	91.0	95.0	mg/L	4.30	20.0

Mat. Spike

Parameter	Sample	Spike	Unknown	Known	Units	Recovery %	Limits %	File
Ammonia (as N)	1769090	2.14	0.090	2.00	mg/L	102	80.0 - 120	119764170
	1769520	2.15	0.068	2.00	mg/L	104	80.0 - 120	119764167

Analytical Set **829907**

SM 2540 C-97

ControlBik

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Total Dissolved Solids	829907	0			grams	119755570

Duplicate

Parameter	Sample	Result	Unknown	Unit	RPD	Limit%
Total Dissolved Solids	1769006	3980	3850	mg/L	3.32	20.0

LCS

Parameter	PrepSet	Reading	Known	Units	Recover%	Limits	File
Total Dissolved Solids	829907	198	200	mg/L	99.0	85.0 - 115	119755584

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201-19-15



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Report Page 9 of 31

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 04/03/2019

Page 2 of 14

Standard

Parameter	Sample	Reading	Known	Units	Recover%	Limits%	File
Total Dissolved Solids		100	100	mg/L	100	90.0 - 110	119755571

Analytical Set 830023

SM 2540 D-2011

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Total Suspended Solids	830023	ND	2		mg/L	119758457

ControlBik

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Total Suspended Solids	830023	-0.0003			grams	119758456

Duplicate

Parameter	Sample	Result	Unknown	Unit	RPD	Limit%
Total Suspended Solids	1769096	118	118	mg/L	0	20.0
	1769289	50.0	50.0	mg/L	0	20.0
	1769391	272	264	mg/L	2.99	20.0

LCS

Parameter	PrepSet	Reading	Known	Units	Recover%	Limits	File
Total Suspended Solids	830023	52.0	50.0	mg/L	104	90.0 - 110	119758490

Standard

Parameter	Sample	Reading	Known	Units	Recover%	Limits%	File
Total Suspended Solids		106	100	mg/L	106	90.0 - 110	119758489

Analytical Set 830057

EPA 300.0 2.1

AWRL/MRL C

Parameter	Reading	Known	Units	Recover%	Limits%	File
Fluoride	0.095	0.100	mg/L	95.0	50.0 - 150	119758980

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Chloride	830057	0.062	0.0053	0.300	mg/L	119758981
Fluoride	830057	ND	0.00863	0.050	mg/L	119758981
Sulfate	830057	ND	0.00775	0.300	mg/L	119758981

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Chloride	10.2	10.0	mg/L	102	90.0 - 110	119758977
	10.4	10.0	mg/L	104	90.0 - 110	119758994
	10.5	10.0	mg/L	105	90.0 - 110	119759001
Fluoride	10.7	10.0	mg/L	107	90.0 - 110	119758977
	10.7	10.0	mg/L	107	90.0 - 110	119758994
	10.7	10.0	mg/L	107	90.0 - 110	119759001
Sulfate	9.99	10.0	mg/L	99.9	90.0 - 110	119758977
	10.1	10.0	mg/L	101	90.0 - 110	119758994
	10.2	10.0	mg/L	102	90.0 - 110	119759001

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Chloride	830057	5.31	5.13	5.00	85.0 - 110	106	103	mg/L	3.45	20.0
Fluoride	830057	5.41	5.33	5.00	88.0 - 110	108	107	mg/L	1.49	20.0

Corporate Shipping: 2600 Dudley Rd, Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201-19-15



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com
Employee Owned Integrity Caring

LELAP-accredited #02008
Continual Improvement

Quality Control

Printed 04/03/2019

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Sulfate	830057	5.24	5.02	5.00	88.0 - 110	105	100	mg/L	4.29	20.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Chloride	1768776	22.2	22.2	12.2	10.0	80.0 - 120	100	100	mg/L	0	20.0
Fluoride	1768776	9.84	9.90	0.190	10.0	80.0 - 120	96.5	97.1	mg/L	0.620	20.0
Sulfate	1768776	70.6	71.6	61.3	10.0	80.0 - 120	93.0	103	mg/L	10.2	20.0
Chloride	1768779	25.1	24.9	15.2	10.0	80.0 - 120	99.0	97.0	mg/L	2.04	20.0
Fluoride	1768779	9.64	9.63	0.220	10.0	80.0 - 120	94.2	94.1	mg/L	0.106	20.0
Sulfate	1768779	43.2	42.4	32.4	10.0	80.0 - 120	108	100	mg/L	7.69	20.0

Analytical Set 820505

EPA 300.1 I

AWRL/MRL C

Parameter	Reading	Known	Units	Recover%	Limits%	File
Bromate	3.84	5.00	ug/L	76.8	75.0 - 125	119768472

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Bromate	830505	ND	2.06	5.00	ug/L	119768471

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Bromate	523	500	ug/L	105	85.0 - 115	119768466
Bromate	516	500	ug/L	103	85.0 - 115	119768481

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Bromate	830505	89.2	88.2	100	85.0 - 115	89.2	88.2	ug/L	1.13	25.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Bromate	1769112	227	208	ND	200	80.0 - 120	114	104	ug/L	8.74	20.0

Analytical Set 829605

SM 5310 C-2000

AWRL/MRL C

Parameter	Reading	Known	Units	Recover%	Limits%	File
Total Organic Carbon	1.94	2.00	mg/L	97.0	75.0 - 125	119748653

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Total Organic Carbon	829605	ND	0.0618	0.500	mg/L	119748652
Total Organic Carbon	829605	0.0826	0.0618	0.500	mg/L	119748656

CCB

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Total Organic Carbon	829605	0.102	0.0618	0.500	mg/L	119748646
Total Organic Carbon	829605	0.0828	0.0618	0.500	mg/L	119748666
Total Organic Carbon	829605	0.110	0.0618	0.500	mg/L	119748677

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Total Organic Carbon	11.0	10.0	mg/L	110	90.0 - 110	119748649
Total Organic Carbon	10.5	10.0	mg/L	105	90.0 - 110	119748658

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201-19-15



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Report Page 11 of 31

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 04/03/2019

Page 4 of 14

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Total Organic Carbon	9.90	10.0	mg/L	99.0	90.0 - 110	119748667
	10.6	10.0	mg/L	106	90.0 - 110	119748678

ICL

Parameter	Reading	Known	Units	Recover%	Limits%	File
Total Organic Carbon	21.7	20.0	mg/L	108	90.0 - 110	119748648
	19.9	20.0	mg/L	99.5	90.0 - 110	119748654

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Total Organic Carbon	10.4	10.0	mg/L	104	90.0 - 110	119748650
	9.94	10.0	mg/L	99.4	90.0 - 110	119748655

LCS

Parameter	PrepSet	Reading	Known	Units	Recover%	Limits	File
Total Organic Carbon	829605	4.82	5.00	mg/L	96.4	89.8 - 111	119748657
	829605	5.04	5.00	mg/L	101	89.8 - 111	119748659

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Total Organic Carbon	1768490	10.6	10.6	0.316	10.0	92.5 - 112	103	103	mg/L	0	20.0
	1768996	14.1	13.7	3.28	10.0	92.5 - 112	108	104	mg/L	3.77	20.0

Standard

Parameter	Sample	Reading	Known	Units	Recover%	Limits%	File
Total Organic Carbon		50.2	50.0	mg/L	100	90.0 - 110	119748647

Analytical Set 829776

EPA 200.8 5.4

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Dissolved Arsenic	829497	ND	0.000359	0.0005	mg/L	119752671
Dissolved Manganese	829497	ND	0.000105	0.001	mg/L	119752671

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Dissolved Arsenic	0.0468	0.05	mg/L	93.6	90.0 - 110	119752670
	0.0479	0.05	mg/L	95.8	90.0 - 110	119752675
Dissolved Manganese	0.0514	0.05	mg/L	103	90.0 - 110	119752670
	0.0518	0.05	mg/L	104	90.0 - 110	119752675

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Dissolved Arsenic	0.0502	0.05	mg/L	100	90.0 - 110	119752652
Dissolved Manganese	0.0494	0.05	mg/L	98.8	90.0 - 110	119752652

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Dissolved Arsenic	1769090	0.474	0.481	0.0164	0.500	70.0 - 130	91.5	92.9	mg/L	1.52	20.0
Dissolved Manganese	1769090	0.613	0.618	0.104	0.500	70.0 - 130	102	103	mg/L	0.978	20.0

Analytical Set 829989

EPA 200.7 4.4

AWRL/MRL C

Parameter	Reading	Known	Units	Recover%	Limits%	File
-----------	---------	-------	-------	----------	---------	------

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201-19-15



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Report Page 12 of 31

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 04/03/2019

Page 5 of 14

AWRL/MRL C

Parameter	Reading	Known	Units	Recover%	Limits%	File
Calcium	0.565	0.500	mg/L	113	25.0 - 175	119757505
Iron, Total	0.0229	0.050	mg/L	45.8	25.0 - 175	119757505
Magnesium, Total	0.507	0.500	mg/L	101	25.0 - 175	119757505
Potassium	0.544	0.500	mg/L	109	25.0 - 175	119757505

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Calcium	829849	0.113	0.0419	0.500	mg/L	119757552
Iron, Total	829849	ND	0.00504	0.025	mg/L	119757552
Magnesium, Total	829849	ND	0.0102	0.020	mg/L	119757552
Potassium	829849	0.124	0.0765	0.500	mg/L	119757552

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File	
Calcium	25.7	25.0	mg/L	103	90.0 - 110	119757506	
	24.6	25.0	mg/L	98.4	90.0 - 110	119757512	
	25.2	25.0	mg/L	101	90.0 - 110	119757514	
	24.5	25.0	mg/L	98.0	90.0 - 110	119757518	
	25.1	25.0	mg/L	100	90.0 - 110	119757519	
	24.7	25.0	mg/L	98.8	90.0 - 110	119757530	
	24.1	25.0	mg/L	96.4	90.0 - 110	119757540	
	24.1	25.0	mg/L	96.4	90.0 - 110	119757551	
	23.4	25.0	mg/L	93.6	90.0 - 110	119757562	
	23.0	25.0	mg/L	92.0	90.0 - 110	119757573	
	23.2	25.0	mg/L	92.8	90.0 - 110	119757574	
	Iron, Total	2.50	2.50	mg/L	100	90.0 - 110	119757506
		2.41	2.50	mg/L	96.4	90.0 - 110	119757512
		2.43	2.50	mg/L	97.2	90.0 - 110	119757514
2.51		2.50	mg/L	100	90.0 - 110	119757518	
2.54		2.50	mg/L	102	90.0 - 110	119757519	
2.43		2.50	mg/L	97.2	90.0 - 110	119757530	
2.45		2.50	mg/L	98.0	90.0 - 110	119757540	
2.38		2.50	mg/L	95.2	90.0 - 110	119757551	
2.40		2.50	mg/L	96.0	90.0 - 110	119757562	
2.48		2.50	mg/L	99.2	90.0 - 110	119757573	
Magnesium, Total	2.52	2.50	mg/L	101	90.0 - 110	119757574	
	25.0	25.0	mg/L	100	90.0 - 110	119757540	
	24.7	25.0	mg/L	98.8	90.0 - 110	119757551	
	24.7	25.0	mg/L	98.8	90.0 - 110	119757562	
	24.7	25.0	mg/L	98.8	90.0 - 110	119757573	
Potassium	25.1	25.0	mg/L	100	90.0 - 110	119757574	
	23.6	25.0	mg/L	94.4	90.0 - 110	119757540	
	23.1	25.0	mg/L	92.4	90.0 - 110	119757551	
	22.9	25.0	mg/L	91.6	90.0 - 110	119757562	
	23.5	25.0	mg/L	94.0	90.0 - 110	119757573	
23.6	25.0	mg/L	94.4	90.0 - 110	119757574		

ICL

Parameter	Reading	Known	Units	Recover%	Limits%	File
Calcium	50.1	50.0	mg/L	100	95.0 - 105	119757500
Iron, Total	5.21	5.00	mg/L	104	95.0 - 105	119757500

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201-19-15



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 04/03/2019

ICL

Parameter	Reading	Known	Units	Recover%	Limits%	File
Magnesium, Total	51.4	50.0	mg/L	103	95.0 - 105	119757500
Potassium	52.2	50.0	mg/L	104	95.0 - 105	119757500

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Calcium	25.5	25.0	mg/L	102	90.0 - 110	119757504
Iron, Total	2.61	2.50	mg/L	104	90.0 - 110	119757504
Magnesium, Total	26.4	25.0	mg/L	106	90.0 - 110	119757504
Potassium	24.2	25.0	mg/L	96.8	90.0 - 110	119757504

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Calcium	829849	4.43	4.39	5.00	85.0 - 115	88.6	87.8	mg/L	0.907	25.0
Iron, Total	829849	0.455	0.455	0.500	85.0 - 115	91.0	91.0	mg/L	0	25.0
Magnesium, Total	829849	4.81	4.90	5.00	85.0 - 115	96.2	98.0	mg/L	1.85	25.0
Potassium	829849	4.74	4.69	5.00	85.0 - 115	94.8	93.8	mg/L	1.06	25.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Calcium	1768990	121	118	115	5.00	75.0 - 125	120	60.0 *	mg/L	66.7 *	25.0
Iron, Total	1768990	1.12	1.14	0.654	0.500	75.0 - 125	93.2	97.2	mg/L	4.20	25.0
Magnesium, Total	1768990	51.9	51.6	47.5	5.00	75.0 - 125	88.0	82.0	mg/L	7.06	25.0
Potassium	1768990	20.8	20.8	14.1	5.00	75.0 - 125	134 *	134 *	mg/L	0	25.0
Calcium	1769336	7.32	7.37	2.32	5.00	75.0 - 125	100	101	mg/L	0.995	25.0
Iron, Total	1769336	0.484	0.492	ND	0.500	75.0 - 125	96.8	98.4	mg/L	1.64	25.0
Magnesium, Total	1769336	4.77	4.87	0.372	5.00	75.0 - 125	88.0	90.0	mg/L	2.25	25.0
Potassium	1769336	6.93	6.95	1.14	5.00	75.0 - 125	116	116	mg/L	0.345	25.0

Analytical Set 830001

EPA 200.8 5.4

Blank

Parameter	PrepSet	Reading	MDL	MDL	Units	File
Lead, Total	829849	ND	0.00025	0.0005	mg/L	119758011
Manganese, Total	829849	ND	0.000105	0.001	mg/L	119758011

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File	
Lead, Total	0.0523	0.05	mg/L	105	90.0 - 110	119757962	
	0.0522	0.05	mg/L	104	90.0 - 110	119757973	
	0.0516	0.05	mg/L	103	90.0 - 110	119757983	
	0.0521	0.05	mg/L	104	90.0 - 110	119757992	
	0.0535	0.05	mg/L	107	90.0 - 110	119758007	
	0.0534	0.05	mg/L	107	90.0 - 110	119758015	
	0.0541	0.05	mg/L	108	90.0 - 110	119758026	
	0.0526	0.05	mg/L	105	90.0 - 110	119758037	
	0.0521	0.05	mg/L	104	90.0 - 110	119758041	
	Manganese, Total	0.0535	0.05	mg/L	107	90.0 - 110	119758007
		0.052	0.05	mg/L	104	90.0 - 110	119758015
		0.0523	0.05	mg/L	105	90.0 - 110	119758026
		0.0519	0.05	mg/L	104	90.0 - 110	119758037
		0.0518	0.05	mg/L	104	90.0 - 110	119758041



NELAP-accredited #T104704201-19-15



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 04/03/2019

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Lead, Total	0.0513	0.05	mg/L	103	90.0 - 110	119757941
Manganese, Total	0.0502	0.05	mg/L	100	90.0 - 110	119757941

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Lead, Total	829849	0.531	0.531	0.500	85.0 - 115	106	106	mg/L	0	20.0
Manganese, Total	829849	0.531	0.515	0.500	85.0 - 115	106	103	mg/L	3.06	20.0

MRL Check

Parameter	Reading	Known	Units	Recover%	Limits%	File
Lead, Total	0.000988	0.001	mg/L	98.8	50.0 - 150	119757942

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Lead, Total	1768990	0.518	0.519	ND	0.500	70.0 - 130	104	104	mg/L	0.193	20.0
Manganese, Total	1768990	0.621	0.627	0.0864	0.500	70.0 - 130	107	108	mg/L	1.12	20.0
Lead, Total	1769336	0.537	0.531	0.000345	0.500	70.0 - 130	107	106	mg/L	1.12	20.0
Manganese, Total	1769336	0.519	0.512	0.00548	0.500	70.0 - 130	103	101	mg/L	1.37	20.0

Analytical Set 830144

EPA 200.7 4.4

Blank

Parameter	PrepSet	Reading	MDL	MDL	Units	File
Silicon Recoverable	829849	0.0823	0.0148	0.100	mg/L	119760566

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Silicon Recoverable	4.95	5.00	mg/L	99.0	90.0 - 110	119760565
	4.75	5.00	mg/L	95.0	90.0 - 110	119760576
	4.74	5.00	mg/L	94.8	90.0 - 110	119760586

Dir. SPKD

Parameter	Sample	DSPK	DSPKD	UNK	Known	Limits%	DSPK%	DSPKD%	Units	RPD	Limit%
Silicon Recoverable	1768990	34.4	33.5	15.9	20.0	75.0 - 125	92.5	88.0	mg/L	2.65	25.0

Direct SPK

Parameter	Sample	DSPK	UNK	Known	Limits%	DSPK%	Units
Silicon Recoverable	1768990	34.4	15.9	20.0	75.0 - 125	92.5	mg/L
							25.0

ICL

Parameter	Reading	Known	Units	Recover%	Limits%	File
Silicon Recoverable	9.59	10.0	mg/L	95.9	95.0 - 105	119760563

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Silicon Recoverable	4.91	5.00	mg/L	98.2	90.0 - 110	119760564

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Silicon Recoverable	829849	3.85	3.73	4.00	85.0 - 115	96.2	93.2	mg/L	3.17	25.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Silicon Recoverable	1768990	19.2	19.4	15.3	4.00	75.0 - 125	97.5	102	mg/L	5.00	25.0

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201-19-15



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 04/03/2019

Analytical Set **830214**

EPA 200.7 4.4

AWRL/MRL C

<u>Parameter</u>	<u>Reading</u>	<u>Known</u>	<u>Units</u>	<u>Recover%</u>	<u>Limits%</u>	<u>File</u>
Sodium	0.610	0.500	mg/L	122	25.0 - 175	119762239

Blank

<u>Parameter</u>	<u>PrepSet</u>	<u>Reading</u>	<u>MDL</u>	<u>MDL</u>	<u>Units</u>	<u>File</u>
Sodium	829849	0.155	0.0315	0.500	mg/L	119762267

CCV

<u>Parameter</u>	<u>Reading</u>	<u>Known</u>	<u>Units</u>	<u>Recover%</u>	<u>Limits%</u>	<u>File</u>
Sodium	23.9	25.0	mg/L	95.6	90.0 - 110	119762263
	24.5	25.0	mg/L	98.0	90.0 - 110	119762274
	24.1	25.0	mg/L	96.4	90.0 - 110	119762281

Dir. SPKD

<u>Parameter</u>	<u>Sample</u>	<u>DSPK</u>	<u>DSPKD</u>	<u>UNK</u>	<u>Known</u>	<u>Limits%</u>	<u>DSPK%</u>	<u>DSPKD%</u>	<u>Units</u>	<u>RPD</u>	<u>Limit%</u>
Sodium	1769336	109	105	84.6	25.0	75.0 - 125	97.6	81.6	mg/L	3.74	25.0

Direct SPK

<u>Parameter</u>	<u>Sample</u>	<u>DSPK</u>	<u>UNK</u>	<u>Known</u>	<u>Limits%</u>	<u>DSPK%</u>	<u>Units</u>
Sodium	1769336	109	84.6	25.0	75.0 - 125	97.6	mg/L 25.0

ICL

<u>Parameter</u>	<u>Reading</u>	<u>Known</u>	<u>Units</u>	<u>Recover%</u>	<u>Limits%</u>	<u>File</u>
Sodium	50.2	50.0	mg/L	100	95.0 - 105	119762234

ICV

<u>Parameter</u>	<u>Reading</u>	<u>Known</u>	<u>Units</u>	<u>Recover%</u>	<u>Limits%</u>	<u>File</u>
Sodium	24.3	25.0	mg/L	97.2	90.0 - 110	119762238

LCS Dup

<u>Parameter</u>	<u>PrepSet</u>	<u>LCS</u>	<u>LCSD</u>	<u>Known</u>	<u>Limits%</u>	<u>LCS%</u>	<u>LCSD%</u>	<u>Units</u>	<u>RPD</u>	<u>Limit%</u>
Sodium	829849	4.87	4.92	5.00	85.0 - 115	97.4	98.4	mg/L	1.02	25.0

Analytical Set **830215**

EPA 200.7 4.4

Blank

<u>Parameter</u>	<u>PrepSet</u>	<u>Reading</u>	<u>MDL</u>	<u>MDL</u>	<u>Units</u>	<u>File</u>
Dissolved Iron	829497	ND	0.00504	0.025	mg/L	119762301

CCV

<u>Parameter</u>	<u>Reading</u>	<u>Known</u>	<u>Units</u>	<u>Recover%</u>	<u>Limits%</u>	<u>File</u>
Dissolved Iron	2.62	2.50	mg/L	105	90.0 - 110	119762300
	2.54	2.50	mg/L	102	90.0 - 110	119762303

ICL

<u>Parameter</u>	<u>Reading</u>	<u>Known</u>	<u>Units</u>	<u>Recover%</u>	<u>Limits%</u>	<u>File</u>
Dissolved Iron	5.11	5.00	mg/L	102	95.0 - 105	119762282

ICV

<u>Parameter</u>	<u>Reading</u>	<u>Known</u>	<u>Units</u>	<u>Recover%</u>	<u>Limits%</u>	<u>File</u>
Dissolved Iron	2.62	2.50	mg/L	105	90.0 - 110	119762286

MSD

<u>Parameter</u>	<u>Sample</u>	<u>MS</u>	<u>MSD</u>	<u>UNK</u>	<u>Known</u>	<u>Limits</u>	<u>MS%</u>	<u>MSD%</u>	<u>Units</u>	<u>RPD</u>	<u>Limit%</u>
Dissolved Iron	1769090	0.571	0.572	0.0628	0.500	75.0 - 125	102	102	mg/L	0.197	20.0

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201-19-15



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Report Page 16 of 31

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 04/03/2019

Page 9 of 14

Analytical Set 830219

EPA 200.7 4.4

Blank

Parameter	PrepSet	Reading	MDL	MDL	Units	File
Phosphorus	829849	ND	0.0388	0.100	mg/L	119762379

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Phosphorus	9.72	10.0	mg/L	97.2	90.0 - 110	119762377
	9.39	10.0	mg/L	93.9	90.0 - 110	119762378
	9.51	10.0	mg/L	95.1	90.0 - 110	119762388
	9.55	10.0	mg/L	95.5	90.0 - 110	119762396

Dir. SPKD

Parameter	Sample	DSPK	DSPKD	UNK	Known	Limits%	DSPK%	DSPKD%	Units	RPD	Limit%
Phosphorus	1768990	18.3	18.4	ND	20.0	75.0 - 125	91.5	92.0	mg/L	0.545	25.0

Direct SPK

Parameter	Sample	DSPK	UNK	Known	Limits%	DSPK%	Units
Phosphorus	1768990	18.3	ND	20.0	75.0 - 125	91.5	mg/L 25.0

ICL

Parameter	Reading	Known	Units	Recover%	Limits%	File
Phosphorus	24.5	25.0	mg/L	98.0	95.0 - 105	119762375

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Phosphorus	9.52	10.0	mg/L	95.2	90.0 - 110	119762376

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Phosphorus	829849	3.68	3.73	4.00	85.0 - 115	92.0	93.2	mg/L	1.35	25.0

Analytical Set 830226

EPA 200.8 5.4

Blank

Parameter	PrepSet	Reading	MDL	MDL	Units	File
Aluminum, Total	829849	ND	0.0025	0.005	mg/L	119762916
Arsenic, Total	829849	0.00105	0.00025	0.0005	mg/L	119762916

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Arsenic, Total	0.0491	0.05	mg/L	98.2	90.0 - 110	119762907
	0.0469	0.05	mg/L	93.8	90.0 - 110	119762917
	0.0481	0.05	mg/L	96.2	90.0 - 110	119762928
	0.0484	0.05	mg/L	96.8	90.0 - 110	119762934

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Arsenic, Total	0.050	0.05	mg/L	100	90.0 - 110	119762878

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Aluminum, Total	829849	0.482	0.528	0.500	85.0 - 115	96.4	106	mg/L	9.11	20.0
Arsenic, Total	829849	0.466	0.473	0.500	85.0 - 115	93.2	94.6	mg/L	1.49	20.0

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201-19-15



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Report Page 17 of 31

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 04/03/2019

Page 10 of 14

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Aluminum, Total	1768990	0.478	0.480	ND	0.500	70.0 - 130	95.6	96.0	mg/L	0.418	20.0
Arsenic, Total	1768990	0.501	0.502	0.0361	0.500	70.0 - 130	93.0	93.2	mg/L	0.215	20.0

Analytical Set 830339

EPA 200.8 5.4

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Aluminum, Total	829849	0.00326	0.00204	0.0025	mg/L	119764586

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Aluminum, Total	0.0514	0.05	mg/L	103	90.0 - 110	119764578
	0.0512	0.05	mg/L	102	90.0 - 110	119764588
	0.0515	0.05	mg/L	103	90.0 - 110	119764598

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Aluminum, Total	0.0523	0.05	mg/L	105	90.0 - 110	119764573

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Aluminum, Total	829849	0.503	0.509	0.500	85.0 - 115	101	102	mg/L	1.19	20.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Aluminum, Total	1768990	0.497	0.496	0.00353	0.500	70.0 - 130	98.7	98.5	mg/L	0.203	20.0

Analytical Set 829837

EPA 524.2 4.1

BFB

Parameter	Sample	RefMass	Reading	%	Limits%	File
BFB Mass 173	829837	174	0	0.0	0 - 2.00	119754209
BFB Mass 174	829837	95.0	37659	75.9	50.0 - 100	119754209
BFB Mass 175	829837	174	3103	8.2	5.00 - 9.00	119754209
BFB Mass 176	829837	174	36333	96.5	95.0 - 101	119754209
BFB Mass 177	829837	176	2382	6.6	5.00 - 9.00	119754209
BFB Mass 50	829837	95.0	10699	21.6	15.0 - 40.0	119754209
BFB Mass 75	829837	95.0	25368	51.1	30.0 - 80.0	119754209
BFB Mass 95	829837	95.0	49635	100.0	100 - 100	119754209
BFB Mass 96	829837	95.0	3299	6.6	5.00 - 9.00	119754209

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Bromodichloromethane	829837	ND	0.308	1.00	ug/L	119754213
Bromoform	829837	ND	0.418	1.00	ug/L	119754213
Chloroform	829837	ND	0.213	1.00	ug/L	119754213
Dibromochloromethane	829837	ND	0.327	1.00	ug/L	119754213

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Bromodichloromethane	19.4	20.0	ug/L	96.8	70.0 - 130	119754210
Bromoform	20.2	20.0	ug/L	101	70.0 - 130	119754210
Chloroform	18.4	20.0	ug/L	91.8	70.0 - 130	119754210
Dibromochloromethane	20.0	20.0	ug/L	100	70.0 - 130	119754210

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201-19-15



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 04/03/2019

IS Areas

Parameter	Sample	Type	Reading	CCVISM	Low	High	File	PrepSet
1,4-DichlorobenzeneD4 (ISTD)	829837	CCV	255600	255600	127800	383400	119754210	829837
	829837	LCS	266000	255600	127800	383400	119754211	829837
	829837	LCS Dup	245000	255600	127800	383400	119754212	829837
	829837	Blank	182700	255600	127800	383400	119754213	829837
ChlorobenzeneD5 (ISTD)	829837	CCV	435700	435700	217900	653600	119754210	829837
	829837	LCS	462900	435700	217900	653600	119754211	829837
	829837	LCS Dup	444000	435700	217900	653600	119754212	829837
	829837	Blank	376800	435700	217900	653600	119754213	829837
1,4-DichlorobenzeneD4 (ISTD)	1765378	MS	234500	255600	127800	383400	119754223	829837
	1765378	MSD	240800	255600	127800	383400	119754224	829837
ChlorobenzeneD5 (ISTD)	1765378	MS	419400	435700	217900	653600	119754223	829837
	1765378	MSD	437700	435700	217900	653600	119754224	829837
1,4-DichlorobenzeneD4 (ISTD)	1769090	UNKNOWN	263000	255600	127800	383400	119754219	829837
ChlorobenzeneD5 (ISTD)	1769090	UNKNOWN	245000	435700	217900	653600	119754219	829837

IS RetTime

Parameter	Sample	Type	Reading	CCVISM	Low	High	File	PrepSet
1,4-DichlorobenzeneD4 (ISTD)	829837	CCV	11.18	11.18	11.12	11.24	119754210	829837
	829837	LCS	11.18	11.18	11.12	11.24	119754211	829837
	829837	LCS Dup	11.18	11.18	11.12	11.24	119754212	829837
	829837	Blank	11.18	11.18	11.12	11.24	119754213	829837
ChlorobenzeneD5 (ISTD)	829837	CCV	8.818	8.818	8.758	8.878	119754210	829837
	829837	LCS	8.818	8.818	8.758	8.878	119754211	829837
	829837	LCS Dup	8.818	8.818	8.758	8.878	119754212	829837
	829837	Blank	8.818	8.818	8.758	8.878	119754213	829837
1,4-DichlorobenzeneD4 (ISTD)	1765378	MS	11.18	11.18	11.12	11.24	119754223	829837
	1765378	MSD	11.18	11.18	11.12	11.24	119754224	829837
ChlorobenzeneD5 (ISTD)	1765378	MS	8.818	8.818	8.758	8.878	119754223	829837
	1765378	MSD	8.818	8.818	8.758	8.878	119754224	829837
1,4-DichlorobenzeneD4 (ISTD)	1769090	UNKNOWN	11.18	11.18	11.12	11.24	119754219	829837
ChlorobenzeneD5 (ISTD)	1769090	UNKNOWN	8.818	8.818	8.758	8.878	119754219	829837

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Bromodichloromethane	829837	19.5	19.9	20.0	70.0 - 130	97.5	99.5	ug/L	2.03	30.0
Bromoform	829837	19.6	21.4	20.0	70.0 - 130	98.0	107	ug/L	8.78	30.0
Chloroform	829837	17.0	17.0	20.0	70.0 - 130	85.0	85.0	ug/L	0	30.0
Dibromochloromethane	829837	18.9	19.3	20.0	70.0 - 130	94.5	96.5	ug/L	2.09	30.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Bromodichloromethane	1765378	7320	7120	ND	10000	67.1 - 133	73.2	71.2	ug/L	2.77	30.0
Bromoform	1765378	8100	7830	ND	10000	58.4 - 125	81.0	78.3	ug/L	3.39	30.0
Chloroform	1765378	5310	5100	ND	10000	62.8 - 138	53.1 *	51.0 *	ug/L	4.03	30.0
Dibromochloromethane	1765378	7770	7150	ND	10000	60.7 - 129	77.7	71.5	ug/L	8.31	30.0

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201-19-15



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 04/03/2019

Page 12 of 14

Surrogate

Parameter	Sample	Type	Reading	Known	Units	Recover%	Limits%	File
1,2-DCA-d4 (SURR)	829837	CCV	21.2	20.0	ug/L	106	70.0 - 130	119754210
	829837	LCS	21.1	20.0	ug/L	106	70.0 - 130	119754211
	829837	LCS Dup	20.3	20.0	ug/L	102	70.0 - 130	119754212
	829837	Blank	21.3	20.0	ug/L	106	70.0 - 130	119754213
Bromofluorobenzene (SURR)	829837	CCV	19.8	20.0	ug/L	99.0	70.0 - 130	119754210
	829837	LCS	20.4	20.0	ug/L	102	70.0 - 130	119754211
	829837	LCS Dup	21.0	20.0	ug/L	105	70.0 - 130	119754212
	829837	Blank	18.7	20.0	ug/L	93.5	70.0 - 130	119754213
Dibromofluoromethane (SURR)	829837	CCV	20.5	20.0	ug/L	102	70.0 - 130	119754210
	829837	LCS	20.7	20.0	ug/L	104	70.0 - 130	119754211
	829837	LCS Dup	19.8	20.0	ug/L	99.0	70.0 - 130	119754212
	829837	Blank	22.0	20.0	ug/L	110	70.0 - 130	119754213
TolueneD8 (SURR)	829837	CCV	20.0	20.0	ug/L	100	70.0 - 130	119754210
	829837	LCS	19.8	20.0	ug/L	99.0	70.0 - 130	119754211
	829837	LCS Dup	19.6	20.0	ug/L	98.0	70.0 - 130	119754212
	829837	Blank	18.8	20.0	ug/L	94.0	70.0 - 130	119754213
1,2-DCA-d4 (SURR)	1765378	MS	20.0	20.0	ug/L	100	70.0 - 130	119754223
	1765378	MSD	20.3	20.0	ug/L	102	70.0 - 130	119754224
Bromofluorobenzene (SURR)	1765378	MS	19.9	20.0	ug/L	99.5	70.0 - 130	119754223
	1765378	MSD	20.0	20.0	ug/L	100	70.0 - 130	119754224
Dibromofluoromethane (SURR)	1765378	MS	19.9	20.0	ug/L	99.5	70.0 - 130	119754223
	1765378	MSD	20.4	20.0	ug/L	102	70.0 - 130	119754224
TolueneD8 (SURR)	1765378	MS	20.2	20.0	ug/L	101	70.0 - 130	119754223
	1765378	MSD	19.8	20.0	ug/L	99.0	70.0 - 130	119754224
1,2-DCA-d4 (SURR)	1769090	UNKNOWN	19.1	20.0	ug/L	95.5	70.0 - 130	119754219
Bromofluorobenzene (SURR)	1769090	UNKNOWN	19.2	20.0	ug/L	96.0	70.0 - 130	119754219
Dibromofluoromethane (SURR)	1769090	UNKNOWN	20.3	20.0	ug/L	102	70.0 - 130	119754219
TolueneD8 (SURR)	1769090	UNKNOWN	18.9	20.0	ug/L	94.5	70.0 - 130	119754219

Analytical Set 831027

EPA 552.2 1

Blank

Parameter	PrepSet	Reading	MDL	MQI	Units	File
Bromoacetic acid	829599	ND	0.275	5.00	ug/L	119778517
Chloroacetic acid	829599	0.928	0.559	5.00	ug/L	119778517
Dibromoacetic acid	829599	ND	0.198	5.00	ug/L	119778517
Dichloroacetic acid	829599	ND	0.244	5.00	ug/L	119778517
Trichloroacetic acid	829599	ND	0.191	5.00	ug/L	119778517

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Bromoacetic acid	11.1	10.0	ug/L	111	70.0 - 130	119783395
Chloroacetic acid	12.5	10.0	ug/L	125	70.0 - 130	119783395
Dibromoacetic acid	9.97	10.0	ug/L	99.7	70.0 - 130	119783395
Dichloroacetic acid	10.5	10.0	ug/L	105	70.0 - 130	119783395
Trichloroacetic acid	10.7	10.0	ug/L	107	70.0 - 130	119783395

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201-19-15



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 04/03/2019

Page 13 of 14

IS Areas

Parameter	Sample	Type	Reading	CCVISM	Low	High	File	PrepSet
1,2,3-Trichloropropane (IS)		CCV	455900	531300	371900	690700	119783395	831027
	829599	Blank	452000	531300	371900	690700	119778517	829599
	829599	LCS	458800	531300	371900	690700	119778518	829599
	1769090	UNKNOWN	475400	531300	371900	690700	119783371	829599
	1769090	MS	452800	531300	371900	690700	119783372	829599
	1769090	MSD	478700	531300	371900	690700	119783373	829599

IS RefTime

Parameter	Sample	Type	Reading	CCVISM	Low	High	File	PrepSet
1,2,3-Trichloropropane (IS)		CCV	8.410	8.400	8.340	8.460	119783395	831027
	829599	Blank	8.400	8.400	8.340	8.460	119778517	829599
	829599	LCS	8.400	8.400	8.340	8.460	119778518	829599
	1769090	UNKNOWN	8.400	8.400	8.340	8.460	119783371	829599
	1769090	MS	8.400	8.400	8.340	8.460	119783372	829599
	1769090	MSD	8.400	8.400	8.340	8.460	119783373	829599

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
Bromoacetic acid	829599	25.7	25.3	20.0	70.0 - 130	128	126	ug/L	1.57	30.0
Chloroacetic acid	829599	25.1	24.6	20.0	70.0 - 130	126	123	ug/L	2.41	30.0
Dibromoacetic acid	829599	24.1	23.5	20.0	70.0 - 130	120	118	ug/L	1.68	30.0
Dichloroacetic acid	829599	25.3	25.9	20.0	70.0 - 130	126	130	ug/L	3.12	30.0
Trichloroacetic acid	829599	22.8	21.6	20.0	70.0 - 130	114	108	ug/L	5.41	30.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Bromoacetic acid	1769090	23.8	21.0	ND	20.0	30.0 - 150	119	105	ug/L	12.5	30.0
Chloroacetic acid	1769090	25.3	22.5	0.727	20.0	15.0 - 150	123	109	ug/L	12.1	30.0
Dibromoacetic acid	1769090	21.7	19.7	ND	20.0	30.0 - 150	108	98.5	ug/L	9.66	30.0
Dichloroacetic acid	1769090	25.2	22.3	ND	20.0	30.0 - 150	126	112	ug/L	12.2	30.0
Trichloroacetic acid	1769090	21.5	19.9	ND	20.0	30.0 - 150	108	99.5	ug/L	7.73	30.0

Surrogate

Parameter	Sample	Type	Reading	Known	Units	Recover%	Limits%	File
2,3-Dibromopropionic (Surr)		CCV	19.3	20.0	ug/L	96.5	70.0 - 130	119783395
	829599	Blank	9.47	20.0	ug/L	47.4 *	70.0 - 130	119778517
	829599	LCS	23.4	20.0	ug/L	117	70.0 - 130	119778518
	829599	LCS Dup	20.6	20.0	ug/L	103	70.0 - 130	119778519
	1769090	UNKNOWN	19.8	20.0	ug/L	99.0	70.0 - 130	119783371
	1769090	MS	22.1	20.0	ug/L	110	70.0 - 130	119783372
1769090	MSD	21.8	20.0	ug/L	109	70.0 - 130	119783373	

Analytical Set 829492

SM 2130 B-2001

AWRL/MRL C

Parameter	Reading	Known	Units	Recover%	Limits%	File
Turbidity	0.29	0.30	NTU	96.7	70.0 - 130	119746105

Blank

Parameter	PrepSet	Reading	MDL	MDL	Units	File
Turbidity	829492	ND	0.30	0.30	NTU	119746103

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201-19-15



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com

LELAP-accredited #02008

Employee Owned Integrity Caring Continual Improvement

Quality Control

Printed 04/03/2019

Page 14 of 14

Duplicate

Parameter	Sample	Result	Unknown	Unit	RPD	Limit%
Turbidity	1768478	ND	ND	NTU		20.0

Mat. Spike

Parameter	Sample	Spike	Unknown	Known	Units	Recovery %	Limits %	File
Turbidity	1768478	38.6	ND	40.0	NTU	96.5	70.0 - 130	119746109

Standard

Parameter	Sample	Reading	Known	Units	Recover%	Limits%	File
Turbidity	829492	10.1	10.0	NTU	101	90.0 - 110	119746104
	829492	96.9	100	NTU	96.9	90.0 - 110	119746106
	829492	9.52	10.0	NTU	95.2	90.0 - 110	119746110
	829492	9.32	10.0	NTU	93.2	90.0 - 110	119746112

Analytical Set 829672

SM 2320 B-2011

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Total Alkalinity (as CaCO3)	829672	ND	1.00	1.00	mg/L	119750206

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Total Alkalinity (as CaCO3)	25.6	25.0	mg/L	102	90.0 - 110	119750205
	26.1	25.0	mg/L	104	90.0 - 110	119750219
	27.1	25.0	mg/L	108	90.0 - 110	119750232

Duplicate

Parameter	Sample	Result	Unknown	Unit	RPD	Limit%
Total Alkalinity (as CaCO3)	1768607	170	170	mg/L	0	20.0
	1768778	308	306	mg/L	0.651	20.0

ICV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Total Alkalinity (as CaCO3)	25.2	25.0	mg/L	101	90.0 - 110	119750204

Mat. Spike

Parameter	Sample	Spike	Unknown	Known	Units	Recovery %	Limits %	File
Total Alkalinity (as CaCO3)	1768607	187	170	25.0	mg/L	68.0	70.0 - 130	119750209
	1768778	329	306	25.0	mg/L	92.0	70.0 - 130	119750222

* Out RPD is Relative Percent Difference: $\frac{\text{abs}(r1-r2)}{\text{mean}(r1,r2)} * 100\%$

Recover% is Recovery Percent: $\text{result} / \text{known} * 100\%$

Blank - Method Blank; AWRL/MRL C - Ambient Water Reporting Limit/Minimum Reporting Limit Check Std; LCS - Laboratory Control Sample; CCB - Continuing Calibration Blank; CCV - Continuing Calibration Verification; ICV - Initial Calibration Verification; BFB - GC/MS Tuning Compound; MRL Check - Minimum Reporting Limit Check Std

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Gulf Coast Region: 4141 Directors Row Ste C Houston TX 77092



NELAP-accredited #T104704201-19-15

Environmental Laboratory, LLC
 1606 E Brazos Suite D Victoria, Texas 77901 ph. (361) 572-8224

Chain Of Custody Record

RUSH

Batch # 82604 TEMP UN-C: 23.6 Page of

Customer / Report Information: **City of Victoria - SWTP** Billing Information: Check box if Billing is the same as Report Information THERM ID# 4 TEMP Corr: 23.6

Name: Stephen Robinson Address: Attention: Kevin Post PO # Project: Well # 21 ASR Table 1, List A/B Comments: Requested Analysis: Completed By laboratory:

Phone: 361-485-3415 FAX: EMAIL: kepost@victoria.tx.org

Sample Information	Collected By:	Collected		Matrix	Container TYPE	NUMBER	Size	Preservative	Custody Seals Present
		Date	Time						
Well # 19									
ASR Table 1, List A		3/21/19	1:24PM	G W	9				S190801421
Well # 19									
ASR Table 1, List B		3/21/19	1:24PM	G W	2				S190801422

Client / Field Sample ID	Date	Time	Matrix	Container TYPE	NUMBER	Size	Preservative	REMARKS:					
								Na2SO4	HNO3	NaOH	HCL	Na2SO3	
ASR Table 1, List A	3/21/19	1:24PM	G W	9				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
ASR Table 1, List B	3/21/19	1:24PM	G W	2				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Required Turnaround: Routine (6-10 Business days) Expedite / Rush: 1 Business Day 2 Business Days 3 Business days 5 Business days Other

Surcharge will apply to RUSH TAT Authorized BY: Container Type: P=Plastic, G=Glass, V=Voa, O=Other Carrier ID:

Relinquished By: Date: 3/21/19 Time: 1:55PM Received By: Phomen Date: 3-21-19 Time: 1855



Envirodyne Laboratories, Inc
11011 Brooklet Dr., # 230
Houston, TX 77099
281.568.7880 Phone
www.envirodyne.com

22 February 2017

Victoria, City of
Lynn Short
700 Main Center
Victoria, TX 77901

Victoria, City of - Surface and Raw Water Testing

Enclosed are the results of analyses for samples received by the laboratory on 02-Feb-17 09:30. The analytical data provided relates only to the samples as received in this laboratory report.

ELI certifies that all results are NELAP compliant and performed in accordance with the referenced method except as noted in the Case Narrative or as noted with a qualifier. Any reproductions of this laboratory report should be in full and only with the written authorization from the client.

The total number of pages in this report is 20

Thank you for selecting ELI for your analytical needs. If you have any questions regarding this report, please contact us.

Sincerely,

A handwritten signature in blue ink that reads 'Monica Smith'.

Monica Smith
Project Manager



Certificate No: TX104704265



Envirodyne Laboratories, Inc
11011 Brooklet Dr., # 230
Houston, TX 77099
281.568.7880 Phone
www.envirodyne.com

Client: Victoria, City of
Project: Victoria, City of - Surface and Raw Water Testing
Work Order: 17B0398

Reported:
22-Feb-17 09:25

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Well #21	17B0398-01	Water	01-Feb-17 10:35	02-Feb-17 09:30
Finished Water	17B0398-02	Water	01-Feb-17 12:25	02-Feb-17 09:30

L - Sample analyzed by NELAC certified lab: T104704527-14-1
L - Sample analyzed by NELAP certified lab: T104704218
L - Analyzed by NELAP certified lab: T104704215-15-19
L - Sample analyzed by NELAP accredited lab: T104704466-11-5

Envirodyne Laboratories, Inc.

Monica Smith, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Envirodyne Laboratories, Inc
 11011 Brooklet Dr., # 230
 Houston, TX 77099
 281.568.7880 Phone
 www.envirodyne.com

Client: Victoria, City of
Project: Victoria, City of - Surface and Raw Water Testing
Work Order: 17B0398

Reported:
 22-Feb-17 09:25

Well #21

17B0398-01 (Water) Sampled: 01-Feb-17 10:35

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Analyst	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	--------	---------	-------

Envirodyne Laboratories, Inc.

Mercury by EPA 245.1

Mercury	<0.20	0.20	ug/L	1	B7B1684	06-Feb-17	06-Feb-17 13:34	EPA 245.1	IZW	L
---------	-------	------	------	---	---------	-----------	-----------------	-----------	-----	---

Wet Chemistry

Acidity	<20	20	mg/L	1	B7B1962	15-Feb-17	15-Feb-17 13:00	SM 2310B	AT	
Alkalinity (m) as CaCO3	294	20	mg/L	1	B7B1600	13-Feb-17	14-Feb-17 15:13	SM 2320 B	ACB	
Alkalinity (p) as CaCO3	<20	20	mg/L	1	B7B1600	13-Feb-17	14-Feb-17 15:13	SM 2320 B	ACB	
Total Alkalinity as CaCO3	294	20	mg/L	1	[CALC]	13-Feb-17	14-Feb-17 15:13	[CALC]	ACB	
Ammonia-N (NH3-N)	<0.10	0.10	mg/L	1	B7B0438	03-Feb-17	03-Feb-17 14:01	SM 4500-NH3 D	JAS	
Bicarbonate Alkalinity as HCO3-	359	1.0	mg/L	1	B7B2330	13-Feb-17	13-Feb-17 15:03	Calc	CLO	
Bromide	<0.20	0.20	mg/L	1	B7B2642	01-Feb-17	01-Feb-17 10:35	EPA 300.0	CLT	
Carbonate Alkalinity as CO3 2-	<20.0	20.0	mg/L	1	B7B2329	14-Feb-17	14-Feb-17 15:13	SM 2320 B	IZW	
Chloride	92.0	3.0	mg/L	1	B7B1011	10-Feb-17	10-Feb-17 09:00	SM4500-Cl B	AT	
Color	<1.0	1.0	Color Units	1	B7B0378	03-Feb-17	03-Feb-17 08:00	SM2120C	XQH	
Cyanide, Total	<0.005	0.005	mg/L	1	B7B1784	08-Feb-17	08-Feb-17 16:48	EPA 335.4	IZW	L
Dissolved Oxygen (DO)	1.40		mg/L	1	B7B2642	01-Feb-17	01-Feb-17 10:35	SM4500-O C	CLT	
pH	7.36		SU	1	B7B2642	01-Feb-17	01-Feb-17 10:35	SM4500H+ B	CLT	
Temperature	24.8	10.0	°C	1	B7B2642	01-Feb-17	01-Feb-17 10:35	SM2250 B	CLT	
Fluoride	0.54	0.10	mg/L	1	B7B0403	03-Feb-17	09-Feb-17 19:26	SM 4500-F C	JAS	
Hydrogen Sulfide	<0.0100	0.0100	mg/L	1	B7B2310	07-Feb-17	07-Feb-17 16:00	Calc	CLO	
Nitrate-N	0.43	0.10	mg/L	1	B7B0320	02-Feb-17	02-Feb-17 18:00	SM 4500-NO3 D	JAS	
Nitrite-N	<0.05	0.05	mg/L	1	B7B0379	03-Feb-17	03-Feb-17 09:45	SM 4500-NO2 B	XQH	
ORP	201	1.0	mV	1	B7B1433	10-Feb-17	10-Feb-17 14:50	SM2580 B	ACB	
OrthoPhosphate as P	<0.10	0.10	mg/L	1	B7B0377	03-Feb-17	03-Feb-17 08:00	SM4500-P E	XQH	
Silica	19.7	0.20	mg/L	1	B7B1632	13-Feb-17	13-Feb-17 17:00	EPA 200.5	JMM	
Sulfate	<2.00	2.00	mg/L	1	B7B0529	02-Feb-17	02-Feb-17 16:00	ASTM D516-07	AT	
Sulfide	<0.01	0.01	mg/L	1	B7B0832	07-Feb-17	07-Feb-17 16:00	SM4500-S2 D	AT	
TDS	256	10.0	mg/L	1	B7B0344	06-Feb-17	06-Feb-17 15:50	SM2540 C	RH	
Total Organic Carbon (TOC)	<1.00	1.00	mg/L	1	B7B1793	06-Feb-17	06-Feb-17 17:43	SM 5310 C	IZW	L
Total Phosphorus	0.24	0.10	mg/L	1	B7B0601	06-Feb-17	06-Feb-17 13:00	SM4500-P E	AT	

Envirodyne Laboratories, Inc.

Monica Smith

Monica Smith, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Envirodyne Laboratories, Inc
 11011 Brooklet Dr., # 230
 Houston, TX 77099
 281.568.7880 Phone
 www.envirodyne.com

Client: Victoria, City of
Project: Victoria, City of - Surface and Raw Water Testing
Work Order: 17B0398

Reported:
 22-Feb-17 09:25

Well #21
17B0398-01 (Water) Sampled: 01-Feb-17 10:35

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Analyst	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	--------	---------	-------

Envirodyne Laboratories, Inc.

Wet Chemistry

TSS	2.6	2.0	mg/L	1	B7B1477	10-Feb-17	10-Feb-17 00:00	SM2540 D	JR	
Turbidity	5.07	0.10	NTU	1	B7B0443	02-Feb-17	02-Feb-17 08:13	SM 2130 B	XQH	

Total Metals by ICP

Aluminum	0.0266	0.0018	mg/L	1	B7B1493	10-Feb-17	13-Feb-17 16:29	EPA 200.7	JMM	
Antimony	<0.0018	0.0018	mg/L	1	B7B1263	07-Feb-17	09-Feb-17 13:14	EPA 200.7	JMM	
Arsenic	0.0156	0.0029	mg/L	1	B7B1263	07-Feb-17	09-Feb-17 13:14	EPA 200.7	JMM	
Arsenic, Dissolved	0.00720	0.00500	mg/L	1	B7B2312	17-Feb-17	17-Feb-17 13:00	EPA 200.7	JMM	
Barium	1.59	0.0005	mg/L	1	B7B1263	07-Feb-17	09-Feb-17 13:14	EPA 200.7	JMM	
Beryllium	<0.0005	0.0005	mg/L	1	B7B1263	07-Feb-17	09-Feb-17 13:14	EPA 200.7	JMM	
Cadmium	<0.00050	0.00050	mg/L	1	B7B1263	07-Feb-17	09-Feb-17 13:14	EPA 200.7	JMM	
Calcium	35.2	2.00	mg/L	1	B7B1271	07-Feb-17	08-Feb-17 15:25	EPA 200.7	JMM	
Calcium as CaCO3	87.8		mg/L	1	[CALC]	07-Feb-17	08-Feb-17 15:25	Calc	JMM	
Chromium	0.0009	0.0005	mg/L	1	B7B1263	07-Feb-17	09-Feb-17 13:14	EPA 200.7	JMM	
Copper	0.0892	0.0006	mg/L	1	B7B1263	07-Feb-17	09-Feb-17 13:14	EPA 200.7	JMM	
Total Hardness as CaCO3	127	13.2	mg/L	1	[CALC]	07-Feb-17	08-Feb-17 15:25	Calc.	JMM	
Iron	0.697	0.0018	mg/L	1	B7B1263	07-Feb-17	09-Feb-17 13:14	EPA 200.7	JMM	
Iron, Dissolved	0.0143	0.0050	mg/L	1	B7B2312	17-Feb-17	17-Feb-17 13:00	EPA 200.7	JMM	
Lead	0.0068	0.0009	mg/L	1	B7B1263	07-Feb-17	09-Feb-17 13:14	EPA 200.7	JMM	
Magnesium	9.54	2.00	mg/L	1	B7B1271	07-Feb-17	08-Feb-17 15:25	EPA 200.7	JMM	
Magnesium as CaCO3	39.3	8.23	mg/L	1	[CALC]	07-Feb-17	08-Feb-17 15:25	EPA 200.7	JMM	
Manganese	0.0961	0.0004	mg/L	1	B7B1263	07-Feb-17	09-Feb-17 13:14	EPA 200.7	JMM	
Manganese, Dissolved	0.0888	0.0050	mg/L	1	B7B2312	17-Feb-17	17-Feb-17 13:00	EPA 200.7	JMM	
Nickel	<0.0005	0.0005	mg/L	1	B7B1263	07-Feb-17	09-Feb-17 13:14	EPA 200.7	JMM	
Potassium	2.1	2.0	mg/L	1	B7B1271	07-Feb-17	08-Feb-17 15:25	EPA 200.7	JMM	
Selenium	<0.0038	0.0038	mg/L	1	B7B1263	07-Feb-17	09-Feb-17 13:14	EPA 200.7	JMM	
Silver	<0.0005	0.0005	mg/L	1	B7B1270	07-Feb-17	08-Feb-17 18:20	EPA 200.7	JMM	
Sodium	130	2.0	mg/L	1	B7B1271	07-Feb-17	08-Feb-17 15:25	EPA 200.7	JMM	
Thallium	<0.0020	0.0020	mg/L	1	B7B1263	07-Feb-17	09-Feb-17 13:14	EPA 200.7	JMM	
Zinc	0.0345	0.0032	mg/L	1	B7B1263	07-Feb-17	09-Feb-17 13:14	EPA 200.7	JMM	

Envirodyne Laboratories, Inc.

Monica Smith

Monica Smith, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Envirodyne Laboratories, Inc
11011 Brooklet Dr., # 230
Houston, TX 77099
281.568.7880 Phone
www.envirodyne.com

Client: Victoria, City of
Project: Victoria, City of - Surface and Raw Water Testing
Work Order: 17B0398

Reported:
 22-Feb-17 09:25

Well #21

17B0398-01 (Water) Sampled: 01-Feb-17 10:35

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Analyst	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	--------	---------	-------

Envirodyne Laboratories, Inc.

Miscellaneous Subcontracted Analyses

Dibromoacetic acid	<1.00	1.00	ug/L	1	B7B1797	09-Feb-17	09-Feb-17 21:54	EPA 552.3	IZW	L
Dichloroacetic acid	<1.00	1.00	ug/L	1	B7B1797	09-Feb-17	09-Feb-17 21:54	EPA 552.3	IZW	L
HAA-5	<1.00	1.00	ug/L	1	[CALC]	09-Feb-17	09-Feb-17 21:54	EPA 524.2	IZW	
Monobromoacetic acid	<1.00	1.00	ug/L	1	B7B1797	09-Feb-17	09-Feb-17 21:54	EPA 552.3	IZW	L
Monochloroacetic acid	<1.00	1.00	ug/L	1	B7B1797	09-Feb-17	09-Feb-17 21:54	EPA 552.3	IZW	L
Trichloroacetic acid	<1.00	1.00	ug/L	1	B7B1797	09-Feb-17	09-Feb-17 21:54	EPA 552.3	IZW	L

Envirodyne Laboratories, Inc.

Monica Smith, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



DOH Certification #E84025
Cert.# T104704527-14-1

Report Date: February 14, 2017

Envirodyne Laboratories, Inc.
11011 Brooklet, Ste 230
Houston, TX 77099-3543

Field Custody: Client
Client/Field ID: Envirodyne
17B0398
Well 21
Sample Collection: 2-1-17/1037
Lab ID No: 17.1325
Lab Custody Date: 2-7-17/1020
Sample description: Water

CERTIFICATE OF ANALYSIS

Parameter	Units	Results	Analysis Date	Method	Detection Limit
Gross Alpha	pCi/l	1.9 ± 0.9	2-8-17/0712	EPA 900.0	3.1
Gross Beta	pCi/l	3.5 ± 1.7	2-8-17/0712	EPA 900.0	3.6
Radium-226	pCi/l	1.1 ± 0.4	2-13-17/1046	EPA 903.0	0.3
Radium-228	pCi/l	0.6 ± 0.5	2-13-17/1005	EPA Ra-05	0.7
Uranium	pCi/l	0.0 ± 0.2	2-13-17/1554	EPA 908.0	0.5
Uranium	ug/l	0.0 ± 0.3	calc	EPA 908.0	0.7

Alpha Standard: Th-230
Beta Standard: Cs-137

James W. Hayes
Laboratory Manager

Test results meet all requirements of the NELAC standards. Statement of estimated uncertainty available upon request. Test results refer only to sample(s) listed. Contact person: Jim Hayes (813) 229-2879.

Page 1 of 1



TCEQ Certification # T104704265

Envirodyne Laboratories, Inc.
 11011 Brooklet, Ste. 230
 Houston, Texas 77099-3543
 Phone (281)568-7880 - Fax (281)568-8004

E A165538

Page _____ Of _____

Name: Envirodyne Laboratories Inc. Analysis Request and Chain of Custody Record
 Address: 11011 Brooklet Dr. Ste 230
 City: Houston, TX 77099
 Contact: Laura Bonjonia Phone: 281-568-7880 Fax: 281-568-8004

Project No.	Client/Project	
	17B0398	

Lab ID No.	Field Sample No./ Identification	Date & Time	Grab	Comp	Sample Container (Size/Mat'l)	Sample Type (Liquid, Sludge, etc)	Preservative	ANALYSIS REQUESTED	pH	D.O.	Temp.	Analysis Time
	FINISHED WATER	2-1-17 12:36	✓		1 GAL cubic	Liquid	ICE HNO3	Gross Alpha, Gross Beta, T.U RA 226-228				
	WELL #21	2-1-17 10:37	✓		1 GAL cubic	Liquid	ICE HNO3	Gross Alpha, Gross Beta, T.U RA 226-228				
<div style="border: 1px solid black; border-radius: 50%; padding: 10px; display: inline-block;">17. 1324-25</div> * STANDARD TAT JTB 2-15-17												

Samplers: (Signature)	Relinquished by: (Signature) <i>Fridge #8</i>	Date: 2-6-17 Time: 14:45	Received by: (Signature) <i>P... ..</i>	Date: 2-6-17 Time: 14:45	Seal Intact?
Affiliation	Relinquished by: (Signature) <i>P... ..</i>	Date: 2-6-17 Time: 14:45	Received by: (Signature) <i>Fedex</i>	Date: 2-6-17 Time: 14:45	Seal Intact?
Remarks:	Relinquished by: (Signature)	Date: _____ Time: _____	Received by Lab: (Signature) <i>KNL D. Vely</i>	Date: 2/7/17 Time: 1020	Seal Intact?
SUB TO KNL FLOW: _____ Meter Reading: _____ Cl ₂ Residual: _____ Mn Correction: _____ Cl ₂ Corrected: _____	Arrival Temp.	Data Results To:			Laboratory No.
			Site Representative:	Date: _____ Time: _____	



CERTIFICATE OF ANALYSIS

CLIENT SAMPLE ID:
COLLECTION DATE:

Victoria- WELL #21
2/1/2017 @ 1225

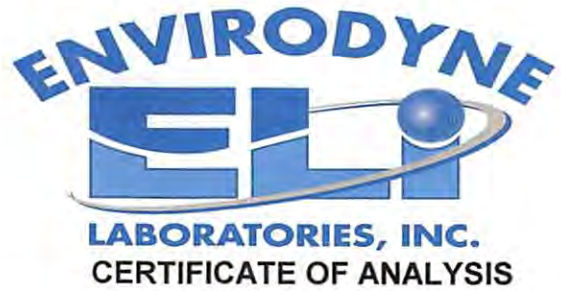
LAB SAMPLE ID: 17B0398
COLLECTED BY: COV

ANALYSIS	RESULT	UNITS	RL	QUAL	METHOD	DATE ANALYZED	ANALYST
WETCHEM							
Non- Carbonate Hardness as CaCO3	79.2	mg/l			(calc)	2/21/2017	JMM

QUALIFIERS:

ND - Not detected at the Reporting Limit
L- Analyzed by third party laboratory
Q- QC did not meet ELI acceptance criteria
J- Analyte detected below quantitation limits
A- Analyte not available for NELAC accreditation

N- Not accredited for this analyte
E- Result above quantitation range
H- Hold time exceeded
* - Refer to sample comments



ENVIRODYNE
ELI
LABORATORIES, INC.
CERTIFICATE OF ANALYSIS

CLIENT:	City of Victoria	LAB NUMBER:	17B0398
DATE COLLECTED:	01-Feb-17	DATE RECEIVED:	02-Feb-17
DATE COMPLETED:	10-Feb-17	SAMPLED BY:	COV

LOCATION:	WELL 21 @ 1035	MDL LIMITS (ug/l)
PARAMETERS:		
VINYL CHLORIDE (ug/l)	0.5 U	0.5
trans-1,2-DICHLOROETHYLENE (ug/l)	0.5 U	0.5
1,1,1-TRICHLOROETHANE (ug/l)	0.5 U	0.5
CARBON TETRACHLORIDE (ug/l)	0.5 U	0.5
1,2-DICHLOROETHANE (ug/l)	0.5 U	0.5
BENZENE (ug/l)	0.5 U	0.5
1,2-DICHLOROPROPANE (ug/l)	0.5 U	0.5
TOLUENE (ug/l)	0.5 U	0.5
1,1,2-TRICHLOROETHANE (ug/l)	0.5 U	0.5
CHLOROBENZENE (ug/l)	0.5 U	0.5
ETHYLBENZENE (ug/l)	0.5 U	0.5
XYLENE (ug/l)	1.5 U	1.5
1,2,4-TRICHLOROBENZENE (ug/l)	0.5 U	0.5
DICHLOROMETHANE (ug/l)	0.5 U	0.5
o-DICHLOROBENZENE (ug/l)	0.5 U	0.5
p-DICHLOROBENZENE (ug/l)	0.5 U	0.5
1,1- DICHLOROETHYLENE (ug/l)	0.5 U	0.5
TRICHLOROETHYLENE (ug/l)	0.5 U	0.5
TETRACHLOROETHYLENE (ug/l)	0.5 U	0.5
STYRENE (ug/l)	0.5 U	0.5
cis- 1,2-DICHLOROETHYLENE (ug/l)	0.5 U	0.5
ETHYLENE DIBROMIDE (ug/l)	0.5 U	0.5
DIBROMOCHLOROPROPANE (ug/l)	0.5 U	0.5
CHLOROFORM (ug/l)	0.5 U	0.5
DICHLOROBROMOMETHANE (ug/l)	0.5 U	0.5
DIBROMOCHLOROMETHANE (ug/l)	0.5 U	0.5
BROMOFORM (ug/l)	0.5 U	0.5
TOTAL TRIHALOMETHANES (ug/l)	2.0 U	2.0

Ref. EPA-8260C (VOLATILES)
 U - Analyte Not Detected at the Listed Detection Limit
 J - Analyte Present but Below Detection Limit

Monica Smith
 LAB REPRESENTATIVE



Envirodyne Laboratories, Inc
 11011 Brooklet Dr., # 230
 Houston, TX 77099
 281.568.7880 Phone
 www.envirodyne.com

Client: Victoria, City of
Project: Victoria, City of - Surface and Raw Water Testing
Work Order: 17B0398

Reported:
 22-Feb-17 09:25

Finished Water
17B0398-02 (Water) Sampled: 01-Feb-17 12:25

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Analyst	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	--------	---------	-------

Envirodyne Laboratories, Inc.

Wet Chemistry

Acidity	<20	20	mg/L	1	B7B1962	15-Feb-17	15-Feb-17 13:00	SM 2310B	AT	
Bromide	<0.20	0.20	mg/L	1	B7B2642	01-Feb-17	01-Feb-17 12:25	EPA 300.0	CLT	
Cyanide, Total	<0.005	0.005	mg/L	1	B7B1784	08-Feb-17	08-Feb-17 16:46	EPA 335.4	IZW	L
Hydrogen Sulfide	<0.0100	0.0100	mg/L	1	B7B2310	07-Feb-17	07-Feb-17 16:00	Calc	CLO	
OrthoPhoshate as P	<0.10	0.10	mg/L	1	B7B0377	03-Feb-17	03-Feb-17 08:00	SM4500-P E	XQH	
Sulfide	<0.01	0.01	mg/L	1	B7B0832	07-Feb-17	07-Feb-17 16:00	SM4500-S2 D	AT	
Total Phosphorus	0.38	0.20	mg/L	2	B7B0601	06-Feb-17	06-Feb-17 13:00	SM4500-P E	AT	

Total Metals by ICP

Arsenic, Dissolved	<0.00500	0.00500	mg/L	1	B7B2312	17-Feb-17	17-Feb-17 13:00	EPA 200.7	JMM	
Calcium	51.9	2.00	mg/L	1	B7B0742	03-Feb-17	06-Feb-17 13:32	EPA 200.7	JMM	
Calcium as CaCO3	130		mg/L	1	[CALC]	03-Feb-17	06-Feb-17 13:32	Calc	JMM	
Iron, Dissolved	<0.0050	0.0050	mg/L	1	B7B2312	17-Feb-17	17-Feb-17 13:00	EPA 200.7	JMM	
Magnesium	13.9	2.00	mg/L	1	B7B0742	03-Feb-17	06-Feb-17 13:32	EPA 200.7	JMM	
Magnesium as CaCO3	57.4	8.23	mg/L	1	[CALC]	03-Feb-17	06-Feb-17 13:32	EPA 200.7	JMM	
Manganese, Dissolved	<0.0050	0.0050	mg/L	1	B7B2312	17-Feb-17	17-Feb-17 13:00	EPA 200.7	JMM	

Envirodyne Laboratories, Inc.

Monica Smith, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



DOH Certification #E84025
Cert.# T104704527-14-1

Report Date: February 14, 2017

Envirodyne Laboratories, Inc.
11011 Brooklet, Ste 230
Houston, TX 77099-3543

Field Custody: Client
Client/Field ID: Envirodyne
17B0398
Finished Water
Sample Collection: 2-1-17/1236
Lab ID No: 17.1324
Lab Custody Date: 2-7-17/1020
Sample description: Water

CERTIFICATE OF ANALYSIS

Parameter	Units	Results	Analysis Date	Method	Detection Limit
Gross Alpha	pCi/l	0.0 ± 0.8	2-8-17/0712	EPA 900.0	2.0
Gross Beta	pCi/l	1.4 ± 1.6	2-8-17/0712	EPA 900.0	3.6
Radium-226	pCi/l	0.5 ± 0.3	2-13-17/1046	EPA 903.0	0.3
Radium-228	pCi/l	0.6 ± 0.5	2-13-17/1005	EPA Ra-05	0.7
Uranium	pCi/l	0.0 ± 0.3	2-13-17/1554	EPA 908.0	0.6
Uranium	ug/l	0.0 ± 0.5	calc	EPA 908.0	0.9

Alpha Standard: Th-230
Beta Standard: Cs-137

James W. Hayes
Laboratory Manager

Test results meet all requirements of the NELAC standards. Statement of estimated uncertainty available upon request. Test results refer only to sample(s) listed. Contact person: Jim Hayes (813) 229-2879.



Envirodyne Laboratories, Inc.
 11011 Brooklet, Ste. 230
 Houston, Texas 77099-3543
 Phone (281)568-7880 - Fax (281)568-8004

E A165538

Page _____ Of _____

TCEQ Certification # T104704265

Name: Envirodyne Laboratories Inc.
 Address: 11011 Brooklet Dr. Ste 230
 City: Houston, TX 77099
 Contact: Laura Bonjonia

Analysis Request and Chain of Custody Record

Phone: 281-568-7880 Fax: 281-568-8004

Project No.		Client/Project					pH	D.O.	Temp.	Analysis Time
		17B0398								
Lab ID No.	Field Sample No./ Identification	Date & Time	Grab	Comp	Sample Container (Size/Mat'l)	Sample Type (Liquid, Sludge, etc.)	Preservative	ANALYSIS REQUESTED		
	FINISHED WATER	2-1-17 12:36	✓		1 GAL cubic	Liquid	ICE HNO3	GROSS ALPHA, GROSS BETA, T.U. RA 226-228		
	WELL #21	2-1-17 10:37	✓		1 GAL cubic	Liquid	ICE HNO3	GROSS ALPHA, GROSS BETA, T.U. RA 226-228		
<p>17. 1324-25</p> <p>* STANDARD TAT</p> <p>QAT 2-15-17</p>										

Samplers: (Signature)	Relinquished by: (Signature) <i>Fridge #8</i>	Date: 2-6-17 Time: 14:45	Received by: (Signature) <i>P... ..</i>	Date: 2-6-17 Time: 14:45	Seal Intact?
Affiliation	Relinquished by: (Signature) <i>P... ..</i>	Date: 2-6-17 Time: 14:45	Received by: (Signature) <i>Fedex</i>	Date: 2-6-17 Time: 14:25	Seal Intact?
Remarks:	Relinquished by: (Signature)	Date: _____ Time: _____	Received by Lab: (Signature) <i>KNL D.Vely</i>	Date: 2/7/17 Time: 1020	Seal Intact?
<i>SWB TO KNL</i>	FLOW: _____ Meter Reading: _____ Cl ₂ Residual: _____ Mn Correction: _____ Cl ₂ Corrected: _____	Arrival Temp.	Data Results To: _____ 1.	Site Representative:	Date: _____ Time: _____
	Laboratory No.				



CERTIFICATE OF ANALYSIS

CLIENT SAMPLE ID: Victoria- Finished Water
COLLECTION DATE: 2/1/2017 @ 1225

LAB SAMPLE ID: 17B0398
COLLECTED BY: COV

ANALYSIS	RESULT	UNITS	RL	QUAL	METHOD	DATE ANALYZED	ANALYST
WETCHEM							
Non- Carbonate Hardness as CaCO3	107.4	mg/l			(calc)	2/14/2017	JMM

QUALIFIERS:

ND - Not detected at the Reporting Limit	N- Not accredited for this analyte
L- Analyzed by third party laboratory	E- Result above quantitation range
Q- QC did not meet ELI acceptance criteria	H- Hold time exceeded
J- Analyte detected below quantitation limits	* - Refer to sample comments
A- Analyte not available for NELAC accreditation	



CERTIFICATE OF ANALYSIS

CLIENT: **City of Victoria**

LAB NUMBER: 17B0398

DATE COLLECTED: 01-Feb-17

DATE RECEIVED: 02-Feb-17

DATE COMPLETED: 09-Feb-17

SAMPLED BY: COV

PARAMETERS:
BNA/Pest.

Maximum
Contaminant Levels
(MCLs) in ug/l

Finished Water

LOCATION:

Gamma-BHC (Lindane) (ug/l)

< 0.11

0.2

Monica Smith

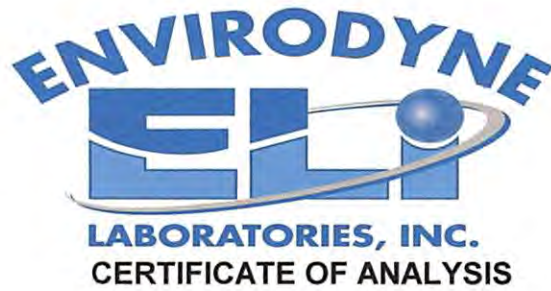
LAB REPRESENTATIVE

Analyzed by NELAP accredited lab T104704218

Ref. EPA-525.2 , EPA 508.1, EPA 8260C

U - Analyte Not Detected at the listed Detection Limit

J - Analyte Present but below Detection Limit




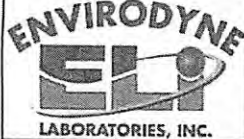
CLIENT:	City of Victoria	LAB NUMBER:	17B0398
DATE COLLECTED:	01-Feb-17	DATE RECEIVED:	02-Feb-17
DATE COMPLETED:	09-Jan-17	SAMPLED BY:	COV

LOCATION:	Finished Water @ 1225	MDL LIMITS (ug/l)
PARAMETERS:		
ETHYLENE DIBROMIDE (ug/)	0.5 U	0.5

Ref. EPA-8260C (VOLATILES)
U - Analyte Not Detected at the Listed Detection Limit
J - Analyte Present but Below Detection Limit

Monica Smith
LAB REPRESENTATIVE

David Burger

TCEQ		MICROBIAL MONITORING FORM												ENVIRODYNE LABORATORIES, INC 11011 BROOKLET, STE 230 HOUSTON, TX 77099 (281) 566-7880 NELAP Certificate # T104704265													
Public/Private Water System Identification & Sample Collection Information (Please type or use block print)																											
Public Water System ID:		2350002																TCEQ Lab ID: TX-288 Test results meet all requirements of NELAC unless stated otherwise.									
Public Water System Name:		City of Victoria																									
County:		Victoria																									
Send Results To:	Name:	City of Victoria - Lynn Short												Sample Iced?		Received By:		Date / Time Received:									
	Address:	700 Main Center												<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		LJB		2/2/17		1310							
	City:	Victoria												If no, temperature receipt?		Tested By:		Date / Time Tested:									
	State:	TX		Zip:		77901								°C		Reported By:		Date / Time Reported:		2-10-17 @ 12:05							
Phone #:	361-485-3381				Fax #:		lshort@victoriatx.org						Report Approval Signature/Title:														
Sampler Name:	DAVID BURGER												Approving Technical Director:		<input checked="" type="checkbox"/> LB		Date of Approval:		2-6-17								
Sampler Contact #:	361-485-3415				<input type="checkbox"/> Owner		<input checked="" type="checkbox"/> Operator						<input type="checkbox"/> Other:														
System Type: (N)		<input type="checkbox"/> Public		<input type="checkbox"/> Private		<input type="checkbox"/> Bottled/Vended		<input type="checkbox"/> Groundwater		<input type="checkbox"/> Surface Water		<input type="checkbox"/> Other		<input type="checkbox"/> Groundwater with Surface Water Influence		Chlorine Residual		Unsuitable Sample - Please Resubmit*		Lab Results							
Sample Identification/Location		Use Specific Address/Location		Date		Time		Sample Type: (N)		Distribution		Construction		Raw Well		Special		Repeat		Include Lab ID of Originating Positive on all Repeat and Triggered Samples		Note: All test results relate only to the samples as received.		Laboratory Sample ID Number			
NOT SITE #		Raw Wells Use Source ID for Well Sampled Ex: G1234567A		Month	Day	Year	Please circle AM or PM														Test Method: Col-A-18						
iWell21				2	1	17	1100	am	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1700912-01		
								pm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
								pm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
								am	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
								pm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
								am	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
								pm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
								am	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
								pm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
								am	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
								pm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
TCEQ Form: 10525 05/2012		*Unsuitable Sample Analysis- Rejection Criteria # Definitions:		1) Sample too old. Exceeded hold time.				2) Insufficient volume				3) Excessive chlorine present in sample.				4) Heavy silt/turbidity present.				5) Form Incomplete / Date Discrepancy (Errors Circled)				6) Other:			

TCEQ MICROBIAL MONITORING FORM

Public/Private Water System Identification & Sample Collection Information (Please type or use block print)

Public Water System ID: 2350002
(Must be 7 digits; include all zeros)

Public Water System Name: City of Victoria

County: Victoria



ENVIRODYNE LABORATORIES, INC
11011 BROOKLET, STE 230
HOUSTON, TX 77099
(281) 568-7880
NELAP Certificate # T104704265

TCEQ Lab ID: TX-288



Send Results To:

Name: City of Victoria - Lynn Smart

Address: 700 Main Center

City: Victoria

State: TX Zip: 77901

Phone #: 361-485-3381 Fax #:

Sampler Name: David Budget

Sampler Contact #: 361-485-3415

Owner Operator Other:

LABORATORY USE ONLY - DO NOT MARK TO THE RIGHT OF THE BOLD CENTER LINE

Sample Iced? Yes No

Received By: [Signature] Date / Time Received: 2/2/17 1310

If no, temperature at receipt? °C

Tested By: [Signature] Date / Time Tested: 2/2/17 1330

Reported By: [Signature] Date / Time Reported: 2-10-17 @ 205

Report Approval Signature/Title:

System Type: (v) Public Private Bottled/Vended Other

Water Source: (v) Groundwater Surface Water Groundwater with Surface Water Influence

Approving Technical Director: LB TOB

Date of Approval: 2-6-17

Chlorine Residual: Free mg/L Total mg/L

Unsuitable Sample - Please Resubmit:

Lab Results: Note: All test results relate only to the samples as received. Test Method: Coliform 18

Sample Identification/Location	Collected			Sample Type: (v)						Include Lab ID of Originating Positive on all Repeat Samples
	Date	Time		Distribution	Construction	Raw Well	Special	Repeat		
Use Specific Address/Location NOT SITE # Raw Wells Use Source ID for Well Sampled Ex: G1234567A	Month	Day	Year	Please circle AM or PM						
H2S Foudud	2	17	1200	am						
H2N Well 21	2	17	1215	am						
				pm						
				am						
				pm						
				am						
				pm						
				am						
				pm						
				am						
				pm						
				am						
				pm						

Rejection Criteria #	Total Coliform				E. coli		Laboratory Sample ID Number
	Present	Absent	Present	Absent	Present	Absent	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			17B0911-01
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			17B0911-02
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			

TCEQ Form: 10525 6/2009

*Unsuitable Sample Analysis - Rejection Criteria # Definitions

1) Sample Too old. Analysis not initiated within 30 hours of collection

2) Quantity insufficient for analysis (100mL required)

3) Excessive Chlorine Residual (>10 mg/L)

4) Heavy Silt/Turbidity Present

5) Form Incomplete / Date Discrepancy (Errors Circled)

6) Other:



1780398

Envirodyne Laboratories, Inc.
11011 Brooklet, Ste. 230
Houston, Texas 77099-3543
Phone (281)568-7880 - Fax (281)568-8004

E A164984

Page 1 Of 2

TCEQ Certification # T104704265

Name: City of Victoria Address: 700 Main Center City: Victoria, TX 77901 Contact: Mr. Lynn Short Phone: 361-485-3381 Fax: 361-485-3385

Analysis Request and Chain of Custody Record

Table with columns: Lab ID No., Field Sample No./ Identification, Date & Time, Grab, Comp, Sample Container (Size/Mat'l), Sample Type (Liquid, Sludge, etc.), Preservative, ANALYSIS REQUESTED, pH, D.O., Temp., Analysis Time. Includes handwritten entries for Well #21 and various sample types like 500 ml/P, 1 gal/cubie, 40ml/vials, 3-1 lt/amb.

Samplers: (Signature) Relinquished by: (Signature) Date: 2/1/17 Time: 12:35 Received by: (Signature) Date: Seal Intact? Affiliation Relinquished by: (Signature) Date: 2.2.17 Time: 0930 Received by Lab: (Signature) Date: 2.2.17 Time: 0930 Seal Intact? Remarks: NaOH 1701029 H2SO4 1608337 HNO3 1609547 FLOW: Meter Reading: Cl2 Residual: Mn Correction: Cl2 Corrected Arrival Temp. 2.1/18 18#3 Data Results To: 1. Site Representative: Date: Time: Laboratory No.



Envirodyne Laboratories, Inc
 11011 Brooklet Dr., # 230
 Houston, TX 77099
 281.568.7880 Phone
 www.envirodyne.com

Client: Victoria, City of
Project: Victoria, City of - Surface and Raw Water Testing
Work Order: 17B0398

Reported:
 22-Feb-17 09:25

Wet Chemistry - Quality Control
Envirodyne Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B7B0320 - Inorganics										
Blank (B7B0320-BLK1) Prepared & Analyzed: 02-Feb-17										
Nitrate-N	<0.10	0.10	mg/L							
LCS (B7B0320-BS1) Prepared & Analyzed: 02-Feb-17										
Nitrate-N	25.5		mg/L	25.0		102	90-110			
Matrix Spike (B7B0320-MS1) Source: 17B0063-03 Prepared & Analyzed: 02-Feb-17										
Nitrate-N	27.0	0.10	mg/L	25.0	0.82	105	80-120			
Matrix Spike Dup (B7B0320-MSD1) Source: 17B0063-03 Prepared & Analyzed: 02-Feb-17										
Nitrate-N	26.9	0.10	mg/L	25.0	0.82	104	80-120	0.371	20	
Batch B7B0344 - Inorganics										
Blank (B7B0344-BLK1) Prepared & Analyzed: 06-Feb-17										
TDS	<10.0	10.0	mg/L							
Duplicate (B7B0344-DUP1) Source: 17A3254-01 Prepared & Analyzed: 06-Feb-17										
TDS	452	10.0	mg/L		468			3.48	20	
Batch B7B0377 - Inorganics										
Blank (B7B0377-BLK1) Prepared & Analyzed: 03-Feb-17										
OrthoPhoshate as P	<0.10	0.10	mg/L							
LCS (B7B0377-BS1) Prepared & Analyzed: 03-Feb-17										
OrthoPhoshate as P	0.310		mg/L	0.333		93.1	80-120			

Envirodyne Laboratories, Inc.

Monica Smith, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Envirodyne Laboratories, Inc
 11011 Brooklet Dr., # 230
 Houston, TX 77099
 281.568.7880 Phone
 www.envirodyne.com

Client: Victoria, City of
Project: Victoria, City of - Surface and Raw Water Testing
Work Order: 17B0398

Reported:
 22-Feb-17 09:25

Wet Chemistry - Quality Control
Envirodyne Laboratories, Inc.

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

Batch B7B0377 - Inorganics

Matrix Spike (B7B0377-MS1)	Source: 17B0305-01			Prepared & Analyzed: 03-Feb-17						
OrthoPhoshate as P	22.5	0.10	mg/L	3.33	19.1	102	80-120			

Matrix Spike Dup (B7B0377-MSD1)	Source: 17B0305-01			Prepared & Analyzed: 03-Feb-17						
OrthoPhoshate as P	22.0	0.10	mg/L	3.33	19.1	87.0	80-120	2.25	20	

Batch B7B0378 - Inorganics

Blank (B7B0378-BLK1)	Prepared & Analyzed: 03-Feb-17									
Color	<1.0	1.0	Color Units							

LCS (B7B0378-BS1)	Prepared & Analyzed: 03-Feb-17									
Color	40.9		Color Units	40.0		102	80-120			

Duplicate (B7B0378-DUP1)	Source: 17B0398-01			Prepared & Analyzed: 03-Feb-17						
Color	<1.0	1.0	Color Units		<1.0			0	20	

Batch B7B0379 - Inorganics

Blank (B7B0379-BLK1)	Prepared & Analyzed: 03-Feb-17									
Nitrite-N	<0.05	0.05	mg/L							

LCS (B7B0379-BS1)	Prepared & Analyzed: 03-Feb-17									
Nitrite-N	0.09		mg/L	0.0997		93.3	90-110			

Matrix Spike (B7B0379-MS1)	Source: 17B0397-01			Prepared & Analyzed: 03-Feb-17						
Nitrite-N	0.12	0.05	mg/L	0.0997	ND	120	80-120			

Envirodyne Laboratories, Inc.

Monica Smith

Monica Smith, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Envirodyne Laboratories, Inc
 11011 Brooklet Dr., # 230
 Houston, TX 77099
 281.568.7880 Phone
 www.envirodyne.com

Client: Victoria, City of
Project: Victoria, City of - Surface and Raw Water Testing
Work Order: 17B0398

Reported:
 22-Feb-17 09:25

Wet Chemistry - Quality Control
Envirodyne Laboratories, Inc.

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

Batch B7B0379 - Inorganics

Matrix Spike Dup (B7B0379-MSD1)		Source: 17B0397-01		Prepared & Analyzed: 03-Feb-17						
Nitrite-N	0.11	0.05	mg/L	0.0997	ND	110	80-120	8.70	20	

Batch B7B0403 - Inorganics

Blank (B7B0403-BLK1)		Prepared: 03-Feb-17 Analyzed: 09-Feb-17								
Fluoride	<0.10	0.10	mg/L							

LCS (B7B0403-BS1)		Prepared: 03-Feb-17 Analyzed: 09-Feb-17								
Fluoride	0.54		mg/L	0.500		108	90-110			

Matrix Spike (B7B0403-MS1)		Source: 17B0494-01		Prepared: 03-Feb-17 Analyzed: 09-Feb-17						
Fluoride	0.97	0.10	mg/L	0.500	0.47	100	80-120			

Matrix Spike Dup (B7B0403-MSD1)		Source: 17B0494-01		Prepared: 03-Feb-17 Analyzed: 09-Feb-17						
Fluoride	0.94	0.10	mg/L	0.500	0.47	94.0	80-120	3.14	20	

Batch B7B0438 - Inorganics

Blank (B7B0438-BLK1)		Prepared & Analyzed: 03-Feb-17								
Ammonia-N (NH3-N)	<0.10	0.10	mg/L							

LCS (B7B0438-BS1)		Prepared & Analyzed: 03-Feb-17								
Ammonia-N (NH3-N)	4.55		mg/L	5.00		91.0	90-110			

Matrix Spike (B7B0438-MS1)		Source: 17B0398-01		Prepared & Analyzed: 03-Feb-17						
Ammonia-N (NH3-N)	3.81	0.10	mg/L	4.10	ND	92.9	80-120			

Envirodyne Laboratories, Inc.

Monica Smith

Monica Smith, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Envirodyne Laboratories, Inc
 11011 Brooklet Dr., # 230
 Houston, TX 77099
 281.568.7880 Phone
 www.envirodyne.com

Client: Victoria, City of
Project: Victoria, City of - Surface and Raw Water Testing
Work Order: 17B0398

Reported:
 22-Feb-17 09:25

Wet Chemistry - Quality Control
Envirodyne Laboratories, Inc.

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

Batch B7B0438 - Inorganics

Matrix Spike Dup (B7B0438-MSD1)		Source: 17B0398-01			Prepared & Analyzed: 03-Feb-17					
Ammonia-N (NH3-N)	4.53	0.10	mg/L	4.10	ND	110	80-120	17.3	20	

Batch B7B0443 - Inorganics

Blank (B7B0443-BLK1)		Prepared & Analyzed: 02-Feb-17								
Turbidity	<0.10	0.10	NTU							

LCS (B7B0443-BS1)		Prepared & Analyzed: 02-Feb-17								
Turbidity	22.0		NTU	20.0		110	80-120			

Duplicate (B7B0443-DUP1)		Source: 17B0058-07			Prepared & Analyzed: 02-Feb-17					
Turbidity	1.18	0.10	NTU		1.23			4.15	20	

Batch B7B0529 - Inorganics

Blank (B7B0529-BLK1)		Prepared & Analyzed: 02-Feb-17								
Sulfate	<2.00	2.00	mg/L							

LCS (B7B0529-BS1)		Prepared & Analyzed: 02-Feb-17								
Sulfate	19.0		mg/L	20.0		95.0	90-110			

Matrix Spike (B7B0529-MS1)		Source: 17B0398-01			Prepared & Analyzed: 02-Feb-17					
Sulfate	20.9	2.00	mg/L	20.0	ND	105	80-120			

Matrix Spike Dup (B7B0529-MSD1)		Source: 17B0398-01			Prepared & Analyzed: 02-Feb-17					
Sulfate	21.7	2.00	mg/L	20.0	ND	109	80-120	3.75	20	

Envirodyne Laboratories, Inc.

Monica Smith

Monica Smith, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Envirodyne Laboratories, Inc
 11011 Brooklet Dr., # 230
 Houston, TX 77099
 281.568.7880 Phone
 www.envirodyne.com

Client: Victoria, City of
Project: Victoria, City of - Surface and Raw Water Testing
Work Order: 17B0398

Reported:
 22-Feb-17 09:25

Wet Chemistry - Quality Control
Envirodyne Laboratories, Inc.

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

Batch B7B0601 - Inorganics

Blank (B7B0601-BLK2)				Prepared & Analyzed: 06-Feb-17						
Total Phosphorus	<0.10	0.10	mg/L							
LCS (B7B0601-BS2)				Prepared & Analyzed: 06-Feb-17						
Total Phosphorus	3.19		mg/L	3.00		106	80-120			
Matrix Spike (B7B0601-MS1)				Source: 17A3244-01		Prepared & Analyzed: 06-Feb-17				
Total Phosphorus	2.08	0.20	mg/L	1.50	0.600	98.7	80-120			
Matrix Spike Dup (B7B0601-MSD1)				Source: 17A3244-01		Prepared & Analyzed: 06-Feb-17				
Total Phosphorus	2.10	0.20	mg/L	1.50	0.600	100	80-120	0.957	20	

Batch B7B0832 - Inorganics

Blank (B7B0832-BLK1)				Prepared & Analyzed: 07-Feb-17						
Sulfide	<0.01	0.01	mg/L							
LCS (B7B0832-BS1)				Prepared & Analyzed: 07-Feb-17						
Sulfide	0.393		mg/L	0.400		98.2	90-110			
Duplicate (B7B0832-DUP1)				Source: 17B0398-01		Prepared & Analyzed: 07-Feb-17				
Sulfide	<0.01	0.01	mg/L		<0.01			0	20	

Batch B7B1011 - Inorganics

Blank (B7B1011-BLK1)				Prepared & Analyzed: 10-Feb-17						
Chloride	<3.0	3.0	mg/L							

Envirodyne Laboratories, Inc.

Monica Smith

Monica Smith, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Envirodyne Laboratories, Inc
 11011 Brooklet Dr., # 230
 Houston, TX 77099
 281.568.7880 Phone
 www.envirodyne.com

Client: Victoria, City of
Project: Victoria, City of - Surface and Raw Water Testing
Work Order: 17B0398

Reported:
 22-Feb-17 09:25

Wet Chemistry - Quality Control
Envirodyne Laboratories, Inc.

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

Batch B7B1011 - Inorganics

LCS (B7B1011-BS1)		Prepared & Analyzed: 10-Feb-17								
Chloride	98.0		mg/L	100		98.0	80-120			
Matrix Spike (B7B1011-MS1)		Source: 17B0997-01		Prepared & Analyzed: 10-Feb-17						
Chloride	74.0	3.0	mg/L	20.0	56.0	90.0	80-120			
Matrix Spike Dup (B7B1011-MSD1)		Source: 17B0997-01		Prepared & Analyzed: 10-Feb-17						
Chloride	78.0	3.0	mg/L	20.0	56.0	110	80-120	5.27	20	

Batch B7B1433 - Inorganics

Blank (B7B1433-BLK1)		Prepared & Analyzed: 10-Feb-17								
ORP	<1.0	1.0	mV							
Duplicate (B7B1433-DUP1)		Source: 17B0398-01		Prepared & Analyzed: 10-Feb-17						
ORP	197	1.0	mV		201			2.01	20	

Batch B7B1477 - Inorganics

Blank (B7B1477-BLK1)		Prepared & Analyzed: 10-Feb-17								
TSS	<2.0	2.0	mg/L							
Duplicate (B7B1477-DUP1)		Source: 17B0398-01		Prepared & Analyzed: 10-Feb-17						
TSS	2.8	2.0	mg/L		2.6			7.41	20	

Batch B7B1600 - Inorganics

Blank (B7B1600-BLK1)		Prepared: 13-Feb-17 Analyzed: 14-Feb-17								
Alkalinity (m) as CaCO3	<20	20	mg/L							
Alkalinity (p) as CaCO3	<20	20	"							

Envirodyne Laboratories, Inc.

Monica Smith

Monica Smith, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Envirodyne Laboratories, Inc
 11011 Brooklet Dr., # 230
 Houston, TX 77099
 281.568.7880 Phone
 www.envirodyne.com

Client: Victoria, City of
Project: Victoria, City of - Surface and Raw Water Testing
Work Order: 17B0398

Reported:
 22-Feb-17 09:25

Wet Chemistry - Quality Control
Envirodyne Laboratories, Inc.

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

Batch B7B1600 - Inorganics

LCS (B7B1600-BS1)		Prepared: 13-Feb-17 Analyzed: 14-Feb-17								
Alkalinity (m) as CaCO3	51		mg/L	50.0		102	80-120			
Alkalinity (p) as CaCO3	52		"	50.0		104	80-120			

Duplicate (B7B1600-DUP1)		Source: 17B0031-01		Prepared: 13-Feb-17 Analyzed: 14-Feb-17						
Alkalinity (m) as CaCO3	57	20	mg/L		60			5.13	20	
Alkalinity (p) as CaCO3	<20	20	"		<20			0	20	

Batch B7B1632 - Metals - EPA 200.2

Blank (B7B1632-BLK1)		Prepared & Analyzed: 13-Feb-17								
Silica	<0.20	0.20	mg/L							

LCS (B7B1632-BS1)		Prepared & Analyzed: 13-Feb-17								
Silica	10.4		mg/L	10.7		96.9	90-110			

Matrix Spike (B7B1632-MS1)		Source: 17B1125-01		Prepared & Analyzed: 13-Feb-17						
Silica	35.7	0.20	mg/L	10.7	24.4	106	85-115			

Matrix Spike Dup (B7B1632-MSD1)		Source: 17B1125-01		Prepared & Analyzed: 13-Feb-17						
Silica	33.8	0.20	mg/L	10.7	24.4	88.2	85-115	5.52	20	

Batch B7B1962 - Inorganics

Blank (B7B1962-BLK1)		Prepared & Analyzed: 15-Feb-17								
Acidity	<20	20	mg/L							

Envirodyne Laboratories, Inc.

Monica Smith

Monica Smith, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Envirodyne Laboratories, Inc
 11011 Brooklet Dr., # 230
 Houston, TX 77099
 281.568.7880 Phone
 www.envirodyne.com

Client: Victoria, City of
Project: Victoria, City of - Surface and Raw Water Testing
Work Order: 17B0398

Reported:
 22-Feb-17 09:25

Wet Chemistry - Quality Control
Envirodyne Laboratories, Inc.

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

Batch B7B1962 - Inorganics

LCS (B7B1962-BS1)

Prepared & Analyzed: 15-Feb-17

Acidity	1024.8		mg/L	1000	102	80-120				
---------	--------	--	------	------	-----	--------	--	--	--	--

Duplicate (B7B1962-DUP1)

Source: 17B0398-01

Prepared & Analyzed: 15-Feb-17

Acidity	<20	20	mg/L	<20				0	20	
---------	-----	----	------	-----	--	--	--	---	----	--

Envirodyne Laboratories, Inc.

Monica Smith, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Envirodyne Laboratories, Inc
 11011 Brooklet Dr., # 230
 Houston, TX 77099
 281.568.7880 Phone
 www.envirodyne.com

Client: Victoria, City of
Project: Victoria, City of - Surface and Raw Water Testing
Work Order: 17B0398

Reported:
 22-Feb-17 09:25

Total Metals by ICP - Quality Control
Envirodyne Laboratories, Inc.

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

Batch B7B0742 - Metals - EPA 200.2

Blank (B7B0742-BLK1)

Prepared: 03-Feb-17 Analyzed: 06-Feb-17

Calcium	<2.00	2.00	mg/L							
Magnesium	<2.00	2.00	"							

LCS (B7B0742-BS1)

Prepared: 03-Feb-17 Analyzed: 06-Feb-17

Magnesium	20.0		mg/L	20.0		99.8	85-115			
Calcium	20.2		"	20.0		101	85-115			

Matrix Spike (B7B0742-MS1)

Source: 17B0397-01

Prepared: 03-Feb-17 Analyzed: 06-Feb-17

Calcium	39.6	2.00	mg/L	20.0	19.5	100	70-130			
Magnesium	25.9	2.00	"	20.0	5.78	100	70-130			

Matrix Spike Dup (B7B0742-MSD1)

Source: 17B0397-01

Prepared: 03-Feb-17 Analyzed: 06-Feb-17

Calcium	41.0	2.00	mg/L	20.0	19.5	108	70-130	3.65	20	
Magnesium	26.3	2.00	"	20.0	5.78	103	70-130	1.85	20	

Batch B7B1263 - Metals - EPA 200.2

Blank (B7B1263-BLK1)

Prepared: 07-Feb-17 Analyzed: 09-Feb-17

Copper	<0.0006	0.0006	mg/L							
Thallium	<0.0020	0.0020	"							
Barium	<0.0005	0.0005	"							
Nickel	<0.0005	0.0005	"							
Chromium	<0.0005	0.0005	"							
Iron	<0.0018	0.0018	"							
Lead	<0.0009	0.0009	"							
Zinc	<0.0032	0.0032	"							
Manganese	<0.0004	0.0004	"							
Cadmium	<0.00050	0.00050	"							
Beryllium	<0.0005	0.0005	"							
Selenium	<0.0038	0.0038	"							
Arsenic	<0.0029	0.0029	"							
Antimony	<0.0018	0.0018	"							

Envirodyne Laboratories, Inc.

Monica Smith

Monica Smith, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Envirodyne Laboratories, Inc
 11011 Brooklet Dr., # 230
 Houston, TX 77099
 281.568.7880 Phone
 www.envirodyne.com

Client: Victoria, City of
Project: Victoria, City of - Surface and Raw Water Testing
Work Order: 17B0398

Reported:
 22-Feb-17 09:25

Total Metals by ICP - Quality Control
Envirodyne Laboratories, Inc.

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

Batch B7B1263 - Metals - EPA 200.2

LCS (B7B1263-BS1)

Prepared: 07-Feb-17 Analyzed: 09-Feb-17

Zinc	274		ug/L	250		110	85-115			
Arsenic	249		"	250		99.4	85-115			
Beryllium	247		"	250		98.6	85-115			
Barium	254		"	250		102	85-115			
Copper	268		"	250		107	85-115			
Cadmium	250		"	250		99.4	85-115			
Nickel	256		"	250		102	85-115			
Thallium	244		"	250		97.6	85-115			
Iron	259		"	250		104	85-115			
Selenium	238		"	250		95.0	85-115			
Manganese	255		"	250		102	85-115			
Chromium	258		"	250		103	85-115			
Lead	250		"	250		101	85-115			
Antimony	258		"	250		103	85-115			

Matrix Spike (B7B1263-MS1)

Source: 17B0984-02

Prepared: 07-Feb-17 Analyzed: 09-Feb-17

Nickel	0.484	0.0005	mg/L	0.500	0.00463	95.9	70-130			
Cadmium	0.48	0.00050	"	0.500	ND	95.0	70-130			
Copper	0.541	0.0006	"	0.500	0.0180	105	70-130			
Beryllium	0.492	0.0005	"	0.500	ND	98.4	70-130			
Iron	0.536	0.0018	"	0.500	0.0488	97.4	70-130			
Chromium	0.494	0.0005	"	0.500	0.00100	98.6	70-130			
Thallium	0.487	0.0020	"	0.500	ND	97.4	70-130			
Selenium	0.466	0.0038	"	0.500	ND	93.2	70-130			
Barium	0.640	0.0005	"	0.500	0.151	97.9	70-130			
Lead	0.48	0.0009	"	0.500	ND	95.6	70-130			
Arsenic	0.502	0.0029	"	0.500	ND	100	70-130			
Zinc	0.550	0.0032	"	0.500	0.0425	101	70-130			
Manganese	0.503	0.0004	"	0.500	0.00505	99.6	70-130			
Antimony	0.520	0.0018	"	0.500	0.00256	103	70-130			

Envirodyne Laboratories, Inc.

Monica Smith

Monica Smith, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Envirodyne Laboratories, Inc
 11011 Brooklet Dr., # 230
 Houston, TX 77099
 281.568.7880 Phone
 www.envirodyne.com

Client: Victoria, City of
Project: Victoria, City of - Surface and Raw Water Testing
Work Order: 17B0398

Reported:
 22-Feb-17 09:25

Total Metals by ICP - Quality Control
Envirodyne Laboratories, Inc.

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

Batch B7B1263 - Metals - EPA 200.2

Matrix Spike Dup (B7B1263-MSD1)		Source: 17B0984-02		Prepared: 07-Feb-17 Analyzed: 09-Feb-17						
Arsenic	0.498	0.0029	mg/L	0.500	ND	99.6	70-130	0.809	20	
Lead	0.48	0.0009	"	0.500	ND	95.2	70-130	0.386	20	
Beryllium	0.492	0.0005	"	0.500	ND	98.4	70-130	0.0395	20	
Cadmium	0.47	0.00050	"	0.500	ND	94.5	70-130	0.562	20	
Manganese	0.499	0.0004	"	0.500	0.00505	98.7	70-130	0.867	20	
Barium	0.636	0.0005	"	0.500	0.151	97.1	70-130	0.590	20	
Iron	0.542	0.0018	"	0.500	0.0488	98.7	70-130	1.14	20	
Chromium	0.490	0.0005	"	0.500	0.00100	97.8	70-130	0.776	20	
Selenium	0.462	0.0038	"	0.500	ND	92.4	70-130	0.826	20	
Copper	0.540	0.0006	"	0.500	0.0180	104	70-130	0.157	20	
Nickel	0.478	0.0005	"	0.500	0.00463	94.7	70-130	1.24	20	
Zinc	0.527	0.0032	"	0.500	0.0425	96.9	70-130	4.23	20	
Thallium	0.488	0.0020	"	0.500	ND	97.5	70-130	0.133	20	
Antimony	0.518	0.0018	"	0.500	0.00256	103	70-130	0.344	20	

Batch B7B1270 - Metals - EPA 200.2

Blank (B7B1270-BLK1)		Prepared: 07-Feb-17 Analyzed: 08-Feb-17								
Silver	<0.0005	0.0005	mg/L							
LCS (B7B1270-BS1)		Prepared: 07-Feb-17 Analyzed: 08-Feb-17								
Silver	48.5		ug/L	50.0		97.0	85-115			
Matrix Spike (B7B1270-MS1)		Source: 17B0984-02		Prepared: 07-Feb-17 Analyzed: 08-Feb-17						
Silver	0.0485	0.0005	mg/L	0.0500	ND	97.1	70-130			
Matrix Spike Dup (B7B1270-MSD1)		Source: 17B0984-02		Prepared: 07-Feb-17 Analyzed: 08-Feb-17						
Silver	0.0484	0.0005	mg/L	0.0500	ND	96.8	70-130	0.309	20	

Envirodyne Laboratories, Inc.

Monica Smith

Monica Smith, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Envirodyne Laboratories, Inc
 11011 Brooklet Dr., # 230
 Houston, TX 77099
 281.568.7880 Phone
 www.envirodyne.com

Client: Victoria, City of
Project: Victoria, City of - Surface and Raw Water Testing
Work Order: 17B0398

Reported:
 22-Feb-17 09:25

Total Metals by ICP - Quality Control
Envirodyne Laboratories, Inc.

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

Batch B7B1271 - Metals - EPA 200.2

Blank (B7B1271-BLK1)

Prepared & Analyzed: 08-Feb-17

Magnesium	<2.00	2.00	mg/L							
Potassium	<2.0	2.0	"							
Calcium	<2.00	2.00	"							
Sodium	<2.0	2.0	"							

LCS (B7B1271-BS1)

Prepared & Analyzed: 08-Feb-17

Potassium	19.6		mg/L	20.0		98.2	85-115			
Magnesium	20.6		"	20.0		103	85-115			
Sodium	19.9		"	20.0		99.5	85-115			
Calcium	20.5		"	20.0		102	85-115			

Matrix Spike (B7B1271-MS1)

Source: 17B0984-02

Prepared & Analyzed: 08-Feb-17

Potassium	49.0	2.0	mg/L	20.0	27.7	106	70-130			
Calcium	64.4	2.00	"	20.0	43.9	103	70-130			
Sodium	52.1	2.0	"	20.0	31.5	103	70-130			
Magnesium	24.9	2.00	"	20.0	4.50	102	70-130			

Matrix Spike Dup (B7B1271-MSD1)

Source: 17B0984-02

Prepared & Analyzed: 08-Feb-17

Sodium	51.9	2.0	mg/L	20.0	31.5	102	70-130	0.329	20	
Potassium	48.5	2.0	"	20.0	27.7	104	70-130	1.02	20	
Magnesium	24.7	2.00	"	20.0	4.50	101	70-130	0.667	20	
Calcium	64.5	2.00	"	20.0	43.9	103	70-130	0.166	20	

Batch B7B1493 - Metals - EPA 200.2

Blank (B7B1493-BLK1)

Prepared: 10-Feb-17 Analyzed: 13-Feb-17

Aluminum	<0.0018	0.0018	mg/L							
----------	---------	--------	------	--	--	--	--	--	--	--

Envirodyne Laboratories, Inc.

Monica Smith

Monica Smith, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Envirodyne Laboratories, Inc
 11011 Brooklet Dr., # 230
 Houston, TX 77099
 281.568.7880 Phone
 www.envirodyne.com

Client: Victoria, City of
Project: Victoria, City of - Surface and Raw Water Testing
Work Order: 17B0398

Reported:
 22-Feb-17 09:25

Total Metals by ICP - Quality Control
Envirodyne Laboratories, Inc.

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

Batch B7B1493 - Metals - EPA 200.2

LCS (B7B1493-BS1)		Prepared: 10-Feb-17 Analyzed: 13-Feb-17								
Aluminum	0.266	0.0018	mg/L				85-115			
Matrix Spike (B7B1493-MS1)		Source: 17B1348-01		Prepared: 10-Feb-17 Analyzed: 13-Feb-17						
Aluminum	0.603	0.0018	mg/L		0.00923		70-130			
Matrix Spike Dup (B7B1493-MSD1)		Source: 17B1348-01		Prepared: 10-Feb-17 Analyzed: 13-Feb-17						
Aluminum	0.594	0.0018	mg/L		0.00923		70-130	1.54	20	

Batch B7B2312 - Metals - EPA 200.2

Blank (B7B2312-BLK1)		Prepared: 16-Feb-17 Analyzed: 17-Feb-17								
Arsenic, Dissolved	<0.00500	0.00500	mg/L							
Manganese, Dissolved	<0.0050	0.0050	"							
Iron, Dissolved	<0.0050	0.0050	"							
LCS (B7B2312-BS1)		Prepared: 16-Feb-17 Analyzed: 17-Feb-17								
Arsenic, Dissolved	0.257	0.00500	mg/L				85-115			
Manganese, Dissolved	0.257	0.0050	"				85-115			
Iron, Dissolved	0.257	0.0050	"				85-115			
Matrix Spike (B7B2312-MS1)		Source: 17B1929-01		Prepared: 16-Feb-17 Analyzed: 17-Feb-17						
Iron, Dissolved	0.588	0.0050	mg/L		0.0820		70-130			
Manganese, Dissolved	0.503	0.0050	"		0.00244		70-130			
Arsenic, Dissolved	0.502	0.00500	"		ND		70-130			
Matrix Spike Dup (B7B2312-MSD1)		Source: 17B1929-01		Prepared: 16-Feb-17 Analyzed: 17-Feb-17						
Manganese, Dissolved	0.503	0.0050	mg/L		0.00244		70-130	0.00	20	
Iron, Dissolved	0.588	0.0050	"		0.0820		70-130	0.00	20	
Arsenic, Dissolved	0.509	0.00500	"		ND		70-130	1.38	20	

Envirodyne Laboratories, Inc.

Monica Smith

Monica Smith, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Envirodyne Laboratories, Inc
11011 Brooklet Dr., # 230
Houston, TX 77099
281.568.7880 Phone
www.envirodyne.com

Client: Victoria, City of
Project: Victoria, City of - Surface and Raw Water Testing
Work Order: 17B0398

Reported:
22-Feb-17 09:25

Notes and Definitions

L Analyzed by third party laboratory
DET Analyte DETECTED
ND Analyte NOT DETECTED at or above the reporting limit
NR Not Reported
dry Sample results reported on a dry weight basis
RPD Relative Percent Difference
CLT Client Representative

Envirodyne Laboratories, Inc.

Monica Smith, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



17B0398

Envirodyne Laboratories, Inc.
11011 Brooklet, Ste. 230
Houston, Texas 77099-3543
Phone (281)568-7880 - Fax (281)568-8004

E A164983

Page 1 Of 1

TCEQ Certification # T104704265

Name: City of Victoria
Address: 700 Main Center
City: Victoria, TX 77901
Contact: Mr. Lynn Short
Phone: 361-485-3381 Fax: 361-485-3385

Analysis Request and Chain of Custody Record

Project No. Client/Project Finished Water

Table with columns: Lab ID No., Field Sample No./ Identification, Date & Time, Grab, Comp, Sample Container (Size/Mat'), Sample Type (Liquid, Sludge, etc.), Preservative, ANALYSIS REQUESTED, pH, D.O., Temp., Analysis Time. Rows include samples for H2S, Dissolved (As, Fe & Mn), Ca, Mg, Non-Carbonate Hardness, Bromate, Bromide, Acidity, OPO4, Gross Alpha, Gross Beta, T.U., Ra, PCBs, Cyanide, Ethylene dibromide (EDB), Lindane, and T. Phosphorus.

Samplers (Signature) Relinquished by: Date: 2/1/17 Time: 12:55 Received by: Date: Seal Intact?
Affiliation Relinquished by: Date: Time: Received by: Date: Seal Intact?
Relinquished by: LSO Date: 2.2.17 Time: 9:30 Received by Lab: Date: 2.2.17 Time: 0930 Seal Intact?

Remarks: NaOH 1701029, H2SO4 1608337, HNO3 1609547
FLOW: Meter Reading: Cl2 Residual: Mn Correction: Cl2 Corrected
Arrival Temp. 21/4.8
Data Results To: 1.
Site Representative: Date: Time: Laboratory No.



1780398

Envirodyne Laboratories, Inc.
11011 Brooklet, Ste. 230
Houston, Texas 77099-3543
Phone (281)568-7880 - Fax (281)568-8004

E A164985

Page 2 Of 2

TCEQ Certification # T104704265

Name: City of Victoria
Address: 700 Main Center
City: Victoria, TX 77901
Contact: Mr. Lynn Short
Phone: 361-485-3381 Fax: 361-485-3385

Analysis Request and Chain of Custody Record

Project No. Client/Project **WELL #21**

Lab ID No.	Field Sample No./ Identification	Date & Time	Grab	Comp	Sample Container (Size/Mat'l)	Sample Type (Liquid, Sludge, etc.)	Preservative	ANALYSIS REQUESTED	pH	D.O.	Temp.	Analysis Time
	Well #21	2/1/17 1035	✓		1 Lt/P <i>cool-30-17 1gal/cubic</i>	Liquid	Ice	Alk, (HCO3 & CO3) NO3N, NO2N, Color, ORP ✓				
	I							Cl, OPO4, SO4, Bromate, Bromide, TSS, F				
								TDS, Turb. Acidity, S2, Diss. Fe, As & Mn				
			2/1/17 1040	✓		1 Lt/P	Liquid	Ice, H2SO4	NH3N, TPO4 ✓			
			2/1/17 1045	✓		1 Lt/Amb	Liquid	Ice, H2SO4	TOC ✓			
			2/1/17 1055	✓		40ml/Amb VOA	Liquid	Ice, NH4Cl	HAA5 ✓✓✓			

Samplers: (Signature) <i>[Signature]</i>	Relinquished by: (Signature) <i>[Signature]</i>	Date: 2/1/17 Time: 1255	Received by: (Signature) <i>[Signature]</i>	Date: _____ Time: _____	Seal Intact?
Affiliation	Relinquished by: (Signature) <i>[Signature]</i>	Date: _____ Time: _____	Received by: (Signature) <i>[Signature]</i>	Date: _____ Time: _____	Seal Intact?
Remarks: NaOH 1701029 H2SO4 1608337 HNO3 1609547	Relinquished by: (Signature) <i>LSO</i>	Date: 2.2.17 Time: 0930	Received by Lab: (Signature) <i>[Signature]</i>	Date: 2.2.17 Time: 0950	Seal Intact?
FLOW: _____ Meter Reading: _____ Cl ₂ Residual: _____ Mn Correction: _____ Cl ₂ Corrected: _____	Arrival Temp. <i>2.1/1.5 R#3</i>	Data Results To: 1.	Site Representative:	Date: _____ Time: _____	Laboratory No.

12.8 Appendix H. TWDB review of draft report 06/03/2019

Texas Water Development Board

P.O. Box 13231, 1700 N. Congress Ave.
Austin, TX 78711-3231, www.twdb.texas.gov
Phone (512) 463-7847, Fax (512) 475-2053

Mr. Tim Andruss
General Manager
Victoria County Groundwater Conservation District
2805 N. Navarro St., Suite 210
Victoria, TX 77901

Received
6-17-19 Dy
in the office of



RE: Research Contract with the Victoria County Groundwater Conservation District, Contract No. 1600011958, Comments on Draft Report Entitled "Victoria Aquifer Storage and Recovery Demonstration"

Dear Mr. Andruss:

Staff members of the Texas Water Development Board (TWDB) have completed a review of the draft report prepared under the above-referenced contract. ATTACHMENT 1 provides the comments resulting from this review. As stated in the TWDB contract, Victoria County Groundwater Conservation District will consider revising the final report in response to comments from the Executive Administrator and other reviewers. In addition, Victoria County Groundwater Conservation District will include a copy of the Executive Administrator's draft report comments in the Final Report.

Please note: The TWDB logo should not be used in the Final Report.

The TWDB's Contract Administration staff looks forward to receiving one (1) electronic copy of the entire Final Report in Portable Document Format (PDF) and five (5) bound double-sided copies. **Please further note, that in compliance with Texas Administrative Code Chapters 206 and 213 (related to Accessibility and Usability of State Web Sites), the digital copy of the final report must comply with the requirements and standards specified in statute. For more information, visit <http://www.sos.state.tx.us/tac/index.shtml>.** If you have any questions on accessibility, please contact David Carter with the Contract Administration Division at (512) 936-6079 or david.carter@twdb.texas.gov.

Victoria County Groundwater Conservation District shall also submit one (1) electronic copy of any computer programs or models, and, if applicable, an operations manual developed under the terms of this Contract.

If you have any questions or need any further information, please feel free to contact Ms. Erika Mancha of our Conservation & Innovative Water Technologies staff at 512-463-7932 or via email at erika.mancha@twdb.texas.gov.

Sincerely,

John T. Dupnik, P.G.
Deputy Executive Administrator
Water Science and Conservation

Date: 6-3-19

Enclosures

c w/o att.: Erika Mancha, Conservation & Innovative Water Technologies

Our Mission	:	Board Members
To provide leadership, information, education, and support for planning, financial assistance, and outreach for the conservation and responsible development of water for Texas	:	Peter M. Lake, Chairman Kathleen Jackson, Board Member Brooke T. Paup, Board Member
	:	Jeff Walker, Executive Administrator

ATTACHMENT 1
Victoria County Groundwater Conservation District
“Victoria Aquifer Storage and Recovery Demonstration Project”
Contract No. 1600011958
TWDB Comments to Draft Report

General Comments

- Professional Geologists and Engineers **must** affix their seals and sign the final report on page ii.
- Professional Engineer **must** affix their seal on the preliminary design report in Appendix B.
- Please add an executive summary to the final report.

Specific Comments

- Page 3. Section 2.1. Replace “Rider 25” with “Demonstration Projects for Alternative Water Supplies” in the title.
- Page 3. Paragraph 3: A statement is made that the aquifer properties of the Upper Goliad formation is based on a number of datasets (15 aquifer tests, 14 geophysical well logs, and water quality data). In the past was this information provided to the TWDB? If so, please specify the document. If not, please consider providing the data or report to the TWDB.
- Page 10. Section 3. Replace “Rider 25 to HB1” with “funding groundwater conservation districts for ASR demonstration projects (House Bill 1, General Appropriations Act, 2015 Legislature, Regular Session, page VI-60, Rider 25)”.
- Page 22. Section 8, first paragraph, last sentence. Please remove the double period.
- Page 31. Section 9.1.1, first paragraph, first sentence. Please remove “the Rider 25”.
- Page 32. Section 9.1.2, fourth paragraph, last sentence. Replace “Rider 25 to HB1” with “funding groundwater conservation districts for ASR demonstration projects (House Bill 1, General Appropriations Act, 2015 Legislature, Regular Session, page VI-60, Rider 25)”.
- Page 34. Section 9.21, first paragraph, last sentence. Please remove the double period.

- Appendix A: May need to remove or redact “FD-1 ASR Flow Diagram” and “M-1 Well head Piping – Plan & Section” in the final report due to security risks.
- Appendix G: Please provide the Well 21 water quality lab report for samples taken in 2017. We could not locate them in the appendix.
- Appendix D. Please remove the equipment manuals from final report and instead provide a pdf version as a deliverable.