Technical Memorandum
Groundwater Quality Sampling, October 2015 Event

Date: April 14, 2016

By: Amy Blain, P.E., City of Longview

Subject: Groundwater Quality Sampling Results, October 2015 Monitoring Event

This memorandum summarizes the results of the groundwater monitoring and sampling event conducted in October 2015 for the Mint Farm Regional Water Treatment Plant well field (Mint Farm). Groundwater continues to be sampled semi-annually to confirm high water quality and monitor the potential for contamination. Groundwater samples are collected from deep sentinel wells DW-1, DW-2, DW-5, DW-6, DW-7, and DW-9 during each semi-annual event. These wells were selected based on their locations relative to nearby industrial sites and the ability to detect potential contaminant migration from those industries toward the wellfield.

ACTIVITIES CONDUCTED DURING THE OCTOBER 2015 MONITORING EVENT

Activities completed during this groundwater monitoring event were conducted in accordance with *Technical Memorandum 2, Water Quality Sampling Protocol (Kennedy/Jenks, 28 April 2009)* and *Technical Memorandum, Monitoring Well Analytes and Department of Health Test Panels (Kennedy/Jenks, 1 March 2013)*. Activities included:

- Collecting groundwater samples from sentinel wells DW-1, DW-2, DW-5, DW-6, DW-7, and DW-9 on October 19 and 20, 2015. Groundwater samples were collected following well purging to stabilize pH, temperature, conductivity and dissolved oxygen levels.

- Submitting groundwater samples to ALS Environmental (ALS), an EPA-certified laboratory, to analyze for constituents identified based on current state and federal drinking water regulations, unregulated emerging contaminants of concern, and contaminants specific to historical and industrial activity in or near the area.

- Downloading water level data from the pressure transducers in the six deep sentinel wells identified herein and comparing the water elevation of the Mint Farm Aquifer at DMW-1 before and after start-up of the Mint Farm Regional Water Treatment Plant to evaluate the potential for declining groundwater levels or diminishing aquifer capacity.

- Reviewing the analytical data and preparation of this summary memorandum.

DATA QUALITY

Based on review of the laboratory reports, it is my opinion the analytical data received are of acceptable quality for their intended use. Laboratory case narratives prepared by ALS are included as part of the lab reports in Attachment A.

RESULTS OF GROUNDWATER QUALITY SAMPLING

Certified laboratory reports for groundwater samples collected during this sampling event are attached. The analytical results were reviewed for conformance with the screening level established for each constituent. Screening levels for regulated contaminants are equivalent to the Maximum Contaminent Level (MCL) and Secondary Maximum Contaminant Level (SMCL) established by the Washington State Department of Health (DOH) and EPA's National Primary Drinking Water Regulations. Screening levels for unregulated contaminants are established by the methods described in the March 2010 Mint Farm Regional Water Treatment Plant Preliminary Design Report and referred to in the Wellhead Protection Program described in Chapter 5 of the City's 2012 Comprehensive Water System Plan.

Iron, manganese and color were detected in the groundwater samples at levels exceeding their respective screening level established by DOH for secondary water quality standards. Although not regulated as a health concern, these analystes are regulated in drinking water due to objectionable aesthetic issues. All three analystes are removed during the water treatment process to levels below their respective SMCL's. Arsenic was detected in DW-2 at 0.0103 milligrams per liter (mg/L), slightly above the screening level and primary MCL of 0.01 mg/L. Arsenic is also consistently removed during the water treatment process to 0.004 mg/L or less.

No other analytes were detected in groundwater samples at concentrations above their respective screening levels.

Several general water quality parameters were observed to have changed in some of the wells, most notably in DW-6. Using data collected since May 2010, trends were generated for DW-6 to assess changes in ammonia, chloride, sulfate, chloride/sulfate ratio, conductivity, pH, total dissolved solids (TDS), hardness, turbidity, iron and manganese. TDS, hardness, conductivity and manganese have increased by up to 100% in DW-6; Iron and ammonia have increased approximately 50% and chloride by 200%. Subtle fluctuation was observed in sulfate but levels are low and generally stable. Increased levels of iron, manganese and chloride appear to coincide with start-up of the Mint Farm RWTP in January 2013 but appear to have stablized and areconsistent with production well raw water quality. Increased TDS and conductivity correlate with increased levels of dissolved inorganics and suggest a need for well re-development; increasing turbidity confirms the same.

The deep monitoring wells were constructed in August 2009. The transducers were serviced in and re-deployed in April 2013 but none of the wells have been re-developed or otherwise maintenanced since initial construction. As of the date of this memorandum, the recommended re-development schedule for the monitoring wells used for well head protection monitoring is five years. Record keeping should document the well ID, installation date, re-development date(s), static water levels before and after re-development, volume of water removed, type and capacity of pump used and a description of the well development technique(s).

EPA Standard Operating Procedure 2044 for Monitoring Well Development recommends overpumping in lieu of surging or jetting to avoid displacing the filter pack. Overpumping should be done at a rate rapid enough to draw the water level in the well as low as possible and then allowing the well to recharge to the original level, and repeating the process until sediment-free water is produced. For this short lift application, an electric submersible self-venting Whaler pump can be used. Overpumping should continue until the specific conductivity is stable and turbidity is less than 5 nephelmoetric turbidity units (NTU).

RESULTS OF GROUNDWATER ELEVATION MONITORING

Water level in both the shallow and deep aquifers is continuously monitored using pressure tranducers in each of the monitoring wells. Transducers in the six deep sentinel wells identified herein were downloaded during this sampling event as a matter of record. Water level data for DMW-1 was compiled and evaluated for any post-startup changes which might preindicate a diminishing aquifer capacity or limited resource.

In November 2009, no discernable response to pumping was exhibited in any of the sentinel wells except DMW-9 (located approximately 55-feet from PW-1) during the 36-day continuous pump test analysis performed at PW-1, the initial production test well. At full wellfield production, maximum drawdown in PW-1 was anticipated to range from 2.5 to 4.0 feet. Prior to start-up of the Mint Farm RWTP, the approximate groundwater level in the deep aquifer at DMW-1 (located along Ditch 5 near Washington Way and SR-411) fluctuated seasonally between elevation 4.0' (summer low) and elevation 12.0' (winter high), approximately two to ten feet below ground surface (bgs).

Since start-up, the average low groundwater level at DMW-1 has remained uniform at elevation 4.0' but the average high groundwater level was slightly lower at approximately elevation 10.0'. Groundwater elevation trends suggests a rising groundwater table (+0.003 ft/day) between May 2010 and November 2012 (pre-startup) and a falling groundwater table (-0.0008 ft/day) between January 2013 and October 2015 (post-startup). However, these trends are narrow in scope and neglect to account for other principle controlling factors including weather patterns, climate changes, the Columbia River and tidal influences. Additionally, no correction has been made to calculate adjusted groundwater elevations based on daily mean tide levels.

Groundwater levels will continue to be monitored and the transducers regularly downloaded for periodic re-evaluation of potential impacts.

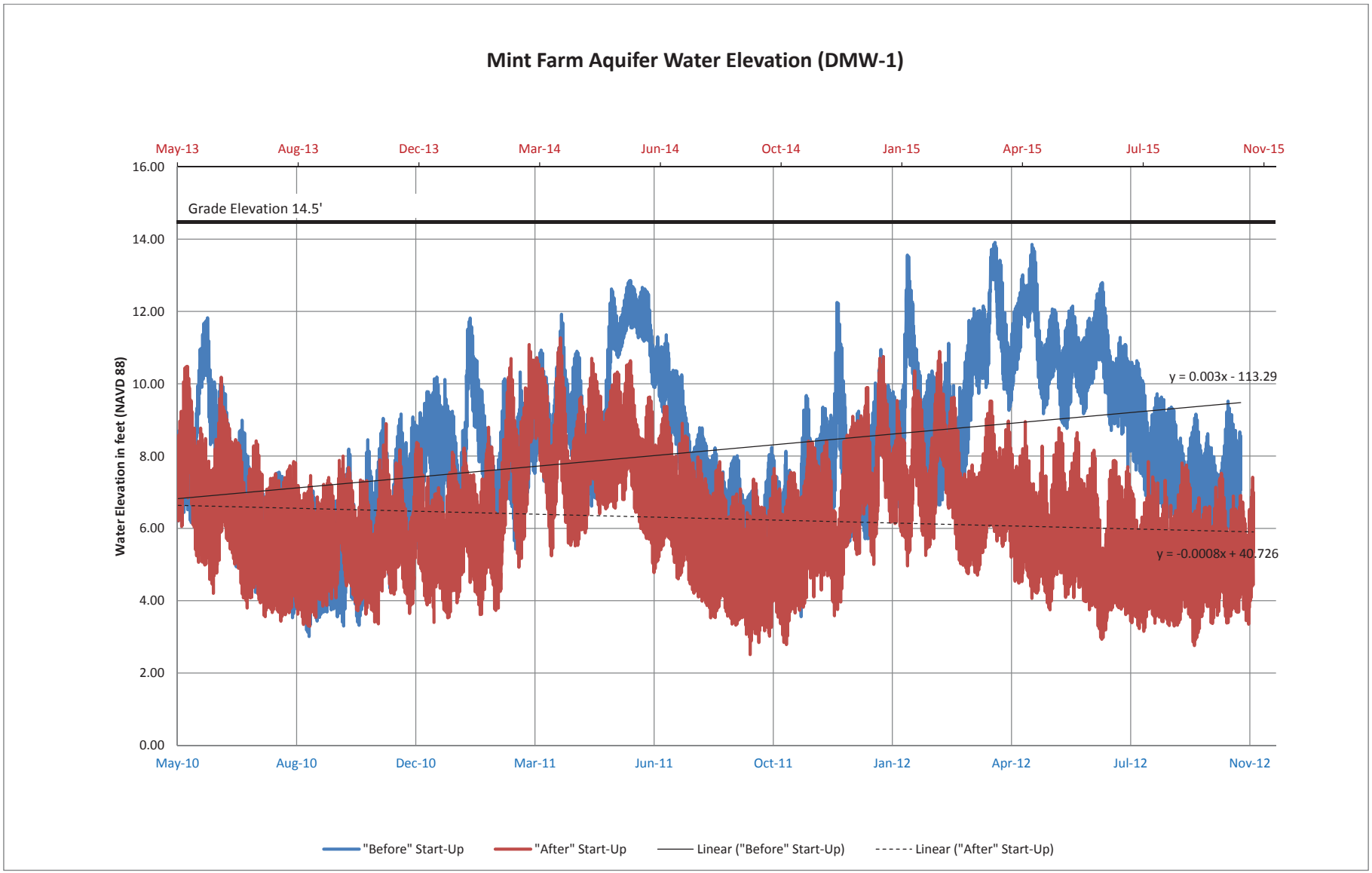
FUTURE SAMPLING ACTIVITIES

Groundwater sampling will continue on a semi-annual basis to confirm consistent raw water quality. Each spring, sentinel wells named herein will be tested for the standard analyte panel each spring. Each fall, sentinel wells named herein and all four production wells will be tested for the extended analyte panel.

REFERENCES

Kennedy/Jenks Consultants, 2009. *Technical Memorandum 2, Water Quality Sampling Protocol.* Kennedy/Jenks Consultants, 28 April 2009.

Kennedy/Jenks Consultants, 2010. *Preliminary Design Report (PDR Part 2) for the City of Longview (City) Mint Farm Regional Water Treatment Plant and Well Field, Part 2A: Hydrogeologic Characterization of the Mint Farm Area.* Kennedy/Jenks Consultants, March 2010.


Mint Farm Aquifer Water Elevation (DMW-1)
May-13
Aug-13
Dec-13
Mar-14
Jun-14
Oct-14
Jan-15
Apr-15
Jul-15
Nov-15
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Water Elevation in feet (NAVD 88)
Grade Elevation 14.5'
y = 0.003x - 113.29
y = -0.0008x + 40.726
May-10
Aug-10
Dec-10
Mar-11
Jun-11
Oct-11
Jan-12
Apr-12
Jul-12
Nov-12
"Before" Start-Up
"After" Start-Up
Linear ("Before" Start-Up)
Linear ("After" Start-Up)

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U. S. EPA ENVIRONMENTAL RESPONSE TEAM

STANDARD OPERATING PROCEDURES

MONITOR WELL DEVELOPMENT

CONTENTS

1.0 SCOPE AND APPLICATION*

2.0 METHOD SUMMARY*

3.0 SAMPLE PRESERVATION, CONTAINERS, HANDLING, AND STORAGE

4.0 INTERFERENCES AND POTENTIAL PROBLEMS*

5.0 EQUIPMENT/APPARATUS*

6.0 REAGENTS

7.0 PROCEDURES

- 7.1 Preparation
- 7.2 Operation*
- 7.3 Post-Operation

8.0 CALCULATIONS*

9.0 QUALITY ASSURANCE/QUALITY CONTROL*

10.0 DATA VALIDATION

11.0 HEALTH AND SAFETY

12.0 REFERENCES*

13.0 APPENDICES*

*These sections affected by Revision 0.1.

SUPERCEDES: SOP #2044; Revision 0.0; 2/18/00; U.S. EPA Contract 68-C99-223.

1.0 SCOPE AND APPLICATION

The purpose of this standard operating procedure (SOP) is to provide an overview of monitor well development practices. The purpose of monitor well development is to ensure removal of fine grained sediments (fines) from the vicinity of the well screen. This allows the water to flow freely from the formation into the well, and also reduces the turbidity of the water during sampling. The most common well development methods are: surging, jetting, overpumping, and bailing.

Surging involves raising and lowering a surge block or surge plunger inside the well. The resulting surging motion forces water into the formation and loosens sediment, pulled from the formation into the well. Occasionally, sediments must be removed from the well with a sand bailer to prevent sand locking of the surge block. This method may cause the sand pack around the screen to be displaced to a degree that damages its value as a filtering medium. Channels or voids may form near the screen if the filter pack sloughs away during surging (Keel and Boating, 1987).

Surging with compressed air is done by injecting a sudden charge of compressed air into the well with an air line so that water is forced through the well screen. The air is then turned off so that the water column falls back into the well and the process is repeated. Periodically, the air line is pulled up into a pipe string (educator) and water is pumped from the well using air as the lifting medium (air-lift pumping). The process is repeated until the well is sediment free. Method variations include leaving the air line in the pipe string at all times or using the well casing as the educator pipe.

Jetting involves lowering a small diameter pipe into the well and injecting a high velocity horizontal stream of water or air through the pipe into the screen openings. This method is especially effective at breaking down filter cakes developed during mud rotary drilling. Simultaneous air-lift pumping is usually used to remove fines.

Overpumping involves pumping at a rate rapid enough to draw the water level in the well as low as possible, and then allowing the well to recharge to the original level. This process is repeated until sediment-free water is produced.

Bailing includes the use of a simple manually operated check-valve bailer to remove water from the well. The bailing method, like other methods, should be repeated until sediment free water is produced. Bailing may be the method of choice in a shallow well or well that recharges slowly.

These are standard (i.e., typically applicable) operating procedures which may be varied or changed as required, dependent on site conditions, equipment limitations or limitations imposed by the procedure. In all instances, the ultimate procedures employed should be documented and associated with a final report.

Mention of trade names or commercial products does not constitute United States Environmental Protection

Agency (U.S. EPA) endorsement or recommendation for use.

2.0 METHOD SUMMARY

After installation, development of a well should occur as soon as it is practical. It should not occur any sooner than 48 hours after grouting is completed, especially if a vigorous well development method (i.e. surging) is being used. If a less vigorous method (i.e bailing) is used, it may be initiated shortly after installation. The method used for development should not interfere with the setting of the well seal.

Several activities must take place prior to well development. First, open the monitor well, take initial measurements (i.e., head space air monitoring readings, water level, total depth of the well) and record results in the site logbook. Develop the well by the appropriate method to accommodate site conditions and project objectives. Continue until the development water is clear and free of sediments, or until parameters such as pH, temperature, and specific conductivity stabilize. Containerize all purge water from wells with known or suspected contamination. Record final measurements in the site logbook. Decontaminate equipment as appropriate prior to use in the next well.

3.0 SAMPLE PRESERVATION, CONTAINERS, HANDLING, AND STORAGE

This section is not applicable to this SOP.

4.0 INTERFERENCES AND POTENTIAL PROBLEMS

The following problems may be associated with well development:

1. Overpumping is not as vigorous as surging and jetting, and is probably the most desirable method for monitor well development. The possibility of disturbing the filter pack is greatest with surging and jetting well development methods.

2. The introduction of external water or air by jetting may alter the hydro chemistry of the aquifer.

3. Surging with air may produce “air locking” in some formations, preventing water from flowing into the well.

4. The use of surge blocks in formations containing clay may cause plugging of the screen.

5. Small (2-inch nominal diameter) submersible pumps that will fit in 2-inch diameter well casing are especially susceptible to clogging if used in well development applications.

6. Chemicals/reagents used during the decontamination of drilling equipment may complicate well development.

5.0 EQUIPMENT/APPARATUS

The type of equipment used for well development is dependent on the diameter of the well and the development method. For example, the diameter of most submersible pumps is too large to fit into a two-inch inner diameter (I.D.) well, and other development methods should be used. Obtaining the highest possible yield is not usually an objective in developing monitor wells and vigorous development is not always necessary. Many monitor wells are constructed in fine-grained formations that would not normally be considered aquifers. Specifications for the drilling contract should include the necessary well development equipment (air compressors, pumps, air lines, surge blocks, generators).

6.0 REAGENTS

The use of chemicals in developing wells that will be used to monitor groundwater quality should be avoided if possible; however, polyphosphates (a dispersing agent), acids, or disinfectants are often used in general well development. Polyphosphates should not be used in thinly bedded sequences of sands and clays. The use of decontamination solutions may also be necessary. If decontamination of equipment is required at a well, refer to Environmental Response Team/Response Engineering and Analytical Contract (ERT/REAC) SOP #2006, *Sampling Equipment Decontamination* and the site specific work plan.

7.0 PROCEDURES

7.1 Preparation

1. Coordinate site access and obtain keys to well locks.

2. Obtain information on each well to be developed (i.e., drilling method, well diameter, well depth, screened interval, anticipated contaminants).

3. Obtain a water level meter, a depth sounder, air monitoring instruments, materials for decontamination, and water quality instrumentation capable of measuring, at a minimum, pH, specific conductivity, temperature, and turbidity. Dissolved oxygen (DO) and salinity are also useful parameters.

4. Assemble containers for temporary storage of water produced during well development. Containers must be structurally sound, compatible with anticipated contaminants, and easy to manage in the field. The use of truck-mounted or roll-off tanks may be necessary in some cases; alternately, a portable water treatment unit (i.e., activated carbon) may be used to decontaminate the purge water.

7.2 Operation

Development should be performed as soon as it is practical after the well is installed, but no sooner than 48 hours after well completion.

1. Assemble necessary equipment on a plastic sheet surrounding the well.

2. Record pertinent information in the site or personal logbook (personnel, time, location ID, etc.).

3. Open monitor well, take air monitor reading at the top of casing and in the breathing zone as appropriate.

4. Measure depth to water and the total depth of the monitor well. Calculate the water column volume of the well (Equation 1, Section 8.0).

5. Begin development and measure the initial pH, temperature, turbidity, and specific conductivity of the water and record in the site logbook. Note the initial color, clarity, and odor of the water.

6. Continue to develop the well and periodically measure the water quality parameters indicated in step 5 (above). Depending on project objectives and available time, development should proceed until these water quality parameters stabilize, or until the water has a turbidity of less than 50 nephelometric turbidity units (NTUs).

7. All water produced by development of contaminated or suspected contaminated wells must be containerized or treated. Each container must be clearly labeled with the location ID, date collected, and sampling contractor. Determination of the appropriate disposal method will be based on the analytical results from each well.

8. No water shall be added to the well to assist development without prior approval by the appropriate U.S. EPA ERT Work Assignment Manager (WAM) and/or appropriate state personnel. In some cases , small amounts of potable water may be added to help develop a poor yielding well. It is essential that at least five times the amount of water injected must be recovered from the well in order to assure that all injected water is removed from the formation.

9. Note the final water quality parameters in the site or personal logbook along with the following data:

   - Well designation (location ID)
   - Date(s) of well installation
   - Date(s) and time of well development

- Static water level before and after development
- Quantity of water removed, and initial and completion time
- Type and capacity of pump or bailer used
- Description of well development techniques

7.3 Post-Operation

1. Decontaminate all equipment;

2. Secure holding tanks or containers of development water;

3. Review analytical results and determine the appropriate water disposal method. Actual disposal of the purge water is generally carried out by the On-Scene Coordinator (OSC).

8.0 CALCULATIONS

To calculate the volume of water in the well, the following equation is used:

Well Volume (V) = • r^2 h (cf) [Equation 1]

where:

•	=	pi (3.14)
r	=	radius of monitoring well in feet (ft)
h	=	height of the water column in ft. [This may be determined by subtracting the depth to water from the total depth of the well as measured from the same reference point.]
cf	=	conversion factor in gallons per cubic foot (gal/ft^3) = 7.48 gal/ft^3. [In this equation, 7.48 gal/ft^3 is the necessary conversion factor.]

Monitor well diameters are typically 2-, 3-, 4-, or 6-inches. A number of standard conversion factors can be used to simplify the above equation using the diameter of the monitor well. The volume, in gallons per linear foot, for various standard monitor well diameters can be calculated as follows:
where:

V (gal/ft) = • r^2 (cf) [Equation 2]

•	=	pi
r	=	radius of monitoring well (feet)
cf	=	conversion factor (7.48 gal/ft^3)

For example, a two inch diameter well, the volume per linear foot can be calculated as follows:

V (gal/ft) = • r^2 (cf) [Equation 2]
= 3.14 $(1/12\ ft)^2$ 7.48 gal/ft^3
= 0.1631 gal/ft

NOTE: The diameter must be converted to the radius in feet as follows:

$\frac{\text{Well Diameter (inches)}}{12}$ x 0.5 = Well Radius (feet) [Equation 3]

The volume in gallons/feet for the common size monitor wells are as follows:

Well diameter (inches)	2	3	4	6
Volume (gal/ft)	0.1631	0.3670	0.6524	1.4680

If you utilize the volumes for the common size wells above, Equation 1 is modified as follows:
where:

Well volume = (h)(f) [Equation 4]

h = height of water column (feet)
f = the volume in gal/ft calculated from Equation 2

9.0 QUALITY ASSURANCE/QUALITY CONTROL

There are no specific quality assurance activities, which apply to the implementation of these procedures. However, the following general quality assurance/quality control (QA/QC) procedures apply:

1. All data must be documented in site and/or personal logbooks.

2. All instrumentation must be operated in accordance with operating instructions as supplied by the manufacturer, unless otherwise specified in the work plan. Equipment checkout and calibration activities must occur prior to sampling/operation and must be documented.

10.0 DATA VALIDATION

This section is not applicable to this SOP.

11.0 HEALTH AND SAFETY

When working with potentially hazardous materials, follow U.S. EPA, Occupational Safety and Health (OSHA), and corporate health and safety practices.

12.0 REFERENCES

Driscoll, F. G. 1986. "Development of Water Wells." In: *Groundwater and Wells.* Second Edition. Chapter 15. Johnson Filtration Division, St. Paul, Minnesota. p. 497-533.

Freeze, Allan R. and John A. Cherry. 1979. *Groundwater*. Englewood Cliffs, NJ: Prentice-Hall, Inc.

Keel, J.F. and Kwasi Boating. 1987. "Monitoring Well Installation, Purging, and Sampling Techniques - Part 1: Conceptualizations".*Groundwater,* 25(3):300-313.

Keel, J.F. and Kwasi Boating. 1987. "Monitoring Well Installation, Purging, and Sampling Techniques - Part 2: Case Histories". *Groundwater*, 25(4):427-439.

13.0 APPENDICES

This section is not applicable to this SOP.

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November 30, 2015

Analytical Report for Service Request No: K1511794

Jeff Coleman
Longview, City of
W/S Operation Center
P.O. Box 128
Longview, WA 98632

RE: Sentinel Well

Dear Jeff,

Enclosed are the results of the sample(s) submitted to our laboratory October 19, 2015
For your reference, these analyses have been assigned our service request number **K1511794.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3275. You may also contact me via email at Chris.Leaf@ALSGlobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

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Project Manager

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Table of Contents

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Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L14-51
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	Not available	-
Idaho DHW	http://www.healthandwelfare.idaho.gov/Health/Labs/CertificationDrinkingWaterLabs/tabid/1833/Default.aspx	-
ISO 17025	http://www.pjlabs.com/	L14-50
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	03016
Maine DHS	Not available	WA01276
Michigan DEQ	http://www.michigan.gov/deq/0,1607,7-135-3307_4131_4156---,00.html	9949
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	[illegible]	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636- 1068
www.alsglobal.com

ALS ENVIRONMENTAL

Client:	Longview, City of	**Service Request No.:**	K1511794
Project:	Sentinel Well	**Date Received:**	10/19/15
Sample Matrix:	Drinking Water		

Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier II data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Surrogate recoveries have been reported for all applicable organic analyses. Additional quality control analyses reported herein include: Laboratory Duplicate (DUP), Matrix Spike (MS), Matrix/Duplicate Matrix Spike (MS/DMS), Laboratory Control Sample (LCS), and Laboratory/Duplicate Laboratory Control Sample (LCS/DLCS).

Sample Receipt

One drinking water sample was received for analysis at ALS Environmental on 10/19/15. The sample was received in good condition and consistent with the accompanying chain of custody form. The sample was stored in a refrigerator at 4ºC upon receipt at the laboratory.

General Chemistry Parameters

Total Cyanide by EPA Method 335.4:
The matrix spike recoveries for sample Batch QC were outside control criteria because of suspected matrix interference. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. No further corrective action was taken.

No other anomalies associated with the analysis of this sample were observed.

Total Metals

No anomalies associated with the analysis of this sample were observed.

EDB and DBCP by EPA Method 504.1

No anomalies associated with the analysis of this sample were observed.

Pesticides and Polychlorinated Biphenyls by EPA Method 508.1

Calibration Verification Exceptions:
The analysis of Organochlorine Pesticides and PCBs in Drinking Water by EPA 508.1 requires the use of dual column confirmation. When the Continuing Calibration Verification (CCV) criterion is met for both columns, the lower of the two sample results is generally reported. The primary evaluation criteria were not met on the confirmation column for Endrin. The results were reported from the column with an acceptable CCV. The data quality was not affected. No further corrective action was necessary.

Approved by_____

Matrix Spike Recovery Exceptions:
The upper control criterion was exceeded for the following several analytes in Matrix Spike (MS) KWG1510525-1 and Matrix Spike Duplicate (MSD) KWG1510525-2. The analytes in question were not detected in the associated field samples. The error associated with elevated recovery indicated a high bias. The sample data was not significantly affected. No further corrective action was appropriate.

Lab Control Sample Exceptions:
The upper control criterion was exceeded for several analytes in Laboratory Control Sample (LCS) KWG1510525-3. The analytes in question were not detected in the associated field samples. The error associated with elevated recovery indicated a high bias. The sample data was not significantly affected. No further corrective action was appropriate.

No other anomalies associated with the analysis of this sample were observed.

Chlorinated Acides by EPA Method 515.4

Matrix Spike Recovery Exceptions:
The matrix spike recovery and duplicate matrix spike recovery of Chloramben for sample DW-1 was outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. The matrix spike outlier suggested a potential high bias in this matrix. No further corrective action was appropriate.

No other anomalies associated with the analysis of this sample were observed.

Volatile Organic Compounds by EPA Method 524.2

No anomalies associated with the analysis of this sample were observed.

Semivolatile Organic Compounds by EPA Method 525.2

Surrogate Exceptions:
The control criteria were exceeded for Perylene-d12 in sample DW-1 and Batch QC due to suspected matrix interference. The sample contained particulate matter that collected on the extraction disk during sample elution. Historical results have shown that particulate matter can cause low recoveries for this surrogate. No further corrective action was appropriate.

The upper control criterion was exceeded for 1,3-Dimethyl-2-nitrobenzene in sample Batch QC. No target analytes were detected in the sample. The error associated with an elevated recovery equated to a high bias. The quality of the sample data was not significantly affected. No further corrective action was appropriate.

Lab Control Sample Exceptions:
The upper control criterion was exceeded for Fluorene in Laboratory Control Sample (LCS) KWG1510524-3. The analyte in question was not detected in the associated field samples. The error associated with elevated recovery indicated a high bias. The sample data was not significantly affected. No further corrective action was appropriate.

Matrix Spike Recovery Exceptions:
The matrix spike recovery of Bis(2-ethylhexyl) Phthalate for sample Batch QC was outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. The matrix spike outlier suggested a potential high bias in this matrix. No further corrective action was appropriate.

No other anomalies associated with the analysis of this sample were observed.

Approved by_____

Diquat by High Performance Liquid Chromatography

No anomalies associated with the analysis of this sample were observed.

Sulfur

This analysis was performed at ALS Environmental, Simi Valley, CA. The data for this analysis is included in the corresponding section of this report.

Carbamates by EPA Method 531.1

This analysis was performed at ALS Environmental, Middletown, PA. The data for this analysis is included in the corresponding section of this report.

Approved by_____

Chain of Custody

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636- 1068
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ALS Environmental

58082

CHAIN OF CUSTODY

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001, 005

SR# [illegible]

COC Set____of____

COC#_____

1317 South 13th Ave, Kelso, WA 98626 Phone (360) 577-7222 / 800-695-7222 / FAX (360) 636-1068
www.alsglobal.com

Project Name: Sentinel Well
Project Number:
Project Manager: Jeff Coleman
Company: City of Longview
Address: PO Box 128 Longview WA 98632
Phone #
email
Sampler Signature: T Daly
Sampler Printed Name: T Daly

CLIENT SAMPLE ID	LABID	SAMPLING Date Time	Matrix	NUMBER OF CONTAINERS	24H: SM 9223 B / Colliert EC NC ✓	24H: SM 9223 B / Colliert Tot NC ✓	48H: 180.1 / Turbidity ✓	48H: 300.0 / NO2 ✓	48H: 300.0 / NO3 ✓	48H: SM 2120 B / Color ✓	48H: SM 4500-P E / O Phos ✓	7D: [redacted]	7D: 549.2 / DIQ_PARAQ ✓	7D: SM 2540 C / TDS ✓	14D: 335.4 / CN T ✓	14D: 504.1 / EDB DBCP 123TCP ✓	14D: 508.1 / PEST_CL ✓	14D: 515.4 / CL_ACID_HERB ✓	14D: 524.2 / VOC ✓	14D: 525.2 / SVO ✓	14D: [redacted]	14D: SM 2320 B / Alkalinity Titr ✓	14D: Sulfur Liq / Sulfur ✓	28D: 245.1 / Hg T ✓	28D: 300.0 / F ✓	28D: 531.1 / CARBAM ✓	28D: SM 2510 B / Conductivity ✓	Remarks
1. DW-1		10/14/15 1337		23																								
2.																												
3.																												
4.																												
5.																												
6.																												
7.																												
8.																												
9.																												
10.																												

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. CLP Like Summary (no raw data)
___ IV. Data Validation Report
___ V. EDD

Invoice Information

P.O.# 36-4738
Bill To: City of Longview
PO Box 128
Longview WA 98632

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
___ Standard

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments:

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other_____(Circle One)

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature: T Daly	Signature: [illegible]	Signature	Signature	Signature	Signature
Printed Name: T Daly	Printed Name: [illegible]	Printed Name	Printed Name	Printed Name	Printed Name
Firm: CoL	Firm: ALS	Firm	Firm	Firm	Firm
Date/Time: 10/14/15 1540	Date/Time: 10/14/15 15:41	Date/Time	Date/Time	Date/Time	Date/Time

ALS Environmental

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58082

001, 005

SR# K1511744

COC Set____of____

COC#_____

1317 South 13th Ave, Kelso, WA 98626 Phone (360) 577-7222 / 800-695-7222 / FAX (360) 636-1068
www.alsglobal.com

Project Name: Sentinel Wells
Project Number:
Project Manager: Jeff Coleman
Company: City of Longview
Address: PO Box 128 Longview WA 98632
Phone #:
email:
Sampler Signature: T Daly
Sampler Printed Name: T Daly

CLIENT SAMPLE ID	LABID	SAMPLING Date	SAMPLING Time	Matrix	NUMBER OF CONTAINERS	28D: 300.0 / Br	28D: 300.0 / Chloride	28D: 300.0 / SO4	28D: 314.0 / ClO4	28D: SM 4500-NH3 G / Ammonia	30D: [redacted]	180D: 1630 / Methyl Hg T	180D: 200.7 / Metals T	180D: 200.8 / Metals T	999D: Calculation / NO2 NO3 Calc	999D: SM 2340 B / Hardness Calc	1	2	3	4	5	Remarks
1. DW-1		10/19/15	1337		23																	
2.																						
3.																						
4.																						
5.																						
6.																						
7.																						
8.																						
9.																						
10.																						

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required

___ II. Report Dup., MS, MSD as required

___ III. CLP Like Summary (no raw data)

___ IV. Data Validation Report

___ V. EDD

Invoice Information

P.O.# 36-4738

Bill To: City of Longview
PO Box 128
Longview WA 98632

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
___ Standard

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments:

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other____(Circle One)

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
T Daly	DWift				
Signature	Signature	Signature	Signature	Signature	Signature
T Daly	DWift				
Printed Name	Printed Name	Printed Name	Printed Name	Printed Name	Printed Name
Coff	ALS				
Firm	Firm	Firm	Firm	Firm	Firm
10/19/15 1540	10-19-15 1541				
Date/Time	Date/Time	Date/Time	Date/Time	Date/Time	Date/Time

PC CL

Cooler Receipt and Preservation Form

Client / Project: City of LV Service Request K15 11794

Received: 10/19/15 Opened: 10/19/15 By: VD Unloaded: 10/19/15 By: VD

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? _____

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected. Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
6.6	6.7	11.6	11.7	+.1	328			

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

General Chemistry

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
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www.alsglobal.com

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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	180.1	**Units:**	NTU
Prep Method:	None	**Basis:**	NA

Turbidity

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-1	K1511794-001	**12.2**	0.20	1	10/20/15 13:44	
Method Blank	K1511794-MB1	ND U	0.20	1	10/20/15 13:44	

ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	180.1	**Units:**	NTU
Prep Method:	None	**Basis:**	NA

Replicate Sample Summary
Turbidity

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
DW-1	K1511794-001DUP	0.20	12.2	12.2	12.2	<1	20	10/20/15
Batch QC	K1511798-001DUP	0.20	1.72	1.71	1.72	<1	20	10/20/15

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	NA

Lab Control Sample Summary
Turbidity

Analysis Method:	180.1	**Units:**	NTU
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	468080

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511794-LCS1	4.50	4.23	106	90-110

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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Bromide

Sample Name	Lab Code	Result		MRL	Dil.	Date Analyzed	Date Extracted	Q
DW-1	K1511794-001	ND	U	0.20	2	10/20/15 09:41	10/19/15	
Method Blank	K1511794-MB1	ND	U	0.10	1	10/20/15 09:26	10/19/15	
Method Blank	K1511794-MB2	ND	U	0.10	1	10/20/15 12:18	10/19/15	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Replicate Sample Summary
Bromide

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
DW-1	K1511794-001DUP	0.20	ND U	ND U	NC	NC	20	10/20/15
Batch QC	K1511798-001DUP	0.20	ND U	ND U	NC	NC	20	10/20/15

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Bromide

Sample Name:	DW-1	**Units:**	mg/L
Lab Code:	K1511794-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511794-001MS			Duplicate Matrix Spike K1511794-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Bromide	ND U	9.61	10.0	96	9.75	10.0	97	90-110	1	20

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ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Bromide

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511798-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511798-001MS			Duplicate Matrix Spike K1511798-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Bromide	ND U	9.61	10.0	96	9.58	10.0	96	90-110	<1	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/19/15

Lab Control Sample Summary
Bromide

Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	468244

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511794-LCS1	2.41	2.50	96	90-110
Lab Control Sample	K1511794-LCS2	2.40	2.50	96	90-110

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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Chloride

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
DW-1	K1511794-001	**4.93**	0.20	2	10/20/15 09:41	10/19/15	
Method Blank	K1511794-MB1	ND U	0.10	1	10/20/15 09:26	10/19/15	
Method Blank	K1511794-MB2	ND U	0.10	1	10/20/15 12:18	10/19/15	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Replicate Sample Summary
Chloride

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
DW-1	K1511794-001DUP	0.20	4.93	4.91	4.92	<1	20	10/20/15
Batch QC	K1511798-001DUP	0.20	5.84	5.82	5.83	<1	20	10/20/15

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Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Chloride

Sample Name:	DW-1	**Units:**	mg/L
Lab Code:	K1511794-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511794-001MS			Duplicate Matrix Spike K1511794-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Chloride	4.93	14.2	10.0	93	14.3	10.0	93	90-110	<1	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Chloride

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511798-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511798-001MS			Duplicate Matrix Spike K1511798-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Chloride	5.84	15.2	10.0	94	15.0	10.0	92	90-110	1	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/19/15

Lab Control Sample Summary
Chloride

Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	468244

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511794-LCS1	4.92	5.00	98	90-110
Lab Control Sample	K1511794-LCS2	4.88	5.00	98	90-110

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Fluoride

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
DW-1	K1511794-001	**0.22**	0.20	2	10/20/15 09:41	10/19/15	
Method Blank	K1511794-MB1	ND U	0.10	1	10/20/15 09:26	10/19/15	
Method Blank	K1511794-MB2	ND U	0.10	1	10/20/15 12:18	10/19/15	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Replicate Sample Summary
Fluoride

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
DW-1	K1511794-001DUP	0.20	0.22	0.21	0.218	4	20	10/20/15
Batch QC	K1511798-001DUP	0.20	ND U	ND U	NC	NC	20	10/20/15

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Fluoride

Sample Name:	DW-1	**Units:**	mg/L
Lab Code:	K1511794-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511794-001MS			Duplicate Matrix Spike K1511794-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Fluoride	0.22	9.45	10.0	92	9.66	10.0	94	90-110	2	20

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ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Fluoride

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511798-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511798-001MS			Duplicate Matrix Spike K1511798-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Fluoride	ND U	9.52	10.0	95	9.66	10.0	97	90-110	2	20

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ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/19/15

Lab Control Sample Summary
Fluoride

Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	468244

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511794-LCS1	4.98	5.00	100	90-110
Lab Control Sample	K1511794-LCS2	4.91	5.00	98	90-110

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Nitrite as Nitrogen

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
DW-1	K1511794-001	ND U	0.10	2	10/20/15 09:41	10/19/15	
Method Blank	K1511794-MB1	ND U	0.050	1	10/20/15 09:26	10/19/15	
Method Blank	K1511794-MB2	ND U	0.050	1	10/20/15 12:18	10/19/15	

ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Replicate Sample Summary
Nitrite as Nitrogen

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
DW-1	K1511794-001DUP	0.10	ND U	ND U	NC	NC	20	10/20/15
Batch QC	K1511798-001DUP	0.10	ND U	ND U	NC	NC	20	10/20/15

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ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Nitrite as Nitrogen

Sample Name:	DW-1	**Units:**	mg/L
Lab Code:	K1511794-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511794-001MS			Duplicate Matrix Spike K1511794-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Nitrite as Nitrogen	ND U	10.3	10.0	103	10.5	10.0	105	90-110	1	20

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Nitrite as Nitrogen

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511798-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511798-001MS			Duplicate Matrix Spike K1511798-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Nitrite as Nitrogen	ND U	10.4	10.0	104	10.4	10.0	104	90-110	<1	20

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ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/19/15

Lab Control Sample Summary
Nitrite as Nitrogen

Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	468244

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511794-LCS1	2.56	2.50	102	90-110
Lab Control Sample	K1511794-LCS2	2.55	2.50	102	90-110

ALS Group USA, Corp.
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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Nitrate as Nitrogen

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
DW-1	K1511794-001	ND U	0.10	2	10/20/15 09:41	10/19/15	
Method Blank	K1511794-MB1	ND U	0.050	1	10/20/15 09:26	10/19/15	
Method Blank	K1511794-MB2	ND U	0.050	1	10/20/15 12:18	10/19/15	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Replicate Sample Summary
Nitrate as Nitrogen

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
DW-1	K1511794-001DUP	0.10	ND U	ND U	NC	NC	20	10/20/15
Batch QC	K1511798-001DUP	0.10	ND U	ND U	NC	NC	20	10/20/15
Batch QC	K1511800-001DUP	0.10	ND U	ND U	NC	NC	20	10/20/15

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Nitrate as Nitrogen

Sample Name:	DW-1	**Units:**	mg/L
Lab Code:	K1511794-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511794-001MS				Duplicate Matrix Spike K1511794-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**		**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Nitrate as Nitrogen	ND U	9.17	10.0	92		9.23	10.0	92	90-110	<1	20

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ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Nitrate as Nitrogen

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511798-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511798-001MS			Duplicate Matrix Spike K1511798-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Nitrate as Nitrogen	ND U	9.15	10.0	91	9.13	10.0	91	90-110	<1	20

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dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Nitrate as Nitrogen

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511800-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511800-001MS			Duplicate Matrix Spike K1511800-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Nitrate as Nitrogen	ND U	3.60	4.00	90	3.63	4.00	91	90-110	<1	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/19/15

Lab Control Sample Summary
Nitrate as Nitrogen

Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	468244

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511794-LCS1	2.38	2.50	95	90-110
Lab Control Sample	K1511794-LCS2	2.35	2.50	94	90-110

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Sulfate

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
DW-1	K1511794-001	**2.86**	0.20	2	10/20/15 09:41	10/19/15	
Method Blank	K1511794-MB1	ND U	0.10	1	10/20/15 09:26	10/19/15	
Method Blank	K1511794-MB2	ND U	0.10	1	10/20/15 12:18	10/19/15	

ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Replicate Sample Summary
Sulfate

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
DW-1	K1511794-001DUP	0.20	2.86	2.73	2.79	5	20	10/20/15
Batch QC	K1511798-001DUP	0.20	3.00	3.03	3.02	<1	20	10/20/15

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Sulfate

Sample Name:	DW-1	**Units:**	mg/L
Lab Code:	K1511794-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511794-001MS			Duplicate Matrix Spike K1511794-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Sulfate	2.86	12.1	10.0	93	12.2	10.0	93	90-110	<1	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Sulfate

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511798-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511798-001MS			Duplicate Matrix Spike K1511798-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Sulfate	3.00	12.5	10.0	95	12.5	10.0	95	90-110	<1	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/19/15

Lab Control Sample Summary
Sulfate

Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	468244

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511794-LCS1	5.01	5.00	100	90-110
Lab Control Sample	K1511794-LCS2	4.92	5.00	98	90-110

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	314.0	**Units:**	ug/L
Prep Method:	None	**Basis:**	NA

Perchlorate

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-1	K1511794-001	ND U	1.0	1	10/21/15 13:17	
Method Blank	K1511794-MB1	ND U	1.0	1	10/21/15 11:42	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
		Date Analyzed:	10/21/15

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	Batch QC	**Units:**	ug/L
Lab Code:	K1511360-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample K1511360-001DUP Result	Average	RPD	RPD Limit
Perchlorate	314.0	1.0	ND U	ND U	NC	NC	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/21/15
		Date Extracted:	NA

Duplicate Matrix Spike Summary
Perchlorate

Sample Name:	Batch QC	**Units:**	ug/L
Lab Code:	K1511360-001	**Basis:**	NA
Analysis Method:	314.0		
Prep Method:	None		

		Matrix Spike K1511360-001MS			Duplicate Matrix Spike K1511360-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	ND U	12.0	10.0	120	11.7	10.0	117	80-120	2	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Analyzed:**	10/21/15
Sample Matrix:	Drinking Water	**Date Extracted:**	NA

Lab Control Sample Summary
Perchlorate

Analysis Method:	314.0	**Units:**	ug/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	468262

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511794-LCS1	16.4	16.8	98	85-115

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	335.4	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Cyanide, Total

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
DW-1	K1511794-001	ND U	0.010	1	10/28/15 10:14	10/27/15	
Method Blank	K1511794-MB1	ND U	0.010	1	10/28/15 10:14	10/27/15	

ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
		Date Analyzed:	10/28/15

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	KQ1512462-06	**Basis:**	NA

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample KQ1512462-06DUP Result	Average	RPD	RPD Limit
Cyanide, Total	335.4	0.010	ND U	ND U	NC	NC	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/28/15
		Date Extracted:	10/27/15

Duplicate Matrix Spike Summary
Cyanide, Total

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	KQ1512462-06	**Basis:**	NA
Analysis Method:	335.4		
Prep Method:	Method		

		Matrix Spike KQ1512462-06MS				Duplicate Matrix Spike KQ1512462-06DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**		**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Cyanide, Total	ND U	0.124	0.100	124 *		0.121	0.100	121 *	90-110	2	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Analyzed:**	10/28/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/27/15

Lab Control Sample Summary
Cyanide, Total

Analysis Method:	335.4	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	469348

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511794-LCS1	0.146	0.150	97	90-110

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	Calculation	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Nitrate+Nitrite as Nitrogen

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-1	K1511794-001	ND U	0.20	1	10/20/15 09:41	

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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	SM 2120 B	**Units:**	ColorUnits
Prep Method:	None	**Basis:**	NA

Color

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-1	K1511794-001	**45.0**	5.0	1	10/20/15 14:49	
Method Blank	K1511794-MB1	ND U	5.0	1	10/20/15 14:35	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
Analysis Method:	SM 2120 B	**Units:**	ColorUnits
Prep Method:	None	**Basis:**	NA

Replicate Sample Summary
Color

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1511797-001DUP	5.0	15.0	15.0	15.0	<1	20	10/20/15
Batch QC	K1511893-005DUP	5.0	ND U	ND U	NC	NC	20	10/21/15

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	NA

Lab Control Sample Summary
Color

Analysis Method:	SM 2120 B	**Units:**	ColorUnits
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	468258

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511794-LCS1	50.0	50.0	100	85-115

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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	SM 2320 B	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Alkalinity as CaCO3, Total

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-1	K1511794-001	**81.3**	2.0	1	11/02/15 14:50	
Method Blank	K1511794-MB1	ND U	2.0	1	11/02/15 14:50	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	SM 2320 B	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Replicate Sample Summary
Alkalinity as CaCO3, Total

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
DW-1	K1511794-001DUP	2.0	81.3	81.3	81.3	<1	20	11/02/15
Batch QC	K1511896-004DUP	2.0	ND U	ND U	NC	NC	20	11/02/15

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Analyzed:**	11/02/15
Sample Matrix:	Drinking Water	**Date Extracted:**	NA

Lab Control Sample Summary
Alkalinity as CaCO3, Total

Analysis Method:	SM 2320 B	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	470113

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511794-LCS1	134	136	99	90-110

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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	SM 2510 B	**Units:**	uMHOS/cm
Prep Method:	None	**Basis:**	NA

Conductivity at 25 Degrees Celsius

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-1	K1511794-001	**197**	2.0	1	10/20/15 09:56	
Method Blank	K1511794-MB1	ND U	2.0	1	10/20/15 09:56	
Method Blank	K1511794-MB2	ND U	2.0	1	10/20/15 09:56	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
		Date Analyzed:	10/20/15

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	Batch QC	**Units:**	uMHOS/cm
Lab Code:	K1511798-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample K1511798-001DUP Result	Average	RPD	RPD Limit
Conductivity at 25 Degrees Celsius	SM 2510 B	2.0	212	211	212	<1	20

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	NA

Lab Control Sample Summary
Conductivity at 25 Degrees Celsius

Analysis Method:	SM 2510 B	**Units:**	uMHOS/cm
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	467985

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511794-LCS1	313	289	108	86-113

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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	SM 2540 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Solids, Total Dissolved

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-1	K1511794-001	**144**	10	1	10/20/15 16:39	
Method Blank	K1511794-MB1	ND U	10	1	10/20/15 16:39	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
		Date Analyzed:	10/20/15

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511788-003	**Basis:**	NA

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample K1511788-003DUP Result	Average	RPD	RPD Limit
Solids, Total Dissolved	SM 2540 C	10	347	373	360	7	10

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	NA

Lab Control Sample Summary
Solids, Total Dissolved

Analysis Method:	SM 2540 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	468084

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511794-LCS1	888	897	99	85-115

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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	SM 4500-NH3 G	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Ammonia as Nitrogen

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
DW-1	K1511794-001	**0.339**	0.050	1	10/22/15 09:57	10/22/15	
Method Blank	K1511794-MB1	ND U	0.050	1	10/22/15 09:57	10/22/15	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
Analysis Method:	SM 4500-NH3 G	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Replicate Sample Summary
Ammonia as Nitrogen

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1511683-001DUP	0.050	0.032 J	ND U	NC	NC	20	10/22/15
Batch QC	K1511831-001DUP	0.050	1.63	1.59	1.61	3	20	10/22/15
Batch QC	K1511838-003DUP	0.050	1.17	1.17	1.17	<1	20	10/22/15

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/22/15
		Date Extracted:	10/22/15

Duplicate Matrix Spike Summary
Ammonia as Nitrogen

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511683-001	**Basis:**	NA
Analysis Method:	SM 4500-NH3 G		
Prep Method:	Method		

		Matrix Spike K1511683-001MS			**Duplicate Matrix Spike** K1511683-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Ammonia as Nitrogen	0.032 J	2.06	2.00	101	2.01	2.00	99	90-110	2	20

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/22/15
		Date Extracted:	10/22/15

Duplicate Matrix Spike Summary
Ammonia as Nitrogen

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511831-001	**Basis:**	NA
Analysis Method:	SM 4500-NH3 G		
Prep Method:	Method		

		Matrix Spike K1511831-001MS			Duplicate Matrix Spike K1511831-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Ammonia as Nitrogen	1.63	3.56	2.00	96	3.52	2.00	94	90-110	2	20

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/22/15
		Date Extracted:	10/22/15

Duplicate Matrix Spike Summary
Ammonia as Nitrogen

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511838-003	**Basis:**	NA
Analysis Method:	SM 4500-NH3 G		
Prep Method:	Method		

		Matrix Spike K1511838-003MS			**Duplicate Matrix Spike** K1511838-003DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Ammonia as Nitrogen	1.17	3.13	2.00	98	3.10	2.00	96	90-110	2	20

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Analyzed:**	10/22/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/22/15

Lab Control Sample Summary
Ammonia as Nitrogen

Analysis Method:	SM 4500-NH3 G	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	468711

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511794-LCS1	15.1	16.2	93	90-110

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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	SM 4500-P E	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Orthophosphate as Phosphorus

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-1	K1511794-001	**0.213**	0.050	1	10/20/15 17:24	
Method Blank	K1511794-MB1	ND U	0.050	1	10/20/15 17:24	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
		Date Analyzed:	10/20/15

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	DW-1	**Units:**	mg/L
Lab Code:	K1511794-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample K1511794-001DUP Result	Average	RPD	RPD Limit
Orthophosphate as Phosphorus	SM 4500-P E	0.050	0.213	0.198	0.206	7	20

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
		Date Analyzed:	10/20/15
		Date Extracted:	NA

Duplicate Matrix Spike Summary
Orthophosphate as Phosphorus

Sample Name:	DW-1	**Units:**	mg/L
Lab Code:	K1511794-001	**Basis:**	NA
Analysis Method:	SM 4500-P E		
Prep Method:	None		

		Matrix Spike K1511794-001MS			Duplicate Matrix Spike K1511794-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Orthophosphate as Phosphorus	0.213	0.59	0.40	94	0.58	0.40	92	75-125	2	20

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	NA

Lab Control Sample Summary
Orthophosphate as Phosphorus

Analysis Method:	SM 4500-P E	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	468008

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511794-LCS1	2.56	2.54	101	85-115

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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	SM 9223 B	**Units:**	MPN/100mL
Prep Method:	None	**Basis:**	NA

Escherichia coli

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-1	K1511794-001	**absent**	-	1	10/20/15 18:16	

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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	SM 9223 B	**Units:**	MPN/100mL
Prep Method:	None	**Basis:**	NA

Coliform, Total

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-1	K1511794-001	**absent**	-	1	10/20/15 18:16	

Metals

ALS Environmental—Kelso Laboratory
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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking water	**Date Received:**	10/19/15

Hardness as CaCO3

Prep Method:	CLAA	Units:	mg/L (ppm)
Analysis Method:	200.7/SM 2340B	Basis:	NA
Test Notes:			

Sample Name	Lab Code	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
DW-1	K1511794-001	0.07	1	10/22/15	10/29/15	64.5	
Method Blank	K1511794-MB	0.07	1	10/22/15	10/29/15	ND	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking water	**Date Received:**	10/19/15
		Date Extracted:	10/22/15
		Date Analyzed:	10/29/15

Duplicate Summary
Metals

Sample Name:	DW-1	Units:	mg/L (ppm)
Lab Code:	K1511794-001D	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
Hardness as CaCO3	CLAA	200.7/SM 2340B	0.07	64.5	63.5	64	2	

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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking water	**Date Received:**	10/19/15

Methyl Mercury

Prep Method:	Method	Units:	ng/L
Analysis Method:	1630	Basis:	NA
Test Notes:			

Sample Name	Lab Code	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
DW-1	K1511794-001	0.1	1	11/02/15	11/03/15	ND	
Method Blank 1	K1511794-MB1	0.1	1	11/02/15	11/03/15	ND	
Method Blank 2	K1511794-MB2	0.1	1	11/02/15	11/03/15	ND	
Method Blank 3	K1511794-MB3	0.1	1	11/02/15	11/03/15	ND	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking water	**Date Received:**	NA
		Date Extracted:	11/02/15
		Date Analyzed:	11/03/15

Matrix Spike/Duplicate Matrix Spike Summary
Metals

Sample Name:	Batch QC	Units:	ng/L
Lab Code:	K1511797-001MS, K1511797-001MSD	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	CAS Acceptance Limits	Relative Percent Difference	Result Notes
Mercury, Methyl	Method	1630	0.1	2.22	2.22	ND	2.74	2.74	123	123	65-135	<1	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	NA
LCS Matrix:	Water	**Date Received:**	NA
		Date Extracted:	11/02/15
		Date Analyzed:	11/03/15

Ongoing Precision and Recovery (OPR) Sample Summary
Metals

Sample Name: Ongoing Precision and Recovery (Initial)

Units: ng/L
Basis: NA

Test Notes:

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Mercury, Methyl	Method	1630	2.22	2.57	116	67-133	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	NA
LCS Matrix:	Water	**Date Received:**	NA
		Date Extracted:	11/02/15
		Date Analyzed:	11/03/15

Ongoing Precision and Recovery (OPR) Sample Summary
Metals

Sample Name: Ongoing Precision and Recovery (Final)

Units: ng/L
Basis: NA

Test Notes:

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Mercury, Methyl	Method	1630	2.22	2.68	121	67-133	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	NA
LCS Matrix:	Water	**Date Received:**	NA
		Date Extracted:	11/02/15
		Date Analyzed:	11/03/15

Quality Control Sample (QCS) Summary
Metals

Sample Name: Quality Control Sample

Units: pg
Basis: NA

Test Notes:

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Mercury, Methyl	Method	1630	100	122	122	67-133	

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Longview, City of	**Service Request:**	K1511794
Project No.:	NA	**Date Collected:**	10/19/15
Project Name:	Sentinel Well	**Date Received:**	10/19/15
Matrix:	WATER	**Units:**	mg/L
		Basis:	NA

Sample Name: **DW-1** **Lab Code:** **K1511794-001**

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.00005	1.0	10/22/15	11/04/15	0.00005	U	
Arsenic	200.8	0.0005	1.0	10/22/15	11/04/15	0.0037		
Barium	200.7	0.0040	1.0	10/22/15	10/29/15	0.0094		
Beryllium	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Cadmium	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Chromium	200.8	0.0002	1.0	10/22/15	11/04/15	0.0002	U	
Copper	200.7	0.004	1.0	10/22/15	10/29/15	0.004	U	
Iron	200.7	0.02	1.0	10/22/15	10/29/15	2.03		
Lead	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Manganese	200.7	0.001	1.0	10/22/15	10/29/15	0.517		
Mercury	245.1	0.0002	1.0	10/27/15	10/28/15	0.0002	U	
Nickel	200.8	0.0002	1.0	10/22/15	11/04/15	0.0004		
Selenium	200.8	0.001	1.0	10/22/15	11/04/15	0.001	U	
Silver	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Sodium	200.7	0.2	1.0	10/22/15	10/29/15	8.8		
Thallium	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Zinc	200.7	0.004	1.0	10/22/15	10/29/15	0.004	U	

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Longview, City of	**Service Request:**	K1511794
Project No.:	NA	**Date Collected:**	
Project Name:	Sentinel Well	**Date Received:**	
Matrix:	WATER	**Units:**	mg/L
		Basis:	NA

Sample Name: Method Blank **Lab Code:** KQ1512200-01

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Barium	200.7	0.0040	1.0	10/22/15	10/29/15	0.0040	U	
Copper	200.7	0.004	1.0	10/22/15	10/29/15	0.004	U	
Iron	200.7	0.02	1.0	10/22/15	10/29/15	0.02	U	
Manganese	200.7	0.001	1.0	10/22/15	10/30/15	0.001	U	
Sodium	200.7	0.2	1.0	10/22/15	10/29/15	0.2	U	
Zinc	200.7	0.004	1.0	10/22/15	10/29/15	0.004	U	

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Longview, City of	**Service Request:**	K1511794
Project No.:	NA	**Date Collected:**	
Project Name:	Sentinel Well	**Date Received:**	
Matrix:	WATER	**Units:**	mg/L
		Basis:	NA

Sample Name: **Method Blank** **Lab Code:** **KQ1512201-01**

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.00005	1.0	10/22/15	11/04/15	0.00005	U	
Arsenic	200.8	0.0005	1.0	10/22/15	11/04/15	0.0005	U	
Beryllium	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Cadmium	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Chromium	200.8	0.0002	1.0	10/22/15	11/04/15	0.0002	U	
Lead	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Nickel	200.8	0.0002	1.0	10/22/15	11/04/15	0.0002	U	
Selenium	200.8	0.001	1.0	10/22/15	11/04/15	0.001	U	
Silver	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Thallium	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Longview, City of	**Service Request:**	K1511794
Project No.:	NA	**Date Collected:**	
Project Name:	Sentinel Well	**Date Received:**	
Matrix:	WATER	**Units:**	mg/L
		Basis:	NA

Sample Name: **Method Blank** **Lab Code:** **KQ1512456-03**

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Mercury	245.1	0.0002	1.0	10/27/15	10/28/15	0.0002	U	

Comments:

Metals
- 5A -
SPIKE SAMPLE RECOVERY

Client: Longview, City of
Service Request: K1511794
Project No.: NA
Units: MG/L
Project Name: Sentinel Well
Basis: NA
Matrix: WATER

Sample Name: Batch QC1S
Lab Code: K1511685-001S

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Mercury	70 - 130	0.0051		0.0002	U	0.0050	102		245.1

An empty field in the Control Limit column indicates the control limit is not applicable

Metals
- 5A -
SPIKE SAMPLE RECOVERY

Client: Longview, City of
Service Request: K1511794
Project No.: NA
Units: MG/L
Project Name: Sentinel Well
Basis: NA
Matrix: WATER

Sample Name: Batch QC1SD
Lab Code: K1511685-001SD

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Mercury	70 - 130	0.0050		0.0002	U	0.0050	100		245.1

An empty field in the Control Limit column indicates the control limit is not applicable

Metals
- 5A -
SPIKE SAMPLE RECOVERY

Client: Longview, City of
Service Request: K1511794
Project No.: NA
Units: MG/L
Project Name: Sentinel Well
Basis: NA
Matrix: WATER

Sample Name: DW-1S
Lab Code: K1511794-001S

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Antimony	70 - 130	0.052600		0.000050	U	0.050000	105		200.8
Arsenic	70 - 130	0.05576		0.00368		0.05000	104		200.8
Barium	70 - 130	0.991		0.0094		1.00	98.2		200.7
Beryllium	70 - 130	0.00252		0.00002	U	0.00250	101		200.8
Cadmium	70 - 130	0.02613		0.00002	U	0.025000	105		200.8
Chromium	70 - 130	0.0084		0.0002	U	0.01000	84		200.8
Copper	70 - 130	0.233		0.004	U	0.25	93.2		200.7
Iron	70 - 130	2.96		2.03		1.00	93.0		200.7
Lead	70 - 130	0.05092		0.00002	U	0.050000	102		200.8
Manganese	70 - 130	0.977		0.517		0.50	92.0		200.7
Nickel	70 - 130	0.0229		0.0004		0.02500	90		200.8
Selenium	70 - 130	0.054		0.001	U	0.0500	108		200.8
Silver	70 - 130	0.01252		0.00002	U	0.012500	100		200.8
Sodium	70 - 130	19.1		8.8		10.00	103.0		200.7
Thallium	70 - 130	0.05162		0.00002	U	0.050000	103		200.8
Zinc	70 - 130	0.469		0.004	U	0.50	93.8		200.7

An empty field in the Control Limit column indicates the control limit is not applicable

Metals

- 6 -

DUPLICATES

Client: Longview, City of
Service Request: K1511794
Project No.: NA
Units: MG/L
Project Name: Sentinel Well
Basis: NA
Matrix: WATER

Sample Name: Batch QC1D
Lab Code: K1511685-001D

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Mercury		0.0002	U	0.0002	U			245.1

An empty field in the Control Limit column indicates the control limit is not applicable.

Metals

- 6 -

DUPLICATES

Client: Longview, City of
Service Request: K1511794
Project No.: NA
Units: MG/L
Project Name: Sentinel Well
Basis: NA
Matrix: WATER

Sample Name: Batch QC1SD
Lab Code: K1511685-001SD

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Mercury	20	0.0051		0.0050		2.0		245.1

An empty field in the Control Limit column indicates the control limit is not applicable.

Metals

- 6 -

DUPLICATES

Client: Longview, City of
Service Request: K1511794
Project No.: NA
Units: MG/L
Project Name: Sentinel Well
Basis: NA
Matrix: WATER

Sample Name: DW-1D
Lab Code: K1511794-001D

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Antimony		0.000050	U	0.000050	U			200.8
Arsenic	20	0.00368		0.00356		3.3		200.8
Barium		0.0094		0.0094		0.0		200.7
Beryllium		0.00002	U	0.00002	U			200.8
Cadmium		0.00002	U	0.00002	U			200.8
Chromium		0.0002	U	0.0002	U			200.8
Copper		0.004	U	0.004	U			200.7
Iron	20	2.03		2.00		1.5		200.7
Lead		0.00002	U	0.00002	U			200.8
Manganese	20	0.517		0.510		1.4		200.7
Nickel		0.0004		0.0003		28.6		200.8
Selenium		0.001	U	0.001	U			200.8
Silver		0.00002	U	0.00002	U			200.8
Sodium	20	8.8		8.4		4.7		200.7
Thallium		0.00002	U	0.00002	U			200.8
Zinc		0.004	U	0.004	U			200.7

An empty field in the Control Limit column indicates the control limit is not applicable.

Metals

- 7 -

LABORATORY CONTROL SAMPLE

Client: Longview, City of **Service Request:** K1511794

Project No.: NA

Project Name: Sentinel Well

Aqueous LCS Source: ALS MIXED **Solid LCS Source:**

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/kg) True	Found	C	Limits	%R
Barium	5	4.8	96.0					
Copper	.625	0.577	92.3					
Iron	2.5	2.38	95.2					
Manganese	1.25	1.20	96.0					
Sodium	12.5	12.4	99.2					
Zinc	1.25	1.16	92.8					

Metals

- 7 -

LABORATORY CONTROL SAMPLE

Client: Longview, City of **Service Request:** K1511794

Project No.: NA

Project Name: Sentinel Well

Aqueous LCS Source: ALS MIXED **Solid LCS Source:**

Analyte	Aqueous (ug/L) True	Aqueous (ug/L) Found	Aqueous (ug/L) %R	Solid (mg/kg) True	Solid (mg/kg) Found	Solid (mg/kg) C	Solid (mg/kg) Limits	Solid (mg/kg) %R
Antimony	0.050	0.0522	104					
Arsenic	0.050	0.052	104					
Beryllium	0.003	0.0025	100					
Cadmium	0.025	0.0264	106					
Chromium	0.010	0.0100	100					
Lead	0.050	0.0511	102					
Mercury	.005	0.0047	94.0					
Nickel	0.025	0.0247	99					
Selenium	0.050	0.054	108					
Silver	0.013	0.0124	99					
Thallium	0.050	0.0518	104					

EPA Method 504.1

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636- 1068
www.alsglobal.com

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	10/19/2015
Sample Matrix:	Drinking water	**Date Received:**	10/19/2015

EPA Method 504.1

Sample Name:	DW-1	**Units:**	ug/L
Lab Code:	K1511794-001	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	504.1		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,2-Dibromoethane (EDB)	ND	U	0.0097	1	10/21/15	10/21/15	KWG1510205	
1,2,3-Trichloropropane	ND	U	0.40	1	10/21/15	10/21/15	KWG1510205	
1,2-Dibromo-3-chloropropane (DBCP	ND	U	0.0097	1	10/21/15	10/21/15	KWG1510205	

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Tentinel - ell	**Date Collected:**	2 A
Sample Matrix:	HOnEing wateO	**Date Received:**	2 A

EPA Method 504.1

Sample Name:	S etr ok MlanE	**Units:**	ugW
Lab Code:	K- 0 151/ N/ 5D4	**Basis:**	2 A
Extraction Method:	S . GUb H	**Level:**	Low
Analysis Method:	5/ 4mh		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,NDHi(OoB oetr ane). HM3	2 H	h	/ m/ 99	1	1/ WN1 W5	1/ WN1 W5	K- 0 151/ N/ 5	
1,NpDGOcr loOoPOoPane	2 H	h	/ m4/	1	1/ WN1 W5	1/ WN1 W5	K- 0 151/ N/ 5	
1,NDHi(OoB oDpDcr loOoPOoPane)HMC6	2 H	h	/ m/ 99	1	1/ WN1 W5	1/ WN1 W5	K- 0 151/ N/ 5	

Comments:

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Extracted:**	10/21/2015
Sample Matrix:	Drinking water	**Date Analyzed:**	10/21/2015

Matrix Spike/Duplicate Matrix Spike Summary
EPA Method 504.1

Sample Name:	Batch QC	**Units:**	ug/L
Lab Code:	K1511798-001	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	504.1	**Extraction Lot:**	KWG1510205

		Batch QCMS KWG1510205-1 Matrix Spike			Batch QCDMS KWG1510205-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
1,2-Dibromoethane (EDB)	ND	0.227	0.243	94	0.214	0.243	88	65-135	6	30
1,2,3-Trichloropropane	ND	0.246	0.243	101	0.228	0.243	94	65-135	8	30
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.233	0.243	96	0.215	0.243	89	65-135	8	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	Longview, City of	**Service Request:**	BacaahKl
Project:	. entine4N e44	**Date Extracted:**	a5/ka/k5ac
Sample Matrix:	Wrin2ing w-ter	**Date Analyzed:**	a5/ka/k5ac

Lab Control Spike Summary
EPA Method 504.1

Extraction Method:	METHOW	**Units:**	9g/L
Analysis Method:	c517a	**Basis:**	8 A
		Level:	Low
		Extraction Lot:	BN Daca5k5c

L-0 Contro4. -u p4e
BN Daca5k5cSl
Lab Control Spike

Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
a,kSWi0rou oetG-ne 6EW3 b	57kl h	57kc5	Kc	h5Sa1 5
a,k,l STrinG4broprop-ne	57kc1	57kc5	a5k	h5Sa1 5
a,kSWi0rou oSl SnG4broprop-ne 6W3 C(b	57k11	57kc5	Kh	h5Sa1 5

Results flagged with an asterisk (*) indicate values outside control criteria.

(ernent renoveries -nP re4-tive pernent Pifferenres 6R(Wb-re Peteru ineP 0y tGe softw-re 9sing v-4es in tGe ra4n94-tion wGinGG-ve not 0een ro9nPeP7

Pesticides/PCBs by EPA Method 508.1

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	10/19/2015
Sample Matrix:	Drinking water	**Date Received:**	10/19/2015

Pesticides/PCBs by EPA Method 508.1

Sample Name:	DW-1	**Units:**	ug/L
Lab Code:	K1511794-001	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	508.1		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
gamma-BHC (Lindane)	ND	U	0.0097	1	10/27/15	10/31/15	KWG1510525	
Heptachlor	ND	U	0.0097	1	10/27/15	10/31/15	KWG1510525	*
Aldrin	ND	U	0.0097	1	10/27/15	10/31/15	KWG1510525	
Heptachlor Epoxide	ND	U	0.0097	1	10/27/15	10/31/15	KWG1510525	*
Heptachlor Epoxide (Isomer A)	ND	U	0.0097	1	10/27/15	10/31/15	KWG1510525	
4,4'-DDE	ND	U	0.0097	1	10/27/15	10/31/15	KWG1510525	
Dieldrin	ND	U	0.0097	1	10/27/15	10/31/15	KWG1510525	*
Endrin	ND	U	0.0097	1	10/27/15	10/31/15	KWG1510525	*
4,4'-DDD	ND	U	0.0097	1	10/27/15	10/31/15	KWG1510525	*
4,4'-DDT	ND	U	0.0097	1	10/27/15	10/31/15	KWG1510525	*
Methoxychlor	ND	U	0.0097	1	10/27/15	10/31/15	KWG1510525	*
Toxaphene	ND	U	0.097	1	10/27/15	10/31/15	KWG1510525	
Chlordane	ND	U	0.097	1	10/27/15	10/31/15	KWG1510525	
Aroclor 1016	ND	U	0.049	1	10/27/15	10/31/15	KWG1510525	
Aroclor 1221	ND	U	0.097	1	10/27/15	10/31/15	KWG1510525	
Aroclor 1232	ND	U	0.097	1	10/27/15	10/31/15	KWG1510525	
Aroclor 1242	ND	U	0.097	1	10/27/15	10/31/15	KWG1510525	
Aroclor 1248	ND	U	0.097	1	10/27/15	10/31/15	KWG1510525	
Aroclor 1254	ND	U	0.097	1	10/27/15	10/31/15	KWG1510525	
Aroclor 1260	ND	U	0.097	1	10/27/15	10/31/15	KWG1510525	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
4,4'-Dibromooctafluorobiphenyl	113	70-130	10/31/15	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Tentinel - ell	**Date Collected:**	2 A
Sample Matrix:	HOnEing wateO	**Date Received:**	2 A

Pesticides/PCBs by EPA Method 508.1

Sample Name:	S etr ok MlanE	**Units:**	ugW
Lab Code:	K- 0 151/ 5N5D7	**Basis:**	2 A
Extraction Method:	S 8. G3 H	**Level:**	Low
Analysis Method:	5/ Uh		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
gad d aDMGC)Linkane*	2 H	(	/ m1/	1	1/ W7W5	1/ W1W5	K- 0 151/ 5N5	
Gehtacr loO	2 H	(	/ m1/	1	1/ W7W5	1/ W1W5	K- 0 151/ 5N5	p
AlkOn	2 H	(	/ m1/	1	1/ W7W5	1/ W1W5	K- 0 151/ 5N5	
Gehtacr loO8 hoxike	2 H	(	/ m1/	1	1/ W7W5	1/ W1W5	K- 0 151/ 5N5	p
Gehtacr loO8 hoxike)Isod eOA*	2 H	(	/ m1/	1	1/ W7W5	1/ W1W5	K- 0 151/ 5N5	
4,4'DHH8	2 H	(	/ m1/	1	1/ W7W5	1/ W1W5	K- 0 151/ 5N5	
HielkOn	2 H	(	/ m1/	1	1/ W7W5	1/ W1W5	K- 0 151/ 5N5	p
8 nkOn	2 H	(	/ m1/	1	1/ W7W5	1/ W1W5	K- 0 151/ 5N5	p
4,4'DHHH	2 H	(	/ m1/	1	1/ W7W5	1/ W1W5	K- 0 151/ 5N5	p
4,4'DHH.	2 H	(	/ m1/	1	1/ W7W5	1/ W1W5	K- 0 151/ 5N5	p
S etr oxycr loO	2 H	(	/ m1/	1	1/ W7W5	1/ W1W5	K- 0 151/ 5N5	p
. oxahr ene	2 H	(	/ m/	1	1/ W7W5	1/ W1W5	K- 0 151/ 5N5	
Cr loOtane	2 H	(	/ m/	1	1/ W7W5	1/ W1W5	K- 0 151/ 5N5	
AOoclo1/ 16	2 H	(	/ m5/	1	1/ W7W5	1/ W1W5	K- 0 151/ 5N5	
AOoclo1NN1	2 H	(	/ m/	1	1/ W7W5	1/ W1W5	K- 0 151/ 5N5	
AOoclo1NB3N	2 H	(	/ m/	1	1/ W7W5	1/ W1W5	K- 0 151/ 5N5	
AOoclo1N4N	2 H	(	/ m/	1	1/ W7W5	1/ W1W5	K- 0 151/ 5N5	
AOoclo1N4U	2 H	(	/ m/	1	1/ W7W5	1/ W1W5	K- 0 151/ 5N5	
AOoclo1N54	2 H	(	/ m/	1	1/ W7W5	1/ W1W5	K- 0 151/ 5N5	
AOoclo1N6/	2 H	(	/ m/	1	1/ W7W5	1/ W1W5	K- 0 151/ 5N5	

p Tee Case 2 aOtive

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
4,4'DHibOd ooctafluoOobihr enyl	1/ 6	7/ D1B/	1/ W1W5	Accehtable

Comments:

Client: Longview, City of
Project: Sentinel Well
Sample Matrix: Drinking water

Service Request: K1511794

Surrogate Recovery Summary
Pesticides/PCBs by EPA Method 508.1

Extraction Method: METHOD
Analysis Method: 508.1

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1
DW-1	K1511794-001	113
Batch QC	K1511798-001	110
Method Blank	KWG1510525-7	106
Batch QCMS	KWG1510525-1	107
Batch QCDMS	KWG1510525-2	104
Lab Control Sample	KWG1510525-3	112

Surrogate Recovery Control Limits (%)

Sur1 = 4,4'-Dibromooctafluorobiphenyl 70-130

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Extracted:**	10/27/2015
Sample Matrix:	Drinking water	**Date Analyzed:**	10/31/2015

Matrix Spike/Duplicate Matrix Spike Summary
Pesticides/PCBs by EPA Method 508.1

Sample Name:	Batch QC	**Units:**	ug/L
Lab Code:	K1511798-001	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	508.1	**Extraction Lot:**	KWG1510525

		Batch QCMS KWG1510525-1 Matrix Spike			Batch QCDMS KWG1510525-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
gamma-BHC (Lindane)	ND	0.116	0.0962	120	0.113	0.0962	118	65-135	2	30
Heptachlor	ND	0.129	0.0962	134	0.121	0.0962	126	65-135	6	30
Aldrin	ND	0.103	0.0962	107	0.0966	0.0962	101	65-135	6	30
Heptachlor Epoxide	ND	0.121	0.0962	126	0.116	0.0962	120	65-135	5	30
Heptachlor Epoxide (Isomer A)	ND	0.111	0.0962	115	0.104	0.0962	108	65-135	6	30
4,4'-DDE	ND	0.131	0.0962	137 *	0.130	0.0962	135	65-135	1	30
Dieldrin	ND	0.123	0.0962	127	0.112	0.0962	117	65-135	9	30
Endrin	ND	0.111	0.0962	115	0.0947	0.0962	99	65-135	16	30
4,4'-DDD	ND	0.151	0.0962	157 *	0.150	0.0962	156 *	65-135	1	30
4,4'-DDT	ND	0.150	0.0962	156 *	0.147	0.0962	153 *	65-135	2	30
Methoxychlor	ND	0.163	0.0962	170 *	0.161	0.0962	168 *	65-135	1	30
Aroclor 1260	ND	0.526	0.481	109	0.549	0.481	114	65-135	4	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Extracted:**	10/27/2015
Sample Matrix:	Drinking water	**Date Analyzed:**	10/31/2015

Lab Control Spike Summary
Pesticides/PCBs by EPA Method 508.1

Extraction Method:	METHOD	**Units:**	ug/L
Analysis Method:	508.1	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1510525

	Lab Control Sample KWG1510525-3 Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
gamma-BHC (Lindane)	0.128	0.100	128	70-130
Heptachlor	0.148	0.100	148 *	70-130
Aldrin	0.118	0.100	118	70-130
Heptachlor Epoxide	0.135	0.100	135 *	70-130
Heptachlor Epoxide (Isomer A)	0.126	0.100	126	70-130
4,4'-DDE	0.128	0.100	128	70-130
Dieldrin	0.139	0.100	139 *	70-130
Endrin	0.153	0.100	153 *	70-130
4,4'-DDD	0.145	0.100	145 *	70-130
4,4'-DDT	0.148	0.100	148 *	70-130
Methoxychlor	0.163	0.100	163 *	70-130
Aroclor 1260	0.558	0.500	112	70-130

Results flagged with an asterisk (*) indicate values outside control criteria.

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Chlorinated Herbicides by EPA 515.4

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	10/19/2015
Sample Matrix:	Drinking water	**Date Received:**	10/19/2015

Chlorinated Herbicides by EPA 515.4

Sample Name:	DW-1	**Units:**	ug/L
Lab Code:	K1511794-001	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	515.4		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dalapon	ND	U	1.0	1	10/22/15	10/23/15	KWG1510246	
3,5-Dichlorobenzoic Acid	ND	U	0.50	1	10/22/15	10/23/15	KWG1510246	
Dicamba	ND	U	0.20	1	10/22/15	10/23/15	KWG1510246	
Dichlorprop	ND	U	0.50	1	10/22/15	10/23/15	KWG1510246	
2,4-D	ND	U	0.10	1	10/22/15	10/23/15	KWG1510246	
Pentachlorophenol	ND	U	0.040	1	10/22/15	10/23/15	KWG1510246	
2,4,5-TP (Silvex)	ND	U	0.20	1	10/22/15	10/23/15	KWG1510246	
Chloramben	ND	U	0.20	1	10/22/15	10/23/15	KWG1510246	
2,4-DB	ND	U	1.0	1	10/22/15	10/23/15	KWG1510246	
Dinoseb	ND	U	0.20	1	10/22/15	10/23/15	KWG1510246	
Dacthal Diacid	ND	U	0.10	1	10/22/15	10/23/15	KWG1510246	
Picloram	ND	U	0.10	1	10/22/15	10/23/15	KWG1510246	
Acifluorfen	ND	U	2.0	1	10/22/15	10/23/15	KWG1510246	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2,4-Dichlorophenylacetic Acid	103	70-130	10/23/15	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Hentinel - ell	**Date Collected:**	S A
Sample Matrix:	O.inTing wate.	**Date Received:**	S A

Chlorinated Herbicides by EPA 515.4

Sample Name:	r etkoMElanT	**Units:**	ug2L
Lab Code:	K- 0 151/ N4DW	**Basis:**	S A
Extraction Method:	r G63 UO	**Level:**	Low
Analysis Method:	515p4		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Oalazon	S O	b	1p/	1	1/ 2NN215	1/ 2Nh215	K- 0 151/ N4D	
h,5WOicklo.odenmoic AciM	S O	b	/ p5/	1	1/ 2NN215	1/ 2Nh215	K- 0 151/ N4D	
OicaP da	S O	b	/ pN/	1	1/ 2NN215	1/ 2Nh215	K- 0 151/ N4D	
Oicklo.z.oz	S O	b	/ p5/	1	1/ 2NN215	1/ 2Nh215	K- 0 151/ N4D	
N,4WO	S O	b	/ p1/	1	1/ 2NN215	1/ 2Nh215	K- 0 151/ N4D	
(entacklo.ozkenol	S O	b	/ p/ 4/	1	1/ 2NN215	1/ 2Nh215	K- 0 151/ N4D	
N,4,5W(xHilve) B	S O	b	/ pN/	1	1/ 2NN215	1/ 2Nh215	K- 0 151/ N4D	
Cklo.aP den	S O	b	/ pN/	1	1/ 2NN215	1/ 2Nh215	K- 0 151/ N4D	
N,4WOE	S O	b	1p/	1	1/ 2NN215	1/ 2Nh215	K- 0 151/ N4D	
Oinosed	S O	b	/ pN/	1	1/ 2NN215	1/ 2Nh215	K- 0 151/ N4D	
Oactkal OiaciM	S O	b	/ p1/	1	1/ 2NN215	1/ 2Nh215	K- 0 151/ N4D	
(iclo.aP	S O	b	/ p1/	1	1/ 2NN215	1/ 2Nh215	K- 0 151/ N4D	
Acifluo.fen	S O	b	Np/	1	1/ 2NN215	1/ 2Nh215	K- 0 151/ N4D	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
N,4WOicklo.ozkenylacetic AciM	95	7/ Wh/	1/ 2Nh215	Acceztadle

Comments:

Client: Longview, City of
Project: Sentinel Well
Sample Matrix: Drinking water

Service Request: K1511794

Surrogate Recovery Summary
Chlorinated Herbicides by EPA 515.4

Extraction Method: METHOD
Analysis Method: 515.4

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1
DW-1	K1511794-001	103
Method Blank	KWG1510246-4	95
DW-1MS	KWG1510246-1	100
DW-1DMS	KWG1510246-2	96
Lab Control Sample	KWG1510246-3	93

Surrogate Recovery Control Limits (%)

Sur1 = 2,4-Dichlorophenylacetic Acid 70-130

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Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Extracted:**	10/22/2015
Sample Matrix:	Drinking water	**Date Analyzed:**	10/23/2015

Matrix Spike/Duplicate Matrix Spike Summary
Chlorinated Herbicides by EPA 515.4

Sample Name:	DW-1	**Units:**	ug/L
Lab Code:	K1511794-001	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	515.4	**Extraction Lot:**	KWG1510246

		DW-1MS KWG1510246-1 Matrix Spike			DW-1DMS KWG1510246-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Dalapon	ND	5.13	4.98	103	5.30	4.98	107	70-130	3	30
3,5-Dichlorobenzoic Acid	ND	4.83	4.98	97	4.80	4.98	96	70-130	1	30
Dicamba	ND	5.35	4.98	107	5.33	4.98	107	70-130	0	30
Dichlorprop	ND	4.72	4.98	95	4.73	4.98	95	70-130	0	30
2,4-D	ND	4.47	4.98	90	4.54	4.98	91	70-130	2	30
Pentachlorophenol	ND	4.63	4.98	93	4.66	4.98	94	70-130	1	30
2,4,5-TP (Silvex)	ND	4.66	4.98	94	4.66	4.98	94	70-130	0	30
Chloramben	ND	10.9	4.98	220 *	9.81	4.98	197 *	70-130	11	30
2,4-DB	ND	5.26	4.98	106	5.33	4.98	107	70-130	1	30
Dinoseb	ND	5.22	4.98	105	5.16	4.98	104	70-130	1	30
Dacthal Diacid	ND	5.78	4.98	116	5.89	4.98	118	70-130	2	30
Picloram	ND	5.37	4.98	108	5.29	4.98	106	70-130	2	30
Acifluorfen	ND	5.23	4.98	105	4.88	4.98	98	70-130	7	30

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Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Extracted:**	10/22/2015
Sample Matrix:	Drinking water	**Date Analyzed:**	10/23/2015

Lab Control Spike Summary
Chlorinated Herbicides by EPA 515.4

Extraction Method:	METHOD	**Units:**	ug/L
Analysis Method:	515.4	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1510246

	Lab Control Sample KWG1510246-3 Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
Dalapon	4.94	5.00	99	70-130
3,5-Dichlorobenzoic Acid	4.64	5.00	93	70-130
Dicamba	4.98	5.00	100	70-130
Dichlorprop	4.58	5.00	92	70-130
2,4-D	4.30	5.00	86	70-130
Pentachlorophenol	4.55	5.00	91	70-130
2,4,5-TP (Silvex)	4.59	5.00	92	70-130
Chloramben	6.08	5.00	122	70-130
2,4-DB	5.11	5.00	102	70-130
Dinoseb	5.15	5.00	103	70-130
Dacthal Diacid	4.58	5.00	92	70-130
Picloram	4.84	5.00	97	70-130
Acifluorfen	5.16	5.00	103	70-130

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Volatile Organic Compounds

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636- 1068
www.alsglobal.com

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	10/19/2015
Sample Matrix:	Drinking water	**Date Received:**	10/19/2015

Volatile Organic Compounds

Sample Name:	DW-1	**Units:**	ug/L
Lab Code:	K1511794-001	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	524.2		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dichlorodifluoromethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Chloromethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Vinyl Chloride	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Bromomethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Chloroethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Trichlorofluoromethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Methylene Chloride	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
trans-1,2-Dichloroethene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,1-Dichloroethene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
cis-1,2-Dichloroethene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Methyl tert-Butyl Ether	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Chloroform	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Bromochloromethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Carbon Tetrachloride	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Benzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,2-Dichloroethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Trichloroethene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,2-Dichloropropane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Bromodichloromethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Dibromomethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
cis-1,3-Dichloropropene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,1-Dichloroethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Toluene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
trans-1,3-Dichloropropene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Tetrachloroethene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
2,2-Dichloropropane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,3-Dichloropropane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Dibromochloromethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,2-Dibromoethane (EDB)	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Chlorobenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Ethylbenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Styrene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
m,p-Xylenes	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
o-Xylene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	

Comments:

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	10/19/2015
Sample Matrix:	Drinking water	**Date Received:**	10/19/2015

Volatile Organic Compounds

Sample Name:	DW-1	**Units:**	ug/L
Lab Code:	K1511794-001	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	524.2		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,1,1-Trichloroethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Bromoform	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,1,2,2-Tetrachloroethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Isopropylbenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,1-Dichloropropene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Bromobenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
n-Propylbenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,3,5-Trimethylbenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
2-Chlorotoluene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
4-Chlorotoluene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
tert-Butylbenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,2,4-Trimethylbenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
sec-Butylbenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
p-Isopropyltoluene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,3-Dichlorobenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,4-Dichlorobenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
n-Butylbenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,2-Dichlorobenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,2-Dibromo-3-chloropropane (DBCP	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,2,4-Trichlorobenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Hexachlorobutadiene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Naphthalene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,1,2-Trichloroethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,1,1,2-Tetrachloroethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,2,3-Trichloropropane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,2,3-Trichlorobenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
4-Bromofluorobenzene	96	70-130	10/30/15	Acceptable
Dibromofluoromethane	94	82-124	10/30/15	Acceptable
Toluene-d8	93	82-124	10/30/15	Acceptable

Comments:

Analytical Results

Client: Longview, City of
Project: Sentinel Well
Sample Matrix: Drinking water

Service Request: K1511794
Date Collected: NA
Date Received: NA

Volatile Organic Compounds

Sample Name: Method Blank
Lab Code: KWG1510595-5

Units: ug/L
Basis: NA

Extraction Method: METHOD
Analysis Method: 524.2

Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dichlorodifluoromethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Chloromethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Vinyl Chloride	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Bromomethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Chloroethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Trichlorofluoromethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Methylene Chloride	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
trans-1,2-Dichloroethene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,1-Dichloroethene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
cis-1,2-Dichloroethene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Methyl tert-Butyl Ether	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Chloroform	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Bromochloromethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Carbon Tetrachloride	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Benzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,2-Dichloroethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Trichloroethene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,2-Dichloropropane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Bromodichloromethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Dibromomethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
cis-1,3-Dichloropropene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,1-Dichloroethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Toluene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
trans-1,3-Dichloropropene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Tetrachloroethene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
2,2-Dichloropropane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,3-Dichloropropane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Dibromochloromethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,2-Dibromoethane (EDB)	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Chlorobenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Ethylbenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Styrene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
m,p-Xylenes	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
o-Xylene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	

Comments:

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking water	**Date Received:**	NA

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1510595-5	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	524.2		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,1,1-Trichloroethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Bromoform	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,1,2,2-Tetrachloroethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Isopropylbenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,1-Dichloropropene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Bromobenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
n-Propylbenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,3,5-Trimethylbenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
2-Chlorotoluene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
4-Chlorotoluene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
tert-Butylbenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,2,4-Trimethylbenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
sec-Butylbenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
p-Isopropyltoluene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,3-Dichlorobenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,4-Dichlorobenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
n-Butylbenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,2-Dichlorobenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,2-Dibromo-3-chloropropane (DBCP	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,2,4-Trichlorobenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Hexachlorobutadiene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Naphthalene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,1,2-Trichloroethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,1,1,2-Tetrachloroethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,2,3-Trichloropropane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,2,3-Trichlorobenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
4-Bromofluorobenzene	97	70-130	10/30/15	Acceptable
Dibromofluoromethane	112	82-124	10/30/15	Acceptable
Toluene-d8	112	82-124	10/30/15	Acceptable

Comments:

Client: Longview, City of
Project: Sentinel Well
Sample Matrix: Drinking water

Service Request: K1511794

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: METHOD
Analysis Method: 524.2

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
DW-1	K1511794-001	96	94	93
Method Blank	KWG1510595-5	97	112	112
Lab Control Sample	KWG1510595-3	99	97	107
Duplicate Lab Control Sample	KWG1510595-4	100	96	90

Surrogate Recovery Control Limits (%)

Sur1	=	4-Bromofluorobenzene	70-130
Sur2	=	Dibromofluoromethane	82-124
Sur3	=	Toluene-d8	82-124

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client: Longview, City of
Project: Sentinel Well
Sample Matrix: Drinking water

Service Request: K1511794
Date Extracted: 10/30/2015
Date Analyzed: 10/30/2015

Lab Control Spike/Duplicate Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method: METHOD
Analysis Method: 524.2

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1510595

	Lab Control Sample KWG1510595-3 Lab Control Spike			Duplicate Lab Control Sample KWG1510595-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Dichlorodifluoromethane	5.94	5.00	119	4.75	5.00	95	70-130	22	30
Chloromethane	5.51	5.00	110	4.39	5.00	88	70-130	23	30
Vinyl Chloride	5.73	5.00	115	4.53	5.00	91	70-130	23	30
Bromomethane	5.62	5.00	112	4.68	5.00	94	70-130	18	30
Chloroethane	5.52	5.00	110	4.39	5.00	88	70-130	23	30
Trichlorofluoromethane	5.65	5.00	113	4.54	5.00	91	70-130	22	30
Methylene Chloride	5.14	5.00	103	4.06	5.00	81	70-130	23	30
trans-1,2-Dichloroethene	5.48	5.00	110	4.34	5.00	87	70-130	23	30
1,1-Dichloroethene	5.55	5.00	111	4.39	5.00	88	70-130	23	30
cis-1,2-Dichloroethene	5.38	5.00	108	4.27	5.00	85	70-130	23	30
Methyl tert-Butyl Ether	10.5	10.0	105	8.46	10.0	85	70-130	22	30
Chloroform	5.61	5.00	112	4.50	5.00	90	70-130	22	30
Bromochloromethane	5.50	5.00	110	4.51	5.00	90	70-130	20	30
Carbon Tetrachloride	5.35	5.00	107	4.72	5.00	94	70-130	13	30
Benzene	5.12	5.00	102	4.70	5.00	94	70-130	9	30
1,2-Dichloroethane	5.12	5.00	102	4.62	5.00	92	70-130	10	30
Trichloroethene	5.50	5.00	110	4.38	5.00	88	70-130	23	30
1,2-Dichloropropane	5.25	5.00	105	4.21	5.00	84	70-130	22	30
Bromodichloromethane	5.07	5.00	101	4.16	5.00	83	70-130	20	30
Dibromomethane	5.14	5.00	103	4.04	5.00	81	70-130	24	30
cis-1,3-Dichloropropene	5.26	5.00	105	4.27	5.00	85	70-130	21	30
Toluene	5.47	5.00	109	4.30	5.00	86	70-130	24	30
1,1-Dichloroethane	5.40	5.00	108	4.29	5.00	86	70-130	23	30
trans-1,3-Dichloropropene	4.76	5.00	95	4.64	5.00	93	70-130	3	30
Tetrachloroethene	5.37	5.00	107	4.78	5.00	96	70-130	12	30
1,3-Dichloropropane	5.01	5.00	100	4.65	5.00	93	70-130	7	30
2,2-Dichloropropane	5.91	5.00	118	4.73	5.00	95	70-130	22	30
Dibromochloromethane	4.83	5.00	97	4.56	5.00	91	70-130	6	30
1,2-Dibromoethane (EDB)	4.94	5.00	99	4.67	5.00	93	70-130	6	30
Chlorobenzene	5.18	5.00	104	4.82	5.00	96	70-130	7	30
Ethylbenzene	5.15	5.00	103	4.87	5.00	97	70-130	6	30
Styrene	5.20	5.00	104	4.90	5.00	98	70-130	6	30
m,p-Xylenes	10.8	10.0	108	10.1	10.0	101	70-130	7	30
o-Xylene	5.35	5.00	107	4.97	5.00	99	70-130	7	30
1,1,1-Trichloroethane	5.17	5.00	103	4.55	5.00	91	70-130	13	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client: Longview, City of
Project: Sentinel Well
Sample Matrix: Drinking water

Service Request: K1511794
Date Extracted: 10/30/2015
Date Analyzed: 10/30/2015

Lab Control Spike/Duplicate Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method: METHOD
Analysis Method: 524.2

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1510595

	Lab Control Sample KWG1510595-3 Lab Control Spike			Duplicate Lab Control Sample KWG1510595-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Bromoform	4.94	5.00	99	4.65	5.00	93	70-130	6	30
1,1,2,2-Tetrachloroethane	4.97	5.00	99	4.76	5.00	95	70-130	4	30
Isopropylbenzene	5.33	5.00	107	4.96	5.00	99	70-130	7	30
1,1-Dichloropropene	5.41	5.00	108	4.85	5.00	97	70-130	11	30
Bromobenzene	5.15	5.00	103	4.80	5.00	96	70-130	7	30
n-Propylbenzene	5.48	5.00	110	5.12	5.00	102	70-130	7	30
1,3,5-Trimethylbenzene	5.45	5.00	109	5.08	5.00	102	70-130	7	30
2-Chlorotoluene	5.27	5.00	105	4.92	5.00	98	70-130	7	30
4-Chlorotoluene	5.27	5.00	105	4.96	5.00	99	70-130	6	30
tert-Butylbenzene	5.36	5.00	107	5.02	5.00	100	70-130	7	30
1,2,4-Trimethylbenzene	5.34	5.00	107	5.03	5.00	101	70-130	6	30
sec-Butylbenzene	5.46	5.00	109	5.11	5.00	102	70-130	7	30
p-Isopropyltoluene	5.43	5.00	109	5.13	5.00	103	70-130	6	30
1,3-Dichlorobenzene	5.18	5.00	104	4.84	5.00	97	70-130	7	30
1,4-Dichlorobenzene	5.12	5.00	102	4.79	5.00	96	70-130	7	30
n-Butylbenzene	5.52	5.00	110	5.16	5.00	103	70-130	7	30
1,2-Dichlorobenzene	5.05	5.00	101	4.82	5.00	96	70-130	5	30
1,2-Dibromo-3-chloropropane (DBCP)	4.66	5.00	93	4.69	5.00	94	70-130	1	30
1,2,4-Trichlorobenzene	5.12	5.00	102	4.87	5.00	97	70-130	5	30
Hexachlorobutadiene	5.27	5.00	105	5.01	5.00	100	70-130	5	30
Naphthalene	5.07	5.00	101	4.76	5.00	95	70-130	6	30
1,1,2-Trichloroethane	5.16	5.00	103	4.66	5.00	93	70-130	10	30
1,1,1,2-Tetrachloroethane	4.76	5.00	95	4.47	5.00	89	70-130	6	30
1,2,3-Trichloropropane	4.95	5.00	99	4.75	5.00	95	70-130	4	30
1,2,3-Trichlorobenzene	5.36	5.00	107	4.90	5.00	98	70-130	9	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Semivolatile Organics by EPA Method 525.2

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	10/19/2015
Sample Matrix:	Drinking water	**Date Received:**	10/19/2015

Semivolatile Organics by EPA Method 525.2

Sample Name:	DW-1	**Units:**	ug/L
Lab Code:	K1511794-001	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	525.2		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorocyclopentadiene	ND	U	0.097	1	10/27/15	11/04/15	KWG1510524	
Fluorene	ND	U	0.049	1	10/27/15	11/04/15	KWG1510524	*
Propachlor	ND	U	0.097	1	10/27/15	11/04/15	KWG1510524	
Hexachlorobenzene	ND	U	0.097	1	10/27/15	11/04/15	KWG1510524	
Simazine	ND	U	0.049	1	10/27/15	11/04/15	KWG1510524	
Atrazine	ND	U	0.097	1	10/27/15	11/04/15	KWG1510524	
Metribuzin	ND	U	0.20	1	10/27/15	11/04/15	KWG1510524	
Alachlor	ND	U	0.070	1	10/27/15	11/04/15	KWG1510524	
Bromacil	ND	U	0.20	1	10/27/15	11/04/15	KWG1510524	
Metolachlor	ND	U	0.087	1	10/27/15	11/04/15	KWG1510524	
Butachlor	ND	U	0.097	1	10/27/15	11/04/15	KWG1510524	
Bis(2-ethylhexyl) Adipate	ND	U	0.58	1	10/27/15	11/04/15	KWG1510524	
Bis(2-ethylhexyl) Phthalate	ND	U	0.58	1	10/27/15	11/04/15	KWG1510524	
Benzo(a)pyrene	ND	U	0.020	1	10/27/15	11/04/15	KWG1510524	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,3-Dimethyl-2-nitrobenzene	127	70-130	11/04/15	Acceptable
Triphenyl Phosphate	101	70-130	11/04/15	Acceptable
Perylene-d12	53	70-130	11/04/15	Outside Control Limits

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking water	**Date Received:**	NA

Semivolatile Organics by EPA Method 525.2

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1510524-4	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	525.2		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorocyclopentadiene	ND	U	0.10	1	10/27/15	11/04/15	KWG1510524	
Fluorene	ND	U	0.050	1	10/27/15	11/04/15	KWG1510524	*
Propachlor	ND	U	0.10	1	10/27/15	11/04/15	KWG1510524	
Hexachlorobenzene	ND	U	0.10	1	10/27/15	11/04/15	KWG1510524	
Simazine	ND	U	0.050	1	10/27/15	11/04/15	KWG1510524	
Atrazine	ND	U	0.10	1	10/27/15	11/04/15	KWG1510524	
Metribuzin	ND	U	0.20	1	10/27/15	11/04/15	KWG1510524	
Alachlor	ND	U	0.072	1	10/27/15	11/04/15	KWG1510524	
Bromacil	ND	U	0.20	1	10/27/15	11/04/15	KWG1510524	
Metolachlor	ND	U	0.090	1	10/27/15	11/04/15	KWG1510524	
Butachlor	ND	U	0.10	1	10/27/15	11/04/15	KWG1510524	
Bis(2-ethylhexyl) Adipate	ND	U	0.60	1	10/27/15	11/04/15	KWG1510524	
Bis(2-ethylhexyl) Phthalate	ND	U	0.60	1	10/27/15	11/04/15	KWG1510524	
Benzo(a)pyrene	ND	U	0.020	1	10/27/15	11/04/15	KWG1510524	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,3-Dimethyl-2-nitrobenzene	117	70-130	11/04/15	Acceptable
Triphenyl Phosphate	94	70-130	11/04/15	Acceptable
Perylene-d12	96	70-130	11/04/15	Acceptable

Comments:

Client: Longview, City of
Project: Sentinel Well
Sample Matrix: Drinking water

Service Request: K1511794

Surrogate Recovery Summary
Semivolatile Organics by EPA Method 525.2

Extraction Method: METHOD
Analysis Method: 525.2

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1		Sur2	Sur3	
DW-1	K1511794-001	127		101	53	*
Batch QC	K1511798-001	131	*	98	63	*
Method Blank	KWG1510524-4	117		94	96	
Batch QCMS	KWG1510524-1	125		103	83	
Batch QCDMS	KWG1510524-2	124		107	91	
Lab Control Sample	KWG1510524-3	123		114	96	

Surrogate Recovery Control Limits (%)

Sur1	=	1,3-Dimethyl-2-nitrobenzene	70-130
Sur2	=	Triphenyl Phosphate	70-130
Sur3	=	Perylene-d12	70-130

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Client:	Longview, City of	**Service Request:**	K575594a
Project:	MentineET eHE	**Date Extracted:**	5u/N9/Nu57
Sample Matrix:	2 rin3ing wWer	**Date Analyzed:**	55/ua/Nu57

Matrix Spike/Duplicate Matrix Spike Summary
Semivolatile Organics by EPA Method 525.2

Sample Name:	DW-1 QC	**Units:**	Sg/L
Lab Code:	K5755940.uu5	**Basis:**	1 A
Extraction Method:	H OG6 8 2	**Level:**	Low
Analysis Method:	7N7kN	**Extraction Lot:**	KT c 575u7Na

		DW-1 QCH M KT c 575u7Na.5 **Matrix Spike**			DW-1 QC2 H M KT c 575u7Na.N **Duplicate Matrix Spike**					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
6 ezW1Eoro-y-EopentWdiene	1 2	uk454	uk4bN	4b	uk4hN	uk4bN	49	9u.5hu	5	hu
mESorene	1 2	5kN5	uk4bN	5Nb	5kNa	uk4bN	5N4	9u.5hu	N	hu
PropW1Eor	1 2	uk444	uk4bN	5ua	5ku7	uk4bN	5u4	9u.5hu	7	hu
6 ezW1Eoro(enxene	1 2	5ku9	uk4bN	555	5ku9	uk4bN	555	9u.5hu	u	hu
M) Wxine	1 2	uk4hh	uk4bN	49	uk4uh	uk4bN	4a	9u.5hu	h	hu
AtrWxine	1 2	uk4hN	uk4bN	49	uk45u	uk4bN	47	9u.5hu	N	hu
H etri(Sxin	1 2	5ku5	uk4bN	5u7	5kuh	uk4bN	5u9	9u.5hu	N	hu
AEW1Eor	1 2	uk4ua	uk4bN	4a	uk4N7	uk4bN	4b	9u.5hu	N	hu
Dro) WiE	1 2	5ku5	uk4bN	5u7	5kuN	uk4bN	5ub	9u.5hu	5	hu
H etoEW1Eor	1 2	ukl00N	uk4bN	4N	uk4u7	uk4bN	4a	9u.5hu	h	hu
DStW1Eor	1 2	5kua	uk4bN	5u0	5ku7	uk4bN	5u4	9u.5hu	5	hu
Di*BNet1yHezyEs AdipWe	1 2	5k5u	uk4bN	55a	5k50	uk4bN	5Nh	9u.5hu	0	hu
Di*BNet1yHezyEs P1t1WBWe	1 2	5k57	uk4bN	5Nu	5kN0	uk4bN	5hh F	9u.5hu	5u	hu
DenxoBWspyrene	1 2	ukl05h	uk4bN	07	ukl0ba	uk4bN	4u	9u.5hu	b	hu

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Per-ent re-overie* Wid reBWive per-ent differen-e* BRP2 s We deter) ined (y t1e *oftwWe S*ing vWSe* in t1e -WESBWion w1i-1 1We not (een roSndedk

Client:	Longview, City of	**Service Request:**	DWWWK5
Project:	kentineNS eNN	**Date Extracted:**	W2/71/72W
Sample Matrix:	ErinTing w. ter	**Date Analyzed:**	WW25/72W

Lab Control Spike Summary
Semivolatile Organics by EPA Method 525.2

Extraction Method:	H OG6 8 E	**Units:**	4g/L
Analysis Method:	- 7- 97	**Basis:**	0 A
		Level:	Low
		Extraction Lot:	DS 1 WW2- 75

L. u ControNk. a pNe
DS 1 WW2- 753M
Lab Control Spike

Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
6 ec. hbNorohyhNopent. ziene	29Kd2	W22	Kd	123WW2
PN4orene	WMW	W22	WWW m	123WW2
(rop. hbNor	WW7	W22	WW7	123WW2
6 ec. hbNorouenxene	WWW	W22	WWW	123WW2
kia . xine	W2W	W22	W2W	123WW2
Atr. xine	W2M	W22	W2M	123WW2
H etriu4xin	WW2	W22	WW2	123WW2
ANhbNor	W21	W22	W21	123WW2
) roa . hiN	W21	W22	W21	123WW2
H etoNhbNor	W21	W22	W21	123WW2
) 4t. hbNor	WWM	W22	WWM	123WW2
) i*B73etbyNecyN Azip. te	WWW	W22	WWW	123WW2
) i*B73etbyNecyN (btb. Nte	WWF	W22	WWF	123WW2
) enxoB spyrene	WWI	W22	WWI	123WW2

Results flagged with an asterisk (*) indicate values outside control criteria.

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Diquat and Paraquat by EPA Method 549.2

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	10/19/2015
Sample Matrix:	Drinking water	**Date Received:**	10/19/2015

Diquat and Paraquat by EPA Method 549.2

Sample Name:	DW-1	**Units:**	ug/L
Lab Code:	K1511794-001	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	549.2		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diquat	ND	U	0.400	1	10/23/15	11/05/15	KWG1510343	
Paraquat	ND	U	0.800	1	10/23/15	11/05/15	KWG1510343	

Comments:

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking water	**Date Received:**	NA

Diquat and Paraquat by EPA Method 549.2

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1510343-5	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	549.2		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diquat	ND	U	0.400	1	10/23/15	11/05/15	KWG1510343	
Paraquat	ND	U	0.800	1	10/23/15	11/05/15	KWG1510343	

Comments:

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Extracted:**	10/23/2015
Sample Matrix:	Drinking water	**Date Analyzed:**	11/05/2015

Matrix Spike/Duplicate Matrix Spike Summary
Diquat and Paraquat by EPA Method 549.2

Sample Name:	DW-1	**Units:**	ug/L
Lab Code:	K1511794-001	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	549.2	**Extraction Lot:**	KWG1510343

		DW-1MS KWG1510343-1 Matrix Spike			DW-1DMS KWG1510343-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Diquat	ND	14.2	12.0	118	13.5	12.0	112	70-130	5	30
Paraquat	ND	11.3	12.0	94	11.6	12.0	96	70-130	3	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	DWWWK5
Project:	Nentineua eu	**Date Extracted:**	W/93/91W
Sample Matrix:	ErinTing w. ter	**Date Analyzed:**	WW1 - /91W

Lab Control Spike Summary
Diquat and Paraquat by EPA Method 549.2

Extraction Method:	HOGq 8 E	**Units:**	4g/L
Analysis Method:	- 5K79	**Basis:**	0 A
		Level:	Low
		Extraction Lot:	Da S WW353

L. 2 ControuN k pue
Da S WW353M
Lab Control Spike

Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
Ei64. t	W37W	W97	WW	11 MW31
P. r. 64. t	W7K	W97	KW	11 MW31

Results flagged with an asterisk (*) indicate values outside control criteria.

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Subcontract Lab Results

ALS Environmental—Kelso Laboratory
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www.alsglobal.com

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NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

[illegible]

[illegible]

Certificate of Analysis

[illegible]	**SOCs**	[illegible]	**2103033**
[illegible]	**51K1511794**	[illegible]	**K1511794**

[illegible]

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This page is included as part of the Analytical Report and must be retained as a permanent record thereof.

Kelli Wolfgang

[illegible]

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
21[illegible]3[illegible]33[illegible]1	[illegible]1511[illegible]1	[illegible]g [illegible]	1[illegible]1[illegible]2[illegible]15 13[illegible]3[illegible]	1[illegible]21[illegible]2[illegible]15 [illegible]8[illegible]51	[illegible]

Notes

[illegible]

Standard Acronyms/Flags

[illegible]

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

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Kelli Wolfgang

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QUALITY CONTROL DATA

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QC Batch: □P□□□□□□□ **Analysis Method:** □P□ 531□1

QC Batch Method: □P□ 531□1

Associated Lab Samples: 21□3□33□□1

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

QUALITY CONTROL DATA

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

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ALS Environmental Chain of Custody

1317 South 13th Avenue • Kelso, WA 98626 • 1-360-577-7222 • FAX 1-360-636-1068

2103033

Project Number: K1511794
Project Manager: Chris Leaf
QAP: LAB QAP

Lab Code	Sample ID	# of Cont.	Matrix	Sample Date	Sample Time	Lab ID	CARBAM 531.1
K1511794-001	DW-1	2	Drinking Water	10/19/15	1337	Middletown ALS	X

	Y	N	Initials	Cooler Temp 2 °C
Custody Seals Present?	✓			
(If present) Seals Intact?	✓			Cooler #:
Received on Ice?	✓			
COC/Lbls Complete	✓			
Cont in Good Cond?	✓			Therm ID: TH-294
Correct Containers?	✓			
Correct Samp Vol?	✓			Ship Carrier:
Correct Preservation?	✓			FedEx UPS
Headspace/Volatiles?				DHL

Tracking #: 6647 9207 3317

Test Comments
CARBAM - 531.1 K1511794-001 Full list for WA Regulations - no compliance report required.

Folder Comments:
Report all metals in mg/l. No DW State form required.

10/21/15 KW

Special Instructions/Comments
Please provide the electronic (PDF and EDD) report to the following e-mail address: ALKLS.Data@alsglobal.com.

CL 10/20/15

H - Test is On Hold P - Test is Authorized for Prep Only

Turnaround Requirements
___ RUSH (Surcharges Apply)
PLEASE CIRCLE WORK DAYS
1 2 3 4 5
✓ STANDARD
Requested FAX Date: _____
Requested Report Date: 11/05/15

Report Requirements
___ I. Results Only
✓ II. Results + QC Summaries
___ III. Results + QC and Calibration Summaries
___ IV. Data Validation Report with Raw Data
PQL/MDL/J N
EDD Y Basic w/QC

Invoice Information
PO# 51K1511794
Bill to

Relinquished By: KSmith 10/20/15 1300 Received By: ALS 10/21/15 0831 Airbill Number:

LABORATORY REPORT

November 5, 2015

Jeff Coleman
Longview, City of
W/S Operation Center
Longview, WA 98632

RE: Sentinel Well

Dear Jeff:

Enclosed are the results of the sample submitted to our laboratory on October 21, 2015. For your reference, this analysis has been assigned our service request number K1511794.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

Kate Aguilera

By Kate Aguilera at 8:19 am, Nov 05, 2015

Kate Aguilera
Project Manager

Client: Longview, City of
Project: Sentinel Well

Service Request No: K1511794

CASE NARRATIVE

The sample was received intact under chain of custody in Simi Valley on October 21, 2015 and was stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the sample at the time of sample receipt.

Hydrogen Sulfide Analysis

The sample was analyzed for hydrogen sulfide using a gas chromatograph equipped with a sulfur chemiluminescence detector (SCD). This method is not included on the laboratory's NELAP, DoD-ELAP, or AIHA-LAP scope of accreditation.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
AIHA	http://www.aihaaccreditedlabs.org	101661
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0694
DoD ELAP	http://www.pjlabs.com/search-accredited-labs	L14-2-R1
Florida DOH (NELAP)	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E871020
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/labcert.htm	2014025
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	876241
New Jersey DEP (NELAP)	http://www.nj.gov/dep/oqa/	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-001
Pennsylvania DEP	http://www.depweb.state.pa.us/labs	68-03307 (Registration)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704413-15-6
Utah DOH (NELAP)	http://www.health.utah.gov/lab/labimp/certification/index.html	CA016272015-5
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

Intra-Network Chain of Custody

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ALS Contact: Chris Leaf

Project Name: Sentinel Well
Project Number:
Project Manager: Jeff Coleman
Company: Longview, City of
QAP: LAB QAP

Lab Code	Client Sample ID	# of Cont.	Matrix	Sample Date	Sample Time	Date Received	Send To	Sulfur Sulfur Liq
K1511794-001	DW-1	2	Drinking Water	10/19/15	1337	10/19/15	SIMIVALLEY	II

1+2

Test Comments

Sulfur - Sulfur Liq K1511794-001 Hydrogen Sulfide

Folder Comments:

Report all metals in mg/L. No DW State form required.

Special Instructions/Comments

Please provide the electronic (PDF and EDD) report to the following e-mail address: ALKLS.Data@alsglobal.com.

CL 10/20/15

pH Checked _____

Turnaround Requirements

____ RUSH (Surcharges Apply)

PLEASE CIRCLE WORK DAYS

1 2 3 4 5

✓ STANDARD

Requested FAX Date: _____

Requested Report Date: 11/05/15

Report Requirements

____ I. Results Only

✓ II. Results + QC Summaries

____ III. Results + QC and Calibration Summaries

____ IV. Data Validation Report with Raw Data

PQL/MDL/J N

EDD Y Basic w/QC

Invoice Information

PO# 51K1511794

Bill to

Relinquished By: H Smith 10/20/15 1200

Received By: [illegible] 10/21/15 0940 1° blank/gel

Airbill Number:

ALS Environmental
Sample Acceptance Check Form

Client: Longview, City of Work order: K1511794
Project: Sentinel Well
Sample(s) received on: 10/21/15 Date opened: 10/21/15 by: KKELPE

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Did **sample containers** arrive in good condition?	☒	☐	☐
3	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
4	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
5	Was **sample volume** received adequate for analysis?	☒	☐	☐
6	Are samples within specified holding times?	☒	☐	☐
7	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: ° C Blank Temperature: 1° C **Gel Packs**			
8	Were **custody seals** on outside of cooler/Box/Container?	☒	☐	☐
	Location of seal(s)? _____ Sealing Lid?	☒	☐	☐
	Were signature and date included?	☒	☐	☐
	Were seals intact?	☒	☐	☐
9	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☒	☐	☐
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☒	☐	☐
10	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
11	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
K1511794-001.01	40mL VOA NP		7	1	A	MC 11/03/2015
K1511794-001.02	40mL VOA NP				A	

Explain any discrepancies: (include lab sample ID numbers):
The sample was received at ALS-Kelso on 10/19/15.

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Longview, City of**
Client Project ID: **Sentinel Well** ALS Project ID: K1511794

Hydrogen Sulfide

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 7890A/GC22/SCD Date(s) Collected: 10/19/15
Analyst: Mike Conejo Date Received: 10/19/15
Sample Type: Drinking Water Date Analyzed: 11/3/15
Test Notes:

Client Sample ID	ALS Sample ID	Sample Amount ml(s)	Purge Volume Liter(s)	Injection Volume ml(s)	**Result µg/L**	MRL µg/L	Data Qualifier
DW-1	K1511794-001	10.0	0.30	1.0	ND	0.84	
Method Blank	P151103-MB	10.0	0.30	1.0	ND	0.84	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Longview, City of**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **Sentinel Well**

ALS Project ID: K1511794
ALS Sample ID: P151103-DLCS

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 7890A/GC22/SCD
Analyst: Mike Conejo
Sample Type: Drinking Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 11/03/15
Liquid Amount: 10.0 ml(s)
Purge Volume: 0.30 Liter(s)
Injection Volume: 0.20 ml(s)

CAS #	Compound	Spike Amount LCS / DLCS ug/L	Result LCS ug/L	Result DLCS ug/L	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
7783-06-4	Hydrogen Sulfide	416	404	422	**97**	**101**	45-151	4	28	

ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
T : +1 360 577 7222
F : +1 360 636 1068
www.alsglobal.com

December 09, 2015

Analytical Report for Service Request No: K1511793

Jeff Coleman
Longview, City of
W/S Operation Center
P.O. Box 128
Longview, WA 98632

RE: Sentinel Wells

Dear Jeff,

Enclosed are the results of the sample(s) submitted to our laboratory October 19, 2015
For your reference, these analyses have been assigned our service request number **K1511793.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3275. You may also contact me via email at Chris.Leaf@ALSGlobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Chris Leaf
Project Manager

ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
T : +1 360 577 7222
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www.alsglobal.com

Table of Contents

□ □ □o□ □
□ □a□f□e□□
□□a□e □e□□f□□a□o□□□□□□□e□□a□o□□□□□□ □□e□□e□
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Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L14-51
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	Not available	-
Idaho DHW	http://www.healthandwelfare.idaho.gov/Health/Labs/CertificationDrinkingWaterLabs/tabid/1833/Default.aspx	-
ISO 17025	http://www.pjlabs.com/	L14-50
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	03016
Maine DHS	Not available	WA01276
Michigan DEQ	http://www.michigan.gov/deq/0,1607,7-135-3307_4131_4156---,00.html	9949
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	□□□a□g□a□o□	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Chain of Custody

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636- 1068
www.alsglobal.com

ALS Environmental

58081

CHAIN OF CUSTODY

58081

001

SR# [illegible]

COC Set____of____

COC#_____

1317 South 13th Ave, Kelso, WA 98626 Phone (360) 577-7222 / 800-695-7222 / FAX (360) 636-1068
www.alsglobal.com

Project Name: Sentinel Wells
Project Number:
Project Manager: Jeff Coleman
Company: City of Longview
Address: PO Box 1280 Longview WA 98632
Phone #
email
Sampler Signature: T Daly
Sampler Printed Name: T Daly

CLIENT SAMPLE ID	LABID	SAMPLING Date	SAMPLING Time	Matrix	NUMBER OF CONTAINERS	7D 900.0 / Radioact	7D 903.1 / Radium 226	7D 904.0 / Radium 228	180D 200.8 / Metals T	1	2	3	4	5	Remarks
1. DW-1		10/19/15	1337		2										
2.															
3.															
4.															
5.															
6.															
7.															
8.															
9.															
10.															

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required

___ II. Report Dup., MS, MSD as required

___ III. CLP Like Summary (no raw data)

___ IV. Data Validation Report

___ V. EDD

Invoice Information

P.O.# 36-4739

Bill To: City of Longview
PO Box 128
Longview WA 98632

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
___ Standard

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments:

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other_____(Circle One)

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature: T Daly	Signature: [illegible]	Signature	Signature	Signature	Signature
Printed Name: T Daly	Printed Name: [illegible] ALS	Printed Name	Printed Name	Printed Name	Printed Name
Firm: CoL	Firm	Firm	Firm	Firm	Firm
Date/Time: 10/19/15 1540	Date/Time: 10-19-15 1541	Date/Time	Date/Time	Date/Time	Date/Time

PC CV

Cooler Receipt and Preservation Form

Client / Project: City of Longview Service Request K15 11793

Received: 10/19/15 Opened: 10/19/15 By: KD Unloaded: 10/19/15 By: KD

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? _____

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected. Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
9.8	10.0	3.5	3.7	+.2	371			

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time
DW-1	Cubi				X	HNO3	8ml	RE/1-31-L	KD	1600

Notes, Discrepancies, & Resolutions: _____

Page _____ ***of*** _____

Metals

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1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511793
Project:	Sentinel Wells	**Date Collected:**	10/19/15 13:37
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15 15:41
Sample Name:	DW-1	**Basis:**	NA
Lab Code:	K1511793-001		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Uranium	200.8	ND U	mg/L	0.000020	1	11/04/15 01:06	10/27/15	

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511793
Project:	Sentinel Wells	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	NA
Lab Code:	KQ1512448-01		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Uranium	200.8	ND U	mg/L	0.000020	1	11/04/15 12:37	10/27/15	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511793
Project	Sentinel Wells	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
		Date Analyzed:	11/04/15

Replicate Sample Summary
Total Metals

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511795-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample KQ1512448-04 Result	Average	RPD	RPD Limit
Uranium	200.8	0.000020	ND U	ND U	ND	-	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Printed 11/24/15 1:24:30 PM

Superset Reference:

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511793
Project:	Sentinel Wells	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	11/4/15
		Date Extracted:	10/27/15

Matrix Spike Summary
Total Metals

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511795-001	**Basis:**	NA
Analysis Method:	200.8		
Prep Method:	EPA CLP-METALS ILM04.0		

Matrix Spike
KQ1512448-05

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Uranium	ND U	0.0207	0.0200	104	70-130

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Printed 11/24/15 1:24:30 PM

Superset Reference:

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511793
Project:	Sentinel Wells	**Date Analyzed:**	11/04/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/27/15

Lab Control Sample Summary
Total Metals

Analysis Method:	200.8	**Units:**	mg/L
Prep Method:	EPA CLP-METALS ILM04.0	**Basis:**	NA
		Analysis Lot:	470354

Lab Control Sample
KQ1512448-02

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
Uranium	0.0205	0.0200	102	85-115

Subcontract Lab Results

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Wednesday, November 11, 2015

Chris Leaf
ALS Environmental
1317 South 13th Ave
Kelso, WA 98626

Re: ALS Workorder: 1510334
Project Name:
Project Number: K1511793

Dear Ms. Leaf:

One water sample was received from ALS Environmental, on 10/21/2015. The sample was scheduled for the following analyses:

Gross Alpha/Beta
Radium-226
Radium-228

The results for these analyses are contained in the enclosed reports.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Thank you for your confidence in ALS Environmental. Should you have any questions, please call.

Sincerely,

ALS Environmental
Jeff R. Kujawa
Project Manager

ALS Environmental – Fort Collins is accredited by the following accreditation bodies for various testing scopes in accordance with requirements of each accreditation body. All testing is performed under the laboratory management system, which is maintained to meet these requirement and regulations. Please contact the laboratory or accreditation body for the current scope testing parameters.

ALS Environmental – Fort Collins	
Accreditation Body	License or Certification Number
Alaska (AK)	UST-086
Alaska (AK)	CO01099
Arizona (AZ)	AZ0742
California (CA)	06251CA
Colorado (CO)	CO01099
Connecticut (CT)	PH-0232
Florida (FL)	E87914
Idaho (ID)	CO01099
Kansas (KS)	E-10381
Kentucky (KY)	90137
L-A-B (DoD ELAP/ISO 170250)	L2257
Louisiana (LA)	05057
Maryland (MD)	285
Missouri (MO)	175
Nebraska(NE)	NE-OS-24-13
Nevada (NV)	CO000782008A
New York (NY)	12036
North Dakota (ND)	R-057
Oklahoma (OK)	1301
Pennsylvania (PA)	68-03116
Tennessee (TN)	2976
Texas (TX)	T104704241
Utah (UT)	CO01099
Washington (WA)	C1280

1510334

Gross Alpha/Beta:
The samples were analyzed for gross alpha and beta activity by gas flow proportional counting according to the current revision of SOP 724. Gross alpha results are referenced to ^{241}Am. Gross beta results are referenced to ^{90}Sr/Y.

All acceptance criteria were met.

Radium-228:
The samples were analyzed for the presence of ^{228}Ra by low background gas flow proportional counting of ^{228}Ac, which is the ingrown progeny of ^{228}Ra, according to the current revision of SOP 724.

All acceptance criteria were met.

Radium-226:
The samples were prepared and analyzed according to the current revision of SOP 783.

All acceptance criteria were met.

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1510334
Client Name: ALS Environmental
Client Project Name:
Client Project Number: K1511793
Client PO Number: K1511793

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
DW-1	1510334-1		WATER	19-Oct-15	13:37

ALS Environmental Chain of Custody

1317 South 13th Avenue • Kelso, WA 98626 • 1-360-577-7222 • FAX 1-360-636-1068

ALS Contact: Chris Leaf

1510334

Project Number: K1511793
Project Manager: Chris Leaf
QAP: LAB QAP

Lab Code	Sample ID	# of Cont.	Matrix	Sample Date	Sample Time	Lab ID	Radioact 900.0	Radium 226 903.1	Radium 228 904.0
K1511793-001	DW-1 (1)	2	Drinking Water	10/19/15	1337	Fort Collins ALS	X	X	X

Special Instructions/Comments

Please provide the electronic (PDF and EDD) report to the following e-mail address: ALKLS.Data@alsglobal.com.

CL 10/20/15

H - Test is On Hold P - Test is Authorized for Prep Only

Turnaround Requirements

____ **RUSH** (Surcharges Apply)

PLEASE CIRCLE WORK DAYS

1 2 3 4 5

✓ **STANDARD**

Requested FAX Date: _____

Requested Report Date: 11/16/15

Report Requirements

____ I. Results Only

✓ II. Results + QC Summaries

____ III. Results + QC and Calibration Summaries

____ IV. Data Validation Report with Raw Data

PQL/MDL/J N

EDD Y Basic w/QC

Invoice Information

PO# 51K1511793 ✓

Bill to

Relinquished By: K Smith 10/20/15 1200

Received By: [signature] 10-21-15 @ 0935

Airbill Number:

ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: ALS Kelso Workorder No: 1510334

Project Manager: JRK Initials: SDM Date: 10-21-15

1. Does this project require any special handling in addition to standard ALS procedures?			YES	(NO)
2. Are custody seals on shipping containers intact?	NONE		(YES)	NO
3. Are Custody seals on sample containers intact?	(NONE)		YES	NO
4. Is there a COC (Chain-of-Custody) present or other representative documents?			(YES)	NO
* 5. Are the COC and bottle labels complete and legible?			YES	(NO)
6. Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)			(YES)	NO
7. Were airbills / shipping documents present and/or removable?	DROP OFF		(YES)	NO
8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	N/A		(YES)	NO
9. Are all aqueous non-preserved samples pH 4-9?	(N/A)		YES	NO
10. Is there sufficient sample for the requested analyses?			(YES)	NO
11. Were all samples placed in the proper containers for the requested analyses?			(YES)	NO
12. Are all samples within holding times for the requested analyses?			(YES)	NO
13. Were all sample containers received intact? (not broken or leaking, etc.)			(YES)	NO
14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: ____ < green pea ____ > green pea	(N/A)		YES	NO
15. Do any water samples contain sediment? Amount Amount of sediment: ____ dusting ____ moderate ____ heavy	N/A		YES	(NO)
16. Were the samples shipped on ice?			YES	(NO)
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #2 #4	(RAD ONLY)		YES	NO

Cooler #:	1							
Temperature (°C):	Amb							
No. of custody seals on cooler:	1							
DOT Survey/ Acceptance Information — External µR/hr reading:	11							
Background µR/hr reading:	11							

Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? (YES) / NO / NA (If no, see Form 008.)

Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXCEPT #1 AND #16.

* 5.) Bottle label on Sample 1 bottle 2 is not legible. The Field id is wiped off. The lab ID label matches the COC.

⇒ lab ID label from Kelso lab says "unpreserved" when I took a pH tape; sample pH'd at < 2.

If applicable, was the client contacted? YES / NO / (NA) Contact: ____ Date/Time: ____

Project Manager Signature / Date: [signature] 10-21-15

*IR Gun #2: Oakton, SN 29922500201-0066
*IR Gun #4: Oakton, SN 2372220101-0002

Form 201r24.xls (06/04/2012)

ORIGIN ID:LOGA (360) 577-7222
SAMPLE RECEIVING
ALS ENVIRONMENTAL
1317 S 13TH AVE

KELSO, WA 98626
UNITED STATES US

SHIP DATE: 20OCT15
ACTWGT: 68.3 LB MAN
CAD: 102641/CAFE2806
DIMS: 26x14x13 IN

BILL SENDER

TO SAMPLE RECEIVING
ALS LBORATORY GROUP
225 COMMERCE DRIVE

FORT COLLINS CO 80524
(970) 490-1511
PO: CL/CL/CL

REF: SAMPLE K1511795 1511793 11796

FedEx Express

TRK# 0201 6447 9267 3306

WED - 21 OCT 10:30A
PRIORITY OVERNIGHT

XH FTCA

80524
CO-US DEN

Part # 156148-434 RIT2 03/14

1510334

Client:	ALS Environmental	**Date:**	*11-Nov-15*
Project:	K1511793	**Work Order:**	1510334
Sample ID:	DW-1	**Lab ID:**	1510334-1
Legal Location:		**Matrix:**	WATER
Collection Date:	10/19/2015 13:37	**Percent Moisture:**	

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Gross Alpha/Beta by GFPC		**PAI 724**			Prep Date: **11/4/2015**	PrepBy: **DKL**
GROSS ALPHA	ND (+/- 1)	U	2.5	pCi/l	NA	11/6/2015 10:16
GROSS BETA	ND (+/- 1.6)	U	3.2	pCi/l	NA	11/6/2015 10:16
Radium-226 by Radon Emanation - Method 903.1		**PAI 783**			Prep Date: **11/3/2015**	PrepBy: **PJW**
Ra-226	0.14 (+/- 0.11)	LT	0.14	pCi/l	NA	11/10/2015 12:27
Carr: BARIUM	*98.4*		*40-110*	*%REC*	DL = NA	11/10/2015 12:27
Radium-228 Analysis by GFPC		**PAI 724**			Prep Date: **10/26/2015**	PrepBy: **DKL**
Ra-228	ND (+/- 0.27)	U	0.66	pCi/l	NA	11/2/2015 10:46
Carr: BARIUM	*98.4*		*40-110*	*%REC*	DL = NA	11/2/2015 10:46

Client:	ALS Environmental	**Date:**	*11-Nov-15*
Project:	K1511793	**Work Order:**	1510334
Sample ID:	DW-1	**Lab ID:**	1510334-1
Legal Location:		**Matrix:**	WATER
Collection Date:	10/19/2015 13:37	**Percent Moisture:**	

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed

Explanation of Qualifiers

Radiochemistry:

U or ND - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
Y2 - Chemical Yield outside default limits.
W - DER is greater than Warning Limit of 1.42
* - Aliquot Basis is 'As Received' while the Report Basis is 'Dry Weight'.
# - Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'.
G - Sample density differs by more than 15% of LCS density.
D - DER is greater than Control Limit
M - Requested MDC not met.
LT - Result is less than requested MDC but greater than achieved MDC.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS, Matrix Spike Recovery within control limits.
N - Matrix Spike Recovery outside control limits
NC - Not Calculated for duplicate results less than 5 times MDC
B - Analyte concentration greater than MDC.
B3 - Analyte concentration greater than MDC but less than Requested MDC.

Inorganics:

B - Result is less than the requested reporting limit but greater than the instrument method detection limit (MDL).
U or ND - Indicates that the compound was analyzed for but not detected.
E - The reported value is estimated because of the presence of interference. An explanatory note may be included in the narrative.
M - Duplicate injection precision was not met.
N - Spiked sample recovery not within control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike duplicate fail and the native sample concentration is less than four times the spike added concentration.
Z - Spiked recovery not within control limits. An explanatory note may be included in the narrative.
* - Duplicate analysis (relative percent difference) not within control limits.
S - SAR value is estimated as one or more analytes used in the calculation were not detected above the detection limit.

Organics:

U or ND - Indicates that the compound was analyzed for but not detected.
B - Analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user.
E - Analyte concentration exceeds the upper level of the calibration range.
J - Estimated value. The result is less than the reporting limit but greater than the instrument method detection limit (MDL).
A - A tentatively identified compound is a suspected aldol-condensation product.
X - The analyte was diluted below an accurate quantitation level.
* - The spike recovery is equal to or outside the control criteria used.
+ - The relative percent difference (RPD) equals or exceeds the control criteria.
G - A pattern resembling gasoline was detected in this sample.
D - A pattern resembling diesel was detected in this sample.
M - A pattern resembling motor oil was detected in this sample.
C - A pattern resembling crude oil was detected in this sample.
4 - A pattern resembling JP-4 was detected in this sample.
5 - A pattern resembling JP-5 was detected in this sample.
H - Indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest.
L - Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest.
Z - This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products:
- gasoline
- JP-8
- diesel
- mineral spirits
- motor oil
- Stoddard solvent
- bunker C

ALS Environmental -- FC

Client: ALS Environmental
Work Order: 1510334
Project: K1511793

Date: *11/11/2015 3:17*

QC BATCH REPORT

Batch ID: **RE151103-1-1** Instrument ID **Alpha Scin** Method: **Radium-226 by Radon Emanation**

LCS Sample ID: **RE151103-1** Units: **pCi/l** Analysis Date: **11/10/2015 13:25**
Client ID: Run ID: **RE151103-1A** Prep Date: **11/3/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-226	23.8 (+/- 6.1)	0.3	30.71		77.6	67-120					P
Carr: BARIUM	32520		33320		97.6	40-110					

LCSD Sample ID: **RE151103-1** Units: **pCi/l** Analysis Date: **11/10/2015 13:25**
Client ID: Run ID: **RE151103-1A** Prep Date: **11/3/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-226	27 (+/- 6.8)	0.4	30.71		87.8	67-120		23.8	0.3	2.1	P
Carr: BARIUM	32660		33320		98	40-110		32520			

MB Sample ID: **RE151103-1** Units: **pCi/l** Analysis Date: **11/10/2015 12:27**
Client ID: Run ID: **RE151103-1A** Prep Date: **11/3/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-226	ND	0.19									Y1,U
Carr: BARIUM	33370		33320		100	40-110					Y1

The following samples were analyzed in this batch: 1510334-1

Client: ALS Environmental
Work Order: 1510334
Project: K1511793

QC BATCH REPORT

Batch ID: **AB151104-1-4** Instrument ID **LB4100-C** Method: **Gross Alpha/Beta by GFPC**

LCS Sample ID: **AB151104-1** Units: **pCi/l** Analysis Date: **11/6/2015 12:26**

Client ID: Run ID: **AB151104-1A** Prep Date: **11/4/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
GROSS ALPHA	204 (+/- 38)	7	224.1		91	70-130					P,M3
GROSS BETA	194 (+/- 34)	11	204.2		94.9	70-130					P,M3

MB Sample ID: **AB151104-1** Units: **pCi/l** Analysis Date: **11/6/2015 15:12**

Client ID: Run ID: **AB151104-1A** Prep Date: **11/4/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
GROSS ALPHA	ND	0.82									U
GROSS BETA	ND	1.12									U

The following samples were analyzed in this batch: 1510334-1

Client: ALS Environmental
Work Order: 1510334
Project: K1511793

QC BATCH REPORT

Batch ID: **RA151026-1-1** Instrument ID **LB4100-A** Method: **Radium-228 Analysis by GFPC**

LCS Sample ID: **RA151026-1** Units: **pCi/l** Analysis Date: **11/2/2015 10:05**
Client ID: Run ID: **RA151026-1A** Prep Date: **10/26/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-228	7.5 (+/- 2)	1	7.362		102	70-130					P
Carr: BARIUM	32520		33320		97.6	40-110					

LCSD Sample ID: **RA151026-1** Units: **pCi/l** Analysis Date: **11/2/2015 10:05**
Client ID: Run ID: **RA151026-1A** Prep Date: **10/26/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-228	7.8 (+/- 2)	1	7.362		106	70-130		7.5	0.1	2.1	P
Carr: BARIUM	32660		33320		98	40-110		32520			

MB Sample ID: **RA151026-1** Units: **pCi/l** Analysis Date: **11/2/2015 10:46**
Client ID: Run ID: **RA151026-1A** Prep Date: **10/26/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-228	ND	0.56									Y1,U
Carr: BARIUM	33370		33320		100	40-110					Y1

The following samples were analyzed in this batch: 1510334-1

ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
T : +1 360 577 7222
F : +1 360 636 1068
www.alsglobal.com

November 30, 2015

Analytical Report for Service Request No: K1511863

Jeff Coleman
Longview, City of
W/S Operation Center
P.O. Box 128
Longview, WA 98632

RE: Sentinel Well

Dear Jeff,

Enclosed are the results of the sample(s) submitted to our laboratory October 20, 2015
For your reference, these analyses have been assigned our service request number **K1511863.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3275. You may also contact me via email at Chris.Leaf@ALSGlobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

for

Chris Leaf
Project Manager

ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
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Table of Contents

Acronyms
Qualifiers
State Certifications, Accreditations, And Licenses
Case Narrative
Chain of Custody
General Chemistry
Metals
EPA Method 504.1
PesticidesPCBs by EPA Method 508.1
Chlorinated Herbicides by EPA 515.4
Volatile Organic Compounds
Semivolatile Organics by EPA Method 525.2
Diquat and Paraquat by EPA Method 549.2
Subcontract Lab Results

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L14-51
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	Not available	-
Idaho DHW	http://www.healthandwelfare.idaho.gov/Health/Labs/CertificationDrinkingWaterLabs/tabid/1833/Default.aspx	-
ISO 17025	http://www.pjlabs.com/	L14-50
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	03016
Maine DHS	Not available	WA01276
Michigan DEQ	http://www.michigan.gov/deq/0,1607,7-135-3307_4131_4156---,00.html	9949
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	□□□.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636- 1068
www.alsglobal.com

ALS ENVIRONMENTAL

Client:	Longview, City of	**Service Request No.:**	K1511863
Project:	Sentinel Well	**Date Received:**	10/20/15
Sample Matrix:	Drinking Water		

Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier II data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Surrogate recoveries have been reported for all applicable organic analyses. Additional quality control analyses reported herein include: Laboratory Duplicate (DUP), Matrix Spike (MS), Matrix/Duplicate Matrix Spike (MS/DMS), Laboratory Control Sample (LCS), and Laboratory/Duplicate Laboratory Control Sample (LCS/DLCS).

Sample Receipt

One drinking water sample was received for analysis at ALS Environmental on 10/20/15. The sample was received in good condition and consistent with the accompanying chain of custody form, except where noted on the cooler receipt and preservation form included in this report. The sample was stored in a refrigerator at 4ºC upon receipt at the laboratory.

General Chemistry Parameters

Chloride, Nitrate as Nitrogen by EPA Method 300.0 and Total Cyanide by EPA Method 335.4:
The matrix spike recoveries for sample Batch QC were outside control criteria because of suspected matrix interference. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. No further corrective action was taken.

Ammonia as Nitrogen by Standard Method 4500-NH3 G:
The Relative Percent Difference (RPD) criterion for the replicate analysis in sample Batch QC was not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). Analytical values derived from measurements close to the detection limit are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

No other anomalies associated with the analysis of this sample were observed.

Total Metals

No anomalies associated with the analysis of this sample were observed.

EDB and DBCP by EPA Method 504.1

No anomalies associated with the analysis of this sample were observed.

Approved by_____

Pesticides and Polychlorinated Biphenyls by EPA Method 508.1

Calibration Verification Exceptions:
The analysis of Organochlorine Pesticides and PCBs in Drinking Water by EPA 508.1 requires the use of dual column confirmation. When the Continuing Calibration Verification (CCV) criterion is met for both columns, the lower of the two sample results is generally reported. The primary evaluation criteria were not met on the confirmation column for Endrin. The results were reported from the column with an acceptable CCV. The data quality was not affected. No further corrective action was necessary.

Matrix Spike Recovery Exceptions:
The upper control criterion was exceeded for the following several analytes in Matrix Spike (MS) KWG1510525-1 and Matrix Spike Duplicate (MSD) KWG1510525-2. The analytes in question were not detected in the associated field samples. The error associated with elevated recovery indicated a high bias. The sample data was not significantly affected. No further corrective action was appropriate.

Lab Control Sample Exceptions:
The upper control criterion was exceeded for several analytes in Laboratory Control Sample (LCS) KWG1510525-3. The analytes in question were not detected in the associated field samples. The error associated with elevated recovery indicated a high bias. The sample data was not significantly affected. No further corrective action was appropriate.

No other anomalies associated with the analysis of this sample were observed.

Chlorinated Acides by EPA Method 515.4

Second Source Exceptions:
The analysis of Chlorinated Herbicides in Drinking Water requires the use of dual column confirmation. When the Initial Calibration Verification (ICV) criteria are met for both columns, the lower of the two sample results is generally reported. The criterion was not met for 4-Nitrophenol and Silvex in CAL 14387. The data quality was not affected. No further corrective action was necessary.

Matrix Spike Recovery Exceptions:
The matrix spike recovery and duplicate matrix spike recovery of Chloramben for batch QC was outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. The matrix spike outlier suggested a potential high bias in this matrix. No further corrective action was appropriate.

No other anomalies associated with the analysis of this sample were observed.

Volatile Organic Compounds by EPA Method 524.2

No anomalies associated with the analysis of this sample were observed.

Semivolatile Organic Compounds by EPA Method 525.2

Surrogate Exceptions:
The control criteria were exceeded for Perylene-d12 in samples DW-2 and Batch QC due to suspected matrix interference. . The sample contained particulate matter that collected on the extraction disk during sample elution. Historical results have shown that particulate matter can cause low recoveries for this surrogate. No further corrective action was appropriate.

Approved by_____

The upper control criterion was exceeded for 1,3-Dimethyl-2-nitrobenzene in samples DW-2 and Batch QC. No target analytes were detected in the sample. The error associated with an elevated recovery equated to a high bias. The quality of the sample data was not significantly affected. No further corrective action was appropriate.

Lab Control Sample Exceptions:
The upper control criterion was exceeded for Fluorene in Laboratory Control Sample (LCS) KWG1510524-3. The analyte in question was not detected in the associated field samples. The error associated with elevated recovery indicated a high bias. The sample data was not significantly affected. No further corrective action was appropriate.

Matrix Spike Recovery Exceptions:
The matrix spike recovery of Bis(2-ethylhexyl) Phthalate for sample Batch QC was outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. The matrix spike outlier suggested a potential high bias in this matrix. No further corrective action was appropriate.

No other anomalies associated with the analysis of this sample were observed.

Diquat by High Performance Liquid Chromatography

No anomalies associated with the analysis of this sample were observed.

Sulfur

This analysis was performed at ALS Environmental, Simi Valley, CA. The data for this analysis is included in the corresponding section of this report.

Carbamates by EPA Method 531.1

This analysis was performed at ALS Environmental, Middletown, PA. The data for this analysis is included in the corresponding section of this report.

Approved by_____

Chain of Custody

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636- 1068
www.alsglobal.com

ALS Environmental

58082

CHAIN OF CUSTODY

58082

001, 005

SR# K1511863

COC Set____of____

COC#_____

1317 South 13th Ave, Kelso, WA 98626 Phone (360) 577-7222 / 800-695-7222 / FAX (360) 636-1068
www.alsglobal.com

Project Name: Sentinel Wells
Project Number:
Project Manager: Jeff Coleman
Company: City of Longview
Address: PO Box 128 Longview WA 98632
Phone #:
email:
Sampler Signature: T Daly
Sampler Printed Name: T Daly

CLIENT SAMPLE ID	LABID	SAMPLING Date	SAMPLING Time	Matrix	NUMBER OF CONTAINERS	24H SM 9223 B / Colliert EC NC	24H SM 9223 B / Colliert Tot NC	48H 180.1 / Turbidity	48H 300.0 / NO2	48H 300.0 / NO3	48H SM 2120 B / Color	48H SM 4500-P E / O Phos	7D [redacted]	7D 549.2 / DIQ_PARAQ	7D SM 2540 C / TDS	14D 335.4 / CN T	14D 504.1 / EDB DBCP 123TCP	14D 508.1 / PEST_CL	14D 515.4 / CL_ACID_HERB	14D 524.2 / VOC	14D 525.2 / SVO	14D [redacted]	14D SM 2320 B / Alkalinity Titr	14D Sulfur Liq / Sulfur	28D 245.1 / Hg T	28D 300.0 / F	28D 531.1 / CARBAM	28D SM 2510 B / Conductivity	Remarks
1. DW-2		10/20/15	1250		28																								
2.																													
3.																													
4.																													
5.																													
6.																													
7.																													
8.																													
9.																													
10.																													

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required

___ II. Report Dup., MS, MSD as required

___ III. CLP Like Summary (no raw data)

___ IV. Data Validation Report

___ V. EDD

Invoice Information

P.O.# 36-4745

Bill To: City of Longview PO Box 128 Longview WA 98632

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
___ Standard

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments:

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other_____(Circle One)

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature: T Daly	Signature: [signature]	Signature	Signature	Signature	Signature
Printed Name: T Daly	Printed Name: A Rynn	Printed Name	Printed Name	Printed Name	Printed Name
Firm: C of L	Firm: ALS	Firm	Firm	Firm	Firm
Date/Time: 10/20/15 1548	Date/Time: 10/20/15 1548	Date/Time	Date/Time	Date/Time	Date/Time

(ALS) Environmental

58082

CHAIN OF CUSTODY

58082

001, 005

SR# K1511863

COC Set____of____

COC#_____

1317 South 13th Ave, Kelso, WA 98626 Phone (360) 577-7222 / 800-695-7222 / FAX (360) 636-1068
www.alsglobal.com

Project Name: Sentinel Wells
Project Number:
Project Manager: Jeff Coleman
Company: City of Longview
Address: PO Box 128 Longview WA 98632
Phone #
email
Sampler Signature: T Daly
Sampler Printed Name: T Daly

CLIENT SAMPLE ID	LABID	SAMPLING Date / Time	Matrix	NUMBER OF CONTAINERS	28D: 300.0 / Br	28D: 300.0 / Chloride	28D: 300.0 / SO4	28D: 314.0 / ClO4	28D: SM 4500-NH3 G / Ammonia	30D: [redacted]	180D: 1630 / Methyl Hg T	180D: 200.7 / Metals T	180D: 200.8 / Metals T	999D: Calculation / NO2 NO3 Calc	999D: SM 2340 B / Hardness Calc	1	2	3	4	5	Remarks
1. DW-2		10/20/15 1250																			
2.																					
3.																					
4.																					
5.																					
6.																					
7.																					
8.																					
9.																					
10.																					

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required

___ II. Report Dup., MS, MSD as required

___ III. CLP Like Summary (no raw data)

___ IV. Data Validation Report

___ V. EDD

Invoice Information

P.O.# 36-4745
Bill To: City of Longview
PO Box 128
Longview WA 98632

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
___ Standard

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments:

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other_____(Circle One)

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature: T Daly	Signature: [illegible]	Signature	Signature	Signature	Signature
Printed Name: Col 2	Printed Name: ALS	Printed Name	Printed Name	Printed Name	Printed Name
Firm	Firm	Firm	Firm	Firm	Firm
Date/Time: 10/20/15 1548	Date/Time: 10/20/15 1548	Date/Time	Date/Time	Date/Time	Date/Time

PC CL

Cooler Receipt and Preservation Form

Client / Project: City of Longview Service Request K15 11863

Received: 10/20/15 Opened: 10/20/15 By: KR Unloaded: 10/20/15 By: KR

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? _____

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
12.9	13.0	10.5	10.6	+0.1	338	1of4		
8.3	8.5	12.6	12.8	+0.2	354	2of4		
5.9	6.1	11.2	11.4	+0.2	359	3of4		
12.1	12.3	14.4	14.6	+0.2	368	4of4		

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA ~~Y~~ N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time
DW2	1 gl cube				X	HNO3	8mL	RE/131-L	KR	1625
DW7	↓				↓	↓	↓	↓	↓	↓
DW6										

Notes, Discrepancies, & Resolutions: _____

Page ____ *of* ____

General Chemistry

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636- 1068
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	180.1	**Units:**	NTU
Prep Method:	None	**Basis:**	NA

Turbidity

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-2	K1511863-001	**1.82**	0.20	1	10/21/15 12:00	
Method Blank	K1511863-MB1	ND U	0.20	1	10/20/15 13:44	

ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
Analysis Method:	180.1	**Units:**	NTU
Prep Method:	None	**Basis:**	NA

Replicate Sample Summary
Turbidity

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1511794-001DUP	0.20	12.2	12.2	12.2	<1	20	10/20/15
Batch QC	K1511798-001DUP	0.20	1.72	1.71	1.72	<1	20	10/20/15

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Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	NA

Lab Control Sample Summary
Turbidity

Analysis Method:	180.1	**Units:**	NTU
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	468080

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511863-LCS	4.50	4.23	106	90-110

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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Bromide

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
DW-2	K1511863-001	ND U	0.20	2	10/21/15 09:38	10/21/15	
Method Blank	K1511863-MB1	ND U	0.10	1	10/21/15 09:22	10/21/15	

ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
		Date Analyzed:	10/21/15

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	DW-2	**Units:**	mg/L
Lab Code:	K1511863-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample K1511863-001DUP Result	Average	RPD	RPD Limit
Bromide	300.0	0.20	ND U	ND U	NC	NC	20

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ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
		Date Analyzed:	10/21/15
		Date Extracted:	10/21/15

Duplicate Matrix Spike Summary
Bromide

Sample Name:	DW-2	**Units:**	mg/L
Lab Code:	K1511863-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511863-001MS			Duplicate Matrix Spike K1511863-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Bromide	ND U	9.54	10.0	95	9.79	10.0	98	90-110	3	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Analyzed:**	10/21/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/21/15

Lab Control Sample Summary
Bromide

Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	468396

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511863-LCS	2.41	2.50	97	90-110

ALS Group USA, Corp.
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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Chloride

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
DW-2	K1511863-001	**8.85**	0.20	2	10/21/15 09:38	10/21/15	
Method Blank	K1511863-MB1	ND U	0.10	1	10/21/15 09:22	10/21/15	

ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Replicate Sample Summary
Chloride

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
DW-2	K1511863-001DUP	0.20	8.85	8.93	8.89	<1	20	10/21/15
Batch QC	K1511896-004DUP	2.0	1.2 J	ND U	NC	NC	20	10/21/15

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ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
		Date Analyzed:	10/21/15
		Date Extracted:	10/21/15

Duplicate Matrix Spike Summary
Chloride

Sample Name:	DW-2	**Units:**	mg/L
Lab Code:	K1511863-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511863-001MS			Duplicate Matrix Spike K1511863-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Chloride	8.85	18.2	10.0	94	18.0	10.0	91	90-110	2	20

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dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/21/15
		Date Extracted:	10/21/15

Duplicate Matrix Spike Summary
Chloride

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511896-004	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511896-004MS			Duplicate Matrix Spike K1511896-004DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Chloride	1.2 J	34.0	40.0	82 *	34.0	40.0	82 *	90-110	<1	20

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Analyzed:**	10/21/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/21/15

Lab Control Sample Summary
Chloride

Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	468396

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511863-LCS	4.88	5.00	98	90-110

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Fluoride

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
DW-2	K1511863-001	**0.21**	0.20	2	10/21/15 09:38	10/21/15	
Method Blank	K1511863-MB1	ND U	0.10	1	10/21/15 09:22	10/21/15	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
		Date Analyzed:	10/21/15

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	DW-2	**Units:**	mg/L
Lab Code:	K1511863-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample K1511863-001DUP Result	Average	RPD	RPD Limit
Fluoride	300.0	0.20	0.21	0.20	0.204	3	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
		Date Analyzed:	10/21/15
		Date Extracted:	10/21/15

Duplicate Matrix Spike Summary
Fluoride

Sample Name:	DW-2	**Units:**	mg/L
Lab Code:	K1511863-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511863-001MS			Duplicate Matrix Spike K1511863-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Fluoride	0.21	9.39	10.0	92	9.56	10.0	93	90-110	2	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Analyzed:**	10/21/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/21/15

Lab Control Sample Summary
Fluoride

Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	468396

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511863-LCS	4.93	5.00	99	90-110

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Nitrite as Nitrogen

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
DW-2	K1511863-001	ND U	0.10	2	10/21/15 09:38	10/21/15	
Method Blank	K1511863-MB1	ND U	0.050	1	10/21/15 09:22	10/21/15	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
		Date Analyzed:	10/21/15

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	DW-2	**Units:**	mg/L
Lab Code:	K1511863-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample K1511863-001DUP Result	Average	RPD	RPD Limit
Nitrite as Nitrogen	300.0	0.10	ND U	ND U	NC	NC	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
		Date Analyzed:	10/21/15
		Date Extracted:	10/21/15

Duplicate Matrix Spike Summary
Nitrite as Nitrogen

Sample Name:	DW-2	**Units:**	mg/L
Lab Code:	K1511863-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511863-001MS			Duplicate Matrix Spike K1511863-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Nitrite as Nitrogen	ND U	10.3	10.0	103	10.4	10.0	104	90-110	1	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Analyzed:**	10/21/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/21/15

Lab Control Sample Summary
Nitrite as Nitrogen

Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	468396

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511863-LCS	2.53	2.50	101	90-110

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Nitrate as Nitrogen

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
DW-2	K1511863-001	ND U	0.10	2	10/21/15 09:38	10/21/15	
Method Blank	K1511863-MB1	ND U	0.050	1	10/21/15 09:22	10/21/15	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Replicate Sample Summary
Nitrate as Nitrogen

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
DW-2	K1511863-001DUP	0.10	ND U	ND U	NC	NC	20	10/21/15
Batch QC	K1511896-004DUP	1.0	ND U	ND U	NC	NC	20	10/21/15

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
		Date Analyzed:	10/21/15
		Date Extracted:	10/21/15

Duplicate Matrix Spike Summary
Nitrate as Nitrogen

Sample Name:	DW-2	**Units:**	mg/L
Lab Code:	K1511863-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511863-001MS			Duplicate Matrix Spike K1511863-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Nitrate as Nitrogen	ND U	9.03	10.0	90	9.20	10.0	92	90-110	2	20

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ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/21/15
		Date Extracted:	10/21/15

Duplicate Matrix Spike Summary
Nitrate as Nitrogen

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511896-004	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511896-004MS			Duplicate Matrix Spike K1511896-004DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Nitrate as Nitrogen	ND U	35.9	40.0	90	35.4	40.0	88 *	90-110	1	20

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Analyzed:**	10/21/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/21/15

Lab Control Sample Summary
Nitrate as Nitrogen

Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	468396

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511863-LCS	2.37	2.50	95	90-110

ALS Group USA, Corp.
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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Sulfate

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
DW-2	K1511863-001	ND U	0.20	2	10/21/15 09:38	10/21/15	
Method Blank	K1511863-MB1	ND U	0.10	1	10/21/15 09:22	10/21/15	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Replicate Sample Summary
Sulfate

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
DW-2	K1511863-001DUP	0.20	ND U	ND U	NC	NC	20	10/21/15
Batch QC	K1511896-004DUP	100	2720	2760	2740	1	20	10/27/15

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
		Date Analyzed:	10/21/15
		Date Extracted:	10/21/15

Duplicate Matrix Spike Summary
Sulfate

Sample Name:	DW-2	**Units:**	mg/L
Lab Code:	K1511863-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511863-001MS			Duplicate Matrix Spike K1511863-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Sulfate	ND U	9.13	10.0	91	9.26	10.0	93	90-110	1	20

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/21/15
		Date Extracted:	10/21/15

Duplicate Matrix Spike Summary
Sulfate

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511896-004	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511896-004MS			Duplicate Matrix Spike K1511896-004DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Sulfate	2720	4730	2000	101	4690	2000	99	90-110	<1	20

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Analyzed:**	10/21/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/21/15

Lab Control Sample Summary
Sulfate

Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	468396

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511863-LCS	4.91	5.00	98	90-110

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	314.0	**Units:**	ug/L
Prep Method:	None	**Basis:**	NA

Perchlorate

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-2	K1511863-001	ND U	1.0	1	10/21/15 13:41	
Method Blank	K1511863-MB1	ND U	1.0	1	10/21/15 11:42	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
		Date Analyzed:	10/21/15

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	Batch QC	**Units:**	ug/L
Lab Code:	K1511360-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample K1511360-001DUP Result	Average	RPD	RPD Limit
Perchlorate	314.0	1.0	ND U	ND U	NC	NC	20

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/21/15
		Date Extracted:	NA

Duplicate Matrix Spike Summary
Perchlorate

Sample Name:	Batch QC	**Units:**	ug/L
Lab Code:	K1511360-001	**Basis:**	NA
Analysis Method:	314.0		
Prep Method:	None		

		Matrix Spike K1511360-001MS			Duplicate Matrix Spike K1511360-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	ND U	12.0	10.0	120	11.7	10.0	117	80-120	2	20

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Analyzed:**	10/21/15
Sample Matrix:	Drinking Water	**Date Extracted:**	NA

Lab Control Sample Summary
Perchlorate

Analysis Method:	314.0	**Units:**	ug/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	468262

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511863-LCS	16.4	16.8	98	85-115

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	335.4	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Cyanide, Total

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
DW-2	K1511863-001	ND U	0.010	1	10/28/15 10:14	10/27/15	
Method Blank	K1511863-MB1	ND U	0.010	1	10/28/15 10:14	10/27/15	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
		Date Analyzed:	10/28/15

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	KQ1512462-06	**Basis:**	NA

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample KQ1512462-06DUP Result	Average	RPD	RPD Limit
Cyanide, Total	335.4	0.010	0.004 J	0.004 J	0.00376	<1	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/28/15
		Date Extracted:	10/27/15

Duplicate Matrix Spike Summary
Cyanide, Total

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	KQ1512462-06	**Basis:**	NA
Analysis Method:	335.4		
Prep Method:	Method		

		Matrix Spike KQ1512462-06MS				Duplicate Matrix Spike KQ1512462-06DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**		**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Cyanide, Total	0.004 J	0.124	0.100	120 *		0.121	0.100	117 *	90-110	2	20

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dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Analyzed:**	10/28/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/27/15

Lab Control Sample Summary
Cyanide, Total

Analysis Method:	335.4	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	469348

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511863-LCS	0.146	0.150	97	90-110

ALS Group USA, Corp.
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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	Calculation	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Nitrate+Nitrite as Nitrogen

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-2	K1511863-001	ND U	0.20	1	10/21/15 09:38	

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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	SM 2120 B	**Units:**	ColorUnits
Prep Method:	None	**Basis:**	NA

Color

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-2	K1511863-001	**15.0**	5.0	1	10/21/15 12:13	
Method Blank	K1511863-MB1	ND U	5.0	1	10/20/15 14:35	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
Analysis Method:	SM 2120 B	**Units:**	ColorUnits
Prep Method:	None	**Basis:**	NA

Replicate Sample Summary
Color

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1511797-001DUP	5.0	15.0	15.0	15.0	<1	20	10/20/15
Batch QC	K1511893-005DUP	5.0	ND U	ND U	NC	NC	20	10/21/15

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	NA

Lab Control Sample Summary
Color

Analysis Method:	SM 2120 B	**Units:**	ColorUnits
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	468258

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511863-LCS	50.0	50.0	100	85-115

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	SM 2320 B	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Alkalinity as CaCO3, Total

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-2	K1511863-001	**149**	2.0	1	11/02/15 14:50	
Method Blank	K1511863-MB1	ND U	2.0	1	11/02/15 14:50	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
Analysis Method:	SM 2320 B	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Replicate Sample Summary
Alkalinity as CaCO3, Total

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1511794-001DUP	2.0	81.3	81.3	81.3	<1	20	11/02/15
Batch QC	K1511896-004DUP	2.0	ND U	ND U	NC	NC	20	11/02/15

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ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Analyzed:**	11/02/15
Sample Matrix:	Drinking Water	**Date Extracted:**	NA

Lab Control Sample Summary
Alkalinity as CaCO3, Total

Analysis Method:	SM 2320 B	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	470113

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511863-LCS	134	136	99	90-110

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	SM 2510 B	**Units:**	uMHOS/cm
Prep Method:	None	**Basis:**	NA

Conductivity at 25 Degrees Celsius

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-2	K1511863-001	**331**	2.0	1	10/21/15 10:44	
Method Blank	K1511863-MB1	ND U	2.0	1	10/21/15 10:44	
Method Blank	K1511863-MB2	ND U	2.0	1	10/21/15 10:44	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
		Date Analyzed:	10/21/15

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	Batch QC	**Units:**	uMHOS/cm
Lab Code:	K1511865-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample K1511865-001DUP Result	Average	RPD	RPD Limit
Conductivity at 25 Degrees Celsius	SM 2510 B	2.0	299	298	299	<1	20

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Analyzed:**	10/21/15
Sample Matrix:	Drinking Water	**Date Extracted:**	NA

Lab Control Sample Summary
Conductivity at 25 Degrees Celsius

Analysis Method:	SM 2510 B	**Units:**	uMHOS/cm
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	468245

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511863-LCS	315	289	109	86-113

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	SM 2540 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Solids, Total Dissolved

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-2	K1511863-001	**216**	10	1	10/23/15 16:02	
Method Blank	K1511863-MB1	ND U	10	1	10/23/15 16:02	
Method Blank	K1511863-MB2	ND U	10	1	10/23/15 16:02	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
Analysis Method:	SM 2540 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Replicate Sample Summary
Solids, Total Dissolved

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1511823-004DUP	10	364	362	363	<1	10	10/23/15
Batch QC	K1511833-007DUP	10	663	662	663	<1	10	10/23/15

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ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Analyzed:**	10/23/15
Sample Matrix:	Drinking Water	**Date Extracted:**	NA

Lab Control Sample Summary
Solids, Total Dissolved

Analysis Method:	SM 2540 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	468747

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511863-LCS	896	897	100	85-115

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	SM 4500-NH3 G	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Ammonia as Nitrogen

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
DW-2	K1511863-001	**0.092**	0.050	1	10/22/15 09:57	10/22/15	
Method Blank	K1511863-MB1	ND U	0.050	1	10/22/15 09:57	10/22/15	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
		Date Analyzed:	10/22/15

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511685-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample K1511685-001DUP Result	Average	RPD	RPD Limit
Ammonia as Nitrogen	SM 4500-NH3 G	0.050	0.126	0.060	0.0926	71 *	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/22/15
		Date Extracted:	10/22/15

Duplicate Matrix Spike Summary
Ammonia as Nitrogen

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511685-001	**Basis:**	NA
Analysis Method:	SM 4500-NH3 G		
Prep Method:	Method		

		Matrix Spike K1511685-001MS			**Duplicate Matrix Spike** K1511685-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Ammonia as Nitrogen	0.126	2.01	2.00	94	1.96	2.00	92	90-110	2	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Analyzed:**	10/22/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/22/15

Lab Control Sample Summary
Ammonia as Nitrogen

Analysis Method:	SM 4500-NH3 G	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	468711

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511863-LCS	14.9	16.2	92	90-110

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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	SM 4500-P E	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Orthophosphate as Phosphorus

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-2	K1511863-001	**0.496**	0.050	1	10/21/15 08:40	
Method Blank	K1511863-MB1	ND U	0.050	1	10/20/15 17:24	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
		Date Analyzed:	10/20/15

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511794-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample K1511794-001DUP Result	Average	RPD	RPD Limit
Orthophosphate as Phosphorus	SM 4500-P E	0.050	0.213	0.198	0.206	7	20

Results flagged with an asterisk (*) indicate values outside control criteria.

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Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	NA

Duplicate Matrix Spike Summary
Orthophosphate as Phosphorus

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511794-001	**Basis:**	NA
Analysis Method:	SM 4500-P E		
Prep Method:	None		

		Matrix Spike K1511794-001MS			**Duplicate Matrix Spike** K1511794-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Orthophosphate as Phosphorus	0.213	0.59	0.40	94	0.58	0.40	92	75-125	2	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	NA

Lab Control Sample Summary
Orthophosphate as Phosphorus

Analysis Method:	SM 4500-P E	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	468008

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511863-LCS	2.56	2.54	101	85-115

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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	SM 9223 B	**Units:**	MPN/100mL
Prep Method:	None	**Basis:**	NA

Escherichia coli

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-2	K1511863-001	**present**	-	1	10/21/15 17:10	

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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	SM 9223 B	**Units:**	MPN/100mL
Prep Method:	None	**Basis:**	NA

Coliform, Total

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-2	K1511863-001	**present**	-	1	10/21/15 17:10	

Metals

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1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking water	**Date Received:**	10/20/15

Hardness as CaCO3

Prep Method:	CLAA	Units:	mg/L (ppm)
Analysis Method:	200.7/SM 2340B	Basis:	NA
Test Notes:			

Sample Name	Lab Code	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
DW-2	K1511863-001	0.07	1	10/22/15	10/29/15	117	
Method Blank	K1511863-MB	0.07	1	10/22/15	10/29/15	ND	

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QA/QC Report

Client: Longview, City of
Project: Sentinel Well
Sample Matrix: Drinking water

Service Request: K1511863
Date Collected: NA
Date Received: NA
Date Extracted: 10/22/15
Date Analyzed: 10/29/15

Duplicate Summary
Metals

Sample Name: Batch QCD
Lab Code: K1511794-001D
Test Notes:

Units: mg/L (ppm)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
Hardness as CaCO3	CLAA	200.7/SM 2340B	0.07	64.5	63.5	64.0	2	

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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking water	**Date Received:**	10/20/15

Methyl Mercury

Prep Method:	Method	Units:	ng/L
Analysis Method:	1630	Basis:	NA
Test Notes:			

Sample Name	Lab Code	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
DW-2	K1511863-001	0.1	1	11/02/15	11/03/15	ND	
Method Blank 1	K1511863-MB1	0.1	1	11/02/15	11/03/15	ND	
Method Blank 2	K1511863-MB2	0.1	1	11/02/15	11/03/15	ND	
Method Blank 3	K1511863-MB3	0.1	1	11/02/15	11/03/15	ND	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking water	**Date Received:**	NA
		Date Extracted:	11/02/15
		Date Analyzed:	11/03/15

Matrix Spike/Duplicate Matrix Spike Summary
Metals

Sample Name:	Batch QC	Units:	ng/L
Lab Code:	K1511797-001MS, K1511797-001MSD	Basis:	NA
Test Notes:			

				Spike Level		Sample	Spike Result		Percent Recovery				
Analyte	**Prep Method**	**Analysis Method**	**MRL**	**MS**	**DMS**	**Result**	**MS**	**DMS**	**MS**	**DMS**	**CAS Acceptance Limits**	**Relative Percent Difference**	**Result Notes**
Mercury, Methyl	Method	1630	0.1	2.22	2.22	ND	2.74	2.74	123	123	65-135	<1	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Collected:**	NA
LCS Matrix:	Water	**Date Received:**	NA
		Date Extracted:	11/02/15
		Date Analyzed:	11/03/15

Ongoing Precision and Recovery (OPR) Sample Summary
Metals

Sample Name: Ongoing Precision and Recovery (Initial)

Units: ng/L
Basis: NA

Test Notes:

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Mercury, Methyl	Method	1630	2.22	2.57	116	67-133	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Collected:**	NA
LCS Matrix:	Water	**Date Received:**	NA
		Date Extracted:	11/02/15
		Date Analyzed:	11/03/15

Ongoing Precision and Recovery (OPR) Sample Summary
Metals

Sample Name: Ongoing Precision and Recovery (Final)

Units: ng/L
Basis: NA

Test Notes:

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Mercury, Methyl	Method	1630	2.22	2.68	121	67-133	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Collected:**	NA
LCS Matrix:	Water	**Date Received:**	NA
		Date Extracted:	11/02/15
		Date Analyzed:	11/03/15

Quality Control Sample (QCS) Summary
Metals

Sample Name: Quality Control Sample

Units: pg
Basis: NA

Test Notes:

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Mercury, Methyl	Method	1630	100	122	122	67-133	

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Longview, City of	**Service Request:**	K1511863
Project No.:	NA	**Date Collected:**	10/20/15
Project Name:	Sentinel Well	**Date Received:**	10/20/15
Matrix:	WATER	**Units:**	mg/L
		Basis:	NA

Sample Name: **DW-2** **Lab Code:** **K1511863-001**

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.00005	1.0	10/22/15	11/04/15	0.00005	U	
Arsenic	200.8	0.0005	1.0	10/22/15	11/04/15	0.0103		
Barium	200.7	0.0040	1.0	10/22/15	10/29/15	0.0220		
Beryllium	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Cadmium	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Chromium	200.8	0.0002	1.0	10/22/15	11/04/15	0.0002	U	
Copper	200.7	0.004	1.0	10/22/15	10/29/15	0.004	U	
Iron	200.7	0.02	1.0	10/22/15	10/29/15	0.55		
Lead	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Manganese	200.7	0.001	1.0	10/22/15	10/29/15	0.315		
Mercury	245.1	0.0002	1.0	11/05/15	11/06/15	0.0002	U	
Nickel	200.8	0.0002	1.0	10/22/15	11/04/15	0.0006		
Selenium	200.8	0.001	1.0	10/22/15	11/04/15	0.001	U	
Silver	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Sodium	200.7	0.2	1.0	10/22/15	10/29/15	14.9		
Thallium	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Zinc	200.7	0.004	1.0	10/22/15	10/29/15	0.004	U	

Comments:

Metals

INORGANIC ANALYSIS DATA PACKAGE

Client: Longview, City of
Project No.: NA
Project Name: Sentinel Well
Matrix: WATER

Service Request: K1511863
Date Collected:
Date Received:
Units: mg/L
Basis: NA

Sample Name: Method Blank
Lab Code: KQ1512200-01

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Barium	200.7	0.0040	1.0	10/22/15	10/29/15	0.0040	U	
Copper	200.7	0.004	1.0	10/22/15	10/29/15	0.004	U	
Iron	200.7	0.02	1.0	10/22/15	10/29/15	0.02	U	
Manganese	200.7	0.001	1.0	10/22/15	10/30/15	0.001	U	
Sodium	200.7	0.2	1.0	10/22/15	10/29/15	0.2	U	
Zinc	200.7	0.004	1.0	10/22/15	10/29/15	0.004	U	

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: Longview, City of
Project No.: NA
Project Name: Sentinel Well
Matrix: WATER

Service Request: K1511863
Date Collected:
Date Received:
Units: mg/L
Basis: NA

Sample Name: Method Blank
Lab Code: KQ1512201-01

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.00005	1.0	10/22/15	11/04/15	0.00005	U	
Arsenic	200.8	0.0005	1.0	10/22/15	11/04/15	0.0005	U	
Beryllium	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Cadmium	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Chromium	200.8	0.0002	1.0	10/22/15	11/04/15	0.0002	U	
Lead	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Nickel	200.8	0.0002	1.0	10/22/15	11/04/15	0.0002	U	
Selenium	200.8	0.001	1.0	10/22/15	11/04/15	0.001	U	
Silver	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Thallium	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	

Comments:

Metals

INORGANIC ANALYSIS DATA PACKAGE

Client:	Longview, City of	**Service Request:**	K1511863
Project No.:	NA	**Date Collected:**	
Project Name:	Sentinel Well	**Date Received:**	
Matrix:	WATER	**Units:**	mg/L
		Basis:	NA

Sample Name: **Method Blank** **Lab Code:** **KQ1512977-01**

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Mercury	245.1	0.0002	1.0	11/05/15	11/06/15	0.0002	U	

Comments:

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Metals
- 5A -
SPIKE SAMPLE RECOVERY

Client: Longview, City of
Service Request: K1511863
Project No.: NA
Units: MG/L
Project Name: Sentinel Well
Basis: NA
Matrix: WATER

Sample Name: Batch QC2S
Lab Code: K1511794-001S

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Antimony	70 - 130	0.052600		0.000050	U	0.050000	105		200.8
Arsenic	70 - 130	0.05576		0.00368		0.05000	104		200.8
Barium	70 - 130	0.991		0.0094		1.00	98.2		200.7
Beryllium	70 - 130	0.00252		0.00002	U	0.00250	101		200.8
Cadmium	70 - 130	0.02613		0.00002	U	0.025000	105		200.8
Chromium	70 - 130	0.0084		0.0002	U	0.01000	84		200.8
Copper	70 - 130	0.233		0.004	U	0.25	93.2		200.7
Iron	70 - 130	2.96		2.03		1.00	93.0		200.7
Lead	70 - 130	0.05092		0.00002	U	0.050000	102		200.8
Manganese	70 - 130	0.977		0.517		0.50	92.0		200.7
Nickel	70 - 130	0.0229		0.0004		0.02500	90		200.8
Selenium	70 - 130	0.054		0.001	U	0.0500	108		200.8
Silver	70 - 130	0.01252		0.00002	U	0.012500	100		200.8
Sodium	70 - 130	19.1		8.8		10.00	103.0		200.7
Thallium	70 - 130	0.05162		0.00002	U	0.050000	103		200.8
Zinc	70 - 130	0.469		0.004	U	0.50	93.8		200.7

An empty field in the Control Limit column indicates the control limit is not applicable

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Metals
- 5A -
SPIKE SAMPLE RECOVERY

Client: Longview, City of
Service Request: K1511863
Project No.: NA
Units: MG/L
Project Name: Sentinel Well
Basis: NA
Matrix: WATER

Sample Name: Batch QC1S
Lab Code: K1511840-002S

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Mercury	70 - 130	0.0048		0.0002	U	0.0050	96.0		245.1

An empty field in the Control Limit column indicates the control limit is not applicable

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Metals
- 5A -
SPIKE SAMPLE RECOVERY

Client: Longview, City of
Service Request: K1511863
Project No.: NA
Units: MG/L
Project Name: Sentinel Well
Basis: NA
Matrix: WATER

Sample Name: Batch QC1SD
Lab Code: K1511840-002SD

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Mercury	70 - 130	0.0050		0.0002	U	0.0050	100.0		245.1

An empty field in the Control Limit column indicates the control limit is not applicable

Metals

- 6 -

DUPLICATES

Client: Longview, City of
Service Request: K1511863
Project No.: NA
Units: MG/L
Project Name: Sentinel Well
Basis: NA
Matrix: WATER

Sample Name: Batch QC2D
Lab Code: K1511794-001D

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Antimony		0.000050	U	0.000050	U			200.8
Arsenic	20	0.00368		0.00356		3.3		200.8
Barium		0.0094		0.0094		0.0		200.7
Beryllium		0.00002	U	0.00002	U			200.8
Cadmium		0.00002	U	0.00002	U			200.8
Chromium		0.0002	U	0.0002	U			200.8
Copper		0.004	U	0.004	U			200.7
Iron	20	2.03		2.00		1.5		200.7
Lead		0.00002	U	0.00002	U			200.8
Manganese	20	0.517		0.510		1.4		200.7
Nickel		0.0004		0.0003		28.6		200.8
Selenium		0.001	U	0.001	U			200.8
Silver		0.00002	U	0.00002	U			200.8
Sodium	20	8.8		8.4		4.7		200.7
Thallium		0.00002	U	0.00002	U			200.8
Zinc		0.004	U	0.004	U			200.7

An empty field in the Control Limit column indicates the control limit is not applicable.

Metals

- 6 -

DUPLICATES

Client: Longview, City of
Service Request: K1511863
Project No.: NA
Units: MG/L
Project Name: Sentinel Well
Basis: NA
Matrix: WATER

Sample Name: Batch QC1D
Lab Code: K1511840-002D

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Mercury		0.0002	U	0.0002	U			245.1

An empty field in the Control Limit column indicates the control limit is not applicable.

Metals

- 6 -

DUPLICATES

Client: Longview, City of
Service Request: K1511863
Project No.: NA
Units: MG/L
Project Name: Sentinel Well
Basis: NA
Matrix: WATER

Sample Name: Batch QC1SD
Lab Code: K1511840-002SD

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Mercury	20	0.0048		0.0050		4.1		245.1

An empty field in the Control Limit column indicates the control limit is not applicable.

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Metals

- 7 -

LABORATORY CONTROL SAMPLE

Client: Longview, City of **Service Request:** K1511863

Project No.: NA

Project Name: Sentinel Well

Aqueous LCS Source: ALS MIXED **Solid LCS Source:**

Analyte	Aqueous (ug/L) True	Aqueous (ug/L) Found	Aqueous (ug/L) %R	Solid (mg/kg) True	Solid (mg/kg) Found	Solid (mg/kg) C	Solid (mg/kg) Limits	Solid (mg/kg) %R
Barium	5	4.8	96.0					
Copper	.625	0.577	92.3					
Iron	2.5	2.38	95.2					
Manganese	1.25	1.20	96.0					
Sodium	12.5	12.4	99.2					
Zinc	1.25	1.16	92.8					

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Metals

- 7 -

LABORATORY CONTROL SAMPLE

Client: Longview, City of **Service Request:** K1511863

Project No.: NA

Project Name: Sentinel Well

Aqueous LCS Source: ALS MIXED **Solid LCS Source:**

Analyte	Aqueous (ug/L) True	Aqueous (ug/L) Found	Aqueous (ug/L) %R	Solid (mg/kg) True	Solid (mg/kg) Found	Solid (mg/kg) C	Solid (mg/kg) Limits	Solid (mg/kg) %R
Antimony	0.050	0.0522	104					
Arsenic	0.050	0.052	104					
Beryllium	0.003	0.0025	100					
Cadmium	0.025	0.0264	106					
Chromium	0.010	0.0100	100					
Lead	0.050	0.0511	102					
Mercury	.005	0.0047	94.0					
Nickel	0.025	0.0247	99					
Selenium	0.050	0.054	108					
Silver	0.013	0.0124	99					
Thallium	0.050	0.0518	104					

EPA Method 504.1

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Analytical Results

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	10/20/2015
Sample Matrix:	Drinking water	**Date Received:**	10/20/2015

EPA Method 504.1

Sample Name:	DW-2	**Units:**	ug/L
Lab Code:	K1511794-001	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	50. G		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,2-Dihro(oetBane)ED3 p	ND	m	0G00U9	1	10/21/15	10/21/15	KWb 1510205	
1,2,4-TricBloroProPane	ND	m	0C4U	1	10/21/15	10/21/15	KWb 1510205	
1,2-Dihro(o-4-cBloroProPane)D3 C6	ND	m	0G00U9	1	10/21/15	10/21/15	KWb 1510205	

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking water	**Date Received:**	NA

EPA Method 504.1

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1510205-4	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	504.1		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,2-Dibromoethane (EDB)	ND	U	0.0099	1	10/21/15	10/21/15	KWG1510205	
1,2,3-Trichloropropane	ND	U	0.40	1	10/21/15	10/21/15	KWG1510205	
1,2-Dibromo-3-chloropropane (DBCP	ND	U	0.0099	1	10/21/15	10/21/15	KWG1510205	

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K15118uN
Project:	Wentine2Me22	**Date Extracted:**	10/E1/E015
Sample Matrix:	S rinl ing water	**Date Analyzed:**	10/E1/E015

Matrix Spike/Duplicate Matrix Spike Summary
EPA Method 504.1

Sample Name:	Batch QC	**Units:**	Dg/L
Lab Code:	K1511798-001	**Basis:**	k A
Extraction Method:	T HOG6 S	**Level:**	Low
Analysis Method:	504.1	**Extraction Lot:**	KM3 1510E05

		Batch QCT W KM3 1510E05-1 Matrix Spike			Batch QCS T W KM3 1510E05-E Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
1,E-S ibromoethane (HS B)	k S	0.EE7	0.E4N	94	0.E14	0.E4N	88	u5-1N5	u	N0
1,E,N-Orich2bropropane	k S	0.E4u	0.E4N	101	0.EE8	0.E4N	94	u5-1N5	8	N0
1,E-S ibromo-N-ch2bropropane (S BCP)	k S	0.ENN	0.E4N	9u	0.E15	0.E4N	89	u5-1N5	8	N0

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and re2tative percent differences (RPS) are determined by the software D-ing va2Des in the ca2:D2ation which have not been roDnded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	BacaahKl
Project:	uentine. D e..	**Date Extracted:**	a5/Sa/S5ac
Sample Matrix:	Wrin2ing w0ter	**Date Analyzed:**	a5/Sa/S5ac

Lab Control Spike Summary
EPA Method 504.1

Extraction Method:	METHOW	**Units:**	8g/L
Analysis Method:	c579a	**Basis:**	- A
		Level:	Low
		Extraction Lot:	BD k aca5S5c

	L04 Contro. u0Np.e BD k aca5S5cl1 **Lab Control Spike**			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
a,SlWi4roNoet60ne 3EWb m	59S1G	59Sc5	(c	G5la15
a,S,11Tri)6.oroprop0ne	59Sc7	59Sc5	a5S	G5la15
a,SlWi4roNol11)6.oroprop0ne 3Wb CPm	59S71	59Sc5	(G	G5la15

Results flagged with an asterisk (*) indicate values outside control criteria.

Per)ent re)overies 0nd re.0tive per)ent differen)es 3RPWin0re deterNined 4y t6e softw0re 8sing v0.8es in t6e)0.)8.0tion w6i)6 60ve not 4een ro8nded9

Pesticides/PCBs by EPA Method 508.1

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Analytical Results

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	10/20/2015
Sample Matrix:	Drinking water	**Date Received:**	10/20/2015

Pesticides/PCBs by EPA Method 508.1

Sample Name:	DW-2	**Units:**	ug/L
Lab Code:	K1511794-001	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	5078		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
gamma-BHC (Lindane)	ND	U	0800. G	1	10/2G/15	10/41/15	KW3 1510525	
Heptachlor	ND	U	0800. G	1	10/2G/15	10/41/15	KW3 1510525	*
Aldrin	ND	U	0800. G	1	10/2G/15	10/41/15	KW3 1510525	
Heptachlor Epoxide	ND	U	0800. G	1	10/2G/15	10/41/15	KW3 1510525	*
Heptachlor Epoxide (Isomer A)	ND	U	0800. G	1	10/2G/15	10/41/15	KW3 1510525	
' ,' 6DDE	ND	U	0800. G	1	10/2G/15	10/41/15	KW3 1510525	
Dieldrin	ND	U	0800. G	1	10/2G/15	10/41/15	KW3 1510525	*
Endrin	ND	U	0800. G	1	10/2G/15	10/41/15	KW3 1510525	*
' ,' 6DDD	ND	U	0800. G	1	10/2G/15	10/41/15	KW3 1510525	*
' ,' 6DDT	ND	U	0800. G	1	10/2G/15	10/41/15	KW3 1510525	*
Methoxychlor	ND	U	0800. G	1	10/2G/15	10/41/15	KW3 1510525	*
Toxaphene	ND	U	080. G	1	10/2G/15	10/41/15	KW3 1510525	
Chlordane	ND	U	080. G	1	10/2G/15	10/41/15	KW3 1510525	
Aroclor 1019	ND	U	080' .	1	10/2G/15	10/41/15	KW3 1510525	
Aroclor 1221	ND	U	080. G	1	10/2G/15	10/41/15	KW3 1510525	
Aroclor 1242	ND	U	080. G	1	10/2G/15	10/41/15	KW3 1510525	
Aroclor 12' 2	ND	U	080. G	1	10/2G/15	10/41/15	KW3 1510525	
Aroclor 12' 7	ND	U	080. G	1	10/2G/15	10/41/15	KW3 1510525	
Aroclor 125'	ND	U	080. G	1	10/2G/15	10/41/15	KW3 1510525	
Aroclor 1290	ND	U	080. G	1	10/2G/15	10/41/15	KW3 1510525	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
' ,' 6Dibromooctafluorobiphenyl	111	C0-140	10/41/15	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking water	**Date Received:**	NA

Pesticides/PCBs by EPA Method 508.1

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1510525-7	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	508.1		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
gamma-BHC (Lindane)	ND	U	0.010	1	10/27/15	10/31/15	KWG1510525	
Heptachlor	ND	U	0.010	1	10/27/15	10/31/15	KWG1510525	*
Aldrin	ND	U	0.010	1	10/27/15	10/31/15	KWG1510525	
Heptachlor Epoxide	ND	U	0.010	1	10/27/15	10/31/15	KWG1510525	*
Heptachlor Epoxide (Isomer A)	ND	U	0.010	1	10/27/15	10/31/15	KWG1510525	
4,4'-DDE	ND	U	0.010	1	10/27/15	10/31/15	KWG1510525	
Dieldrin	ND	U	0.010	1	10/27/15	10/31/15	KWG1510525	*
Endrin	ND	U	0.010	1	10/27/15	10/31/15	KWG1510525	*
4,4'-DDD	ND	U	0.010	1	10/27/15	10/31/15	KWG1510525	*
4,4'-DDT	ND	U	0.010	1	10/27/15	10/31/15	KWG1510525	*
Methoxychlor	ND	U	0.010	1	10/27/15	10/31/15	KWG1510525	*
Toxaphene	ND	U	0.10	1	10/27/15	10/31/15	KWG1510525	
Chlordane	ND	U	0.10	1	10/27/15	10/31/15	KWG1510525	
Aroclor 1016	ND	U	0.050	1	10/27/15	10/31/15	KWG1510525	
Aroclor 1221	ND	U	0.10	1	10/27/15	10/31/15	KWG1510525	
Aroclor 1232	ND	U	0.10	1	10/27/15	10/31/15	KWG1510525	
Aroclor 1242	ND	U	0.10	1	10/27/15	10/31/15	KWG1510525	
Aroclor 1248	ND	U	0.10	1	10/27/15	10/31/15	KWG1510525	
Aroclor 1254	ND	U	0.10	1	10/27/15	10/31/15	KWG1510525	
Aroclor 1260	ND	U	0.10	1	10/27/15	10/31/15	KWG1510525	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
4,4'-Dibromooctafluorobiphenyl	106	70-130	10/31/15	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Longview, City of
Project: Sentinel Well
Sample Matrix: Drinking water

Service Request: K1511794

Surrogate Recovery Summary
Pesticides/PCBs by EPA Method 508.1

Extraction Method: METHOD
Analysis Method: 5078l

Units: . erPent
Level: Low

Sample Name	Lab Code	Sur1
BatPh QC	K1511c-73001	110
DW3G	K15117943001	111
Method Blank	KW2 15105G53c	109
BatPh QCMS	KW2 15105G531	10c
BatPh QCDMS	KW2 15105G53G	106
Lab Control Sample	KW2 15105G534	11G

Surrogate Recovery Control Limits (%)

Sur1 = 6,6'3DibromooPtafluorobiphenyl c03140

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K151184u
Project:	l entineW2 eWW	**Date Extracted:**	10/37/3015
Sample Matrix:	k rinSing water	**Date Analyzed:**	10/u1/3015

Matrix Spike/Duplicate Matrix Spike Summary
Pesticides/PCBs by EPA Method 508.1

Sample Name:	Batch QC	**Units:**	Ng/L
Lab Code:	K1511798-001	**Basis:**	DA
Extraction Method:	METHOk	**Level:**	Low
Analysis Method:	508.1	**Extraction Lot:**	K2 G1510535

		Batch QCMl K2 G1510535-1 Matrix Spike			Batch QCk Ml K2 G1510535-3 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
ga6 6 a-BHC nLin(aned	Dk	0.114	0.0943	130	0.11u	0.0943	118	45-1u5	3	u0
HeptachWr	Dk	0.139	0.0943	1u)	0.131	0.0943	134	45-1u5	4	u0
AWrin	Dk	0.10u	0.0943	107	0.0944	0.0943	101	45-1u5	4	u0
HeptachWr Epoxi(e	Dk	0.131	0.0943	134	0.114	0.0943	130	45-1u5	5	u0
HeptachWr Epoxi(e nso6 er Ad	Dk	0.111	0.0943	115	0.10)	0.0943	108	45-1u5	4	u0
) ,) '-k k E	Dk	0.1u1	0.0943	1u7 *	0.1u0	0.0943	1u5	45-1u5	1	u0
k ieWrin	Dk	0.13u	0.0943	137	0.113	0.0943	117	45-1u5	9	u0
En(rin	Dk	0.111	0.0943	115	0.09) 7	0.0943	99	45-1u5	14	u0
) ,) '-k k k	Dk	0.151	0.0943	157 *	0.150	0.0943	154 *	45-1u5	1	u0
) ,) '-k k T	Dk	0.150	0.0943	154 *	0.1) 7	0.0943	15u *	45-1u5	3	u0
MethoxychWr	Dk	0.14u	0.0943	170 *	0.141	0.0943	148 *	45-1u5	1	u0
ArocWr 1340	Dk	0.534	0.) 81	109	0.5) 9	0.) 81	11)	45-1u5	)	u0

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries an(reWtive percent (ifferences nRPk dare (eter6 ine(by the software Nsing vaWes in the caWNation which have not been roNn(e(.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	l entinebm elb	**Date Extracted:**	10/GD/GD15
Sample Matrix:	- rin3ing wNer	**Date Analyzed:**	10/41/GD15

Lab Control Spike Summary
Pesticides/PCBs by EPA Method 508.1

Extraction Method:	k METH-	**Units:**	. g/L
Analysis Method:	50781	**Basis:**	u A
		Level:	Low
		Extraction Lot:	Km Wl5105G5

	LNa Controbl NS pbe Km Wl5105G524 Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
gNS S N2OT C HLin(Nned	081G7	08100	1G7	D02140
T eptN*cbor	081h7	08100	1h7)	D02140
Ab(rin	08117	08100	117	D02140
T eptN*cbor Mpoxi(e	08145	08100	145)	D02140
T eptN*cbor Mpoxi(e B6loS er Ad	081G9	08100	1G9	D02140
h,hs2- - M	081G7	08100	1G7	D02140
- ieb(rin	0814'	08100	14')	D02140
Mn(rin	08154	08100	154)	D02140
h,hs2- - -	081h5	08100	1h5)	D02140
h,hs2- - E	081h7	08100	1h7)	D02140
k etcoxy*cbor	08194	08100	194)	D02140
Aro*bor 1G90	08557	08500	11G	D02140

Results flagged with an asterisk (*) indicate values outside control criteria.

Per*ent re*overieI Nn(rebNive per*ent (ifferen*eI BRP- dNe (eterS ine(ay tce IoftwNe . Iing vNb eI in tce *Nb*. bNion wci*c cNve not aeen ro. n(e(8

Chlorinated Herbicides by EPA 515.4

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ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Collected:**	10/20/2015
Sample Matrix:	Drinking water	**Date Received:**	10/20/2015

Chlorinated Herbicides by EPA 515.4

Sample Name:	DW-2	**Units:**	ug/L
Lab Code:	K1511863-001	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	515.4		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dalapon	ND	U	1.0	1	10/22/15	10/23/15	KWG1510246	
3,5-Dichlorobenzoic Acid	ND	U	0.50	1	10/22/15	10/23/15	KWG1510246	
Dicamba	ND	U	0.20	1	10/22/15	10/23/15	KWG1510246	
Dichlorprop	ND	U	0.50	1	10/22/15	10/23/15	KWG1510246	
2,4-D	ND	U	0.10	1	10/22/15	10/23/15	KWG1510246	
Pentachlorophenol	ND	U	0.040	1	10/22/15	10/23/15	KWG1510246	
2,4,5-TP (Silvex)	ND	U	0.20	1	10/22/15	10/23/15	KWG1510246	
Chloramben	ND	U	0.20	1	10/22/15	10/23/15	KWG1510246	
2,4-DB	ND	U	1.0	1	10/22/15	10/23/15	KWG1510246	
Dinoseb	ND	U	0.20	1	10/22/15	10/23/15	KWG1510246	
Dacthal Diacid	ND	U	0.10	1	10/22/15	10/23/15	KWG1510246	
Picloram	ND	U	0.10	1	10/22/15	10/23/15	KWG1510246	
Acifluorfen	ND	U	2.0	1	10/22/15	10/23/15	KWG1510246	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2,4-Dichlorophenylacetic Acid	110	70-130	10/23/15	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Hentinel - ell	**Date Collected:**	S A
Sample Matrix:	O.inTing wate.	**Date Received:**	S A

Chlorinated Herbicides by EPA 515.4

Sample Name:	r etkoMElanT	**Units:**	ug2L
Lab Code:	K- 0 151/ ND9WD	**Basis:**	S A
Extraction Method:	r G63 UO	**Level:**	Low
Analysis Method:	515pD		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Oalabon	S O	h	1p/	1	1/ 2NN215	1/ 2N4215	K- 0 151/ ND9	
4,5WOicklo.ozendoic AciM	S O	h	/ p5/	1	1/ 2NN215	1/ 2N4215	K- 0 151/ ND9	
Oicamza	S O	h	/ pN/	1	1/ 2NN215	1/ 2N4215	K- 0 151/ ND9	
Oicklo.b.ob	S O	h	/ p5/	1	1/ 2NN215	1/ 2N4215	K- 0 151/ ND9	
N,DWO	S O	h	/ p1/	1	1/ 2NN215	1/ 2N4215	K- 0 151/ ND9	
Pentacklo.obkenol	S O	h	/ p/ D/	1	1/ 2NN215	1/ 2N4215	K- 0 151/ ND9	
N,D,5WP (Hilvex)	S O	h	/ pN/	1	1/ 2NN215	1/ 2N4215	K- 0 151/ ND9	
Cklo.amzen	S O	h	/ pN/	1	1/ 2NN215	1/ 2N4215	K- 0 151/ ND9	
N,DWOE	S O	h	1p/	1	1/ 2NN215	1/ 2N4215	K- 0 151/ ND9	
Oinosez	S O	h	/ pN/	1	1/ 2NN215	1/ 2N4215	K- 0 151/ ND9	
Oactkal OiaciM	S O	h	/ p1/	1	1/ 2NN215	1/ 2N4215	K- 0 151/ ND9	
Piclo.am	S O	h	/ p1/	1	1/ 2NN215	1/ 2N4215	K- 0 151/ ND9	
Acifluo.fen	S O	h	Np/	1	1/ 2NN215	1/ 2N4215	K- 0 151/ ND9	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
N,DWOicklo.obkenylacetic AciM	: 5	B/ W4/	1/ 2N4215	Accebtazle

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well		
Sample Matrix:	Drinking water		

Surrogate Recovery Summary
Chlorinated Herbicides by EPA 515.4

Extraction Method:	METHOD	**Units:**	cer-ent
Analysis Method:	515.P	**Level:**	Low

Sample Name	Lab Code	Sur1
6 at-h QC	K151103PQ221	124
DWGd	K1511794Q221	112
Methob 6 lank	KWB1512dP9QP	35
6 at-h QCMS	KWB1512dP9Q1	122
6 at-h QCDMS	KWB1512dP9Qd	39
LamControl SaF ple	KWB1512dP9Q4	34

Surrogate Recovery Control Limits (%)

Sur1 = d,PQDi-hlorophenyla-eti- A-ib 02Q142

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K5755kaS
Project:	EentineTH eTT	**Date Extracted:**	5u/COO/Cu57
Sample Matrix:	3 rinMing wWer	**Date Analyzed:**	5u/COS/Cu57

Matrix Spike/Duplicate Matrix Spike Summary
Chlorinated Herbicides by EPA 515.4

Sample Name:	DW-1 QC	**Units:**	l g/L
Lab Code:	K5755940.uu5	**Basis:**	2 A
Extraction Method:	G 6 8 c h 3	**Level:**	Low
Analysis Method:	757N0	**Extraction Lot:**	KH b 575uC0a

		DW-1 QCG E KH b 575uC0a.5 Matrix Spike			DW-1 QC3 G E KH b 575uC0a.O Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
3 WWpon	2 3	7NSS	0N4k	5uS	7NSu	0N4k	5u9	9u.5Su	S	Su
S,7.3 i-1Torozendoi- A-im	2 3	0NkS	0N4k	49	0Nku	0N4k	4a	9u.5Su	5	Su
3 i-WP zW	2 3	7NS7	0N4k	5u9	7NSS	0N4k	5u9	9u.5Su	u	Su
3 i-1Torprop	2 3	0N9O	0N4k	47	0N9S	0N4k	47	9u.5Su	u	Su
Q,0.3	2 3	0N99	0N4k	4u	0N70	0N4k	45	9u.5Su	O	Su
(entW1Torop1enoT	2 3	0NaS	0N4k	4S	0Nia	0N4k	40	9u.5Su	5	Su
Q,0,7.8(xEiTve) *	2 3	0Nia	0N4k	40	0Nia	0N4k	40	9u.5Su	u	Su
C1TorWP zen	2 3	5uN4	0N4k	COu B	4Nk5	0N4k	549 B	9u.5Su	55	Su
Q,0.3 D	2 3	7NOa	0N4k	5ua	7NSS	0N4k	5u9	9u.5Su	5	Su
3 inosez	2 3	7NOO	0N4k	5u7	7NSa	0N4k	5u0	9u.5Su	5	Su
3 Wt1WT3 iWim	2 3	7N9k	0N4k	55a	7Nk4	0N4k	55k	9u.5Su	O	Su
(i-TorWP	2 3	7NS9	0N4k	5uk	7NO4	0N4k	5ua	9u.5Su	O	Su
A-ifTorfen	2 3	7NOS	0N4k	5u7	0Nkk	0N4k	4k	9u.5Su	9	Su

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

(er-ent re-overies WimreTWive per-ent mifferen-es xR(3 * We meterP inemzy t1e softwWe l sing vWTes in t1e -WF1 TWion w1i-1 1We not zeen rol nnemN

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	mentineSG eSS	**Date Extracted:**	12/66/6215
Sample Matrix:	3 rinDing wbter	**Date Analyzed:**	12/64/6215

Lab Control Spike Summary
Chlorinated Herbicides by EPA 515.4

Extraction Method:	k METH3	**Units:**	Ng/L
Analysis Method:	515.u	**Basis:**	a A
		Level:	Low
		Extraction Lot:	KG 0 15126u9

	Lbl ControSnrbWpSe KG 0 15126u9-4 Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
3 bSbpon	u.cu	5.22	cc	O2-142
4,5-3 ihzSorol endoih Ahi8	u.9u	5.22	c4	O2-142
3 ihbWl b	u.c7	5.22	122	O2-142
3 ihzSorprop	u.57	5.22	c6	O2-142
6,u-3	u.42	5.22	79	O2-142
PentbhzSoropzenoS	u.55	5.22	c1	O2-142
6,u,5-EP (miSvex)	u.5c	5.22	c6	O2-142
CzSorbWl en	9.27	5.22	166	O2-142
6,u-3 B	5.11	5.22	126	O2-142
3 inosel	5.15	5.22	124	O2-142
3 bhtzbS3 ibhi8	u.57	5.22	c6	O2-142
PihSorbW	u.7u	5.22	cO	O2-142
AhifSNorfen	5.19	5.22	124	O2-142

Results flagged with an asterisk (*) indicate values outside control criteria.

Perhent rehoveries bn8 reSstive perhent 8ifferenhes (RP3) bre 8eterWine8 l y tze softwbre Nsing vbSNes in tze hbSnNstion wzihz zbve not l een roNn8e8.

Volatile Organic Compounds

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636- 1068
www.alsglobal.com

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Collected:**	10/20/2015
Sample Matrix:	Drinking water	**Date Received:**	10/20/2015

Volatile Organic Compounds

Sample Name:	DW-2	**Units:**	ug/L
Lab Code:	K1511863-001	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	524.2		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dichlorodifluoromethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Chloromethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Vinyl Chloride	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Bromomethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Chloroethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Trichlorofluoromethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Methylene Chloride	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
trans-1,2-Dichloroethene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
cis-1,2-Dichloroethene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,1-Dichloroethene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Methyl tert-Butyl Ether	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Chloroform	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Bromochloromethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Carbon Tetrachloride	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Benzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,2-Dichloroethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Trichloroethene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,2-Dichloropropane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Bromodichloromethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Dibromomethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
cis-1,3-Dichloropropene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,1-Dichloroethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Toluene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
trans-1,3-Dichloropropene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Tetrachloroethene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
2,2-Dichloropropane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,3-Dichloropropane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Dibromochloromethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,2-Dibromoethane (EDB)	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Chlorobenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Ethylbenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Styrene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
m,p-Xylenes	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
o-Xylene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	

Comments:

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Collected:**	10/20/2015
Sample Matrix:	Drinking water	**Date Received:**	10/20/2015

Volatile Organic Compounds

Sample Name:	DW-2	**Units:**	ug/L
Lab Code:	K1511863-001	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	524.2		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,1,1-Trichloroethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Bromoform	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,1,2,2-Tetrachloroethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Isopropylbenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,1-Dichloropropene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Bromobenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
n-Propylbenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,3,5-Trimethylbenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
2-Chlorotoluene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
4-Chlorotoluene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
tert-Butylbenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,2,4-Trimethylbenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
sec-Butylbenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
p-Isopropyltoluene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,3-Dichlorobenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,4-Dichlorobenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
n-Butylbenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,2-Dichlorobenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,2-Dibromo-3-chloropropane (DBCP	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,2,4-Trichlorobenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Hexachlorobutadiene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Naphthalene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,1,2-Trichloroethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,1,1,2-Tetrachloroethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,2,3-Trichloropropane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,2,3-Trichlorobenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
4-Bromofluorobenzene	97	70-130	10/30/15	Acceptable
Dibromofluoromethane	94	82-124	10/30/15	Acceptable
Toluene-d8	93	82-124	10/30/15	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Tentinel - ell	**Date Collected:**	2 A
Sample Matrix:	HOnEing wateO	**Date Received:**	2 A

Volatile Organic Compounds

Sample Name:	S etr ok ManE	**Units:**	ugW
Lab Code:	K- 0 151/ 5N5D5	**Basis:**	2 A
Extraction Method:	S 4. G9 H	**Level:**	Low
Analysis Method:	5UhdU		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
HicrloOkifluoOVetrane	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
CrloOVetrane	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
Binyl CrloOke	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
MOVoVetrane	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
CrloOetrane	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
. OcrloOfluoOVetrane	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
S etrylene CrloOke	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
tOansD,UDHicrloOetrene	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
1,1DHicrloOetrene	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
cisD,UDHicrloOetrene	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
S etryl teODMutyl 4 treO	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
CrloOfoOV	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
MOVocrloOVetrane	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
CaOon . etOacrloOke	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
Menzene	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
1,UDHicrloOetrane	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
. OcrloOetrene	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
1,UDHicrloOpOpane	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
MOVokicrloOVetrane	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
HibOoVoVetrane	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
cisD,3DHicrloOpOpene	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
1,1DHicrloOetrane	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
. oluene	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
tOansD,3DHicrloOpOpene	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
. etOacrloOetrene	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
U,UDHicrloOpOpane	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
1,3DHicrloOpOpane	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
HibOoVocrloOVetrane	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
1,UDHibOoVoetrane (4HM)	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
CrloObenzene	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
4 trylbenzene	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
TtyOene	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
V,pDXylenes	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
oDXylene	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Tentinel - ell	**Date Collected:**	2 A
Sample Matrix:	HOnEing wateO	**Date Received:**	2 A

Volatile Organic Compounds

Sample Name:	S etr ok ManE	**Units:**	ugW
Lab Code:	K- 0 151/ 5N5D5	**Basis:**	2 A
Extraction Method:	S 4. G9 H	**Level:**	Low
Analysis Method:	5UhdU		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,1,1D Oicr loOoetr ane	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
MoOVofoOV	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
1,1,U,UD etOacr loOoetr ane	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
IsopOopylbenzene	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
1,1DHicr loOopOopene	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
MoOVobenzene	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
nDPOopylbenzene	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
1,3,5D OVetr ylbenzene	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
UDCr loOotoluene	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
hDCr loOotoluene	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
teODMutylbenzene	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
1,U,hD OVetr ylbenzene	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
secDMutylbenzene	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
pDIsopOopyltoluene	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
1,3DHicr loOobenzene	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
1,hDHicr loOobenzene	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
nDMutylbenzene	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
1,UDHicr loOobenzene	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
1,UDHibOVoD3Dr loOopOopane (HMCP	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
1,U,hD Oicr loOobenzene	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
Gexacr loOobutakiene	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
2 apr tr alene	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
1,1,UD Oicr loOoetr ane	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
1,1,1,UD etOacr loOoetr ane	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
1,U,3D Oicr loOopOopane	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
1,U,3D Oicr loOobenzene	2 H	m	/ d5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
hDMOoVofluoOobenzene	N7	7/ D13/	1/ W/ W5	Acceptable
HibOoVofluoOoVetr ane	11U	8UD1Uh	1/ W/ W5	Acceptable
. olueneD8	11U	8UD1Uh	1/ W/ W5	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Longview, City of
Project: Sentinel Well
Sample Matrix: Drinking water

Service Request: K1511794

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: METHOD
Analysis Method: 52. P2

Units: cer-ent
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
DW02	K15117940661	3G	3.	34
MetdoBb lank	KWh 151653505	3G	112	112
LamControl Sau ple	KWh 151653504	33	3G	16G
DFpli-ate LamControl Sau ple	KWh 15165350	166	39	36

Surrogate Recovery Control Limits (%)

SFr1	=	. 0b rou oflForomenzene	G60146
SFr2	=	Dimrou oflForou etdane	72012.
SFr4	=	TolFene0B7	72012.

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K151172.
Project:	Sentinel Well	**Date Extracted:**	10/. 0/N015
Sample Matrix:	DrinMng water	**Date Analyzed:**	10/. 0/N015

Lab Control Spike/Duplicate Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	E THOh D	**Units:**	ug/L
Analysis Method:	5N43N	**Basis:**	k A
		Level:	Low
		Extraction Lot:	KWG1510595

	Lab Control Sample KWG1510595-. Lab Control Spike			Duplicate Lab Control Sample KWG1510595-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Dic8loroVifluoromet8ane	5394	5300	119	4315	5300	95	d0-1. 0	NN	. 0
C8loromet8ane	5351	5300	110	43 9	5300	77	d0-1. 0	N	. 0
Binyl C8loriVe	531.	5300	115	435.	5300	91	d0-1. 0	N	. 0
6 romomet8ane	532N	5300	11N	4327	5300	94	d0-1. 0	17	. 0
C8loroet8ane	535N	5300	110	43 9	5300	77	d0-1. 0	N	. 0
Hric8lorofluoromet8ane	5325	5300	11.	4354	5300	91	d0-1. 0	NN	. 0
E et8ylene C8loriVe	5314	5300	10.	4302	5300	71	d0-1. 0	N	. 0
trans-1,N-Dic8loroet8ene	5347	5300	110	43 4	5300	7d	d0-1. 0	N	. 0
1,1-Dic8loroet8ene	5355	5300	111	43 9	5300	77	d0-1. 0	N	. 0
cis-1,N-Dic8loroet8ene	53 7	5300	107	43Nd	5300	75	d0-1. 0	N	. 0
E et8yl tert-6 utyl Tt8er	1035	1030	105	7342	1030	75	d0-1. 0	NN	. 0
C8loroform	5321	5300	11N	4350	5300	90	d0-1. 0	NN	. 0
6 romoc8loromet8ane	5350	5300	110	4351	5300	90	d0-1. 0	N0	. 0
Carbon Hetrac8loriVe	53 5	5300	10d	431N	5300	94	d0-1. 0	1.	. 0
6 enzene	531N	5300	10N	4310	5300	94	d0-1. 0	9	. 0
1,N-Dic8loroet8ane	531N	5300	10N	432N	5300	9N	d0-1. 0	10	. 0
Hric8loroet8ene	5350	5300	110	43 7	5300	77	d0-1. 0	N	. 0
1,N-Dic8loropropane	53N5	5300	105	43N1	5300	74	d0-1. 0	NN	. 0
6 romoVic8loromet8ane	530d	5300	101	4312	5300	7.	d0-1. 0	N0	. 0
Dibromomet8ane	5314	5300	10.	4304	5300	71	d0-1. 0	N4	. 0
cis-1,. -Dic8loropropene	53N2	5300	105	43Nd	5300	75	d0-1. 0	N1	. 0
Holuene	534d	5300	109	43 0	5300	72	d0-1. 0	N4	. 0
1,1-Dic8loroet8ane	5340	5300	107	43N9	5300	72	d0-1. 0	N	. 0
trans-1,. -Dic8loropropene	431 2	5300	95	4324	5300	9.	d0-1. 0	.	. 0
Hetrac8loroet8ene	53 d	5300	10d	431 7	5300	92	d0-1. 0	1N	. 0
1,. -Dic8loropropane	5301	5300	100	4325	5300	9.	d0-1. 0	d	. 0
N,N-Dic8loropropane	5391	5300	117	431.	5300	95	d0-1. 0	NN	. 0
Dibromoc8loromet8ane	437.	5300	9d	4352	5300	91	d0-1. 0	2	. 0
1,N-Dibromoet8ane (TD6)	4394	5300	99	432d	5300	9.	d0-1. 0	2	. 0
C8lorobenzene	5317	5300	104	437N	5300	92	d0-1. 0	d	. 0
Tt8ylbenzene	5315	5300	10.	437d	5300	9d	d0-1. 0	2	. 0
Styrene	53N0	5300	104	4390	5300	97	d0-1. 0	2	. 0
m,p-Xylenes	1037	1030	107	1031	1030	101	d0-1. 0	d	. 0
o-Xylene	53 5	5300	10d	439d	5300	99	d0-1. 0	d	. 0
6 romoform	4394	5300	99	4325	5300	9.	d0-1. 0	2	. 0

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries anVrelative percent Vifferences (RPD) are VetermineVby t8e software using values in t8e calculation w8ic8 8ave not been rounVeV3

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K151172.
Project:	Sentinel Well	**Date Extracted:**	10/. 0/N015
Sample Matrix:	DrinMng water	**Date Analyzed:**	10/. 0/N015

Lab Control Spike/Duplicate Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	E THOh D	**Units:**	ug/L
Analysis Method:	5N43N	**Basis:**	k A
		Level:	Low
		Extraction Lot:	KWG1510595

	Lab Control Sample KWG1510595-. Lab Control Spike			Duplicate Lab Control Sample KWG1510595-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
1,1,1-Hric8loroet8ane	531d	5300	10.	4355	5300	91	d0-1. 0	1.	. 0
1,1,N,N-Hetrac8loroet8ane	439d	5300	99	43d2	5300	95	d0-1. 0	4	. 0
Isopropylbenzene	53 .	5300	10d	4392	5300	99	d0-1. 0	d	. 0
1,1-Dic8loropropene	5341	5300	107	4375	5300	9d	d0-1. 0	11	. 0
6 romobenzene	5315	5300	10.	4370	5300	92	d0-1. 0	d	. 0
n-Propylbenzene	5347	5300	110	531N	5300	10N	d0-1. 0	d	. 0
1,. ,5-Hrimet8ylbenzene	5345	5300	109	5307	5300	10N	d0-1. 0	d	. 0
N-C8lorotoluene	53Nd	5300	105	439N	5300	97	d0-1. 0	d	. 0
4-C8lorotoluene	53Nd	5300	105	4392	5300	99	d0-1. 0	2	. 0
tert-6 utylbenzene	53 2	5300	10d	530N	5300	100	d0-1. 0	d	. 0
1,N,4-Hrimet8ylbenzene	53 4	5300	10d	530.	5300	101	d0-1. 0	2	. 0
sec-6 utylbenzene	5342	5300	109	5311	5300	10N	d0-1. 0	d	. 0
p-Isopropyltoluene	534.	5300	109	531.	5300	10.	d0-1. 0	2	. 0
1,. -Dic8lorobenzene	5317	5300	104	4374	5300	9d	d0-1. 0	d	. 0
1,4-Dic8lorobenzene	531N	5300	10N	43d9	5300	92	d0-1. 0	d	. 0
n-6 utylbenzene	535N	5300	110	5312	5300	10.	d0-1. 0	d	. 0
1,N-Dic8lorobenzene	5305	5300	101	437N	5300	92	d0-1. 0	5	. 0
1,N-Dibromo-. -c8loropropane (D6 CP)	4322	5300	9.	4329	5300	94	d0-1. 0	1	. 0
1,N,4-Hric8lorobenzene	531N	5300	10N	437d	5300	9d	d0-1. 0	5	. 0
Oexac8lorobutaViene	53Nd	5300	105	5301	5300	100	d0-1. 0	5	. 0
k ap8t8alene	530d	5300	101	43d2	5300	95	d0-1. 0	2	. 0
1,1,N-Hric8loroet8ane	5312	5300	10.	4322	5300	9.	d0-1. 0	10	. 0
1,1,1,N-Hetrac8loroet8ane	43d2	5300	95	434d	5300	79	d0-1. 0	2	. 0
1,N,. -Hric8loropropane	4395	5300	99	43d5	5300	95	d0-1. 0	4	. 0
1,N,. -Hric8lorobenzene	53 2	5300	10d	4390	5300	97	d0-1. 0	9	. 0

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries anVrelative percent Vifferences (RPD) are VetermineVby t8e software using values in t8e calculation w8ic8 8ave not been rounVeV3

Semivolatile Organics by EPA Method 525.2

ALS Environmental—Kelso Laboratory
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Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Mentinel / ell	**Date Collected:**	1GNGNG15
Sample Matrix:	- hinding wateh	**Date Received:**	1GNGNG15

Semivolatile Organics by EPA Method 525.2

Sample Name:	- / VN	**Units:**	ugCL
Lab Code:	K1511794WGG1	**Basis:**	2 A
Extraction Method:	B k SDr -	**Level:**	Low
Analysis Method:	5N5EN		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dexacplohocyclo*entaFiene	2 -	U	GKGTH	1	1GNHD15	110G 015	K/ O151G5N	
bluohene	2 -	U	GKG T	1	1GNHD15	110G 015	K/ O151G5N	P
zho*acploh	2 -	U	GKGTH	1	1GNHD15	110G 015	K/ O151G5N	
Dexacplohomen6ene	2 -	U	GKGTH	1	1GNHD15	110G 015	K/ O151G5N	
M(a6ine	2 -	U	GKG T	1	1GNHD15	110G 015	K/ O151G5N	
Atha6ine	2 -	U	GKGTH	1	1GNHD15	110G 015	K/ O151G5N	
B ethimu6in	2 -	U	GENG	1	1GNHD15	110G 015	K/ O151G5N	
Alacploh	2 -	U	GKGHG	1	1GNHD15	110G 015	K/ O151G5N	
) ho(acil	2 -	U	GENG	1	1GNHD15	110G 015	K/ O151G5N	
B etolacploh	2 -	U	GKG7H	1	1GNHD15	110G 015	K/ O151G5N	
) utacploh	2 -	U	GKGTH	1	1GNHD15	110G 015	K/ O151G5N	
) is3NWtpylpexyl8 AFi*ate	2 -	U	GE57	1	1GNHD15	110G 015	K/ O151G5N	
) is3NWtpylpexyl8 zptpalate	2 -	U	GE57	1	1GNHD15	110G 015	K/ O151G5N	
) en6o3a8*yhene	2 -	U	GKGNG	1	1GNHD15	110G 015	K/ O151G5N	

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Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4Wi(etpyl WWithomen6ene	14H	HGW4G	110G 015	r utsiFe Conthol Li(its
Shi*penyl zpos*pate	TT	HGW4G	110G 015	Acce*tanle
zehyleneW1N	4T	HGW4G	110G 015	r utsiFe Conthol Li(its

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Dentinel Well	**Date Collected:**	MA
Sample Matrix:	r EinSing wateE	**Date Received:**	MA

Semivolatile Organics by EPA Method 525.2

Sample Name:	h etdoB k lanS	**Units:**	ugNL
Lab Code:	KWG151052- /-	**Basis:**	MA
Extraction Method:	h THO. r	**Level:**	Low
Analysis Method:	525U2		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Oe*acdloEocycloFentaBiene	Mr	p	0U10	1	10N2xN15	11N0- N15	KWG151052-	
bluoEene	Mr	p	0U050	1	10N2xN15	11N0- N15	KWG151052-	P
zEoFacdloE	Mr	p	0U10	1	10N2xN15	11N0- N15	KWG151052-	
Oe*acdloEomen6ene	Mr	p	0U10	1	10N2xN15	11N0- N15	KWG151052-	
Di(a6ine	Mr	p	0U050	1	10N2xN15	11N0- N15	KWG151052-	
AtEa6ine	Mr	p	0U10	1	10N2xN15	11N0- N15	KWG151052-	
h etEimu6in	Mr	p	0U20	1	10N2xN15	11N0- N15	KWG151052-	
AlacdloE	Mr	p	0U0x2	1	10N2xN15	11N0- N15	KWG151052-	
k Eo(acil	Mr	p	0U20	1	10N2xN15	11N0- N15	KWG151052-	
h etolacdloE	Mr	p	0U0) 0	1	10N2xN15	11N0- N15	KWG151052-	
k utacdloE	Mr	p	0U10	1	10N2xN15	11N0- N15	KWG151052-	
k is32/etdylde*yl8 ABiFate	Mr	p	0U90	1	10N2xN15	11N0- N15	KWG151052-	
k is32/etdylde*yl8 zdtdalate	Mr	p	0U90	1	10N2xN15	11N0- N15	KWG151052-	
k en6o3a8FyEene	Mr	p	0U020	1	10N2xN15	11N0- N15	KWG151052-	

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Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4/r i(etdyl/2/nitEomen6ene	11x	x0/140	11N0- N15	AcceFtanle
HEiFdenyl zdosFdate	) -	x0/140	11N0- N15	AcceFtanle
zeEylene/B12	) 9	x0/140	11N0- N15	AcceFtanle

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Longview, City of
Project: Sentinel Well
Sample Matrix: Drinking water

Service Request: K1511794

Surrogate Recovery Summary
Semivolatile Organics by EPA Method 525.2

Extraction Method: METHOD
Analysis Method: 525.2

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
Batch QC	K1511- 07*331	141 8	07	94 8
DW*2	K1511794*331	14- 8	00	40 8
Method Blank	KW6 151352G*G	11-	0G	09
Batch QCMS	KW6 151352G*1	125	134	74
Batch QCDMS	KW6 151352G*2	12G	13-	01
Lab Control Sample	KW6 151352G*4	124	11G	09

Surrogate Recovery Control Limits (%)

Sur1	=	1,4*Dimethyl*2*nitrobenzene	- 3*143
Sur2	=	Triphenyl Phosphate	- 3*143
Sur4	=	Perylene*d12	- 3*143

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K57550aS
Project:	EentineTH eTT	**Date Extracted:**	5u/N9/Nu57
Sample Matrix:	3 rinMng wWer	**Date Analyzed:**	55/uO/Nu57

Matrix Spike/Duplicate Matrix Spike Summary
Semivolatile Organics by EPA Method 525.2

Sample Name:	DW-1 QC	**Units:**	l g/L
Lab Code:	K5755940.uu5	**Basis:**	2 A
Extraction Method:	G 6 8 c h 3	**Level:**	Low
Analysis Method:	7N7kN	**Extraction Lot:**	KH b 575u7NO

		DW-1 QCG E KH b 575u7NO.5 Matrix Spike			DW-1 QC3 G E KH b 575u7NO.N Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
c ezW1Toro-y-TopentWdiene	2 3	uk454	uk4aN	4a	uk4SN	uk4aN	49	9u.5Su	5	Su
miT orene	2 3	5kN5	uk4aN	5Na	5kNO	uk4aN	5N4	9u.5Su	N	Su
PropW1Tor	2 3	uk444	uk4aN	5uO	5ku7	uk4aN	5u4	9u.5Su	7	Su
c ezW1Toro(enxene	2 3	5ku9	uk4aN	555	5ku9	uk4aN	555	9u.5Su	u	Su
Ei) Wxine	2 3	uk4SS	uk4aN	49	uk4uS	uk4aN	4O	9u.5Su	S	Su
AtrWxine	2 3	uk4SN	uk4aN	49	uk45u	uk4aN	47	9u.5Su	N	Su
G etri(l xin	2 3	5ku5	uk4aN	5u7	5kuS	uk4aN	5u9	9u.5Su	N	Su
ATW1Tor	2 3	uk4uO	uk4aN	4O	uk4N7	uk4aN	4a	9u.5Su	N	Su
Dro) WiT	2 3	5ku5	uk4aN	5u7	5kuN	uk4aN	5ua	9u.5Su	5	Su
G etoTW1Tor	2 3	ul00N	uk4aN	4N	uk4u7	uk4aN	4O	9u.5Su	S	Su
Dl tW1Tor	2 3	5kuO	uk4aN	5u0	5ku7	uk4aN	5u4	9u.5Su	5	Su
Di*BN et1yTl ezyTs AdipWe	2 3	5k5u	uk4aN	55O	5k50	uk4aN	5NS	9u.5Su	0	Su
Di*BN et1yTl ezyTs P1t1WTWe	2 3	5k57	uk4aN	5Nu	5kN0	uk4aN	5SS F	9u.5Su	5u	Su
DenxoBWspyrene	2 3	ul05S	uk4aN	07	ul0aO	uk4aN	4u	9u.5Su	a	Su

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Per-ent re-overie* Wid reTWive per-ent differen-e* BRP3 s We deter) ined (y t1e *oftwWe l *ing vWl e* in t1e -W-1 TWion w1i-1 1We not (een rol ndedk

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	DWWWK5
Project:	kentineNS eNN	**Date Extracted:**	W2/7H/72W
Sample Matrix:	ErinTing w. ter	**Date Analyzed:**	WW23/72W

Lab Control Spike Summary
Semivolatile Organics by EPA Method 525.2

Extraction Method:	O G68 c E	**Units:**	4g/L
Analysis Method:	-7-97	**Basis:**	0 A
		Level:	Low
		Extraction Lot:	DS 1 WW2-73

L. u ControNk. a pN
DS 1 WW2-73M
Lab Control Spike

Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
8 eh. bzNorobybNopent. diene	29m12	W22	m1	H2M52
(N4orene	W5W	W22	W5W P	H2M52
xrop. bzNor	WW7	W22	WW7	H2M52
8 eh. bzNorouen)ene	WWW	W22	WWW	H2M52
kia .)ine	W2W	W22	W2W	H2M52
Atr.)ine	W25	W22	W25	H2M52
O etriu4)in	WW2	W22	WW2	H2M52
ANbzNor	W2H	W22	W2H	H2M52
* roa . biN	W2H	W22	W2H	H2M52
O etoNbzNor	W2H	W22	W2H	H2M52
* 4t. bzNor	WW5	W22	WW5	H2M52
* iB7MtzyNzehyNF Adip. te	WWW	W22	WWW	H2M52
* iB7MtzyNzehyNF xztz. Nte	WWK	W22	WWK	H2M52
* en)os. Ipyrene	WWH	W22	WWH	H2M52

Results flagged with an asterisk (*) indicate values outside control criteria.

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Diquat and Paraquat by EPA Method 549.2

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ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	10/20/2015
Sample Matrix:	Drinking water	**Date Received:**	10/20/2015

Diquat and Paraquat by EPA Method 549.2

Sample Name:	DW-2	**Units:**	ug/L
Lab Code:	K1511794-001	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	5. 3G2		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Di8uat	ND	q	0G00	1	10/24/15	11/05/15	KWU15104. 4	
Para8uat	ND	q	0G00	1	10/24/15	11/05/15	KWU15104. 4	

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking water	**Date Received:**	NA

Diquat and Paraquat by EPA Method 549.2

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1510434-5	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	53. 2U		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Di8uat	ND	q	02300	1	10/U4/15	11/05/15	KWG1510434	
Para8uat	ND	q	02700	1	10/U4/15	11/05/15	KWG1510434	

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Sentinel Well	**Date Extracted:**	10/23/2015
Sample Matrix:	Drinking water	**Date Analyzed:**	11/05/2015

Matrix Spike/Duplicate Matrix Spike Summary
Diquat and Paraquat by EPA Method 549.2

Sample Name:	Batch QC	**Units:**	ug/L
Lab Code:	K1511794-001	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	549.2	**Extraction Lot:**	KWG1510343

		Batch QCMS KWG1510343-1 Matrix Spike			Batch QCDMS KWG1510343-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Diquat	ND	14.2	12.0	118	13.5	12.0	112	70-130	5	30
Paraquat	ND	11.3	12.0	94	11.6	12.0	96	70-130	3	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	DWWWK5
Project:	aentinekl ekk	**Date Extracted:**	WM05/0MW
Sample Matrix:	TrinHing wuter	**Date Analyzed:**	WWM4/0MW

Lab Control Spike Summary
Diquat and Paraquat by EPA Method 549.2

Extraction Method:	O Gq 8 6 T	**Units:**	. g/L
Analysis Method:	- 7940	**Basis:**	2 A
		Level:	Low
		Extraction Lot:	Dl 3 WWW575

	LuNControkauS pke Dl 3 WWW575E7 **Lab Control Spike**			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
TiF. ut	W54W	W04M	WWM	PMEW5M
muruF. ut	WW49	W04M	9W	PMEW5M

Results flagged with an asterisk (*) indicate values outside control criteria.

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Subcontract Lab Results

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NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

October 30, 2015

Ms. Chris Leaf
ALS Environmental - Kelso
1317 S. 13th Avenue
Kelso, WA 98626

Certificate of Analysis

Project Name:	**SOCs**	Workorder:	**2103388**
Purchase Order:	**51K1511863**	Workorder ID:	**K1511863**

Dear Ms. Leaf:

Enclosed are the analytical results for samples received by the laboratory on Thursday, October 22, 2015.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Mrs. Kelli L Wolfgang (Project Coordinator) at (717) 944-5541.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

This laboratory report may not be reproduced, except in full, without the written approval of ALS Environmental.

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

Kelli Wolfgang

Mrs. Kelli L Wolfgang
Project Coordinator

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.

ALS Environmental
34 Dogwood Lane ▪ Middletown, PA 17057 ▪ Phone: 717-944-5541 ▪ Fax: 717-944-1430 ▪ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

Workorder: 2103388 K1511863

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2103388001	K1511863-001	Drinking Water	10/20/2015 12:50	10/22/2015 09:04	Collected by Client

Notes

-- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
-- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
-- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
-- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
-- The Chain of Custody document is included as part of this report.
-- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
-- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are preformed in the laboratory and are therefore analyzed out of hold time.
-- Method references listed on this report beginning with the prefix “S” followed by a method number (such as S2310B-97) refer to methods from “Standard Methods for the Examination of Water and Wastewater”.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)
(S)	Surrogate Compound
NC	Not Calculated
*	Result outside of QC limits

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ANALYTICAL RESULTS

Workorder: 2103388 K1511863

Lab ID: **2103388001** Date Collected: 10/20/2015 12:50 Matrix: Drinking Water
Sample ID: **K1511863-001** Date Received: 10/22/2015 09:04

Parameters	Results	Flag	Units	RDL	Method	Prepared By	Analyzed	By	*Cntr*
CARBAMATES									
Aldicarb	ND		ug/L	0.31	EPA 531.1		10/29/15 10:28	CGS	B
Aldicarb Sulfone	ND		ug/L	0.18	EPA 531.1		10/29/15 10:28	CGS	B
Aldicarb Sulfoxide	ND		ug/L	0.37	EPA 531.1		10/29/15 10:28	CGS	B
Carbaryl	ND		ug/L	0.42	EPA 531.1		10/29/15 10:28	CGS	B
Carbofuran	ND		ug/L	0.43	EPA 531.1		10/29/15 10:28	CGS	B
3-Hydroxycarbofuran	ND		ug/L	0.41	EPA 531.1		10/29/15 10:28	CGS	B
Methiocarb	ND		ug/L	0.42	EPA 531.1		10/29/15 10:28	CGS	B
Methomyl	ND		ug/L	0.31	EPA 531.1		10/29/15 10:28	CGS	B
Oxamyl	ND		ug/L	0.42	EPA 531.1		10/29/15 10:28	CGS	B
Propoxur	ND		ug/L	0.44	EPA 531.1		10/29/15 10:28	CGS	B

Kelli Wolfgang
Mrs. Kelli L Wolfgang
Project Coordinator

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34 Dogwood Lane ▪ Middletown, PA 17057 ▪ Phone: 717-944-5541 ▪ Fax: 717-944-1430 ▪ www.alsglobal.com

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

QUALITY CONTROL DATA

Workorder: 2103388 K1511863

QC Batch: HPLC/4044 **Analysis Method:** EPA 531.1

QC Batch Method: EPA 531.1

Associated Lab Samples: 2103388001

METHOD BLANK: 2252455

Parameter	Blank Result	Units	Reporting Limit
Aldicarb	ND	ug/L	0.31
Aldicarb Sulfone	ND	ug/L	0.18
Aldicarb Sulfoxide	ND	ug/L	0.37
Carbaryl	ND	ug/L	0.42
Carbofuran	ND	ug/L	0.43
3-Hydroxycarbofuran	ND	ug/L	0.41
Methiocarb	ND	ug/L	0.42
Methomyl	ND	ug/L	0.31
Oxamyl	ND	ug/L	0.42
Propoxur	ND	ug/L	0.44

LABORATORY CONTROL SAMPLE: 2252456

Parameter	LCS % Rec	Units	Spike Conc.	LCS Result	% Rec Limit
Aldicarb	94.2	ug/L	10	9.4	80 - 120
Aldicarb Sulfone	88.4	ug/L	10	8.8	80 - 120
Aldicarb Sulfoxide	94.2	ug/L	10	9.4	80 - 120
Carbaryl	90.8	ug/L	10	9.1	80 - 120
Carbofuran	90.3	ug/L	10	9.0	80 - 120
3-Hydroxycarbofuran	98.3	ug/L	10	9.8	80 - 120
Methiocarb	89.6	ug/L	10	9.0	80 - 120
Methomyl	92.3	ug/L	10	9.2	80 - 120
Oxamyl	102	ug/L	10	10.2	80 - 120
Propoxur	90.7	ug/L	10	9.1	80 - 120

SAMPLE DUPLICATE: 2252457 ORIGINAL: 2102620001

Parameter	Original Result	Units	DUP Result	RPD	Max RPD
Carbofuran	0	ug/L	0	NC	20
Oxamyl	0	ug/L	0	NC	20

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QUALITY CONTROL DATA

Workorder: 2103388 K1511863

MATRIX SPIKE SAMPLE: 2252458 ORIGINAL: 2103704001

****NOTE - The Original Result shown below is a raw result and is only used for the purpose of calculating Matrix Spike percent recoveries. This result is not a final value and cannot be used as such.

Parameter	Original Result	Units	Spike Conc.	MS Result	MS % Rec	% Rec Limit
Carbofuran	0	ug/L	10	8.47521	84.8	65 - 135
Oxamyl	0	ug/L	10	9.70749	97.1	65 - 135

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: 2103388 K1511863

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
2103388001	K1511863-001			EPA 531.1	HPLC/4044

ALS Environmental Chain of Custody

1317 South 13th Avenue • Kelso, WA 98626 • 1-360-577-7222 • FAX 1-360-636-1068

ALS Contact: Chris Leaf

* 2 1 0 3 3 8 8 *

KW

Project Number: K1511863
Project Manager: Chris Leaf
QAP: LAB QAP

Lab Code	Sample ID	# of Cont.	Matrix	Sample Date	Sample Time	Lab ID	CARBAM 531.1
K1511863-001	DW-2	2	Drinking Water	10/20/15	1250	Middletown ALS	X

	Y	N	Initials	Cooler Temp:
Custody Seals Present?	✓		BLS	1 °C
(If present) Seals Intact?	✓			Cooler #
Received on Ice?	✓			
COC/Lbls Complete	✓			Therm ID:
Cont in Good Cond?	✓			TT-394
Correct Containers?	✓			Ship Carrier:
Correct Samp Vol?	✓			
Correct Preservation?	✓			FedEx UPS
Headspace/Volatiles?	✓			DHL

Tracking #:

Test Comments
CARBAM - 531.1 K1511863-001 Full list for WA Regulations - no compliance report required.

Folder Comments: Q
~~Report all metals in mg/L~~. No DW State form required.
NA

KW

10/22/15 1720

Special Instructions/Comments	Turnaround Requirements	Report Requirements	Invoice Information
Please provide the electronic (PDF and EDD) report to the following e-mail address: ALKLS.Data@alsglobal.com.	___ RUSH (Surcharges Apply)	___ I. Results Only	
CC CL 10/21/15	PLEASE CIRCLE WORK DAYS 1 2 3 4 5	✓ II. Results + QC Summaries	PO# 51K1511863
	✓ STANDARD	___ III. Results + QC and Calibration Summaries	
	Requested FAX Date:	___ IV. Data Validation Report with Raw Data	Bill to
H - Test is On Hold P - Test is Authorized for Prep Only	Requested Report Date 11/06/15	PQL/MDL/J N; EDD Y Basic w/QC Kelso Superset	

Relinquished By: [signature] 10/21/15 1133 Received By: B. Schaeffer 10/22/15 9:04 Airbill Number: 6447 9267 3597

2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
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www.alsglobal.com

LABORATORY REPORT

November 5, 2015

Jeff Coleman
Longview, City of
W/S Operation Center
P.O. Box 128
Longview, WA 98632

RE: Sentinel Well

Dear Jeff:

Enclosed are the results of the sample submitted to our laboratory on October 22, 2015. For your reference, this analysis has been assigned our service request number K1511863.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

Kate Aguilera

By Kate Aguilera at 8:23 am, Nov 05, 2015

Kate Aguilera
Project Manager

2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
F: +1 805 526 7270
www.alsglobal.com

Client: Longview, City of
Project: Sentinel Well

Service Request No: K1511863

CASE NARRATIVE

The sample was received intact under chain of custody at the Simi Valley facility on October 22, 2015 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the sample(s) at the time of sample receipt.

Hydrogen Sulfide Analysis

The sample was analyzed for hydrogen sulfide using a gas chromatograph equipped with a sulfur chemiluminescence detector (SCD). This method is not included on the laboratory's NELAP, DoD-ELAP, or AIHA-LAP scope of accreditation.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

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ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
AIHA	http://www.aihaaccreditedlabs.org	101661
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0694
DoD ELAP	http://www.pjlabs.com/search-accredited-labs	L14-2-R1
Florida DOH (NELAP)	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E871020
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/labcert.htm	2014025
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	876241
New Jersey DEP (NELAP)	http://www.nj.gov/dep/oqa/	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-001
Pennsylvania DEP	http://www.depweb.state.pa.us/labs	68-03307 (Registration)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704413-15-6
Utah DOH (NELAP)	http://www.health.utah.gov/lab/labimp/certification/index.html	CA016272015-5
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

Intra-Network Chain of Custody

1317 South 13th Avenue • Kelso, WA 98626 • 1-360-577-7222 • FAX 1-360-636-1068

ALS Contact: Chris Leaf

Project Name: Sentinel Well
Project Number:
Project Manager: Jeff Coleman
Company: Longview, City of
QAP: LAB QAP

Lab Code	Client Sample ID	# of Cont.	Matrix	Sample Date	Sample Time	Date Received	Send To	Sulfur Sulfur Liq
K1511863-001	DW-2	2	Drinking Water	10/20/15	1250	10/20/15	SIMIVALLEY	II

Test Comments

Sulfur - Sulfur Liq K1511863-001 Hydrogen Sulfide

Folder Comments:

~~Report all metals in mg/L.~~ No DW State form required.

NA

Special Instructions/Comments

Please provide the electronic (PDF and EDD) report to the following e-mail address: ALKLS.Data@alsglobal.com.

@ CL 10/21/15

pH Checked _____

Turnaround Requirements

____ **RUSH** (Surcharges Apply)

PLEASE CIRCLE WORK DAYS

1 2 3 4 5

✓ **STANDARD**

Requested FAX Date: _____

Requested Report Date: 11/06/15

Report Requirements

____ I. Results Only

✓ II. Results + QC Summaries

____ III. Results + QC and Calibration Summaries

____ IV. Data Validation Report with Raw Data

PQL/MDL/J N

EDD Y Basic w/ QC (also Superset 1° blank cal)

Invoice Information

PO# 51K1511863

Bill to

Relinquished By: H Smith 10/21/15 1133 Received By: 10/22/15 0950 Airbill Number: _____

ALS Environmental
Sample Acceptance Check Form

Client: Longview, City of Work order: K1511863
Project: Sentinel Well
Sample(s) received on: 10/22/15 Date opened: 10/22/15 by: KKELPE

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Did **sample containers** arrive in good condition?	☒	☐	☐
3	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
4	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
5	Was **sample volume** received adequate for analysis?	☒	☐	☐
6	Are samples within specified holding times?	☒	☐	☐
7	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: ° C Blank Temperature: 1° C **Gel Packs**			
8	Were **custody seals** on outside of cooler/Box/Container?	☒	☐	☐
	Location of seal(s)? SEALING COOLER Sealing Lid?	☒	☐	☐
	Were signature and date included?	☒	☐	☐
	Were seals intact?	☒	☐	☐
9	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☒	☐	☐
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☒	☐	☐
10	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
11	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
K1511863-001.01	40mL VOA NP		7	1	A	11/3/15
K1511863-001.02	40mL VOA NP				A	

Explain any discrepancies: (include lab sample ID numbers):
The sample was received at ALS-Kelso on 10/20/15

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Longview, City of**
Client Project ID: **Sentinel Well**

ALS Project ID: K1511863

Hydrogen Sulfide

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 7890A/GC22/SCD
Analyst: Mike Conejo
Sample Type: Drinking Water
Test Notes:

Date(s) Collected: 10/20/15
Date Received: 10/20/15
Date Analyzed: 11/3/15

Client Sample ID	ALS Sample ID	Sample Amount ml(s)	Purge Volume Liter(s)	Injection Volume ml(s)	**Result µg/L**	MRL µg/L	Data Qualifier
DW-2	K1511863-001	10.0	0.30	1.0	ND	0.84	
Method Blank	P151103-MB	10.0	0.30	1.0	ND	0.84	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Longview, City of**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **Sentinel Well**

ALS Project ID: K1511863
ALS Sample ID: P151103-DLCS

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 7890A/GC22/SCD
Analyst: Mike Conejo
Sample Type: Drinking Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 11/03/15
Liquid Amount: 10.0 ml(s)
Purge Volume: 0.30 Liter(s)
Injection Volume: 0.20 ml(s)

CAS #	Compound	Spike Amount LCS / DLCS ug/L	Result LCS ug/L	Result DLCS ug/L	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
7783-06-4	Hydrogen Sulfide	416	404	422	**97**	**101**	45-151	4	28	

ALS Environmental
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www.alsglobal.com

December 09, 2015

Analytical Report for Service Request No: K1511864

Jeff Coleman
Longview, City of
W/S Operation Center
P.O. Box 128
Longview, WA 98632

RE: Sentinel Wells

Dear Jeff,

Enclosed are the results of the sample(s) submitted to our laboratory October 20, 2015
For your reference, these analyses have been assigned our service request number **K1511864.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3275. You may also contact me via email at Chris.Leaf@ALSGlobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Chris Leaf
Project Manager

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Table of Contents

Acronyms
Qualifiers
State Certifications, Accreditations, And Licenses
Chain of Custody
Metals
Subcontract Lab Results

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L14-51
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	Not available	-
Idaho DHW	http://www.healthandwelfare.idaho.gov/Health/Labs/CertificationDrinkingWaterLabs/tabid/1833/Default.aspx	-
ISO 17025	http://www.pjlabs.com/	L14-50
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	03016
Maine DHS	Not available	WA01276
Michigan DEQ	http://www.michigan.gov/deq/0,1607,7-135-3307_4131_4156---,00.html	9949
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Chain of Custody

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636- 1068
www.alsglobal.com

ALS Environmental

58081

CHAIN OF CUSTODY

58081

001

SR# K151184

COC Set____of____

COC#_____

1317 South 13th Ave, Kelso, WA 98626 Phone (360) 577-7222 / 800-695-7222 / FAX (360) 636-1068
www.alsglobal.com

Project Name: Sentinel Wells
Project Number:
Project Manager: Jeff Coleman
Company: City of Longview
Address: PO Box 128 Longview WA 98632
Phone #
Email
Sampler Signature: T Daly
Sampler Printed Name: T Daly

CLIENT SAMPLE ID	LABID	SAMPLING Date, Time	Matrix	NUMBER OF CONTAINERS	7D 900.0 / Radioact	7D 903.1 / Radium 226	7D 904.0 / Radium 228	180D 200.8 / Metals T	1	2	3	4	5	Remarks
1. DW-2		10/20/15 1250		2	—	—	—	—						
2.														
3.														
4.														
5.														
6.														
7.														
8.														
9.														
10.														

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. CLP Like Summary (no raw data)
___ IV. Data Validation Report
___ V. EDD

Invoice Information

P.O.# 36-4746
Bill To: City of Longview
PO Box 128
Longview WA 98632

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
___ Standard

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments:

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other_____(Circle One)

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature: T Daly	Signature: [illegible]	Signature	Signature	Signature	Signature
Printed Name: T Daly	Printed Name: [illegible]	Printed Name	Printed Name	Printed Name	Printed Name
Firm: CoL	Firm: ARI	Firm	Firm	Firm	Firm
Date/Time: 10/20/15 1548	Date/Time: 10/20/15 1548	Date/Time	Date/Time	Date/Time	Date/Time

PC CL

Cooler Receipt and Preservation Form

Client / Project: City of Longview Service Request K15 11864

Received: 10/20/15 Opened: 10/20/15 By: KR Unloaded: 10/20/15 By: KR

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? _____

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
12.9	13.0	10.5	10.6	+0.1	338	1 of 4		
8.3	8.5	12.6	12.8	+0.2	354	2 of 4		
5.9	6.1	11.2	11.4	+0.2	359	3 of 4		
12.1	12.3	14.4	14.6	+0.2	368	4 of 4		

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA ~~Y~~ N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time
DW2	1 gl Cube				X	HNO3	8mL	RE/1-31-L	KR	1605
DW7	↓				↓	↓	↓	↓	↓	↓
DW6										

Notes, Discrepancies, & Resolutions: _____

Page _____ *of* _____

Metals

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511864
Project:	Sentinel Wells	**Date Collected:**	10/20/15 12:50
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15 15:48
Sample Name:	DW-2	**Basis:**	NA
Lab Code:	K1511864-001		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Uranium	200.8	ND U	mg/L	0.000020	1	11/04/15 01:38	10/27/15	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511864
Project:	Sentinel Wells	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	NA
Lab Code:	KQ1512448-01		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Uranium	200.8	ND U	mg/L	0.000020	1	11/04/15 12:37	10/27/15	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511864
Project	Sentinel Wells	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
		Date Analyzed:	11/04/15

Replicate Sample Summary
Total Metals

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511795-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample KQ1512448-04 Result	Average	RPD	RPD Limit
Uranium	200.8	0.000020	ND U	ND U	ND	-	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Printed 11/24/15 2:26:59 PM

Superset Reference:

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511864
Project:	Sentinel Wells	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	11/4/15
		Date Extracted:	10/27/15

Matrix Spike Summary
Total Metals

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511795-001	**Basis:**	NA
Analysis Method:	200.8		
Prep Method:	EPA CLP-METALS ILM04.0		

Matrix Spike
KQ1512448-05

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Uranium	ND U	0.0207	0.0200	104	70-130

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Printed 11/24/15 2:27:00 PM

Superset Reference:

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511864
Project:	Sentinel Wells	**Date Analyzed:**	11/04/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/27/15

Lab Control Sample Summary
Total Metals

Analysis Method:	200.8	**Units:**	mg/L
Prep Method:	EPA CLP-METALS ILM04.0	**Basis:**	NA
		Analysis Lot:	470354

Lab Control Sample
KQ1512448-02

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
Uranium	0.0205	0.0200	102	85-115

Subcontract Lab Results

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Thursday, November 12, 2015

Chris Leaf
ALS Environmental
1317 South 13th Ave
Kelso, WA 98626

Re: ALS Workorder: 1510386
Project Name:
Project Number: K1511864

Dear Ms. Leaf:

One water sample was received from ALS Environmental, on 10/22/2015. The sample was scheduled for the following analyses:

Gross Alpha/Beta
Radium-226
Radium-228

The results for these analyses are contained in the enclosed reports.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Thank you for your confidence in ALS Environmental. Should you have any questions, please call.

Sincerely,

ALS Environmental
Jeff R. Kujawa
Project Manager

ALS Environmental – Fort Collins is accredited by the following accreditation bodies for various testing scopes in accordance with requirements of each accreditation body. All testing is performed under the laboratory management system, which is maintained to meet these requirement and regulations. Please contact the laboratory or accreditation body for the current scope testing parameters.

ALS Environmental – Fort Collins	
Accreditation Body	License or Certification Number
Alaska (AK)	UST-086
Alaska (AK)	CO01099
Arizona (AZ)	AZ0742
California (CA)	06251CA
Colorado (CO)	CO01099
Connecticut (CT)	PH-0232
Florida (FL)	E87914
Idaho (ID)	CO01099
Kansas (KS)	E-10381
Kentucky (KY)	90137
L-A-B (DoD ELAP/ISO 170250)	L2257
Louisiana (LA)	05057
Maryland (MD)	285
Missouri (MO)	175
Nebraska(NE)	NE-OS-24-13
Nevada (NV)	CO000782008A
New York (NY)	12036
North Dakota (ND)	R-057
Oklahoma (OK)	1301
Pennsylvania (PA)	68-03116
Tennessee (TN)	2976
Texas (TX)	T104704241
Utah (UT)	CO01099
Washington (WA)	C1280

1510386

Gross Alpha/Beta:
The samples were analyzed for gross alpha and beta activity by gas flow proportional counting according to the current revision of SOP 724. Gross alpha results are referenced to ^{241}Am. Gross beta results are referenced to ^{90}Sr/Y.

All acceptance criteria were met.

Radium-228:
The samples were analyzed for the presence of ^{228}Ra by low background gas flow proportional counting of ^{228}Ac, which is the ingrown progeny of ^{228}Ra, according to the current revision of SOP 724.

All acceptance criteria were met.

Radium-226:
The samples were prepared and analyzed according to the current revision of SOP 783.

All acceptance criteria were met.

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1510386
Client Name: ALS Environmental
Client Project Name:
Client Project Number: K1511864
Client PO Number: K1511864

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
DW-2	1510386-1		WATER	20-Oct-15	12:50

ALS Environmental Chain of Custody

1317 South 13th Avenue • Kelso, WA 98626 • 1-360-577-7222 • FAX 1-360-636-1068

ALS Contact: Chris Leaf

15|0386

Project Number: K1511864
Project Manager: Chris Leaf
QAP: LAB QAP

Lab Code	Sample ID	# of Cont.	Matrix	Sample Date	Sample Time	Lab ID	Radioact 900.0	Radium 226 903.1	Radium 228 904.0
K1511864-001	DW-2 (1)	2	Drinking Water	10/20/15	1250	Fort Collins ALS	X	X	X

Folder Comments:
Cubes preserved with HNO3 on 10/20/15 @ 1605.

Special Instructions/Comments
Please provide the electronic (PDF and EDD) report to the following e-mail address: ALKLS.Data@alsglobal.com.

CL 10/21/15

H - Test is On Hold P - Test is Authorized for Prep Only

Turnaround Requirements
____ **RUSH** (Surcharges Apply)
PLEASE CIRCLE WORK DAYS
1 2 3 4 5
✓ **STANDARD**
Requested FAX Date: _____
Requested Report Date: 11/17/15

Report Requirements
____ I. Results Only
____ II. Results + QC Summaries
✓ III. Results + QC and Calibration Summaries
____ IV. Data Validation Report with Raw Data
PQL/MDL/J N
EDD Y Basic w/QC or Kelso Superset

Invoice Information
PO# 51K1511864
Bill to

Relinquished By: [signature] 10/21/15 1133 Received By: [signature] 10-22-15 @ 0930 Airbill Number:

ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: ALS Kelso Workorder No: 1510386

Project Manager: JRK Initials: SDM Date: 10-22-15

1. Does this project require any special handling in addition to standard ALS procedures?		YES	NO
2. Are custody seals on shipping containers intact?	NONE	YES	NO
3. Are Custody seals on sample containers intact?	NONE	YES	NO
4. Is there a COC (Chain-of-Custody) present or other representative documents?		YES	NO
5. Are the COC and bottle labels complete and legible?		YES	NO
6. Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		YES	NO
7. Were airbills / shipping documents present and/or removable?	DROP OFF	YES	NO
8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	N/A	YES	NO
9. Are all aqueous non-preserved samples pH 4-9?	N/A	YES	NO
10. Is there sufficient sample for the requested analyses?		YES	NO
11. Were all samples placed in the proper containers for the requested analyses?		YES	NO
12. Are all samples within holding times for the requested analyses?		YES	NO
13. Were all sample containers received intact? (not broken or leaking, etc.)		YES	NO
14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: ____ < green pea ____ > green pea	N/A	YES	NO
15. Do any water samples contain sediment? Amount of sediment: ____ dusting ____ moderate ____ heavy	N/A	YES	NO
16. Were the samples shipped on ice?		YES	NO
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #2 #4	RAD ONLY	YES	NO

Cooler #:	1							
Temperature (°C):	Amb							
No. of custody seals on cooler:	1							
DOT Survey/ Acceptance Information — External µR/hr reading:	10							
Background µR/hr reading:	11							

Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? YES / NO / NA (If no, see Form 008.)

Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXCEPT #1 AND #16.

If applicable, was the client contacted? YES / NO / NA Contact: _____ Date/Time: _____

Project Manager Signature / Date: 10-22-15

*IR Gun #2: Oakton, SN 29922500201-0066
*IR Gun #4: Oakton, SN 2372220101-0002

Form 201r24.xls (06/04/2012)

1510386

ORIGIN ID:KOGA (360) 577-7222
SAMPLE RECEIVING
ALS ENVIRONMENTAL
1317 S. 13TH AVE

KELSO, WA 98626
UNITED STATES US

SHIP DATE: 21OCT15
ACTWGT: 64.7 LB
CAD: 102641/CAFE2806
DIMS: 26x14x13 IN

BILL SENDER

TO SAMPLE RECEIVING
ALS LBORATORY GROUP
225 COMMERCE DRIVE

FORT COLLINS CO 80524
(970) 490-1511
PO: CL/CL/CL

REF: SAMPLE K1511860 1511861 1511864

10
-1

521C3/401A/6F03

FedEx
Express

J141214073001ev

TRK# 0201 6447 9267 3946

THU - 22 OCT 10:30A
PRIORITY OVERNIGHT

XH FTCA

80524
CO-US DEN

Client:	ALS Environmental	**Date:**	*12-Nov-15*
Project:	K1511864	**Work Order:**	1510386
Sample ID:	DW-2	**Lab ID:**	1510386-1
Legal Location:		**Matrix:**	WATER
Collection Date:	10/20/2015 12:50	**Percent Moisture:**	

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Gross Alpha/Beta by GFPC		**PAI 724**			Prep Date: **11/4/2015**	PrepBy: **DKL**
GROSS ALPHA	ND (+/- 1.2)	U	2.8	pCi/l	NA	11/6/2015 10:16
GROSS BETA	**4.3 (+/- 1.8)**		**3.3**	**pCi/l**	NA	11/6/2015 10:16
Radium-226 by Radon Emanation - Method 903.1		**PAI 783**			Prep Date: **11/5/2015**	PrepBy: **ECP**
Ra-226	0.24 (+/- 0.16)	LT	0.19	pCi/l	NA	11/11/2015 13:06
Carr: BARIUM	*95.9*		*40-110*	*%REC*	DL = NA	11/11/2015 13:06
Radium-228 Analysis by GFPC		**PAI 724**			Prep Date: **10/26/2015**	PrepBy: **DKL**
Ra-228	ND (+/- 0.25)	U	0.52	pCi/l	NA	11/2/2015 12:39
Carr: BARIUM	*95.9*		*40-110*	*%REC*	DL = NA	11/2/2015 12:39

Client:	ALS Environmental	**Date:**	*12-Nov-15*
Project:	K1511864	**Work Order:**	1510386
Sample ID:	DW-2	**Lab ID:**	1510386-1
Legal Location:		**Matrix:**	WATER
Collection Date:	10/20/2015 12:50	**Percent Moisture:**	

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed

Explanation of Qualifiers

Radiochemistry:

U or ND - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
Y2 - Chemical Yield outside default limits.
W - DER is greater than Warning Limit of 1.42
* - Aliquot Basis is 'As Received' while the Report Basis is 'Dry Weight'.
# - Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'.
G - Sample density differs by more than 15% of LCS density.
D - DER is greater than Control Limit
M - Requested MDC not met.
LT - Result is less than requested MDC but greater than achieved MDC.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS, Matrix Spike Recovery within control limits.
N - Matrix Spike Recovery outside control limits
NC - Not Calculated for duplicate results less than 5 times MDC
B - Analyte concentration greater than MDC.
B3 - Analyte concentration greater than MDC but less than Requested MDC.

Inorganics:

B - Result is less than the requested reporting limit but greater than the instrument method detection limit (MDL).
U or ND - Indicates that the compound was analyzed for but not detected.
E - The reported value is estimated because of the presence of interference. An explanatory note may be included in the narrative.
M - Duplicate injection precision was not met.
N - Spiked sample recovery not within control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike duplicate fail and the native sample concentration is less than four times the spike added concentration.
Z - Spiked recovery not within control limits. An explanatory note may be included in the narrative.
* - Duplicate analysis (relative percent difference) not within control limits.
S - SAR value is estimated as one or more analytes used in the calculation were not detected above the detection limit.

Organics:

U or ND - Indicates that the compound was analyzed for but not detected.
B - Analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user.
E - Analyte concentration exceeds the upper level of the calibration range.
J - Estimated value. The result is less than the reporting limit but greater than the instrument method detection limit (MDL).
A - A tentatively identified compound is a suspected aldol-condensation product.
X - The analyte was diluted below an accurate quantitation level.
* - The spike recovery is equal to or outside the control criteria used.
+ - The relative percent difference (RPD) equals or exceeds the control criteria.
G - A pattern resembling gasoline was detected in this sample.
D - A pattern resembling diesel was detected in this sample.
M - A pattern resembling motor oil was detected in this sample.
C - A pattern resembling crude oil was detected in this sample.
4 - A pattern resembling JP-4 was detected in this sample.
5 - A pattern resembling JP-5 was detected in this sample.
H - Indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest.
L - Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest.
Z - This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products:
- gasoline
- JP-8
- diesel
- mineral spirits
- motor oil
- Stoddard solvent
- bunker C

QC BATCH REPORT

Batch ID: **RE151105-2-1** Instrument ID **Alpha Scin** Method: **Radium-226 by Radon Emanation**

LCS Sample ID: **RE151105-2** Units: **pCi/l** Analysis Date: **11/11/2015 13:47**
Client ID: Run ID: **RE151105-2A** Prep Date: **11/5/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-226	25.2 (+/- 6.4)	0.3	30.71		82.1	67-120					P
Carr: BARIUM	32570		33300		97.8	40-110					

LCSD Sample ID: **RE151105-2** Units: **pCi/l** Analysis Date: **11/11/2015 13:47**
Client ID: Run ID: **RE151105-2A** Prep Date: **11/5/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-226	27.5 (+/- 7)	0.2	30.71		89.7	67-120		25.2	0.2	2.1	P
Carr: BARIUM	32340		33300		97.1	40-110		32570			

MB Sample ID: **RE151105-2** Units: **pCi/l** Analysis Date: **11/11/2015 13:47**
Client ID: Run ID: **RE151105-2A** Prep Date: **11/5/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-226	ND	0.23									U
Carr: BARIUM	31910		33300		95.8	40-110					

The following samples were analyzed in this batch: 1510386-1

Client: ALS Environmental
Work Order: 1510386
Project: K1511864

QC BATCH REPORT

Batch ID: **AB151104-1-4** Instrument ID **LB4100-C** Method: **Gross Alpha/Beta by GFPC**

LCS Sample ID: **AB151104-1** Units: **pCi/l** Analysis Date: **11/6/2015 12:26**
Client ID: Run ID: **AB151104-1A** Prep Date: **11/4/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
GROSS ALPHA	204 (+/- 38)	7	224.1		91	70-130					P,M3
GROSS BETA	194 (+/- 34)	11	204.2		94.9	70-130					P,M3

MB Sample ID: **AB151104-1** Units: **pCi/l** Analysis Date: **11/6/2015 15:12**
Client ID: Run ID: **AB151104-1A** Prep Date: **11/4/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
GROSS ALPHA	ND	0.82									U
GROSS BETA	ND	1.12									U

MS Sample ID: **1510238-2** Units: **pCi/l** Analysis Date: **11/6/2015 12:26**
Client ID: **ETDS-101315-02** Run ID: **AB151104-1A** Prep Date: **11/4/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
GROSS ALPHA	238 (+/- 44)	8	224.1	13	100	70-130					P,M3
GROSS BETA	228 (+/- 39)	12	204.2	13.5	105	70-130					P,M3

The following samples were analyzed in this batch: 1510386-1 1510238-2

Client: ALS Environmental
Work Order: 1510386
Project: K1511864

QC BATCH REPORT

Batch ID: **RA151026-2-2** Instrument ID **LB4100-A** Method: **Radium-228 Analysis by GFPC**

LCS Sample ID: **RA151026-2** Units: **pCi/l** Analysis Date: **11/2/2015 12:43**
Client ID: Run ID: **RA151026-2A** Prep Date: **10/26/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-228	8.3 (+/- 2.2)	1	7.362		112	70-130					P,M3
Carr: BARIUM	32570		33300		97.8	40-110					

LCSD Sample ID: **RA151026-2** Units: **pCi/l** Analysis Date: **11/2/2015 12:43**
Client ID: Run ID: **RA151026-2A** Prep Date: **10/26/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-228	7.6 (+/- 2)	1	7.362		104	70-130		8.3	0.2	2.1	P
Carr: BARIUM	32340		33300		97.1	40-110		32570			

MB Sample ID: **RA151026-2** Units: **pCi/l** Analysis Date: **11/2/2015 13:07**
Client ID: Run ID: **RA151026-2A** Prep Date: **10/26/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-228	ND	0.58									U
Carr: BARIUM	31910		33300		95.8	40-110					

The following samples were analyzed in this batch: 1510386-1

ALS Environmental
ALS Group USA, Corp
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www.alsglobal.com

December 18, 2015

Analytical Report for Service Request No: K1511797

Jeff Coleman
Longview, City of
W/S Operation Center
P.O. Box 128
Longview, WA 98632

RE: Sentinel Well

Dear Jeff,

Enclosed are the results of the sample(s) submitted to our laboratory October 19, 2015
For your reference, these analyses have been assigned our service request number **K1511797.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3275. You may also contact me via email at Chris.Leaf@ALSGlobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Chris Leaf
Project Manager

ALS Environmental
ALS Group USA, Corp
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Table of Contents

Acronyms
Qualifiers
State Certifications, Accreditations, And Licenses
Case Narrative
Chain of Custody
General Chemistry
Metals
EPA Method 504.1
PesticidesPCBs by EPA Method 508.1
Chlorinated Herbicides by EPA 515.4
Volatile Organic Compounds
Semivolatile Organics by EPA Method 525.2
Diquat and Paraquat by EPA Method 549.2
Subcontract Lab Results

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L14-51
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	Not available	-
Idaho DHW	http://www.healthandwelfare.idaho.gov/Health/Labs/CertificationDrinkingWaterLabs/tabid/1833/Default.aspx	-
ISO 17025	http://www.pjlabs.com/	L14-50
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	03016
Maine DHS	Not available	WA01276
Michigan DEQ	http://www.michigan.gov/deq/0,1607,7-135-3307_4131_4156---,00.html	9949
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	□□□a□g□a□o□	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS Environmental—Kelso Laboratory
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Phone (360)577- 7222 Fax (360)636- 1068
www.alsglobal.com

ALS ENVIRONMENTAL

Client:	Longview, City of	**Service Request No.:**	K1511797
Project:	Sentinel Well	**Date Received:**	10/19/15
Sample Matrix:	Drinking Water		

Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier II data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Surrogate recoveries have been reported for all applicable organic analyses. Additional quality control analyses reported herein include: Laboratory Duplicate (DUP), Matrix Spike (MS), Matrix/Duplicate Matrix Spike (MS/DMS), Laboratory Control Sample (LCS), and Laboratory/Duplicate Laboratory Control Sample (LCS/DLCS).

Sample Receipt

Two drinking water samples were received for analysis at ALS Environmental on 10/19/15. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4ºC upon receipt at the laboratory.

General Chemistry Parameters

Total Cyanide by EPA Method 335.4:
The matrix spike recoveries for sample Batch QC were outside control criteria because of suspected matrix interference. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. No further corrective action was taken.

No other anomalies associated with the analysis of these samples were observed.

Total Metals

No anomalies associated with the analysis of these samples were observed.

EDB and DBCP by EPA Method 504.1

No anomalies associated with the analysis of these samples were observed.

Pesticides and Polychlorinated Biphenyls by EPA Method 508.1

Calibration Verification Exceptions:
The analysis of Organochlorine Pesticides and PCBs in Drinking Water by EPA 508.1 requires the use of dual column confirmation. When the Continuing Calibration Verification (CCV) criterion is met for both columns, the lower of the two sample results is generally reported. The primary evaluation criteria were not met on the confirmation column for Endrin. The results were reported from the column with an acceptable CCV. The data quality was not affected. No further corrective action was necessary.

Approved by_____

Matrix Spike Recovery Exceptions:
The upper control criterion was exceeded for the following several analytes in Matrix Spike (MS) KWG1510525-1 and Matrix Spike Duplicate (MSD) KWG1510525-2. The analytes in question were not detected in the associated field samples. The error associated with elevated recovery indicated a high bias. The sample data was not significantly affected. No further corrective action was appropriate.

Lab Control Sample Exceptions:
The upper control criterion was exceeded for several analytes in Laboratory Control Sample (LCS) KWG1510525-3. The analytes in question were not detected in the associated field samples. The error associated with elevated recovery indicated a high bias. The sample data was not significantly affected. No further corrective action was appropriate.

No other anomalies associated with the analysis of these samples were observed.

Chlorinated Acides by EPA Method 515.4

Matrix Spike Recovery Exceptions:
The matrix spike recovery and duplicate matrix spike recovery of Chloramben for batch QC was outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. The matrix spike outlier suggested a potential high bias in this matrix. No further corrective action was appropriate.

No other anomalies associated with the analysis of these samples were observed.

Volatile Organic Compounds by EPA Method 524.2

No anomalies associated with the analysis of these samples were observed.

Semivolatile Organic Compounds by EPA Method 525.2

Lab Control Sample Exceptions:
The upper control criterion was exceeded for Fluorene in Laboratory Control Sample (LCS) KWG1510524-3. The analyte in question was not detected in the associated field samples. The error associated with elevated recovery indicated a high bias. The sample data was not significantly affected. No further corrective action was appropriate.

Surrogate Exceptions:
The control criteria were exceeded for Perylene-d12 in sample Batch QC due to suspected matrix interference. . The sample contained particulate matter that collected on the extraction disk during sample elution. Historical results have shown that particulate matter can cause low recoveries for this surrogate. No further corrective action was appropriate.

The upper control criterion was exceeded for 1,3-Dimethyl-2-nitrobenzene in sample Batch QC. No target analytes were detected in the sample. The error associated with an elevated recovery equated to a high bias. The quality of the sample data was not significantly affected. No further corrective action was appropriate.

Matrix Spike Recovery Exceptions:
The matrix spike recovery of Bis(2-ethylhexyl) Phthalate for sample Batch QC was outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. The matrix spike outlier suggested a potential high bias in this matrix. No further corrective action was appropriate.

No other anomalies associated with the analysis of these samples were observed.

Diquat by High Performance Liquid Chromatography

No anomalies associated with the analysis of these samples were observed.

Approved by_____

Sulfur

This analysis was performed at ALS Environmental, Simi Valley, CA. The data for this analysis is included in the corresponding section of this report.

Carbamates by EPA Method 531.1

This analysis was performed at ALS Environmental, Middletown, PA. The data for this analysis is included in the corresponding section of this report.

Approved by_____

Chain of Custody

ALS Environmental—Kelso Laboratory
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Phone (360)577- 7222 Fax (360)636- 1068
www.alsglobal.com

ALS Environmental

58082

CHAIN OF CUSTODY

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001, 005

SR# [illegible]

COC Set____of____

COC#_____

1317 South 13th Ave, Kelso, WA 98626 Phone (360) 577-7222 / 800-695-7222 / FAX (360) 636-1068
www.alsglobal.com

Project Name: Sentinel Wells
Project Number:
Project Manager: Jeff Coleman
Company: ~~PO Box 128~~ City of Longview
Address: PO Box 128 Longview WA 98632
Phone #:
email:
Sampler Signature: T Daly
Sampler Printed Name: T Daly

CLIENT SAMPLE ID	LABID	SAMPLING Date	SAMPLING Time	Matrix	NUMBER OF CONTAINERS	24H SM 9223 B / Colliert EC NC	24H SM 9223 B / Colliert Tot NC	48H 180.1 / Turbidity	48H 300.0 / NO2	48H 300.0 / NO3	48H SM 2120 B / Color	48H SM 4500-P E / O Phos	7D [redacted]	7D 549.2 / DIQ_PARAQ	7D SM 2540 C / TDS	14D 335.4 / CN T	14D 504.1 / EDB DBCP 123TCP	14D 508.1 / PEST_CL	14D 515.4 / CL_ACID_HERB	14D 524.2 / VOC	14D 525.2 / SVO	14D [redacted]	14D SM 2320 B / Alkalinity Titr	14D Sulfur Liq / Sulfur	28D 245.1 / Hg T	28D 300.0 / F	28D 531.1 / CARBAM	28D SM 2510 B / Conductivity	Remarks
1. DW-5		10/19/15	1132		23																								
2. Trip Blank					4																								
3.																													
4.																													
5.																													
6.																													
7.																													
8.																													
9.																													
10.																													

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. CLP Like Summary (no raw data)
___ IV. Data Validation Report
___ V. EDD

Invoice Information

P.O.# 36-4736
Bill To: City of Longview
PO Box 128 Longview
WA 98632

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
___ Standard

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments:

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other_____(Circle One)

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
T Daly	[illegible]				
Signature	Signature	Signature	Signature	Signature	Signature
T Daly	[illegible]				
Printed Name	Printed Name	Printed Name	Printed Name	Printed Name	Printed Name
Cof L	ALS				
Firm	Firm	Firm	Firm	Firm	Firm
10/19/15 1540	10-19-15 15:41				
Date/Time	Date/Time	Date/Time	Date/Time	Date/Time	Date/Time

ALS Environmental

58082

CHAIN OF CUSTODY

58082

001, 005

SR# [illegible]

COC Set____of____

COC#_____

1317 South 13th Ave, Kelso, WA 98626 Phone (360) 577-7222 / 800-695-7222 / FAX (360) 636-1068
www.alsglobal.com

Project Name: Sentinel Wells
Project Number:
Project Manager: Jeff Coleman
Company: City of Longview
Address: PO Box 128 Longview WA 98632
Phone #
email
Sampler Signature: T Daly
Sampler Printed Name: T Daly

CLIENT SAMPLE ID	LABID	SAMPLING Date	SAMPLING Time	Matrix	NUMBER OF CONTAINERS	28D: 300.0 / Br	28D: 300.0 / Chloride	28D: 300.0 / SO4	28D: 314.0 / ClO4	28D: SM 4500-NH3 G / Ammonia	30D: [redacted]	180D: 1630 / Methyl Hg T	180D: 200.7 / Metals T	180D: 200.8 / Metals T	999D: Calculation / NO2 NO3 Calc	999D: SM 2340 B / Hardness Calc	1	2	3	4	5	Remarks
1. DW-5		10/19/15	1137																			
2.																						
3.																						
4.																						
5.																						
6.																						
7.																						
8.																						
9.																						
10.																						

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. CLP Like Summary (no raw data)
___ IV. Data Validation Report
___ V. EDD

Invoice Information

P.O.# 36-4736
Bill To: City of Longview
PO Box 128
Longview WA 98632

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
___ Standard

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments:

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other_____(Circle One)

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature: T Daly	Signature: DWiff	Signature	Signature	Signature	Signature
Printed Name: Col L	Printed Name: ALS	Printed Name	Printed Name	Printed Name	Printed Name
Firm	Firm	Firm	Firm	Firm	Firm
Date/Time: 10/19/15 1540	Date/Time: 10 19 15 1541	Date/Time	Date/Time	Date/Time	Date/Time

PC CL

Cooler Receipt and Preservation Form

Client / Project: City of Longview Service Request *K15* 11797

Received: 10/19/15 Opened: 10/19/15 By: KD Unloaded: 10/19/15 By: KD

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? _____

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected. Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
9.6	9.8	11.2	11.4	+.2	308			

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

Page ____ *of* ____

General Chemistry

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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	180.1	**Units:**	NTU
Prep Method:	None	**Basis:**	NA

Turbidity

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-5	K1511797-001	**1.52**	0.20	1	10/20/15 13:44	
Method Blank	K1511797-MB1	ND U	0.20	1	10/20/15 13:44	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
Analysis Method:	180.1	**Units:**	NTU
Prep Method:	None	**Basis:**	NA

Replicate Sample Summary
Turbidity

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1511794-001DUP	0.20	12.2	12.2	12.2	<1	20	10/20/15
Batch QC	K1511798-001DUP	0.20	1.72	1.71	1.72	<1	20	10/20/15

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ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	NA

Lab Control Sample Summary
Turbidity

Analysis Method:	180.1	**Units:**	NTU
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	468080

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511797-LCS1	4.50	4.23	106	90-110

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Bromide

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
DW-5	K1511797-001	ND U	0.20	2	10/20/15 09:55	10/19/15	
Method Blank	K1511797-MB1	ND U	0.10	1	10/20/15 09:26	10/19/15	
Method Blank	K1511797-MB2	ND U	0.10	1	10/20/15 12:18	10/19/15	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Replicate Sample Summary
Bromide

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1511794-001DUP	0.20	ND U	ND U	NC	NC	20	10/20/15
Batch QC	K1511798-001DUP	0.20	ND U	ND U	NC	NC	20	10/20/15

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ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Bromide

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511794-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511794-001MS			Duplicate Matrix Spike K1511794-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Bromide	ND U	9.61	10.0	96	9.75	10.0	97	90-110	1	20

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ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Bromide

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511798-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511798-001MS			**Duplicate Matrix Spike** K1511798-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Bromide	ND U	9.61	10.0	96	9.58	10.0	96	90-110	<1	20

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ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/19/15

Lab Control Sample Summary
Bromide

Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	468244

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511797-LCS1	2.41	2.50	96	90-110
Lab Control Sample	K1511797-LCS2	2.40	2.50	96	90-110

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Chloride

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
DW-5	K1511797-001	**57.1**	2.0	20	10/20/15 11:20	10/19/15	
Method Blank	K1511797-MB1	ND U	0.10	1	10/20/15 09:26	10/19/15	
Method Blank	K1511797-MB2	ND U	0.10	1	10/20/15 12:18	10/19/15	

ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Replicate Sample Summary
Chloride

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1511794-001DUP	0.20	4.93	4.91	4.92	<1	20	10/20/15
Batch QC	K1511798-001DUP	0.20	5.84	5.82	5.83	<1	20	10/20/15

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Chloride

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511794-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511794-001MS			**Duplicate Matrix Spike** K1511794-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Chloride	4.93	14.2	10.0	93	14.3	10.0	93	90-110	<1	20

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Chloride

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511798-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511798-001MS			Duplicate Matrix Spike K1511798-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Chloride	5.84	15.2	10.0	94	15.0	10.0	92	90-110	1	20

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/19/15

Lab Control Sample Summary
Chloride

Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	468244

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511797-LCS1	4.92	5.00	98	90-110
Lab Control Sample	K1511797-LCS2	4.88	5.00	98	90-110

ALS Group USA, Corp.
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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Fluoride

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
DW-5	K1511797-001	ND U	0.20	2	10/20/15 09:55	10/19/15	
Method Blank	K1511797-MB1	ND U	0.10	1	10/20/15 09:26	10/19/15	
Method Blank	K1511797-MB2	ND U	0.10	1	10/20/15 12:18	10/19/15	

ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Replicate Sample Summary
Fluoride

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1511794-001DUP	0.20	0.22	0.21	0.218	4	20	10/20/15
Batch QC	K1511798-001DUP	0.20	ND U	ND U	NC	NC	20	10/20/15

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Fluoride

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511794-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511794-001MS			Duplicate Matrix Spike K1511794-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Fluoride	0.22	9.45	10.0	92	9.66	10.0	94	90-110	2	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Fluoride

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511798-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511798-001MS			**Duplicate Matrix Spike** K1511798-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Fluoride	ND U	9.52	10.0	95	9.66	10.0	97	90-110	2	20

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ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/19/15

Lab Control Sample Summary
Fluoride

Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	468244

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511797-LCS1	4.98	5.00	100	90-110
Lab Control Sample	K1511797-LCS2	4.91	5.00	98	90-110

ALS Group USA, Corp.
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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Nitrite as Nitrogen

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
DW-5	K1511797-001	ND U	0.10	2	10/20/15 09:55	10/19/15	
Method Blank	K1511797-MB1	ND U	0.050	1	10/20/15 09:26	10/19/15	
Method Blank	K1511797-MB2	ND U	0.050	1	10/20/15 12:18	10/19/15	

ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Replicate Sample Summary
Nitrite as Nitrogen

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1511794-001DUP	0.10	ND U	ND U	NC	NC	20	10/20/15
Batch QC	K1511798-001DUP	0.10	ND U	ND U	NC	NC	20	10/20/15

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ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Nitrite as Nitrogen

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511794-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511794-001MS			**Duplicate Matrix Spike** K1511794-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Nitrite as Nitrogen	ND U	10.3	10.0	103	10.5	10.0	105	90-110	1	20

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ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Nitrite as Nitrogen

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511798-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511798-001MS			Duplicate Matrix Spike K1511798-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Nitrite as Nitrogen	ND U	10.4	10.0	104	10.4	10.0	104	90-110	<1	20

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ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/19/15

Lab Control Sample Summary
Nitrite as Nitrogen

Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	468244

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511797-LCS1	2.56	2.50	102	90-110
Lab Control Sample	K1511797-LCS2	2.55	2.50	102	90-110

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Nitrate as Nitrogen

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
DW-5	K1511797-001	ND U	0.10	2	10/20/15 09:55	10/19/15	
Method Blank	K1511797-MB1	ND U	0.050	1	10/20/15 09:26	10/19/15	
Method Blank	K1511797-MB2	ND U	0.050	1	10/20/15 12:18	10/19/15	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Replicate Sample Summary
Nitrate as Nitrogen

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1511794-001DUP	0.10	ND U	ND U	NC	NC	20	10/20/15
Batch QC	K1511798-001DUP	0.10	ND U	ND U	NC	NC	20	10/20/15
Batch QC	K1511800-001DUP	0.10	ND U	ND U	NC	NC	20	10/20/15

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Nitrate as Nitrogen

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511794-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511794-001MS			Duplicate Matrix Spike K1511794-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Nitrate as Nitrogen	ND U	9.17	10.0	92	9.23	10.0	92	90-110	<1	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Nitrate as Nitrogen

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511798-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511798-001MS			Duplicate Matrix Spike K1511798-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Nitrate as Nitrogen	ND U	9.15	10.0	91	9.13	10.0	91	90-110	<1	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Nitrate as Nitrogen

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511800-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511800-001MS			Duplicate Matrix Spike K1511800-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Nitrate as Nitrogen	ND U	3.60	4.00	90	3.63	4.00	91	90-110	<1	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/19/15

Lab Control Sample Summary
Nitrate as Nitrogen

Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	468244

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511797-LCS1	2.38	2.50	95	90-110
Lab Control Sample	K1511797-LCS2	2.35	2.50	94	90-110

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Sulfate

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
DW-5	K1511797-001	**0.28**	0.20	2	10/20/15 09:55	10/19/15	
Method Blank	K1511797-MB1	ND U	0.10	1	10/20/15 09:26	10/19/15	
Method Blank	K1511797-MB2	ND U	0.10	1	10/20/15 12:18	10/19/15	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Replicate Sample Summary
Sulfate

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1511794-001DUP	0.20	2.86	2.73	2.79	5	20	10/20/15
Batch QC	K1511798-001DUP	0.20	3.00	3.03	3.02	<1	20	10/20/15

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Sulfate

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511794-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511794-001MS			Duplicate Matrix Spike K1511794-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Sulfate	2.86	12.1	10.0	93	12.2	10.0	93	90-110	<1	20

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Sulfate

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511798-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511798-001MS			Duplicate Matrix Spike K1511798-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Sulfate	3.00	12.5	10.0	95	12.5	10.0	95	90-110	<1	20

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/19/15

Lab Control Sample Summary
Sulfate

Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	468244

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511797-LCS1	5.01	5.00	100	90-110
Lab Control Sample	K1511797-LCS2	4.92	5.00	98	90-110

ALS Group USA, Corp.
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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	314.0	**Units:**	ug/L
Prep Method:	None	**Basis:**	NA

Perchlorate

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-5	K1511797-001	ND U	1.0	1	10/21/15 12:53	
Method Blank	K1511797-MB1	ND U	1.0	1	10/21/15 11:42	

ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
		Date Analyzed:	10/21/15

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	Batch QC	**Units:**	ug/L
Lab Code:	K1511360-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample K1511360-001DUP Result	Average	RPD	RPD Limit
Perchlorate	314.0	1.0	ND U	ND U	NC	NC	20

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/21/15
		Date Extracted:	NA

Duplicate Matrix Spike Summary
Perchlorate

Sample Name:	Batch QC	**Units:**	ug/L
Lab Code:	K1511360-001	**Basis:**	NA
Analysis Method:	314.0		
Prep Method:	None		

		Matrix Spike K1511360-001MS			Duplicate Matrix Spike K1511360-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	ND U	12.0	10.0	120	11.7	10.0	117	80-120	2	20

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Analyzed:**	10/21/15
Sample Matrix:	Drinking Water	**Date Extracted:**	NA

Lab Control Sample Summary
Perchlorate

Analysis Method:	314.0	**Units:**	ug/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	468262

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511797-LCS1	16.4	16.8	98	85-115

ALS Group USA, Corp.
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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	335.4	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Cyanide, Total

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
DW-5	K1511797-001	ND U	0.010	1	10/28/15 10:14	10/27/15	
Method Blank	K1511797-MB1	ND U	0.010	1	10/28/15 10:14	10/27/15	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
		Date Analyzed:	10/28/15

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	KQ1512462-06	**Basis:**	NA

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample KQ1512462-06DUP Result	Average	RPD	RPD Limit
Cyanide, Total	335.4	0.010	ND U	ND U	NC	NC	20

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/28/15
		Date Extracted:	10/27/15

Duplicate Matrix Spike Summary
Cyanide, Total

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	KQ1512462-06	**Basis:**	NA
Analysis Method:	335.4		
Prep Method:	Method		

		Matrix Spike KQ1512462-06MS				Duplicate Matrix Spike KQ1512462-06DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**		**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Cyanide, Total	ND U	0.124	0.100	124 *		0.121	0.100	121 *	90-110	2	20

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Analyzed:**	10/28/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/27/15

Lab Control Sample Summary
Cyanide, Total

Analysis Method:	335.4	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	469348

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511797-LCS1	0.146	0.150	97	90-110

ALS Group USA, Corp.
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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	Calculation	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Nitrate+Nitrite as Nitrogen

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-5	K1511797-001	ND U	0.20	1	10/20/15 09:55	

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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	SM 2120 B	**Units:**	ColorUnits
Prep Method:	None	**Basis:**	NA

Color

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-5	K1511797-001	**15.0**	5.0	1	10/20/15 14:42	
Method Blank	K1511797-MB1	ND U	5.0	1	10/20/15 14:35	

ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	SM 2120 B	**Units:**	ColorUnits
Prep Method:	None	**Basis:**	NA

Replicate Sample Summary
Color

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
DW-5	K1511797-001DUP	5.0	15.0	15.0	15.0	<1	20	10/20/15
Batch QC	K1511893-005DUP	5.0	ND U	ND U	NC	NC	20	10/21/15

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ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	NA

Lab Control Sample Summary
Color

Analysis Method:	SM 2120 B	**Units:**	ColorUnits
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	468258

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511797-LCS1	50.0	50.0	100	85-115

ALS Group USA, Corp.
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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	SM 2320 B	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Alkalinity as CaCO3, Total

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-5	K1511797-001	**105**	2.0	1	11/02/15 14:50	
Method Blank	K1511797-MB1	ND U	2.0	1	11/02/15 14:50	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
Analysis Method:	SM 2320 B	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Replicate Sample Summary
Alkalinity as CaCO3, Total

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1511794-001DUP	2.0	81.3	81.3	81.3	<1	20	11/02/15
Batch QC	K1511896-004DUP	2.0	ND U	ND U	NC	NC	20	11/02/15

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ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Analyzed:**	11/02/15
Sample Matrix:	Drinking Water	**Date Extracted:**	NA

Lab Control Sample Summary
Alkalinity as CaCO3, Total

Analysis Method:	SM 2320 B	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	470113

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511797-LCS1	134	136	99	90-110

ALS Group USA, Corp.
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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	SM 2510 B	**Units:**	uMHOS/cm
Prep Method:	None	**Basis:**	NA

Conductivity at 25 Degrees Celsius

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-5	K1511797-001	**451**	2.0	1	10/20/15 09:56	
Method Blank	K1511797-MB1	ND U	2.0	1	10/20/15 09:56	
Method Blank	K1511797-MB2	ND U	2.0	1	10/20/15 09:56	

ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
		Date Analyzed:	10/20/15

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	Batch QC	**Units:**	uMHOS/cm
Lab Code:	K1511798-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample K1511798-001DUP Result	Average	RPD	RPD Limit
Conductivity at 25 Degrees Celsius	SM 2510 B	2.0	212	211	212	<1	20

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	NA

Lab Control Sample Summary
Conductivity at 25 Degrees Celsius

Analysis Method:	SM 2510 B	**Units:**	uMHOS/cm
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	467985

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511797-LCS1	313	289	108	86-113

ALS Group USA, Corp.
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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	SM 2540 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Solids, Total Dissolved

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-5	K1511797-001	**247**	10	1	10/20/15 16:39	
Method Blank	K1511797-MB1	ND U	10	1	10/20/15 16:39	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
		Date Analyzed:	10/20/15

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511788-003	**Basis:**	NA

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample K1511788-003DUP Result	Average	RPD	RPD Limit
Solids, Total Dissolved	SM 2540 C	10	347	373	360	7	10

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	NA

Lab Control Sample Summary
Solids, Total Dissolved

Analysis Method:	SM 2540 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	468084

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511797-LCS1	888	897	99	85-115

ALS Group USA, Corp.
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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	SM 4500-NH3 G	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Ammonia as Nitrogen

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
DW-5	K1511797-001	**0.091**	0.050	1	10/22/15 09:57	10/22/15	
Method Blank	K1511797-MB1	ND U	0.10	1	10/22/15 09:57	10/22/15	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
Analysis Method:	SM 4500-NH3 G	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Replicate Sample Summary
Ammonia as Nitrogen

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1511683-001DUP	0.10	0.032 J	ND U	NC	NC	20	10/22/15
Batch QC	K1511831-001DUP	0.10	1.63	1.59	1.61	3	20	10/22/15
Batch QC	K1511838-003DUP	0.10	1.17	1.17	1.17	<1	20	10/22/15

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ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/22/15
		Date Extracted:	10/22/15

Duplicate Matrix Spike Summary
Ammonia as Nitrogen

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511683-001	**Basis:**	NA
Analysis Method:	SM 4500-NH3 G		
Prep Method:	Method		

		Matrix Spike K1511683-001MS				**Duplicate Matrix Spike** K1511683-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**		**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Ammonia as Nitrogen	0.032 J	2.06	2.00	101		2.01	2.00	99	90-110	2	20

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ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/22/15
		Date Extracted:	10/22/15

Duplicate Matrix Spike Summary
Ammonia as Nitrogen

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511831-001	**Basis:**	NA
Analysis Method:	SM 4500-NH3 G		
Prep Method:	Method		

		Matrix Spike K1511831-001MS			Duplicate Matrix Spike K1511831-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Ammonia as Nitrogen	1.63	3.56	2.00	96	3.52	2.00	94	90-110	2	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/22/15
		Date Extracted:	10/22/15

Duplicate Matrix Spike Summary
Ammonia as Nitrogen

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511838-003	**Basis:**	NA
Analysis Method:	SM 4500-NH3 G		
Prep Method:	Method		

		Matrix Spike K1511838-003MS			**Duplicate Matrix Spike** K1511838-003DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Ammonia as Nitrogen	1.17	3.13	2.00	98	3.10	2.00	96	90-110	2	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Analyzed:**	10/22/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/22/15

Lab Control Sample Summary
Ammonia as Nitrogen

Analysis Method:	SM 4500-NH3 G	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	468711

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511797-LCS1	15.1	16.2	93	90-110

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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	SM 4500-P E	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Orthophosphate as Phosphorus

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-5	K1511797-001	**0.381**	0.050	1	10/20/15 17:24	
Method Blank	K1511797-MB1	ND U	0.050	1	10/20/15 17:24	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
		Date Analyzed:	10/20/15

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511794-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample K1511794-001DUP Result	Average	RPD	RPD Limit
Orthophosphate as Phosphorus	SM 4500-P E	0.050	0.213	0.198	0.206	7	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	NA

Duplicate Matrix Spike Summary
Orthophosphate as Phosphorus

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511794-001	**Basis:**	NA
Analysis Method:	SM 4500-P E		
Prep Method:	None		

		Matrix Spike K1511794-001MS			**Duplicate Matrix Spike** K1511794-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Orthophosphate as Phosphorus	0.213	0.59	0.40	94	0.58	0.40	92	75-125	2	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	NA

Lab Control Sample Summary
Orthophosphate as Phosphorus

Analysis Method:	SM 4500-P E	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	468008

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511797-LCS1	2.56	2.54	101	85-115

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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	SM 9223 B	**Units:**	MPN/100mL
Prep Method:	None	**Basis:**	NA

Escherichia coli

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-5	K1511797-001	**absent**	-	1	10/20/15 18:16	

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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	SM 9223 B	**Units:**	MPN/100mL
Prep Method:	None	**Basis:**	NA

Coliform, Total

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-5	K1511797-001	**absent**	-	1	10/20/15 18:16	

Metals

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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking water	**Date Received:**	10/19/15

Hardness as CaCO3

Prep Method:	CLAA	Units:	mg/L (ppm)
Analysis Method:	200.7/SM 2340B	Basis:	NA
Test Notes:			

Sample Name	Lab Code	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
DW-5	K1511797-001	0.07	1	10/22/15	10/29/15	153	
Method Blank	K1511797-MB	0.07	1	10/22/15	10/29/15	ND	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking water	**Date Received:**	NA
		Date Extracted:	10/22/15
		Date Analyzed:	10/29/15

Duplicate Summary
Metals

Sample Name:	Batch QCD	Units:	mg/L (ppm)
Lab Code:	K1511794-001D	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
Hardness as CaCO3	CLAA	200.7/SM 2340B	0.07	64.5	63.5	64.0	2	

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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking water	**Date Received:**	10/19/15

Methyl Mercury

Prep Method:	Method	Units:	ng/L
Analysis Method:	1630	Basis:	NA
Test Notes:			

Sample Name	Lab Code	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
DW-5	K1511797-001	0.1	1	11/02/15	11/03/15	ND	
Method Blank 1	K1511797-MB1	0.1	1	11/02/15	11/03/15	ND	
Method Blank 2	K1511797-MB2	0.1	1	11/02/15	11/03/15	ND	
Method Blank 3	K1511797-MB3	0.1	1	11/02/15	11/03/15	ND	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Collected:**	10/19/15
Sample Matrix:	Drinking water	**Date Received:**	10/19/15
		Date Extracted:	11/02/15
		Date Analyzed:	11/03/15

Matrix Spike/Duplicate Matrix Spike Summary
Metals

Sample Name:	DW-5	Units:	ng/L
Lab Code:	K1511797-001MS, K1511797-001MSD	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	CAS Acceptance Limits	Relative Percent Difference	Result Notes
Mercury, Methyl	Method	1630	0.1	2.22	2.22	ND	2.74	2.74	123	123	65-135	<1	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Collected:**	NA
LCS Matrix:	Water	**Date Received:**	NA
		Date Extracted:	11/02/15
		Date Analyzed:	11/03/15

Ongoing Precision and Recovery (OPR) Sample Summary
Metals

Sample Name: Ongoing Precision and Recovery (Initial)

Units: ng/L
Basis: NA

Test Notes:

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Mercury, Methyl	Method	1630	2.22	2.57	116	67-133	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Collected:**	NA
LCS Matrix:	Water	**Date Received:**	NA
		Date Extracted:	11/02/15
		Date Analyzed:	11/03/15

Ongoing Precision and Recovery (OPR) Sample Summary
Metals

Sample Name: Ongoing Precision and Recovery (Final)

Units: ng/L
Basis: NA

Test Notes:

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Mercury, Methyl	Method	1630	2.22	2.68	121	67-133	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Collected:**	NA
LCS Matrix:	Water	**Date Received:**	NA
		Date Extracted:	11/02/15
		Date Analyzed:	11/03/15

Quality Control Sample (QCS) Summary
Metals

Sample Name: Quality Control Sample

Units: pg
Basis: NA

Test Notes:

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Mercury, Methyl	Method	1630	100	122	122	67-133	

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Longview, City of	**Service Request:**	K1511797
Project No.:	NA	**Date Collected:**	10/19/15
Project Name:	Sentinel Well	**Date Received:**	10/19/15
Matrix:	WATER	**Units:**	mg/L
		Basis:	NA

Sample Name: **DW-5** **Lab Code:** **K1511797-001**

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.00005	1.0	10/22/15	11/04/15	0.00005	U	
Arsenic	200.8	0.0005	1.0	10/22/15	11/04/15	0.0062		
Barium	200.7	0.0040	1.0	10/22/15	10/29/15	0.0169		
Beryllium	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Cadmium	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Chromium	200.8	0.0002	1.0	10/22/15	11/04/15	0.0002	U	
Copper	200.7	0.004	1.0	10/22/15	10/29/15	0.004	U	
Iron	200.7	0.02	1.0	10/22/15	10/29/15	0.33		
Lead	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Manganese	200.7	0.001	1.0	10/22/15	10/29/15	0.338		
Mercury	245.1	0.0002	1.0	10/27/15	10/28/15	0.0002	U	
Nickel	200.8	0.0002	1.0	10/22/15	11/04/15	0.0007		
Selenium	200.8	0.001	1.0	10/22/15	11/04/15	0.001	U	
Silver	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Sodium	200.7	0.2	1.0	10/22/15	10/29/15	14.5		
Thallium	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Zinc	200.7	0.004	1.0	10/22/15	10/29/15	0.004	U	

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Longview, City of	**Service Request:**	K1511797
Project No.:	NA	**Date Collected:**	
Project Name:	Sentinel Well	**Date Received:**	
Matrix:	WATER	**Units:**	mg/L
		Basis:	NA

Sample Name: Method Blank **Lab Code:** KQ1512200-01

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Barium	200.7	0.0040	1.0	10/22/15	10/29/15	0.0040	U	
Copper	200.7	0.004	1.0	10/22/15	10/29/15	0.004	U	
Iron	200.7	0.02	1.0	10/22/15	10/29/15	0.02	U	
Manganese	200.7	0.001	1.0	10/22/15	10/30/15	0.001	U	
Sodium	200.7	0.2	1.0	10/22/15	10/29/15	0.2	U	
Zinc	200.7	0.004	1.0	10/22/15	10/29/15	0.004	U	

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Longview, City of	**Service Request:**	K1511797
Project No.:	NA	**Date Collected:**	
Project Name:	Sentinel Well	**Date Received:**	
Matrix:	WATER	**Units:**	mg/L
		Basis:	NA

Sample Name: **Method Blank** **Lab Code:** **KQ1512201-01**

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.00005	1.0	10/22/15	11/04/15	0.00005	U	
Arsenic	200.8	0.0005	1.0	10/22/15	11/04/15	0.0005	U	
Beryllium	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Cadmium	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Chromium	200.8	0.0002	1.0	10/22/15	11/04/15	0.0002	U	
Lead	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Nickel	200.8	0.0002	1.0	10/22/15	11/04/15	0.0002	U	
Selenium	200.8	0.001	1.0	10/22/15	11/04/15	0.001	U	
Silver	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Thallium	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Longview, City of	**Service Request:**	K1511797
Project No.:	NA	**Date Collected:**	
Project Name:	Sentinel Well	**Date Received:**	
Matrix:	WATER	**Units:**	mg/L
		Basis:	NA

Sample Name: **Method Blank** **Lab Code:** **KQ1512456-03**

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Mercury	245.1	0.0002	1.0	10/27/15	10/28/15	0.0002	U	

Comments:

Metals
- 5A -
SPIKE SAMPLE RECOVERY

Client: Longview, City of
Service Request: K1511797
Project No.: NA
Units: MG/L
Project Name: Sentinel Well
Basis: NA
Matrix: WATER

Sample Name: Batch QC1S
Lab Code: K1511685-001S

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Mercury	70 - 130	0.0051		0.0002	U	0.0050	102		245.1

An empty field in the Control Limit column indicates the control limit is not applicable

Metals
- 5A -
SPIKE SAMPLE RECOVERY

Client: Longview, City of
Service Request: K1511797
Project No.: NA
Units: MG/L
Project Name: Sentinel Well
Basis: NA
Matrix: WATER

Sample Name: Batch QC1SD
Lab Code: K1511685-001SD

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Mercury	70 - 130	0.0050		0.0002	U	0.0050	100		245.1

An empty field in the Control Limit column indicates the control limit is not applicable

Metals
- 5A -
SPIKE SAMPLE RECOVERY

Client: Longview, City of
Service Request: K1511797
Project No.: NA
Units: MG/L
Project Name: Sentinel Well
Basis: NA
Matrix: WATER

Sample Name: Batch QC2S
Lab Code: K1511794-001S

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Antimony	70 - 130	0.052600		0.000050	U	0.050000	105		200.8
Arsenic	70 - 130	0.05576		0.00368		0.05000	104		200.8
Barium	70 - 130	0.991		0.0094		1.00	98.2		200.7
Beryllium	70 - 130	0.00252		0.00002	U	0.00250	101		200.8
Cadmium	70 - 130	0.02613		0.00002	U	0.025000	105		200.8
Chromium	70 - 130	0.0084		0.0002	U	0.01000	84		200.8
Copper	70 - 130	0.233		0.004	U	0.25	93.2		200.7
Iron	70 - 130	2.96		2.03		1.00	93.0		200.7
Lead	70 - 130	0.05092		0.00002	U	0.050000	102		200.8
Manganese	70 - 130	0.977		0.517		0.50	92.0		200.7
Nickel	70 - 130	0.0229		0.0004		0.02500	90		200.8
Selenium	70 - 130	0.054		0.001	U	0.0500	108		200.8
Silver	70 - 130	0.01252		0.00002	U	0.012500	100		200.8
Sodium	70 - 130	19.1		8.8		10.00	103.0		200.7
Thallium	70 - 130	0.05162		0.00002	U	0.050000	103		200.8
Zinc	70 - 130	0.469		0.004	U	0.50	93.8		200.7

An empty field in the Control Limit column indicates the control limit is not applicable

Metals

- 6 -

DUPLICATES

Client: Longview, City of
Service Request: K1511797
Project No.: NA
Units: MG/L
Project Name: Sentinel Well
Basis: NA
Matrix: WATER

Sample Name: Batch QC1D
Lab Code: K1511685-001D

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Mercury		0.0002	U	0.0002	U			245.1

An empty field in the Control Limit column indicates the control limit is not applicable.

Form VI - IN

Metals

- 6 -

DUPLICATES

Client: Longview, City of
Service Request: K1511797
Project No.: NA
Units: MG/L
Project Name: Sentinel Well
Basis: NA
Matrix: WATER

Sample Name: Batch QC1SD
Lab Code: K1511685-001SD

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Mercury	20	0.0051		0.0050		2.0		245.1

An empty field in the Control Limit column indicates the control limit is not applicable.

Form VI - IN

Metals

- 6 -

DUPLICATES

Client: Longview, City of
Service Request: K1511797
Project No.: NA
Units: MG/L
Project Name: Sentinel Well
Basis: NA
Matrix: WATER

Sample Name: Batch QC2D
Lab Code: K1511794-001D

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Antimony		0.000050	U	0.000050	U			200.8
Arsenic	20	0.00368		0.00356		3.3		200.8
Barium		0.0094		0.0094		0.0		200.7
Beryllium		0.00002	U	0.00002	U			200.8
Cadmium		0.00002	U	0.00002	U			200.8
Chromium		0.0002	U	0.0002	U			200.8
Copper		0.004	U	0.004	U			200.7
Iron	20	2.03		2.00		1.5		200.7
Lead		0.00002	U	0.00002	U			200.8
Manganese	20	0.517		0.510		1.4		200.7
Nickel		0.0004		0.0003		28.6		200.8
Selenium		0.001	U	0.001	U			200.8
Silver		0.00002	U	0.00002	U			200.8
Sodium	20	8.8		8.4		4.7		200.7
Thallium		0.00002	U	0.00002	U			200.8
Zinc		0.004	U	0.004	U			200.7

An empty field in the Control Limit column indicates the control limit is not applicable.

Form VI - IN

Metals

- 7 -

LABORATORY CONTROL SAMPLE

Client: Longview, City of **Service Request:** K1511797

Project No.: NA

Project Name: Sentinel Well

Aqueous LCS Source: ALS MIXED **Solid LCS Source:**

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/kg) True	Found	C	Limits	%R
Barium	5	4.8	96.0					
Copper	.625	0.577	92.3					
Iron	2.5	2.38	95.2					
Manganese	1.25	1.20	96.0					
Sodium	12.5	12.4	99.2					
Zinc	1.25	1.16	92.8					

Metals

- 7 -

LABORATORY CONTROL SAMPLE

Client: Longview, City of **Service Request:** K1511797

Project No.: NA

Project Name: Sentinel Well

Aqueous LCS Source: ALS MIXED **Solid LCS Source:**

Analyte	Aqueous (ug/L) True	Aqueous (ug/L) Found	Aqueous (ug/L) %R	Solid (mg/kg) True	Solid (mg/kg) Found	Solid (mg/kg) C	Solid (mg/kg) Limits	Solid (mg/kg) %R
Antimony	0.050	0.0522	104					
Arsenic	0.050	0.052	104					
Beryllium	0.003	0.0025	100					
Cadmium	0.025	0.0264	106					
Chromium	0.010	0.0100	100					
Lead	0.050	0.0511	102					
Mercury	.005	0.0047	94.0					
Nickel	0.025	0.0247	99					
Selenium	0.050	0.054	108					
Silver	0.013	0.0124	99					
Thallium	0.050	0.0518	104					

EPA Method 504.1

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www.alsglobal.com

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Analytical Results

Client:	Longview, City of	**Service Request:**	K1511797
Project:	2entinel D ell	**Date Collected:**	1-0190W15
Sample Matrix:	NSinr ing wateS	**Date Received:**	1-0190W15

EPA Method 504.1

Sample Name:	ND 45	**Units:**	ugOL
Lab Code:	K15117974- - 1	**Basis:**	/ A
Extraction Method:	k METHN	**Level:**	Low
Analysis Method:	5-O1		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,W4NimSoh oet(ane BVN) 3	/ N	b	- .- - 9G	1	1-0WI015	1-0WI015	KD U151-W5	
1,Wp4ESic(loSoPSoPane	/ N	b	- .p9	1	1-0WI015	1-0WI015	KD U151-W5	
1,W4NimSoh o4p4c(loSoPSoPane BN) C6	/ N	b	- .- - 9G	1	1-0WI015	1-0WI015	KD U151-W5	

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Tentinel 4 ell	**Date Collected:**	2 A
Sample Matrix:	HOnEing wateO	**Date Received:**	2 A

EPA Method 504.1

Sample Name:	S etr ok MlanE	**Units:**	ugW
Lab Code:	K4 - 1510/ 05ND	**Basis:**	2 A
Extraction Method:	S . GUb H	**Level:**	Low
Analysis Method:	50Dmh		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,/ NHi(OoB oetr ane). HM3	2 H	h	0m0099	1	10W1W5	10W1W5	K4 - 1510/ 05	
1,/ ,pNGOcr loOoPOoPane	2 H	h	0mD0	1	10W1W5	10W1W5	K4 - 1510/ 05	
1,/ NHi(OoB oNpNcr loOoPOoPane)HMC6	2 H	h	0m0099	1	10W1W5	10W1W5	K4 - 1510/ 05	

Comments:

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Extracted:**	10/21/2015
Sample Matrix:	Drinking water	**Date Analyzed:**	10/21/2015

Matrix Spike/Duplicate Matrix Spike Summary
EPA Method 504.1

Sample Name:	Batch QC	**Units:**	ug/L
Lab Code:	K1511798-001	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	504.1	**Extraction Lot:**	KWG1510205

		Batch QCMS KWG1510205-1 Matrix Spike			Batch QCDMS KWG1510205-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
1,2-Dibromoethane (EDB)	ND	0.227	0.243	94	0.214	0.243	88	65-135	6	30
1,2,3-Trichloropropane	ND	0.246	0.243	101	0.228	0.243	94	65-135	8	30
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.233	0.243	96	0.215	0.243	89	65-135	8	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	Longview, City of	**Service Request:**	BacaahKh
Project:	. entine4N e44	**Date Extracted:**	a1/ka/k1ac
Sample Matrix:	Wrin2ing w-ter	**Date Analyzed:**	a1/ka/k1ac

Lab Control Spike Summary
EPA Method 504.1

Extraction Method:	METHOW	**Units:**	9g/L
Analysis Method:	c157a	**Basis:**	8 A
		Level:	Low
		Extraction Lot:	BN Daca1k1c

L-0 Contro4. -u p4e
BN Daca1k1cSl
Lab Control Spike

Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
a,kSWi0rou oetG-ne 6EW3 b	17kl h	17kc1	Kc	h1Sa1 1
a,k,l STrinG4broprop-ne	17kc5	17kc1	a1k	h1Sa1 1
a,kSWi0rou oSl SnG4broprop-ne 6W3 C(b	17k5l	17kc1	Kh	h1Sa1 1

Results flagged with an asterisk (*) indicate values outside control criteria.

(ernent renoveries -nP re4-tive pernent Pifferenres 6R(Wb-re Peteru ineP 0y tGe softw-re 9sing v-4es in tGe ra4n94-tion wGinGG-ve not 0een ro9nPeP7

Pesticides/PCBs by EPA Method 508.1

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Analytical Results

Client:	Longview, City of	**Service Request:**	K1511797
Project:	2entinel D ell	**Date Collected:**	1-0190W15
Sample Matrix:	NSinr ing wateS	**Date Received:**	1-0190W15

Pesticides/PCBs by EPA Method 508.1

Sample Name:	ND 45	**Units:**	ugCL
Lab Code:	K15117974- - 1	**Basis:**	/ A
Extraction Method:	k METHN	**Level:**	Low
Analysis Method:	5-C8l		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
gaUUa4mTC BLin(aned	/ N	3	-8-97	1	1-0W015	1-0G1015	KD. 151-5W5	
Te*tacploS	/ N	3	-8-97	1	1-0W015	1-0G1015	KD. 151-5W5	)
Al(Sin	/ N	3	-8-97	1	1-0W015	1-0G1015	KD. 151-5W5	
Te*tacploSM*ohi(e	/ N	3	-8-97	1	1-0W015	1-0G1015	KD. 151-5W5	)
Te*tacploSM*ohi(e BsoUeSAd	/ N	3	-8-97	1	1-0W015	1-0G1015	KD. 151-5W5	
I,I'4NNM	/ N	3	-8-97	1	1-0W015	1-0G1015	KD. 151-5W5	
Niel(Sin	/ N	3	-8-97	1	1-0W015	1-0G1015	KD. 151-5W5	)
Mn(Sin	/ N	3	-8-97	1	1-0W015	1-0G1015	KD. 151-5W5	)
I,I'4NNN	/ N	3	-8-97	1	1-0W015	1-0G1015	KD. 151-5W5	)
I,I'4NNE	/ N	3	-8-97	1	1-0W015	1-0G1015	KD. 151-5W5	)
k etpohycploS	/ N	3	-8-97	1	1-0W015	1-0G1015	KD. 151-5W5	)
Eoha*pene	/ N	3	-8-97	1	1-0W015	1-0G1015	KD. 151-5W5	
CploS(ane	/ N	3	-8-97	1	1-0W015	1-0G1015	KD. 151-5W5	
ASocloS1-16	/ N	3	-8-I9	1	1-0W015	1-0G1015	KD. 151-5W5	
ASocloS1WWI	/ N	3	-8-97	1	1-0W015	1-0G1015	KD. 151-5W5	
ASocloS1WGW	/ N	3	-8-97	1	1-0W015	1-0G1015	KD. 151-5W5	
ASocloS1WIW	/ N	3	-8-97	1	1-0W015	1-0G1015	KD. 151-5W5	
ASocloS1WIO	/ N	3	-8-97	1	1-0W015	1-0G1015	KD. 151-5W5	
ASocloS1W5I	/ N	3	-8-97	1	1-0W015	1-0G1015	KD. 151-5W5	
ASocloS1W6-	/ N	3	-8-97	1	1-0W015	1-0G1015	KD. 151-5W5	

) 2ee Case / aSSative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
I,I'4NibSoUooctafluoSobi*penyl	115	7-41G-	1-0G1015	Acce*table

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Eentinel 4 ell	**Date Collected:**	WA
Sample Matrix:	THnMng wateH	**Date Received:**	WA

Pesticides/PCBs by EPA Method 508.1

Sample Name:	2 etSor k lanM	**Units:**	ugIL
Lab Code:	K4 - 15105/ 5N7	**Basis:**	WA
Extraction Method:	2 O8. GT	**Level:**	Low
Analysis Method:	503U		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
ga((aNk. C dLinr ane)	WT	B	0U010	1	10D/7D5	10DnlD5	K4 - 15105/ 5	
. eptacSloH	WT	B	0U010	1	10D/7D5	10DnlD5	K4 - 15105/ 5	*
Alr Hn	WT	B	0U010	1	10D/7D5	10DnlD5	K4 - 15105/ 5	
. eptacSloHOpohir e	WT	B	0U010	1	10D/7D5	10DnlD5	K4 - 15105/ 5	*
. eptacSloHOpohir e dxso(eHA)	WT	B	0U010	1	10D/7D5	10DnlD5	K4 - 15105/ 5	
I ,I 'NT TO	WT	B	0U010	1	10D/7D5	10DnlD5	K4 - 15105/ 5	
T ielr Hn	WT	B	0U010	1	10D/7D5	10DnlD5	K4 - 15105/ 5	*
Onr Hn	WT	B	0U010	1	10D/7D5	10DnlD5	K4 - 15105/ 5	*
I ,I 'NT T T	WT	B	0U010	1	10D/7D5	10DnlD5	K4 - 15105/ 5	*
I ,I 'NT T 8	WT	B	0U010	1	10D/7D5	10DnlD5	K4 - 15105/ 5	*
2 etSohycSloH	WT	B	0U010	1	10D/7D5	10DnlD5	K4 - 15105/ 5	*
8 ohapSene	WT	B	0U0	1	10D/7D5	10DnlD5	K4 - 15105/ 5	
CSloHane	WT	B	0U0	1	10D/7D5	10DnlD5	K4 - 15105/ 5	
AHocloH1016	WT	B	0U050	1	10D/7D5	10DnlD5	K4 - 15105/ 5	
AHocloH1/ / 1	WT	B	0U0	1	10D/7D5	10DnlD5	K4 - 15105/ 5	
AHocloH1/ m/	WT	B	0U0	1	10D/7D5	10DnlD5	K4 - 15105/ 5	
AHocloH1/ I /	WT	B	0U0	1	10D/7D5	10DnlD5	K4 - 15105/ 5	
AHocloH1/ I 3	WT	B	0U0	1	10D/7D5	10DnlD5	K4 - 15105/ 5	
AHocloH1/ 5I	WT	B	0U0	1	10D/7D5	10DnlD5	K4 - 15105/ 5	
AHocloH1/ 60	WT	B	0U0	1	10D/7D5	10DnlD5	K4 - 15105/ 5	

* Eee Case WaHative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
I ,I 'NT ibHo(ooctafluoHobipSenyl	106	70Nm0	10DnlD5	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Longview, City of
Project: aentineSl eSS
Sample Matrix: 4 rinDing wkter

Service Request: K1511797

Surrogate Recovery Summary
Pesticides/PCBs by EPA Method 508.1

Extraction Method: WMETH4
Analysis Method: 5C08l

Units: . erPent
Level: Low

Sample Name	Lab Code	Sur1
4 1 c5	K1511797cC0l	115
- ktP3 QC	K1511790cC0l	11O
Wet3oG- SknD	K1 B151O5h5c7	1O2
- ktP3 QCWa	K1 B151O5h5cl	1O7
- ktP3 QC4 Wa	K1 B151O5h5ch	1Qd
Lkb ControSa kmpSe	K1 B151O5h5c6	11h

Surrogate Recovery Control Limits (%)

aur1 = d,d'c4 ibromooPtkfSuorobip3enyS 7Oc16O

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	kentineSl eSS	**Date Extracted:**	10/W7/W015
Sample Matrix:	NrinDing water	**Date Analyzed:**	10/21/W015

Matrix Spike/Duplicate Matrix Spike Summary
Pesticides/PCBs by EPA Method 508.1

Sample Name:	Batch QC	**Units:**	4g/L
Lab Code:	K1511798-001	**Basis:**	u A
Extraction Method:	3 METHN	**Level:**	Low
Analysis Method:	508.1	**Extraction Lot:**	Kl O15105W5

		Batch QC3 k Kl O15105W5-1 **Matrix Spike**			Batch QCN3 k Kl O15105W5-W **Duplicate Matrix Spike**					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
ga6 6 a-BTC nhLin(aned	u N	0.11G	0.09GW	1W0	0.112	0.09GW	118	G5-125	W	20
TeptachSor	u N	0.1W9	0.09GW	12)	0.1WI	0.09GW	1WG	G5-125	G	20
ASl(rin	u N	0.102	0.09GW	107	0.09CG	0.09GW	101	G5-125	G	20
TeptachSor Mpoxi(e	u N	0.1WI	0.09GW	1WG	0.11G	0.09GW	1W0	G5-125	5	20
TeptachSor Mpoxi(e nhso6 er Ad	u N	0.111	0.09GW	115	0.10)	0.09GW	108	G5-125	G	20
) ,) '-NNM	u N	0.121	0.09GW	127 *	0.120	0.09GW	125	G5-125	1	20
NieSl(rin	u N	0.1W2	0.09GW	1W7	0.11W	0.09GW	117	G5-125	9	20
Mh(rin	u N	0.111	0.09GW	115	0.09) 7	0.09GW	99	G5-125	1G	20
) ,) '-NNN	u N	0.151	0.09GW	157 *	0.150	0.09GW	15G *	G5-125	1	20
) ,) '-NNE	u N	0.150	0.09GW	15G *	0.1) 7	0.09GW	152 *	G5-125	W	20
3 ethoxychSor	u N	0.1G2	0.09GW	170 *	0.1GI	0.09GW	1G8 *	G5-125	1	20
ArocSor 1WG0	u N	0.5WG	0.) 81	109	0.5) 9	0.) 81	11)	G5-125	)	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries an(reSitive percent (ifferences nRPNdare (eter6 ine(by the software 4sing vaS4es in the caS:4Sition which have not been ro4n(e(.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	l entinebm elb	**Date Extracted:**	14/G7/G415
Sample Matrix:	3 rinDing wNer	**Date Analyzed:**	14/- 1/G415

Lab Control Spike Summary
Pesticides/PCBs by EPA Method 508.1

Extraction Method:	k METH3	**Units:**	. g/L
Analysis Method:	54081	**Basis:**	u A
		Level:	Low
		Extraction Lot:	Km W15145G5

	LNa Controbl NS pbe Km W15145G52- Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
gNS S N2OTC BLin(Nned	481G0	48144	1G0	7421- 4
TeptN*cbor	481h0	48144	1h0)	7421- 4
Ab(rin	48110	48144	110	7421- 4
TeptN*cbor Mpoxi(e	481- 5	48144	1- 5)	7421- 4
TeptN*cbor Mpoxi(e BsoS er Ad	481G6	48144	1G6	7421- 4
h,h'23 3 M	481G0	48144	1G0	7421- 4
3 ieb(rin	481- 9	48144	1- 9)	7421- 4
Mn(rin	4815-	48144	15-)	7421- 4
h,h'23 3 3	481h5	48144	1h5)	7421- 4
h,h'23 3 E	481h0	48144	1h0)	7421- 4
k etcoxy*cbor	4816-	48144	16-)	7421- 4
Aro*bor 1G64	48550	48544	11G	7421- 4

Results flagged with an asterisk (*) indicate values outside control criteria.

Per*ent re*overies Nn(rebNive per*ent (ifferen*es BRP3 dNe (eterS ine(ay tce softwNe . sing vNo es in tce *N*. bNion wci*c cNve not aeen ro. n(e(8

Chlorinated Herbicides by EPA 515.4

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Analytical Results

Client:	Longview, City of	**Service Request:**	K1511797
Project:	2entinel D ell	**Date Collected:**	1-0190W15
Sample Matrix:	NSinr ing wateS	**Date Received:**	1-0190W15

Chlorinated Herbicides by EPA 515.4

Sample Name:	ND 45	**Units:**	ugQL
Lab Code:	K15117974- - 1	**Basis:**	/ A
Extraction Method:	k METHN	**Level:**	Low
Analysis Method:	515O		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Nalapon	/ N	U	1O	1	1-0WW015	1-0W3015	KD G151-W6	
3,54NichloSobenzoic Acid	/ N	U	-O5-	1	1-0WW015	1-0W3015	KD G151-W6	
Nicamba	/ N	U	-0W	1	1-0WW015	1-0W3015	KD G151-W6	
NichloSpSop	/ N	U	-O5-	1	1-0WW015	1-0W3015	KD G151-W6	
W. 4N	/ N	U	-O0-	1	1-0WW015	1-0W3015	KD G151-W6	
PentachloSophenol	/ N	U	-O. -	1	1-0WW015	1-0W3015	KD G151-W6	
W. ,54EP (2ilvex)	/ N	U	-0W	1	1-0WW015	1-0W3015	KD G151-W6	
ChloSamben	/ N	U	-0W	1	1-0WW015	1-0W3015	KD G151-W6	
W. 4NB	/ N	U	1O	1	1-0WW015	1-0W3015	KD G151-W6	
Ninoseb	/ N	U	-0W	1	1-0WW015	1-0W3015	KD G151-W6	
Nacthal Niacid	/ N	U	-O0-	1	1-0WW015	1-0W3015	KD G151-W6	
PicloSam	/ N	U	-O0-	1	1-0WW015	1-0W3015	KD G151-W6	
AcifluoSfen	/ N	U	WO	1	1-0WW015	1-0W3015	KD G151-W6	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
W. 4NichloSophenylacetic Acid	1-5	7-413-	1-0W3015	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Hentinel 4 ell	**Date Collected:**	S A
Sample Matrix:	O.inTing wate.	**Date Received:**	S A

Chlorinated Herbicides by EPA 515.4

Sample Name:	r etkoMElanT	**Units:**	ug2L
Lab Code:	K4 - 1510/ NDWN	**Basis:**	S A
Extraction Method:	r G63 UO	**Level:**	Low
Analysis Method:	515pN		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Oalazon	S O	b	1p0	1	102/ / 215	102/ h215	K4 - 1510/ ND	
h,5WOicklo.odenmoic AciM	S O	b	0p50	1	102/ / 215	102/ h215	K4 - 1510/ ND	
OicaP da	S O	b	0p/ 0	1	102/ / 215	102/ h215	K4 - 1510/ ND	
Oicklo.z.oz	S O	b	0p50	1	102/ / 215	102/ h215	K4 - 1510/ ND	
/ ,NWO	S O	b	0p10	1	102/ / 215	102/ h215	K4 - 1510/ ND	
(entacklo.ozkenol	S O	b	0p0N0	1	102/ / 215	102/ h215	K4 - 1510/ ND	
/ ,N,5WO(xHilve) B	S O	b	0p/ 0	1	102/ / 215	102/ h215	K4 - 1510/ ND	
Cklo.aP den	S O	b	0p/ 0	1	102/ / 215	102/ h215	K4 - 1510/ ND	
/ ,NWOE	S O	b	1p0	1	102/ / 215	102/ h215	K4 - 1510/ ND	
Oinosed	S O	b	0p/ 0	1	102/ / 215	102/ h215	K4 - 1510/ ND	
Oactkal OiaciM	S O	b	0p10	1	102/ / 215	102/ h215	K4 - 1510/ ND	
(iclo.aP	S O	b	0p10	1	102/ / 215	102/ h215	K4 - 1510/ ND	
Acifluo.fen	S O	b	/ p0	1	102/ / 215	102/ h215	K4 - 1510/ ND	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
/ ,NWOicklo.ozkenylacetic AciM	95	70Wh0	102/ h215	Acceztadle

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	aentineSl eSS		
Sample Matrix:	4 rinDing wkter		

Surrogate Recovery Summary
Chlorinated Herbicides by EPA 515.4

Extraction Method:	WMETH4	**Units:**	Percent
Analysis Method:	515O	**Level:**	Low

Sample Name	Lab Code	Sur1
3 ktcGQC	K151179. -001	102
4 l -5	K1511797-001	105
WetGoB 3 SknD	Kl 6 1510h. d-.	95
3 ktcGQCWa	Kl 6 1510h. d-1	100
3 ktcGQC4 Wa	Kl 6 1510h. d-h	9d
Lkb ControSa kmpSe	Kl 6 1510h. d-2	92

Surrogate Recovery Control Limits (%)

aur1 =	h,. -4 icGSoropGenySkcetic AciB	70-120

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K5755949
Project:	2entine3Me33	**Date Extracted:**	5u/EE/Eu57
Sample Matrix:	S rinl ing wWer	**Date Analyzed:**	5u/ET/Eu57

Matrix Spike/Duplicate Matrix Spike Summary
Chlorinated Herbicides by EPA 515.4

Sample Name:	DW-1 QC	**Units:**	kg/L
Lab Code:	K5755940.uu5	**Basis:**	a A
Extraction Method:	H OG6 8 S	**Level:**	Low
Analysis Method:	757N0	**Extraction Lot:**	KMc 575uE0h

		DW-1 QCH 2 KMc 575uE0h.5 Matrix Spike			DW-1 QCS H 2 KMc 575uE0h.E Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
S W3Wpon	a S	7NST	0N4b	5uT	7NTu	0N4b	5u9	9u.5Tu	T	Tu
T,7.S i-13orozendoi- A-im	a S	0NST	0N4b	49	0N5u	0N4b	4h	9u.5Tu	5	Tu
S i-WP zW	a S	7NT7	0N4b	5u9	7NTT	0N4b	5u9	9u.5Tu	u	Tu
S i-13orprop	a S	0N9E	0N4b	47	0N9T	0N4b	47	9u.5Tu	u	Tu
E,0.S	a S	0N99	0N4b	4u	0N70	0N4b	45	9u.5Tu	E	Tu
(entW13orop1eno3	a S	0NST	0N4b	4T	0N5h	0N4b	40	9u.5Tu	5	Tu
E,0,7.G(x2i3ve) *	a S	0N5h	0N4b	40	0N5h	0N4b	40	9u.5Tu	u	Tu
C13orWP zen	a S	5uN4	0N4b	EEu B	4N55	0N4b	549 B	9u.5Tu	55	Tu
E,0.S D	a S	7NEh	0N4b	5uh	7NTT	0N4b	5u9	9u.5Tu	5	Tu
S inosez	a S	7NEE	0N4b	5u7	7N5h	0N4b	5u0	9u.5Tu	5	Tu
S Wt1W3S iWim	a S	7N9b	0N4b	55h	7N54	0N4b	55b	9u.5Tu	E	Tu
(i-3orWP	a S	7NT9	0N4b	5ub	7NE4	0N4b	5uh	9u.5Tu	E	Tu
A-if3korfen	a S	7NET	0N4b	5u7	0N5b	0N4b	4b	9u.5Tu	9	Tu

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

(er-ent re-overies Wimre3Wive per-ent nifferen-es xR(S * We meterP inemzy t1e softwWe ksing vWkes in t1e - W-k3Wion w1i-1 1We not zeen roknnemN

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Extracted:**	10/22/2015
Sample Matrix:	Drinking water	**Date Analyzed:**	10/23/2015

Lab Control Spike Summary
Chlorinated Herbicides by EPA 515.4

Extraction Method:	METHOD	**Units:**	ug/L
Analysis Method:	5154	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG15102. 6

	Lab Control Sample KWG15102. 6-3 Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
Dalapon	. 49.	5400	99	70-130
3,5-Dichlorobenzoic Acid	. 46.	5400	93	70-130
Dicamba	. 498	5400	100	70-130
Dichlorprop	. 458	5400	92	70-130
2,. -D	. 430	5400	86	70-130
Pentachlorophenol	. 455	5400	91	70-130
2,. ,5-TP (Silvex)	. 459	5400	92	70-130
Chloramben	6408	5400	122	70-130
2,. -DB	5411	5400	102	70-130
Dinoseb	5415	5400	103	70-130
Dacthal Diacid	. 458	5400	92	70-130
Picloram	. 48.	5400	97	70-130
Acifluorfen	5416	5400	103	70-130

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded4

Volatile Organic Compounds

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636- 1068
www.alsglobal.com

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Mentinel / ell	**Date Collected:**	1WG19GNW15
Sample Matrix:	- hinding wateh	**Date Received:**	1WG19GNW15

Volatile Organic Compounds

Sample Name:	- / 45	**Units:**	ugGL
Lab Code:	K15117974WWI	**Basis:**	0 A
Extraction Method:	B kSDr -	**Level:**	Low
Analysis Method:	5NETN		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
- ic. loho3ifluohoUet. ane	0 -	2	W5W	1	1WGHMG15	1WGHMG15	K/ O151W595	
C. lohoUet. ane	0 -	2	W5W	1	1WGHMG15	1WGHMG15	K/ O151W595	
minyl C. lohi3e	0 -	2	W5W	1	1WGHMG15	1WGHMG15	K/ O151W595	
VhoUoUet. ane	0 -	2	W5W	1	1WGHMG15	1WGHMG15	K/ O151W595	
C. lohoet. ane	0 -	2	W5W	1	1WGHMG15	1WGHMG15	K/ O151W595	
Shic. lohofluohoUet. ane	0 -	2	W5W	1	1WGHMG15	1WGHMG15	K/ O151W595	
B et. ylene C. lohi3e	0 -	2	W5W	1	1WGHMG15	1WGHMG15	K/ O151W595	
thans41,N4- ic. lohoet. ene	0 -	2	W5W	1	1WGHMG15	1WGHMG15	K/ O151W595	
1,14- ic. lohoet. ene	0 -	2	W5W	1	1WGHMG15	1WGHMG15	K/ O151W595	
cis41,N4- ic. lohoet. ene	0 -	2	W5W	1	1WGHMG15	1WGHMG15	K/ O151W595	
B et. yl teht4Vutyl kt. eh	0 -	2	W5W	1	1WGHMG15	1WGHMG15	K/ O151W595	
C. lohofohU	0 -	2	W5W	1	1WGHMG15	1WGHMG15	K/ O151W595	
VhoUoc. lohoUet. ane	0 -	2	W5W	1	1WGHMG15	1WGHMG15	K/ O151W595	
Calbon Sethac. lohi3e	0 -	2	W5W	1	1WGHMG15	1WGHMG15	K/ O151W595	
Venzene	0 -	2	W5W	1	1WGHMG15	1WGHMG15	K/ O151W595	
1,N4- ic. lohoet. ane	0 -	2	W5W	1	1WGHMG15	1WGHMG15	K/ O151W595	
Shic. lohoet. ene	0 -	2	W5W	1	1WGHMG15	1WGHMG15	K/ O151W595	
1,N4- ic. lohophopane	0 -	2	W5W	1	1WGHMG15	1WGHMG15	K/ O151W595	
VhoUo3ic. lohoUet. ane	0 -	2	W5W	1	1WGHMG15	1WGHMG15	K/ O151W595	
- ibhoUoUet. ane	0 -	2	W5W	1	1WGHMG15	1WGHMG15	K/ O151W595	
cis41,H4- ic. lohophopene	0 -	2	W5W	1	1WGHMG15	1WGHMG15	K/ O151W595	
1,14- ic. lohoet. ane	0 -	2	W5W	1	1WGHMG15	1WGHMG15	K/ O151W595	
Soluene	0 -	2	W5W	1	1WGHMG15	1WGHMG15	K/ O151W595	
thans41,H4- ic. lohophopene	0 -	2	W5W	1	1WGHMG15	1WGHMG15	K/ O151W595	
Sethac. lohoet. ene	0 -	2	W5W	1	1WGHMG15	1WGHMG15	K/ O151W595	
N,N4- ic. lohophopane	0 -	2	W5W	1	1WGHMG15	1WGHMG15	K/ O151W595	
1,H4- ic. lohophopane	0 -	2	W5W	1	1WGHMG15	1WGHMG15	K/ O151W595	
- ibhoUoc. lohoUet. ane	0 -	2	W5W	1	1WGHMG15	1WGHMG15	K/ O151W595	
1,N4- ibhoUoet. ane (k- V)	0 -	2	W5W	1	1WGHMG15	1WGHMG15	K/ O151W595	
C. lohobenzene	0 -	2	W5W	1	1WGHMG15	1WGHMG15	K/ O151W595	
kt. ylbenzene	0 -	2	W5W	1	1WGHMG15	1WGHMG15	K/ O151W595	
Mtyhene	0 -	2	W5W	1	1WGHMG15	1WGHMG15	K/ O151W595	
U,p4Xylenes	0 -	2	W5W	1	1WGHMG15	1WGHMG15	K/ O151W595	
o4Xylene	0 -	2	W5W	1	1WGHMG15	1WGHMG15	K/ O151W595	

Comments:

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Mentinel / ell	**Date Collected:**	1WG19GNW15
Sample Matrix:	- hinding wateh	**Date Received:**	1WG19GNW15

Volatile Organic Compounds

Sample Name:	- / 45	**Units:**	ugGL
Lab Code:	K15117974WWI	**Basis:**	0 A
Extraction Method:	B k S Dr -	**Level:**	Low
Analysis Method:	5NETN		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,1,14Shic. lohoet. ane	0 -	2	W5W	1	1WGHWG15	1WGHWG15	K/ O151W595	
VhoUofohU	0 -	2	W5W	1	1WGHWG15	1WGHWG15	K/ O151W595	
1,1,N,N4Sethac. lohoet. ane	0 -	2	W5W	1	1WGHWG15	1WGHWG15	K/ O151W595	
Isophopylbenzene	0 -	2	W5W	1	1WGHWG15	1WGHWG15	K/ O151W595	
1,14- ic. lohophopene	0 -	2	W5W	1	1WGHWG15	1WGHWG15	K/ O151W595	
VhoUobenzene	0 -	2	W5W	1	1WGHWG15	1WGHWG15	K/ O151W595	
n4Phopylbenzene	0 -	2	W5W	1	1WGHWG15	1WGHWG15	K/ O151W595	
1,H,54ShiUet. ylbenzene	0 -	2	W5W	1	1WGHWG15	1WGHWG15	K/ O151W595	
N4C. lohotoluene	0 -	2	W5W	1	1WGHWG15	1WGHWG15	K/ O151W595	
E4C. lohotoluene	0 -	2	W5W	1	1WGHWG15	1WGHWG15	K/ O151W595	
teht4Vutylbenzene	0 -	2	W5W	1	1WGHWG15	1WGHWG15	K/ O151W595	
1,N,E4ShiUet. ylbenzene	0 -	2	W5W	1	1WGHWG15	1WGHWG15	K/ O151W595	
sec4Vutylbenzene	0 -	2	W5W	1	1WGHWG15	1WGHWG15	K/ O151W595	
p4Isophopyltoluene	0 -	2	W5W	1	1WGHWG15	1WGHWG15	K/ O151W595	
1,H4- ic. lohobenzene	0 -	2	W5W	1	1WGHWG15	1WGHWG15	K/ O151W595	
1,E4- ic. lohobenzene	0 -	2	W5W	1	1WGHWG15	1WGHWG15	K/ O151W595	
n4Vutylbenzene	0 -	2	W5W	1	1WGHWG15	1WGHWG15	K/ O151W595	
1,N4- ic. lohobenzene	0 -	2	W5W	1	1WGHWG15	1WGHWG15	K/ O151W595	
1,N4- ibhoUo4H4c. lohophopane (- VCP	0 -	2	W5W	1	1WGHWG15	1WGHWG15	K/ O151W595	
1,N,E4Shic. lohobenzene	0 -	2	W5W	1	1WGHWG15	1WGHWG15	K/ O151W595	
Dexac. lohobuta3iene	0 -	2	W5W	1	1WGHWG15	1WGHWG15	K/ O151W595	
0 ap. t. alene	0 -	2	W5W	1	1WGHWG15	1WGHWG15	K/ O151W595	
1,1,N4Shic. lohoet. ane	0 -	2	W5W	1	1WGHWG15	1WGHWG15	K/ O151W595	
1,1,1,N4Sethac. lohoet. ane	0 -	2	W5W	1	1WGHWG15	1WGHWG15	K/ O151W595	
1,N,H4Shic. lohophopane	0 -	2	W5W	1	1WGHWG15	1WGHWG15	K/ O151W595	
1,N,H4Shic. lohobenzene	0 -	2	W5W	1	1WGHWG15	1WGHWG15	K/ O151W595	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
E4VhoUofluohobenzene	97	7W41HW	1WGHWG15	Acceptable
- ibhoUofluohoUet. ane	95	FN41NE	1WGHWG15	Acceptable
Soluene43F	FF	FN41NE	1WGHWG15	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511797
Project:	kentinel 4 ell	**Date Collected:**	/ A
Sample Matrix:	S DnBing wateD	**Date Received:**	/ A

Volatile Organic Compounds

Sample Name:	N etMoh d lanB	**Units:**	ug-L
Lab Code:	K4 W151G595 05	**Basis:**	/ A
Extraction Method:	N r ETHS	**Level:**	Low
Analysis Method:	5O2.O		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
S icMoDhifluoDometMane	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
CMoDometMane	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
Vinyl CMoDhe	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
d DomometMane	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
CMoDoetMane	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
EDcMoDofluoDometMane	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
N etMylene CMoDhe	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
tDans01,O0S icMoDoetMene	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
1,10S icMoDoetMene	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
cis01,O0S icMoDoetMene	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
N etMyl teD00d utyl r tMeD	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
CMoDofoDm	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
d DomocMoDometMane	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
CaDbon EetDacMoDhe	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
d enzene	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
1,O0S icMoDoetMane	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
EDcMoDoetMene	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
1,O0S icMoDopDopane	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
d DomohicMoDometMane	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
S ibDomometMane	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
cis01,30S icMoDopDopene	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
1,10S icMoDoetMane	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
Eoluene	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
tDans01,30S icMoDopDopene	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
EetDacMoDoetMene	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
O,O0S icMoDopDopane	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
1,30S icMoDopDopane	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
S ibDomocMoDometMane	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
1,O0S ibDomoetMane (r S d)	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
CMoDobenzene	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
r tMylbenzene	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
ktyDene	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
m,p0Xylenes	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
o0Xylene	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	

Comments:

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511797
Project:	kentinel 4 ell	**Date Collected:**	/ A
Sample Matrix:	S DnBing wateD	**Date Received:**	/ A

Volatile Organic Compounds

Sample Name:	N etMoh d lanB	**Units:**	ug-L
Lab Code:	K4 W151G59505	**Basis:**	/ A
Extraction Method:	N r ETHS	**Level:**	Low
Analysis Method:	5O2.O		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,1,10EDcMoDoetMane	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
d DomofoDm	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
1,1,O,O0EetDacMoDoetMane	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
IsopDopylbenzene	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
1,10SicMoDopDopene	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
d Domobenzene	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
n0PDopylbenzene	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
1,3,50EDmetMylbenzene	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
O0CMoDotoluene	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
20CMoDotoluene	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
teD0d utylbenzene	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
1,O,20EDmetMylbenzene	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
sec0d utylbenzene	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
p0IsopDopyltoluene	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
1,30SicMoDobenzene	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
1,20SicMoDobenzene	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
n0d utylbenzene	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
1,O0SicMoDobenzene	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
1,O0SibDomo030cMoDopDopane (S d CP	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
1,O,20EDcMoDobenzene	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
TexacMoDobutahiene	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
/ apMMalene	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
1,1,O0EDcMoDoetMane	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
1,1,1,O0EetDacMoDoetMane	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
1,O,30EDcMoDopDopane	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	
1,O,30EDcMoDobenzene	/ S	U	G5G	1	1G-3G-15	1G-3G-15	K4 W151G595	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
20d DomofluoDobenzene	97	7O013G	1G-3G-15	Acceptable
SibDomofluoDometMane	11O	FO01O2	1G-3G-15	Acceptable
Eoluene0hF	11O	FO01O2	1G-3G-15	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Longview, City of
Project: aentineSl eSS
Sample Matrix: 4 rinDing wkter

Service Request: K1511797

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: WMETH4
Analysis Method: 5O2.O

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
4 1 -5	K1511797-001	97	95	66
WetGoh d SknD	K1 3 1510595-5	97	11O	11O
Lkb ControSa kmpSe	K1 3 1510595-B	99	97	107
4 upSickte Lkb ControSa kmpSe	K1 3 1510595-2	100	9F	90

Surrogate Recovery Control Limits (%)

aur1	=	2-d romofSuorobenzene	70-1B0
aurO	=	4 ibromofSuorometGkne	6O-1O2
aurB	=	EoSuene-h6	6O-1O2

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client: Longview, City of
Project: Sentinel Well
Sample Matrix: Drinking water

Service Request: K1511797
Date Extracted: 10/30/2015
Date Analyzed: 10/30/2015

Lab Control Spike/Duplicate Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method: METHOD
Analysis Method: 524.2

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1510595

	Lab Control Sample KWG1510595-3 Lab Control Spike			Duplicate Lab Control Sample KWG1510595-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Dichlorodifluoromethane	5.94	5.00	119	4.75	5.00	95	70-130	22	30
Chloromethane	5.51	5.00	110	4.39	5.00	88	70-130	23	30
Vinyl Chloride	5.73	5.00	115	4.53	5.00	91	70-130	23	30
Bromomethane	5.62	5.00	112	4.68	5.00	94	70-130	18	30
Chloroethane	5.52	5.00	110	4.39	5.00	88	70-130	23	30
Trichlorofluoromethane	5.65	5.00	113	4.54	5.00	91	70-130	22	30
Methylene Chloride	5.14	5.00	103	4.06	5.00	81	70-130	23	30
trans-1,2-Dichloroethene	5.48	5.00	110	4.34	5.00	87	70-130	23	30
1,1-Dichloroethene	5.55	5.00	111	4.39	5.00	88	70-130	23	30
cis-1,2-Dichloroethene	5.38	5.00	108	4.27	5.00	85	70-130	23	30
Methyl tert-Butyl Ether	10.5	10.0	105	8.46	10.0	85	70-130	22	30
Chloroform	5.61	5.00	112	4.50	5.00	90	70-130	22	30
Bromochloromethane	5.50	5.00	110	4.51	5.00	90	70-130	20	30
Carbon Tetrachloride	5.35	5.00	107	4.72	5.00	94	70-130	13	30
Benzene	5.12	5.00	102	4.70	5.00	94	70-130	9	30
1,2-Dichloroethane	5.12	5.00	102	4.62	5.00	92	70-130	10	30
Trichloroethene	5.50	5.00	110	4.38	5.00	88	70-130	23	30
1,2-Dichloropropane	5.25	5.00	105	4.21	5.00	84	70-130	22	30
Bromodichloromethane	5.07	5.00	101	4.16	5.00	83	70-130	20	30
Dibromomethane	5.14	5.00	103	4.04	5.00	81	70-130	24	30
cis-1,3-Dichloropropene	5.26	5.00	105	4.27	5.00	85	70-130	21	30
Toluene	5.47	5.00	109	4.30	5.00	86	70-130	24	30
1,1-Dichloroethane	5.40	5.00	108	4.29	5.00	86	70-130	23	30
trans-1,3-Dichloropropene	4.76	5.00	95	4.64	5.00	93	70-130	3	30
Tetrachloroethene	5.37	5.00	107	4.78	5.00	96	70-130	12	30
1,3-Dichloropropane	5.01	5.00	100	4.65	5.00	93	70-130	7	30
2,2-Dichloropropane	5.91	5.00	118	4.73	5.00	95	70-130	22	30
Dibromochloromethane	4.83	5.00	97	4.56	5.00	91	70-130	6	30
1,2-Dibromoethane (EDB)	4.94	5.00	99	4.67	5.00	93	70-130	6	30
Chlorobenzene	5.18	5.00	104	4.82	5.00	96	70-130	7	30
Ethylbenzene	5.15	5.00	103	4.87	5.00	97	70-130	6	30
Styrene	5.20	5.00	104	4.90	5.00	98	70-130	6	30
m,p-Xylenes	10.8	10.0	108	10.1	10.0	101	70-130	7	30
o-Xylene	5.35	5.00	107	4.97	5.00	99	70-130	7	30
Bromoform	4.94	5.00	99	4.65	5.00	93	70-130	6	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Longview, City of
Project: Sentinel Well
Sample Matrix: Drinking water

Service Request: K1511797
Date Extracted: 10/30/2015
Date Analyzed: 10/30/2015

Lab Control Spike/Duplicate Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method: METHOD
Analysis Method: 524.2

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1510595

	Lab Control Sample KWG1510595-3 Lab Control Spike			Duplicate Lab Control Sample KWG1510595-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
1,1,1-Trichloroethane	5.17	5.00	103	4.55	5.00	91	70-130	13	30
1,1,2,2-Tetrachloroethane	4.97	5.00	99	4.76	5.00	95	70-130	4	30
Isopropylbenzene	5.33	5.00	107	4.96	5.00	99	70-130	7	30
1,1-Dichloropropene	5.41	5.00	108	4.85	5.00	97	70-130	11	30
Bromobenzene	5.15	5.00	103	4.80	5.00	96	70-130	7	30
n-Propylbenzene	5.48	5.00	110	5.12	5.00	102	70-130	7	30
1,3,5-Trimethylbenzene	5.45	5.00	109	5.08	5.00	102	70-130	7	30
2-Chlorotoluene	5.27	5.00	105	4.92	5.00	98	70-130	7	30
4-Chlorotoluene	5.27	5.00	105	4.96	5.00	99	70-130	6	30
tert-Butylbenzene	5.36	5.00	107	5.02	5.00	100	70-130	7	30
1,2,4-Trimethylbenzene	5.34	5.00	107	5.03	5.00	101	70-130	6	30
sec-Butylbenzene	5.46	5.00	109	5.11	5.00	102	70-130	7	30
p-Isopropyltoluene	5.43	5.00	109	5.13	5.00	103	70-130	6	30
1,3-Dichlorobenzene	5.18	5.00	104	4.84	5.00	97	70-130	7	30
1,4-Dichlorobenzene	5.12	5.00	102	4.79	5.00	96	70-130	7	30
n-Butylbenzene	5.52	5.00	110	5.16	5.00	103	70-130	7	30
1,2-Dichlorobenzene	5.05	5.00	101	4.82	5.00	96	70-130	5	30
1,2-Dibromo-3-chloropropane (DBCP)	4.66	5.00	93	4.69	5.00	94	70-130	1	30
1,2,4-Trichlorobenzene	5.12	5.00	102	4.87	5.00	97	70-130	5	30
Hexachlorobutadiene	5.27	5.00	105	5.01	5.00	100	70-130	5	30
Naphthalene	5.07	5.00	101	4.76	5.00	95	70-130	6	30
1,1,2-Trichloroethane	5.16	5.00	103	4.66	5.00	93	70-130	10	30
1,1,1,2-Tetrachloroethane	4.76	5.00	95	4.47	5.00	89	70-130	6	30
1,2,3-Trichloropropane	4.95	5.00	99	4.75	5.00	95	70-130	4	30
1,2,3-Trichlorobenzene	5.36	5.00	107	4.90	5.00	98	70-130	9	30

Results flagged with an asterisk (*) indicate values outside control criteria.

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Semivolatile Organics by EPA Method 525.2

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Analytical Results

Client:	Longview, City of	**Service Request:**	K1511797
Project:	2entinel D ell	**Date Collected:**	1-0190W15
Sample Matrix:	NSinr ing wateS	**Date Received:**	1-0190W15

Semivolatile Organics by EPA Method 525.2

Sample Name:	ND 45	**Units:**	ugCL
Lab Code:	K15117974-1	**Basis:**	/ A
Extraction Method:	k METHN	**Level:**	Low
Analysis Method:	5W5C0W		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
TexachloSocyclopentadiene	/ N	U	-Q97	1	1-0W7015	110-G015	KD. 151-5WG	
FluoSene	/ N	U	-QCP	1	1-0W7015	110-G015	KD. 151-5WG	*
PSopachloS	/ N	U	-Q97	1	1-0W7015	110-G015	KD. 151-5WG	
TexachloSobenzene	/ N	U	-Q97	1	1-0W7015	110-G015	KD. 151-5WG	
2imazine	/ N	U	-QCP	1	1-0W7015	110-G015	KD. 151-5WG	
AtSazine	/ N	U	-Q97	1	1-0W7015	110-G015	KD. 151-5WG	
k etSibuzin	/ N	U	-0W	1	1-0W7015	110-G015	KD. 151-5WG	
AlachloS	/ N	U	-Q7-	1	1-0W7015	110-G015	KD. 151-5WG	
BSomacil	/ N	U	-0W	1	1-0W7015	110-G015	KD. 151-5WG	
k etolachloS	/ N	U	-Q87	1	1-0W7015	110-G015	KD. 151-5WG	
ButachloS	/ N	U	-Q97	1	1-0W7015	110-G015	KD. 151-5WG	
Bis(W4ethylhexyl) Adipate	/ N	U	-G58	1	1-0W7015	110-G015	KD. 151-5WG	
Bis(W4ethylhexyl) Phthalate	/ N	U	-G58	1	1-0W7015	110-G015	KD. 151-5WG	
Benzo(a)pySene	/ N	U	-QW	1	1-0W7015	110-G015	KD. 151-5WG	

* 2ee Case / aSSative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,34Nimethyl4WnitSobenzene	1W7	7-413-	110-G015	Acceptable
ESiphenyl Phosphate	98	7-413-	110-G015	Acceptable
PeSylene4d1W	97	7-413-	110-G015	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel 4 ell	**Date Collected:**	NA
Sample Matrix:	Drinking water	**Date Received:**	NA

Semivolatile Organics by EPA Method 525.2

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	K4 W151G502-2	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	505.0		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hexachlorocyclopentadiene	ND	U	G1G	1	1G/07/15	11/G2/15	K4 W151G502	
Fluorene	ND	U	GG5G	1	1G/07/15	11/G2/15	K4 W151G502	*
Propachlor	ND	U	G1G	1	1G/07/15	11/G2/15	K4 W151G502	
Hexachlorobenzene	ND	U	G1G	1	1G/07/15	11/G2/15	K4 W151G502	
Simazine	ND	U	GG5G	1	1G/07/15	11/G2/15	K4 W151G502	
Atrazine	ND	U	G1G	1	1G/07/15	11/G2/15	K4 W151G502	
Metribuzin	ND	U	G0G	1	1G/07/15	11/G2/15	K4 W151G502	
Alachlor	ND	U	GG70	1	1G/07/15	11/G2/15	K4 W151G502	
Bromacil	ND	U	G0G	1	1G/07/15	11/G2/15	K4 W151G502	
Metolachlor	ND	U	GG9G	1	1G/07/15	11/G2/15	K4 W151G502	
Butachlor	ND	U	G1G	1	1G/07/15	11/G2/15	K4 W151G502	
Bis(0-ethylhexyl) Adipate	ND	U	G6G	1	1G/07/15	11/G2/15	K4 W151G502	
Bis(0-ethylhexyl) Phthalate	ND	U	G6G	1	1G/07/15	11/G2/15	K4 W151G502	
Benzo(a)pyrene	ND	U	GG0G	1	1G/07/15	11/G2/15	K4 W151G502	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,3-Dimethyl-0-nitrobenzene	117	7G-13G	11/G2/15	Acceptable
Triphenyl Phosphate	92	7G-13G	11/G2/15	Acceptable
Perylene-d10	96	7G-13G	11/G2/15	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Longview, City of
Project: aentineSl eSS
Sample Matrix: 4 rinDing wkter

Service Request: K1511797

Surrogate Recovery Summary
Semivolatile Organics by EPA Method 525.2

Extraction Method: WMETH4
Analysis Method: 5O52O

Units: . erPent
Level: Low

Sample Name	Lab Code	Sur1		Sur2	Sur3	
4 1 c5	K1511797c- - 1	1O7		90	97	
3 ktP8 QC	K1511790c- - 1	1Bl	*	90	hB	*
Wet8od 3 SknD	K1 6 151- 5OGcG	117		9G	9h	
3 ktP8 QCWa	K1 6 151- 5OGcl	1O5		1- B	0B	
3 ktP8 QC4 Wa	K1 6 151- 5OGcO	1OG		1- 7	91	
Lkb ControSa kmpSe	K1 6 151- 5OGcB	1OB		11G	9h	

Surrogate Recovery Control Limits (%)

aur1	=	1,Bc4 imet8ySOcnitrobenzene	7- clB-
aurO	=	Erip8enyS. 8osp8kte	7- clB-
aurB	=	. erySenecd1O	7- clB-

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K5755949
Project:	3entineME eMM	**Date Extracted:**	5u/N9/Nu57
Sample Matrix:	l rin2ing wWer	**Date Analyzed:**	55/uT/Nu57

Matrix Spike/Duplicate Matrix Spike Summary
Semivolatile Organics by EPA Method 525.2

Sample Name:	DW-1 QC	**Units:**	ag/L
Lab Code:	K5755940.uu5	**Basis:**	S A
Extraction Method:	H OG6 8 1	**Level:**	Low
Analysis Method:	7N7kN	**Extraction Lot:**	KE c 575u7NT

		DW-1 QCH 3 KE c 575u7NT.5 Matrix Spike			DW-1 QCl H 3 KE c 575u7NT.N Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
6 ezW1Mro-y-MpentWiene	S1	uk454	uk4bN	4b	uk4hN	uk4bN	49	9u.5hu	5	hu
mMorene	S1	5kN5	uk4bN	5Nb	5kNT	uk4bN	5N4	9u.5hu	N	hu
PropW1Mr	S1	uk444	uk4bN	5uT	5ku7	uk4bN	5u4	9u.5hu	7	hu
6 ezW1Mro(enxene	S1	5ku9	uk4bN	555	5ku9	uk4bN	555	9u.5hu	u	hu
3i) Wine	S1	uk4hh	uk4bN	49	uk4uh	uk4bN	4T	9u.5hu	h	hu
AtrWine	S1	uk4hN	uk4bN	49	uk45u	uk4bN	47	9u.5hu	N	hu
H etri(axin	S1	5ku5	uk4bN	5u7	5kuh	uk4bN	5u9	9u.5hu	N	hu
AMW1Mr	S1	uk4uT	uk4bN	4T	uk4N7	uk4bN	4b	9u.5hu	N	hu
Dro) WiM	S1	5ku5	uk4bN	5u7	5kuN	uk4bN	5ub	9u.5hu	5	hu
H etoNW1Mr	S1	ulk00N	uk4bN	4N	uk4u7	uk4bN	4T	9u.5hu	h	hu
DatW1Mr	S1	5kuT	uk4bN	5u0	5ku7	uk4bN	5u4	9u.5hu	5	hu
Di*BNet1yMlezyMAdipWe	S1	5k5u	uk4bN	55T	5k50	uk4bN	5Nh	9u.5hu	0	hu
Di*BNet1yMlezyMP1t1WWe	S1	5k57	uk4bN	5Nu	5kN0	uk4bN	5hh F	9u.5hu	5u	hu
DenxoBWpyrene	S1	ulk05h	uk4bN	07	ulk0bT	uk4bN	4u	9u.5hu	b	hu

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

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QA/QC Report

Client:	Longview, City of	**Service Request:**	DWWWIK1
Project:	Nentineua eu	**Date Extracted:**	W/51/51W
Sample Matrix:	ErinTing w0ter	**Date Analyzed:**	WW12/51W

Lab Control Spike Summary
Semivolatile Organics by EPA Method 525.2

Extraction Method:	HOG68E	**Units:**	9g/L
Analysis Method:	-5-75	**Basis:**	4A
		Level:	Low
		Extraction Lot:	Da SWW-52

L0. ControuN0k pue
Da SWW-523M
Lab Control Spike

Analyte Name	Result	Spike Amount	%Rec	%Rec Limits
6ec0hbuorohyhuopent0ziene	17Kdl	W71	Kd	113WMI
Pu9orene	WMW	W71	WMW m	113WMI
(rop0hbuor	WW5	W71	WW5	113WMI
6ec0hbuoro. enxene	WWW	W71	WWW	113WMI
Nik 0xine	W1W	W71	WW	113WMI
Atr0xine	W1M	W71	WM	113WMI
Hetri. 9xin	WW	W71	WW	113WMI
Au0hbuor	W11	W71	W1	113WMI
)rok 0hiu	W11	W71	W1	113WMI
Hetou0hbuor	W11	W71	W1	113WMI
)9t0hbuor	WWM	W71	WWM	113WMI
)i*B53etbyubecyus Azip0te	WWW	W71	WWW	113WMI
)i*B53etbyubecyus (btb0u0te	WWF	W71	WWF	113WMI
)enxoB0spyrene	WWI	W71	WWI	113WMI

Results flagged with an asterisk (*) indicate values outside control criteria.

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Diquat and Paraquat by EPA Method 549.2

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Analytical Results

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Collected:**	10/19/2015
Sample Matrix:	Drinking water	**Date Received:**	10/19/2015

Diquat and Paraquat by EPA Method 549.2

Sample Name:	DW-5	**Units:**	ug/L
Lab Code:	K1511797-001	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	549.2		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diquat	ND	U	0.400	1	10/23/15	11/05/15	KWG1510343	
Paraquat	ND	U	0.800	1	10/23/15	11/05/15	KWG1510343	

Comments:

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking water	**Date Received:**	NA

Diquat and Paraquat by EPA Method 549.2

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1510343-5	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	549.2		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diquat	ND	U	0.400	1	10/23/15	11/05/15	KWG1510343	
Paraquat	ND	U	0.800	1	10/23/15	11/05/15	KWG1510343	

Comments:

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	NentineDk eID	**Date Extracted:**	10/2S/2015
Sample Matrix:	3 rinuing water	**Date Analyzed:**	11/05/2015

Matrix Spike/Duplicate Matrix Spike Summary
Diquat and Paraquat by EPA Method 549.2

Sample Name:	Batch QC	**Units:**	8g/L
Lab Code:	K1511794-001	**Basis:**	6 A
Extraction Method:	1 WMET 3	**Level:**	Low
Analysis Method:	549.2	**Extraction Lot:**	Kk H1510S4S

		Batch QCl N Kk H1510S4S-1 **Matrix Spike**			Batch QC3 1 N Kk H1510S4S-2 **Duplicate Matrix Spike**					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
3 iO8at	6 3	14.2	12.0	11G	1S.5	12.0	112	70-1S0	5	S0
ParaO8at	6 3	11.S	12.0	94	11.q	12.0	9q	70-1S0	S	S0

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RP3) are determined by the software 8sing values in the calculation which have not been rounded.

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511797
Project:	Sentinel Well	**Date Extracted:**	10/23/2015
Sample Matrix:	Drinking water	**Date Analyzed:**	11/05/2015

Lab Control Spike Summary
Diquat and Paraquat by EPA Method 549.2

Extraction Method:	METHOD	**Units:**	ug/L
Analysis Method:	549.2	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1510343

	Lab Control Sample KWG1510343-4 Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
Diquat	13.1	12.0	110	70-130
Paraquat	10.9	12.0	91	70-130

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Subcontract Lab Results

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

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Certificate of Analysis

P[illegible]	**SOCs**	[illegible]	**2103034**
P[illegible]	**51K1511797**	[illegible]	**K1511797**

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Kelli Wolfgang

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Page 13[illegible] of 152

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

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Standard Acronyms/Flags

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ALS Environmental
34 Dogwood Lane ▪ Middletown, PA 17057 ▪ Phone: 717-944-5541 ▪ Fax: 717-944-1430 ▪ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

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Kelli Wolfgang

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QUALITY CONTROL DATA

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QC Batch: HPLC/4044 **Analysis Method:** EPA 531.1

QC Batch Method: EPA 531.1

Associated Lab Samples: 2103034001

METHOD BLANK: 2252455

Parameter	Blank Result	Units	Reporting Limit
Aldicarb	ND	ug/L	0.31
Aldicarb Sulfone	ND	ug/L	0.18
Aldicarb Sulfoxide	ND	ug/L	0.37
Carbaryl	ND	ug/L	0.42
Carbofuran	ND	ug/L	0.43
3-Hydroxycarbofuran	ND	ug/L	0.41
Methiocarb	ND	ug/L	0.42
Methomyl	ND	ug/L	0.31
Oxamyl	ND	ug/L	0.42
Propoxur	ND	ug/L	0.44

LABORATORY CONTROL SAMPLE: 2252456

Parameter	LCS % Rec	Units	Spike Conc.	LCS Result	% Rec Limit
Aldicarb	94.2	ug/L	10	9.4	80 - 120
Aldicarb Sulfone	88.4	ug/L	10	8.8	80 - 120
Aldicarb Sulfoxide	94.2	ug/L	10	9.4	80 - 120
Carbaryl	90.8	ug/L	10	9.1	80 - 120
Carbofuran	90.3	ug/L	10	9.0	80 - 120
3-Hydroxycarbofuran	98.3	ug/L	10	9.8	80 - 120
Methiocarb	89.6	ug/L	10	9.0	80 - 120
Methomyl	92.3	ug/L	10	9.2	80 - 120
Oxamyl	102	ug/L	10	10.2	80 - 120
Propoxur	90.7	ug/L	10	9.1	80 - 120

SAMPLE DUPLICATE: 2252457 ORIGINAL: 2102620001

Parameter	Original Result	Units	DUP Result	RPD	Max RPD
Carbofuran	0	ug/L	0	NC	20
Oxamyl	0	ug/L	0	NC	20

QUALITY CONTROL DATA

orkorder: 2103034 K1511797

MATRI SPIKE SAMPLE: 2252458 ORIGINAL: 2103704001

NOTE - The Original Result sho n belo is a ra result and is only used for the purpose of calculating Matrix Spike percent reco eries. This result is not a final alue and cannot be used as such.

Parameter	Original Result	Units	Spike Conc.	MS Result	MS % Rec	% Rec Limit
Carbofuran	0	ug/L	10	8.47521	84.8	65 - 135
Oxamyl	0	ug/L	10	9.70749	97.1	65 - 135

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

orkorder: 2103034 K1511797

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
2103034001	K1511797-001			EPA 531.1	HPLC/4044

ALS Environmental Chain of Custody

1317 South 13th Avenue • Kelso, WA 98626 • 1-360-577-7222 • FAX 1-360-636-1068

2103034

Project Number: K1511797
Project Manager: Chris Leaf
QAP: LAB QAP

Lab Code	Sample ID	# of Cont.	Matrix	Sample Date	Sample Time	Lab ID	CARBAM 531.1
K1511797-001	DW-5	2	Drinking Water	10/19/15	1137	Middletown ALS	X

	Y	N	Initials
Custody Seals Present?	✓		
(if present) Seals Intact?	✓		
Received on Ice?	✓		
COC/Labs Complete	✓		
Cont in Good Cond?	✓		
Correct Containers?	✓		
Correct Samp Vol?	✓		
Correct Preservation?	✓		
Headspace/Volatiles?		✓	

Cooler Temp: 2 °C
Cooler #:
Therm ID: TH-254
Ship Carrier: FedEx UPS DHL
Tracking #: 6449 9267 3317

Test Comments
CARBAM - 531.1 K1511797-001 Full list for WA Regulations - no compliance report required.

Folder Comments:
Report all metals in mg/L. No DW State form required.

10/21/15 KW

Special Instructions/Comments	Turnaround Requirements	Report Requirements	Invoice Information
Please provide the electronic (PDF and EDD) report to the following e-mail address: ALKLS.Data@alsglobal.com.	___RUSH (Surcharges Apply)	___I. Results Only	
	PLEASE CIRCLE WORK DAYS	✓ II. Results + QC Summaries	PO# 51K1511797
	1 2 3 4 5	___III. Results + QC and Calibration Summaries	
	✓ STANDARD	___IV. Data Validation Report with Raw Data	
	Requested FAX Date:	PQL/MDL/I N	Bill to:
	Requested Report Date: 11/05/15	EDD Y Basic w/QC	

10/20/15

H - Test is On Hold P - Test is Authorized for Prep Only

Relinquished By: KSmith 10/20/15 1200 Received By: ALS 10/21/15 0851 Airbill Number:

LABORATORY REPORT

November 5, 2015

Jeff Coleman
Longview, City of
W/S Operation Center
Longview, WA 98632

RE: Sentinel Well

Dear Jeff:

Enclosed are the results of the sample submitted to our laboratory on October 21, 2015. For your reference, this analysis has been assigned our service request number K1511797.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

Kate Aguilera

By Kate Aguilera at 8:20 am, Nov 05, 2015

Kate Aguilera
Project Manager

CASE NARRATIVE

The sample was received intact under chain of custody in Simi Valley on October 21, 2015 and was stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the sample at the time of sample receipt.

Hydrogen Sulfide Analysis

The sample was analyzed for hydrogen sulfide using a gas chromatograph equipped with a sulfur chemiluminescence detector (SCD). This method is not included on the laboratory's NELAP, DoD-ELAP, or AIHA-LAP scope of accreditation.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
AIHA	http://www.aihaaccreditedlabs.org	101661
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0694
DoD ELAP	http://www.pjlabs.com/search-accredited-labs	L14-2-R1
Florida DOH (NELAP)	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E871020
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/labcert.htm	2014025
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	876241
New Jersey DEP (NELAP)	http://www.nj.gov/dep/oqa/	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-001
Pennsylvania DEP	http://www.depweb.state.pa.us/labs	68-03307 (Registration)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704413-15-6
Utah DOH (NELAP)	http://www.health.utah.gov/lab/labimp/certification/index.html	CA016272015-5
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

Intra-Network Chain of Custody

1317 South 13th Avenue • Kelso, WA 98626 • 1-360-577-7222 • FAX 1-360-636-1068

ALS Contact: Chris Leaf

Project Name: Sentinel Well
Project Number:
Project Manager: Jeff Coleman
Company: Longview, City of
QAP: LAB QAP

Lab Code	Client Sample ID	# of Cont.	Matrix	Sample Date	Sample Time	Date Received	Send To	Sulfur Sulfur Liq
K1511797-001	DW-5	2	Drinking Water	10/19/15	1137	10/19/15	SIMIVALLEY	II

.27.25

Test Comments

Sulfur - Sulfur Liq K1511797-001 Hydrogen Sulfide

Folder Comments:

Report all metals in mg/L. No DW State form required.

Special Instructions/Comments

Please provide the electronic (PDF and EDD) report to the following e-mail address: ALKLS.Data@alsglobal.com.

CL 10/20/15

pH Checked _____

Turnaround Requirements

____ RUSH (Surcharges Apply)

PLEASE CIRCLE WORK DAYS

1 2 3 4 5

✓ STANDARD

Requested FAX Date: _____

Requested Report Date: 11/05/15

Report Requirements

____ I. Results Only

✓ II. Results + QC Summaries

____ III. Results + QC and Calibration Summaries

____ IV. Data Validation Report with Raw Data

PQL/MDL/J N

EDD Y Basic c/oc

Invoice Information

PO# 51K1511797

Bill to

Relinquished By: [illegible signature] 10/20/15 1300 Received By: [illegible signature] 10/21/15 0948 1° blank sel Airbill Number:

ALS Environmental
Sample Acceptance Check Form

Client: Longview, City of Work order: K1511797
Project: Sentinel Well
Sample(s) received on: 10/19/15 Date opened: 10/19/15 by: KKELPE

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Did **sample containers** arrive in good condition?	☒	☐	☐
3	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
4	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
5	Was **sample volume** received adequate for analysis?	☒	☐	☐
6	Are samples within specified holding times?	☒	☐	☐
7	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: ° C Blank Temperature: 1° C **Gel Packs**			
8	Were **custody seals** on outside of cooler/Box/Container?	☒	☐	☐
	Location of seal(s)? SEALING COOLER LID Sealing Lid?	☒	☐	☐
	Were signature and date included?	☒	☐	☐
	Were seals intact?	☒	☐	☐
9	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☒	☐	☐
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☒	☐	☐
10	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
11	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
K1511797-001.24	40mL VOA NP		7	1	A	MC 11/03/2015
K1511797-001.25	40mL VOA NP				A	

Explain any discrepancies: (include lab sample ID numbers):
The sample was received at ALS-Kelso on 10/19/15.

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Longview, City of**
Client Project ID: **Sentinel Well** ALS Project ID: K1511797

Hydrogen Sulfide

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 7890A/GC22/SCD Date(s) Collected: 10/19/15
Analyst: Mike Conejo Date Received: 10/19/15
Sample Type: Drinking Water Date Analyzed: 11/3/15
Test Notes:

Client Sample ID	ALS Sample ID	Sample Amount ml(s)	Purge Volume Liter(s)	Injection Volume ml(s)	**Result µg/L**	MRL µg/L	Data Qualifier
DW-5	K1511797-001	10.0	0.30	1.0	ND	0.84	
Method Blank	P151103-MB	10.0	0.30	1.0	ND	0.84	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Longview, City of**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **Sentinel Well**

ALS Project ID: K1511797
ALS Sample ID: P151103-DLCS

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 7890A/GC22/SCD
Analyst: Mike Conejo
Sample Type: Drinking Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 11/03/15
Liquid Amount: 10.0 ml(s)
Purge Volume: 0.30 Liter(s)
Injection Volume: 0.20 ml(s)

CAS #	Compound	Spike Amount LCS / DLCS ug/L	Result LCS ug/L	Result DLCS ug/L	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
7783-06-4	Hydrogen Sulfide	416	404	422	**97**	**101**	45-151	4	28	

ALS Environmental
ALS Group USA, Corp
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December 09, 2015

Analytical Report for Service Request No: K1511796

Jeff Coleman
Longview, City of
W/S Operation Center
P.O. Box 128
Longview, WA 98632

RE: Sentinel Wells

Dear Jeff,

Enclosed are the results of the sample(s) submitted to our laboratory October 19, 2015
For your reference, these analyses have been assigned our service request number **K1511796.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3275. You may also contact me via email at Chris.Leaf@ALSGlobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Chris Leaf
Project Manager

ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
T : +1 360 577 7222
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www.alsglobal.com

Table of Contents

Acronyms
□ualifiers
State Certifications□Accreditations□And Licenses
Chain of Custody
Metals
Subcontract Lab Results

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L14-51
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	Not available	-
Idaho DHW	http://www.healthandwelfare.idaho.gov/Health/Labs/CertificationDrinkingWaterLabs/tabid/1833/Default.aspx	-
ISO 17025	http://www.pjlabs.com/	L14-50
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	03016
Maine DHS	Not available	WA01276
Michigan DEQ	http://www.michigan.gov/deq/0,1607,7-135-3307_4131_4156---,00.html	9949
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	□□□.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Chain of Custody

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636- 1068
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ALS Environmental

58081

CHAIN OF CUSTODY

58081

001

SR# K1511446

COC Set____of____

COC#_____

1317 South 13th Ave, Kelso, WA 98626 Phone (360) 577-7222 / 800-695-7222 / FAX (360) 636-1068
www.alsglobal.com

Project Name: Sentinel Wells
Project Number:
Project Manager: Jeff Coleman
Company: City of Longview
Address: PO Box 128 Longview WA 98632
Phone #
email
Sampler Signature: T Daly
Sampler Printed Name: T Daly

CLIENT SAMPLE ID	LABID	SAMPLING Date	SAMPLING Time	Matrix	NUMBER OF CONTAINERS	7D 900.0 / Radioact	7D 903.1 / Radium 226	7D 904.0 / Radium 228	180D 200.8 / Metals T	1	2	3	4	5	Remarks
1. DW-5		10/19/15	1137		2										
2.															
3.															
4.															
5.															
6.															
7.															
8.															
9.															
10.															

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. CLP Like Summary (no raw data)
___ IV. Data Validation Report
___ V. EDD

Invoice Information

P.O.# 36-4737
Bill To: City of Longview
PO Box 128 Longview
WA 98632

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
___ Standard

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments:

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other_____(Circle One)

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature: T Daly	Signature: Dwight	Signature	Signature	Signature	Signature
Printed Name: T Daly	Printed Name: Dwight	Printed Name	Printed Name	Printed Name	Printed Name
Firm: CoL	Firm: ALS	Firm	Firm	Firm	Firm
Date/Time: 10/19/15 1340	Date/Time: 10 19 15 1540	Date/Time	Date/Time	Date/Time	Date/Time

PC CL

Cooler Receipt and Preservation Form

Client / Project: City of Longview Service Request K15 117916

Received: 10/19/15 Opened: 10/19/15 By: KD Unloaded: 10/19/15 By: KD

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? _____

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected. Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
9.8	10.0	3.5	3.7	+.2	371			

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time
DW-5	CUBZ				X	HNO3	8ml	RE/1-31-L	KD	1600

Notes, Discrepancies, & Resolutions: _____

Page ____ *of* ____

Metals

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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511796
Project:	Sentinel Wells	**Date Collected:**	10/19/15 11:37
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15 15:40
Sample Name:	DW-5	**Basis:**	NA
Lab Code:	K1511796-001		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Uranium	200.8	ND U	mg/L	0.000020	1	11/04/15 01:25	10/27/15	

Client:	Longview, City of	**Service Request:**	K1511796
Project:	Sentinel Wells	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	NA
Lab Code:	KQ1512448-01		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Uranium	200.8	ND U	mg/L	0.000020	1	11/04/15 12:37	10/27/15	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511796
Project	Sentinel Wells	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
		Date Analyzed:	11/04/15

Replicate Sample Summary
Total Metals

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511795-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample KQ1512448-04 Result	Average	RPD	RPD Limit
Uranium	200.8	0.000020	ND U	ND U	ND	-	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Printed 11/24/15 1:35:22 PM

Superset Reference:

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511796
Project:	Sentinel Wells	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	11/4/15
		Date Extracted:	10/27/15

Matrix Spike Summary
Total Metals

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511795-001	**Basis:**	NA
Analysis Method:	200.8		
Prep Method:	EPA CLP-METALS ILM04.0		

Matrix Spike
KQ1512448-05

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Uranium	ND U	0.0207	0.0200	104	70-130

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Printed 11/24/15 1:35:22 PM

Superset Reference:

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511796
Project:	Sentinel Wells	**Date Analyzed:**	11/04/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/27/15

Lab Control Sample Summary
Total Metals

Analysis Method:	200.8	**Units:**	mg/L
Prep Method:	EPA CLP-METALS ILM04.0	**Basis:**	NA
		Analysis Lot:	470354

Lab Control Sample
KQ1512448-02

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
Uranium	0.0205	0.0200	102	85-115

Subcontract Lab Results

ALS Environmental—Kelso Laboratory
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www.alsglobal.com

Thursday, November 12, 2015

Chris Leaf
ALS Environmental
1317 South 13th Ave
Kelso, WA 98626

Re: ALS Workorder: 1510337
Project Name:
Project Number: K1511796

Dear Ms. Leaf:

One water sample was received from ALS Environmental, on 10/21/2015. The sample was scheduled for the following analyses:

Gross Alpha/Beta
Radium-226
Radium-228

The results for these analyses are contained in the enclosed reports.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Thank you for your confidence in ALS Environmental. Should you have any questions, please call.

Sincerely,

ALS Environmental
Jeff R. Kujawa
Project Manager

ALS Environmental – Fort Collins is accredited by the following accreditation bodies for various testing scopes in accordance with requirements of each accreditation body. All testing is performed under the laboratory management system, which is maintained to meet these requirement and regulations. Please contact the laboratory or accreditation body for the current scope testing parameters.

ALS Environmental – Fort Collins	
Accreditation Body	License or Certification Number
Alaska (AK)	UST-086
Alaska (AK)	CO01099
Arizona (AZ)	AZ0742
California (CA)	06251CA
Colorado (CO)	CO01099
Connecticut (CT)	PH-0232
Florida (FL)	E87914
Idaho (ID)	CO01099
Kansas (KS)	E-10381
Kentucky (KY)	90137
L-A-B (DoD ELAP/ISO 170250)	L2257
Louisiana (LA)	05057
Maryland (MD)	285
Missouri (MO)	175
Nebraska(NE)	NE-OS-24-13
Nevada (NV)	CO000782008A
New York (NY)	12036
North Dakota (ND)	R-057
Oklahoma (OK)	1301
Pennsylvania (PA)	68-03116
Tennessee (TN)	2976
Texas (TX)	T104704241
Utah (UT)	CO01099
Washington (WA)	C1280

1510337

Gross Alpha/Beta:
The samples were analyzed for gross alpha and beta activity by gas flow proportional counting according to the current revision of SOP 724. Gross alpha results are referenced to ^{241}Am. Gross beta results are referenced to ^{90}Sr/Y.

All acceptance criteria were met.

Radium-228:
The samples were analyzed for the presence of ^{228}Ra by low background gas flow proportional counting of ^{228}Ac, which is the ingrown progeny of ^{228}Ra, according to the current revision of SOP 724.

All acceptance criteria were met.

Radium-226:
The samples were prepared and analyzed according to the current revision of SOP 783.

All acceptance criteria were met.

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1510337
Client Name: ALS Environmental
Client Project Name:
Client Project Number: K1511796
Client PO Number: K1511796

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
DW-5	1510337-1		WATER	19-Oct-15	11:37

ALS Environmental Chain of Custody

1317 South 13th Avenue • Kelso, WA 98626 • 1-360-577-7222 • FAX 1-360-636-1068

ALS Contact: Chris Leaf

Project Number: K1511796
Project Manager: Chris Leaf
QAP: LAB QAP

1510337

Lab Code	Sample ID	# of Cont.	Matrix	Sample Date	Sample Time	Lab ID	Radioact 900.0	Radium 226 903.1	Radium 228 904.0
K1511796-001	DW-5 (1)	2	Drinking Water	10/19/15	1137	Fort Collins ALS	X	X	X

Folder Comments:
preserved with HNO3 on 10/19/15 @ 1600.

Special Instructions/Comments	Turnaround Requirements	Report Requirements	Invoice Information
Please provide the electronic (PDF and EDD) report to the following e-mail address: ALKLS.Data@alsglobal.com.	____RUSH (Surcharges Apply) PLEASE CIRCLE WORK DAYS 1 2 3 4 5 ____ STANDARD Requested FAX Date: _____ Requested Report Date: 11/16/15	____ I. Results Only ____ II. Results + QC Summaries ____ III. Results + QC and Calibration Summaries ____ IV. Data Validation Report with Raw Data PQL/MDL/J N EDD Y	PO# 51K1511796 Bill to
H - Test is On Hold P - Test is Authorized for Prep Only			

Relinquished By: K Smith 10/20/15 1900 Received By: GA 10-21-15 @ 0935 Airbill Number:

ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: ALS Kelso Workorder No: 1510337

Project Manager: JRK Initials: SDM Date: 10-21-15

1. Does this project require any special handling in addition to standard ALS procedures?		YES	(NO)
2. Are custody seals on shipping containers intact?	NONE	(YES)	NO
3. Are Custody seals on sample containers intact?	(NONE)	YES	NO
4. Is there a COC (Chain-of-Custody) present or other representative documents?		(YES)	NO
5. Are the COC and bottle labels complete and legible?		(YES)	NO
6. Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		(YES)	NO
7. Were airbills / shipping documents present and/or removable?	DROP OFF	(YES)	NO
8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	N/A	(YES)	NO
9. Are all aqueous non-preserved samples pH 4-9?	(N/A)	YES	NO
10. Is there sufficient sample for the requested analyses?		(YES)	NO
11. Were all samples placed in the proper containers for the requested analyses?		(YES)	NO
12. Are all samples within holding times for the requested analyses?		(YES)	NO
13. Were all sample containers received intact? (not broken or leaking, etc.)		(YES)	NO
14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: ____ < green pea ____> green pea	(N/A)	YES	NO
15. Do any water samples contain sediment? Amount Amount of sediment: ____ dusting ____ moderate ____heavy	N/A	YES	(NO)
16. Were the samples shipped on ice?		YES	(NO)
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #2 #4	(RAD ONLY)	YES	(NO)

Cooler #:	1							
Temperature (°C):	Amb							
No. of custody seals on cooler:	~~0~~ SDM 1							
DOT Survey/ Acceptance Information — External µR/hr reading:	11							
Background µR/hr reading:	11							

Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? **YES / NO / NA** (If no, see Form 008.)

Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXCEPT #1 AND #16.

* Sample lab ID label says the sample is "unpreserved". When I took a pH, the reading came out < 2.

If applicable, was the client contacted? **YES / NO / NA** Contact: _____ Date/Time: _____

Project Manager Signature / Date: [signature] 10-21-15

*IR Gun #2: Oakton, SN 29922500201-0066
*IR Gun #4: Oakton, SN 2372220101-0002

Form 201r24.xls (06/04/2012)

ORIGIN ID:LOGA (360) 577-7222
SAMPLE RECEIVING
ALS ENVIRONMENTAL
1317 S 13TH AVE

KELSO, WA 98626
UNITED STATES US

SHIP DATE: 20OCT15
ACTWGT: 68.3 LB MAN
CAD: 102641/CAFE2806
DIMS: 26x14x13 IN

BILL SENDER

TO SAMPLE RECEIVING
ALS LBORATORY GROUP
225 COMMERCE DRIVE

FORT COLLINS CO 80524
(970) 490-1511
PO: CL/CL/CL

REF: SAMPLE K1511795 1511793 11796

FedEx Express

TRK# 0201 6447 9267 3306

WED - 21 OCT 10:30A
PRIORITY OVERNIGHT

XH FTCA

80524
CO-US DEN

Part # 156148-434 RIT2 03/14

151037

Client:	ALS Environmental	**Date:**	*12-Nov-15*
Project:	K1511796	**Work Order:**	1510337
Sample ID:	DW-5	**Lab ID:**	1510337-1
Legal Location:		**Matrix:**	WATER
Collection Date:	10/19/2015 11:37	**Percent Moisture:**	

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Gross Alpha/Beta by GFPC		**PAI 724**			Prep Date: **11/4/2015**	PrepBy: **DKL**
GROSS ALPHA	ND (+/- 1.1)	U	2.5	pCi/l	NA	11/6/2015 10:16
GROSS BETA	**4.1 (+/- 1.7)**		**3.1**	**pCi/l**	NA	11/6/2015 10:16
Radium-226 by Radon Emanation - Method 903.1		**PAI 783**			Prep Date: **11/5/2015**	PrepBy: **ECP**
Ra-226	ND (+/- 0.15)	U	0.23	pCi/l	NA	11/11/2015 13:06
Carr: BARIUM	*97.4*		*40-110*	*%REC*	DL = NA	11/11/2015 13:06
Radium-228 Analysis by GFPC		**PAI 724**			Prep Date: **10/26/2015**	PrepBy: **DKL**
Ra-228	ND (+/- 0.27)	U	0.5	pCi/l	NA	11/2/2015 12:39
Carr: BARIUM	*97.4*		*40-110*	*%REC*	DL = NA	11/2/2015 12:39

Client:	ALS Environmental	**Date:**	*12-Nov-15*
Project:	K1511796	**Work Order:**	1510337
Sample ID:	DW-5	**Lab ID:**	1510337-1
Legal Location:		**Matrix:**	WATER
Collection Date:	10/19/2015 11:37	**Percent Moisture:**	

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed

Explanation of Qualifiers

Radiochemistry:

U or ND - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
Y2 - Chemical Yield outside default limits.
W - DER is greater than Warning Limit of 1.42
* - Aliquot Basis is 'As Received' while the Report Basis is 'Dry Weight'.
# - Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'.
G - Sample density differs by more than 15% of LCS density.
D - DER is greater than Control Limit
M - Requested MDC not met.
LT - Result is less than requested MDC but greater than achieved MDC.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS, Matrix Spike Recovery within control limits.
N - Matrix Spike Recovery outside control limits
NC - Not Calculated for duplicate results less than 5 times MDC
B - Analyte concentration greater than MDC.
B3 - Analyte concentration greater than MDC but less than Requested MDC.

Inorganics:

B - Result is less than the requested reporting limit but greater than the instrument method detection limit (MDL).
U or ND - Indicates that the compound was analyzed for but not detected.
E - The reported value is estimated because of the presence of interference. An explanatory note may be included in the narrative.
M - Duplicate injection precision was not met.
N - Spiked sample recovery not within control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike duplicate fail and the native sample concentration is less than four times the spike added concentration.
Z - Spiked recovery not within control limits. An explanatory note may be included in the narrative.
* - Duplicate analysis (relative percent difference) not within control limits.
S - SAR value is estimated as one or more analytes used in the calculation were not detected above the detection limit.

Organics:

U or ND - Indicates that the compound was analyzed for but not detected.
B - Analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user.
E - Analyte concentration exceeds the upper level of the calibration range.
J - Estimated value. The result is less than the reporting limit but greater than the instrument method detection limit (MDL).
A - A tentatively identified compound is a suspected aldol-condensation product.
X - The analyte was diluted below an accurate quantitation level.
* - The spike recovery is equal to or outside the control criteria used.
+ - The relative percent difference (RPD) equals or exceeds the control criteria.
G - A pattern resembling gasoline was detected in this sample.
D - A pattern resembling diesel was detected in this sample.
M - A pattern resembling motor oil was detected in this sample.
C - A pattern resembling crude oil was detected in this sample.
4 - A pattern resembling JP-4 was detected in this sample.
5 - A pattern resembling JP-5 was detected in this sample.
H - Indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest.
L - Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest.
Z - This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products:
- gasoline
- JP-8
- diesel
- mineral spirits
- motor oil
- Stoddard solvent
- bunker C

QC BATCH REPORT

Batch ID: **RE151105-2-1** Instrument ID **Alpha Scin** Method: **Radium-226 by Radon Emanation**

LCS Sample ID: **RE151105-2** Units: **pCi/l** Analysis Date: **11/11/2015 13:47**
Client ID: Run ID: **RE151105-2A** Prep Date: **11/5/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-226	25.2 (+/- 6.4)	0.3	30.71		82.1	67-120					P
Carr: BARIUM	32570		33300		97.8	40-110					

LCSD Sample ID: **RE151105-2** Units: **pCi/l** Analysis Date: **11/11/2015 13:47**
Client ID: Run ID: **RE151105-2A** Prep Date: **11/5/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-226	27.5 (+/- 7)	0.2	30.71		89.7	67-120		25.2	0.2	2.1	P
Carr: BARIUM	32340		33300		97.1	40-110		32570			

MB Sample ID: **RE151105-2** Units: **pCi/l** Analysis Date: **11/11/2015 13:47**
Client ID: Run ID: **RE151105-2A** Prep Date: **11/5/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-226	ND	0.23									U
Carr: BARIUM	31910		33300		95.8	40-110					

The following samples were analyzed in this batch: 1510337-1

Client: ALS Environmental
Work Order: 1510337
Project: K1511796

QC BATCH REPORT

Batch ID: **AB151104-1-4** Instrument ID **LB4100-C** Method: **Gross Alpha/Beta by GFPC**

LCS Sample ID: **AB151104-1** Units: **pCi/l** Analysis Date: **11/6/2015 12:26**

Client ID: Run ID: **AB151104-1A** Prep Date: **11/4/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
GROSS ALPHA	204 (+/- 38)	7	224.1		91	70-130					P,M3
GROSS BETA	194 (+/- 34)	11	204.2		94.9	70-130					P,M3

MB Sample ID: **AB151104-1** Units: **pCi/l** Analysis Date: **11/6/2015 15:12**

Client ID: Run ID: **AB151104-1A** Prep Date: **11/4/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
GROSS ALPHA	ND	0.82									U
GROSS BETA	ND	1.12									U

The following samples were analyzed in this batch: 1510337-1

Client: ALS Environmental
Work Order: 1510337
Project: K1511796

QC BATCH REPORT

Batch ID: **RA151026-2-2** Instrument ID **LB4100-A** Method: **Radium-228 Analysis by GFPC**

LCS Sample ID: **RA151026-2** Units: **pCi/l** Analysis Date: **11/2/2015 12:43**
Client ID: Run ID: **RA151026-2A** Prep Date: **10/26/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-228	8.3 (+/- 2.2)	1	7.362		112	70-130					P,M3
Carr: BARIUM	32570		33300		97.8	40-110					

LCSD Sample ID: **RA151026-2** Units: **pCi/l** Analysis Date: **11/2/2015 12:43**
Client ID: Run ID: **RA151026-2A** Prep Date: **10/26/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-228	7.6 (+/- 2)	1	7.362		104	70-130		8.3	0.2	2.1	P
Carr: BARIUM	32340		33300		97.1	40-110		32570			

MB Sample ID: **RA151026-2** Units: **pCi/l** Analysis Date: **11/2/2015 13:07**
Client ID: Run ID: **RA151026-2A** Prep Date: **10/26/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-228	ND	0.58									U
Carr: BARIUM	31910		33300		95.8	40-110					

The following samples were analyzed in this batch: 1510337-1

ALS Environmental
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www.alsglobal.com

November 30, 2015

Analytical Report for Service Request No: K1511862

Jeff Coleman
Longview, City of
W/S Operation Center
P.O. Box 128
Longview, WA 98632

RE: Sentinel Wells

Dear Jeff,

Enclosed are the results of the sample(s) submitted to our laboratory October 20, 2015
For your reference, these analyses have been assigned our service request number **K1511862.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3275. You may also contact me via email at Chris.Leaf@ALSGlobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

for

Chris Leaf
Project Manager

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ALS Group USA, Corp
1317 South 13th Avenue
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Table of Contents

Acronyms
Qualifiers
State Certifications, Accreditations, And Licenses
Case Narrative
Chain of Custody
General Chemistry
Metals
EPA Method 504.1
PesticidesPCBs by EPA Method 508.1
Chlorinated Herbicides by EPA 515.4
Volatile Organic Compounds
Semivolatile Organics by EPA Method 525.2
Diquat and Paraquat by EPA Method 549.2
Subcontract Lab Results

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L14-51
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	Not available	-
Idaho DHW	http://www.healthandwelfare.idaho.gov/Health/Labs/CertificationDrinkingWaterLabs/tabid/1833/Default.aspx	-
ISO 17025	http://www.pjlabs.com/	L14-50
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	03016
Maine DHS	Not available	WA01276
Michigan DEQ	http://www.michigan.gov/deq/0,1607,7-135-3307_4131_4156---,00.html	9949
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636- 1068
www.alsglobal.com

ALS ENVIRONMENTAL

Client:	Longview, City of	**Service Request No.:**	K1511862
Project:	Sentinel Wells	**Date Received:**	10/20/15
Sample Matrix:	Drinking Water		

Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier II data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Surrogate recoveries have been reported for all applicable organic analyses. Additional quality control analyses reported herein include: Laboratory Duplicate (DUP), Matrix Spike (MS), Matrix/Duplicate Matrix Spike (MS/DMS), Laboratory Control Sample (LCS), and Laboratory/Duplicate Laboratory Control Sample (LCS/DLCS).

Sample Receipt

One drinking water sample was received for analysis at ALS Environmental on 10/20/15. The sample was received in good condition and consistent with the accompanying chain of custody form, except where noted on the cooler receipt and preservation form included in this report. The sample was stored in a refrigerator at 4ºC upon receipt at the laboratory.

General Chemistry Parameters

Chloride by EPA Method 300.0 and Total Cyanide by EPA Method 335.4:
The matrix spike recoveries for sample Batch QC were outside control criteria because of suspected matrix interference. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. No further corrective action was taken.

No other anomalies associated with the analysis of this sample were observed.

Total Metals

No anomalies associated with the analysis of this sample were observed.

EDB and DBCP by EPA Method 504.1

No anomalies associated with the analysis of this sample were observed.

Pesticides and Polychlorinated Biphenyls by EPA Method 508.1

Calibration Verification Exceptions:
The analysis of Organochlorine Pesticides and PCBs in Drinking Water by EPA 508.1 requires the use of dual column confirmation. When the Continuing Calibration Verification (CCV) criterion is met for both columns, the lower of the two sample results is generally reported. The primary evaluation criteria were not met on the confirmation column for Endrin. The results were reported from the column with an acceptable CCV. The data quality was not affected. No further corrective action was necessary.

Approved by_____

Matrix Spike Recovery Exceptions:
The upper control criterion was exceeded for the following several analytes in Matrix Spike (MS) KWG1510525-1 and Matrix Spike Duplicate (MSD) KWG1510525-2. The analytes in question were not detected in the associated field samples. The error associated with elevated recovery indicated a high bias. The sample data was not significantly affected. No further corrective action was appropriate.

Lab Control Sample Exceptions:
The upper control criterion was exceeded for several analytes in Laboratory Control Sample (LCS) KWG1510525-3. The analytes in question were not detected in the associated field samples. The error associated with elevated recovery indicated a high bias. The sample data was not significantly affected. No further corrective action was appropriate.

No other anomalies associated with the analysis of this sample were observed.

Chlorinated Acides by EPA Method 515.4

Second Source Exceptions:
The analysis of Chlorinated Herbicides in Drinking Water requires the use of dual column confirmation. When the Initial Calibration Verification (ICV) criteria are met for both columns, the lower of the two sample results is generally reported. The criterion was not met for 4-Nitrophenol and Silvex in CAL 14387. The data quality was not affected. No further corrective action was necessary.

Matrix Spike Recovery Exceptions:
The matrix spike recovery and duplicate matrix spike recovery of Chloramben for batch QC was outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. The matrix spike outlier suggested a potential high bias in this matrix. No further corrective action was appropriate.

No other anomalies associated with the analysis of this sample were observed.

Volatile Organic Compounds by EPA Method 524.2

No anomalies associated with the analysis of this sample were observed.

Semivolatile Organic Compounds by EPA Method 525.2

Internal Standard Exceptions:
The internal standard recovery of Acenaphthene-d10 in sample DW6 was outside control criteria because of suspected matrix interference. The error associated with a decreased internal standard recovery indicated a potential high bias for all associated analytes. The analyte in question was not detected in the associated field samples. The results quantified using this internal standard were flagged to indicate the problem.

Lab Control Sample Exceptions:
The upper control criterion was exceeded for Fluorene in Laboratory Control Sample (LCS) KWG1510524-3. The analyte in question was not detected in the associated field samples. The error associated with elevated recovery indicated a high bias. The sample data was not significantly affected. No further corrective action was appropriate.

Surrogate Exceptions:
The control criteria were exceeded for Perylene-d12 in sample Batch QC due to suspected matrix interference. . The sample contained particulate matter that collected on the extraction disk during sample elution. Historical results have shown that particulate matter can cause low recoveries for this surrogate. No further corrective action was appropriate.

Approved by_____

The upper control criterion was exceeded for 1,3-Dimethyl-2-nitrobenzene in sample Batch QC. No target analytes were detected in the sample. The error associated with an elevated recovery equated to a high bias. The quality of the sample data was not significantly affected. No further corrective action was appropriate.

Matrix Spike Recovery Exceptions:
The matrix spike recovery of Bis(2-ethylhexyl) Phthalate for sample Batch QC was outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. The matrix spike outlier suggested a potential high bias in this matrix. No further corrective action was appropriate.

No other anomalies associated with the analysis of this sample were observed.

Diquat by High Performance Liquid Chromatography

No anomalies associated with the analysis of this sample were observed.

Sulfur

This analysis was performed at ALS Environmental, Simi Valley, CA. The data for this analysis is included in the corresponding section of this report.

Carbamates by EPA Method 531.1

This analysis was performed at ALS Environmental, Middletown, PA. The data for this analysis is included in the corresponding section of this report.

Approved by_____

Chain of Custody

ALS Environmental—Kelso Laboratory
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Phone (360)577- 7222 Fax (360)636- 1068
www.alsglobal.com

ALS Environmental

58082

CHAIN OF CUSTODY

58082

001, 005

SR# K1511R62

COC Set____of____

COC#_____

1317 South 13th Ave, Kelso, WA 98626 Phone (360) 577-7222 / 800-695-7222 / FAX (360) 636-1068
www.alsglobal.com

Project Name: Sentinel Wells
Project Number:
Project Manager: Jeff Coleman
Company: City of Longview
Address: PO Box 128 Longview WA 98632
Phone #
email
Sampler Signature: T Daly
Sampler Printed Name: T Daly

					24H		48H					7D			14D								28D				
CLIENT SAMPLE ID	LABID	SAMPLING Date	SAMPLING Time	Matrix	NUMBER OF CONTAINERS	SM 9223 B / Colilert EC NC	SM 9223 B / Colilert Tot NC	180.1 / Turbidity	300.0 / NO2	300.0 / NO3	SM 2120 B / Color	SM 4500-P E / O Phos	[redacted]	548.2 / DIQ_PARAQ	SM 2540 C / TDS	335.4 / CN T	504.1 / EDB DBCP 123TCP	508.1 / PEST_CL	515.4 / CL_ACID_HERB	524.2 / VOC	525.2 / SVO	[redacted]	SM 2320 B / Alkalinity Tlr	Sulfur Liq / Sulfur	245.1 / Hg T	300.0 / F	631.1 / CARBAM	SM 2510 B / Conductivity	Remarks
1. DW6		10/20/15	~~0955~~ 0910		23																							
2.																												
3.																												
4.																												
5.																												
6.																												
7.																												
8.																												
9.																												
10.																												

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required

___ II. Report Dup., MS, MSD as required

___ III. CLP Like Summary (no raw data)

___ IV. Data Validation Report

___ V. EDD

Invoice Information

P.O.# ~~PO~~ 36-4741

Bill To: City of Longview
PO Box 128
Longview WA 98632

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
___ Standard

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments:

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other_____(Circle One)

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature: T Daly	Signature: [signature]	Signature	Signature	Signature	Signature
Printed Name: T Daly	Printed Name: [illegible]	Printed Name	Printed Name	Printed Name	Printed Name
Firm: CoL	Firm: ALS	Firm	Firm	Firm	Firm
Date/Time: 10/20/15 1548	Date/Time: 10/20/15 1548	Date/Time	Date/Time	Date/Time	Date/Time

(ALS) Environmental

58082

CHAIN OF CUSTODY

58082

001, 005

SR# K1511862

COC Set____of____

COC#_____

1317 South 13th Ave, Kelso, WA 98626 Phone (360) 577-7222 / 800-695-7222 / FAX (360) 636-1068
www.alsglobal.com

Project Name: Sentinel Wells
Project Number:
Project Manager: Jeff Coleman
Company: City of Longview
Address: PO Box 128 Longview WA 98632
Phone #:
Email:
Sampler Signature: T Daly
Sampler Printed Name: T Daly

CLIENT SAMPLE ID	LABID	SAMPLING Date Time	Matrix	NUMBER OF CONTAINERS	28D: 300.0 / Br	28D: 300.0 / Chloride	28D: 300.0 / SO4	28D: 314.0 / ClO4	28D: SM 4500-NH3 G / Ammonia	30D: [redacted]	180D: 1630 / Methyl Hg T	180D: 200.7 / Metals T	180D: 200.8 / Metals T	999D: Calculation / NO2 NO3 Calc	999D: SM 2340 B / Hardness Calc	1	2	3	4	5	Remarks
1. DW-6		10/20/15 0910																			
2.																					
3.																					
4.																					
5.																					
6.																					
7.																					
8.																					
9.																					
10.																					

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. CLP Like Summary (no raw data)
___ IV. Data Validation Report
___ V. EDD

Invoice Information

P.O.# 36-4741
Bill To: City of Longview
PO Box 128
Longview WA 98632

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
___ Standard

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments:

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other____(Circle One)

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
T Daly					
Signature: T Daly	Signature:	Signature	Signature	Signature	Signature
Printed Name: Coff	Printed Name: ALS	Printed Name	Printed Name	Printed Name	Printed Name
Firm	Firm	Firm	Firm	Firm	Firm
Date/Time: 10/20/15 1549	Date/Time: 10/20/15 1549	Date/Time	Date/Time	Date/Time	Date/Time

PC CL

Cooler Receipt and Preservation Form

Client / Project: City of Longview Service Request K15 11862

Received: 10/20/15 Opened: 10/20/15 By: KR Unloaded: 10/20/15 By: KR

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? _____

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
12.9	13.0	10.5	10.6	+0.1	338	1of4		
8.3	8.5	12.6	12.8	+0.2	354	2of4		
5.9	6.1	11.2	11.4	+0.2	359	3of4		
12.1	12.3	14.4	14.6	+0.2	368	4of4		

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA ~~Y~~ N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time
DW2	1 gl cube				X	HNO3	8mL	RE/1-31-L	KR	1625
DW7	↓				↓	↓	↓	↓	↓	↓
DW6										

Notes, Discrepancies, & Resolutions: _____

Page ____ *of* ____

General Chemistry

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636- 1068
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	180.1	**Units:**	NTU
Prep Method:	None	**Basis:**	NA

Turbidity

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW6	K1511862-001	**10.4**	0.20	1	10/21/15 12:00	
Method Blank	K1511862-MB1	ND U	0.20	1	10/20/15 13:44	

ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project	Sentinel Wells	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
Analysis Method:	180.1	**Units:**	NTU
Prep Method:	None	**Basis:**	NA

Replicate Sample Summary
Turbidity

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1511794-001DUP	0.20	12.2	12.2	12.2	<1	20	10/20/15
Batch QC	K1511798-001DUP	0.20	1.72	1.71	1.72	<1	20	10/20/15

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ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	NA

Lab Control Sample Summary
Turbidity

Analysis Method:	180.1	**Units:**	NTU
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	468080

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511862-LCS1	4.50	4.23	106	90-110

ALS Group USA, Corp.
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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Bromide

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
DW6	K1511862-001	ND U	0.20	2	10/20/15 20:22	10/19/15	
Method Blank	K1511862-MB1	ND U	0.10	1	10/20/15 09:26	10/19/15	
Method Blank	K1511862-MB2	ND U	0.10	1	10/20/15 12:18	10/19/15	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project	Sentinel Wells	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Replicate Sample Summary
Bromide

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1511794-001DUP	0.20	ND U	ND U	NC	NC	20	10/20/15
Batch QC	K1511798-001DUP	0.20	ND U	ND U	NC	NC	20	10/20/15

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ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Bromide

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511794-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511794-001MS			**Duplicate Matrix Spike** K1511794-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Bromide	ND U	9.61	10.0	96	9.75	10.0	97	90-110	1	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Bromide

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511798-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511798-001MS			**Duplicate Matrix Spike** K1511798-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Bromide	ND U	9.61	10.0	96	9.58	10.0	96	90-110	<1	20

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ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/19/15

Lab Control Sample Summary
Bromide

Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	468244

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511862-LCS1	2.41	2.50	96	90-110
Lab Control Sample	K1511862-LCS2	2.40	2.50	96	90-110

ALS Group USA, Corp.
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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Chloride

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
DW6	K1511862-001	**122**	2.0	20	10/21/15 11:22	10/21/15	
Method Blank	K1511862-MB1	ND U	0.10	1	10/21/15 09:22	10/21/15	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project	Sentinel Wells	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Replicate Sample Summary
Chloride

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1511863-001DUP	0.20	8.85	8.93	8.89	<1	20	10/21/15
Batch QC	K1511896-004DUP	2.0	1.2 J	ND U	NC	NC	20	10/21/15

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/21/15
		Date Extracted:	10/21/15

Duplicate Matrix Spike Summary
Chloride

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511863-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511863-001MS			Duplicate Matrix Spike K1511863-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Chloride	8.85	18.2	10.0	94	18.0	10.0	91	90-110	2	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/21/15
		Date Extracted:	10/21/15

Duplicate Matrix Spike Summary
Chloride

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511896-004	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511896-004MS			Duplicate Matrix Spike K1511896-004DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Chloride	1.2 J	34.0	40.0	82 *	34.0	40.0	82 *	90-110	<1	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Analyzed:**	10/21/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/21/15

Lab Control Sample Summary
Chloride

Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	468396

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511862-LCS1	4.88	5.00	98	90-110

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Fluoride

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
DW6	K1511862-001	ND U	0.20	2	10/20/15 20:22	10/19/15	
Method Blank	K1511862-MB1	ND U	0.10	1	10/20/15 09:26	10/19/15	
Method Blank	K1511862-MB2	ND U	0.10	1	10/20/15 12:18	10/19/15	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project	Sentinel Wells	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Replicate Sample Summary
Fluoride

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1511794-001DUP	0.20	0.22	0.21	0.218	4	20	10/20/15
Batch QC	K1511798-001DUP	0.20	ND U	ND U	NC	NC	20	10/20/15

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Fluoride

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511794-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511794-001MS			**Duplicate Matrix Spike** K1511794-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Fluoride	0.22	9.45	10.0	92	9.66	10.0	94	90-110	2	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Fluoride

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511798-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511798-001MS			**Duplicate Matrix Spike** K1511798-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Fluoride	ND U	9.52	10.0	95	9.66	10.0	97	90-110	2	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/19/15

Lab Control Sample Summary
Fluoride

Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	468244

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511862-LCS1	4.98	5.00	100	90-110
Lab Control Sample	K1511862-LCS2	4.91	5.00	98	90-110

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Nitrite as Nitrogen

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
DW6	K1511862-001	ND U	0.10	2	10/20/15 20:22	10/19/15	
Method Blank	K1511862-MB1	ND U	0.050	1	10/20/15 09:26	10/19/15	
Method Blank	K1511862-MB2	ND U	0.050	1	10/20/15 12:18	10/19/15	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project	Sentinel Wells	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Replicate Sample Summary
Nitrite as Nitrogen

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1511794-001DUP	0.10	ND U	ND U	NC	NC	20	10/20/15
Batch QC	K1511798-001DUP	0.10	ND U	ND U	NC	NC	20	10/20/15

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Nitrite as Nitrogen

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511794-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511794-001MS			Duplicate Matrix Spike K1511794-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Nitrite as Nitrogen	ND U	10.3	10.0	103	10.5	10.0	105	90-110	1	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Nitrite as Nitrogen

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511798-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511798-001MS			Duplicate Matrix Spike K1511798-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Nitrite as Nitrogen	ND U	10.4	10.0	104	10.4	10.0	104	90-110	<1	20

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ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/19/15

Lab Control Sample Summary
Nitrite as Nitrogen

Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	468244

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511862-LCS1	2.56	2.50	102	90-110
Lab Control Sample	K1511862-LCS2	2.55	2.50	102	90-110

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Nitrate as Nitrogen

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
DW6	K1511862-001	ND U	0.10	2	10/20/15 20:22	10/19/15	
Method Blank	K1511862-MB1	ND U	0.050	1	10/20/15 09:26	10/19/15	
Method Blank	K1511862-MB2	ND U	0.050	1	10/20/15 12:18	10/19/15	

ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project	Sentinel Wells	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Replicate Sample Summary
Nitrate as Nitrogen

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1511794-001DUP	0.10	ND U	ND U	NC	NC	20	10/20/15
Batch QC	K1511798-001DUP	0.10	ND U	ND U	NC	NC	20	10/20/15
Batch QC	K1511800-001DUP	0.10	ND U	ND U	NC	NC	20	10/20/15

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ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Nitrate as Nitrogen

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511794-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511794-001MS			Duplicate Matrix Spike K1511794-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Nitrate as Nitrogen	ND U	9.17	10.0	92	9.23	10.0	92	90-110	<1	20

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ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Nitrate as Nitrogen

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511798-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511798-001MS			Duplicate Matrix Spike K1511798-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Nitrate as Nitrogen	ND U	9.15	10.0	91	9.13	10.0	91	90-110	<1	20

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Nitrate as Nitrogen

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511800-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511800-001MS			Duplicate Matrix Spike K1511800-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Nitrate as Nitrogen	ND U	3.60	4.00	90	3.63	4.00	91	90-110	<1	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/19/15

Lab Control Sample Summary
Nitrate as Nitrogen

Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	468244

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511862-LCS1	2.38	2.50	95	90-110
Lab Control Sample	K1511862-LCS2	2.35	2.50	94	90-110

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Sulfate

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
DW6	K1511862-001	**0.60**	0.20	2	10/20/15 20:22	10/19/15	
Method Blank	K1511862-MB1	ND U	0.10	1	10/20/15 09:26	10/19/15	
Method Blank	K1511862-MB2	ND U	0.10	1	10/20/15 12:18	10/19/15	

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dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project	Sentinel Wells	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Replicate Sample Summary
Sulfate

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1511794-001DUP	0.20	2.86	2.73	2.79	5	20	10/20/15
Batch QC	K1511798-001DUP	0.20	3.00	3.03	3.02	<1	20	10/20/15

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Sulfate

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511794-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511794-001MS			Duplicate Matrix Spike K1511794-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Sulfate	2.86	12.1	10.0	93	12.2	10.0	93	90-110	<1	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Sulfate

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511798-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511798-001MS			Duplicate Matrix Spike K1511798-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Sulfate	3.00	12.5	10.0	95	12.5	10.0	95	90-110	<1	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/19/15

Lab Control Sample Summary
Sulfate

Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	468244

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511862-LCS1	5.01	5.00	100	90-110
Lab Control Sample	K1511862-LCS2	4.92	5.00	98	90-110

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	314.0	**Units:**	ug/L
Prep Method:	None	**Basis:**	NA

Perchlorate

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW6	K1511862-001	ND U	1.0	1	10/21/15 13:29	
Method Blank	K1511862-MB1	ND U	1.0	1	10/21/15 11:42	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project	Sentinel Wells	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
		Date Analyzed:	10/21/15

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	Batch QC	**Units:**	ug/L
Lab Code:	K1511360-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample K1511360-001DUP Result	Average	RPD	RPD Limit
Perchlorate	314.0	1.0	ND U	ND U	NC	NC	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/21/15
		Date Extracted:	NA

Duplicate Matrix Spike Summary
Perchlorate

Sample Name:	Batch QC	**Units:**	ug/L
Lab Code:	K1511360-001	**Basis:**	NA
Analysis Method:	314.0		
Prep Method:	None		

		Matrix Spike K1511360-001MS			Duplicate Matrix Spike K1511360-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	ND U	12.0	10.0	120	11.7	10.0	117	80-120	2	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Analyzed:**	10/21/15
Sample Matrix:	Drinking Water	**Date Extracted:**	NA

Lab Control Sample Summary
Perchlorate

Analysis Method:	314.0	**Units:**	ug/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	468262

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511862-LCS1	16.4	16.8	98	85-115

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	335.4	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Cyanide, Total

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
DW6	K1511862-001	ND U	0.010	1	10/28/15 10:14	10/27/15	
Method Blank	K1511862-MB1	ND U	0.010	1	10/28/15 10:14	10/27/15	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project	Sentinel Wells	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
		Date Analyzed:	10/28/15

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	KQ1512462-06	**Basis:**	NA

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample KQ1512462-06DUP Result	Average	RPD	RPD Limit
Cyanide, Total	335.4	0.010	ND U	ND U	NC	NC	20

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ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/28/15
		Date Extracted:	10/27/15

Duplicate Matrix Spike Summary
Cyanide, Total

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	KQ1512462-06	**Basis:**	NA
Analysis Method:	335.4		
Prep Method:	Method		

		Matrix Spike KQ1512462-06MS			Duplicate Matrix Spike KQ1512462-06DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Cyanide, Total	ND U	0.124	0.100	124 *	0.121	0.100	121 *	90-110	2	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Analyzed:**	10/28/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/27/15

Lab Control Sample Summary
Cyanide, Total

Analysis Method:	335.4	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	469348

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511862-LCS1	0.146	0.150	97	90-110

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	Calculation	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Nitrate+Nitrite as Nitrogen

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW6	K1511862-001	ND U	0.20	1	10/20/15 20:22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	SM 2120 B	**Units:**	ColorUnits
Prep Method:	None	**Basis:**	NA

Color

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW6	K1511862-001	**15.0**	5.0	1	10/21/15 12:10	
Method Blank	K1511862-MB1	ND U	5.0	1	10/20/15 14:35	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project	Sentinel Wells	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
Analysis Method:	SM 2120 B	**Units:**	ColorUnits
Prep Method:	None	**Basis:**	NA

Replicate Sample Summary
Color

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1511797-001DUP	5.0	15.0	15.0	15.0	<1	20	10/20/15
Batch QC	K1511893-005DUP	5.0	ND U	ND U	NC	NC	20	10/21/15

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	NA

Lab Control Sample Summary
Color

Analysis Method:	SM 2120 B	**Units:**	ColorUnits
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	468258

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511862-LCS1	50.0	50.0	100	85-115

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	SM 2320 B	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Alkalinity as CaCO3, Total

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW6	K1511862-001	**101**	2.0	1	11/02/15 14:50	
Method Blank	K1511862-MB1	ND U	2.0	1	11/02/15 14:50	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project	Sentinel Wells	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
Analysis Method:	SM 2320 B	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Replicate Sample Summary
Alkalinity as CaCO3, Total

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1511794-001DUP	2.0	81.3	81.3	81.3	<1	20	11/02/15
Batch QC	K1511896-004DUP	2.0	ND U	ND U	NC	NC	20	11/02/15

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Analyzed:**	11/02/15
Sample Matrix:	Drinking Water	**Date Extracted:**	NA

Lab Control Sample Summary
Alkalinity as CaCO3, Total

Analysis Method:	SM 2320 B	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	470113

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511862-LCS1	134	136	99	90-110

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	SM 2510 B	**Units:**	uMHOS/cm
Prep Method:	None	**Basis:**	NA

Conductivity at 25 Degrees Celsius

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW6	K1511862-001	**649**	2.0	1	10/21/15 10:44	
Method Blank	K1511862-MB1	ND U	2.0	1	10/21/15 10:44	
Method Blank	K1511862-MB2	ND U	2.0	1	10/21/15 10:44	

ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project	Sentinel Wells	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
		Date Analyzed:	10/21/15

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	Batch QC	**Units:**	uMHOS/cm
Lab Code:	K1511865-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample K1511865-001DUP Result	Average	RPD	RPD Limit
Conductivity at 25 Degrees Celsius	SM 2510 B	2.0	299	298	299	<1	20

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Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Analyzed:**	10/21/15
Sample Matrix:	Drinking Water	**Date Extracted:**	NA

Lab Control Sample Summary
Conductivity at 25 Degrees Celsius

Analysis Method:	SM 2510 B	**Units:**	uMHOS/cm
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	468245

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511862-LCS1	315	289	109	86-113

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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	SM 2540 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Solids, Total Dissolved

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW6	K1511862-001	**487**	10	1	10/23/15 16:02	
Method Blank	K1511862-MB1	ND U	10	1	10/23/15 16:02	
Method Blank	K1511862-MB2	ND U	10	1	10/23/15 16:02	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project	Sentinel Wells	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
Analysis Method:	SM 2540 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Replicate Sample Summary
Solids, Total Dissolved

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1511823-004DUP	10	364	362	363	<1	10	10/23/15
Batch QC	K1511833-007DUP	10	663	662	663	<1	10	10/23/15

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Analyzed:**	10/23/15
Sample Matrix:	Drinking Water	**Date Extracted:**	NA

Lab Control Sample Summary
Solids, Total Dissolved

Analysis Method:	SM 2540 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	468747

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511862-LCS1	896	897	100	85-115

ALS Group USA, Corp.
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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	SM 4500-NH3 G	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Ammonia as Nitrogen

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
DW6	K1511862-001	**0.156**	0.050	1	10/22/15 09:57	10/22/15	
Method Blank	K1511862-MB1	ND U	0.050	1	10/22/15 09:57	10/22/15	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project	Sentinel Wells	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
Analysis Method:	SM 4500-NH3 G	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Replicate Sample Summary
Ammonia as Nitrogen

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1511683-001DUP	0.050	0.032 J	ND U	NC	NC	20	10/22/15
Batch QC	K1511831-001DUP	0.050	1.63	1.59	1.61	3	20	10/22/15
Batch QC	K1511838-003DUP	0.050	1.17	1.17	1.17	<1	20	10/22/15

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/22/15
		Date Extracted:	10/22/15

Duplicate Matrix Spike Summary
Ammonia as Nitrogen

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511683-001	**Basis:**	NA
Analysis Method:	SM 4500-NH3 G		
Prep Method:	Method		

		Matrix Spike K1511683-001MS			**Duplicate Matrix Spike** K1511683-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Ammonia as Nitrogen	0.032 J	2.06	2.00	101	2.01	2.00	99	90-110	2	20

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/22/15
		Date Extracted:	10/22/15

Duplicate Matrix Spike Summary
Ammonia as Nitrogen

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511831-001	**Basis:**	NA
Analysis Method:	SM 4500-NH3 G		
Prep Method:	Method		

		Matrix Spike K1511831-001MS				**Duplicate Matrix Spike** K1511831-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Ammonia as Nitrogen	1.63	3.56	2.00	96	3.52	2.00	94	90-110	2	20

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/22/15
		Date Extracted:	10/22/15

Duplicate Matrix Spike Summary
Ammonia as Nitrogen

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511838-003	**Basis:**	NA
Analysis Method:	SM 4500-NH3 G		
Prep Method:	Method		

		Matrix Spike K1511838-003MS			**Duplicate Matrix Spike** K1511838-003DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Ammonia as Nitrogen	1.17	3.13	2.00	98	3.10	2.00	96	90-110	2	20

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Analyzed:**	10/22/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/22/15

Lab Control Sample Summary
Ammonia as Nitrogen

Analysis Method:	SM 4500-NH3 G	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	468711

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511862-LCS1	15.1	16.2	93	90-110

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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	SM 4500-P E	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Orthophosphate as Phosphorus

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW6	K1511862-001	**0.371**	0.050	1	10/21/15 08:40	
Method Blank	K1511862-MB1	ND U	0.050	1	10/20/15 17:24	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project	Sentinel Wells	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
		Date Analyzed:	10/20/15

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511794-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample K1511794-001DUP Result	Average	RPD	RPD Limit
Orthophosphate as Phosphorus	SM 4500-P E	0.050	0.213	0.198	0.206	7	20

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	NA

Duplicate Matrix Spike Summary
Orthophosphate as Phosphorus

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511794-001	**Basis:**	NA
Analysis Method:	SM 4500-P E		
Prep Method:	None		

		Matrix Spike K1511794-001MS			**Duplicate Matrix Spike** K1511794-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Orthophosphate as Phosphorus	0.213	0.59	0.40	94	0.58	0.40	92	75-125	2	20

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	NA

Lab Control Sample Summary
Orthophosphate as Phosphorus

Analysis Method:	SM 4500-P E	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	468008

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511862-LCS1	2.56	2.54	101	85-115

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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	SM 9223 B	**Units:**	MPN/100mL
Prep Method:	None	**Basis:**	NA

Escherichia coli

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW6	K1511862-001	**absent**	-	1	10/21/15 17:10	

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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	SM 9223 B	**Units:**	MPN/100mL
Prep Method:	None	**Basis:**	NA

Coliform, Total

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW6	K1511862-001	**absent**	-	1	10/21/15 17:10	

Metals

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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Collected:**	10/20/15
Sample Matrix:	Drinking water	**Date Received:**	10/20/15

Hardness as CaCO3

Prep Method:	CLAA	Units:	mg/L (ppm)
Analysis Method:	200.7/SM 2340B	Basis:	NA
Test Notes:			

Sample Name	Lab Code	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
DW6	K1511862-001	0.07	1	10/22/15	10/29/15	218	
Method Blank	K1511862-MB	0.07	1	10/22/15	10/29/15	ND	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Collected:**	NA
Sample Matrix:	Drinking water	**Date Received:**	NA
		Date Extracted:	10/22/15
		Date Analyzed:	10/29/15

Duplicate Summary
Metals

Sample Name:	Batch QCD	Units:	mg/L (ppm)
Lab Code:	K1511794-001D	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
Hardness as CaCO3	CLAA	200.7/SM 2340B	0.07	64.5	63.5	64.0	2	

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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Collected:**	10/20/15
Sample Matrix:	Drinking water	**Date Received:**	10/20/15

Methyl Mercury

Prep Method:	Method	Units:	ng/L
Analysis Method:	1630	Basis:	NA
Test Notes:			

Sample Name	Lab Code	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
DW6	K1511862-001	0.1	1	11/02/15	11/03/15	ND	
Method Blank 1	K1511862-MB1	0.1	1	11/02/15	11/03/15	ND	
Method Blank 2	K1511862-MB2	0.1	1	11/02/15	11/03/15	ND	
Method Blank 3	K1511862-MB3	0.1	1	11/02/15	11/03/15	ND	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Collected:**	NA
Sample Matrix:	Drinking water	**Date Received:**	NA
		Date Extracted:	11/02/15
		Date Analyzed:	11/03/15

Matrix Spike/Duplicate Matrix Spike Summary
Metals

Sample Name:	Batch QC	Units:	ng/L
Lab Code:	K1511797-001MS, K1511797-001MSD	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	CAS Acceptance Limits	Relative Percent Difference	Result Notes
Mercury, Methyl	Method	1630	0.1	2.22	2.22	ND	2.74	2.74	123	123	65-135	<1	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Collected:**	NA
LCS Matrix:	Water	**Date Received:**	NA
		Date Extracted:	11/02/15
		Date Analyzed:	11/03/15

Ongoing Precision and Recovery (OPR) Sample Summary
Metals

Sample Name: Ongoing Precision and Recovery (Initial)

Units: ng/L
Basis: NA

Test Notes:

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Mercury, Methyl	Method	1630	2.22	2.57	116	67-133	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Collected:**	NA
LCS Matrix:	Water	**Date Received:**	NA
		Date Extracted:	11/02/15
		Date Analyzed:	11/03/15

Ongoing Precision and Recovery (OPR) Sample Summary
Metals

Sample Name: Ongoing Precision and Recovery (Final)

Units: ng/L
Basis: NA

Test Notes:

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Mercury, Methyl	Method	1630	2.22	2.68	121	67-133	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Collected:**	NA
LCS Matrix:	Water	**Date Received:**	NA
		Date Extracted:	11/02/15
		Date Analyzed:	11/03/15

Quality Control Sample (QCS) Summary
Metals

Sample Name: Quality Control Sample

Units: pg
Basis: NA

Test Notes:

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Mercury, Methyl	Method	1630	100	122	122	67-133	

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Longview, City of	**Service Request:**	K1511862
Project No.:	NA	**Date Collected:**	10/20/15
Project Name:	Sentinel Wells	**Date Received:**	10/20/15
Matrix:	WATER	**Units:**	mg/L
		Basis:	NA

Sample Name: **DW6** **Lab Code:** **K1511862-001**

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.00005	1.0	10/22/15	11/04/15	0.00005	U	
Arsenic	200.8	0.0005	1.0	10/22/15	11/04/15	0.0050		
Barium	200.7	0.0040	1.0	10/22/15	10/29/15	0.0281		
Beryllium	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Cadmium	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Chromium	200.8	0.0002	1.0	10/22/15	11/04/15	0.0002	U	
Copper	200.7	0.004	1.0	10/22/15	10/29/15	0.004	U	
Iron	200.7	0.02	1.0	10/22/15	10/29/15	0.89		
Lead	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Manganese	200.7	0.001	1.0	10/22/15	10/29/15	0.860		
Mercury	245.1	0.0002	1.0	10/27/15	10/28/15	0.0002	U	
Nickel	200.8	0.0002	1.0	10/22/15	11/04/15	0.0010		
Selenium	200.8	0.001	1.0	10/22/15	11/04/15	0.001	U	
Silver	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Sodium	200.7	0.2	1.0	10/22/15	10/29/15	16.5		
Thallium	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Zinc	200.7	0.004	1.0	10/22/15	10/29/15	0.004	U	

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Longview, City of	**Service Request:**	K1511862
Project No.:	NA	**Date Collected:**	
Project Name:	Sentinel Wells	**Date Received:**	
Matrix:	WATER	**Units:**	mg/L
		Basis:	NA

Sample Name: **Method Blank** **Lab Code:** **KQ1512200-01**

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Barium	200.7	0.0040	1.0	10/22/15	10/29/15	0.0040	U	
Copper	200.7	0.004	1.0	10/22/15	10/29/15	0.004	U	
Iron	200.7	0.02	1.0	10/22/15	10/29/15	0.02	U	
Manganese	200.7	0.001	1.0	10/22/15	10/30/15	0.001	U	
Sodium	200.7	0.2	1.0	10/22/15	10/29/15	0.2	U	
Zinc	200.7	0.004	1.0	10/22/15	10/29/15	0.004	U	

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: Longview, City of
Project No.: NA
Project Name: Sentinel Wells
Matrix: WATER

Service Request: K1511862
Date Collected:
Date Received:
Units: mg/L
Basis: NA

Sample Name: Method Blank
Lab Code: KQ1512201-01

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.00005	1.0	10/22/15	11/04/15	0.00005	U	
Arsenic	200.8	0.0005	1.0	10/22/15	11/04/15	0.0005	U	
Beryllium	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Cadmium	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Chromium	200.8	0.0002	1.0	10/22/15	11/04/15	0.0002	U	
Lead	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Nickel	200.8	0.0002	1.0	10/22/15	11/04/15	0.0002	U	
Selenium	200.8	0.001	1.0	10/22/15	11/04/15	0.001	U	
Silver	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Thallium	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Longview, City of	**Service Request:**	K1511862
Project No.:	NA	**Date Collected:**	
Project Name:	Sentinel Wells	**Date Received:**	
Matrix:	WATER	**Units:**	mg/L
		Basis:	NA

Sample Name: **Method Blank** **Lab Code:** **KQ1512456-03**

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Mercury	245.1	0.0002	1.0	10/27/15	10/28/15	0.0002	U	

Comments:

Metals
- 5A -
SPIKE SAMPLE RECOVERY

Client: Longview, City of
Service Request: K1511862
Project No.: NA
Units: MG/L
Project Name: Sentinel Wells
Basis: NA
Matrix: WATER

Sample Name: Batch QC1S
Lab Code: K1511685-001S

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Mercury	70 - 130	0.0051		0.0002	U	0.0050	102		245.1

An empty field in the Control Limit column indicates the control limit is not applicable

Metals
- 5A -
SPIKE SAMPLE RECOVERY

Client: Longview, City of
Service Request: K1511862
Project No.: NA
Units: MG/L
Project Name: Sentinel Wells
Basis: NA
Matrix: WATER

Sample Name: Batch QC1SD
Lab Code: K1511685-001SD

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Mercury	70 - 130	0.0050		0.0002	U	0.0050	100		245.1

An empty field in the Control Limit column indicates the control limit is not applicable

Metals
- 5A -
SPIKE SAMPLE RECOVERY

Client: Longview, City of
Service Request: K1511862
Project No.: NA
Units: MG/L
Project Name: Sentinel Wells
Basis: NA
Matrix: WATER

Sample Name: Batch QC2S
Lab Code: K1511794-001S

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Antimony	70 - 130	0.052600		0.000050	U	0.050000	105		200.8
Arsenic	70 - 130	0.05576		0.00368		0.05000	104		200.8
Barium	70 - 130	0.991		0.0094		1.00	98.2		200.7
Beryllium	70 - 130	0.00252		0.00002	U	0.00250	101		200.8
Cadmium	70 - 130	0.02613		0.00002	U	0.025000	105		200.8
Chromium	70 - 130	0.0084		0.0002	U	0.01000	84		200.8
Copper	70 - 130	0.233		0.004	U	0.25	93.2		200.7
Iron	70 - 130	2.96		2.03		1.00	93.0		200.7
Lead	70 - 130	0.05092		0.00002	U	0.050000	102		200.8
Manganese	70 - 130	0.977		0.517		0.50	92.0		200.7
Nickel	70 - 130	0.0229		0.0004		0.02500	90		200.8
Selenium	70 - 130	0.054		0.001	U	0.0500	108		200.8
Silver	70 - 130	0.01252		0.00002	U	0.012500	100		200.8
Sodium	70 - 130	19.1		8.8		10.00	103.0		200.7
Thallium	70 - 130	0.05162		0.00002	U	0.050000	103		200.8
Zinc	70 - 130	0.469		0.004	U	0.50	93.8		200.7

An empty field in the Control Limit column indicates the control limit is not applicable

Metals

- 6 -

DUPLICATES

Client: Longview, City of
Service Request: K1511862
Project No.: NA
Units: MG/L
Project Name: Sentinel Wells
Basis: NA
Matrix: WATER

Sample Name: Batch QC1D
Lab Code: K1511685-001D

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Mercury		0.0002	U	0.0002	U			245.1

An empty field in the Control Limit column indicates the control limit is not applicable.

Metals

- 6 -

DUPLICATES

Client: Longview, City of
Service Request: K1511862
Project No.: NA
Units: MG/L
Project Name: Sentinel Wells
Basis: NA
Matrix: WATER

Sample Name: Batch QC1SD
Lab Code: K1511685-001SD

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Mercury	20	0.0051		0.0050		2.0		245.1

An empty field in the Control Limit column indicates the control limit is not applicable.

Metals

- 6 -

DUPLICATES

Client: Longview, City of
Service Request: K1511862
Project No.: NA
Units: MG/L
Project Name: Sentinel Wells
Basis: NA
Matrix: WATER

Sample Name: Batch QC2D
Lab Code: K1511794-001D

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Antimony		0.000050	U	0.000050	U			200.8
Arsenic	20	0.00368		0.00356		3.3		200.8
Barium		0.0094		0.0094		0.0		200.7
Beryllium		0.00002	U	0.00002	U			200.8
Cadmium		0.00002	U	0.00002	U			200.8
Chromium		0.0002	U	0.0002	U			200.8
Copper		0.004	U	0.004	U			200.7
Iron	20	2.03		2.00		1.5		200.7
Lead		0.00002	U	0.00002	U			200.8
Manganese	20	0.517		0.510		1.4		200.7
Nickel		0.0004		0.0003		28.6		200.8
Selenium		0.001	U	0.001	U			200.8
Silver		0.00002	U	0.00002	U			200.8
Sodium	20	8.8		8.4		4.7		200.7
Thallium		0.00002	U	0.00002	U			200.8
Zinc		0.004	U	0.004	U			200.7

An empty field in the Control Limit column indicates the control limit is not applicable.

Metals

- 7 -

LABORATORY CONTROL SAMPLE

Client: Longview, City of **Service Request:** K1511862

Project No.: NA

Project Name: Sentinel Wells

Aqueous LCS Source: ALS MIXED **Solid LCS Source:**

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/kg) True	Found	C	Limits	%R
Barium	5	4.8	96.0					
Copper	.625	0.577	92.3					
Iron	2.5	2.38	95.2					
Manganese	1.25	1.20	96.0					
Sodium	12.5	12.4	99.2					
Zinc	1.25	1.16	92.8					

Metals

- 7 -

LABORATORY CONTROL SAMPLE

Client: Longview, City of **Service Request:** K1511862

Project No.: NA

Project Name: Sentinel Wells

Aqueous LCS Source: ALS MIXED **Solid LCS Source:**

Analyte	Aqueous (ug/L) True	Aqueous (ug/L) Found	Aqueous (ug/L) %R	Solid (mg/kg) True	Solid (mg/kg) Found	C	Limits	%R
Antimony	0.050	0.0522	104					
Arsenic	0.050	0.052	104					
Beryllium	0.003	0.0025	100					
Cadmium	0.025	0.0264	106					
Chromium	0.010	0.0100	100					
Lead	0.050	0.0511	102					
Mercury	.005	0.0047	94.0					
Nickel	0.025	0.0247	99					
Selenium	0.050	0.054	108					
Silver	0.013	0.0124	99					
Thallium	0.050	0.0518	104					

EPA Method 504.1

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www.alsglobal.com

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511794
Project:	2entinel Wells	**Date Collected:**	10/40/4015
Sample Matrix:	DSInr ing wateS	**Date Received:**	10/40/4015

EPA Method 504.1

Sample Name:	DW9	**Units:**	ug/L
Lab Code:	K1511794-001	**Basis:**	NA
Extraction Method:	k METHD	**Level:**	Low
Analysis Method:	50O1		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-DihSo(oetBane)MD3 p	ND	m	0.00GU	1	10/41/15	10/41/15	KWb 1510405	
1,4,P-ESicBloSo6So6ane	ND	m	0.C0	1	10/41/15	10/41/15	KWb 1510405	
1,4-DihSo(o-P-cBloSo6So6ane)D3 C:	ND	m	0.00GU	1	10/41/15	10/41/15	KWb 1510405	

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Tentinel - ells	**Date Collected:**	2 A
Sample Matrix:	HOnEing wateO	**Date Received:**	2 A

EPA Method 504.1

Sample Name:	S etr ok MlanE	**Units:**	ugW
Lab Code:	K- 0 151/ 4/ 5ND	**Basis:**	2 A
Extraction Method:	S . GUb H	**Level:**	Low
Analysis Method:	5/ Dnh		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4NHiBOo) oetr ane 3. HMp	2 H	(	/ m/ hh	1	1/ W4 1W5	1/ W4 1W5	K- 0 151/ 4/ 5	
1,4,PNGOcr loOo6Oo6ane	2 H	(	/ mD/	1	1/ W4 1W5	1/ W4 1W5	K- 0 151/ 4/ 5	
1,4NHiBOo) oNPNcr loOo6Oo6ane 3HMC:	2 H	(	/ m/ hh	1	1/ W4 1W5	1/ W4 1W5	K- 0 151/ 4/ 5	

Comments:

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	Sentinel Wells	**Date Extracted:**	10/21/2015
Sample Matrix:	Drinking water	**Date Analyzed:**	10/21/2015

Matrix Spike/Duplicate Matrix Spike Summary
EPA Method 504.1

Sample Name:	Batch QC	**Units:**	ug/L
Lab Code:	K1511798-001	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	504.1	**Extraction Lot:**	KWG1510205

		Batch QCMS KWG1510205-1 Matrix Spike			Batch QCDMS KWG1510205-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
1,2-Dibromoethane (EDB)	ND	0.227	0.243	94	0.214	0.243	88	65-135	6	30
1,2,3-Trichloropropane	ND	0.246	0.243	101	0.228	0.243	94	65-135	8	30
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.233	0.243	96	0.215	0.243	89	65-135	8	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	BacaahKl
Project:	6entine. u e..W	**Date Extracted:**	a5/1a/15ac
Sample Matrix:	S rinl ing w0ter	**Date Analyzed:**	a5/1a/15ac

Lab Control Spike Summary
EPA Method 504.1

Extraction Method:	s METHS	**Units:**	8g/L
Analysis Method:	c579a	**Basis:**	- A
		Level:	Low
		Extraction Lot:	Bu Naca515c

	L04 Contro. 602 p.e Bu Naca515cDk Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
a,1DS i4ro2 oetC0ne 3MS b m	591kO	591c5	(c	C5Da k5
a,1,kDEri) Goroprop0ne	591c7	591c5	a51	C5Da k5
a,1DS i4ro2 oDkD) Goroprop0ne 3S b CPm	591 7k	591c5	(O	C5Da k5

Results flagged with an asterisk (*) indicate values outside control criteria.

Per) ent re) overieW0nd re.0tive per) ent differen) eW3RPS m0re deter2 ined 4y tGe Wiftw0re 8Wing v0.8eWin tGe) 0.) 8.0tion wGi) GC0ve not 4een ro8nded9

Pesticides/PCBs by EPA Method 508.1

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Analytical Results

Client:	Longview, City of	**Service Request:**	K1511794
Project:	2entinel Wells	**Date Collected:**	10/40/4015
Sample Matrix:	DSinr ing wateS	**Date Received:**	10/40/4015

Pesticides/PCBs by EPA Method 508.1

Sample Name:	DW9	**Units:**	ug/L
Lab Code:	K1511794-001	**Basis:**	NA
Extraction Method:	k METHD	**Level:**	Low
Analysis Method:	507O		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
gamma-BTC (Lindane)	ND	U	0.0008.	1	10/4. /15	10/31/15	KWG1510545	
TeptachloS	ND	U	0.0008.	1	10/4. /15	10/31/15	KWG1510545	*
AldSin	ND	U	0.0008.	1	10/4. /15	10/31/15	KWG1510545	
TeptachloSMpoxide	ND	U	0.0008.	1	10/4. /15	10/31/15	KWG1510545	*
TeptachloSMpoxide (IsomeSA)	ND	U	0.0008.	1	10/4. /15	10/31/15	KWG1510545	
' ,' 6DDM	ND	U	0.0008.	1	10/4. /15	10/31/15	KWG1510545	
DieldSin	ND	U	0.0008.	1	10/4. /15	10/31/15	KWG1510545	*
MndSin	ND	U	0.0008.	1	10/4. /15	10/31/15	KWG1510545	*
' ,' 6DDD	ND	U	0.0008.	1	10/4. /15	10/31/15	KWG1510545	*
' ,' 6DDE	ND	U	0.0008.	1	10/4. /15	10/31/15	KWG1510545	*
k ethoxychloS	ND	U	0.0008.	1	10/4. /15	10/31/15	KWG1510545	*
Eoxaphene	ND	U	0.008.	1	10/4. /15	10/31/15	KWG1510545	
ChloSdane	ND	U	0.08.	1	10/4. /15	10/31/15	KWG1510545	
ASocloS1019	ND	U	0.0' 8	1	10/4. /15	10/31/15	KWG1510545	
ASocloS1441	ND	U	0.08.	1	10/4. /15	10/31/15	KWG1510545	
ASocloS1434	ND	U	0.08.	1	10/4. /15	10/31/15	KWG1510545	
ASocloS14' 4	ND	U	0.08.	1	10/4. /15	10/31/15	KWG1510545	
ASocloS14' 7	ND	U	0.08.	1	10/4. /15	10/31/15	KWG1510545	
ASocloS145'	ND	U	0.08.	1	10/4. /15	10/31/15	KWG1510545	
ASocloS1490	ND	U	0.08.	1	10/4. /15	10/31/15	KWG1510545	

* 2ee Case NaSSative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
' ,' 6DibSomooctafluoSobiphenyl	113	. 0-130	10/31/15	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511863
Project:	kentinel Wells	**Date Collected:**	/ A
Sample Matrix:	S DnBing wateD	**Date Received:**	/ A

Pesticides/PCBs by EPA Method 508.1

Sample Name:	N etMoh d lanB	**Units:**	ug7L
Lab Code:	KWG15105352-	**Basis:**	/ A
Extraction Method:	N r ETHS	**Level:**	Low
Analysis Method:	508O1		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
gamma2d T C (Linhane)	/ S	U	0O010	1	1073- 715	107. 1715	KWG1510535	
TeptacMoD	/ S	U	0O010	1	1073- 715	107. 1715	KWG1510535	*
AlhDn	/ S	U	0O010	1	1073- 715	107. 1715	KWG1510535	
TeptacMoDr poxihe	/ S	U	0O010	1	1073- 715	107. 1715	KWG1510535	*
TeptacMoDr poxihe (IsomeDA)	/ S	U	0O010	1	1073- 715	107. 1715	KWG1510535	
4,4'2S S r	/ S	U	0O010	1	1073- 715	107. 1715	KWG1510535	
S ielhDn	/ S	U	0O010	1	1073- 715	107. 1715	KWG1510535	*
r nhDn	/ S	U	0O010	1	1073- 715	107. 1715	KWG1510535	*
4,4'2S S S	/ S	U	0O010	1	1073- 715	107. 1715	KWG1510535	*
4,4'2S S E	/ S	U	0O010	1	1073- 715	107. 1715	KWG1510535	*
N etMoxycMoD	/ S	U	0O010	1	1073- 715	107. 1715	KWG1510535	*
EoxapMene	/ S	U	0O10	1	1073- 715	107. 1715	KWG1510535	
CMoDhane	/ S	U	0O10	1	1073- 715	107. 1715	KWG1510535	
ADocloD1016	/ S	U	0O050	1	1073- 715	107. 1715	KWG1510535	
ADocloD1331	/ S	U	0O10	1	1073- 715	107. 1715	KWG1510535	
ADocloD13. 3	/ S	U	0O10	1	1073- 715	107. 1715	KWG1510535	
ADocloD1343	/ S	U	0O10	1	1073- 715	107. 1715	KWG1510535	
ADocloD1348	/ S	U	0O10	1	1073- 715	107. 1715	KWG1510535	
ADocloD1354	/ S	U	0O10	1	1073- 715	107. 1715	KWG1510535	
ADocloD1360	/ S	U	0O10	1	1073- 715	107. 1715	KWG1510535	

* kee Case / aDative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
4,4'2S ibDomooctafluoDobipMenyl	106	-021. 0	107. 1715	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel WellM		
Sample Matrix:	Drinking water		

Surrogate Recovery Summary
Pesticides/PCBs by EPA Method 508.1

Extraction Method:	E THO0 D	**Units:**	Percent
Analysis Method:	587.1	**Level:**	Low

Sample Name	Lab Code	Sur1
h atcGQC	K1511- 37B881	118
DW9	K1511794B881	112
E etCo6 h lank	KWd 1518545B3	189
h atcGQCE S	KWd 1518545B1	18-
h atcGQCDE S	KWd 1518545B4	18b
LamControl SaF ple	KWd 1518545B2	114

Surrogate Recovery Control Limits (%)

S' r1 \ b,b=BDimroF ooctafl' oromipGenyl - 8B128

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K151184u
Project:	l entineW2 eWW	**Date Extracted:**	10/u7/u015
Sample Matrix:	k rinSing water	**Date Analyzed:**	10/M/u015

Matrix Spike/Duplicate Matrix Spike Summary
Pesticides/PCBs by EPA Method 508.1

Sample Name:	Batch QC	**Units:**	Ng/L
Lab Code:	K1511798-001	**Basis:**	DA
Extraction Method:	E THOGk	**Level:**	Low
Analysis Method:	508.1	**Extraction Lot:**	K2 6 15105u5

		Batch QCE l K2 6 15105u5-1 Matrix Spike			Batch QCk E l K2 6 15105u5-u Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
gamma-BOC (Lindane)	Dk	0.114	0.094u	1u0	0.11M	0.094u	118	45-1M5	u	M0
OeptachWr	Dk	0.1u9	0.094u	1M1	0.1u1	0.094u	1u4	45-1M5	4	M0
AWrin	Dk	0.10M	0.094u	107	0.0944	0.094u	101	45-1M5	4	M0
OeptachWr TpoI ide	Dk	0.1u1	0.094u	1u4	0.114	0.094u	1u0	45-1M5	5	M0
OeptachWr TpoI ide (s3omer A)	Dk	0.111	0.094u	115	0.10x	0.094u	108	45-1M5	4	M0
x,x'-k k T	Dk	0.1M1	0.094u	1M7 *	0.1M0	0.094u	1M5	45-1M5	1	M0
k ieWrin	Dk	0.1uM	0.094u	1u7	0.11u	0.094u	117	45-1M5	9	M0
Tndrin	Dk	0.111	0.094u	115	0.09x7	0.094u	99	45-1M5	14	M0
x,x'-k k k	Dk	0.151	0.094u	157 *	0.150	0.094u	154 *	45-1M5	1	M0
x,x'-k k H	Dk	0.150	0.094u	154 *	0.1x7	0.094u	15M *	45-1M5	u	M0
E ethoI ychWr	Dk	0.14M	0.094u	170 *	0.141	0.094u	148 *	45-1M5	1	M0
ArocWr 1u40	Dk	0.5u4	0.x81	109	0.5x9	0.x81	11x	45-1M5	x	M0

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoverie3 and reWtive percent difference3 (RPk) are determined by the 3oftware N3ing vaWe3 in the caWNation which have not been roNnded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	l entinebm ebD	**Date Extracted:**	10/4k/4015
Sample Matrix:	- rin3ing wNer	**Date Analyzed:**	10/21/4015

Lab Control Spike Summary
Pesticides/PCBs by EPA Method 508.1

Extraction Method:	METHO-	**Units:**	. g/L
Analysis Method:	50781	**Basis:**	u A
		Level:	Low
		Extraction Lot:	Km Wl510545

	LNa Controbl NS pbe Km Wl510545G2 Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
gNS S NGBHC (LindNne)	08147	08100	147	k0G120
HeptNchbor	081x7	08100	1x7 *	k0G120
Abdrin	08117	08100	117	k0G120
HeptNchbor Epo6ide	08125	08100	125 *	k0G120
HeptNchbor Epo6ide (IDoS er A)	08149	08100	149	k0G120
x,xsG - E	08147	08100	147	k0G120
- iebdrin	0812'	08100	12' *	k0G120
Endrin	08152	08100	152 *	k0G120
x,xsG - -	081x5	08100	1x5 *	k0G120
x,xsG - T	081x7	08100	1x7 *	k0G120
Metho6ychbor	08192	08100	192 *	k0G120
Arocbor 1490	08557	08500	114	k0G120

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoverieDNnd rebNive percent differenceD(RP-) Ne deterS ined ay the DoftwNe . Dng vNo eDin the cNc. bNion which hNve not aeen ro. nded8

Chlorinated Herbicides by EPA 515.4

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Analytical Results

Client:	Longview, City of	**Service Request:**	K1511863
Project:	2entinel Wells	**Date Collected:**	10/30/3015
Sample Matrix:	DSinr ing wateS	**Date Received:**	10/30/3015

Chlorinated Herbicides by EPA 515.4

Sample Name:	DW6	**Units:**	ug/L
Lab Code:	K1511863-001	**Basis:**	NA
Extraction Method:	k METHD	**Level:**	Low
Analysis Method:	515O		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dalapon	ND	U	1.0	1	10/33/15	10/3G/15	KW4 15103. 6	
G,5-DichloSobenzoic Acid	ND	U	0.50	1	10/33/15	10/3G/15	KW4 15103. 6	
Dicamba	ND	U	0.30	1	10/33/15	10/3G/15	KW4 15103. 6	
DichloSpSop	ND	U	0.50	1	10/33/15	10/3G/15	KW4 15103. 6	
3,. -D	ND	U	0.00	1	10/33/15	10/3G/15	KW4 15103. 6	
PentachloSophenol	ND	U	0.0. 0	1	10/33/15	10/3G/15	KW4 15103. 6	
3,. ,5-EP (2ilvex)	ND	U	0.30	1	10/33/15	10/3G/15	KW4 15103. 6	
ChloSamben	ND	U	0.30	1	10/33/15	10/3G/15	KW4 15103. 6	
3,. -DB	ND	U	1.0	1	10/33/15	10/3G/15	KW4 15103. 6	
Dinoseb	ND	U	0.30	1	10/33/15	10/3G/15	KW4 15103. 6	
Dacthal Diacid	ND	U	0.00	1	10/33/15	10/3G/15	KW4 15103. 6	
PicloSam	ND	U	0.00	1	10/33/15	10/3G/15	KW4 15103. 6	
AcifluoSfen	ND	U	3.0	1	10/33/15	10/3G/15	KW4 15103. 6	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
3,. -DichloSophenylacetic Acid	103	70-1C0	10/3G/15	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Tentinel - ells	**Date Collected:**	2 A
Sample Matrix:	HOnEing wateO	**Date Received:**	2 A

Chlorinated Herbicides by EPA 515.4

Sample Name:	S etr ok ManE	**Units:**	ugW
Lab Code:	K- 0 151/ 4N9DN	**Basis:**	2 A
Extraction Method:	S . G6 3 H	**Level:**	Low
Analysis Method:	515UN		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Halabon	2 H	h	1U/	1	1/ W4W5	1/ WpW5	K- 0 151/ 4N9	
p,5DHicr loOozendoic Acik	2 H	h	/ U5/	1	1/ W4W5	1/ WpW5	K- 0 151/ 4N9	
Hicamza	2 H	h	/ U4/	1	1/ W4W5	1/ WpW5	K- 0 151/ 4N9	
Hicr loObOob	2 H	h	/ U5/	1	1/ W4W5	1/ WpW5	K- 0 151/ 4N9	
4,NDH	2 H	h	/ U1/	1	1/ W4W5	1/ WpW5	K- 0 151/ 4N9	
Pentacr loOobr enol	2 H	h	/ U/N/	1	1/ W4W5	1/ WpW5	K- 0 151/ 4N9	
4,N,5DGP (Tilvex)	2 H	h	/ U4/	1	1/ W4W5	1/ WpW5	K- 0 151/ 4N9	
Cr loOamzen	2 H	h	/ U4/	1	1/ W4W5	1/ WpW5	K- 0 151/ 4N9	
4,NDHM	2 H	h	1U/	1	1/ W4W5	1/ WpW5	K- 0 151/ 4N9	
Hinosez	2 H	h	/ U4/	1	1/ W4W5	1/ WpW5	K- 0 151/ 4N9	
Hactr al Hiacik	2 H	h	/ U1/	1	1/ W4W5	1/ WpW5	K- 0 151/ 4N9	
PicloOam	2 H	h	/ U1/	1	1/ W4W5	1/ WpW5	K- 0 151/ 4N9	
AcifluoOfen	2 H	h	4U/	1	1/ W4W5	1/ WpW5	K- 0 151/ 4N9	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
4,NDHicr loOobr enylacetic Acik	: 5	B/ D1p/	1/ WpW5	Accebtazle

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel WellM		
Sample Matrix:	Drinking water		

Surrogate Recovery Summary
Chlorinated Herbicides by EPA 515.4

Extraction Method:	E THO. D	**Units:**	- er0ent
Analysis Method:	515Rc	**Level:**	Low

Sample Name	Lab Code	Sur1
h at0d QC	K15113Gc2661	16B
DW9	K15117942661	164
E etdomh lank	KWb 15164c92c	G5
h at0d QCE S	KWb 15164c921	166
h at0d QCDE S	KWb 15164c924	G9
LaF Control Sa: ple	KWb 15164c92B	GB

Surrogate Recovery Control Limits (%)

S=r1 \ 4,c2Di0dloropdenyla0eti0 A0im 3621B6

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K5755kaS
Project:	EentineTH eTIO	**Date Extracted:**	5u/SS/Su57
Sample Matrix:	3 rinMng wWer	**Date Analyzed:**	5u/SG/Su57

Matrix Spike/Duplicate Matrix Spike Summary
Chlorinated Herbicides by EPA 515.4

Sample Name:	DW-1 QC	**Units:**	l g/L
Lab Code:	K5755940.uu5	**Basis:**	2 A
Extraction Method:	6 8 c h b 3	**Level:**	Low
Analysis Method:	757N0	**Extraction Lot:**	KH z 575uS0a

		DW-1 QC6 E KH z 575uS0a.5 Matrix Spike			DW-1 QC3 6 E KH z 575uS0a.S Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
3 WTWpon	2 3	7N5G	0N4k	5uG	7NGu	0N4k	5u9	9u.5Gu	G	Gu
G,7.3 i-1Torodenmoi- A-iP	2 3	0N1kG	0N4k	49	0N1ku	0N4k	4a	9u.5Gu	5	Gu
3 i-W(dW	2 3	7NG7	0N4k	5u9	7NGG	0N4k	5u9	9u.5Gu	u	Gu
3 i-1Torprop	2 3	0N9S	0N4k	47	0N9G	0N4k	47	9u.5Gu	u	Gu
S,0.3	2 3	0N09	0N4k	4u	0N70	0N4k	45	9u.5Gu	S	Gu
xentW1Torop1enoT	2 3	0NaG	0N4k	4G	0Na	0N4k	40	9u.5Gu	5	Gu
S,0,7.c x)EiTve*B	2 3	0Na	0N4k	40	0Na	0N4k	40	9u.5Gu	u	Gu
C1TorW(den	2 3	5uN4	0N4k	SSu s	4N5	0N4k	549 s	9u.5Gu	55	Gu
S,0.3 D	2 3	7NSa	0N4k	5ua	7NGG	0N4k	5u9	9u.5Gu	5	Gu
3 inoOed	2 3	7NSS	0N4k	5u7	7N5a	0N4k	5u0	9u.5Gu	5	Gu
3 Wt1WT3 iWiP	2 3	7N9k	0N4k	55a	7N4	0N4k	55k	9u.5Gu	S	Gu
xi-TorW(	2 3	7NG9	0N4k	5uk	7NS4	0N4k	5ua	9u.5Gu	S	Gu
A-ifTorfen	2 3	7NSG	0N4k	5u7	0N1k	0N4k	4k	9u.5Gu	9	Gu

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

xer-ent re-overieOWiP reTWive per-ent Pifferen-eO)Rx3 BWe Peter(ineP dy t1e OoftwWe l Ong vWT eOin t1e -W-1 TWion w1i-1 1We not deen rol nPePN

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	mentineSG eSSk	**Date Extracted:**	12/44/4215
Sample Matrix:	3 rinDing wbter	**Date Analyzed:**	12/4- /4215

Lab Control Spike Summary
Chlorinated Herbicides by EPA 515.4

Extraction Method:	METHO3	**Units:**	Ng/L
Analysis Method:	515.u	**Basis:**	a A
		Level:	Low
		Extraction Lot:	KG 0 15124u9

Lbl ControSnrbWpSe
KG 0 15124u96-
Lab Control Spike

Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
3 bSbpon	u.hu	5.22	hh	c26l - 2
- ,563 izdSorol en8oiz AziP	u.9u	5.22	h-	c26l - 2
3 izbWl b	u.h7	5.22	122	c26l - 2
3 izdSorprop	u.57	5.22	h4	c26l - 2
4,u63	u.- 2	5.22	79	c26l - 2
(entbzdSoropdenoS	u.55	5.22	h1	c26l - 2
4,u,56Γ(xmiSve) B	u.5h	5.22	h4	c26l - 2
CdSorbWl en	9.27	5.22	144	c26l - 2
4,u63 s	5.11	5.22	124	c26l - 2
3 inokel	5.15	5.22	12-	c26l - 2
3 bztdbS3 ibziP	u.57	5.22	h4	c26l - 2
(izSorbW	u.7u	5.22	hc	c26l - 2
AzifSNorfen	5.19	5.22	12-	c26l - 2

Results flagged with an asterisk (*) indicate values outside control criteria.

(erzent rezoveriek bnP reSstive perzent Pifferenzek xR(3 Bbre PeterWineP l y tde koftwbre Nking vbSNek in tde zbSzNSstion wdizd dbve not l een roNnPeP.

Volatile Organic Compounds

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636- 1068
www.alsglobal.com

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511863
Project:	2entinel Wells	**Date Collected:**	10/30/3015
Sample Matrix:	DSinr ing wateS	**Date Received:**	10/30/3015

Volatile Organic Compounds

Sample Name:	DW6	**Units:**	ug/L
Lab Code:	K1511863-001	**Basis:**	NA
Extraction Method:	k METHD	**Level:**	Low
Analysis Method:	53O4B		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
DichloSodifluoSomethane	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
ChloSomethane	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
Vinyl ChloSide	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
BSomomethane	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
ChloSoethane	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
ESichloSofluoSomethane	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
k ethylene ChloSide	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
tSans-1,3-DichloSoethene	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
1,1-DichloSoethene	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
cis-1,3-DichloSoethene	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
k ethyl teSt-Butyl MheS	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
ChloSofoSm	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
BSomochloSomethane	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
CaSbon EetSachloSide	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
Benzene	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
1,3-DichloSoethane	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
ESichloSoethene	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
1,3-DichloSopSopane	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
BSomodichloSomethane	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
DibSomomethane	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
cis-1,. -DichloSopSopene	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
1,1-DichloSoethane	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
Eoluene	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
tSans-1,. -DichloSopSopene	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
EetSachloSoethene	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
3,3-DichloSopSopane	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
1,. -DichloSopSopane	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
DibSomochloSomethane	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
1,3-DibSomoethane (MDB)	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
ChloSobenzene	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
Mhylbenzene	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
2tySene	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
m,p-Xylenes	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
o-Xylene	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	

Comments:

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511863
Project:	2entinel Wells	**Date Collected:**	10/30/3015
Sample Matrix:	DSinr ing wateS	**Date Received:**	10/30/3015

Volatile Organic Compounds

Sample Name:	DW6	**Units:**	ug/L
Lab Code:	K1511863-001	**Basis:**	NA
Extraction Method:	k METHD	**Level:**	Low
Analysis Method:	53O4B		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,1,1-ESichloSoethane	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
BSomofoSm	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
1,1,3,3-EetSachloSoethane	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
IsopSopylbenzene	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
1,1-DichloSopSopene	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
BSomobenzene	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
n-PSopylbenzene	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
1,. ,5-ESimethylbenzene	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
3-ChloSotoluene	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
O-ChloSotoluene	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
teSt-Butylbenzene	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
1,3,O-ESimethylbenzene	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
sec-Butylbenzene	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
p-IsopSopyltoluene	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
1,. -DichloSobenzene	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
1,O-DichloSobenzene	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
n-Butylbenzene	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
1,3-DichloSobenzene	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
1,3-DibSomo-. -chloSopSopane (DBCP	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
1,3,O-ESichloSobenzene	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
TexachloSobutadiene	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
Naphthalene	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
1,1,3-ESichloSoethane	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
1,1,1,3-EetSachloSoethane	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
1,3,. -ESichloSopSopane	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	
1,3,. -ESichloSobenzene	ND	U	0450	1	10/. 0/15	10/. 0/15	KWG1510595	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
O-BSomofluoSobenzene	96	70-1. 0	10/. 0/15	Acceptable
DibSomofluoSomethane	9O	83-13O	10/. 0/15	Acceptable
Eoluene-d8	88	83-13O	10/. 0/15	Acceptable

Comments:

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Tentinel - ells	**Date Collected:**	2 A
Sample Matrix:	HOnEing wateO	**Date Received:**	2 A

Volatile Organic Compounds

Sample Name:	S etr ok ManE	**Units:**	ugW
Lab Code:	K- 0 151/ 5N5D5	**Basis:**	2 A
Extraction Method:	S 4. G9 H	**Level:**	Low
Analysis Method:	53UB		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
HicrloOkifluoOVetrane	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
CrloOVetrane	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
Binyl CrloOke	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
MOVoVetrane	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
CrloOetrane	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
. OcrloOfluoOVetrane	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
S etrylene CrloOke	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
tOansD1,3DHicrloOetrene	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
1,1DHicrloOetrene	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
cisD1,3DHicrloOetrene	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
S etryl teODMutyl 4 treO	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
CrloOfoOV	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
MOVocrloOVetrane	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
CaOon . etOacrloOke	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
Menzene	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
1,3DHicrloOetrane	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
. OcrloOetrene	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
1,3DHicrloOpOpane	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
MOVokicrloOVetrane	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
HibOoVoVetrane	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
cisD1,dDHicrloOpOpene	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
1,1DHicrloOetrane	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
. oluene	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
tOansD1,dDHicrloOpOpene	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
. etOacrloOetrene	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
3,3DHicrloOpOpane	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
1,dDHicrloOpOpane	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
HibOoVocrloOVetrane	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
1,3DHibOoVoetrane (4HM)	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
CrloObenzene	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
4 trylbenzene	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
TtyOene	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
V,pDXylenes	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
oDXylene	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	

Comments:

Client:	Longview, City of	**Service Request:**	K1511863
Project:	Tentinel - ells	**Date Collected:**	2 A
Sample Matrix:	HOnEing wateO	**Date Received:**	2 A

Volatile Organic Compounds

Sample Name:	S etr ok ManE	**Units:**	ugW
Lab Code:	K- 0 151/ 5N5D5	**Basis:**	2 A
Extraction Method:	S 4. G9 H	**Level:**	Low
Analysis Method:	53U3		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,1,1D Oicr loOoetr ane	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
MoOVofoOV	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
1,1,3,3D etOacr loOoetr ane	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
IsopOopylbenzene	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
1,1DHicr loOopOopene	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
MoOVobenzene	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
nDPOopylbenzene	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
1,d,5D OVetr ylbenzene	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
3DCr loOotoluene	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
UDCr loOotoluene	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
teODMutylbenzene	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
1,3,UD OVetr ylbenzene	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
secDMutylbenzene	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
pDIsopOopyltoluene	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
1,dDHicr loOobenzene	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
1,UDHicr loOobenzene	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
nDMutylbenzene	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
1,3DHicr loOobenzene	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
1,3DHibOoVoDDr loOopOopane (HMCP	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
1,3,UD Oicr loOobenzene	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
Gexacr loOobutakiene	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
2 apr tr alene	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
1,1,3D Oicr loOoetr ane	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
1,1,1,3D etOacr loOoetr ane	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
1,3,dD Oicr loOopOopane	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	
1,3,dD Oicr loOobenzene	2 H	m	/ h5/	1	1/ W/ W5	1/ W/ W5	K- 0 151/ 5N5	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
UDMOoVofluoOobenzene	N7	7/ D1d/	1/ W/ W5	Acceptable
HibOoVofluoOoVetr ane	113	83D13U	1/ W/ W5	Acceptable
. oluene D8	113	83D13U	1/ W/ W5	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Longview, City of
Project: Sentinel WellM
Sample Matrix: Drinking water

Service Request: K1511794

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: E THO2 D
Analysis Method: 54. P4

Units: cer-ent
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
DW9	K15117940661	39	3.	77
E ethod Blank	KWG151653505	3b	114	114
Lau Control SaF ple	KWG15165350m	33	3b	16b
D: pli-ate Lau Control SaF ple	KWG15165350.	166	39	36

Surrogate Recovery Control Limits (%)

S: r1 \	. 0BroF ofl: orouen=ene	b60lm6
S: r4 \	DiuroF ofl: oroF ethane	740l4.
S: rm \	Hol: ene0d7	740l4.

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K151172.
Project:	Sentinel WellE	**Date Extracted:**	10/k0/. 015
Sample Matrix:	DrinMng water	**Date Analyzed:**	10/k0/. 015

Lab Control Spike/Duplicate Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	T HOh d D	**Units:**	ug/L
Analysis Method:	5. 4N	**Basis:**	3 A
		Level:	Low
		Extraction Lot:	KWG1510595

	Lab Control Sample KWG1510595-k Lab Control Spike			Duplicate Lab Control Sample KWG1510595-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
DicVloroBifluorometVane	5N94	5N00	119	4N85	5N00	95	80-1k0	. .	k0
CVloromet Vane	5N51	5N00	110	4N49	5N00	77	80-1k0	. k	k0
6 inyl CVloriBe	5N8k	5N00	115	4N5k	5N00	91	80-1k0	. k	k0
s romometVane	5N2.	5N00	11.	4N27	5N00	94	80-1k0	17	k0
CVloroet Vane	5N5.	5N00	110	4N49	5N00	77	80-1k0	. k	k0
OricVlorofluorometVane	5N25	5N00	11k	4N54	5N00	91	80-1k0	. .	k0
T etVylene CVloriBe	5N14	5N00	10k	4N02	5N00	71	80-1k0	. k	k0
tranE-1,. -DicVloroet Vene	5N47	5N00	110	4N44	5N00	78	80-1k0	. k	k0
ciE-1,. -DicVloroet Vene	5Nk7	5N00	107	4N8	5N00	75	80-1k0	. k	k0
1,1-DicVloroet Vene	5N55	5N00	111	4Nk9	5N00	77	80-1k0	. k	k0
T etVyl tert-s utyl HtVer	10N5	10N0	105	7N42	10N0	75	80-1k0	. .	k0
CVloroform	5N21	5N00	11.	4N50	5N00	90	80-1k0	. .	k0
s romocVlorometVane	5N50	5N00	110	4N51	5N00	90	80-1k0	. 0	k0
Carbon OetracVloriBe	5Nk5	5N00	108	4N8.	5N00	94	80-1k0	1k	k0
s enzene	5N1.	5N00	10.	4N80	5N00	94	80-1k0	9	k0
1,. -DicVloroet Vane	5N1.	5N00	10.	4N2.	5N00	9.	80-1k0	10	k0
OricVloroet Vene	5N50	5N00	110	4Nk7	5N00	77	80-1k0	. k	k0
1,. -DicVloropropane	5N5	5N00	105	4N1	5N00	74	80-1k0	. .	k0
s romoBicVlorometVane	5N08	5N00	101	4N12	5N00	7k	80-1k0	. 0	k0
DibromometVane	5N14	5N00	10k	4N04	5N00	71	80-1k0	. 4	k0
ciE-1,k-DicVloropropene	5N2	5N00	105	4N8	5N00	75	80-1k0	. 1	k0
1,1-DicVloroet Vane	5N40	5N00	107	4N9	5N00	72	80-1k0	. k	k0
Ooluene	5N48	5N00	109	4Nk0	5N00	72	80-1k0	. 4	k0
tranE-1,k-DicVloropropene	4N82	5N00	95	4N24	5N00	9k	80-1k0	k	k0
OetracVloroet Vene	5Nk8	5N00	108	4N87	5N00	92	80-1k0	1.	k0
1,k-DicVloropropane	5N01	5N00	100	4N25	5N00	9k	80-1k0	8	k0
. ,. -DicVloropropane	5N91	5N00	117	4N8k	5N00	95	80-1k0	. .	k0
DibromocVlorometVane	4N7k	5N00	98	4N52	5N00	91	80-1k0	2	k0
1,. -DibromoetVane (HDs)	4N94	5N00	99	4N28	5N00	9k	80-1k0	2	k0
CVlorobenzene	5N17	5N00	104	4N7.	5N00	92	80-1k0	8	k0
HtVylbenzene	5N15	5N00	10k	4N78	5N00	98	80-1k0	2	k0
Styrene	5N0	5N00	104	4N90	5N00	97	80-1k0	2	k0
m,p-XyleneE	10N7	10N0	107	10N1	10N0	101	80-1k0	8	k0
o-Xylene	5Nk5	5N00	108	4N98	5N00	99	80-1k0	8	k0
s romoform	4N94	5N00	99	4N25	5N00	9k	80-1k0	2	k0

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoverieEanBrelative percent BifferenceE(RPD) are BetermineBby tVe Eoftware uEing valueEin tVe calculation wVicVVave not been rounBeBN

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K151172.
Project:	Sentinel WellE	**Date Extracted:**	10/k0/. 015
Sample Matrix:	DrinMng water	**Date Analyzed:**	10/k0/. 015

Lab Control Spike/Duplicate Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	T HOh d D	**Units:**	ug/L
Analysis Method:	5. 4N	**Basis:**	3 A
		Level:	Low
		Extraction Lot:	KWG1510595

	Lab Control Sample KWG1510595-k **Lab Control Spike**			Duplicate Lab Control Sample KWG1510595-4 **Duplicate Lab Control Spike**					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
1,1,. ,. -OetracVloroetVane	4N98	5N00	99	4N82	5N00	95	80-1k0	4	k0
1,1,1-OricVloroetVane	5N18	5N00	10k	4N55	5N00	91	80-1k0	1k	k0
IEopropylbenzene	5Nkk	5N00	108	4N92	5N00	99	80-1k0	8	k0
1,1-DicVloropropene	5N41	5N00	107	4N75	5N00	98	80-1k0	11	k0
s romobenzene	5N15	5N00	10k	4N70	5N00	92	80-1k0	8	k0
n-Propylbenzene	5N47	5N00	110	5N1.	5N00	10.	80-1k0	8	k0
1,k,5-OrimetVylbenzene	5N45	5N00	109	5N07	5N00	10.	80-1k0	8	k0
. -CVlorotoluene	5N8	5N00	105	4N9.	5N00	97	80-1k0	8	k0
4-CVlorotoluene	5N8	5N00	105	4N92	5N00	99	80-1k0	2	k0
tert-s utylbenzene	5Nk2	5N00	108	5N0.	5N00	100	80-1k0	8	k0
1,. ,4-OrimetVylbenzene	5Nk4	5N00	108	5N0k	5N00	101	80-1k0	2	k0
Eec-s utylbenzene	5N42	5N00	109	5N11	5N00	10.	80-1k0	8	k0
p-IEopropyltoluene	5N4k	5N00	109	5N1k	5N00	10k	80-1k0	2	k0
1,k-DicVlorobenzene	5N17	5N00	104	4N74	5N00	98	80-1k0	8	k0
1,4-DicVlorobenzene	5N1.	5N00	10.	4N89	5N00	92	80-1k0	8	k0
n-s utylbenzene	5N5.	5N00	110	5N12	5N00	10k	80-1k0	8	k0
1,. -DicVlorobenzene	5N05	5N00	101	4N7.	5N00	92	80-1k0	5	k0
1,. -Dibromo-k-cVloropropane (Ds CP)	4N22	5N00	9k	4N29	5N00	94	80-1k0	1	k0
1,. ,4-OricVlorobenzene	5N1.	5N00	10.	4N78	5N00	98	80-1k0	5	k0
h exacVlorobutaBiene	5N8	5N00	105	5N01	5N00	100	80-1k0	5	k0
3 apVtValene	5N08	5N00	101	4N82	5N00	95	80-1k0	2	k0
1,1,. -OricVloroetVane	5N12	5N00	10k	4N22	5N00	9k	80-1k0	10	k0
1,1,1,. -OetracVloroetVane	4N82	5N00	95	4N48	5N00	79	80-1k0	2	k0
1,. ,k-OricVloropropane	4N95	5N00	99	4N85	5N00	95	80-1k0	4	k0
1,. ,k-OricVlorobenzene	5Nk2	5N00	108	4N90	5N00	97	80-1k0	9	k0

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoverieEanBrelative percent BifferenceE(RPD) are BetermineBby tVe Eoftware uEing valueEin tVe calculation wVicVVave not been rounBeBN

Semivolatile Organics by EPA Method 525.2

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Nentinel / ells	**Date Collected:**	1G04G04G15
Sample Matrix:	- Mhhing wateM	**Date Received:**	1G04G04G15

Semivolatile Organics by EPA Method 525.2

Sample Name:	- / 9	**Units:**	ug0L
Lab Code:	K1511794WGG1	**Basis:**	2 A
Extraction Method:	d Bk S D-	**Level:**	Low
Analysis Method:	545r4		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
S exacploMcyclo*entaFiene	2 -	.	GrGET	1	1G04T015	110GE015	K/ H151G54O	U
PluoMne	2 -	.	GrGOE	1	1G04T015	110GE015	K/ H151G54O	U
bM*acploM	2 -	.	GrGET	1	1G04T015	110GE015	K/ H151G54O	U
S exacploMzenmene	2 -	.	GrGET	1	1G04T015	110GE015	K/ H151G54O	
Ni6 amine	2 -	.	GrGOE	1	1G04T015	110GE015	K/ H151G54O	
AtMmine	2 -	.	GrGET	1	1G04T015	110GE015	K/ H151G54O	
d etMzumin	2 -	.	Gr4G	1	1G04T015	110GE015	K/ H151G54O	
AlacploM	2 -	.	GrGTG	1	1G04T015	110GE015	K/ H151G54O	
(M6 acil	2 -	.	Gr4G	1	1G04T015	110GE015	K/ H151G54O	
d etolacploM	2 -	.	GrG7T	1	1G04T015	110GE015	K/ H151G54O	
(utacploM	2 -	.	GrGET	1	1G04T015	110GE015	K/ H151G54O	
(is)4Wetpylpexyl3 AFi*ate	2 -	.	Gr57	1	1G04T015	110GE015	K/ H151G54O	
(is)4Wetpylpexyl3 bptpalate	2 -	.	Gr57	1	1G04T015	110GE015	K/ H151G54O	
(enmo)a3*yMne	2 -	.	GrG4G	1	1G04T015	110GE015	K/ H151G54O	

UNee Case 2 aMative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,8Wi6 etpylWWitMzenmene	148	TGW8G	110GE015	Acce*tazle
kM*penyl bpos*pate	E1	TGW8G	110GE015	Acce*tazle
beMylene W14	EO	TGW8G	110GE015	Acce*tazle

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Wells	**Date Collected:**	NA
Sample Matrix:	Drinking water	**Date Received:**	NA

Semivolatile Organics by EPA Method 525.2

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1510542-2	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	545.4		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hepachlorocyclo*entadiene	ND	x	0.10	1	10/4U/15	11/02/15	KWG1510542	
Pluorene	ND	x	0.050	1	10/4U/15	11/02/15	KWG1510542	F
bro*achlor	ND	x	0.10	1	10/4U/15	11/02/15	KWG1510542	
Hepachlorozenneene	ND	x	0.10	1	10/4U/15	11/02/15	KWG1510542	
Si6 amine	ND	x	0.050	1	10/4U/15	11/02/15	KWG1510542	
Atramine	ND	x	0.10	1	10/4U/15	11/02/15	KWG1510542	
Metrizumin	ND	x	0.40	1	10/4U/15	11/02/15	KWG1510542	
Alachlor	ND	x	0.0U4	1	10/4U/15	11/02/15	KWG1510542	
Bro6 acil	ND	x	0.40	1	10/4U/15	11/02/15	KWG1510542	
Metolachlor	ND	x	0.0(0	1	10/4U/15	11/02/15	KWG1510542	
Butachlor	ND	x	0.10	1	10/4U/15	11/02/15	KWG1510542	
Bis)4-ethylhepyl3 Adi*ate	ND	x	0.90	1	10/4U/15	11/02/15	KWG1510542	
Bis)4-ethylhepyl3 bhthalate	ND	x	0.90	1	10/4U/15	11/02/15	KWG1510542	
Benno)a3*yrene	ND	x	0.040	1	10/4U/15	11/02/15	KWG1510542	

F See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,8-Di6 ethyl-4-nitrozenneene	11U	U0-180	11/02/15	Acce*tazle
Tri*henyl bhos*hate	(2	U0-180	11/02/15	Acce*tazle
berylene-d14	(9	U0-180	11/02/15	Acce*tazle

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Longview, City of
Project: Sentinel WellM
Sample Matrix: Drinking water

Service Request: K1511794

Surrogate Recovery Summary
Semivolatile Organics by EPA Method 525.2

Extraction Method: E THO2 D
Analysis Method: 545.4

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
Batch QC	K1511- 07*331	161 8	07	96 8
DW9	K1511794*331	146	01	0G
E ethob Blank	KWd 151354G*G	11-	0G	09
Batch QCE S	KWd 151354G*1	145	136	76
Batch QCDE S	KWd 151354G*4	14G	13-	01
LamControl SaF ple	KWd 151354G*6	146	11G	09

Surrogate Recovery Control Limits (%)

Sur1	=	1,6*DiF ethyl*4*nitromenzene	- 3*163
Sur4	=	Hriphenyl PhoMphate	- 3*163
Sur6	=	Perylene*b14	- 3*163

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Client:	Longview, City of	**Service Request:**	K57550aN
Project:	MentineET eEH	**Date Extracted:**	5u/N9/Nu57
Sample Matrix:	2 rin3ing wWer	**Date Analyzed:**	55/uO/Nu57

Matrix Spike/Duplicate Matrix Spike Summary
Semivolatile Organics by EPA Method 525.2

Sample Name:	DW-1 QC	**Units:**	Sg/L
Lab Code:	K5755940.uu5	**Basis:**	l A
Extraction Method:	G 6 8 c h 2	**Level:**	Low
Analysis Method:	7N7kN	**Extraction Lot:**	KT b 575u7NO

		DW-1 QCG M KT b 575u7NO.5 Matrix Spike			DW-1 QC2 G M KT b 575u7NO.N Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
c edW1Eoro-y-EopentWriene	l 2	uk454	uk4aN	4a	uk4zN	uk4aN	49	9u.5zu	5	zu
PESorene	l 2	5kN5	uk4aN	5Na	5kNO	uk4aN	5N4	9u.5zu	N	zu
(ropW1Eor	l 2	uk444	uk4aN	5uO	5ku7	uk4aN	5u4	9u.5zu	7	zu
c edW1Eoroxen)ene	l 2	5ku9	uk4aN	555	5ku9	uk4aN	555	9u.5zu	u	zu
M* Wyine	l 2	uk4zz	uk4aN	49	uk4uz	uk4aN	4O	9u.5zu	z	zu
AtrWyine	l 2	uk4zN	uk4aN	49	uk45u	uk4aN	47	9u.5zu	N	zu
G etrixS)in	l 2	5ku5	uk4aN	5u7	5kuz	uk4aN	5u9	9u.5zu	N	zu
AEW1Eor	l 2	uk4uO	uk4aN	4O	uk4N7	uk4aN	4a	9u.5zu	N	zu
Dro* WiE	l 2	5ku5	uk4aN	5u7	5kuN	uk4aN	5ua	9u.5zu	5	zu
G etoEW1Eor	l 2	uk00N	uk4aN	4N	uk4u7	uk4aN	4O	9u.5zu	z	zu
DStW1Eor	l 2	5kuO	uk4aN	5u0	5ku7	uk4aN	5u4	9u.5zu	5	zu
DiHBNet1yHedyEs AmipWe	l 2	5k5u	uk4aN	55O	5k50	uk4aN	5Nz	9u.5zu	0	zu
DiHBNet1yHedyEs (1t1WEWe	l 2	5k57	uk4aN	5Nu	5kN0	uk4aN	5zz F	9u.5zu	5u	zu
Den)oBWspyrene	l 2	uk05z	uk4aN	07	uk0aO	uk4aN	4u	9u.5zu	a	zu

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

(er-ent re-overieHWimreEWive per-ent nifferen-eHER(2 s We meter* inemxy t1e HoftwWe SHng vWSeHin t1e - WESEWion w1i-1 1We not xeen roSnmenk

Client:	Longview, City of	**Service Request:**	DWWWK5
Project:	Nentineua euH	**Date Extracted:**	W/5O/51W
Sample Matrix:	ErinTing w0ter	**Date Analyzed:**	WW12/51W

Lab Control Spike Summary
Semivolatile Organics by EPA Method 525.2

Extraction Method:	G68chE	**Units:**	9g/L
Analysis Method:	-5-75	**Basis:**	4A
		Level:	Low
		Extraction Lot:	DaSWW-52

	L0. ControuN0k pue Da SWW-523M Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
c eb0zduorozyzuopent0miene	17P11	W11	P1	C13WM
xu9orene	WMW	W11	WWW(	C13WM
) rop0zduor	WWS	W11	WWS	C13WM
c eb0zduoro. en*ene	WWW	W11	WWW	C13WM
Nik 0*ine	W1W	W11	WW	C13WM
Atr0*ine	W1M	W11	WM	C13WM
Getri. 9*in	WW	W11	WW	C13WM
Au0zduor	W1O	W11	WO	C13WM
Brok 0ziu	W1O	W11	WO	C13WM
Getou0zduor	W1O	W11	WO	C13WM
B9t0zduor	WWM	W11	WWM	C13WM
BiHs53etdyudebyuF Amip0te	WWW	W11	WWW	C13WM
BiHs53etdyudebyuF) dtd0u0te	WWK	W11	WWK	C13WM
Ben*os0Fpyrene	WWO	W11	WWO	C13WM

Results flagged with an asterisk (*) indicate values outside control criteria.

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Diquat and Paraquat by EPA Method 549.2

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1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511794
Project:	2entinel Wells	**Date Collected:**	10/40/4015
Sample Matrix:	DSinr ing wateS	**Date Received:**	10/40/4015

Diquat and Paraquat by EPA Method 549.2

Sample Name:	DW9	**Units:**	ug/L
Lab Code:	K1511794-001	**Basis:**	NA
Extraction Method:	k METHD	**Level:**	Low
Analysis Method:	5O 34		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Di8uat	ND	q	03000	1	10/4G/15	11/05/15	KWU1510GOG	
PaSa8uat	ND	q	03700	1	10/4G/15	11/05/15	KWU1510GOG	

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Dentinel Wells	**Date Collected:**	MA
Sample Matrix:	r EinSing wateE	**Date Received:**	MA

Diquat and Paraquat by EPA Method 549.2

Sample Name:	h etdoB k lanS	**Units:**	ugNL
Lab Code:	KWG15103-3/5	**Basis:**	MA
Extraction Method:	h THO. r	**Level:**	Low
Analysis Method:	5-2U4		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
r i8uat	Mr	q	0U-00	1	10N43N15	11N05N15	KWG15103-3	
PaEa8uat	Mr	q	0U700	1	10N43N15	11N05N15	KWG15103-3	

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511862
Project:	kentineSl eSSW	**Date Extracted:**	10/2M2015
Sample Matrix:	NrinDing water	**Date Analyzed:**	11/05/2015

Matrix Spike/Duplicate Matrix Spike Summary
Diquat and Paraquat by EPA Method 549.2

Sample Name:	Batch QC	**Units:**	3g/L
Lab Code:	K1511794-001	**Basis:**	u A
Extraction Method:	E THOGN	**Level:**	Low
Analysis Method:	549.2	**Extraction Lot:**	Kl q 1510M4M

		Batch QCE k Kl q 1510M4M1 **Matrix Spike**			Batch QCNE k Kl q 1510M4M2 **Duplicate Matrix Spike**					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
NiP3at	u N	14.2	12.0	118	1M5	12.0	112	70-1M0	5	M0
FaraP3at	u N	11.M	12.0	94	11.6	12.0	96	70-1M0	M	M0

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

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ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	DWWWK5
Project:	kentineNS eNO	**Date Extracted:**	W3/5M53W
Sample Matrix:	TrinHing w2ter	**Date Analyzed:**	WW3-/53W

Lab Control Spike Summary
Diquat and Paraquat by EPA Method 549.2

Extraction Method:	Gq86PT	**Units:**	0g/L
Analysis Method:	-7945	**Basis:**	. A
		Level:	Low
		Extraction Lot:	DS 1 WW3M7M

	L2u ControNk2a pNe DS 1 WW3M7ME7 Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
Tim02t	WW4W	W543	WW3	F3EWW3
c2r2m02t	W349	W543	9W	F3EWW3

Results flagged with an asterisk (*) indicate values outside control criteria.

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Subcontract Lab Results

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

[illegible]

[illegible]

Certificate of Analysis

[illegible]	**SOCs**	[illegible]	**2103390**
[illegible]	**51K1511862**	[illegible]	**K1511862**

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[illegible]

Kelli Wolfgang

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This page is included as part of the Analytical Report and must be retained as a permanent record thereof.

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[illegible] Page 1 of 7

Page 13 of 152

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SAMPLE SUMMARY

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Notes

[illegible]

Standard Acronyms/Flags

[illegible]

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ANALYTICAL RESULTS

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Kelli Wolfgang

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QUALITY CONTROL DATA

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QC Batch: □P□□□□□□ **Analysis Method:** □P□ 531□1

QC Batch Method: □P□ 531□1

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QUALITY CONTROL DATA

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

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ALS Environmental Chain of Custody

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ALS Contact: Chris Leaf

2103390

Project Number: K1511862
Project Manager: Chris Leaf
QAP: LAB QAP

Lab Code	Sample ID	# of Cont.	Matrix	Sample Date	Sample Time	Lab ID	CARBAM 531.1
K1511862-001	DW6	2	Drinking Water	10/20/15	0910	Middletown ALS	X

Test Comments
CARBAM - 531.1 K1511862-001 Full list for WA Regulations - no compliance report required.

Folder Comments:
~~Report all metals in mg/L~~ No DW State form required.

KLW 10/22/15 1735

	Y	N	Initials	
Custody Seals Present?			BRS	Cooler Temp: 1 °C
(if present) Seals Intact?				Cooler #:
Received on Ice?				
COC/Lbls Complete				Therm ID: TR-294
Cont in Good Cond?				
Correct Containers?				Ship Carrier:
Correct Samp Vol?				FedEx UPS
Correct Preservation?				
Headspace/Volatiles?				DHL

Tracking #:

Special Instructions/Comments
Please provide the electronic (PDF and EDD) report to the following e-mail address: ALKLS.Data@alsglobal.com.

@ CL 10/~~22~~ 21/15

H - Test is On Hold P - Test is Authorized for Prep Only

Turnaround Requirements
____ RUSH (Surcharges Apply)
PLEASE CIRCLE WORK DAYS
1 2 3 4 5
X STANDARD
Requested FAX Date: _____
Requested Report Date: 11/06/15

Report Requirements
____ I. Results Only
X II. Results + QC Summaries
____ III. Results + QC and Calibration Summaries
____ IV. Data Validation Report with Raw Data
PQL/MDL/J N
EDD Y Basic w/QC Kelso Supervisor

Invoice Information
PO# 51K1511862
Bill to

Relinquished By: R Smith 10/21/15 1133 Received By: B. Schaeffer 10/22/15 9:04Am

Airbill Number: 6447 9267 3597

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F: +1 805 526 7270
www.alsglobal.com

LABORATORY REPORT

November 4, 2015

Jeff Coleman
Longview, City of
W/S Operation Center
P.O. Box 128
Longview, WA 98632

RE: Sentinel Wells

Dear Jeff:

Enclosed are the results of the sample submitted to our laboratory on October 22, 2015. For your reference, this analysis has been assigned our service request number K1511862.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

Kate Aguilera

By Kate Aguilera at 8:22 am, Nov 05, 2015

Kate Aguilera
Project Manager

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F: +1 805 526 7270
www.alsglobal.com

Client: Longview, City of
Project: Sentinel Wells

Service Request No: K1511862

CASE NARRATIVE

The sample was received intact under chain of custody at the Simi Valley facility on October 22, 2015 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the sample(s) at the time of sample receipt.

Hydrogen Sulfide Analysis

The sample was analyzed for hydrogen sulfide using a gas chromatograph equipped with a sulfur chemiluminescence detector (SCD). This method is not included on the laboratory's NELAP, DoD-ELAP, or AIHA-LAP scope of accreditation.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

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F: +1 805 526 7270
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ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
AIHA	http://www.aihaaccreditedlabs.org	101661
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0694
DoD ELAP	http://www.pjlabs.com/search-accredited-labs	L14-2-R1
Florida DOH (NELAP)	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E871020
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/labcert.htm	2014025
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	876241
New Jersey DEP (NELAP)	http://www.nj.gov/dep/oqa/	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-001
Pennsylvania DEP	http://www.depweb.state.pa.us/labs	68-03307 (Registration)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704413-15-6
Utah DOH (NELAP)	http://www.health.utah.gov/lab/labimp/certification/index.html	CA016272015-5
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

Intra-Network Chain of Custody

1317 South 13th Avenue • Kelso, WA 98626 • 1-360-577-7222 • FAX 1-360-636-1068

ALS Contact: Chris Leaf

Project Name: Sentinel Wells
Project Number:
Project Manager: Jeff Coleman
Company: Longview, City of
QAP: LAB QAP

Lab Code	Client Sample ID	# of Cont.	Matrix	Sample Date	Sample Time	Date Received	Send To	Sulfur Sulfur Liq
K1511862-001	DW6	2	Drinking Water	10/20/15	0910	10/20/15	SIMIVALLEY	II

Test Comments

Sulfur - Sulfur Liq K1511862-001 Hydrogen Sulfide

Folder Comments:

Report all metals in mg/L. No DW State form required.

nt

Special Instructions/Comments

Please provide the electronic (PDF and EDD) report to the following e-mail address: ALKLS.Data@alsglobal.com.

Cl 10/20/15

pH Checked _____

Turnaround Requirements

____ **RUSH** (Surcharges Apply)

PLEASE CIRCLE WORK DAYS

1 2 3 4 5

✓ **STANDARD**

Requested FAX Date: _____

Requested Report Date: 11/06/15

Report Requirements

____ I. Results Only

✓ II. Results + QC Summaries

____ III. Results + QC and Calibration Summaries

____ IV. Data Validation Report with Raw Data

PQL/MDL/J N

EDD Y Basic w/QC Kelso Superset

Invoice Information

PO# 51K1511862 ✓

Bill to

Relinquished By: [signature] 10/21/15 1133 Received By: [signature] 10/22/15 0950 10 blank sil Airbill Number: _____

ALS Environmental
Sample Acceptance Check Form

Client: Longview, City of Work order: K1511862
Project: Sentinel Wells
Sample(s) received on: 10/22/15 Date opened: 10/22/15 by: KKELPE

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Did **sample containers** arrive in good condition?	☒	☐	☐
3	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
4	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
5	Was **sample volume** received adequate for analysis?	☒	☐	☐
6	Are samples within specified holding times?	☒	☐	☐
7	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: ° C Blank Temperature: 1° C **Gel Packs**			
8	Were **custody seals** on outside of cooler/Box/Container?	☒	☐	☐
	Location of seal(s)? _____ Sealing Lid?	☒	☐	☐
	Were signature and date included?	☒	☐	☐
	Were seals intact?	☒	☐	☐
9	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☒	☐	☐
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☒	☐	☐
10	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
11	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
K1511862-001.01	40mL VOA NP		7	1	A	MC 11/03/2015
K1511862-001.02	40mL VOA NP				A	

Explain any discrepancies: (include lab sample ID numbers):
the sample was received at ALS-Kelso on 10/20/15

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Longview, City of**
Client Project ID: **Sentinel Wells** ALS Project ID: K1511862

Hydrogen Sulfide

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 7890A/GC22/SCD Date(s) Collected: 10/20/15
Analyst: Mike Conejo Date Received: 10/20/15
Sample Type: Drinking Water Date Analyzed: 11/3/15
Test Notes:

Client Sample ID	ALS Sample ID	Sample Amount ml(s)	Purge Volume Liter(s)	Injection Volume ml(s)	**Result µg/L**	MRL µg/L	Data Qualifier
DW6	K1511862-001	10.0	0.30	1.0	ND	0.84	
Method Blank	P151103-MB	10.0	0.30	1.0	ND	0.84	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Longview, City of**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **Sentinel Wells**

ALS Project ID: K1511862
ALS Sample ID: P151103-DLCS

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 7890A/GC22/SCD
Analyst: Mike Conejo
Sample Type: Drinking Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 11/03/15
Liquid Amount: 10.0 ml(s)
Purge Volume: 0.30 Liter(s)
Injection Volume: 0.20 ml(s)

CAS #	Compound	Spike Amount LCS / DLCS ug/L	Result LCS ug/L	Result DLCS ug/L	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
7783-06-4	Hydrogen Sulfide	416	404	422	**97**	**101**	45-151	4	28	

ALS Environmental
ALS Group USA, Corp
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www.alsglobal.com

December 09, 2015

Analytical Report for Service Request No: K1511860

Jeff Coleman
Longview, City of
W/S Operation Center
P.O. Box 128
Longview, WA 98632

RE: Sentinel Wells

Dear Jeff,

Enclosed are the results of the sample(s) submitted to our laboratory October 20, 2015
For your reference, these analyses have been assigned our service request number **K1511860.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3275. You may also contact me via email at Chris.Leaf@ALSGlobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Chris Leaf
Project Manager

ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
T : +1 360 577 7222
F : +1 360 636 1068
www.alsglobal.com

Table of Contents

□ □ □o□ □
□ □a□f□e□□
□□a□e □e□□f□□a□o□□□□□□□e□□a□o□□□□□□ □□e□□e□
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Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L14-51
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	Not available	-
Idaho DHW	http://www.healthandwelfare.idaho.gov/Health/Labs/CertificationDrinkingWaterLabs/tabid/1833/Default.aspx	-
ISO 17025	http://www.pjlabs.com/	L14-50
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	03016
Maine DHS	Not available	WA01276
Michigan DEQ	http://www.michigan.gov/deq/0,1607,7-135-3307_4131_4156---,00.html	9949
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Chain of Custody

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636- 1068
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ALS Environmental

58081

CHAIN OF CUSTODY

58081

001

SR# K1511860

COC Set____of____

COC#_____

1317 South 13th Ave, Kelso, WA 98626 Phone (360) 577-7222 / 800-695-7222 / FAX (360) 636-1068
www.alsglobal.com

Project Name: Sentinel Wells
Project Number:
Project Manager: Jeff Coleman
Company: City of Longview
Address: PO Box 128 Longview WA 98632
Phone #:
Email:
Sampler Signature: T Daly
Sampler Printed Name: T Daly

CLIENT SAMPLE ID	LABID	SAMPLING Date	SAMPLING Time	Matrix	NUMBER OF CONTAINERS	7D 900.0 / Radioact	7D 903.1 / Radium 226	7D 904.0 / Radium 228	180D 200.8 / Metals T	1	2	3	4	5	Remarks
1. DW #6		10/20/15	0910		2										
2.															
3.															
4.															
5.															
6.															
7.															
8.															
9.															
10.															

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. CLP Like Summary (no raw data)
___ IV. Data Validation Report
___ V. EDD

Invoice Information

P.O.# 36-4742
Bill To: City of Longview
PO Box 128
Longview WA 98632

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
___ Standard

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments:

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other_____(Circle One)

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature: T Daly	Signature: [illegible]	Signature	Signature	Signature	Signature
Printed Name: T Daly	Printed Name: [illegible]	Printed Name	Printed Name	Printed Name	Printed Name
Firm: Col P	Firm: ALS	Firm	Firm	Firm	Firm
Date/Time: 10/20/15 1548	Date/Time: 10/20/15 1548	Date/Time	Date/Time	Date/Time	Date/Time

PC CL

Cooler Receipt and Preservation Form

Client / Project: City of Longview 1 Service Request K15 118100

Received: 10/20/15 Opened: 10/20/15 By: KR Unloaded: 10/20/15 By: KR

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? _____

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
12.9	13.0	10.5	10.6	+0.1	338	1 of 4		
8.3	8.5	12.6	12.8	+0.2	354	2 of 4		
5.9	6.1	11.2	11.4	+0.2	359	3 of 4		
12.1	12.3	14.4	14.6	+0.2	368	4 of 4		

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA ~~Y~~ N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time
DW2	1 gl cube				X	HNO3	8mL	RE/1-31-L	KR	1605
DW7	↓				↓	↓	↓	↓	↓	↓
DW6										

Notes, Discrepancies, & Resolutions: _____

Page ____ *of* ____

Metals

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511860
Project:	Sentinel Wells	**Date Collected:**	10/20/15 09:10
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15 15:48
Sample Name:	DW #6	**Basis:**	NA
Lab Code:	K1511860-001		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Uranium	200.8	ND U	mg/L	0.000020	1	11/04/15 01:29	10/27/15	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511860
Project:	Sentinel Wells	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	NA
Lab Code:	KQ1512448-01		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Uranium	200.8	ND U	mg/L	0.000020	1	11/04/15 12:37	10/27/15	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511860
Project	Sentinel Wells	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
		Date Analyzed:	11/04/15

Replicate Sample Summary
Total Metals

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511795-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample KQ1512448-04 Result	Average	RPD	RPD Limit
Uranium	200.8	0.000020	ND U	ND U	ND	-	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Printed 11/24/15 1:40:05 PM

Superset Reference:

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511860
Project:	Sentinel Wells	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	11/4/15
		Date Extracted:	10/27/15

Matrix Spike Summary
Total Metals

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511795-001	**Basis:**	NA
Analysis Method:	200.8		
Prep Method:	EPA CLP-METALS ILM04.0		

Matrix Spike
KQ1512448-05

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Uranium	ND U	0.0207	0.0200	104	70-130

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Printed 11/24/15 1:40:05 PM

Superset Reference:

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511860
Project:	Sentinel Wells	**Date Analyzed:**	11/04/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/27/15

Lab Control Sample Summary
Total Metals

Analysis Method:	200.8	**Units:**	mg/L
Prep Method:	EPA CLP-METALS ILM04.0	**Basis:**	NA
		Analysis Lot:	470354

Lab Control Sample
KQ1512448-02

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
Uranium	0.0205	0.0200	102	85-115

Subcontract Lab Results

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Thursday, November 12, 2015

Chris Leaf
ALS Environmental
1317 South 13th Ave
Kelso, WA 98626

Re: ALS Workorder: 1510388
Project Name:
Project Number: K1511860

Dear Ms. Leaf:

One water sample was received from ALS Environmental, on 10/22/2015. The sample was scheduled for the following analyses:

Gross Alpha/Beta
Radium-226
Radium-228

The results for these analyses are contained in the enclosed reports.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Thank you for your confidence in ALS Environmental. Should you have any questions, please call.

Sincerely,

ALS Environmental
Jeff R. Kujawa
Project Manager

ALS Environmental – Fort Collins is accredited by the following accreditation bodies for various testing scopes in accordance with requirements of each accreditation body. All testing is performed under the laboratory management system, which is maintained to meet these requirement and regulations. Please contact the laboratory or accreditation body for the current scope testing parameters.

ALS Environmental – Fort Collins	
Accreditation Body	License or Certification Number
Alaska (AK)	UST-086
Alaska (AK)	CO01099
Arizona (AZ)	AZ0742
California (CA)	06251CA
Colorado (CO)	CO01099
Connecticut (CT)	PH-0232
Florida (FL)	E87914
Idaho (ID)	CO01099
Kansas (KS)	E-10381
Kentucky (KY)	90137
L-A-B (DoD ELAP/ISO 170250)	L2257
Louisiana (LA)	05057
Maryland (MD)	285
Missouri (MO)	175
Nebraska(NE)	NE-OS-24-13
Nevada (NV)	CO000782008A
New York (NY)	12036
North Dakota (ND)	R-057
Oklahoma (OK)	1301
Pennsylvania (PA)	68-03116
Tennessee (TN)	2976
Texas (TX)	T104704241
Utah (UT)	CO01099
Washington (WA)	C1280

1510388

Gross Alpha/Beta:
The samples were analyzed for gross alpha and beta activity by gas flow proportional counting according to the current revision of SOP. Gross alpha results are referenced to ^{241}Am. Gross beta results are referenced to ^{90}Sr/Y.

All acceptance criteria were met.

Radium-228:
The samples were analyzed for the presence of ^{228}Ra by low background gas flow proportional counting of ^{228}Ac, which is the ingrown progeny of ^{228}Ra, according to the current revision of SOP 724.

All acceptance criteria were met.

Radium-226:
The samples were prepared and analyzed according to the current revision of SOP 783**.**

All acceptance criteria were met.

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1510388
Client Name: ALS Environmental
Client Project Name:
Client Project Number: K1511860
Client PO Number: K1511860

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
DW #6	1510388-1		WATER	20-Oct-15	9:10

ALS Environmental Chain of Custody

1317 South 13th Avenue • Kelso, WA 98626 • 1-360-577-7222 • FAX 1-360-636-1068

ALS Contact: Chris Leaf

Project Number: K1511860
Project Manager: Chris Leaf
QAP: LAB QAP

1510388

Lab Code	Sample ID	# of Cont.	Matrix	Sample Date	Sample Time	Lab ID	Radioact 900.0	Radium 226 903.1	Radium 228 904.0
K1511860-001	DW #6 (1)	2	Drinking Water	10/20/15	0910	Fort Collins ALS	X	X	X

Folder Comments:
cubes preserved with HNO3 on 10/20/15 @ 1605.

Special Instructions/Comments
Please provide the electronic (PDF and EDD) report to the following e-mail address: ALKLS.Data@alsglobal.com.

CL 10/21/15

H - Test is On Hold P - Test is Authorized for Prep Only

Turnaround Requirements
____ **RUSH** (Surcharges Apply)
PLEASE CIRCLE WORK DAYS
1 2 3 4 5
✓ **STANDARD**
Requested FAX Date: _____
Requested Report Date: 11/17/15

Report Requirements
____ I. Results Only
✓ II. Results + QC Summaries
____ III. Results + QC and Calibration Summaries
____ IV. Data Validation Report with Raw Data
PQL/MDL/J N
EDD Y Basic w/QC Kelso Superset

Invoice Information
PO# 51K1511860
Bill to

Relinquished By: 10/21/15 1133 Received By: 10-22-15 @ 0930 Airbill Number:

ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: ALS Welso Workorder No: 1510388

Project Manager: JRK Initials: SDM Date: 10-22-15

1. Does this project require any special handling in addition to standard ALS procedures?		YES	(NO)
2. Are custody seals on shipping containers intact?	NONE	(YES)	NO
3. Are Custody seals on sample containers intact?	(NONE)	YES	NO
4. Is there a COC (Chain-of-Custody) present or other representative documents?		(YES)	NO
5. Are the COC and bottle labels complete and legible?		(YES)	NO
6. Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		(YES)	NO
7. Were airbills / shipping documents present and/or removable?	DROP OFF	(YES)	NO
8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	N/A	(YES)	NO
9. Are all aqueous non-preserved samples pH 4-9?	(N/A)	YES	NO
10. Is there sufficient sample for the requested analyses?		(YES)	NO
11. Were all samples placed in the proper containers for the requested analyses?		(YES)	NO
12. Are all samples within holding times for the requested analyses?		(YES)	NO
13. Were all sample containers received intact? (not broken or leaking, etc.)		(YES)	NO
14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: ____ < green pea ____ > green pea	(N/A)	YES	NO
15. Do any water samples contain sediment? Amount Amount of sediment: ____ dusting ____ moderate ____ heavy	N/A	YES	(NO)
16. Were the samples shipped on ice?		YES	(NO)
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #2 #4	(RAD ONLY)	YES	NO

Cooler #:	1							
Temperature (°C):	Amb							
No. of custody seals on cooler:	1							
DOT Survey/ Acceptance Information — External µR/hr reading:	10							
Background µR/hr reading:	11							

Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? (YES) / NO / NA (If no, see Form 008.)

Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXCEPT #1 AND #16.

If applicable, was the client contacted? YES / NO (NA) Contact: _____ Date/Time: _____

Project Manager Signature / Date: [signature] 10-22-15

*IR Gun #2: Oakton, SN 29922500201-0066
*IR Gun #4: Oakton, SN 2372220101-0002

Form 201r24.xls (06/04/2012)

1510388

ORIGIN ID:LOGA (360) 577-7222
SAMPLE RECEIVING
ALS ENVIRONMENTAL
1317 S 13TH AVE

KELSO, WA 98626
UNITED STATES US

SHIP DATE: 21OCT15
ACTWGT: 64.7 LB
CAD: 102641/CAFE2806
DIMS: 26x14x13 IN

BILL SENDER

TO SAMPLE RECEIVING
ALS LBORATORY GROUP
225 COMMERCE DRIVE

FORT COLLINS CO 80524
(970) 490-1511
PO: CL/CL/CL

REF: SAMPLE K1511860 1511861 1511864

10
-1

521C3/401A/6F03

FedEx
Express

E

J141214073001uv

THU - 22 OCT 10:30A
PRIORITY OVERNIGHT

TRK# 0201 6447 9267 3946

XH FTCA

80524
CO-US DEN

Client: ALS Environmental
Project: K1511860
Sample ID: DW #6
Legal Location:
Collection Date: 10/20/2015 09:10

Date: *12-Nov-15*
Work Order: 1510388
Lab ID: 1510388-1
Matrix: WATER
Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Gross Alpha/Beta by GFPC		**PAI 724**			Prep Date: **11/4/2015**	PrepBy: **DKL**
GROSS ALPHA	ND (+/- 1)	U	2.9	pCi/l	NA	11/6/2015 10:16
GROSS BETA	3.8 (+/- 1.8)	LT	3.3	pCi/l	NA	11/6/2015 10:16
Radium-226 by Radon Emanation - Method 903.1		**PAI 783**			Prep Date: **11/5/2015**	PrepBy: **ECP**
Ra-226	ND (+/- 0.12)	U	0.2	pCi/l	NA	11/11/2015 13:06
Carr: BARIUM	*97.3*		*40-110*	*%REC*	DL = NA	11/11/2015 13:06
Radium-228 Analysis by GFPC		**PAI 724**			Prep Date: **10/26/2015**	PrepBy: **DKL**
Ra-228	ND (+/- 0.3)	U	0.63	pCi/l	NA	11/2/2015 13:07
Carr: BARIUM	*97.3*		*40-110*	*%REC*	DL = NA	11/2/2015 13:07

Client:	ALS Environmental	**Date:**	*12-Nov-15*
Project:	K1511860	**Work Order:**	1510388
Sample ID:	DW #6	**Lab ID:**	1510388-1
Legal Location:		**Matrix:**	WATER
Collection Date:	10/20/2015 09:10	**Percent Moisture:**	

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed

Explanation of Qualifiers

Radiochemistry:

U or ND - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
Y2 - Chemical Yield outside default limits.
W - DER is greater than Warning Limit of 1.42
* - Aliquot Basis is 'As Received' while the Report Basis is 'Dry Weight'.
# - Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'.
G - Sample density differs by more than 15% of LCS density.
D - DER is greater than Control Limit
M - Requested MDC not met.
LT - Result is less than requested MDC but greater than achieved MDC.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS, Matrix Spike Recovery within control limits.
N - Matrix Spike Recovery outside control limits
NC - Not Calculated for duplicate results less than 5 times MDC
B - Analyte concentration greater than MDC.
B3 - Analyte concentration greater than MDC but less than Requested MDC.

Inorganics:

B - Result is less than the requested reporting limit but greater than the instrument method detection limit (MDL).
U or ND - Indicates that the compound was analyzed for but not detected.
E - The reported value is estimated because of the presence of interference. An explanatory note may be included in the narrative.
M - Duplicate injection precision was not met.
N - Spiked sample recovery not within control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike duplicate fail and the native sample concentration is less than four times the spike added concentration.
Z - Spiked recovery not within control limits. An explanatory note may be included in the narrative.
* - Duplicate analysis (relative percent difference) not within control limits.
S - SAR value is estimated as one or more analytes used in the calculation were not detected above the detection limit.

Organics:

U or ND - Indicates that the compound was analyzed for but not detected.
B - Analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user.
E - Analyte concentration exceeds the upper level of the calibration range.
J - Estimated value. The result is less than the reporting limit but greater than the instrument method detection limit (MDL).
A - A tentatively identified compound is a suspected aldol-condensation product.
X - The analyte was diluted below an accurate quantitation level.
* - The spike recovery is equal to or outside the control criteria used.
+ - The relative percent difference (RPD) equals or exceeds the control criteria.
G - A pattern resembling gasoline was detected in this sample.
D - A pattern resembling diesel was detected in this sample.
M - A pattern resembling motor oil was detected in this sample.
C - A pattern resembling crude oil was detected in this sample.
4 - A pattern resembling JP-4 was detected in this sample.
5 - A pattern resembling JP-5 was detected in this sample.
H - Indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest.
L - Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest.
Z - This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products:
- gasoline
- JP-8
- diesel
- mineral spirits
- motor oil
- Stoddard solvent
- bunker C

QC BATCH REPORT

Batch ID: **RE151105-2-1** Instrument ID **Alpha Scin** Method: **Radium-226 by Radon Emanation**

LCS Sample ID: **RE151105-2** Units: **pCi/l** Analysis Date: **11/11/2015 13:47**
Client ID: Run ID: **RE151105-2A** Prep Date: **11/5/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-226	25.2 (+/- 6.4)	0.3	30.71		82.1	67-120					P
Carr: BARIUM	32570		33300		97.8	40-110					

LCSD Sample ID: **RE151105-2** Units: **pCi/l** Analysis Date: **11/11/2015 13:47**
Client ID: Run ID: **RE151105-2A** Prep Date: **11/5/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-226	27.5 (+/- 7)	0.2	30.71		89.7	67-120		25.2	0.2	2.1	P
Carr: BARIUM	32340		33300		97.1	40-110		32570			

MB Sample ID: **RE151105-2** Units: **pCi/l** Analysis Date: **11/11/2015 13:47**
Client ID: Run ID: **RE151105-2A** Prep Date: **11/5/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-226	ND	0.23									U
Carr: BARIUM	31910		33300		95.8	40-110					

The following samples were analyzed in this batch: 1510388-1

Client: ALS Environmental
Work Order: 1510388
Project: K1511860

QC BATCH REPORT

Batch ID: **AB151104-1-4** Instrument ID **LB4100-C** Method: **Gross Alpha/Beta by GFPC**

LCS Sample ID: **AB151104-1** Units: **pCi/l** Analysis Date: **11/6/2015 12:26**

Client ID: Run ID: **AB151104-1A** Prep Date: **11/4/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
GROSS ALPHA	204 (+/- 38)	7	224.1		91	70-130					P,M3
GROSS BETA	194 (+/- 34)	11	204.2		94.9	70-130					P,M3

MB Sample ID: **AB151104-1** Units: **pCi/l** Analysis Date: **11/6/2015 15:12**

Client ID: Run ID: **AB151104-1A** Prep Date: **11/4/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
GROSS ALPHA	ND	0.82									U
GROSS BETA	ND	1.12									U

The following samples were analyzed in this batch: 1510388-1

Client: ALS Environmental
Work Order: 1510388
Project: K1511860

QC BATCH REPORT

Batch ID: **RA151026-2-2** Instrument ID **LB4100-A** Method: **Radium-228 Analysis by GFPC**

LCS Sample ID: **RA151026-2** Units: **pCi/l** Analysis Date: **11/2/2015 12:43**
Client ID: Run ID: **RA151026-2A** Prep Date: **10/26/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-228	8.3 (+/- 2.2)	1	7.362		112	70-130					P,M3
Carr: BARIUM	32570		33300		97.8	40-110					

LCSD Sample ID: **RA151026-2** Units: **pCi/l** Analysis Date: **11/2/2015 12:43**
Client ID: Run ID: **RA151026-2A** Prep Date: **10/26/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-228	7.6 (+/- 2)	1	7.362		104	70-130		8.3	0.2	2.1	P
Carr: BARIUM	32340		33300		97.1	40-110		32570			

MB Sample ID: **RA151026-2** Units: **pCi/l** Analysis Date: **11/2/2015 13:07**
Client ID: Run ID: **RA151026-2A** Prep Date: **10/26/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-228	ND	0.58									U
Carr: BARIUM	31910		33300		95.8	40-110					

The following samples were analyzed in this batch: 1510388-1

ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
T : +1 360 577 7222
F : +1 360 636 1068
www.alsglobal.com

December 09, 2015

Analytical Report for Service Request No: K1511861

Jeff Coleman
Longview, City of
W/S Operation Center
P.O. Box 128
Longview, WA 98632

RE: Sentinel Wells

Dear Jeff,

Enclosed are the results of the sample(s) submitted to our laboratory October 20, 2015
For your reference, these analyses have been assigned our service request number **K1511861.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3275. You may also contact me via email at Chris.Leaf@ALSGlobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Chris Leaf
Project Manager

ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
T : +1 360 577 7222
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www.alsglobal.com

Table of Contents

Acronyms
Qualifiers
State Certifications, Accreditations, And Licenses
Chain of Custody
Metals
Subcontract Lab Results

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L14-51
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	Not available	-
Idaho DHW	http://www.healthandwelfare.idaho.gov/Health/Labs/CertificationDrinkingWaterLabs/tabid/1833/Default.aspx	-
ISO 17025	http://www.pjlabs.com/	L14-50
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	03016
Maine DHS	Not available	WA01276
Michigan DEQ	http://www.michigan.gov/deq/0,1607,7-135-3307_4131_4156---,00.html	9949
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Chain of Custody

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636- 1068
www.alsglobal.com

ALS Environmental

58081

CHAIN OF CUSTODY

58081

001

SR# K1511861

COC Set____of____

COC#_____

1317 South 13th Ave, Kelso, WA 98626 Phone (360) 577-7222 / 800-695-7222 / FAX (360) 636-1068
www.alsglobal.com

Project Name: Sentinel Wells
Project Number:
Project Manager: Jeff Coleman
Company: City of Longview
Address: PO Box 128 Longview WA 98632
Phone #:
email:
Sampler Signature: T Daly
Sampler Printed Name: T Daly

CLIENT SAMPLE ID	LABID	SAMPLING Date	SAMPLING Time	Matrix	NUMBER OF CONTAINERS	7D 900.0 / Radioact	7D 903.1 / Radium 226	7D 904.0 / Radium 228	180D 200.8 / Metals T	1	2	3	4	5	Remarks
1. DW-7		10/20/15	1050		2	—	—	—	—						
2.															
3.															
4.															
5.															
6.															
7.															
8.															
9.															
10.															

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. CLP Like Summary (no raw data)
___ IV. Data Validation Report
___ V. EDD

Invoice Information

P.O.# 36-4744
Bill To: City of Longview
PO Box 128
Longview WA 98632

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
___ Standard

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments:

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other_____(Circle One)

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature: T Daly	Signature: [illegible]	Signature	Signature	Signature	Signature
Printed Name: T Daly	Printed Name: [illegible]	Printed Name	Printed Name	Printed Name	Printed Name
Firm: CDP	Firm: HRS	Firm	Firm	Firm	Firm
Date/Time: 10/20/15 1548	Date/Time: 10/20/15 1548	Date/Time	Date/Time	Date/Time	Date/Time

PC CL

Cooler Receipt and Preservation Form

Client / Project: City of Longview Service Request K15 11801

Received: 10/20/15 Opened: 10/20/15 By: KR Unloaded: 10/20/15 By: KR

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? _____

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
12.9	13.0	10.5	10.6	+0.1	338	1 of 4		
8.3	8.5	12.6	12.8	+0.2	354	2 of 4		
5.9	6.1	11.2	11.4	+0.2	359	3 of 4		
12.1	12.3	14.4	14.6	+0.2	368	4 of 4		

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA ~~Y~~ N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time
DW2	1 gl cube				X	HNO3	8mL	RE/1-31-L	KR	1605
DW7	↓				↓	↓	↓	↓	↓	↓
DW6										

Notes, Discrepancies, & Resolutions: _____

Page ____ *of* ____

Metals

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511861
Project:	Sentinel Wells	**Date Collected:**	10/20/15 10:50
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15 15:48
Sample Name:	DW-7	**Basis:**	NA
Lab Code:	K1511861-001		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Uranium	200.8	ND U	mg/L	0.000020	1	11/04/15 01:34	10/27/15	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511861
Project:	Sentinel Wells	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	NA
Lab Code:	KQ1512448-01		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Uranium	200.8	ND U	mg/L	0.000020	1	11/04/15 12:37	10/27/15	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511861
Project	Sentinel Wells	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
		Date Analyzed:	11/04/15

Replicate Sample Summary
Total Metals

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511795-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample KQ1512448-04 Result	Average	RPD	RPD Limit
Uranium	200.8	0.000020	ND U	ND U	ND	-	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Printed 11/24/15 1:43:26 PM

Superset Reference:

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511861
Project:	Sentinel Wells	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	11/4/15
		Date Extracted:	10/27/15

Matrix Spike Summary
Total Metals

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511795-001	**Basis:**	NA
Analysis Method:	200.8		
Prep Method:	EPA CLP-METALS ILM04.0		

Matrix Spike
KQ1512448-05

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Uranium	ND U	0.0207	0.0200	104	70-130

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Printed 11/24/15 1:43:26 PM

Superset Reference:

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511861
Project:	Sentinel Wells	**Date Analyzed:**	11/04/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/27/15

Lab Control Sample Summary
Total Metals

Analysis Method:	200.8	**Units:**	mg/L
Prep Method:	EPA CLP-METALS ILM04.0	**Basis:**	NA
		Analysis Lot:	470354

Lab Control Sample
KQ1512448-02

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
Uranium	0.0205	0.0200	102	85-115

Subcontract Lab Results

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Thursday, November 12, 2015

Chris Leaf
ALS Environmental
1317 South 13th Ave
Kelso, WA 98626

Re: ALS Workorder: 1510387
Project Name:
Project Number: K1511861

Dear Ms. Leaf:

One water sample was received from ALS Environmental, on 10/22/2015. The sample was scheduled for the following analyses:

Gross Alpha/Beta
Radium-226
Radium-228

The results for these analyses are contained in the enclosed reports.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Thank you for your confidence in ALS Environmental. Should you have any questions, please call.

Sincerely,

ALS Environmental
Jeff R. Kujawa
Project Manager

ALS Environmental – Fort Collins is accredited by the following accreditation bodies for various testing scopes in accordance with requirements of each accreditation body. All testing is performed under the laboratory management system, which is maintained to meet these requirement and regulations. Please contact the laboratory or accreditation body for the current scope testing parameters.

ALS Environmental – Fort Collins	
Accreditation Body	License or Certification Number
Alaska (AK)	UST-086
Alaska (AK)	CO01099
Arizona (AZ)	AZ0742
California (CA)	06251CA
Colorado (CO)	CO01099
Connecticut (CT)	PH-0232
Florida (FL)	E87914
Idaho (ID)	CO01099
Kansas (KS)	E-10381
Kentucky (KY)	90137
L-A-B (DoD ELAP/ISO 170250)	L2257
Louisiana (LA)	05057
Maryland (MD)	285
Missouri (MO)	175
Nebraska(NE)	NE-OS-24-13
Nevada (NV)	CO000782008A
New York (NY)	12036
North Dakota (ND)	R-057
Oklahoma (OK)	1301
Pennsylvania (PA)	68-03116
Tennessee (TN)	2976
Texas (TX)	T104704241
Utah (UT)	CO01099
Washington (WA)	C1280

1510387

Gross Alpha/Beta:
The samples were analyzed for gross alpha and beta activity by gas flow proportional counting according to the current revision of SOP 724. Gross alpha results are referenced to ^{241}Am. Gross beta results are referenced to ^{90}Sr/Y.

All acceptance criteria were met.

Radium-228:
The samples were analyzed for the presence of ^{228}Ra by low background gas flow proportional counting of ^{228}Ac, which is the ingrown progeny of ^{228}Ra, according to the current revision of SOP 724.

All acceptance criteria were met.

Radium-226:
The samples were prepared and analyzed according to the current revision of SOP 783.

All acceptance criteria were met.

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1510387
Client Name: ALS Environmental
Client Project Name:
Client Project Number: K1511861
Client PO Number: K1511861

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
DW-7	1510387-1		WATER	20-Oct-15	10:50

ALS Environmental Chain of Custody

1317 South 13th Avenue • Kelso, WA 98626 • 1-360-577-7222 • FAX 1-360-636-1068

ALS Contact: Chris Leaf

1510387

Project Number: K1511861
Project Manager: Chris Leaf
QAP: LAB QAP

Lab Code	Sample ID	# of Cont.	Matrix	Sample Date	Sample Time	Lab ID	Radioact 900.0	Radium 226 903.1	Radium 228 904.0
K1511861-001	DW-7	2	Drinking Water	10/20/15	1050	Fort Collins ALS	X	X	X

Folder Comments:
Cubes preserved with HNO3 on 10/20/15 @ 1605.

Special Instructions/Comments
Please provide the electronic (PDF and EDD) report to the following e-mail address: ALKLS.Data@alsglobal.com.

CL 10/21/15

H - Test is On Hold P - Test is Authorized for Prep Only

Turnaround Requirements
____ **RUSH** (Surcharges Apply)
PLEASE CIRCLE WORK DAYS
1 2 3 4 5
✓ **STANDARD**
Requested FAX Date: _____
Requested Report Date: 11/17/15

Report Requirements
____ I. Results Only
X II. Results + QC Summaries
____ III. Results + QC and Calibration Summaries
____ IV. Data Validation Report with Raw Data
PQL/MDL/J N
EDD Y basic w/QC
Kelso Superset

Invoice Information
PO# 51K1511861
Bill to

Relinquished By: dSmith 10/21/15 1133 Received By: CA 10/22/15 @ 0930 Airbill Number:

ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: ALS Kelso Workorder No: 1510387

Project Manager: JRK Initials: SDM Date: 10-22-15

1. Does this project require any special handling in addition to standard ALS procedures?		YES	(NO)
2. Are custody seals on shipping containers intact?	NONE	(YES)	NO
3. Are Custody seals on sample containers intact?	(NONE)	YES	NO
4. Is there a COC (Chain-of-Custody) present or other representative documents?		(YES)	NO
5. Are the COC and bottle labels complete and legible?		(YES)	NO
6. Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		(YES)	NO
7. Were airbills / shipping documents present and/or removable?	DROP OFF	(YES)	NO
8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	N/A	(YES)	NO
9. Are all aqueous non-preserved samples pH 4-9?	(N/A)	YES	NO
10. Is there sufficient sample for the requested analyses?		(YES)	NO
11. Were all samples placed in the proper containers for the requested analyses?		(YES)	NO
12. Are all samples within holding times for the requested analyses?		(YES)	NO
13. Were all sample containers received intact? (not broken or leaking, etc.)		(YES)	NO
14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: ____ < green pea ____ > green pea	(N/A)	YES	NO
15. Do any water samples contain sediment? Amount Amount of sediment: ____ dusting ____ moderate ____ heavy	N/A	YES	(NO)
16. Were the samples shipped on ice?		YES	(NO)
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #2 #4	(RAD ONLY)	YES	NO

Cooler #:	1							
Temperature (°C):	Amb							
No. of custody seals on cooler:	1							
DOT Survey/ Acceptance Information — External µR/hr reading:	10							
Background µR/hr reading:	11							

Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? (YES) NO / NA (If no, see Form 008.)

Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXCEPT #1 AND #16.

If applicable, was the client contacted? YES / NO / (NA) Contact: _____ Date/Time: _____

Project Manager Signature / Date: [signature] 10-22-15

*IR Gun #2: Oakton, SN 29922500201-0066
*IR Gun #4: Oakton, SN 2372220101-0002

Form 201r24.xls (06/04/2012)

1510287

ORIGIN ID:LOGA (360) 577-7222
SAMPLE RECEIVING
ALS ENVIRONMENTAL
1317 S 13TH AVE

KELSO, WA 98626
UNITED STATES US

SHIP DATE: 21OCT15
ACTWGT: 64.7 LB
CAD: 102641/CAFE2806
DIMS: 26x14x13 IN

BILL SENDER

TO SAMPLE RECEIVING
ALS LBORATORY GROUP
225 COMMERCE DRIVE

FORT COLLINS CO 80524
(970) 490-1511
PO: CL/CL/CL

REF: SAMPLE K1511860 1511861 1511864

10
-1

521C3/401A/6F03

FedEx
Express

J141214072001ev

THU - 22 OCT 10:30A
PRIORITY OVERNIGHT

TRK# 0201 6447 9267 3946

XH FTCA

80524
CO-US DEN

Client: ALS Environmental
Project: K1511861
Sample ID: DW-7
Legal Location:
Collection Date: 10/20/2015 10:50

Date: *12-Nov-15*
Work Order: 1510387
Lab ID: 1510387-1
Matrix: WATER
Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Gross Alpha/Beta by GFPC		**PAI 724**			Prep Date: **11/4/2015**	PrepBy: **DKL**
GROSS ALPHA	ND (+/- 1.1)	U	2.2	pCi/l	NA	11/6/2015 10:16
GROSS BETA	3.6 (+/- 1.7)	LT	3.2	pCi/l	NA	11/6/2015 10:16
Radium-226 by Radon Emanation - Method 903.1		**PAI 783**			Prep Date: **11/5/2015**	PrepBy: **ECP**
Ra-226	ND (+/- 0.14)	U	0.23	pCi/l	NA	11/11/2015 13:06
Carr: BARIUM	*97.4*		*40-110*	*%REC*	DL = NA	11/11/2015 13:06
Radium-228 Analysis by GFPC		**PAI 724**			Prep Date: **10/26/2015**	PrepBy: **DKL**
Ra-228	ND (+/- 0.28)	U	0.51	pCi/l	NA	11/2/2015 12:39
Carr: BARIUM	*97.4*		*40-110*	*%REC*	DL = NA	11/2/2015 12:39

Client:	ALS Environmental	**Date:**	*12-Nov-15*
Project:	K1511861	**Work Order:**	1510387
Sample ID:	DW-7	**Lab ID:**	1510387-1
Legal Location:		**Matrix:**	WATER
Collection Date:	10/20/2015 10:50	**Percent Moisture:**	

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed

Explanation of Qualifiers

Radiochemistry:

U or ND - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
Y2 - Chemical Yield outside default limits.
W - DER is greater than Warning Limit of 1.42
* - Aliquot Basis is 'As Received' while the Report Basis is 'Dry Weight'.
# - Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'.
G - Sample density differs by more than 15% of LCS density.
D - DER is greater than Control Limit
M - Requested MDC not met.
LT - Result is less than requested MDC but greater than achieved MDC.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS, Matrix Spike Recovery within control limits.
N - Matrix Spike Recovery outside control limits
NC - Not Calculated for duplicate results less than 5 times MDC
B - Analyte concentration greater than MDC.
B3 - Analyte concentration greater than MDC but less than Requested MDC.

Inorganics:

B - Result is less than the requested reporting limit but greater than the instrument method detection limit (MDL).
U or ND - Indicates that the compound was analyzed for but not detected.
E - The reported value is estimated because of the presence of interference. An explanatory note may be included in the narrative.
M - Duplicate injection precision was not met.
N - Spiked sample recovery not within control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike duplicate fail and the native sample concentration is less than four times the spike added concentration.
Z - Spiked recovery not within control limits. An explanatory note may be included in the narrative.
* - Duplicate analysis (relative percent difference) not within control limits.
S - SAR value is estimated as one or more analytes used in the calculation were not detected above the detection limit.

Organics:

U or ND - Indicates that the compound was analyzed for but not detected.
B - Analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user.
E - Analyte concentration exceeds the upper level of the calibration range.
J - Estimated value. The result is less than the reporting limit but greater than the instrument method detection limit (MDL).
A - A tentatively identified compound is a suspected aldol-condensation product.
X - The analyte was diluted below an accurate quantitation level.
* - The spike recovery is equal to or outside the control criteria used.
+ - The relative percent difference (RPD) equals or exceeds the control criteria.
G - A pattern resembling gasoline was detected in this sample.
D - A pattern resembling diesel was detected in this sample.
M - A pattern resembling motor oil was detected in this sample.
C - A pattern resembling crude oil was detected in this sample.
4 - A pattern resembling JP-4 was detected in this sample.
5 - A pattern resembling JP-5 was detected in this sample.
H - Indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest.
L - Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest.
Z - This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products:
- gasoline
- JP-8
- diesel
- mineral spirits
- motor oil
- Stoddard solvent
- bunker C

ALS Environmental -- FC

Client: ALS Environmental
Work Order: 1510387
Project: K1511861

Date: *11/12/2015 2:09*

QC BATCH REPORT

Batch ID: **RE151105-2-1** Instrument ID **Alpha Scin** Method: **Radium-226 by Radon Emanation**

LCS Sample ID: **RE151105-2** Units: **pCi/l** Analysis Date: **11/11/2015 13:47**
Client ID: Run ID: **RE151105-2A** Prep Date: **11/5/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-226	25.2 (+/- 6.4)	0.3	30.71		82.1	67-120					P
Carr: BARIUM	32570		33300		97.8	40-110					

LCSD Sample ID: **RE151105-2** Units: **pCi/l** Analysis Date: **11/11/2015 13:47**
Client ID: Run ID: **RE151105-2A** Prep Date: **11/5/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-226	27.5 (+/- 7)	0.2	30.71		89.7	67-120		25.2	0.2	2.1	P
Carr: BARIUM	32340		33300		97.1	40-110		32570			

MB Sample ID: **RE151105-2** Units: **pCi/l** Analysis Date: **11/11/2015 13:47**
Client ID: Run ID: **RE151105-2A** Prep Date: **11/5/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-226	ND	0.23									U
Carr: BARIUM	31910		33300		95.8	40-110					

The following samples were analyzed in this batch: 1510387-1

Client: ALS Environmental
Work Order: 1510387
Project: K1511861

QC BATCH REPORT

Batch ID: **AB151104-1-4** Instrument ID **LB4100-C** Method: **Gross Alpha/Beta by GFPC**

LCS Sample ID: **AB151104-1** Units: **pCi/l** Analysis Date: **11/6/2015 12:26**

Client ID: Run ID: **AB151104-1A** Prep Date: **11/4/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
GROSS ALPHA	204 (+/- 38)	7	224.1		91	70-130					P,M3
GROSS BETA	194 (+/- 34)	11	204.2		94.9	70-130					P,M3

MB Sample ID: **AB151104-1** Units: **pCi/l** Analysis Date: **11/6/2015 15:12**

Client ID: Run ID: **AB151104-1A** Prep Date: **11/4/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
GROSS ALPHA	ND	0.82									U
GROSS BETA	ND	1.12									U

The following samples were analyzed in this batch: 1510387-1

Client: ALS Environmental
Work Order: 1510387
Project: K1511861

QC BATCH REPORT

Batch ID: **RA151026-2-2** Instrument ID **LB4100-A** Method: **Radium-228 Analysis by GFPC**

LCS Sample ID: **RA151026-2** Units: **pCi/l** Analysis Date: **11/2/2015 12:43**
Client ID: Run ID: **RA151026-2A** Prep Date: **10/26/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-228	8.3 (+/- 2.2)	1	7.362		112	70-130					P,M3
Carr: BARIUM	32570		33300		97.8	40-110					

LCSD Sample ID: **RA151026-2** Units: **pCi/l** Analysis Date: **11/2/2015 12:43**
Client ID: Run ID: **RA151026-2A** Prep Date: **10/26/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-228	7.6 (+/- 2)	1	7.362		104	70-130		8.3	0.2	2.1	P
Carr: BARIUM	32340		33300		97.1	40-110		32570			

MB Sample ID: **RA151026-2** Units: **pCi/l** Analysis Date: **11/2/2015 13:07**
Client ID: Run ID: **RA151026-2A** Prep Date: **10/26/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-228	ND	0.58									U
Carr: BARIUM	31910		33300		95.8	40-110					

The following samples were analyzed in this batch: 1510387-1

ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
T : +1 360 577 7222
F : +1 360 636 1068
www.alsglobal.com

December 21, 2015

Analytical Report for Service Request No: K1511865

Jeff Coleman
Longview, City of
W/S Operation Center
P.O. Box 128
Longview, WA 98632

RE: Sentinel Well

Dear Jeff,

Enclosed are the results of the sample(s) submitted to our laboratory October 20, 2015
For your reference, these analyses have been assigned our service request number **K1511865.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3275. You may also contact me via email at Chris.Leaf@ALSGlobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Chris Leaf
Project Manager

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Table of Contents

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□ □a□f□e□□
□□a□e □e□□f□□a□o□□□□□□e□□a□o□□□□□□ □□e□□e□
□a□e □a□□a□□e
□ □a□□ of □ □□□o□□
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□P□ □e□□o□5□□□1
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Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L14-51
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	Not available	-
Idaho DHW	http://www.healthandwelfare.idaho.gov/Health/Labs/CertificationDrinkingWaterLabs/tabid/1833/Default.aspx	-
ISO 17025	http://www.pjlabs.com/	L14-50
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	03016
Maine DHS	Not available	WA01276
Michigan DEQ	http://www.michigan.gov/deq/0,1607,7-135-3307_4131_4156---,00.html	9949
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	□□□a□g□a□o□	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

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www.alsglobal.com

ALS ENVIRONMENTAL

Client:	Longview, City of	**Service Request No.:**	K1511865
Project:	Sentinel Well	**Date Received:**	10/20/15
Sample Matrix:	Drinking Water		

Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier II data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Surrogate recoveries have been reported for all applicable organic analyses. Additional quality control analyses reported herein include: Laboratory Duplicate (DUP), Matrix Spike (MS), Matrix/Duplicate Matrix Spike (MS/DMS), Laboratory Control Sample (LCS), and Laboratory/Duplicate Laboratory Control Sample (LCS/DLCS).

Sample Receipt

Two drinking water samples were received for analysis at ALS Environmental on 10/20/15. The samples were received in good condition and consistent with the accompanying chain of custody form, except where noted on the cooler receipt and preservation form included in this report. The samples were stored in a refrigerator at 4ºC upon receipt at the laboratory.

General Chemistry Parameters

Chloride by EPA Method 300.0 and Total Cyanide by EPA Method 335.4:
The matrix spike recoveries for sample Batch QC were outside control criteria because of suspected matrix interference. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. No further corrective action was taken.

Ammonia as Nitrogen by Standard Method 4500-NH3 G:
The Relative Percent Difference (RPD) criterion for the replicate analysis in sample Batch QC was not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). Analytical values derived from measurements close to the detection limit are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

No other anomalies associated with the analysis of these samples were observed.

Total Metals

No anomalies associated with the analysis of these samples were observed.

EDB and DBCP by EPA Method 504.1

No anomalies associated with the analysis of these samples were observed.

Approved by_____

Pesticides and Polychlorinated Biphenyls by EPA Method 508.1

Calibration Verification Exceptions:
The analysis of Organochlorine Pesticides and PCBs in Drinking Water by EPA 508.1 requires the use of dual column confirmation. When the Continuing Calibration Verification (CCV) criterion is met for both columns, the lower of the two sample results is generally reported. The primary evaluation criteria were not met on the confirmation column for Endrin. The results were reported from the column with an acceptable CCV. The data quality was not affected. No further corrective action was necessary.

Matrix Spike Recovery Exceptions:
The upper control criterion was exceeded for the following several analytes in Matrix Spike (MS) KWG1510525-1 and Matrix Spike Duplicate (MSD) KWG1510525-2. The analytes in question were not detected in the associated field samples. The error associated with elevated recovery indicated a high bias. The sample data was not significantly affected. No further corrective action was appropriate.

Lab Control Sample Exceptions:
The upper control criterion was exceeded for several analytes in Laboratory Control Sample (LCS) KWG1510525-3. The analytes in question were not detected in the associated field samples. The error associated with elevated recovery indicated a high bias. The sample data was not significantly affected. No further corrective action was appropriate.

No other anomalies associated with the analysis of these samples were observed.

Chlorinated Acides by EPA Method 515.4

Second Source Exceptions:
The analysis of Chlorinated Herbicides in Drinking Water requires the use of dual column confirmation. When the Initial Calibration Verification (ICV) criteria are met for both columns, the lower of the two sample results is generally reported. The criterion was not met for 4-Nitrophenol and Silvex in CAL 14387. The data quality was not affected. No further corrective action was necessary.

Matrix Spike Recovery Exceptions:
The matrix spike recovery and duplicate matrix spike recovery of Chloramben for batch QC was outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. The matrix spike outlier suggested a potential high bias in this matrix. No further corrective action was appropriate.

No other anomalies associated with the analysis of these samples were observed.

Volatile Organic Compounds by EPA Method 524.2

The sample Trip Blanks had a pH of 6.

No other anomalies associated with the analysis of these samples were observed.

Semivolatile Organic Compounds by EPA Method 525.2

Surrogate Exceptions:
The control criteria were exceeded for Perylene-d12 in sample DW-7 and Batch QC due to suspected matrix interference. . The sample contained particulate matter that collected on the extraction disk during sample elution. Historical results have shown that particulate matter can cause low recoveries for this surrogate. No further corrective action was appropriate.

Approved by_____

The upper control criterion was exceeded for 1,3-Dimethyl-2-nitrobenzene in sample Batch QC. No target analytes were detected in the sample. The error associated with an elevated recovery equated to a high bias. The quality of the sample data was not significantly affected. No further corrective action was appropriate.

Lab Control Sample Exceptions:
The upper control criterion was exceeded for Fluorene in Laboratory Control Sample (LCS) KWG1510524-3. The analyte in question was not detected in the associated field samples. The error associated with elevated recovery indicated a high bias. The sample data was not significantly affected. No further corrective action was appropriate.

Matrix Spike Recovery Exceptions:
The matrix spike recovery of Bis(2-ethylhexyl) Phthalate for sample Batch QC was outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. The matrix spike outlier suggested a potential high bias in this matrix. No further corrective action was appropriate.

No other anomalies associated with the analysis of these samples were observed.

Diquat by High Performance Liquid Chromatography

No anomalies associated with the analysis of these samples were observed.

Sulfur

This analysis was performed at ALS Environmental, Simi Valley, CA. The data for this analysis is included in the corresponding section of this report.

Carbamates by EPA Method 531.1

This analysis was performed at ALS Environmental, Middletown, PA. The data for this analysis is included in the corresponding section of this report.

Approved by_____

Chain of Custody

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Phone (360)577- 7222 Fax (360)636- 1068
www.alsglobal.com

ALS Environmental

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CHAIN OF CUSTODY

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001, 005

SR# K1511865

COC Set____of____

COC#_____

1317 South 13th Ave, Kelso, WA 98626 Phone (360) 577-7222 / 800-695-7222 / FAX (360) 636-1068
www.alsglobal.com

Project Name: Sentinel Wells
Project Number:
Project Manager: Jeff Coleman
Company: City of Longview
Address: PO Box 128 Longview WA 98632
Phone #:
Email:
Sampler Signature: T Daly
Sampler Printed Name: T Daly

CLIENT SAMPLE ID	LABID	SAMPLING Date, Time	Matrix	NUMBER OF CONTAINERS	24H: SM 9223 B / Colliert EC NC	24H: SM 9223 B / Colliert Tot NC	48H: 180.1 / Turbidity	48H: 300.0 / NO2	48H: 300.0 / NO3	48H: SM 2120 B / Color	48H: SM 4500-P E / O Phos	7D: [redacted]	7D: 549.2 / DIQ_PARAQ	7D: SM 2540 C / TDS	14D: 335.4 / CN T	14D: 504.1 / EDB DBCP 123TCP	14D: 508.1 / PEST_CL	14D: 515.4 / CL_ACID_HERB	14D: 524.2 / VOC	14D: 525.2 / SVO	14D: [redacted]	14D: SM 2320 B / Alkalinity Titr	14D: Sulfur Liq / Sulfur	28D: 245.1 / Hg T	28D: 300.0 / F	28D: 531.1 / CARBAM	28D: SM 2510 B / Conductivity	Remarks
1. DW-7		10/20/15 1050		23																								
2.																												
3.																												
4.																												
5.																												
6.																												
7.																												
8.																												
9.																												
10.																												

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. CLP Like Summary (no raw data)
___ IV. Data Validation Report
___ V. EDD

Invoice Information

P.O.# 36-4743
Bill To: City of Longview
PO Box 128
Long

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
___ Standard

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments:

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other____(Circle One)

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature: T Daly	Signature: [signature]	Signature	Signature	Signature	Signature
Printed Name: T Daly	Printed Name: [signature]	Printed Name	Printed Name	Printed Name	Printed Name
Firm: Cof L	Firm: ALS	Firm	Firm	Firm	Firm
Date/Time: 10/20/15 1548	Date/Time: 10/20/15 1548	Date/Time	Date/Time	Date/Time	Date/Time

ALS Environmental

58082

CHAIN OF CUSTODY

58082

001, 005

SR# K1511865

COC Set____of____

COC#_____

1317 South 13th Ave, Kelso, WA 98626 Phone (360) 577-7222 / 800-695-7222 / FAX (360) 636-1068
www.alsglobal.com

Project Name: Sentinel Wells
Project Number:
Project Manager: Jeff Coleman
Company: City of Longview
Address: PO Box 128 Longview WA 98632
Phone #:
email:
Sampler Signature: T Daly
Sampler Printed Name: T Daly

CLIENT SAMPLE ID	LABID	SAMPLING Date	SAMPLING Time	Matrix	NUMBER OF CONTAINERS	28D: 300.0 / Br	28D: 300.0 / Chloride	28D: 300.0 / SO4	28D: 314.0 / ClO4	28D: SM 4500-NH3 G / Ammonia	30D: [redacted]	180D: 1630 / Methyl Hg T	180D: 200.7 / Metals T	180D: 200.8 / Metals T	999D: Calculation / NO2 NO3 Calc	999D: SM 2340 B / Hardness Calc	1	2	3	4	5	Remarks
1. DW-7		10/20/15	1050																			
2.																						
3.																						
4.																						
5.																						
6.																						
7.																						
8.																						
9.																						
10.																						

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. CLP Like Summary (no raw data)
___ IV. Data Validation Report
___ V. EDD

Invoice Information

P.O.# 36-4743
Bill To: City of Longview
PO Box 128
Longview WA 98632

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
___ Standard

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments:

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other____(Circle One)

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature: T Daly	Signature: [signature]	Signature	Signature	Signature	Signature
Printed Name: T Daly	Printed Name: [signature]	Printed Name	Printed Name	Printed Name	Printed Name
Firm: Cal L	Firm: ALS	Firm	Firm	Firm	Firm
Date/Time: 10/20/15 1548	Date/Time: 10/20/15 1548	Date/Time	Date/Time	Date/Time	Date/Time

PC CL

Cooler Receipt and Preservation Form

Client / Project: City of Longview Service Request K15 11865

Received: 10/20/15 Opened: 10/20/15 By: KR Unloaded: 10/20/15 By: KR

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? _____

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
12.9	13.0	10.5	10.6	+0.1	338	1 of 4		
8.3	8.5	12.6	12.8	+0.2	354	2 of 4		
5.9	6.1	11.2	11.4	+0.2	359	3 of 4		
12.1	12.3	14.4	14.6	+0.2	368	4 of 4		

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA ~~Y~~ N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time
DW2	1gl cube				X	HNO3	8mL	RE/1-31-L	KR	1605
DW7	↓				↓	↓	↓	↓	↓	↓
DW6										

Notes, Discrepancies, & Resolutions: _____

Page ____ *of* ____

General Chemistry

ALS Environmental—Kelso Laboratory
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www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	180.1	**Units:**	NTU
Prep Method:	None	**Basis:**	NA

Turbidity

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-7	K1511865-001	**10.1**	0.20	1	10/21/15 12:00	
Method Blank	K1511865-MB1	ND U	0.20	1	10/20/15 13:44	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
Analysis Method:	180.1	**Units:**	NTU
Prep Method:	None	**Basis:**	NA

Replicate Sample Summary
Turbidity

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1511794-001DUP	0.20	12.2	12.2	12.2	<1	20	10/20/15
Batch QC	K1511798-001DUP	0.20	1.72	1.71	1.72	<1	20	10/20/15

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	NA

Lab Control Sample Summary
Turbidity

Analysis Method:	180.1	**Units:**	NTU
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	468080

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511865-LCS1	4.50	4.23	106	90-110

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Bromide

Sample Name	Lab Code	Result		MRL	Dil.	Date Analyzed	Date Extracted	Q
DW-7	K1511865-001	ND	U	0.20	2	10/20/15 20:51	10/19/15	
Method Blank	K1511865-MB1	ND	U	0.10	1	10/20/15 09:26	10/19/15	
Method Blank	K1511865-MB2	ND	U	0.10	1	10/20/15 12:18	10/19/15	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Replicate Sample Summary
Bromide

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1511794-001DUP	0.20	ND U	ND U	NC	NC	20	10/20/15
Batch QC	K1511798-001DUP	0.20	ND U	ND U	NC	NC	20	10/20/15

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Bromide

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511794-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511794-001MS			**Duplicate Matrix Spike** K1511794-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Bromide	ND U	9.61	10.0	96	9.75	10.0	97	90-110	1	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Bromide

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511798-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511798-001MS			**Duplicate Matrix Spike** K1511798-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Bromide	ND U	9.61	10.0	96	9.58	10.0	96	90-110	<1	20

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ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/19/15

Lab Control Sample Summary
Bromide

Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	468244

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511865-LCS1	2.41	2.50	96	90-110
Lab Control Sample	K1511865-LCS2	2.40	2.50	96	90-110

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Chloride

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
DW-7	K1511865-001	**25.2**	1.0	10	10/22/15 01:01	10/21/15	
Method Blank	K1511865-MB1	ND U	0.10	1	10/21/15 09:22	10/21/15	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Replicate Sample Summary
Chloride

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1511863-001DUP	0.20	8.85	8.93	8.89	<1	20	10/21/15
Batch QC	K1511896-004DUP	2.0	1.2 J	ND U	NC	NC	20	10/21/15

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dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/21/15
		Date Extracted:	10/21/15

Duplicate Matrix Spike Summary
Chloride

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511863-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511863-001MS			Duplicate Matrix Spike K1511863-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Chloride	8.85	18.2	10.0	94	18.0	10.0	91	90-110	2	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/21/15
		Date Extracted:	10/21/15

Duplicate Matrix Spike Summary
Chloride

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511896-004	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511896-004MS			**Duplicate Matrix Spike** K1511896-004DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Chloride	1.2 J	34.0	40.0	82 *	34.0	40.0	82 *	90-110	<1	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Analyzed:**	10/21/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/21/15

Lab Control Sample Summary
Chloride

Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	468396

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511865-LCS1	4.88	5.00	98	90-110

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Fluoride

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
DW-7	K1511865-001	ND U	0.20	2	10/20/15 20:51	10/19/15	
Method Blank	K1511865-MB1	ND U	0.10	1	10/20/15 09:26	10/19/15	
Method Blank	K1511865-MB2	ND U	0.10	1	10/20/15 12:18	10/19/15	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Replicate Sample Summary
Fluoride

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1511794-001DUP	0.20	0.22	0.21	0.218	4	20	10/20/15
Batch QC	K1511798-001DUP	0.20	ND U	ND U	NC	NC	20	10/20/15

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dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Fluoride

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511794-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511794-001MS			Duplicate Matrix Spike K1511794-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Fluoride	0.22	9.45	10.0	92	9.66	10.0	94	90-110	2	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Fluoride

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511798-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511798-001MS			Duplicate Matrix Spike K1511798-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Fluoride	ND U	9.52	10.0	95	9.66	10.0	97	90-110	2	20

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dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/19/15

Lab Control Sample Summary
Fluoride

Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	468244

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511865-LCS1	4.98	5.00	100	90-110
Lab Control Sample	K1511865-LCS2	4.91	5.00	98	90-110

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Nitrite as Nitrogen

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
DW-7	K1511865-001	ND U	0.10	2	10/20/15 20:51	10/19/15	
Method Blank	K1511865-MB1	ND U	0.050	1	10/20/15 09:26	10/19/15	
Method Blank	K1511865-MB2	ND U	0.050	1	10/20/15 12:18	10/19/15	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Replicate Sample Summary
Nitrite as Nitrogen

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1511794-001DUP	0.10	ND U	ND U	NC	NC	20	10/20/15
Batch QC	K1511798-001DUP	0.10	ND U	ND U	NC	NC	20	10/20/15

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ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Nitrite as Nitrogen

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511794-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511794-001MS			Duplicate Matrix Spike K1511794-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Nitrite as Nitrogen	ND U	10.3	10.0	103	10.5	10.0	105	90-110	1	20

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Nitrite as Nitrogen

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511798-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511798-001MS			Duplicate Matrix Spike K1511798-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Nitrite as Nitrogen	ND U	10.4	10.0	104	10.4	10.0	104	90-110	<1	20

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/19/15

Lab Control Sample Summary
Nitrite as Nitrogen

Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	468244

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511865-LCS1	2.56	2.50	102	90-110
Lab Control Sample	K1511865-LCS2	2.55	2.50	102	90-110

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Nitrate as Nitrogen

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
DW-7	K1511865-001	ND U	0.10	2	10/20/15 20:51	10/19/15	
Method Blank	K1511865-MB1	ND U	0.050	1	10/20/15 09:26	10/19/15	
Method Blank	K1511865-MB2	ND U	0.050	1	10/20/15 12:18	10/19/15	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Replicate Sample Summary
Nitrate as Nitrogen

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1511794-001DUP	0.10	ND U	ND U	NC	NC	20	10/20/15
Batch QC	K1511798-001DUP	0.10	ND U	ND U	NC	NC	20	10/20/15
Batch QC	K1511800-001DUP	0.10	ND U	ND U	NC	NC	20	10/20/15

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dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Nitrate as Nitrogen

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511794-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511794-001MS			Duplicate Matrix Spike K1511794-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Nitrate as Nitrogen	ND U	9.17	10.0	92	9.23	10.0	92	90-110	<1	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Nitrate as Nitrogen

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511798-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511798-001MS			Duplicate Matrix Spike K1511798-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Nitrate as Nitrogen	ND U	9.15	10.0	91	9.13	10.0	91	90-110	<1	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Nitrate as Nitrogen

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511800-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511800-001MS			Duplicate Matrix Spike K1511800-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Nitrate as Nitrogen	ND U	3.60	4.00	90	3.63	4.00	91	90-110	<1	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/19/15

Lab Control Sample Summary
Nitrate as Nitrogen

Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	468244

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511865-LCS1	2.38	2.50	95	90-110
Lab Control Sample	K1511865-LCS2	2.35	2.50	94	90-110

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Sulfate

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
DW-7	K1511865-001	**3.01**	0.20	2	10/20/15 20:51	10/19/15	
Method Blank	K1511865-MB1	ND U	0.10	1	10/20/15 09:26	10/19/15	
Method Blank	K1511865-MB2	ND U	0.10	1	10/20/15 12:18	10/19/15	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Replicate Sample Summary
Sulfate

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1511794-001DUP	0.20	2.86	2.73	2.79	5	20	10/20/15
Batch QC	K1511798-001DUP	0.20	3.00	3.03	3.02	<1	20	10/20/15

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Sulfate

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511794-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511794-001MS			Duplicate Matrix Spike K1511794-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Sulfate	2.86	12.1	10.0	93	12.2	10.0	93	90-110	<1	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Sulfate

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511798-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511798-001MS			Duplicate Matrix Spike K1511798-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Sulfate	3.00	12.5	10.0	95	12.5	10.0	95	90-110	<1	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/19/15

Lab Control Sample Summary
Sulfate

Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	468244

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511865-LCS1	5.01	5.00	100	90-110
Lab Control Sample	K1511865-LCS2	4.92	5.00	98	90-110

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	314.0	**Units:**	ug/L
Prep Method:	None	**Basis:**	NA

Perchlorate

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-7	K1511865-001	ND U	1.0	1	10/21/15 13:53	
Method Blank	K1511865-MB1	ND U	1.0	1	10/21/15 11:42	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
		Date Analyzed:	10/21/15

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	Batch QC	**Units:**	ug/L
Lab Code:	K1511360-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample K1511360-001DUP Result	Average	RPD	RPD Limit
Perchlorate	314.0	1.0	ND U	ND U	NC	NC	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/21/15
		Date Extracted:	NA

Duplicate Matrix Spike Summary
Perchlorate

Sample Name:	Batch QC	**Units:**	ug/L
Lab Code:	K1511360-001	**Basis:**	NA
Analysis Method:	314.0		
Prep Method:	None		

		Matrix Spike K1511360-001MS			Duplicate Matrix Spike K1511360-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	ND U	12.0	10.0	120	11.7	10.0	117	80-120	2	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Analyzed:**	10/21/15
Sample Matrix:	Drinking Water	**Date Extracted:**	NA

Lab Control Sample Summary
Perchlorate

Analysis Method:	314.0	**Units:**	ug/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	468262

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511865-LCS1	16.4	16.8	98	85-115

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	335.4	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Cyanide, Total

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
DW-7	K1511865-001	ND U	0.010	1	10/28/15 10:14	10/27/15	
Method Blank	K1511865-MB1	ND U	0.010	1	10/28/15 10:14	10/27/15	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
		Date Analyzed:	10/28/15

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	KQ1512462-06	**Basis:**	NA

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample KQ1512462-06DUP Result	Average	RPD	RPD Limit
Cyanide, Total	335.4	0.010	0.004 J	0.004 J	0.00376	<1	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/28/15
		Date Extracted:	10/27/15

Duplicate Matrix Spike Summary
Cyanide, Total

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	KQ1512462-06	**Basis:**	NA
Analysis Method:	335.4		
Prep Method:	Method		

		Matrix Spike KQ1512462-06MS				Duplicate Matrix Spike KQ1512462-06DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**		**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Cyanide, Total	0.004 J	0.124	0.100	120 *		0.121	0.100	117 *	90-110	2	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Analyzed:**	10/28/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/27/15

Lab Control Sample Summary
Cyanide, Total

Analysis Method:	335.4	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	469348

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511865-LCS1	0.146	0.150	97	90-110

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	Calculation	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Nitrate+Nitrite as Nitrogen

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-7	K1511865-001	ND U	0.20	1	10/20/15 20:51	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	SM 2120 B	**Units:**	ColorUnits
Prep Method:	None	**Basis:**	NA

Color

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-7	K1511865-001	**10.0**	5.0	1	10/21/15 12:23	
Method Blank	K1511865-MB1	ND U	5.0	1	10/20/15 14:35	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
Analysis Method:	SM 2120 B	**Units:**	ColorUnits
Prep Method:	None	**Basis:**	NA

Replicate Sample Summary
Color

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1511797-001DUP	5.0	15.0	15.0	15.0	<1	20	10/20/15
Batch QC	K1511893-005DUP	5.0	ND U	ND U	NC	NC	20	10/21/15

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	NA

Lab Control Sample Summary
Color

Analysis Method:	SM 2120 B	**Units:**	ColorUnits
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	468258

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511865-LCS1	50.0	50.0	100	85-115

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	SM 2320 B	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Alkalinity as CaCO3, Total

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-7	K1511865-001	**92.0**	2.0	1	11/02/15 14:50	
Method Blank	K1511865-MB1	ND U	2.0	1	11/02/15 14:50	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
Analysis Method:	SM 2320 B	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Replicate Sample Summary
Alkalinity as CaCO3, Total

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1511794-001DUP	2.0	81.3	81.3	81.3	<1	20	11/02/15
Batch QC	K1511896-004DUP	2.0	ND U	ND U	NC	NC	20	11/02/15

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Analyzed:**	11/02/15
Sample Matrix:	Drinking Water	**Date Extracted:**	NA

Lab Control Sample Summary
Alkalinity as CaCO3, Total

Analysis Method:	SM 2320 B	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	470113

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511865-LCS1	134	136	99	90-110

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	SM 2510 B	**Units:**	uMHOS/cm
Prep Method:	None	**Basis:**	NA

Conductivity at 25 Degrees Celsius

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-7	K1511865-001	**299**	2.0	1	10/21/15 10:44	
Method Blank	K1511865-MB1	ND U	2.0	1	10/21/15 10:44	
Method Blank	K1511865-MB2	ND U	2.0	1	10/21/15 10:44	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
		Date Analyzed:	10/21/15

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	DW-7	**Units:**	uMHOS/cm
Lab Code:	K1511865-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample K1511865-001DUP Result	Average	RPD	RPD Limit
Conductivity at 25 Degrees Celsius	SM 2510 B	2.0	299	298	299	<1	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Analyzed:**	10/21/15
Sample Matrix:	Drinking Water	**Date Extracted:**	NA

Lab Control Sample Summary
Conductivity at 25 Degrees Celsius

Analysis Method:	SM 2510 B	**Units:**	uMHOS/cm
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	468245

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511865-LCS1	315	289	109	86-113

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	SM 2540 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Solids, Total Dissolved

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-7	K1511865-001	**206**	10	1	10/23/15 16:02	
Method Blank	K1511865-MB1	ND U	10	1	10/23/15 16:02	
Method Blank	K1511865-MB2	ND U	10	1	10/23/15 16:02	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
Analysis Method:	SM 2540 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Replicate Sample Summary
Solids, Total Dissolved

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1511823-004DUP	10	364	362	363	<1	10	10/23/15
Batch QC	K1511833-007DUP	10	663	662	663	<1	10	10/23/15

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Analyzed:**	10/23/15
Sample Matrix:	Drinking Water	**Date Extracted:**	NA

Lab Control Sample Summary
Solids, Total Dissolved

Analysis Method:	SM 2540 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	468747

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511865-LCS1	896	897	100	85-115

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	SM 4500-NH3 G	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Ammonia as Nitrogen

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
DW-7	K1511865-001	**0.284**	0.050	1	10/22/15 09:57	10/22/15	
Method Blank	K1511865-MB1	ND U	0.050	1	10/22/15 09:57	10/22/15	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
		Date Analyzed:	10/22/15

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511685-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample K1511685-001DUP Result	Average	RPD	RPD Limit
Ammonia as Nitrogen	SM 4500-NH3 G	0.050	0.126	0.060	0.0926	71 *	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/22/15
		Date Extracted:	10/22/15

Duplicate Matrix Spike Summary
Ammonia as Nitrogen

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511685-001	**Basis:**	NA
Analysis Method:	SM 4500-NH3 G		
Prep Method:	Method		

		Matrix Spike K1511685-001MS			**Duplicate Matrix Spike** K1511685-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Ammonia as Nitrogen	0.126	2.01	2.00	94	1.96	2.00	92	90-110	2	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Analyzed:**	10/22/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/22/15

Lab Control Sample Summary
Ammonia as Nitrogen

Analysis Method:	SM 4500-NH3 G	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	468711

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511865-LCS1	14.9	16.2	92	90-110

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	SM 4500-P E	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Orthophosphate as Phosphorus

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-7	K1511865-001	**0.487**	0.050	1	10/21/15 08:40	
Method Blank	K1511865-MB1	ND U	0.050	1	10/20/15 17:24	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
		Date Analyzed:	10/20/15

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511794-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample K1511794-001DUP Result	Average	RPD	RPD Limit
Orthophosphate as Phosphorus	SM 4500-P E	0.050	0.213	0.198	0.206	7	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	NA

Duplicate Matrix Spike Summary
Orthophosphate as Phosphorus

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511794-001	**Basis:**	NA
Analysis Method:	SM 4500-P E		
Prep Method:	None		

		Matrix Spike K1511794-001MS			**Duplicate Matrix Spike** K1511794-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Orthophosphate as Phosphorus	0.213	0.59	0.40	94	0.58	0.40	92	75-125	2	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	NA

Lab Control Sample Summary
Orthophosphate as Phosphorus

Analysis Method:	SM 4500-P E	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	468008

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511865-LCS1	2.56	2.54	101	85-115

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	SM 9223 B	**Units:**	MPN/100mL
Prep Method:	None	**Basis:**	NA

Escherichia coli

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-7	K1511865-001	**absent**	-	1	10/21/15 17:10	

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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking Water	**Date Received:**	10/20/15
Analysis Method:	SM 9223 B	**Units:**	MPN/100mL
Prep Method:	None	**Basis:**	NA

Coliform, Total

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-7	K1511865-001	**absent**	-	1	10/21/15 17:10	

Metals

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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking water	**Date Received:**	10/20/15

Hardness as CaCO3

Prep Method:	CLAA	Units:	mg/L (ppm)
Analysis Method:	200.7/SM 2340B	Basis:	NA
Test Notes:			

Sample Name	Lab Code	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
DW-7	K1511865-001	0.07	1	10/22/15	10/29/15	98.3	
Method Blank	K1511865-MB	0.07	1	10/22/15	10/29/15	ND	

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QA/QC Report

Client: Longview, City of
Project: Sentinel Well
Sample Matrix: Drinking water

Service Request: K1511865
Date Collected: NA
Date Received: NA
Date Extracted: 10/22/15
Date Analyzed: 10/29/15

Duplicate Summary
Metals

Sample Name: Batch QCD
Lab Code: K1511794-001D
Test Notes:

Units: mg/L (ppm)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
Hardness as CaCO3	CLAA	200.7/SM 2340B	0.07	64.5	63.5	64.0	2	

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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Collected:**	10/20/15
Sample Matrix:	Drinking water	**Date Received:**	10/20/15

Methyl Mercury

Prep Method:	Method	Units:	ng/L
Analysis Method:	1630	Basis:	NA
Test Notes:			

Sample Name	Lab Code	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
DW-7	K1511865-001	0.1	1	11/02/15	11/03/15	ND	
Method Blank 1	K1511865-MB1	0.1	1	11/02/15	11/03/15	ND	
Method Blank 2	K1511865-MB2	0.1	1	11/02/15	11/03/15	ND	
Method Blank 3	K1511865-MB3	0.1	1	11/02/15	11/03/15	ND	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Collected:**	NA
Sample Matrix:	Drinking water	**Date Received:**	NA
		Date Extracted:	11/02/15
		Date Analyzed:	11/03/15

Matrix Spike/Duplicate Matrix Spike Summary
Metals

Sample Name:	Batch QC	Units:	ng/L
Lab Code:	K1511797-001MS, K1511797-001MSD	Basis:	NA
Test Notes:			

				Spike Level		Sample	Spike Result		Percent Recovery				
Analyte	**Prep Method**	**Analysis Method**	**MRL**	**MS**	**DMS**	**Result**	**MS**	**DMS**	**MS**	**DMS**	**CAS Acceptance Limits**	**Relative Percent Difference**	**Result Notes**
Mercury, Methyl	Method	1630	0.1	2.22	2.22	ND	2.74	2.74	123	123	65-135	<1	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Collected:**	NA
LCS Matrix:	Water	**Date Received:**	NA
		Date Extracted:	11/02/15
		Date Analyzed:	11/03/15

Ongoing Precision and Recovery (OPR) Sample Summary
Metals

Sample Name: Ongoing Precision and Recovery (Initial)

Units: ng/L
Basis: NA

Test Notes:

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Mercury, Methyl	Method	1630	2.22	2.57	116	67-133	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Collected:**	NA
LCS Matrix:	Water	**Date Received:**	NA
		Date Extracted:	11/02/15
		Date Analyzed:	11/03/15

Ongoing Precision and Recovery (OPR) Sample Summary
Metals

Sample Name: Ongoing Precision and Recovery (Final)

Units: ng/L
Basis: NA

Test Notes:

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Mercury, Methyl	Method	1630	2.22	2.68	121	67-133	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Collected:**	NA
LCS Matrix:	Water	**Date Received:**	NA
		Date Extracted:	11/02/15
		Date Analyzed:	11/03/15

Quality Control Sample (QCS) Summary
Metals

Sample Name: Quality Control Sample

Units: pg
Basis: NA

Test Notes:

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Mercury, Methyl	Method	1630	100	122	122	67-133	

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Longview, City of	**Service Request:**	K1511865
Project No.:	NA	**Date Collected:**	10/20/15
Project Name:	Sentinel Well	**Date Received:**	10/20/15
Matrix:	WATER	**Units:**	mg/L
		Basis:	NA

Sample Name: DW-7 **Lab Code:** K1511865-001

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.00005	1.0	10/22/15	11/04/15	0.00005	U	
Arsenic	200.8	0.0005	1.0	10/22/15	11/04/15	0.0041		
Barium	200.7	0.0040	1.0	10/22/15	10/29/15	0.0137		
Beryllium	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Cadmium	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Chromium	200.8	0.0002	1.0	10/22/15	11/04/15	0.0002	U	
Copper	200.7	0.004	1.0	10/22/15	10/29/15	0.004	U	
Iron	200.7	0.02	1.0	10/22/15	10/29/15	1.47		
Lead	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Manganese	200.7	0.001	1.0	10/22/15	10/29/15	0.878		
Mercury	245.1	0.0002	1.0	10/27/15	10/28/15	0.0002	U	
Nickel	200.8	0.0002	1.0	10/22/15	11/04/15	0.0005		
Selenium	200.8	0.001	1.0	10/22/15	11/04/15	0.001	U	
Silver	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Sodium	200.7	0.2	1.0	10/22/15	10/29/15	11.0		
Thallium	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Zinc	200.7	0.004	1.0	10/22/15	10/29/15	0.004	U	

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Longview, City of	**Service Request:**	K1511865
Project No.:	NA	**Date Collected:**	
Project Name:	Sentinel Well	**Date Received:**	
Matrix:	WATER	**Units:**	mg/L
		Basis:	NA

Sample Name: **Method Blank** **Lab Code:** **KQ1512200-01**

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Barium	200.7	0.0040	1.0	10/22/15	10/29/15	0.0040	U	
Copper	200.7	0.004	1.0	10/22/15	10/29/15	0.004	U	
Iron	200.7	0.02	1.0	10/22/15	10/29/15	0.02	U	
Manganese	200.7	0.001	1.0	10/22/15	10/30/15	0.001	U	
Sodium	200.7	0.2	1.0	10/22/15	10/29/15	0.2	U	
Zinc	200.7	0.004	1.0	10/22/15	10/29/15	0.004	U	

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: Longview, City of
Project No.: NA
Project Name: Sentinel Well
Matrix: WATER

Service Request: K1511865
Date Collected:
Date Received:
Units: mg/L
Basis: NA

Sample Name: Method Blank
Lab Code: KQ1512201-01

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.00005	1.0	10/22/15	11/04/15	0.00005	U	
Arsenic	200.8	0.0005	1.0	10/22/15	11/04/15	0.0005	U	
Beryllium	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Cadmium	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Chromium	200.8	0.0002	1.0	10/22/15	11/04/15	0.0002	U	
Lead	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Nickel	200.8	0.0002	1.0	10/22/15	11/04/15	0.0002	U	
Selenium	200.8	0.001	1.0	10/22/15	11/04/15	0.001	U	
Silver	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Thallium	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Longview, City of	**Service Request:**	K1511865
Project No.:	NA	**Date Collected:**	
Project Name:	Sentinel Well	**Date Received:**	
Matrix:	WATER	**Units:**	mg/L
		Basis:	NA

Sample Name: **Method Blank** **Lab Code:** **KQ1512456-03**

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Mercury	245.1	0.0002	1.0	10/27/15	10/28/15	0.0002	U	

Comments:

Metals
- 5A -
SPIKE SAMPLE RECOVERY

Client: Longview, City of
Service Request: K1511865
Project No.: NA
Units: MG/L
Project Name: Sentinel Well
Basis: NA
Matrix: WATER

Sample Name: Batch QC1S
Lab Code: K1511685-001S

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Mercury	70 - 130	0.0051		0.0002	U	0.0050	102		245.1

An empty field in the Control Limit column indicates the control limit is not applicable

Metals
- 5A -
SPIKE SAMPLE RECOVERY

Client: Longview, City of
Service Request: K1511865
Project No.: NA
Units: MG/L
Project Name: Sentinel Well
Basis: NA
Matrix: WATER

Sample Name: Batch QC1SD
Lab Code: K1511685-001SD

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Mercury	70 - 130	0.0050		0.0002	U	0.0050	100		245.1

An empty field in the Control Limit column indicates the control limit is not applicable

Metals
- 5A -
SPIKE SAMPLE RECOVERY

Client: Longview, City of
Service Request: K1511865
Project No.: NA
Units: MG/L
Project Name: Sentinel Well
Basis: NA
Matrix: WATER

Sample Name: Batch QC2S
Lab Code: K1511794-001S

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Antimony	70 - 130	0.052600		0.000050	U	0.050000	105		200.8
Arsenic	70 - 130	0.05576		0.00368		0.05000	104		200.8
Barium	70 - 130	0.991		0.0094		1.00	98.2		200.7
Beryllium	70 - 130	0.00252		0.00002	U	0.00250	101		200.8
Cadmium	70 - 130	0.02613		0.00002	U	0.025000	105		200.8
Chromium	70 - 130	0.0084		0.0002	U	0.01000	84		200.8
Copper	70 - 130	0.233		0.004	U	0.25	93.2		200.7
Iron	70 - 130	2.96		2.03		1.00	93.0		200.7
Lead	70 - 130	0.05092		0.00002	U	0.050000	102		200.8
Manganese	70 - 130	0.977		0.517		0.50	92.0		200.7
Nickel	70 - 130	0.0229		0.0004		0.02500	90		200.8
Selenium	70 - 130	0.054		0.001	U	0.0500	108		200.8
Silver	70 - 130	0.01252		0.00002	U	0.012500	100		200.8
Sodium	70 - 130	19.1		8.8		10.00	103.0		200.7
Thallium	70 - 130	0.05162		0.00002	U	0.050000	103		200.8
Zinc	70 - 130	0.469		0.004	U	0.50	93.8		200.7

An empty field in the Control Limit column indicates the control limit is not applicable

Metals

- 6 -

DUPLICATES

Client: Longview, City of
Service Request: K1511865
Project No.: NA
Units: MG/L
Project Name: Sentinel Well
Basis: NA
Matrix: WATER

Sample Name: Batch QC1D
Lab Code: K1511685-001D

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Mercury		0.0002	U	0.0002	U			245.1

An empty field in the Control Limit column indicates the control limit is not applicable.

Form VI - IN

Metals

- 6 -

DUPLICATES

Client: Longview, City of
Service Request: K1511865
Project No.: NA
Units: MG/L
Project Name: Sentinel Well
Basis: NA
Matrix: WATER

Sample Name: Batch QC1SD
Lab Code: K1511685-001SD

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Mercury	20	0.0051		0.0050		2.0		245.1

An empty field in the Control Limit column indicates the control limit is not applicable.

Form VI - IN

Metals

- 6 -

DUPLICATES

Client: Longview, City of
Service Request: K1511865
Project No.: NA
Units: MG/L
Project Name: Sentinel Well
Basis: NA
Matrix: WATER

Sample Name: Batch QC2D
Lab Code: K1511794-001D

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Antimony		0.000050	U	0.000050	U			200.8
Arsenic	20	0.00368		0.00356		3.3		200.8
Barium		0.0094		0.0094		0.0		200.7
Beryllium		0.00002	U	0.00002	U			200.8
Cadmium		0.00002	U	0.00002	U			200.8
Chromium		0.0002	U	0.0002	U			200.8
Copper		0.004	U	0.004	U			200.7
Iron	20	2.03		2.00		1.5		200.7
Lead		0.00002	U	0.00002	U			200.8
Manganese	20	0.517		0.510		1.4		200.7
Nickel		0.0004		0.0003		28.6		200.8
Selenium		0.001	U	0.001	U			200.8
Silver		0.00002	U	0.00002	U			200.8
Sodium	20	8.8		8.4		4.7		200.7
Thallium		0.00002	U	0.00002	U			200.8
Zinc		0.004	U	0.004	U			200.7

An empty field in the Control Limit column indicates the control limit is not applicable.

Metals

- 7 -

LABORATORY CONTROL SAMPLE

Client: Longview, City of **Service Request:** K1511865

Project No.: NA

Project Name: Sentinel Well

Aqueous LCS Source: ALS MIXED **Solid LCS Source:**

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/kg) True	Found	C	Limits	%R
Barium	5	4.8	96.0					
Copper	.625	0.577	92.3					
Iron	2.5	2.38	95.2					
Manganese	1.25	1.20	96.0					
Sodium	12.5	12.4	99.2					
Zinc	1.25	1.16	92.8					

Metals

- 7 -

LABORATORY CONTROL SAMPLE

Client: Longview, City of **Service Request:** K1511865

Project No.: NA

Project Name: Sentinel Well

Aqueous LCS Source: ALS MIXED **Solid LCS Source:**

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/kg) True	Found	C	Limits	%R
Antimony	0.050	0.0522	104					
Arsenic	0.050	0.052	104					
Beryllium	0.003	0.0025	100					
Cadmium	0.025	0.0264	106					
Chromium	0.010	0.0100	100					
Lead	0.050	0.0511	102					
Mercury	.005	0.0047	94.0					
Nickel	0.025	0.0247	99					
Selenium	0.050	0.054	108					
Silver	0.013	0.0124	99					
Thallium	0.050	0.0518	104					

EPA Method 504.1

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Analytical Results

Client:	Longview, City of	**Service Request:**	K1511795
Project:	Sentinel D ell	**Date Collected:**	1-02-02-15
Sample Matrix:	Nrinking water	**Date Received:**	1-02-02-15

EPA Method 504.1

Sample Name:	ND 4W	**Units:**	ug0L
Lab Code:	K15117954-1	**Basis:**	/ A
Extraction Method:	METHON	**Level:**	Low
Analysis Method:	5-.0I		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,24Nihro(oetBane)EN3 p	/ N	m	-G-U9	1	1-021015	1-021015	KD b 151-2-5	
1,2,P4TricBloro6ro6ane	/ N	m	-GPU	1	1-021015	1-021015	KD b 151-2-5	
1,24Nihro(o4P4cBloro6ro6ane)N3 C:	/ N	m	-G-U9	1	1-021015	1-021015	KD b 151-2-5	

Comments:

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Analytical Results

Client:	Longview, City of	**Service Request:**	K1511865
Project:	kentinel 3 ell	**Date Collected:**	/ A
Sample Matrix:	S DnBing wateD	**Date Received:**	/ A

EPA Method 504.1

Sample Name:	N etMoh d lanB	**Units:**	ug4L
Lab Code:	K3 W151G0G52-	**Basis:**	/ A
Extraction Method:	N r ETHS	**Level:**	Low
Analysis Method:	5G-O1		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,02S iUDob oetMane m S d (	/ S	9	G00G .	1	1G4014 15	1G4014 15	K3 W151G0G5	
1,0,) 2EDcMoDopDopane	/ S	9	G0-G	1	1G4014 15	1G4014 15	K3 W151G0G5	
1,02S iUDob o2) 2cMoDopDopane mS d CP	/ S	9	G00G .	1	1G4014 15	1G4014 15	K3 W151G0G5	

Comments:

PDnteh: 114G640G15 11:--:G0 FoDb 1A 2HDganic Page 1 of 1

u:\ktealtMCDystalOpt\FoDb 1b / ewOpt NeDgeh kupeDtet ReferDnce: RR18) 510

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K15118u5
Project:	l entineW2 eWW	**Date Extracted:**	10/M/M015
Sample Matrix:	k rinSing water	**Date Analyzed:**	10/M/M015

Matrix Spike/Duplicate Matrix Spike Summary
EPA Method 504.1

Sample Name:	Batch QC	**Units:**	Ng/L
Lab Code:	K1511798-001	**Basis:**	DA
Extraction Method:	E THOGk	**Level:**	Low
Analysis Method:	504.1	**Extraction Lot:**	K2 6 1510M05

		Batch QCE l K2 6 1510M05-1 Matrix Spike			Batch QCk E l K2 6 1510M05-M Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
1,M4k ibromoethane (Tk B)	Dk	0.M7	0.M43	94	0.M4	0.M43	88	u5-135	u	30
1,M,3-HrichWropropane	Dk	0.M4u	0.M43	101	0.MM8	0.M43	94	u5-135	8	30
1,M4k ibromo-3-chWropropane (k BCP)	Dk	0.M33	0.M43	9u	0.M5	0.M43	89	u5-135	8	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and reWative percent differences (RPk) are determined by the software Nsing vaWes in the caWNation which have not been roNnded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	BacaahKc
Project:	. entine4N e44	**Date Extracted:**	a1/ka/k1ac
Sample Matrix:	Wrin2ing w-ter	**Date Analyzed:**	a1/ka/k1ac

Lab Control Spike Summary
EPA Method 504.1

Extraction Method:	METHOW	**Units:**	9g/L
Analysis Method:	c157a	**Basis:**	8 A
		Level:	Low
		Extraction Lot:	BN Daca1k1c

L-0 Contro4. -u p4e
BN Daca1k1cS
Lab Control Spike

Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
a,kSWi0rou oet6-ne 3EWb m	17k1 G	17kc1	(c	GlSa1 1
a,k,l STri)64broprop-ne	17kc5	17kc1	a1k	GlSa1 1
a,kSWi0rou oSl S)64broprop-ne 3Wb CPm	17k51	17kc1	(G	GlSa1 1

Results flagged with an asterisk (*) indicate values outside control criteria.

Per)ent re)overies -nd re4-tive per)ent differen)es 3RPWm-re deteru ined 0y t6e softw-re 9sing v-4)es in t6e)-4)94-tion w6i)6 6-ve not 0een ro9nded7

Pesticides/PCBs by EPA Method 508.1

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Analytical Results

Client:	Longview, City of	**Service Request:**	K1511795
Project:	Sentinel D ell	**Date Collected:**	1-02-02-15
Sample Matrix:	Nrinking water	**Date Received:**	1-02-02-15

Pesticides/PCBs by EPA Method 508.1

Sample Name:	ND 4W	**Units:**	ug/L
Lab Code:	K15117954-1	**Basis:**	/ A
Extraction Method:	METHON	**Level:**	Low
Analysis Method:	5-78		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
gamma4BHC (Lindane)	/ N	U	-8-.W	1	1-02W015	1-03101 5	KD G151-525	
Heptachlor	/ N	U	-8-.W	1	1-02W015	1-03101 5	KD G151-525	*
Aldrin	/ N	U	-8-.W	1	1-02W015	1-03101 5	KD G151-525	
Heptachlor Epoxide	/ N	U	-8-.W	1	1-02W015	1-03101 5	KD G151-525	*
Heptachlor Epoxide (Isomer A)	/ N	U	-8-.W	1	1-02W015	1-03101 5	KD G151-525	
',' 64NNE	/ N	U	-8-.W	1	1-02W015	1-03101 5	KD G151-525	
Nieldrin	/ N	U	-8-.W	1	1-02W015	1-03101 5	KD G151-525	*
Endrin	/ N	U	-8-.W	1	1-02W015	1-03101 5	KD G151-525	*
',' 64NNN	/ N	U	-8-.W	1	1-02W015	1-03101 5	KD G151-525	*
',' 64NNT	/ N	U	-8-.W	1	1-02W015	1-03101 5	KD G151-525	*
Methoxychlor	/ N	U	-8-.W	1	1-02W015	1-03101 5	KD G151-525	*
Toxaphene	/ N	U	-8.W	1	1-02W015	1-03101 5	KD G151-525	
Chlordane	/ N	U	-8.W	1	1-02W015	1-03101 5	KD G151-525	
Aroclor 1-19	/ N	U	-8'.	1	1-02W015	1-03101 5	KD G151-525	
Aroclor 1221	/ N	U	-8.W	1	1-02W015	1-03101 5	KD G151-525	
Aroclor 1232	/ N	U	-8.W	1	1-02W015	1-03101 5	KD G151-525	
Aroclor 12' 2	/ N	U	-8.W	1	1-02W015	1-03101 5	KD G151-525	
Aroclor 12' 7	/ N	U	-8.W	1	1-02W015	1-03101 5	KD G151-525	
Aroclor 125'	/ N	U	-8.W	1	1-02W015	1-03101 5	KD G151-525	
Aroclor 129-	/ N	U	-8.W	1	1-02W015	1-03101 5	KD G151-525	

* See Case / arrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
',' 64Nibromooctafluorobiphenyl	1-7	W413-	1-03101 5	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511865
Project:	kentinel 3 ell	**Date Collected:**	/ A
Sample Matrix:	S DnBing wateD	**Date Received:**	/ A

Pesticides/PCBs by EPA Method 508.1

Sample Name:	N etMoh d lanB	**Units:**	ug7L
Lab Code:	K3 W151G5052-	**Basis:**	/ A
Extraction Method:	N r ETHS	**Level:**	Low
Analysis Method:	5G8O1		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
gamma2d T C (Linhane)	/ S	U	G0G1G	1	1G70- 715	1G7. 1715	K3 W151G505	
TeptacMoD	/ S	U	G0G1G	1	1G70- 715	1G7. 1715	K3 W151G505	*
AlhDn	/ S	U	G0G1G	1	1G70- 715	1G7. 1715	K3 W151G505	
TeptacMoDr poxihe	/ S	U	G0G1G	1	1G70- 715	1G7. 1715	K3 W151G505	*
TeptacMoDr poxihe (IsomeDA)	/ S	U	G0G1G	1	1G70- 715	1G7. 1715	K3 W151G505	
4,4'2S S r	/ S	U	G0G1G	1	1G70- 715	1G7. 1715	K3 W151G505	
S ielhDn	/ S	U	G0G1G	1	1G70- 715	1G7. 1715	K3 W151G505	*
r nhDn	/ S	U	G0G1G	1	1G70- 715	1G7. 1715	K3 W151G505	*
4,4'2S S S	/ S	U	G0G1G	1	1G70- 715	1G7. 1715	K3 W151G505	*
4,4'2S S E	/ S	U	G0G1G	1	1G70- 715	1G7. 1715	K3 W151G505	*
N etMoxycMoD	/ S	U	G0G1G	1	1G70- 715	1G7. 1715	K3 W151G505	*
EoxapMene	/ S	U	G01G	1	1G70- 715	1G7. 1715	K3 W151G505	
CMoDhane	/ S	U	G01G	1	1G70- 715	1G7. 1715	K3 W151G505	
ADocloD1G16	/ S	U	G005G	1	1G70- 715	1G7. 1715	K3 W151G505	
ADocloD1001	/ S	U	G01G	1	1G70- 715	1G7. 1715	K3 W151G505	
ADocloD10. 0	/ S	U	G01G	1	1G70- 715	1G7. 1715	K3 W151G505	
ADocloD1040	/ S	U	G01G	1	1G70- 715	1G7. 1715	K3 W151G505	
ADocloD1048	/ S	U	G01G	1	1G70- 715	1G7. 1715	K3 W151G505	
ADocloD1054	/ S	U	G01G	1	1G70- 715	1G7. 1715	K3 W151G505	
ADocloD106G	/ S	U	G01G	1	1G70- 715	1G7. 1715	K3 W151G505	

* kee Case / aDative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
4,4'2S ibDomooctafluoDobipMenyl	1G6	- G21. G	1G7. 1715	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Longview, City of
Project: a entineSl eSS
Sample Matrix: 4 rinDing wkter

Service Request: K1511795

Surrogate Recovery Summary
Pesticides/PCBs by EPA Method 508.1

Extraction Method: WMETH4
Analysis Method: 5O7O1

Units: 8er. ent
Level: Low

Sample Name	Lab Code	Sur1
3 kt. BQC	K1511Pc7-OO1	11O
4 1 -P	K1511795-OO1	1O7
WetBo2 3 SknD	K1 h 151O5G5-P	1O9
3 kt. BQCWa	K1 h 151O5G5-1	1OP
3 kt. BQC4 Wa	K1 h 151O5G5-G	1Od
Lkb ControSa kmpSe	K1 h 151O5G5-6	11G

Surrogate Recovery Control Limits (%)

aur1 = d,d'-4 ibromoo. tkfSuorobipBenyS PO-16O

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511845
Project:	Sentinel Well	**Date Extracted:**	10/27/2015
Sample Matrix:	Drinking water	**Date Analyzed:**	10/31/2015

Matrix Spike/Duplicate Matrix Spike Summary
Pesticides/PCBs by EPA Method 508.1

Sample Name:	Batch QC	**Units:**	ug/L
Lab Code:	K1511798-001	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	508.1	**Extraction Lot:**	KWG1510525

		Batch QCMS KWG1510525-1 Matrix Spike			Batch QCDMS KWG1510525-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
ga6 6 a-BHC nhLin(aned	ND	0.114	0.0942	120	0.113	0.0942	118	45-135	2	30
Heptachlor	ND	0.129	0.0942	13)	0.121	0.0942	124	45-135	4	30
Al(rin	ND	0.103	0.0942	107	0.0944	0.0942	101	45-135	4	30
Heptachlor Epoxi(e	ND	0.121	0.0942	124	0.114	0.0942	120	45-135	5	30
Heptachlor Epoxi(e nhso6 er Ad	ND	0.111	0.0942	115	0.10)	0.0942	108	45-135	4	30
) ,) '-DDE	ND	0.131	0.0942	137 *	0.130	0.0942	135	45-135	1	30
Diel(rin	ND	0.123	0.0942	127	0.112	0.0942	117	45-135	9	30
En(rin	ND	0.111	0.0942	115	0.09) 7	0.0942	99	45-135	14	30
) ,) '-DDD	ND	0.151	0.0942	157 *	0.150	0.0942	154 *	45-135	1	30
) ,) '-DDT	ND	0.150	0.0942	154 *	0.1) 7	0.0942	153 *	45-135	2	30
Methoxychlor	ND	0.143	0.0942	170 *	0.141	0.0942	148 *	45-135	1	30
Aroclor 1240	ND	0.524	0.) 81	109	0.5) 9	0.) 81	11)	45-135	)	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries an(relative percent (ifferences nRPDdare (eter6 ine(by the software using values in the calculation which have not been roun(e(.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511795
Project:	bentineaS eaa	**Date Extracted:**	14/WD/W415
Sample Matrix:	- rin3ing wuter	**Date Analyzed:**	14/21/W415

Lab Control Spike Summary
Pesticides/PCBs by EPA Method 508.1

Extraction Method:	k METH-	**Units:**	8g/L
Analysis Method:	54701	**Basis:**	. A
		Level:	Low
		Extraction Lot:	KS m15145W5

LuNControabul pae
KS m15145W5G2
Lab Control Spike

Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
gul l uG0TC HLin(uned	401W7	40144	1W7	D4G124
Teptu*caor	401h7	40144	1h7)	D4G124
Aa(rin	40117	40144	117	D4G124
Teptu*caor Mpoxi(e	40125	40144	125)	D4G124
Teptu*caor Mpoxi(e B61ol er Ad	401W9	40144	1W9	D4G124
h,hsG - M	401W7	40144	1W7	D4G124
- iea(rin	4012'	40144	12')	D4G124
Mh(rin	40152	40144	152)	D4G124
h,hsG - -	401h5	40144	1h5)	D4G124
h,hsG - E	401h7	40144	1h7)	D4G124
k etcoxy*caor	40192	40144	192)	D4G124
Aro*aor 1W94	40557	40544	11W	D4G124

Results flagged with an asterisk (*) indicate values outside control criteria.

Per*ent re*overieI un(reautive per*ent (ifferen*eI BRP- dure (eterl ine(Ny tce Ioftwure 8Ing vua8eI in tce *ua*8aution wci*c cuve not Neen ro8n(e(0

Chlorinated Herbicides by EPA 515.4

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel D ell	**Date Collected:**	1-02-02-15
Sample Matrix:	Nrinking water	**Date Received:**	1-02-02-15

Chlorinated Herbicides by EPA 515.4

Sample Name:	ND 3W	**Units:**	ug0L
Lab Code:	K15118653--1	**Basis:**	/ A
Extraction Method:	METHON	**Level:**	Low
Analysis Method:	515.4		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Nalahon	/ N	p	1.-	1	1-0220l5	1-02U0l5	KD G151-246	
U,53Nicblorozendoic Acim	/ N	p	-.5-	1	1-0220l5	1-02U0l5	KD G151-246	
NicaP za	/ N	p	-.2-	1	1-0220l5	1-02U0l5	KD G151-246	
Nicblorhroh	/ N	p	-.5-	1	1-0220l5	1-02U0l5	KD G151-246	
2,43N	/ N	p	-.1-	1	1-0220l5	1-02U0l5	KD G151-246	
(entacblorohbenol	/ N	p	-.-4-	1	1-0220l5	1-02U0l5	KD G151-246	
2,4,53T(xSilve) B	/ N	p	-.2-	1	1-0220l5	1-02U0l5	KD G151-246	
CbloraP zen	/ N	p	-.2-	1	1-0220l5	1-02U0l5	KD G151-246	
2,43N7	/ N	p	1.-	1	1-0220l5	1-02U0l5	KD G151-246	
Ninosez	/ N	p	-.2-	1	1-0220l5	1-02U0l5	KD G151-246	
Nactbal Niacim	/ N	p	-.1-	1	1-0220l5	1-02U0l5	KD G151-246	
(icloraP	/ N	p	-.1-	1	1-0220l5	1-02U0l5	KD G151-246	
Acifluorfen	/ N	p	2.-	1	1-0220l5	1-02U0l5	KD G151-246	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2,43Nicblorohbenylacetic Acim	1-6	W31U-	1-02U0l5	Accehtazle

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511795
Project:	Tentinel 4 ell	**Date Collected:**	2 A
Sample Matrix:	HOnEing wateO	**Date Received:**	2 A

Chlorinated Herbicides by EPA 515.4

Sample Name:	S etr ok MlanE	**Units:**	ugW
Lab Code:	K4 - 1510/ N9DN	**Basis:**	2 A
Extraction Method:	S . G6 3 H	**Level:**	Low
Analysis Method:	515UN		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Halabon	2 H	h	1U0	1	10W/ W5	10WpW5	K4 - 1510/ N9	
p,5DHicr loOozendoic Acik	2 H	h	0U50	1	10W/ W5	10WpW5	K4 - 1510/ N9	
Hicamza	2 H	h	0U/0	1	10W/ W5	10WpW5	K4 - 1510/ N9	
Hicr loObOob	2 H	h	0U50	1	10W/ W5	10WpW5	K4 - 1510/ N9	
/ ,NDH	2 H	h	0U10	1	10W/ W5	10WpW5	K4 - 1510/ N9	
Pentacr loOobr enol	2 H	h	0U0N0	1	10W/ W5	10WpW5	K4 - 1510/ N9	
/ ,N,5DGP (Tilvex)	2 H	h	0U/0	1	10W/ W5	10WpW5	K4 - 1510/ N9	
Cr loOamzen	2 H	h	0U/0	1	10W/ W5	10WpW5	K4 - 1510/ N9	
/ ,NDHM	2 H	h	1U0	1	10W/ W5	10WpW5	K4 - 1510/ N9	
Hinosez	2 H	h	0U/0	1	10W/ W5	10WpW5	K4 - 1510/ N9	
Hactr al Hiacik	2 H	h	0U10	1	10W/ W5	10WpW5	K4 - 1510/ N9	
PicloOam	2 H	h	0U10	1	10W/ W5	10WpW5	K4 - 1510/ N9	
AcifluoOfen	2 H	h	/ U0	1	10W/ W5	10WpW5	K4 - 1510/ N9	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
/ ,NDHicr loOobr enylacetic Acik	: 5	B0D1p0	10WpW5	Accebtazle

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511795
Project:	aentineSl eSS		
Sample Matrix:	4 rinDing wkter		

Surrogate Recovery Summary
Chlorinated Herbicides by EPA 515.4

Extraction Method:	WMETH4	**Units:**	Percent
Analysis Method:	515O	**Level:**	Low

Sample Name	Lab Code	Sur1
2 ktc6 QC	K1511- 0. 3CGl	1Ch
4 1 3-	K15117953CGl	1C9
Wet6ob 2 SknD	Kl d 151GB. 93.	05
2 ktc6 QCWa	Kl d 151GB. 931	1CG
2 ktc6 QC4 Wa	Kl d 151GB. 93B	09
LkmControSa kF pSe	Kl d 151GB. 93h	0h

Surrogate Recovery Control Limits (%)

aur1 = B,. 34 ic6Sorop6enySkcetic Acib - GB1hG

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K5755ka7
Project:	MentineET eHE	**Date Extracted:**	5u/HH/Hu57
Sample Matrix:	2 rin3ing wWer	**Date Analyzed:**	5u/HO/Hu57

Matrix Spike/Duplicate Matrix Spike Summary
Chlorinated Herbicides by EPA 515.4

Sample Name:	DW-1 QC	**Units:**	Sg/L
Lab Code:	K5755940.uu5	**Basis:**	1 A
Extraction Method:	G 68c h 2	**Level:**	Low
Analysis Method:	757N0	**Extraction Lot:**	KT b 575uHDa

		DW-1 QCG M KT b 575uHDa.5 **Matrix Spike**			DW-1 QC2 G M KT b 575uHDa.H **Duplicate Matrix Spike**					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
2 WWyon	1 2	7NSO	0N4k	5uO	7NOu	0N4k	5u9	9u.5Ou	O	Ou
O,7.2 i-1Eorozendoi- A-im	1 2	0NkO	0N4k	49	0Nku	0N4k	4a	9u.5Ou	5	Ou
2 i-WP zW	1 2	7NO7	0N4k	5u9	7NOO	0N4k	5u9	9u.5Ou	u	Ou
2 i-1Eorprop	1 2	0N9H	0N4k	47	0N9O	0N4k	47	9u.5Ou	u	Ou
H,0.2	1 2	0N99	0N4k	4u	0N70	0N4k	45	9u.5Ou	H	Ou
(entW1Eorop1enoE	1 2	0NsO	0N4k	4O	0Nsa	0N4k	40	9u.5Ou	5	Ou
H,0,7.8(xMEve) *	1 2	0Nsa	0N4k	40	0Nsa	0N4k	40	9u.5Ou	u	Ou
C1EorWP zen	1 2	5uN4	0N4k	HHu B	4Nk5	0N4k	549 B	9u.5Ou	55	Ou
H,0.2 D	1 2	7NHa	0N4k	5ua	7NOO	0N4k	5u9	9u.5Ou	5	Ou
2 inosez	1 2	7NHH	0N4k	5u7	7NSa	0N4k	5u0	9u.5Ou	5	Ou
2 Wt1WE2 iWim	1 2	7N9k	0N4k	55a	7Nk4	0N4k	55k	9u.5Ou	H	Ou
(i-EorWP	1 2	7NO9	0N4k	5uk	7NHH	0N4k	5ua	9u.5Ou	H	Ou
A-ifESorfen	1 2	7NHO	0N4k	5u7	0Nkk	0N4k	4k	9u.5Ou	9	Ou

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

(er-ent re-overies WimreBWive per-ent mifferen-es xR(2 * We meterP inemzy t1e softwWe Ssing vWSes in t1e -WESBWion w1i-1 1We not zeen roSnnemN

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511795
Project:	Sentinel Well	**Date Extracted:**	10/22/2015
Sample Matrix:	3 rinDing water	**Date Analyzed:**	10/2- /2015

Lab Control Spike Summary
Chlorinated Herbicides by EPA 515.4

Extraction Method:	k METH3	**Units:**	ug/L
Analysis Method:	5154	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG15102. 9

	Lab Control Sample KWG15102. 96- Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
3 alapon	. 4c.	5400	cc	O061 - 0
- ,563 ihzlorobendoih Ahi8	. 49.	5400	c-	O061 - 0
3 ihamba	. 4c7	5400	100	O061 - 0
3 ihzlorprop	. 457	5400	c2	O061 - 0
2,. 63	. 4 0	5400	79	O061 - 0
Pentahzloropzenol	. 455	5400	c1	O061 - 0
2,. ,56EP (Silvex)	. 45c	5400	c2	O061 - 0
Czloramben	9407	5400	122	O061 - 0
2,. 63 B	5411	5400	102	O061 - 0
3 inoseb	5415	5400	10-	O061 - 0
3 ahtzal 3 iahi8	. 457	5400	c2	O061 - 0
Pihloram	. 47.	5400	cO	O061 - 0
Ahifluorfen	5419	5400	10-	O061 - 0

Results flagged with an asterisk (*) indicate values outside control criteria.

Perhent rehoveries an8 relative perhent 8ifferenhes (RP3) are 8etermine8 by tze software using values in tze halhulation wzihz zave not been roun8e84

Volatile Organic Compounds

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636- 1068
www.alsglobal.com

Analytical Results

Client: Longview, City of
Project: Sentinel Well
Sample Matrix: Drinking water

Service Request: K1511865
Date Collected: 10/20/2015
Date Received: 10/20/2015

Volatile Organic Compounds

Sample Name: DW-7
Lab Code: K1511865-001

Units: ug/L
Basis: NA

Extraction Method: METHOD
Analysis Method: 524.2

Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dichlorodifluoromethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Chloromethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Vinyl Chloride	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Bromomethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Chloroethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Trichlorofluoromethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Methylene Chloride	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
trans-1,2-Dichloroethene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,1-Dichloroethene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
cis-1,2-Dichloroethene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Methyl tert-Butyl Ether	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Chloroform	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Bromochloromethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Carbon Tetrachloride	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Benzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,2-Dichloroethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Trichloroethene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,2-Dichloropropane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Bromodichloromethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Dibromomethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
cis-1,3-Dichloropropene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,1-Dichloroethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Toluene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
trans-1,3-Dichloropropene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Tetrachloroethene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
2,2-Dichloropropane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,3-Dichloropropane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Dibromochloromethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,2-Dibromoethane (EDB)	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Chlorobenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Ethylbenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Styrene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
m,p-Xylenes	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
o-Xylene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	

Comments:

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Sentinel Well	**Date Collected:**	10/20/2015
Sample Matrix:	Drinking water	**Date Received:**	10/20/2015

Volatile Organic Compounds

Sample Name:	DW-7	**Units:**	ug/L
Lab Code:	K1511865-001	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	524.2		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,1,1-Trichloroethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Bromoform	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,1,2,2-Tetrachloroethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Isopropylbenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,1-Dichloropropene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Bromobenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
n-Propylbenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,3,5-Trimethylbenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
2-Chlorotoluene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
4-Chlorotoluene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
tert-Butylbenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,2,4-Trimethylbenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
sec-Butylbenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
p-Isopropyltoluene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,3-Dichlorobenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,4-Dichlorobenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
n-Butylbenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,2-Dichlorobenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,2-Dibromo-3-chloropropane (DBCP	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,2,4-Trichlorobenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Hexachlorobutadiene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
Naphthalene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,1,2-Trichloroethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,1,1,2-Tetrachloroethane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,2,3-Trichloropropane	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	
1,2,3-Trichlorobenzene	ND	U	0.50	1	10/30/15	10/30/15	KWG1510595	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
4-Bromofluorobenzene	96	70-130	10/30/15	Acceptable
Dibromofluoromethane	94	82-124	10/30/15	Acceptable
Toluene-d8	89	82-124	10/30/15	Acceptable

Comments:

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511865
Project:	kentinel Mell	**Date Collected:**	1-/0-/0-15
Sample Matrix:	EWnr ing wateW	**Date Received:**	1-/0-/0-15

Volatile Organic Compounds

Sample Name:	DW2 Slanr s	**Units:**	ug/L
Lab Code:	K15118653--0	**Basis:**	NA
Extraction Method:	T HDO4 E	**Level:**	Low
Analysis Method:	50. C0		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
EicnloWVifluoWBetmane	NE	d	-C5-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
CnloWBetmane	NE	d	-C5-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
binyl CnloWVe	NE	d	-C5-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
SWBoBetmane	NE	d	-C5-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
CnloWetmane	NE	d	-C5-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
DWcnloWfluoWBetmane	NE	d	-C5-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
T etmylene CnloWVe	NE	d	-C5-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
tWns31,03EicnloWetmene	NE	d	-C5-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
1,13EicnloWetmene	NE	d	-C5-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
cis31,03EicnloWetmene	NE	d	-C5-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
T etmyl teW3Sutyl HtmeW	NE	d	-C5-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
CnloWfoWB	NE	d	-C5-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
SWBocnloWBetmane	NE	d	-C5-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
CaWon DetWcnloWVe	NE	d	-C5-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
Senpene	NE	d	-C5-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
1,03EicnloWetmane	NE	d	-C5-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
DWcnloWetmene	NE	d	-C5-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
1,03EicnloW2W2ane	NE	d	-C5-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
SWBoVicnloWBetmane	NE	d	-C5-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
EizWBoBetmane	NE	d	-C5-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
cis31,93EicnloW2W2ene	NE	d	-C5-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
1,13EicnloWetmane	NE	d	-C5-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
Doluene	NE	d	-C5-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
tWns31,93EicnloW2W2ene	NE	d	-C5-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
DetWcnloWetmene	NE	d	-C5-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
0,03EicnloW2W2ane	NE	d	-C5-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
1,93EicnloW2W2ane	NE	d	-C5-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
EizWBocnloWBetmane	NE	d	-C5-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
1,03EizWBoetmane (HES)	NE	d	-C5-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
CnloWzenpene	NE	d	-C5-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
Htmylzenpene	NE	d	-C5-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
ktyWne	NE	d	-C5-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
B,23Xylenes	NE	d	-C5-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
o3Xylene	NE	d	-C5-	1	1-/9-/15	1-/9-/15	KMU151-5h5	

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511865
Project:	kentinel Mell	**Date Collected:**	1-/0-/0-15
Sample Matrix:	EWnr ing wateW	**Date Received:**	1-/0-/0-15

Volatile Organic Compounds

Sample Name:	DW2 Slanr s	**Units:**	ug/L
Lab Code:	K15118653--0	**Basis:**	NA
Extraction Method:	T HDO4 E	**Level:**	Low
Analysis Method:	50. 0		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,1,13DWcmloWetmane	NE	d	-G-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
SWB ofoW3	NE	d	-G-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
1,1,0,03DetWcmloWetmane	NE	d	-G-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
Iso2W2ylzenpene	NE	d	-G-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
1,13EicmloW2W2ene	NE	d	-G-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
SWB ozenpene	NE	d	-G-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
n3PW2ylzenpene	NE	d	-G-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
1,9,53DWB etmylzenpene	NE	d	-G-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
03CmloWtoluene	NE	d	-G-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
. 3CmloWtoluene	NE	d	-G-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
teW3S utylzenpene	NE	d	-G-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
1,0,. 3DWB etmylzenpene	NE	d	-G-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
sec3S utylzenpene	NE	d	-G-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
23Iso2W2yltoluene	NE	d	-G-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
1,93EicmloWzenpene	NE	d	-G-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
1,. 3EicmloWzenpene	NE	d	-G-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
n3S utylzenpene	NE	d	-G-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
1,03EicmloWzenpene	NE	d	-G-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
1,03EizWB o393cmloW2W2ane (ESCP	NE	d	-G-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
1,0,. 3DWcmloWzenpene	NE	d	-G-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
OexacmloWzutaViene	NE	d	-G-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
Na2mtmalene	NE	d	-G-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
1,1,03DWcmloWetmane	NE	d	-G-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
1,1,1,03DetWcmloWetmane	NE	d	-G-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
1,0,93DWcmloW2W2ane	NE	d	-G-	1	1-/9-/15	1-/9-/15	KMU151-5h5	
1,0,93DWcmloWzenpene	NE	d	-G-	1	1-/9-/15	1-/9-/15	KMU151-5h5	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
. 3SWB ofluoWzenpene	h6	7-319-	1-/9-/15	Acce2tazle
EizWB ofluoWB etmane	h7	80310.	1-/9-/15	Acce2tazle
Doluene3V8	1-h	80310.	1-/9-/15	Acce2tazle

Comments:

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Eentinel 3 ell	**Date Collected:**	WA
Sample Matrix:	THnMng wateH	**Date Received:**	WA

Volatile Organic Compounds

Sample Name:	2 etSor k lanM	**Units:**	ugD
Lab Code:	K3 - 15105/ 5N5	**Basis:**	WA
Extraction Method:	2 O4. GT	**Level:**	Low
Analysis Method:	59U9		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
TicSloHor ifluoHoVetSane	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
CSloHoVetSane	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
Binyl CSloHr e	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
kHoVoVetSane	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
CSloHoetSane	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
4HicSloHofluoHoVetSane	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
2 etSylene CSloHr e	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
tHansN,9NTicSloHoetSene	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
1,1NTicSloHoetSene	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
cisN,9NTicSloHoetSene	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
2 etSyl teHNkutyl OtSeH	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
CSloHofoHV	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
kHoVocSloHoVetSane	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
CaHbon 4 etHicSloHr e	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
kenzene	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
1,9NTicSloHoetSane	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
4HicSloHoetSene	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
1,9NTicSloHopHopane	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
kHoVoricSloHoVetSane	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
TibHoVoVetSane	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
cisN,dNTicSloHopHopene	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
1,1NTicSloHoetSane	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
4oluene	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
tHansN,dNTicSloHopHopene	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
4etHicSloHoetSene	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
9,9NTicSloHopHopane	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
1,dNTicSloHopHopane	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
TibHoVocSloHoVetSane	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
1,9NTibHoVoetSane (OTk)	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
CSloHobenzene	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
OtSylbenzene	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
EtyHene	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
V,pNXylenes	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
oNXylene	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	

Comments:

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511865
Project:	Eentinel 3 ell	**Date Collected:**	WA
Sample Matrix:	THnMng wateH	**Date Received:**	WA

Volatile Organic Compounds

Sample Name:	2 etSor k lanM	**Units:**	ugID
Lab Code:	K3 - 15105/ 5N5	**Basis:**	WA
Extraction Method:	2 O4. GT	**Level:**	Low
Analysis Method:	59U9		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,1,1N4 HicSloHoetSane	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
k HoVofoHV	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
1,1,9,9N4 etHicSloHoetSane	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
IsopHopylbenzene	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
1,1NTicSloHopHopene	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
k HoVobenzene	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
nNPHopylbenzene	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
1,d,5N4 HVetSylbenzene	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
9NCSloHotoluene	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
UNCSloHotoluene	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
teHNk utylbenzene	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
1,9,UN4 HVetSylbenzene	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
secNk utylbenzene	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
pNsopHopyltoluene	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
1,dNTicSloHobenzene	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
1,UNTicSloHobenzene	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
nNk utylbenzene	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
1,9NTicSloHobenzene	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
1,9NTibHoVoNNSloHopHopane (TkCP	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
1,9,UN4 HicSloHobenzene	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
. exacSloHobutar iene	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
WapStSalene	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
1,1,9N4 HicSloHoetSane	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
1,1,1,9N4 etHicSloHoetSane	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
1,9,dN4 HicSloHopHopane	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	
1,9,dN4 HicSloHobenzene	WT	m	0h50	1	10D20D5	10D20D5	K3 - 15105/ 5	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
UNk HoVofluoHobenzene	/ 7	70Nd0	10D20D5	Acceptable
TibHoVofluoHoVetSane	119	89N9U	10D20D5	Acceptable
4 oluene Ni8	119	89N9U	10D20D5	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Longview, City of
Project: aentineSl eSS
Sample Matrix: 4 rinDing wkter

Service Request: K1511795

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: WMETH4
Analysis Method: 5O2.O

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
4 1 -6	K1511795-001	39	32	73
Erip GSknDh	K1511795-00O	39	36	103
WetBob GSknD	Kl d 1510535-5	36	11O	11O
Lku ControSa kF pSe	Kl d 1510535-m	33	36	106
4 : pSckte Lku ControSa kF pSe	Kl d 1510535-2	100	39	30

Surrogate Recovery Control Limits (%)

a: r1 \ 2-GroF ofS orouen=ene	60-1m0
a: rO \ 4 iuroF ofS oroF etBkne	7O-1O2
a: rm \ EoS ene-b7	7O-1O2

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511725
Project:	Sentinel Well	**Date Extracted:**	10/k0/. 015
Sample Matrix:	DrinMng water	**Date Analyzed:**	10/k0/. 015

Lab Control Spike/Duplicate Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	E THOh D	**Units:**	ug/L
Analysis Method:	5. 4N	**Basis:**	3 A
		Level:	Low
		Extraction Lot:	KWG1510595

	Lab Control Sample KWG1510595-k Lab Control Spike			Duplicate Lab Control Sample KWG1510595-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Dic8loroVifluoromet8ane	5N94	5N00	119	4N15	5N00	95	d0-1k0	. .	k0
C8loromet8ane	5N51	5N00	110	4N49	5N00	77	d0-1k0	. k	k0
Binyl C8loriVe	5N4k	5N00	115	4N5k	5N00	91	d0-1k0	. k	k0
6 romomet8ane	5N2.	5N00	11.	4N27	5N00	94	d0-1k0	17	k0
C8loroet8ane	5N5.	5N00	110	4N49	5N00	77	d0-1k0	. k	k0
Hric8lorofluoromet8ane	5N25	5N00	11k	4N54	5N00	91	d0-1k0	. .	k0
E et8ylene C8loriVe	5N14	5N00	10k	4N02	5N00	71	d0-1k0	. k	k0
trans-1,. -Dic8loroet8ene	5N47	5N00	110	4N44	5N00	7d	d0-1k0	. k	k0
cis-1,. -Dic8loroet8ene	5N47	5N00	107	4Nd	5N00	75	d0-1k0	. k	k0
1,1-Dic8loroet8ene	5N55	5N00	111	4N49	5N00	77	d0-1k0	. k	k0
E et8yl tert-6 utyl Tt8er	10N5	10N0	105	7N42	10N0	75	d0-1k0	. .	k0
C8loroform	5N21	5N00	11.	4N50	5N00	90	d0-1k0	. .	k0
6 romoc8loromet8ane	5N50	5N00	110	4N51	5N00	90	d0-1k0	. 0	k0
Carbon Hetrac8loriVe	5N45	5N00	10d	4Nl.	5N00	94	d0-1k0	1k	k0
6 enzene	5N1.	5N00	10.	4Nl0	5N00	94	d0-1k0	9	k0
1,. -Dic8loroet8ane	5N1.	5N00	10.	4N2.	5N00	9.	d0-1k0	10	k0
Hric8loroet8ene	5N50	5N00	110	4N47	5N00	77	d0-1k0	. k	k0
1,. -Dic8loropropane	5N5	5N00	105	4N1	5N00	74	d0-1k0	. .	k0
6 romoVic8loromet8ane	5N0d	5N00	101	4N12	5N00	7k	d0-1k0	. 0	k0
Dibromomet8ane	5N14	5N00	10k	4N04	5N00	71	d0-1k0	. 4	k0
cis-1,k-Dic8loropropene	5N2	5N00	105	4Nd	5N00	75	d0-1k0	. 1	k0
Holuene	5N4d	5N00	109	4N40	5N00	72	d0-1k0	. 4	k0
1,1-Dic8loroet8ane	5N40	5N00	107	4N9	5N00	72	d0-1k0	. k	k0
trans-1,k-Dic8loropropene	4Nl2	5N00	95	4N24	5N00	9k	d0-1k0	k	k0
Hetrac8loroet8ene	5N4d	5N00	10d	4Nl7	5N00	92	d0-1k0	1.	k0
1,k-Dic8loropropane	5N01	5N00	100	4N25	5N00	9k	d0-1k0	d	k0
. ,. -Dic8loropropane	5N91	5N00	117	4Nlk	5N00	95	d0-1k0	. .	k0
Dibromoc8loromet8ane	4N7k	5N00	9d	4N52	5N00	91	d0-1k0	2	k0
1,. -Dibromoet8ane (TD6)	4N94	5N00	99	4N2d	5N00	9k	d0-1k0	2	k0
C8lorobenzene	5N17	5N00	104	4N7.	5N00	92	d0-1k0	d	k0
Tt8ylbenzene	5N15	5N00	10k	4N7d	5N00	9d	d0-1k0	2	k0
Styrene	5N0	5N00	104	4N90	5N00	97	d0-1k0	2	k0
m,p-Xylenes	10N7	10N0	107	10N1	10N0	101	d0-1k0	d	k0
o-Xylene	5N45	5N00	10d	4N9d	5N00	99	d0-1k0	d	k0
1,1,1-Hric8loroet8ane	5N1d	5N00	10k	4N55	5N00	91	d0-1k0	1k	k0

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries anVrelative percent Vifferences (RPD) are VetermineVby t8e software using values in t8e calculation w8ic8 8ave not been rounVeVN

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511725
Project:	Sentinel Well	**Date Extracted:**	10/k0/. 015
Sample Matrix:	DrinMng water	**Date Analyzed:**	10/k0/. 015

Lab Control Spike/Duplicate Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	E THOh D	**Units:**	ug/L
Analysis Method:	5. 4N	**Basis:**	3 A
		Level:	Low
		Extraction Lot:	KWG1510595

	Lab Control Sample KWG1510595-k Lab Control Spike			Duplicate Lab Control Sample KWG1510595-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
1,1,. ,. -Hetrac8loroet8ane	4N9d	5N00	99	4N12	5N00	95	d0-1k0	4	k0
6romoform	4N94	5N00	99	4N25	5N00	9k	d0-1k0	2	k0
Isopropylbenzene	5Nkk	5N00	10d	4N92	5N00	99	d0-1k0	d	k0
1,1-Dic8loropropene	5N41	5N00	107	4N75	5N00	9d	d0-1k0	11	k0
6romobenzene	5N15	5N00	10k	4N70	5N00	92	d0-1k0	d	k0
n-Propylbenzene	5N47	5N00	110	5N1.	5N00	10.	d0-1k0	d	k0
1,k,5-Hrimet8ylbenzene	5N45	5N00	109	5N07	5N00	10.	d0-1k0	d	k0
. -C8lorotoluene	5Nd	5N00	105	4N9.	5N00	97	d0-1k0	d	k0
4-C8lorotoluene	5Nd	5N00	105	4N92	5N00	99	d0-1k0	2	k0
tert-6utylbenzene	5Nk2	5N00	10d	5N0.	5N00	100	d0-1k0	d	k0
1,. ,4-Hrimet8ylbenzene	5Nk4	5N00	10d	5N0k	5N00	101	d0-1k0	2	k0
sec-6utylbenzene	5N42	5N00	109	5N11	5N00	10.	d0-1k0	d	k0
p-Isopropyltoluene	5N4k	5N00	109	5N1k	5N00	10k	d0-1k0	2	k0
1,k-Dic8lorobenzene	5N17	5N00	104	4N74	5N00	9d	d0-1k0	d	k0
1,4-Dic8lorobenzene	5N1.	5N00	10.	4N19	5N00	92	d0-1k0	d	k0
n-6utylbenzene	5N5.	5N00	110	5N12	5N00	10k	d0-1k0	d	k0
1,. -Dic8lorobenzene	5N05	5N00	101	4N7.	5N00	92	d0-1k0	5	k0
1,. -Dibromo-k-c8loropropane (D6CP)	4N22	5N00	9k	4N29	5N00	94	d0-1k0	1	k0
1,. ,4-Hric8lorobenzene	5N1.	5N00	10.	4N7d	5N00	9d	d0-1k0	5	k0
Oexac8lorobutaViene	5Nd	5N00	105	5N01	5N00	100	d0-1k0	5	k0
3ap8t8alene	5N0d	5N00	101	4N12	5N00	95	d0-1k0	2	k0
1,1,. -Hric8loroet8ane	5N12	5N00	10k	4N22	5N00	9k	d0-1k0	10	k0
1,1,1,. -Hetrac8loroet8ane	4N12	5N00	95	4N4d	5N00	79	d0-1k0	2	k0
1,. ,k-Hric8loropropane	4N95	5N00	99	4N15	5N00	95	d0-1k0	4	k0
1,. ,k-Hric8lorobenzene	5Nk2	5N00	10d	4N90	5N00	97	d0-1k0	9	k0

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries anVrelative percent Vifferences (RPD) are VetermineVby t8e software using values in t8e calculation w8ic8 8ave not been rounVeVN

Semivolatile Organics by EPA Method 525.2

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Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511795
Project:	Mentinel - ell	**Date Collected:**	1WGNWGNW15
Sample Matrix:	2 hinding wateh	**Date Received:**	1WGNWGNW15

Semivolatile Organics by EPA Method 525.2

Sample Name:	2 - 4/	**Units:**	ugGL
Lab Code:	K15117954WWI	**Basis:**	0 A
Extraction Method:	B k SDr 2	**Level:**	Low
Analysis Method:	5N5EN		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
DeUacxlohocyclopenta*iene	0 2	.	WEWI/	1	1WGN/G15	11GWIG15	K- H151W5NO	
Pluohene	0 2	.	WEWOT	1	1WGN/G15	11GWIG15	K- H151W5NO	F
bhopacxloh	0 2	.	WEWI/	1	1WGN/G15	11GWIG15	K- H151W5NO	
DeUacxlohozennene	0 2	.	WEWI/	1	1WGN/G15	11GWIG15	K- H151W5NO	
M6 amine	0 2	.	WEWOT	1	1WGN/G15	11GWIG15	K- H151W5NO	
Athamine	0 2	.	WEWI/	1	1WGN/G15	11GWIG15	K- H151W5NO	
B ethizumin	0 2	.	WENW	1	1WGN/G15	11GWIG15	K- H151W5NO	
Alacxloh	0 2	.	WEW/W	1	1WGN/G15	11GWIG15	K- H151W5NO	
(ho6 acil	0 2	.	WENW	1	1WGN/G15	11GWIG15	K- H151W5NO	
B etolacxloh	0 2	.	WEW7/	1	1WGN/G15	11GWIG15	K- H151W5NO	
(utacxloh	0 2	.	WEWI/	1	1WGN/G15	11GWIG15	K- H151W5NO	
(is)N4etxylxeUyl3 A*ipate	0 2	.	W57	1	1WGN/G15	11GWIG15	K- H151W5NO	
(is)N4etxylxeUyl3 bxtxalate	0 2	.	W57	1	1WGN/G15	11GWIG15	K- H151W5NO	
(enmo)a3pyhene	0 2	.	WEWNW	1	1WGN/G15	11GWIG15	K- H151W5NO	

F Mee Case 0 ahhative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,842 i6 etxyl4N4nithozennene	1N8	/ W418W	11GWIG15	Acceptazle
Shipxenyl bxospxate	T1	/ W418W	11GWIG15	Acceptazle
behylene4*1N	NW	/ W418W	11GWIG15	r utsi*e Conthol Li6 its

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511795
Project:	Sentinel 4 ell	**Date Collected:**	NA
Sample Matrix:	Drinking water	**Date Received:**	NA

Semivolatile Organics by EPA Method 525.2

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	K4 W151G502-2	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	505.0		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hepachlorocyclo*entadiene	ND	x	G1G	1	1G/0U/15	11/G2/15	K4 W151G502	
Pluorene	ND	x	GG5G	1	1G/0U/15	11/G2/15	K4 W151G502	F
bro*achlor	ND	x	G1G	1	1G/0U/15	11/G2/15	K4 W151G502	
Hepachlorozenne ene	ND	x	G1G	1	1G/0U/15	11/G2/15	K4 W151G502	
Si6 amine	ND	x	GG5G	1	1G/0U/15	11/G2/15	K4 W151G502	
Atramine	ND	x	G1G	1	1G/0U/15	11/G2/15	K4 W151G502	
Metrizumin	ND	x	G0G	1	1G/0U/15	11/G2/15	K4 W151G502	
Alachlor	ND	x	GGU0	1	1G/0U/15	11/G2/15	K4 W151G502	
Bro6 acil	ND	x	G0G	1	1G/0U/15	11/G2/15	K4 W151G502	
Metolachlor	ND	x	GG(G	1	1G/0U/15	11/G2/15	K4 W151G502	
Butachlor	ND	x	G1G	1	1G/0U/15	11/G2/15	K4 W151G502	
Bis)0-ethylhepyl3 Adi*ate	ND	x	G9G	1	1G/0U/15	11/G2/15	K4 W151G502	
Bis)0-ethylhepyl3 bhthalate	ND	x	G9G	1	1G/0U/15	11/G2/15	K4 W151G502	
Benno)a3*yrene	ND	x	GG0G	1	1G/0U/15	11/G2/15	K4 W151G502	

F See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,8-Di6 ethyl-0-nitrozenne ene	11U	UG-18G	11/G2/15	Acce*tazle
Tri*henyl bhos*hate	(2	UG-18G	11/G2/15	Acce*tazle
berylene-d10	(9	UG-18G	11/G2/15	Acce*tazle

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Longview, City of
Project: aentineSl eSS
Sample Matrix: 4 rinDing wkter

Service Request: K1511795

Surrogate Recovery Summary
Semivolatile Organics by EPA Method 525.2

Extraction Method: WMETH4
Analysis Method: 5O52O

Units: . erPent
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
8 ktPBQC	K1511c-70**1	1h1 3	-7	9h 3
4 1 0c	K15117950**1	1Ch	-1	O* 3
WetBod 8 SknD	K1 6 151*5OC0G	11c	-G	-9
8 ktPBQCWa	K1 6 151*5OC01	1O5	1*h	7h
8 ktPBQC4 Wa	K1 6 151*5OC0O	1OG	1*c	-1
Lkb ControSa kmpSe	K1 6 151*5OC0h	1Ch	11G	-9

Surrogate Recovery Control Limits (%)

aur1	=	1,h04 imetBysOOnitrobenzene	c*01h*
aurO	=	EripBenyS. BospBkte	c*01h*
aurh	=	. erySene0d1O	c*01h*

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Client:	Longview, City of	**Service Request:**	K57550a7
Project:	MentineET eHE	**Date Extracted:**	5u/N9/Nu57
Sample Matrix:	2 rin3ing wWer	**Date Analyzed:**	55/uH/Nu57

Matrix Spike/Duplicate Matrix Spike Summary
Semivolatile Organics by EPA Method 525.2

Sample Name:	DW-1 QC	**Units:**	Sg/L
Lab Code:	K5755940.uu5	**Basis:**	1 A
Extraction Method:	O G68 c 2	**Level:**	Low
Analysis Method:	7N7kN	**Extraction Lot:**	KT h 575u7NH

		DW-1 QCO M KT h 575u7NH5 Matrix Spike			DW-1 QC2 O M KT h 575u7NHN Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
8 ezW1Eoro-y-EopentWdiene	1 2	uk454	uk4aN	4a	uk4bN	uk4aN	49	9u.5bu	5	bu
mESorene	1 2	5kN5	uk4aN	5Na	5kNH	uk4aN	5N4	9u.5bu	N	bu
PropW1Eor	1 2	uk444	uk4aN	5uH	5ku7	uk4aN	5u4	9u.5bu	7	bu
8 ezW1Eoro(enxene	1 2	5ku9	uk4aN	555	5ku9	uk4aN	555	9u.5bu	u	bu
M) Wxine	1 2	uk4bb	uk4aN	49	uk4ub	uk4aN	4H	9u.5bu	b	bu
AtrWxine	1 2	uk4bN	uk4aN	49	uk45u	uk4aN	47	9u.5bu	N	bu
O etri(Sxin	1 2	5ku5	uk4aN	5u7	5kub	uk4aN	5u9	9u.5bu	N	bu
ABW1Eor	1 2	uk4uH	uk4aN	4H	uk4N7	uk4aN	4a	9u.5bu	N	bu
Dro) WiE	1 2	5ku5	uk4aN	5u7	5kuN	uk4aN	5ua	9u.5bu	5	bu
O etoEW1Eor	1 2	ul00N	uk4aN	4N	uk4u7	uk4aN	4H	9u.5bu	b	bu
DStW1Eor	1 2	5kuH	uk4aN	5u0	5ku7	uk4aN	5u4	9u.5bu	5	bu
Di*BNet1yHezyEs AdipWe	1 2	5k5u	uk4aN	55H	5k50	uk4aN	5Nb	9u.5bu	0	bu
Di*BNet1yHezyEs P1t1WBWe	1 2	5k57	uk4aN	5Nu	5kN0	uk4aN	5bb F	9u.5bu	5u	bu
DenxoBWpyrene	1 2	ul05b	uk4aN	07	ul0aH	uk4aN	4u	9u.5bu	a	bu

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Per-ent re-overie* Wid reBWive per-ent differen-e* BRP2 s We deter) ined (y t1e *oftwWe S*ing vWSe* in t1e -WESBWion w1i-1 1We not (een roSndedk

Client:	Longview, City of	**Service Request:**	DWWWK-
Project:	Nentineua eu	**Date Extracted:**	W/5H/51 W
Sample Matrix:	ErinTing w0ter	**Date Analyzed:**	WW1 2/51 W

Lab Control Spike Summary
Semivolatile Organics by EPA Method 525.2

Extraction Method:	O G68 c E	**Units:**	9g/L
Analysis Method:	-5-75	**Basis:**	4 A
		Level:	Low
		Extraction Lot:	Da S WW-52

L0. ControuN0k pue
Da S WW-523M
Lab Control Spike

Analyte Name	Result	Spike Amount	%Rec	%Rec Limits
8 eh0bzworobybwopent0diene	17m11	W1 1	m1	H 3WM
(u9orene	WMW	W1 1	WWW P	H 3WM
xrop0bzwor	WWS	W1 1	WWS	H 3WM
8 eh0bzworo. en)ene	WWW	W1 1	WWW	H 3WM
Nik 0)ine	W1 W	W1 1	W W	H 3WM
Atr0)ine	W1 M	W1 1	W M	H 3WM
O etri. 9)in	WW	W1 1	WW	H 3WM
Au0bzwor	W1 H	W1 1	W H	H 3WM
* rok 0biu	W1 H	W1 1	W H	H 3WM
O etow0bzwor	W1 H	W1 1	W H	H 3WM
* 9t0bzwor	WWM	W1 1	WWM	H 3WM
* iBs53etzyuzehyuFAdip0te	WWW	W1 1	WWW	H 3WM
* iBs53etzyuzehyuFxztz0u0te	WWK	W1 1	WWK	H 3WM
* en)os0Fpyrene	WWH	W1 1	WWH	H 3WM

Results flagged with an asterisk (*) indicate values outside control criteria.

xerbent reboverieB0nd reu0tive perbent differenbeBsRxEF0re deterk ined . y tze Bbftw0re 9Bing v0u9eBin tze b0ub9u0tion wzibz z0ve not . een ro9nded7

Diquat and Paraquat by EPA Method 549.2

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Analytical Results

Client:	Longview, City of	**Service Request:**	K1511795
Project:	Sentinel D ell	**Date Collected:**	1-02-02-15
Sample Matrix:	Nrinking water	**Date Received:**	1-02-02-15

Diquat and Paraquat by EPA Method 549.2

Sample Name:	ND 4W	**Units:**	ug0L
Lab Code:	K15117954-- 1	**Basis:**	/ A
Extraction Method:	METHON	**Level:**	Low
Analysis Method:	5. 3G2		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
NiPuat	/ N	8	-G--	1	1-02U015	110-5015	KD q 151-U U	
: araPuat	/ N	8	-G7--	1	1-02U015	110-5015	KD q 151-U U	

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511795
Project:	Sentinel 4 ell	**Date Collected:**	NA
Sample Matrix:	Drinking water	**Date Received:**	NA

Diquat and Paraquat by EPA Method 549.2

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	K4 W151G030-5	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	53. 2U		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Di8uat	ND	q	G23GG	1	1G/U0/15	11/G5/15	K4 W151G030	
Para8uat	ND	q	G27GG	1	1G/U0/15	11/G5/15	K4 W151G030	

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511865
Project:	kentineSl eSS	**Date Extracted:**	10/2W2015
Sample Matrix:	NrinDing water	**Date Analyzed:**	11/05/2015

Matrix Spike/Duplicate Matrix Spike Summary
Diquat and Paraquat by EPA Method 549.2

Sample Name:	Batch QC	**Units:**	3g/L
Lab Code:	K1511794-001	**Basis:**	u A
Extraction Method:	METHON	**Level:**	Low
Analysis Method:	549.2	**Extraction Lot:**	Kl G1510W4W

		Batch QCMk Kl G1510W4W1 Matrix Spike			Batch QCNMk Kl G1510W4W2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Niq3at	u N	14.2	12.0	118	1W5	12.0	112	70-1W0	5	W0
Paraq3at	u N	11.W	12.0	94	11.6	12.0	96	70-1W0	W	W0

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and reSative percent differences (RPN) are determined by the software 3sing vaS3es in the caS-3Sation which have not been ro3nded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	DWWWK-
Project:	kentineNS eNN	**Date Extracted:**	W3/4M43W
Sample Matrix:	TrinHing w2ter	**Date Analyzed:**	WW3-/43W

Lab Control Spike Summary
Diquat and Paraquat by EPA Method 549.2

Extraction Method:	O Gq 8 6 T	**Units:**	0g/L
Analysis Method:	-5794	**Basis:**	. A
		Level:	Low
		Extraction Lot:	DS 1 WW3M5M

L2u ControNk2a pN
DS 1 WW3M5M5
Lab Control Spike

Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
TiF02t	WW9W	W49	WW3	P3EWW3
m2r2F02t	W397	W49	7W	P3EWW3

Results flagged with an asterisk (*) indicate values outside control criteria.

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Subcontract Lab Results

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www.alsglobal.com

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

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Certificate of Analysis

P œ a e	**SOCs**	o o e	**2103389**
P a e e	**51K1511865**	o o e	**K1511865**

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Kelli Wolfgang

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

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Notes

[illegible]

Standard Acronyms/Flags

[illegible]

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ANALYTICAL RESULTS

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Kelli Wolfgang

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QUALITY CONTROL DATA

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QC Batch: □P□□□□□□□ **Analysis Method:** □P□ 531□1

QC Batch Method: □P□ 531□1

Associated Lab Samples: 21□33□□□□1

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

QUALITY CONTROL DATA

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

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ALS Environmental Chain of Custody

1317 South 13th Avenue • Kelso, WA 98626 • 1-360-577-7222 • FAX 1-360-636-1068

ALS Contact: Chris Leaf

2103389

Project Number: K1511865
Project Manager: Chris Leaf
QAP: LAB QAP

Lab Code	Sample ID	# of Cont.	Matrix	Sample Date	Sample Time	Lab ID	CARBAM 531.1
K1511865-001	DW-7	2	Drinking Water	10/20/15	1050	Middletown ALS	X

Test Comments
CARBAM - 531.1 K1511865-001 Full list for WA Regulations - no compliance report required.

Folder Comments: @
~~Report all metals in mg/L~~ No DW State form required.
MA

KW
10/22/15 1725

	Y	N	Initials
Custody Seals Present?			BXS
(if present) Seals Intact?			
Received on Ice?			
COC/Lbls Complete			
Cont in Good Cond?			
Correct Containers?			
Correct Samp Vol?			
Correct Preservation?			
Headspace/Volatiles?			

Cooler Temp: 1 °C
Cooler #:
Therm ID: TH-294
Ship Carrier:
FedEx UPS
DHL
Tracking #:

Special Instructions/Comments
Please provide the electronic (PDF and EDD) report to the following e-mail address: ALKLS.Data@alsglobal.com.

@ CL 10/21/15

H - Test is On Hold P - Test is Authorized for Prep Only

Turnaround Requirements
___ **RUSH** (Surcharges Apply)
PLEASE CIRCLE WORK DAYS
1 2 3 4 5
✓ **STANDARD**
Requested FAX Date: ___
Requested Report Date: 11/06/15

Report Requirements
___ I. Results Only
✓ II. Results + QC Summaries
___ III. Results + QC and Calibration Summaries
___ IV. Data Validation Report with Raw Data
PQL/MDL/J N
EDD Y Basic @/QC Kelso Superset

Invoice Information
PO# 51K1511865 ✓
Bill to

Relinquished By: KSmith 10/21/15 1133 Received By: B Schaeffer 10/22/15 9:04 Airbill Number: 6447 9267 3597

Page 1

LABORATORY REPORT

November 5, 2015

Jeff Coleman
Longview, City of
W/S Operation Center
P.O. Box 128
Longview, WA 98632

RE: Sentinel Well

Dear Jeff:

Enclosed are the results of the sample submitted to our laboratory on October 22, 2015. For your reference, this analysis has been assigned our service request number K1511865.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

Kate Aguilera

By Kate Aguilera at 8:24 am, Nov 05, 2015

Kate Aguilera
Project Manager

CASE NARRATIVE

The sample was received intact under chain of custody at the Simi Valley facility on October 22, 2015 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the sample at the time of sample receipt.

Hydrogen Sulfide Analysis

The sample was analyzed for hydrogen sulfide using a gas chromatograph equipped with a sulfur chemiluminescence detector (SCD). This method is not included on the laboratory's NELAP, DoD-ELAP, or AIHA-LAP scope of accreditation.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
AIHA	http://www.aihaaccreditedlabs.org	101661
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0694
DoD ELAP	http://www.pjlabs.com/search-accredited-labs	L14-2-R1
Florida DOH (NELAP)	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E871020
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/labcert.htm	2014025
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	876241
New Jersey DEP (NELAP)	http://www.nj.gov/dep/oqa/	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-001
Pennsylvania DEP	http://www.depweb.state.pa.us/labs	68-03307 (Registration)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704413-15-6
Utah DOH (NELAP)	http://www.health.utah.gov/lab/labimp/certification/index.html	CA016272015-5
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

Intra-Network Chain of Custody

1317 South 13th Avenue • Kelso, WA 98626 • 1-360-577-7222 • FAX 1-360-636-1068

ALS Contact: Chris Leaf

Project Name: Sentinel Well
Project Number:
Project Manager: Jeff Coleman
Company: Longview, City of
QAP: LAB QAP

Lab Code	Client Sample ID	# of Cont.	Matrix	Sample Date	Sample Time	Date Received	Send To	Sulfur Sulfur Liq
K1511865-001	DW-7	2	Drinking Water	10/20/15	1050	10/20/15	SIMIVALLEY	II

Test Comments

Sulfur - Sulfur Liq K1511865-001 Hydrogen Sulfide

Folder Comments:

~~Report all metals in mg/L. No DW State form required.~~ NA

Special Instructions/Comments

Please provide the electronic (PDF and EDD) report to the following e-mail address: ALKLS.Data@alsglobal.com.

CL 10/20/15

pH Checked _____

Turnaround Requirements

____ **RUSH** (Surcharges Apply)

PLEASE CIRCLE WORK DAYS

1 2 3 4 5

✓ **STANDARD**

Requested FAX Date: _____

Requested Report Date: 11/06/15

Report Requirements

____ I. Results Only

✓ II. Results + QC Summaries

____ III. Results + QC and Calibration Summaries

____ IV. Data Validation Report with Raw Data

PQL/MDL/J N

EDD Y

Basic QC Kelso Superset

Invoice Information

PO# 51K1511865

Bill to

Relinquished By: [signature] 10/21/15 1133 Received By: [signature] 10/22/15 0950 1° blank air

Airbill Number:

ALS Environmental
Sample Acceptance Check Form

Client: Longview, City of Work order: K1511865
Project: Sentinel Well
Sample(s) received on: 10/22/15 Date opened: 10/22/15 by: KKELPE

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Did **sample containers** arrive in good condition?	☒	☐	☐
3	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
4	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
5	Was **sample volume** received adequate for analysis?	☒	☐	☐
6	Are samples within specified holding times?	☒	☐	☐
7	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: ° C Blank Temperature: 1° C **Gel Packs**			
8	Were **custody seals** on outside of cooler/Box/Container?	☒	☐	☐
	Location of seal(s)? SEALING COOLER Sealing Lid?	☒	☐	☐
	Were signature and date included?	☒	☐	☐
	Were seals intact?	☒	☐	☐
9	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☒	☐	☐
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☒	☐	☐
10	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
11	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
K1511865-001.01	40mL VOA NP		7	1	A	MC 11/03/2015
K1511865-001.02	40mL VOA NP				A	

Explain any discrepancies: (include lab sample ID numbers):
the sample was receive at ALS-Kelso on 10/20/15

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Longview, City of**
Client Project ID: **Sentinel Well** ALS Project ID: K1511865

Hydrogen Sulfide

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 7890A/GC22/SCD Date(s) Collected: 10/20/15
Analyst: Mike Conejo Date Received: 10/20/15
Sample Type: Drinking Water Date Analyzed: 11/3/15
Test Notes:

Client Sample ID	ALS Sample ID	Sample Amount ml(s)	Purge Volume Liter(s)	Injection Volume ml(s)	**Result µg/L**	MRL µg/L	Data Qualifier
DW-7	K1511865-001	10.0	0.30	1.0	ND	0.84	
Method Blank	P151103-MB	10.0	0.30	1.0	ND	0.84	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Longview, City of**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **Sentinel Well**

ALS Project ID: K1511865
ALS Sample ID: P151103-DLCS

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 7890A/GC22/SCD
Analyst: Mike Conejo
Sample Type: Drinking Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 11/03/15
Liquid Amount: 10.0 ml(s)
Purge Volume: 0.30 Liter(s)
Injection Volume: 0.20 ml(s)

CAS #	Compound	Spike Amount LCS / DLCS ug/L	Result LCS ug/L	Result DLCS ug/L	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
7783-06-4	Hydrogen Sulfide	416	404	422	**97**	**101**	45-151	4	28	

ALS Environmental
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November 24, 2015

Analytical Report for Service Request No: K1511798

Jeff Coleman
Longview, City of
W/S Operation Center
P.O. Box 128
Longview, WA 98632

RE: Sentinel Well Program

Dear Jeff,

Enclosed are the results of the sample(s) submitted to our laboratory October 19, 2015
For your reference, these analyses have been assigned our service request number **K1511798.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3275. You may also contact me via email at Chris.Leaf@ALSGlobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

for

Chris Leaf
Project Manager

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ALS Group USA, Corp
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Kelso, WA 98626
T : +1 360 577 7222
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Table of Contents

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□ □a□f□e□□
□□a□e □e□□f□□a□o□□□□□□e□□a□o□□□□□□ □□e□□e□
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Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L14-51
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	Not available	-
Idaho DHW	http://www.healthandwelfare.idaho.gov/Health/Labs/CertificationDrinkingWaterLabs/tabid/1833/Default.aspx	-
ISO 17025	http://www.pjlabs.com/	L14-50
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	03016
Maine DHS	Not available	WA01276
Michigan DEQ	http://www.michigan.gov/deq/0,1607,7-135-3307_4131_4156---,00.html	9949
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	□□□a□g□a□o□	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636- 1068
www.alsglobal.com

ALS ENVIRONMENTAL

Client:	Longview, City of	**Service Request No.:**	K1511798
Project:	Sentinel Well Program	**Date Received:**	10/19/15
Sample Matrix:	Drinking Water		

Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier II data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Surrogate recoveries have been reported for all applicable organic analyses. Additional quality control analyses reported herein include: Laboratory Duplicate (DUP), Matrix Spike (MS), Matrix/Duplicate Matrix Spike (MS/DMS), Laboratory Control Sample (LCS), and Laboratory/Duplicate Laboratory Control Sample (LCS/DLCS).

Sample Receipt

One drinking water sample was received for analysis at ALS Environmental on 10/19/15. The sample was received in good condition and consistent with the accompanying chain of custody form, except where noted on the cooler receipt and preservation form included in this report. The sample was stored in a refrigerator at 4ºC upon receipt at the laboratory.

General Chemistry Parameters

Total Cyanide by EPA Method 335.4:
The matrix spike recoveries for sample Batch QC were outside control criteria because of suspected matrix interference. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. No further corrective action was taken.

No other anomalies associated with the analysis of this sample were observed.

Total Metals

No anomalies associated with the analysis of this sample were observed.

EDB and DBCP by EPA Method 504.1

No anomalies associated with the analysis of this sample were observed.

Pesticides and Polychlorinated Biphenyls by EPA Method 508.1

Calibration Verification Exceptions:
The analysis of Organochlorine Pesticides and PCBs in Drinking Water by EPA 508.1 requires the use of dual column confirmation. When the Continuing Calibration Verification (CCV) criterion is met for both columns, the lower of the two sample results is generally reported. The primary evaluation criteria were not met on the confirmation column for Endrin. The results were reported from the column with an acceptable CCV. The data quality was not affected. No further corrective action was necessary.

Approved by_____

Matrix Spike Recovery Exceptions:
The upper control criterion was exceeded for the following several analytes in Matrix Spike (MS) KWG1510525-1 and Matrix Spike Duplicate (MSD) KWG1510525-2. The analytes in question were not detected in the associated field samples. The error associated with elevated recovery indicated a high bias. The sample data was not significantly affected. No further corrective action was appropriate.

Lab Control Sample Exceptions:
The upper control criterion was exceeded for several analytes in Laboratory Control Sample (LCS) KWG1510525-3. The analytes in question were not detected in the associated field samples. The error associated with elevated recovery indicated a high bias. The sample data was not significantly affected. No further corrective action was appropriate.

No other anomalies associated with the analysis of this sample were observed.

Chlorinated Acides by EPA Method 515.4

Matrix Spike Recovery Exceptions:
The matrix spike recovery and duplicate matrix spike recovery of Chloramben for batch QC was outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. The matrix spike outlier suggested a potential high bias in this matrix. No further corrective action was appropriate.

No other anomalies associated with the analysis of this sample were observed.

Volatile Organic Compounds by EPA Method 524.2

No anomalies associated with the analysis of this sample were observed.

Semivolatile Organic Compounds by EPA Method 525.2

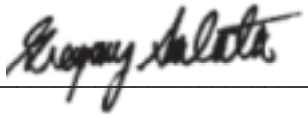
Surrogate Exceptions:
The control criteria were exceeded for Perylene-d12 in sample DW-9 due to suspected matrix interference. . The sample contained particulate matter that collected on the extraction disk during sample elution. Historical results have shown that particulate matter can cause low recoveries for this surrogate. No further corrective action was appropriate.

The upper control criterion was exceeded for 1,3-Dimethyl-2-nitrobenzene in sample Batch QC. No target analytes were detected in the sample. The error associated with an elevated recovery equated to a high bias. The quality of the sample data was not significantly affected. No further corrective action was appropriate.

Lab Control Sample Exceptions:
The upper control criterion was exceeded for Fluorene in Laboratory Control Sample (LCS) KWG1510524-3. The analyte in question was not detected in the associated field samples. The error associated with elevated recovery indicated a high bias. The sample data was not significantly affected. No further corrective action was appropriate.

Matrix Spike Recovery Exceptions:
The matrix spike recovery of Bis(2-ethylhexyl) Phthalate for sample DW-9 was outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. The matrix spike outlier suggested a potential high bias in this matrix. No further corrective action was appropriate.

No other anomalies associated with the analysis of this sample were observed.

Approved by 

Diquat by High Performance Liquid Chromatography

No anomalies associated with the analysis of this sample were observed.

Sulfur

This analysis was performed at ALS Environmental, Simi Valley, CA. The data for this analysis is included in the corresponding section of this report.

Carbamates by EPA Method 531.1

This analysis was performed at ALS Environmental, Middletown, PA. The data for this analysis is included in the corresponding section of this report.

Approved by_____

Chain of Custody

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636- 1068
www.alsglobal.com

ALS Environmental

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COC Set____of____

COC#_____

1317 South 13th Ave, Kelso, WA 98626 Phone (360) 577-7222 / 800-695-7222 / FAX (360) 636-1068
www.alsglobal.com

Project Name: Sentinel Wells
Project Number:
Project Manager: Jeff Coleman
Company: City of Longview
Address: PO Box 128 Longview WA 98632
Phone #:
email:
Sampler Signature: T Daly
Sampler Printed Name: T Daly

	CLIENT SAMPLE ID	LABID	SAMPLING Date	SAMPLING Time	Matrix	NUMBER OF CONTAINERS	24H SM 9223 B / Colliert EC NC	24H SM 9223 B / Colliert Tot NC	48H 180.1 / Turbidity	48H 300.0 / NO2	48H 300.0 / NO3	48H SM 2120 B / Color	48H SM 4500-P E / O Phos	7D [redacted]	7D 549.2 / DIQ_PARAQ	7D SM 2540 C / TDS	14D 335.4 / CN T	14D 504.1 / EDB DBCP 123TCP	14D 508.1 / PEST_CL	14D 515.4 / CL_ACID_HERB	14D 524.2 / VOC	14D 525.2 / SVO	14D [redacted]	14D SM 2320 B / Alkalinity Titr	14D Sulfur Liq / Sulfur	28D 245.1 / Hg T	28D 300.0 / F	28D 531.1 / CARBAM	28D SM 2510 B / Conductivity	Remarks
1.	DW-9		10/19/15	923		35																								
2.																														
3.																														
4.																														
5.																														
6.																														
7.																														
8.																														
9.																														
10.																														

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. CLP Like Summary (no raw data)
___ IV. Data Validation Report
___ V. EDD

Invoice Information

P.O.# 36-4734
Bill To: City of Longview
PO Box 128
Longview WA 98632

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
___ Standard

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments:

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other_____(Circle One)

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature: T Daly	Signature: Dwight	Signature	Signature	Signature	Signature
Printed Name: T Daly	Printed Name: Dwight	Printed Name	Printed Name	Printed Name	Printed Name
Firm: [signature]	Firm: ALS	Firm	Firm	Firm	Firm
Date/Time: 10/19/15 1540	Date/Time: 10/19/15 15:41	Date/Time	Date/Time	Date/Time	Date/Time

ALS Environmental

58082

CHAIN OF CUSTODY

58082

001, 005

SR# [illegible]

COC Set____of____

COC#_____

1317 South 13th Ave, Kelso, WA 98626 Phone (360) 577-7222 / 800-695-7222 / FAX (360) 636-1068
www.alsglobal.com

Project Name: Sentinel Wells
Project Number:
Project Manager: Jeff Coleman
Company: City of Longview
Address: PO Box 128 Longview WA 98632
Phone #
email
Sampler Signature: T Daly
Sampler Printed Name: T Daly

CLIENT SAMPLE ID	LABID	SAMPLING Date Time	Matrix	NUMBER OF CONTAINERS	28D: 300.0 / Br	28D: 300.0 / Chloride	28D: 300.0 / SO4	28D: 314.0 / ClO4	28D: SM 4500-NH3 G / Ammonia	30D: [redacted]	180D: 1630 / Methyl Hg T	180D: 200.7 / Metals T	180D: 200.8 / Metals T	999D: Calculation / NO2 NO3 Calc	999D: SM 2340 B / Hardness Calc	1	2	3	4	5	Remarks
1. DW-9		10/19/15 923		3																	
2.																					
3.																					
4.																					
5.																					
6.																					
7.																					
8.																					
9.																					
10.																					

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. CLP Like Summary (no raw data)
___ IV. Data Validation Report
___ V. EDD

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PO Box 128
Longview WA 98632

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
___ Standard

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments:

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other_____(Circle One)

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature: T Daly	Signature: [illegible]	Signature	Signature	Signature	Signature
Printed Name	Printed Name: ALS	Printed Name	Printed Name	Printed Name	Printed Name
Firm	Firm	Firm	Firm	Firm	Firm
Date/Time: 10/19/15 1540	Date/Time: 10/19/15 1541	Date/Time	Date/Time	Date/Time	Date/Time

PC CV

Cooler Receipt and Preservation Form

Client / Project: City of Longview Service Request *K15* 11798

Received: 10/19/15 Opened: 10/19/15 By: KR Unloaded: 10/19/15 By: KR

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? _____

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected. Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
7.1	7.3	10.5	10.7	+0.2	369			
8.5	8.7	10.3	10.5	+0.2	364			

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: Some bottles were not labeled

SHORT HOLD TIME

Page ____ *of* ____

General Chemistry

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636- 1068
www.alsglobal.com

ALS Group USA, Corp.
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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	180.1	**Units:**	NTU
Prep Method:	None	**Basis:**	NA

Turbidity

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-9	K1511798-001	**1.72**	0.20	1	10/20/15 13:44	
Method Blank	K1511798-MB1	ND U	0.20	1	10/20/15 13:44	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project	Sentinel Well Program	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	180.1	**Units:**	NTU
Prep Method:	None	**Basis:**	NA

Replicate Sample Summary
Turbidity

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1511794-001DUP	0.20	12.2	12.2	12.2	<1	20	10/20/15
DW-9	K1511798-001DUP	0.20	1.72	1.71	1.72	<1	20	10/20/15

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	NA

Lab Control Sample Summary
Turbidity

Analysis Method:	180.1	**Units:**	NTU
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	468080

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511798-LCS1	4.50	4.23	106	90-110

ALS Group USA, Corp.
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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Bromide

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
DW-9	K1511798-001	ND U	0.20	2	10/20/15 10:09	10/19/15	
Method Blank	K1511798-MB1	ND U	0.10	1	10/20/15 09:26	10/19/15	
Method Blank	K1511798-MB2	ND U	0.10	1	10/20/15 12:18	10/19/15	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project	Sentinel Well Program	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Replicate Sample Summary
Bromide

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1511794-001DUP	0.20	ND U	ND U	NC	NC	20	10/20/15
DW-9	K1511798-001DUP	0.20	ND U	ND U	NC	NC	20	10/20/15

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Bromide

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511794-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511794-001MS			**Duplicate Matrix Spike** K1511794-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Bromide	ND U	9.61	10.0	96	9.75	10.0	97	90-110	1	20

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Bromide

Sample Name:	DW-9	**Units:**	mg/L
Lab Code:	K1511798-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511798-001MS			Duplicate Matrix Spike K1511798-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Bromide	ND U	9.61	10.0	96	9.58	10.0	96	90-110	<1	20

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/19/15

Lab Control Sample Summary
Bromide

Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	468244

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511798-LCS1	2.41	2.50	96	90-110
Lab Control Sample	K1511798-LCS2	2.40	2.50	96	90-110

ALS Group USA, Corp.
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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Chloride

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
DW-9	K1511798-001	**5.84**	0.20	2	10/20/15 10:09	10/19/15	
Method Blank	K1511798-MB1	ND U	0.10	1	10/20/15 09:26	10/19/15	
Method Blank	K1511798-MB2	ND U	0.10	1	10/20/15 12:18	10/19/15	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project	Sentinel Well Program	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Replicate Sample Summary
Chloride

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1511794-001DUP	0.20	4.93	4.91	4.92	<1	20	10/20/15
DW-9	K1511798-001DUP	0.20	5.84	5.82	5.83	<1	20	10/20/15

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Chloride

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511794-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511794-001MS			**Duplicate Matrix Spike** K1511794-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Chloride	4.93	14.2	10.0	93	14.3	10.0	93	90-110	<1	20

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Chloride

Sample Name:	DW-9	**Units:**	mg/L
Lab Code:	K1511798-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511798-001MS			Duplicate Matrix Spike K1511798-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Chloride	5.84	15.2	10.0	94	15.0	10.0	92	90-110	1	20

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/19/15

Lab Control Sample Summary
Chloride

Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	468244

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511798-LCS1	4.92	5.00	98	90-110
Lab Control Sample	K1511798-LCS2	4.88	5.00	98	90-110

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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Fluoride

Sample Name	Lab Code	Result		MRL	Dil.	Date Analyzed	Date Extracted	Q
DW-9	K1511798-001	ND	U	0.20	2	10/20/15 10:09	10/19/15	
Method Blank	K1511798-MB1	ND	U	0.10	1	10/20/15 09:26	10/19/15	
Method Blank	K1511798-MB2	ND	U	0.10	1	10/20/15 12:18	10/19/15	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project	Sentinel Well Program	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Replicate Sample Summary
Fluoride

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1511794-001DUP	0.20	0.22	0.21	0.218	4	20	10/20/15
DW-9	K1511798-001DUP	0.20	ND U	ND U	NC	NC	20	10/20/15

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Fluoride

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511794-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511794-001MS			**Duplicate Matrix Spike** K1511794-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Fluoride	0.22	9.45	10.0	92	9.66	10.0	94	90-110	2	20

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Fluoride

Sample Name:	DW-9	**Units:**	mg/L
Lab Code:	K1511798-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511798-001MS			Duplicate Matrix Spike K1511798-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Fluoride	ND U	9.52	10.0	95	9.66	10.0	97	90-110	2	20

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/19/15

Lab Control Sample Summary
Fluoride

Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	468244

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511798-LCS1	4.98	5.00	100	90-110
Lab Control Sample	K1511798-LCS2	4.91	5.00	98	90-110

ALS Group USA, Corp.
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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Nitrite as Nitrogen

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
DW-9	K1511798-001	ND U	0.10	2	10/20/15 10:09	10/19/15	
Method Blank	K1511798-MB1	ND U	0.050	1	10/20/15 09:26	10/19/15	
Method Blank	K1511798-MB2	ND U	0.050	1	10/20/15 12:18	10/19/15	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project	Sentinel Well Program	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Replicate Sample Summary
Nitrite as Nitrogen

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1511794-001DUP	0.10	ND U	ND U	NC	NC	20	10/20/15
DW-9	K1511798-001DUP	0.10	ND U	ND U	NC	NC	20	10/20/15

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Nitrite as Nitrogen

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511794-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511794-001MS			Duplicate Matrix Spike K1511794-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Nitrite as Nitrogen	ND U	10.3	10.0	103	10.5	10.0	105	90-110	1	20

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Nitrite as Nitrogen

Sample Name:	DW-9	**Units:**	mg/L
Lab Code:	K1511798-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511798-001MS			Duplicate Matrix Spike K1511798-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Nitrite as Nitrogen	ND U	10.4	10.0	104	10.4	10.0	104	90-110	<1	20

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/19/15

Lab Control Sample Summary
Nitrite as Nitrogen

Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	468244

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511798-LCS1	2.56	2.50	102	90-110
Lab Control Sample	K1511798-LCS2	2.55	2.50	102	90-110

ALS Group USA, Corp.
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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Nitrate as Nitrogen

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
DW-9	K1511798-001	ND U	0.10	2	10/20/15 10:09	10/19/15	
Method Blank	K1511798-MB1	ND U	0.050	1	10/20/15 09:26	10/19/15	
Method Blank	K1511798-MB2	ND U	0.050	1	10/20/15 12:18	10/19/15	

ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project	Sentinel Well Program	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Replicate Sample Summary
Nitrate as Nitrogen

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1511794-001DUP	0.10	ND U	ND U	NC	NC	20	10/20/15
DW-9	K1511798-001DUP	0.10	ND U	ND U	NC	NC	20	10/20/15
Batch QC	K1511800-001DUP	0.10	ND U	ND U	NC	NC	20	10/20/15

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dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Nitrate as Nitrogen

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511794-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511794-001MS			Duplicate Matrix Spike K1511794-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Nitrate as Nitrogen	ND U	9.17	10.0	92	9.23	10.0	92	90-110	<1	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Nitrate as Nitrogen

Sample Name:	DW-9	**Units:**	mg/L
Lab Code:	K1511798-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511798-001MS			Duplicate Matrix Spike K1511798-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Nitrate as Nitrogen	ND U	9.15	10.0	91	9.13	10.0	91	90-110	<1	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Nitrate as Nitrogen

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511800-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511800-001MS			Duplicate Matrix Spike K1511800-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Nitrate as Nitrogen	ND U	3.60	4.00	90	3.63	4.00	91	90-110	<1	20

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ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/19/15

Lab Control Sample Summary
Nitrate as Nitrogen

Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	468244

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511798-LCS1	2.38	2.50	95	90-110
Lab Control Sample	K1511798-LCS2	2.35	2.50	94	90-110

ALS Group USA, Corp.
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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Sulfate

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
DW-9	K1511798-001	**3.00**	0.20	2	10/20/15 10:09	10/19/15	
Method Blank	K1511798-MB1	ND U	0.10	1	10/20/15 09:26	10/19/15	
Method Blank	K1511798-MB2	ND U	0.10	1	10/20/15 12:18	10/19/15	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project	Sentinel Well Program	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Replicate Sample Summary
Sulfate

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1511794-001DUP	0.20	2.86	2.73	2.79	5	20	10/20/15
DW-9	K1511798-001DUP	0.20	3.00	3.03	3.02	<1	20	10/20/15

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Sulfate

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511794-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511794-001MS			Duplicate Matrix Spike K1511794-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Sulfate	2.86	12.1	10.0	93	12.2	10.0	93	90-110	<1	20

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
		Date Analyzed:	10/20/15
		Date Extracted:	10/19/15

Duplicate Matrix Spike Summary
Sulfate

Sample Name:	DW-9	**Units:**	mg/L
Lab Code:	K1511798-001	**Basis:**	NA
Analysis Method:	300.0		
Prep Method:	Method		

		Matrix Spike K1511798-001MS			Duplicate Matrix Spike K1511798-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Sulfate	3.00	12.5	10.0	95	12.5	10.0	95	90-110	<1	20

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/19/15

Lab Control Sample Summary
Sulfate

Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	468244

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511798-LCS1	5.01	5.00	100	90-110
Lab Control Sample	K1511798-LCS2	4.92	5.00	98	90-110

ALS Group USA, Corp.
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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	314.0	**Units:**	ug/L
Prep Method:	None	**Basis:**	NA

Perchlorate

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-9	K1511798-001	ND U	1.0	1	10/21/15 13:05	
Method Blank	K1511798-MB1	ND U	1.0	1	10/21/15 11:42	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project	Sentinel Well Program	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
		Date Analyzed:	10/21/15

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	Batch QC	**Units:**	ug/L
Lab Code:	K1511360-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample K1511360-001DUP Result	Average	RPD	RPD Limit
Perchlorate	314.0	1.0	ND U	ND U	NC	NC	20

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/21/15
		Date Extracted:	NA

Duplicate Matrix Spike Summary
Perchlorate

Sample Name:	Batch QC	**Units:**	ug/L
Lab Code:	K1511360-001	**Basis:**	NA
Analysis Method:	314.0		
Prep Method:	None		

		Matrix Spike K1511360-001MS			Duplicate Matrix Spike K1511360-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	ND U	12.0	10.0	120	11.7	10.0	117	80-120	2	20

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Analyzed:**	10/21/15
Sample Matrix:	Drinking Water	**Date Extracted:**	NA

Lab Control Sample Summary
Perchlorate

Analysis Method:	314.0	**Units:**	ug/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	468262

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511798-LCS1	16.4	16.8	98	85-115

ALS Group USA, Corp.
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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	335.4	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Cyanide, Total

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
DW-9	K1511798-001	ND U	0.010	1	10/28/15 10:14	10/27/15	
Method Blank	K1511798-MB1	ND U	0.010	1	10/28/15 10:14	10/27/15	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project	Sentinel Well Program	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
		Date Analyzed:	10/28/15

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	KQ1512462-06	**Basis:**	NA

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample KQ1512462-06DUP Result	Average	RPD	RPD Limit
Cyanide, Total	335.4	0.010	ND U	ND U	NC	NC	20

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/28/15
		Date Extracted:	10/27/15

Duplicate Matrix Spike Summary
Cyanide, Total

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	KQ1512462-06	**Basis:**	NA
Analysis Method:	335.4		
Prep Method:	Method		

		Matrix Spike KQ1512462-06MS			Duplicate Matrix Spike KQ1512462-06DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Cyanide, Total	ND U	0.124	0.100	124 *	0.121	0.100	121 *	90-110	2	20

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Analyzed:**	10/28/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/27/15

Lab Control Sample Summary
Cyanide, Total

Analysis Method:	335.4	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	469348

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511798-LCS1	0.146	0.150	97	90-110

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	Calculation	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Nitrate+Nitrite as Nitrogen

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-9	K1511798-001	ND U	0.20	1	10/20/15 10:09	

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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	SM 2120 B	**Units:**	ColorUnits
Prep Method:	None	**Basis:**	NA

Color

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-9	K1511798-001	**20.0**	5.0	1	10/20/15 14:50	
Method Blank	K1511798-MB1	ND U	5.0	1	10/20/15 14:35	

ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project	Sentinel Well Program	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
Analysis Method:	SM 2120 B	**Units:**	ColorUnits
Prep Method:	None	**Basis:**	NA

Replicate Sample Summary
Color

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1511797-001DUP	5.0	15.0	15.0	15.0	<1	20	10/20/15
Batch QC	K1511893-005DUP	5.0	ND U	ND U	NC	NC	20	10/21/15

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ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	NA

Lab Control Sample Summary
Color

Analysis Method:	SM 2120 B	**Units:**	ColorUnits
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	468258

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511798-LCS1	50.0	50.0	100	85-115

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	SM 2320 B	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Alkalinity as CaCO3, Total

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-9	K1511798-001	**86.7**	2.0	1	11/02/15 14:50	
Method Blank	K1511798-MB1	ND U	2.0	1	11/02/15 14:50	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project	Sentinel Well Program	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
Analysis Method:	SM 2320 B	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Replicate Sample Summary
Alkalinity as CaCO3, Total

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1511794-001DUP	2.0	81.3	81.3	81.3	<1	20	11/02/15
Batch QC	K1511896-004DUP	2.0	ND U	ND U	NC	NC	20	11/02/15

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ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Analyzed:**	11/02/15
Sample Matrix:	Drinking Water	**Date Extracted:**	NA

Lab Control Sample Summary
Alkalinity as CaCO3, Total

Analysis Method:	SM 2320 B	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	470113

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511798-LCS1	134	136	99	90-110

ALS Group USA, Corp.
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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	SM 2510 B	**Units:**	uMHOS/cm
Prep Method:	None	**Basis:**	NA

Conductivity at 25 Degrees Celsius

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-9	K1511798-001	**212**	2.0	1	10/20/15 09:56	
Method Blank	K1511798-MB1	ND U	2.0	1	10/20/15 09:56	
Method Blank	K1511798-MB2	ND U	2.0	1	10/20/15 09:56	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project	Sentinel Well Program	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
		Date Analyzed:	10/20/15

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	DW-9	**Units:**	uMHOS/cm
Lab Code:	K1511798-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample K1511798-001DUP Result	Average	RPD	RPD Limit
Conductivity at 25 Degrees Celsius	SM 2510 B	2.0	212	211	212	<1	20

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	NA

Lab Control Sample Summary
Conductivity at 25 Degrees Celsius

Analysis Method:	SM 2510 B	**Units:**	uMHOS/cm
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	467985

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511798-LCS1	313	289	108	86-113

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	SM 2540 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Solids, Total Dissolved

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-9	K1511798-001	**130**	10	1	10/20/15 16:39	
Method Blank	K1511798-MB1	ND U	10	1	10/20/15 16:39	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project	Sentinel Well Program	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
		Date Analyzed:	10/20/15

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511788-003	**Basis:**	NA

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample K1511788-003DUP Result	Average	RPD	RPD Limit
Solids, Total Dissolved	SM 2540 C	10	347	373	360	7	10

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	NA

Lab Control Sample Summary
Solids, Total Dissolved

Analysis Method:	SM 2540 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	468084

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511798-LCS1	888	897	99	85-115

ALS Group USA, Corp.
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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	SM 4500-NH3 G	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Ammonia as Nitrogen

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
DW-9	K1511798-001	**0.191**	0.050	1	10/22/15 09:57	10/22/15	
Method Blank	K1511798-MB1	ND U	0.050	1	10/22/15 09:57	10/22/15	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project	Sentinel Well Program	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
Analysis Method:	SM 4500-NH3 G	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA

Replicate Sample Summary
Ammonia as Nitrogen

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1511683-001DUP	0.050	0.032 J	ND U	NC	NC	20	10/22/15
Batch QC	K1511831-001DUP	0.050	1.63	1.59	1.61	3	20	10/22/15
Batch QC	K1511838-003DUP	0.050	1.17	1.17	1.17	<1	20	10/22/15

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/22/15
		Date Extracted:	10/22/15

Duplicate Matrix Spike Summary
Ammonia as Nitrogen

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511683-001	**Basis:**	NA
Analysis Method:	SM 4500-NH3 G		
Prep Method:	Method		

		Matrix Spike K1511683-001MS			**Duplicate Matrix Spike** K1511683-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Ammonia as Nitrogen	0.032 J	2.06	2.00	101	2.01	2.00	99	90-110	2	20

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dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/22/15
		Date Extracted:	10/22/15

Duplicate Matrix Spike Summary
Ammonia as Nitrogen

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511831-001	**Basis:**	NA
Analysis Method:	SM 4500-NH3 G		
Prep Method:	Method		

		Matrix Spike K1511831-001MS				**Duplicate Matrix Spike** K1511831-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Ammonia as Nitrogen	1.63	3.56	2.00	96	3.52	2.00	94	90-110	2	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/22/15
		Date Extracted:	10/22/15

Duplicate Matrix Spike Summary
Ammonia as Nitrogen

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511838-003	**Basis:**	NA
Analysis Method:	SM 4500-NH3 G		
Prep Method:	Method		

		Matrix Spike K1511838-003MS			**Duplicate Matrix Spike** K1511838-003DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Ammonia as Nitrogen	1.17	3.13	2.00	98	3.10	2.00	96	90-110	2	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Analyzed:**	10/22/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/22/15

Lab Control Sample Summary
Ammonia as Nitrogen

Analysis Method:	SM 4500-NH3 G	**Units:**	mg/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	468711

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511798-LCS1	15.1	16.2	93	90-110

ALS Group USA, Corp.
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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	SM 4500-P E	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Orthophosphate as Phosphorus

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-9	K1511798-001	**0.491**	0.050	1	10/20/15 17:24	
Method Blank	K1511798-MB1	ND U	0.050	1	10/20/15 17:24	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project	Sentinel Well Program	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
		Date Analyzed:	10/20/15

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511794-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample K1511794-001DUP Result	Average	RPD	RPD Limit
Orthophosphate as Phosphorus	SM 4500-P E	0.050	0.213	0.198	0.206	7	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Collected:**	N/A
Sample Matrix:	Drinking Water	**Date Received:**	N/A
		Date Analyzed:	10/20/15
		Date Extracted:	NA

Duplicate Matrix Spike Summary
Orthophosphate as Phosphorus

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1511794-001	**Basis:**	NA
Analysis Method:	SM 4500-P E		
Prep Method:	None		

		Matrix Spike K1511794-001MS			**Duplicate Matrix Spike** K1511794-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Orthophosphate as Phosphorus	0.213	0.59	0.40	94	0.58	0.40	92	75-125	2	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Analyzed:**	10/20/15
Sample Matrix:	Drinking Water	**Date Extracted:**	NA

Lab Control Sample Summary
Orthophosphate as Phosphorus

Analysis Method:	SM 4500-P E	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	468008

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1511798-LCS1	2.56	2.54	101	85-115

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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	SM 9223 B	**Units:**	MPN/100mL
Prep Method:	None	**Basis:**	NA

Escherichia coli

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-9	K1511798-001	**absent**	-	1	10/20/15 18:16	

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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
Analysis Method:	SM 9223 B	**Units:**	MPN/100mL
Prep Method:	None	**Basis:**	NA

Coliform, Total

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
DW-9	K1511798-001	**absent**	-	1	10/20/15 18:16	

Metals

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Collected:**	10/19/15
Sample Matrix:	Drinking water	**Date Received:**	10/19/15

Hardness as CaCO3

Prep Method:	CLAA	Units:	mg/L (ppm)
Analysis Method:	200.7/SM 2340B	Basis:	NA
Test Notes:			

Sample Name	Lab Code	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
DW-9	K1511798-001	0.07	1	10/22/15	10/29/15	68.2	
Method Blank	K1511798-MB	0.07	1	10/22/15	10/29/15	ND	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Collected:**	NA
Sample Matrix:	Drinking water	**Date Received:**	NA
		Date Extracted:	10/22/15
		Date Analyzed:	10/29/15

Duplicate Summary
Metals

Sample Name:	Batch QCD	Units:	mg/L (ppm)
Lab Code:	K1511794-001D	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
Hardness as CaCO3	CLAA	200.7/SM 2340B	0.07	64.5	63.5	64.0	2	

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Analytical Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Collected:**	10/19/15
Sample Matrix:	Drinking water	**Date Received:**	10/19/15

Methyl Mercury

Prep Method:	Method	Units:	ng/L
Analysis Method:	1630	Basis:	NA
Test Notes:			

Sample Name	Lab Code	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
DW-9	K1511798-001	0.1	1	11/02/15	11/03/15	ND	
Method Blank 1	K1511798-MB1	0.1	1	11/02/15	11/03/15	ND	
Method Blank 2	K1511798-MB2	0.1	1	11/02/15	11/03/15	ND	
Method Blank 3	K1511798-MB3	0.1	1	11/02/15	11/03/15	ND	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Collected:**	NA
Sample Matrix:	Drinking water	**Date Received:**	NA
		Date Extracted:	11/02/15
		Date Analyzed:	11/03/15

Matrix Spike/Duplicate Matrix Spike Summary
Metals

Sample Name:	Batch QC		Units:	ng/L
Lab Code:	K1511797-001MS,	K1511797-001MSD	Basis:	NA
Test Notes:				

Analyte	Prep Method	Analysis Method	MRL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	CAS Acceptance Limits	Relative Percent Difference	Result Notes
Mercury, Methyl	Method	1630	0.1	2.22	2.22	ND	2.74	2.74	123	123	65-135	<1	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Collected:**	NA
LCS Matrix:	Water	**Date Received:**	NA
		Date Extracted:	11/02/15
		Date Analyzed:	11/03/15

Ongoing Precision and Recovery (OPR) Sample Summary
Metals

Sample Name: Ongoing Precision and Recovery (Initial)

Units: ng/L
Basis: NA

Test Notes:

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Mercury, Methyl	Method	1630	2.22	2.57	116	67-133	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Collected:**	NA
LCS Matrix:	Water	**Date Received:**	NA
		Date Extracted:	11/02/15
		Date Analyzed:	11/03/15

Ongoing Precision and Recovery (OPR) Sample Summary
Metals

Sample Name: Ongoing Precision and Recovery (Final)

Units: ng/L
Basis: NA

Test Notes:

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Mercury, Methyl	Method	1630	2.22	2.68	121	67-133	

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QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	Sentinel Well Program	**Date Collected:**	NA
LCS Matrix:	Water	**Date Received:**	NA
		Date Extracted:	11/02/15
		Date Analyzed:	11/03/15

Quality Control Sample (QCS) Summary
Metals

Sample Name: Quality Control Sample

Units: pg
Basis: NA

Test Notes:

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Mercury, Methyl	Method	1630	100	122	122	67-133	

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Longview, City of	**Service Request:**	K1511798
Project No.:	NA	**Date Collected:**	10/19/15
Project Name:	Sentinel Well Program	**Date Received:**	10/19/15
Matrix:	WATER	**Units:**	mg/L
		Basis:	NA

Sample Name: **DW-9** **Lab Code:** **K1511798-001**

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.00005	1.0	10/22/15	11/04/15	0.00005	U	
Arsenic	200.8	0.0005	1.0	10/22/15	11/04/15	0.0039		
Barium	200.7	0.0040	1.0	10/22/15	10/29/15	0.0092		
Beryllium	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Cadmium	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Chromium	200.8	0.0002	1.0	10/22/15	11/04/15	0.0002	U	
Copper	200.7	0.004	1.0	10/22/15	10/29/15	0.004	U	
Iron	200.7	0.02	1.0	10/22/15	10/29/15	0.61		
Lead	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Manganese	200.7	0.001	1.0	10/22/15	10/29/15	0.517		
Mercury	245.1	0.0002	1.0	10/27/15	10/28/15	0.0002	U	
Nickel	200.8	0.0002	1.0	10/22/15	11/04/15	0.0006		
Selenium	200.8	0.001	1.0	10/22/15	11/04/15	0.001	U	
Silver	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Sodium	200.7	0.2	1.0	10/22/15	10/29/15	8.6		
Thallium	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Zinc	200.7	0.004	1.0	10/22/15	10/29/15	0.004	U	

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Longview, City of	**Service Request:**	K1511798
Project No.:	NA	**Date Collected:**	
Project Name:	Sentinel Well Program	**Date Received:**	
Matrix:	WATER	**Units:**	mg/L
		Basis:	NA

Sample Name: Method Blank **Lab Code:** KQ1512200-01

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Barium	200.7	0.0040	1.0	10/22/15	10/29/15	0.0040	U	
Copper	200.7	0.004	1.0	10/22/15	10/29/15	0.004	U	
Iron	200.7	0.02	1.0	10/22/15	10/29/15	0.02	U	
Manganese	200.7	0.001	1.0	10/22/15	10/30/15	0.001	U	
Sodium	200.7	0.2	1.0	10/22/15	10/29/15	0.2	U	
Zinc	200.7	0.004	1.0	10/22/15	10/29/15	0.004	U	

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Longview, City of	**Service Request:**	K1511798
Project No.:	NA	**Date Collected:**	
Project Name:	Sentinel Well Program	**Date Received:**	
Matrix:	WATER	**Units:**	mg/L
		Basis:	NA

Sample Name: Method Blank **Lab Code:** KQ1512201-01

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.00005	1.0	10/22/15	11/04/15	0.00005	U	
Arsenic	200.8	0.0005	1.0	10/22/15	11/04/15	0.0005	U	
Beryllium	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Cadmium	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Chromium	200.8	0.0002	1.0	10/22/15	11/04/15	0.0002	U	
Lead	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Nickel	200.8	0.0002	1.0	10/22/15	11/04/15	0.0002	U	
Selenium	200.8	0.001	1.0	10/22/15	11/04/15	0.001	U	
Silver	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	
Thallium	200.8	0.00002	1.0	10/22/15	11/04/15	0.00002	U	

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Longview, City of	**Service Request:**	K1511798
Project No.:	NA	**Date Collected:**	
Project Name:	Sentinel Well Program	**Date Received:**	
Matrix:	WATER	**Units:**	mg/L
		Basis:	NA

Sample Name: **Method Blank** **Lab Code:** **KQ1512456-03**

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Mercury	245.1	0.0002	1.0	10/27/15	10/28/15	0.0002	U	

Comments:

Metals
- 5A -
SPIKE SAMPLE RECOVERY

Client: Longview, City of
Service Request: K1511798
Project No.: NA
Units: MG/L
Project Name: Sentinel Well Program
Basis: NA
Matrix: WATER

Sample Name: Batch QC1S
Lab Code: K1511685-001S

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Mercury	70 - 130	0.0051		0.0002	U	0.0050	102		245.1

An empty field in the Control Limit column indicates the control limit is not applicable

Metals
- 5A -
SPIKE SAMPLE RECOVERY

Client: Longview, City of
Service Request: K1511798
Project No.: NA
Units: MG/L
Project Name: Sentinel Well Program
Basis: NA
Matrix: WATER

Sample Name: Batch QC1SD
Lab Code: K1511685-001SD

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Mercury	70 - 130	0.0050		0.0002	U	0.0050	100		245.1

An empty field in the Control Limit column indicates the control limit is not applicable

Metals
- 5A -
SPIKE SAMPLE RECOVERY

Client: Longview, City of
Service Request: K1511798
Project No.: NA
Units: MG/L
Project Name: Sentinel Well Program
Basis: NA
Matrix: WATER

Sample Name: Batch QC2S
Lab Code: K1511794-001S

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Antimony	70 - 130	0.052600		0.000050	U	0.050000	105		200.8
Arsenic	70 - 130	0.05576		0.00368		0.05000	104		200.8
Barium	70 - 130	0.991		0.0094		1.00	98.2		200.7
Beryllium	70 - 130	0.00252		0.00002	U	0.00250	101		200.8
Cadmium	70 - 130	0.02613		0.00002	U	0.025000	105		200.8
Chromium	70 - 130	0.0084		0.0002	U	0.01000	84		200.8
Copper	70 - 130	0.233		0.004	U	0.25	93.2		200.7
Iron	70 - 130	2.96		2.03		1.00	93.0		200.7
Lead	70 - 130	0.05092		0.00002	U	0.050000	102		200.8
Manganese	70 - 130	0.977		0.517		0.50	92.0		200.7
Nickel	70 - 130	0.0229		0.0004		0.02500	90		200.8
Selenium	70 - 130	0.054		0.001	U	0.0500	108		200.8
Silver	70 - 130	0.01252		0.00002	U	0.012500	100		200.8
Sodium	70 - 130	19.1		8.8		10.00	103.0		200.7
Thallium	70 - 130	0.05162		0.00002	U	0.050000	103		200.8
Zinc	70 - 130	0.469		0.004	U	0.50	93.8		200.7

An empty field in the Control Limit column indicates the control limit is not applicable

Metals

- 6 -

DUPLICATES

Client: Longview, City of
Service Request: K1511798
Project No.: NA
Units: MG/L
Project Name: Sentinel Well Program
Basis: NA
Matrix: WATER

Sample Name: Batch QC1D
Lab Code: K1511685-001D

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Mercury		0.0002	U	0.0002	U			245.1

An empty field in the Control Limit column indicates the control limit is not applicable.

Form VI - IN

Metals

- 6 -

DUPLICATES

Client: Longview, City of
Service Request: K1511798
Project No.: NA
Units: MG/L
Project Name: Sentinel Well Program
Basis: NA
Matrix: WATER

Sample Name: Batch QC1SD
Lab Code: K1511685-001SD

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Mercury	20	0.0051		0.0050		2.0		245.1

An empty field in the Control Limit column indicates the control limit is not applicable.

Form VI - IN

Metals

- 6 -

DUPLICATES

Client: Longview, City of
Service Request: K1511798
Project No.: NA
Units: MG/L
Project Name: Sentinel Well Program
Basis: NA
Matrix: WATER

Sample Name: Batch QC2D
Lab Code: K1511794-001D

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Antimony		0.000050	U	0.000050	U			200.8
Arsenic	20	0.00368		0.00356		3.3		200.8
Barium		0.0094		0.0094		0.0		200.7
Beryllium		0.00002	U	0.00002	U			200.8
Cadmium		0.00002	U	0.00002	U			200.8
Chromium		0.0002	U	0.0002	U			200.8
Copper		0.004	U	0.004	U			200.7
Iron	20	2.03		2.00		1.5		200.7
Lead		0.00002	U	0.00002	U			200.8
Manganese	20	0.517		0.510		1.4		200.7
Nickel		0.0004		0.0003		28.6		200.8
Selenium		0.001	U	0.001	U			200.8
Silver		0.00002	U	0.00002	U			200.8
Sodium	20	8.8		8.4		4.7		200.7
Thallium		0.00002	U	0.00002	U			200.8
Zinc		0.004	U	0.004	U			200.7

An empty field in the Control Limit column indicates the control limit is not applicable.

Metals

- 7 -

LABORATORY CONTROL SAMPLE

Client: Longview, City of **Service Request:** K1511798

Project No.: NA

Project Name: Sentinel Well Program

Aqueous LCS Source: ALS MIXED **Solid LCS Source:**

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/kg) True	Found	C	Limits	%R
Barium	5	4.8	96.0					
Copper	.625	0.577	92.3					
Iron	2.5	2.38	95.2					
Manganese	1.25	1.20	96.0					
Sodium	12.5	12.4	99.2					
Zinc	1.25	1.16	92.8					

Metals

- 7 -

LABORATORY CONTROL SAMPLE

Client: Longview, City of **Service Request:** K1511798

Project No.: NA

Project Name: Sentinel Well Program

Aqueous LCS Source: ALS MIXED **Solid LCS Source:**

Analyte	Aqueous (ug/L) True	Aqueous (ug/L) Found	Aqueous (ug/L) %R	Solid (mg/kg) True	Solid (mg/kg) Found	Solid (mg/kg) C	Solid (mg/kg) Limits	Solid (mg/kg) %R
Antimony	0.050	0.0522	104					
Arsenic	0.050	0.052	104					
Beryllium	0.003	0.0025	100					
Cadmium	0.025	0.0264	106					
Chromium	0.010	0.0100	100					
Lead	0.050	0.0511	102					
Mercury	.005	0.0047	94.0					
Nickel	0.025	0.0247	99					
Selenium	0.050	0.054	108					
Silver	0.013	0.0124	99					
Thallium	0.050	0.0518	104					

EPA Method 504.1

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Analytical Results

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well r kogkaM	**Date Collected:**	10/19/2015
Sample Matrix:	DkinEing watek	**Date Received:**	10/19/2015

EPA Method 504.1

Sample Name:	DW-9	**Units:**	ug/L
Lab Code:	K1511794-001	**Basis:**	NA
Extraction Method:	T HO. GD	**Level:**	Low
Analysis Method:	50Ubl		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,2-Di(koMoetBane)HD3 p	ND	h	0b0097	1	10/21/15	10/21/15	KWm1510205	
1,2,P-OkicBloko6ko6ane	ND	h	0bU0	1	10/21/15	10/21/15	KWm1510205	
1,2-Di(koMo-P-cBloko6ko6ane)D3 Cr	ND	h	0b0097	1	10/21/15	10/21/15	KWm1510205	

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Hentinel - ell O.og.aG	**Date Collected:**	S A
Sample Matrix:	U.inTing wate.	**Date Received:**	S A

EPA Method 504.1

Sample Name:	r etkoMElanT	**Units:**	ug2L
Lab Code:	K- 0 151/ N/ 5DW	**Basis:**	S A
Extraction Method:	r bmh (U	**Level:**	Low
Analysis Method:	5/ WB		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,NDUi3.oGoetkane pb UEP	S U	)	/ B/ 99	1	1/ 2N12 15	1/ 2N12 15	K- 0 151/ N/ 5	
1,N,6Dn icklo.o: .o: ane	S U	)	/ BW	1	1/ 2N12 15	1/ 2N12 15	K- 0 151/ N/ 5	
1,NDUi3.oGoD6Dcklo.o: .o: ane pUECO	S U	)	/ B/ 99	1	1/ 2N12 15	1/ 2N12 15	K- 0 151/ N/ 5	

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K15117h9
Project:	Dentineka elkkSrogrN	**Date Extracted:**	18/WI/W815
Sample Matrix:	Brinuing wNter	**Date Analyzed:**	18/WI/W815

Matrix Spike/Duplicate Matrix Spike Summary
EPA Method 504.1

Sample Name:	Ba ch	**Units:**	4g/L
Lab Code:	K15117h9c881	**Basis:**	. A
Extraction Method:	2 METHB	**Level:**	Low
Analysis Method:	58-0l	**Extraction Lot:**	Ka O1518W85

		Ba ch2 D Ka O1518W85cl **Matrix Spike**			Ba chB2 D Ka O1518W85cW **Duplicate Matrix Spike**					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
1,WcBi3rol oetbNne mMB( )	. B	80WW7	80W6	h-	80WI-	80W6	99	G5c165	G	68
1,W,6cEriPbkoropropNne	. B	80WG	80W6	181	80WW9	80W6	h-	G5c165	9	68
1,WcBi3rol oc6cPbkoropropNne mB(CS)	. B	80W66	80W6	hG	80WI5	80W6	9h	G5c165	9	68

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

SerPent rePoveries Nnd rekNive perPent differenPes mRSB) Nre deterl ined 3y tbe softwNre 4sing vNl4es in tbe PNRP4kNion wbiPb bNve not 3een ro4nded0

Client:	Longview, City of	**Service Request:**	BacaahKl
Project:	uentine. D e.. Erogr0N	**Date Extracted:**	a5/Sa/S5ac
Sample Matrix:	2 rinMing w0ter	**Date Analyzed:**	a5/Sa/S5ac

Lab Control Spike Summary
EPA Method 504.1

Extraction Method:	T HOG6 2	**Units:**	8g/L
Analysis Method:	c579a	**Basis:**	- A
		Level:	Low
		Extraction Lot:	BD k aca5S5c

L04 Contro. u0Np.e
BD k aca5S5c1W

	Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
a,Sl2 i4roNoet30ne bH2 m(	59SWi	59Sc5	Kc	h51aW5
a,S,WOri)3.oroprop0ne	59Sc7	59Sc5	a5S	h51aW5
a,Sl2 i4roNo1W)3.oroprop0ne b2 mCE(	59S7W	59Sc5	Kh	h51aW5

Results flagged with an asterisk (*) indicate values outside control criteria.

Eer)ent re)overies 0nF re.0tive per)ent Fifferen)es bRE2 (0re FeterNineF 4y t3e softw0re 8sing v0.8es in t3e)0.)8.0tion w3i)3 30ve not 4een ro8nFeF9

Pesticides/PCBs by EPA Method 508.1

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Analytical Results

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well r kogkaM	**Date Collected:**	10/19/2015
Sample Matrix:	DkinEing watek	**Date Received:**	10/19/2015

Pesticides/PCBs by EPA Method 508.1

Sample Name:	DW-9	**Units:**	ug/L
Lab Code:	K1511794-001	**Basis:**	NA
Extraction Method:	T HO8 . D	**Level:**	Low
Analysis Method:	504G		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
gaMMa-B8 C (Lindane)	ND	m	0G0097	1	10/27/15	10/U1/15	KW3 1510525	
8 eptachlok	ND	m	0G0097	1	10/27/15	10/U1/15	KW3 1510525	*
Aldkin	ND	m	0G0097	1	10/27/15	10/U1/15	KW3 1510525	
8 eptachlok Hpoxide	ND	m	0G0097	1	10/27/15	10/U1/15	KW3 1510525	*
8 eptachlok Hpoxide (IsoMek A)	ND	m	0G0097	1	10/27/15	10/U1/15	KW3 1510525	
' ,' 6DDH	ND	m	0G0097	1	10/27/15	10/U1/15	KW3 1510525	
Dieldkin	ND	m	0G0097	1	10/27/15	10/U1/15	KW3 1510525	*
Hndkin	ND	m	0G0097	1	10/27/15	10/U1/15	KW3 1510525	*
' ,' 6DDD	ND	m	0G0097	1	10/27/15	10/U1/15	KW3 1510525	*
' ,' 6DDO	ND	m	0G0097	1	10/27/15	10/U1/15	KW3 1510525	*
T ethoxychlok	ND	m	0G0097	1	10/27/15	10/U1/15	KW3 1510525	*
Ooxaphene	ND	m	0G097	1	10/27/15	10/U1/15	KW3 1510525	
Chlokdane	ND	m	0G097	1	10/27/15	10/U1/15	KW3 1510525	
Akoclok 101b	ND	m	0G0' 9	1	10/27/15	10/U1/15	KW3 1510525	
Akoclok 1221	ND	m	0G097	1	10/27/15	10/U1/15	KW3 1510525	
Akoclok 12U2	ND	m	0G097	1	10/27/15	10/U1/15	KW3 1510525	
Akoclok 12' 2	ND	m	0G097	1	10/27/15	10/U1/15	KW3 1510525	
Akoclok 12' 4	ND	m	0G097	1	10/27/15	10/U1/15	KW3 1510525	
Akoclok 125'	ND	m	0G097	1	10/27/15	10/U1/15	KW3 1510525	
Akoclok 12b0	ND	m	0G097	1	10/27/15	10/U1/15	KW3 1510525	

* See Case Nakkative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
' ,' 6DiPkoMooctafluokoPiphenyl	110	70-1U0	10/U1/15	AcceptaPle

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Tentinel - ell HOogOa8	**Date Collected:**	2 A
Sample Matrix:	. OnEing wateO	**Date Received:**	2 A

Pesticides/PCBs by EPA Method 508.1

Sample Name:	S etr ok MlanE	**Units:**	ugW
Lab Code:	K- 0 151/ 5N5D7	**Basis:**	2 A
Extraction Method:	S G3 Um.	**Level:**	Low
Analysis Method:	5/ 4B		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
ga8 8 aDMUC)Linkane*	2 .	d	/ B1/	1	1/ W7W5	1/ W1W5	K- 0 151/ 5N5	
Uehtacr loO	2 .	d	/ B1/	1	1/ W7W5	1/ W1W5	K- 0 151/ 5N5	p
AlkOn	2 .	d	/ B1/	1	1/ W7W5	1/ W1W5	K- 0 151/ 5N5	
Uehtacr loOGhoxike	2 .	d	/ B1/	1	1/ W7W5	1/ W1W5	K- 0 151/ 5N5	p
Uehtacr loOGhoxike)Iso8 eOA*	2 .	d	/ B1/	1	1/ W7W5	1/ W1W5	K- 0 151/ 5N5	
' ,' 6O . G	2 .	d	/ B1/	1	1/ W7W5	1/ W1W5	K- 0 151/ 5N5	
. ielkOn	2 .	d	/ B1/	1	1/ W7W5	1/ W1W5	K- 0 151/ 5N5	p
GnkOn	2 .	d	/ B1/	1	1/ W7W5	1/ W1W5	K- 0 151/ 5N5	p
' ,' 6O . .	2 .	d	/ B1/	1	1/ W7W5	1/ W1W5	K- 0 151/ 5N5	p
' ,' 6O . 3	2 .	d	/ B1/	1	1/ W7W5	1/ W1W5	K- 0 151/ 5N5	p
S etr oxycr loO	2 .	d	/ B1/	1	1/ W7W5	1/ W1W5	K- 0 151/ 5N5	p
3 oxahr ene	2 .	d	/ B1/	1	1/ W7W5	1/ W1W5	K- 0 151/ 5N5	
Cr loOtane	2 .	d	/ B1/	1	1/ W7W5	1/ W1W5	K- 0 151/ 5N5	
AOocloO1/ 1b	2 .	d	/ B5/	1	1/ W7W5	1/ W1W5	K- 0 151/ 5N5	
AOocloO1NN1	2 .	d	/ B1/	1	1/ W7W5	1/ W1W5	K- 0 151/ 5N5	
AOocloO1N(N	2 .	d	/ B1/	1	1/ W7W5	1/ W1W5	K- 0 151/ 5N5	
AOocloO1N N	2 .	d	/ B1/	1	1/ W7W5	1/ W1W5	K- 0 151/ 5N5	
AOocloO1N 4	2 .	d	/ B1/	1	1/ W7W5	1/ W1W5	K- 0 151/ 5N5	
AOocloO1N5'	2 .	d	/ B1/	1	1/ W7W5	1/ W1W5	K- 0 151/ 5N5	
AOocloO1Nb/	2 .	d	/ B1/	1	1/ W7W5	1/ W1W5	K- 0 151/ 5N5	

p Tee Case 2 aOative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
' ,' 6O iPOo8 ooctafluoOoPihr enyl	1/ b	7/ D1(/	1/ W1W5	AccehtaPle

Comments:

Client: Longview, City of
Project: Sentinel Well MograE
Sample Matrix: Drinking water

Service Request: K1511794

Surrogate Recovery Summary
Pesticides/PCBs by EPA Method 508.1

Extraction Method: T HO0 8 D
Analysis Method: 5. 4P1

Units: Mercent
Level: Low

Sample Name	Lab Code	Sur1
DW-9	K1511794-. . 1	11.
T ethoG2 lank	KW3 151. 5B5-7	1. d
DW-9T S	KW3 151. 5B5-1	1. 7
DW-9DT S	KW3 151. 5B5-B	1. 6
LamControl SaE ple	KW3 151. 5B5-b	11B

Surrogate Recovery Control Limits (%)

Sur1 = 6,6'-DimroE ooctafluoromiphenyl 7. -1b.

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K15117h9
Project:	NentineDa eDDkrogruS	**Date Extracted:**	18/l 7/l 815
Sample Matrix:	Brin4ing wuter	**Date Analyzed:**	18/WI/l 815

Matrix Spike/Duplicate Matrix Spike Summary
Pesticides/PCBs by EPA Method 508.1

Sample Name:	Ba ch	**Units:**	0g/L
Lab Code:	K15117h9c881	**Basis:**	. A
Extraction Method:	2 3 MET B	**Level:**	Low
Analysis Method:	589-1	**Extraction Lot:**	Ka H15185l 5

		Ba ch2 N Ka H15185l 5cl Matrix Spike			Ba chB2 N Ka H15185l 5cl Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
guS S ucGE C 6Linmune(	. B	8-11O	8-8hOl	11 8	8-11W	8-8hOl	119	O5cl W5	l	W8
E eptud) Dor	. B	8-11 h	8-8hOl	1Wx	8-11 1	8-8hOl	11 O	O5cl W5	O	W8
ADmrin	. B	8-18W	8-8hOl	187	8-8hOO	8-8hOl	181	O5cl W5	O	W8
E eptud) Dor 3 poI ime	. B	8-11 1	8-8hOl	11 O	8-11O	8-8hOl	11 8	O5cl W5	5	W8
E eptud) Dor 3 poI ime 6s' oS er A(	. B	8-111	8-8hOl	115	8-18x	8-8hOl	189	O5cl W5	O	W8
x,x*cBB3	. B	8-1WI	8-8hOl	1W7 F	8-1W8	8-8hOl	1W5	O5cl W5	1	W8
BieDmrin	. B	8-11 W	8-8hOl	11 7	8-111	8-8hOl	117	O5cl W5	h	W8
3 nmrin	. B	8-111	8-8hOl	115	8-8hx7	8-8hOl	hh	O5cl W5	1O	W8
x,x*cBBB	. B	8-151	8-8hOl	157 F	8-158	8-8hOl	15O F	O5cl W5	1	W8
x,x*cBBM	. B	8-158	8-8hOl	15O F	8-1x7	8-8hOl	15W F	O5cl W5	l	W8
2 et) oI yd) Dor	. B	8-1OW	8-8hOl	178 F	8-1Ol	8-8hOl	1O9 F	O5cl W5	1	W8
ArodDor 11 O8	. B	8-51 O	8-x91	18h	8-5xh	8-x91	11x	O5cl W5	x	W8

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

kerdent redoverie' unmreDutive perdent mifferende' 6RkB(ure meterS inemby t) e ' oftwure 0' ing vuDe' in t) e duDl0Dution w) id)) uve not been ro0nmem-

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	l entinebm elbkrogrNS	**Date Extracted:**	10/G7/C015
Sample Matrix:	3 rinDing wNer	**Date Analyzed:**	10/- 1/C015

Lab Control Spike Summary
Pesticides/PCBs by EPA Method 508.1

Extraction Method:	METHO3	**Units:**	. g/L
Analysis Method:	50481	**Basis:**	u A
		Level:	Low
		Extraction Lot:	Km Wl5105G5

LNa Controbl NS pbe
Km Wl5105G52-
Lab Control Spike

Analyte Name	**Result**	**Spike Amount**	**%Rec**		**%Rec Limits**
gNS S N2BHC (LindNne)	081G4	08100	1G4		7021-0
HeptNchbor	081x4	08100	1x4	*	7021-0
Ahdrin	08114	08100	114		7021-0
HeptNchbor Epo6ide	081-5	08100	1-5	*	7021-0
HeptNchbor Epo6ide (s' oS er A)	081GI	08100	1GI		7021-0
x,xE23 3 E	081G4	08100	1G4		7021-0
3 iehdrin	081-9	08100	1-9	*	7021-0
Endrin	0815-	08100	15-	*	7021-0
x,xE23 3 3	081x5	08100	1x5	*	7021-0
x,xE23 3 T	081x4	08100	1x4	*	7021-0
Metho6ychbor	081I-	08100	1I-	*	7021-0
Arochor 1GI0	08554	08500	11G		7021-0

Results flagged with an asterisk (*) indicate values outside control criteria.

kercent recoverie' Nnd rebNive percent difference' (Rk3) Nre deterS ined ay the ' oftwNre . ' ing vNo e' in the cNre. bNion which hNve not aeen ro. nded8

Chlorinated Herbicides by EPA 515.4

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Analytical Results

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well r kogkaM	**Date Collected:**	10/19/2015
Sample Matrix:	DkinEing watek	**Date Received:**	10/19/2015

Chlorinated Herbicides by EPA 515.4

Sample Name:	DW-9	**Units:**	ug/L
Lab Code:	K1511794-001	**Basis:**	NA
Extraction Method:	T HO. GD	**Level:**	Low
Analysis Method:	5156		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dalazon	ND	b	160	1	10/22/15	10/2h/15	KWU151023p	
h,5-DicdlokomenPoic Aci(	ND	b	0650	1	10/22/15	10/2h/15	KWU151023p	
DicaMma	ND	b	0620	1	10/22/15	10/2h/15	KWU151023p	
Dicdlokzkoz	ND	b	0650	1	10/22/15	10/2h/15	KWU151023p	
2,3-D	ND	b	0610	1	10/22/15	10/2h/15	KWU151023p	
r entacdlokozdenol	ND	b	06030	1	10/22/15	10/2h/15	KWU151023p	
2,3,5-Or xSilve) B	ND	b	0620	1	10/22/15	10/2h/15	KWU151023p	
CdlokaMmen	ND	b	0620	1	10/22/15	10/2h/15	KWU151023p	
2,3-D:	ND	b	160	1	10/22/15	10/2h/15	KWU151023p	
Dinosem	ND	b	0620	1	10/22/15	10/2h/15	KWU151023p	
Dactdal Diaci(	ND	b	0610	1	10/22/15	10/2h/15	KWU151023p	
r iclokaM	ND	b	0610	1	10/22/15	10/2h/15	KWU151023p	
Acifluokfen	ND	b	260	1	10/22/15	10/2h/15	KWU151023p	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2,3-Dicdlokozdenylacetic Aci(	102	70-1h0	10/2h/15	Acceztanle

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Oentinel - ell . GogGa6	**Date Collected:**	r A
Sample Matrix:	3 GnHing wateG	**Date Received:**	r A

Chlorinated Herbicides by EPA 515.4

Sample Name:	k etMoE TlanH	**Units:**	ugSL
Lab Code:	K- 0 151/ NDWZD	**Basis:**	r A
Extraction Method:	k Uph b 3	**Level:**	Low
Analysis Method:	515zD		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
3 alaPon	r 3	m	1z/	1	1/ SNNSI 5	1/ SNdSI 5	K- 0 151/ NDW	
d,523 icMoGo(enxoic AciE	r 3	m	/ z5/	1	1/ SNNSI 5	1/ SNdSI 5	K- 0 151/ NDW	
3 ica6 (a	r 3	m	/ zN/	1	1/ SNNSI 5	1/ SNdSI 5	K- 0 151/ NDW	
3 icMoGPGoP	r 3	m	/ z5/	1	1/ SNNSI 5	1/ SNdSI 5	K- 0 151/ NDW	
N,D23	r 3	m	/ z1/	1	1/ SNNSI 5	1/ SNdSI 5	K- 0 151/ NDW	
. entacMoGoPMenol	r 3	m	/ z/ D/	1	1/ SNNSI 5	1/ SNdSI 5	K- 0 151/ NDW	
N,D,52p .)OilveB:	r 3	m	/ zN/	1	1/ SNNSI 5	1/ SNdSI 5	K- 0 151/ NDW	
CMoGa6 (en	r 3	m	/ zN/	1	1/ SNNSI 5	1/ SNdSI 5	K- 0 151/ NDW	
N,D23 T	r 3	m	1z/	1	1/ SNNSI 5	1/ SNdSI 5	K- 0 151/ NDW	
3 inose(	r 3	m	/ zN/	1	1/ SNNSI 5	1/ SNdSI 5	K- 0 151/ NDW	
3 actMl 3 iaciE	r 3	m	/ z1/	1	1/ SNNSI 5	1/ SNdSI 5	K- 0 151/ NDW	
. icloGa6	r 3	m	/ z1/	1	1/ SNNSI 5	1/ SNdSI 5	K- 0 151/ NDW	
AcifluoGfen	r 3	m	Nz/	1	1/ SNNSI 5	1/ SNdSI 5	K- 0 151/ NDW	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
N,D23 icMoGoPMenylacetic AciE	95	7/ 21d/	1/ SNdSI 5	AccePta(le

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well MograE		
Sample Matrix:	Drinking water		

Surrogate Recovery Summary
Chlorinated Herbicides by EPA 515.4

Extraction Method:	T HO. P D	**Units:**	Mcr0ent
Analysis Method:	515c-	**Level:**	Low

Sample Name	Lab Code	Sur1
2 at06 QC	K151179- 3CGl	1Ch
DW39	K15117943CGl	1Gd
T et6om2 lank	KWB151Gd- b3-	95
2 at06 QCT S	KWB151Gd- b31	1CG
2 at06 QCDT S	KWB151Gd- b3d	9b
LaF Control SaE ple	KWB151Gd- b3h	9h

Surrogate Recovery Control Limits (%)

Sur1 = d,- 3Di06lorop6enyla0eti0 A0im 7GB1hG

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K575594k
Project:	3entineME eMWTrogrWH	**Date Extracted:**	5u/CO/Cu57
Sample Matrix:	l rin2ing wWer	**Date Analyzed:**	5u/CG/Cu57

Matrix Spike/Duplicate Matrix Spike Summary
Chlorinated Herbicides by EPA 515.4

Sample Name:	DW-1 QC	**Units:**	ag/L
Lab Code:	K5755940.uu5	**Basis:**	S A
Extraction Method:	6 8c h b l	**Level:**	Low
Analysis Method:	757N0	**Extraction Lot:**	KE z 575uC0d

		DW-1 QC6 3 KE z 575uC0d.5 Matrix Spike			DW-1 QCl 6 3 KE z 575uC0d.O Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
l WWpon	S l	7NSG	0N4k	5uG	7NGu	0N4k	5u9	9u.5Gu	G	Gu
G,7.l i-1MromenPoi- A-i(	S l	0NkG	0N4k	49	0Nku	0N4k	4d	9u.5Gu	5	Gu
l i-WHmW	S l	7NG7	0N4k	5u9	7NGG	0N4k	5u9	9u.5Gu	u	Gu
l i-1MrprOp	S l	0N9O	0N4k	47	0N9G	0N4k	47	9u.5Gu	u	Gu
Q,0.l	S l	0N99	0N4k	4u	0N70	0N4k	45	9u.5Gu	O	Gu
TentW1MrOp1enoM	S l	0NdG	0N4k	4G	0Ndd	0N4k	40	9u.5Gu	5	Gu
Q,0,7.c T x3iMe) *	S l	0Ndd	0N4k	40	0Ndd	0N4k	40	9u.5Gu	u	Gu
C1MrWHmen	S l	5uN4	0N4k	COu B	4Nk5	0N4k	549 B	9u.5Gu	55	Gu
Q,0.l D	S l	7NQd	0N4k	5ud	7NGG	0N4k	5u9	9u.5Gu	5	Gu
l inosem	S l	7NQO	0N4k	5u7	7NSd	0N4k	5u0	9u.5Gu	5	Gu
l Wt1WMI iWi(	S l	7N9k	0N4k	55d	7Nk4	0N4k	55k	9u.5Gu	O	Gu
Ti-MrWH	S l	7NG9	0N4k	5uk	7NO4	0N4k	5ud	9u.5Gu	O	Gu
A-ifMorfen	S l	7NQG	0N4k	5u7	0Nkk	0N4k	4k	9u.5Gu	9	Gu

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Ter-ent re-overies Wi(reMive per-ent (ifferen-es xRTl * We (eterHine(my t1e softwWe asing vWes in t1e - WaMion w1i-1 1We not neen roan(e(N

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	mentineSG eSSErogrbW	**Date Extracted:**	12/66/6215
Sample Matrix:	k rinMing wbter	**Date Analyzed:**	12/6D/6215

Lab Control Spike Summary
Chlorinated Herbicides by EPA 515.4

Extraction Method:	T HOc h k	**Units:**	Ng/L
Analysis Method:	515.u	**Basis:**	a A
		Level:	Low
		Extraction Lot:	KG 0 15126u-

	Lbl ControSnrbWpSe KG 0 15126u-3D Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
k bSbpon	u.9u	5.22	99	7231D2
D,53k izdSorol en8oiz AziP	u.-u	5.22	9D	7231D2
k izbWl b	u.94	5.22	122	7231D2
k izdSorprop	u.54	5.22	96	7231D2
6,u3k	u.D2	5.22	4-	7231D2
EentbzdSoropdenoS	u.55	5.22	91	7231D2
6,u,53OE (miSvex)	u.59	5.22	96	7231D2
CdSorbWl en	-.24	5.22	166	7231D2
6,u3k B	5.11	5.22	126	7231D2
k inosel	5.15	5.22	12D	7231D2
k bztdbSk ibziP	u.54	5.22	96	7231D2
EizSorbW	u.4u	5.22	97	7231D2
AzifSNorfen	5.1-	5.22	12D	7231D2

Results flagged with an asterisk (*) indicate values outside control criteria.

Eerzent rezoveries bnP reSstive perzent Pifferenzes (REk) bre PeterWineP l y tde softwbre Nsing vbSNes in tde zbSzNSstion wdizd dbve not l een roNnPeP.

Volatile Organic Compounds

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636- 1068
www.alsglobal.com

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511794
Project:	hentinel N ell dBogBak	**Date Collected:**	1G0190MG15
Sample Matrix:	/ BnSing wateB	**Date Received:**	1G0190MG15

Volatile Organic Compounds

Sample Name:	/ N W	**Units:**	ug0L
Lab Code:	K1511794WG1	**Basis:**	- A
Extraction Method:	D r ETH/	**Level:**	Low
Analysis Method:	5M02M		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
/ icmloBoVifluoBok etmane	- /	U	G25G	1	1G0. G015	1G0. G015	KN 3 151G595	
CmloBok etmane	- /	U	G25G	1	1G0. G015	1G0. G015	KN 3 151G595	
b inyl CmloBVe	- /	U	G25G	1	1G0. G015	1G0. G015	KN 3 151G595	
z Bok ok etmane	- /	U	G25G	1	1G0. G015	1G0. G015	KN 3 151G595	
CmloBoetmane	- /	U	G25G	1	1G0. G015	1G0. G015	KN 3 151G595	
EBcmloBofluoBok etmane	- /	U	G25G	1	1G0. G015	1G0. G015	KN 3 151G595	
D etmylene CmloBVe	- /	U	G25G	1	1G0. G015	1G0. G015	KN 3 151G595	
tBansW,MW icmloBoetmene	- /	U	G25G	1	1G0. G015	1G0. G015	KN 3 151G595	
1,1W icmloBoetmene	- /	U	G25G	1	1G0. G015	1G0. G015	KN 3 151G595	
cisW,MW icmloBoetmene	- /	U	G25G	1	1G0. G015	1G0. G015	KN 3 151G595	
D etmyl teBVe utyl r tmeB	- /	U	G25G	1	1G0. G015	1G0. G015	KN 3 151G595	
CmloBofoBk	- /	U	G25G	1	1G0. G015	1G0. G015	KN 3 151G595	
z Bok ocmloBok etmane	- /	U	G25G	1	1G0. G015	1G0. G015	KN 3 151G595	
CaBpon EetBacmloBVe	- /	U	G25G	1	1G0. G015	1G0. G015	KN 3 151G595	
z en(ene	- /	U	G25G	1	1G0. G015	1G0. G015	KN 3 151G595	
1,MW icmloBoetmane	- /	U	G25G	1	1G0. G015	1G0. G015	KN 3 151G595	
EBcmloBoetmene	- /	U	G25G	1	1G0. G015	1G0. G015	KN 3 151G595	
1,MW icmloBo) Bo) ane	- /	U	G25G	1	1G0. G015	1G0. G015	KN 3 151G595	
z Bok oVicmloBok etmane	- /	U	G25G	1	1G0. G015	1G0. G015	KN 3 151G595	
/ ipBok ok etmane	- /	U	G25G	1	1G0. G015	1G0. G015	KN 3 151G595	
cisW,. W icmloBo) Bo) ene	- /	U	G25G	1	1G0. G015	1G0. G015	KN 3 151G595	
1,1W icmloBoetmane	- /	U	G25G	1	1G0. G015	1G0. G015	KN 3 151G595	
Eoluene	- /	U	G25G	1	1G0. G015	1G0. G015	KN 3 151G595	
tBansW,. W icmloBo) Bo) ene	- /	U	G25G	1	1G0. G015	1G0. G015	KN 3 151G595	
EetBacmloBoetmene	- /	U	G25G	1	1G0. G015	1G0. G015	KN 3 151G595	
M,MW icmloBo) Bo) ane	- /	U	G25G	1	1G0. G015	1G0. G015	KN 3 151G595	
1,. W icmloBo) Bo) ane	- /	U	G25G	1	1G0. G015	1G0. G015	KN 3 151G595	
/ ipBok ocmloBok etmane	- /	U	G25G	1	1G0. G015	1G0. G015	KN 3 151G595	
1,MW ipBok oetmane X / z P	- /	U	G25G	1	1G0. G015	1G0. G015	KN 3 151G595	
CmloBopen(ene	- /	U	G25G	1	1G0. G015	1G0. G015	KN 3 151G595	
r tmylpen(ene	- /	U	G25G	1	1G0. G015	1G0. G015	KN 3 151G595	
htyBene	- /	U	G25G	1	1G0. G015	1G0. G015	KN 3 151G595	
k ,) W ylenes	- /	U	G25G	1	1G0. G015	1G0. G015	KN 3 151G595	
oW ylene	- /	U	G25G	1	1G0. G015	1G0. G015	KN 3 151G595	

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511794
Project:	hentinel N ell dBogBak	**Date Collected:**	1G0190MG15
Sample Matrix:	/ BnSing wateB	**Date Received:**	1G0190MG15

Volatile Organic Compounds

Sample Name:	/ N W9	**Units:**	ug0L
Lab Code:	K1511794WG1	**Basis:**	- A
Extraction Method:	D r ETH/	**Level:**	Low
Analysis Method:	5M02M		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,1,1WEBcmloBoetmane	- /	U	G25G	1	1G0.G015	1G0.G015	KN3151G595	
z Bok ofoBk	- /	U	G25G	1	1G0.G015	1G0.G015	KN3151G595	
1,1,M,MWEetBacmloBoetmane	- /	U	G25G	1	1G0.G015	1G0.G015	KN3151G595	
Iso) Bo) ylpen(ene	- /	U	G25G	1	1G0.G015	1G0.G015	KN3151G595	
1,1Wicmlo Bo) Bo) ene	- /	U	G25G	1	1G0.G015	1G0.G015	KN3151G595	
z Bok open(ene	- /	U	G25G	1	1G0.G015	1G0.G015	KN3151G595	
nWBo) ylpen(ene	- /	U	G25G	1	1G0.G015	1G0.G015	KN3151G595	
1,. ,5WEBk etmylpen(ene	- /	U	G25G	1	1G0.G015	1G0.G015	KN3151G595	
MWCmloBotoluene	- /	U	G25G	1	1G0.G015	1G0.G015	KN3151G595	
OWCmloBotoluene	- /	U	G25G	1	1G0.G015	1G0.G015	KN3151G595	
teBWutylpen(ene	- /	U	G25G	1	1G0.G015	1G0.G015	KN3151G595	
1,M,OWEBk etmylpen(ene	- /	U	G25G	1	1G0.G015	1G0.G015	KN3151G595	
secWutylpen(ene	- /	U	G25G	1	1G0.G015	1G0.G015	KN3151G595	
) Wso) Bo) yltoluene	- /	U	G25G	1	1G0.G015	1G0.G015	KN3151G595	
1,. Wicmlo Bopen(ene	- /	U	G25G	1	1G0.G015	1G0.G015	KN3151G595	
1,OWicmlo Bopen(ene	- /	U	G25G	1	1G0.G015	1G0.G015	KN3151G595	
nWutylpen(ene	- /	U	G25G	1	1G0.G015	1G0.G015	KN3151G595	
1,MWicmlo Bopen(ene	- /	U	G25G	1	1G0.G015	1G0.G015	KN3151G595	
1,MWipBok oWWcmloBo) Bo) ane X z Cd	- /	U	G25G	1	1G0.G015	1G0.G015	KN3151G595	
1,M,OWEBcmloBopen(ene	- /	U	G25G	1	1G0.G015	1G0.G015	KN3151G595	
TexacmloBoputaViene	- /	U	G25G	1	1G0.G015	1G0.G015	KN3151G595	
- a) mtmalene	- /	U	G25G	1	1G0.G015	1G0.G015	KN3151G595	
1,1,MWEBcmloBoetmane	- /	U	G25G	1	1G0.G015	1G0.G015	KN3151G595	
1,1,1,MWEetBacmloBoetmane	- /	U	G25G	1	1G0.G015	1G0.G015	KN3151G595	
1,M. WEBcmloBo) Bo) ane	- /	U	G25G	1	1G0.G015	1G0.G015	KN3151G595	
1,M. WEBcmloBopen(ene	- /	U	G25G	1	1G0.G015	1G0.G015	KN3151G595	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
OWeBok ofluoBopen(ene	97	7GW. G	1G0.G015	Acce) taple
/ ipBok ofluoBok etmane	95	4MW/MO	1G0.G015	Acce) taple
EoluenewW4	49	4MW/MO	1G0.G015	Acce) taple

Comments:

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well DrograE	**Date Collected:**	NA
Sample Matrix:	Trinking water	**Date Received:**	NA

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1510595-5	**Basis:**	NA
Extraction Method:	MHO2 . T	**Level:**	Low
Analysis Method:	53Uin		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
TichlorodifluoroE ethane	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
ChloroE ethane	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
z inyl Chloride	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
BroE oE ethane	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
Chloroethane	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
OrichlorofluoroE ethane	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
Methylene Chloride	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
trans-1,3-Tichloroethene	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
1,1-Tichloroethene	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
cis-1,3-Tichloroethene	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
Methyl tert-Butyl Hther	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
ChloroforE	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
BroE ochloroE ethane	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
Carpon Oetrachloride	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
Ben(ene	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
1,3-Tichloroethane	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
Orichloroethene	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
1,3-Tichloro) ro) ane	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
BroE odichloroE ethane	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
TiproE oE ethane	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
cis-1,V-Tichloro) ro) ene	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
1,1-Tichloroethane	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
Ooluene	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
trans-1,V-Tichloro) ro) ene	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
Oetrachloroethene	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
3,3-Tichloro) ro) ane	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
1,V-Tichloro) ro) ane	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
TiproE ochloroE ethane	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
1,3-TiproE oethane XHTBP	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
Chloropen(ene	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
Hthylpen(ene	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
Styrene	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
E ,) -: ylenes	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
o-: ylene	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	

Comments:

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Sentinel Well DrograE	**Date Collected:**	NA
Sample Matrix:	Trinking water	**Date Received:**	NA

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1510595-5	**Basis:**	NA
Extraction Method:	MHO2 . T	**Level:**	Low
Analysis Method:	53Uin		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,1,1-Orichloroethane	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
BroE oforE	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
1,1,3,3-Oetrachloroethane	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
Iso) ro) ylpen(ene	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
1,1-Tichloro) ro) ene	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
BroE open(ene	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
n-Dro) ylpen(ene	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
1,V,5-OriE ethylpen(ene	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
3-Chlorotoluene	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
U-Chlorotoluene	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
tert-Butylpen(ene	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
1,3,U-OriE ethylpen(ene	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
sec-Butylpen(ene	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
) -Iso) ro) yltoluene	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
1,V-Tichloropen(ene	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
1,U-Tichloropen(ene	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
n-Butylpen(ene	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
1,3-Tichloropen(ene	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
1,3-TiproE o-V-chloro) ro) ane XTBCD	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
1,3,U-Orichloropen(ene	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
2 exachloroputadiene	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
Na) hthalene	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
1,1,3-Orichloroethane	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
1,1,1,3-Oetrachloroethane	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
1,3,V-Orichloro) ro) ane	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	
1,3,V-Orichloropen(ene	NT	b	0n50	1	10/V0/15	10/V0/15	KWG1510595	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
U-BroE ofluoropen(ene	97	70-1V0	10/V0/15	Acce) taple
TiproE ofluoroE ethane	113	43-13U	10/V0/15	Acce) taple
Ooluene-d4	113	43-13U	10/V0/15	Acce) taple

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Longview, City of
Project: Sentinel Well MograE
Sample Matrix: Drinking water

Service Request: K1511794

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: T HO2 . D
Analysis Method: 5Pc-P

Units: Mcr0ent
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
DW69	K15117946331	97	95	49
T ethod Blank	KWG151359565	97	11P	11P
LamControl SaE ple	KWG15135956b	99	97	137
Dupli0ate LamControl SaE ple	KWG15135956c	133	9F	93

Surrogate Recovery Control Limits (%)

Sur1	=	c6BroE ofluoromenzene	736lb3
SurP	=	DimroE ofluoroE ethane	4P6lPc
Surb	=	Ooluene6d4	4P6lPc

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511792
Project:	Sentinel Well Erogram	**Date Extracted:**	10/k0/. 015
Sample Matrix:	DrinMng water	**Date Analyzed:**	10/k0/. 015

Lab Control Spike/Duplicate Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	T HOh d D	**Units:**	ug/L
Analysis Method:	5. 4N	**Basis:**	3 A
		Level:	Low
		Extraction Lot:	KWG1510595

	Lab Control Sample KWG1510595-k Lab Control Spike			Duplicate Lab Control Sample KWG1510595-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Dic8loroVifluoromet8ane	5N94	5N00	119	4N75	5N00	95	70-1k0	. .	k0
C8loromet8ane	5N51	5N00	110	4Nk9	5N00	22	70-1k0	. k	k0
Binyl C8loriVe	5N7k	5N00	115	4N5k	5N00	91	70-1k0	. k	k0
6romomet8ane	5N.	5N00	11.	4N52	5N00	94	70-1k0	12	k0
C8loroet8ane	5N5.	5N00	110	4Nk9	5N00	22	70-1k0	. k	k0
Oric8lorofluoromet8ane	5N55	5N00	11k	4N54	5N00	91	70-1k0	. .	k0
T et8ylene C8loriVe	5N14	5N00	10k	4N9s	5N00	21	70-1k0	. k	k0
tranz-1,. -Dic8loroet8ene	5N42	5N00	110	4Nk4	5N00	27	70-1k0	. k	k0
1,1-Dic8loroet8ene	5N55	5N00	111	4Nk9	5N00	22	70-1k0	. k	k0
ciz-1,. -Dic8loroet8ene	5Nk2	5N00	102	4N7	5N00	25	70-1k0	. k	k0
T et8yl tert-6 utyl Ht8er	10N5	10N0	105	2N4s	10N0	25	70-1k0	. .	k0
C8loroform	5N51	5N00	11.	4N50	5N00	90	70-1k0	. .	k0
6romoc8loromet8ane	5N50	5N00	110	4N51	5N00	90	70-1k0	. 0	k0
Carbon Oetrac8loriVe	5Nk5	5N00	107	4N7.	5N00	94	70-1k0	1k	k0
6en(ene	5N1.	5N00	10.	4N70	5N00	94	70-1k0	9	k0
1,. -Dic8loroet8ane	5N1.	5N00	10.	4N5.	5N00	9.	70-1k0	10	k0
Oric8loroet8ene	5N50	5N00	110	4Nk2	5N00	22	70-1k0	. k	k0
1,. -Dic8loropropane	5N5	5N00	105	4N1	5N00	24	70-1k0	. .	k0
6romoVic8loromet8ane	5N07	5N00	101	4N1s	5N00	2k	70-1k0	. 0	k0
Dibromomet8ane	5N14	5N00	10k	4N04	5N00	21	70-1k0	. 4	k0
ciz-1,k-Dic8loropropene	5Ns	5N00	105	4N7	5N00	25	70-1k0	. 1	k0
Ooluene	5N47	5N00	109	4Nk0	5N00	2s	70-1k0	. 4	k0
1,1-Dic8loroet8ane	5N40	5N00	102	4N9	5N00	2s	70-1k0	. k	k0
tranz-1,k-Dic8loropropene	4N7s	5N00	95	4N54	5N00	9k	70-1k0	k	k0
Oetrac8loroet8ene	5Nk7	5N00	107	4N72	5N00	9s	70-1k0	1.	k0
1,k-Dic8loropropane	5N01	5N00	100	4N55	5N00	9k	70-1k0	7	k0
. ,. -Dic8loropropane	5N91	5N00	112	4N7k	5N00	95	70-1k0	. .	k0
Dibromoc8loromet8ane	4N2k	5N00	97	4N5s	5N00	91	70-1k0	s	k0
1,. -Dibromoet8ane)HD6 X	4N94	5N00	99	4N57	5N00	9k	70-1k0	s	k0
C8loroben(ene	5N12	5N00	104	4N2.	5N00	9s	70-1k0	7	k0
Ht8ylben(ene	5N15	5N00	10k	4N27	5N00	97	70-1k0	s	k0
Styrene	5N0	5N00	104	4N90	5N00	92	70-1k0	s	k0
m,p-F ylenez	10N2	10N0	102	10N1	10N0	101	70-1k0	7	k0
o-F ylene	5Nk5	5N00	107	4N97	5N00	99	70-1k0	7	k0
1,1,1-Oric8loroet8ane	5N17	5N00	10k	4N55	5N00	91	70-1k0	1k	k0

Results flagged with an asterisk (*) indicate values outside control criteria.

Eercent recoveriez anVrelative percent Vifferencez)REDXare VetermineVby t8e zoftware uzing valuez in t8e calculation w8ic8 8ave not been rounVeVN

Client:	Longview, City of	**Service Request:**	K1511792
Project:	Sentinel Well Erogram	**Date Extracted:**	10/k0/. 015
Sample Matrix:	DrinMng water	**Date Analyzed:**	10/k0/. 015

Lab Control Spike/Duplicate Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	T HOh d D	**Units:**	ug/L
Analysis Method:	5. 4N	**Basis:**	3 A
		Level:	Low
		Extraction Lot:	KWG1510595

	Lab Control Sample KWG1510595-k Lab Control Spike			Duplicate Lab Control Sample KWG1510595-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
6 romoform	4N94	5N00	99	4N5	5N00	9k	70-1k0	s	k0
1,1,. ,. -Oetrac8loroet8ane	4N97	5N00	99	4N7s	5N00	95	70-1k0	4	k0
Izopropylben(ene	5Nkk	5N00	107	4N9s	5N00	99	70-1k0	7	k0
1,1-Dic8loropropene	5N41	5N00	102	4N25	5N00	97	70-1k0	11	k0
6 romoben(ene	5N15	5N00	10k	4N20	5N00	9s	70-1k0	7	k0
n-Eropylben(ene	5N42	5N00	110	5N1.	5N00	10.	70-1k0	7	k0
1,k,5-Orimet8ylben(ene	5N45	5N00	109	5N02	5N00	10.	70-1k0	7	k0
. -C8lorotoluene	5N7	5N00	105	4N9.	5N00	92	70-1k0	7	k0
4-C8lorotoluene	5N7	5N00	105	4N9s	5N00	99	70-1k0	s	k0
tert-6 utylben(ene	5Nks	5N00	107	5N0.	5N00	100	70-1k0	7	k0
1,. ,4-Orimet8ylben(ene	5Nk4	5N00	107	5N0k	5N00	101	70-1k0	s	k0
zec-6 utylben(ene	5N4s	5N00	109	5N11	5N00	10.	70-1k0	7	k0
p-Izopropyltoluene	5N4k	5N00	109	5N1k	5N00	10k	70-1k0	s	k0
1,k-Dic8loroben(ene	5N12	5N00	104	4N24	5N00	97	70-1k0	7	k0
1,4-Dic8loroben(ene	5N1.	5N00	10.	4N79	5N00	9s	70-1k0	7	k0
n-6 utylben(ene	5N5.	5N00	110	5N1s	5N00	10k	70-1k0	7	k0
1,. -Dic8loroben(ene	5N05	5N00	101	4N2.	5N00	9s	70-1k0	5	k0
1,. -Dibromo-k-c8loropropane)D6 CEX	4Nss	5N00	9k	4N19	5N00	94	70-1k0	1	k0
1,. ,4-Oric8loroben(ene	5N1.	5N00	10.	4N27	5N00	97	70-1k0	5	k0
h exac8lorobutaViene	5N7	5N00	105	5N01	5N00	100	70-1k0	5	k0
3 ap8t8alene	5N07	5N00	101	4N7s	5N00	95	70-1k0	s	k0
1,1,. -Oric8loroet8ane	5N1s	5N00	10k	4N1s	5N00	9k	70-1k0	10	k0
1,1,1,. -Oetrac8loroet8ane	4N7s	5N00	95	4N47	5N00	29	70-1k0	s	k0
1,. ,k-Oric8loropropane	4N95	5N00	99	4N75	5N00	95	70-1k0	4	k0
1,. ,k-Oric8loroben(ene	5Nks	5N00	107	4N90	5N00	92	70-1k0	9	k0

Results flagged with an asterisk (*) indicate values outside control criteria.

Eercent recoveriez anVrelative percent Vifferencez)REDXare VetermineVby t8e zoftware uzing valuez in t8e calculation w8ic8 8ave not been rounVeVN

Semivolatile Organics by EPA Method 525.2

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Analytical Results

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Mentinel / ell hdogdaB	**Date Collected:**	1G0190NG15
Sample Matrix:	- dinking wated	**Date Received:**	1G0190NG15

Semivolatile Organics by EPA Method 525.2

Sample Name:	- / W	**Units:**	ugCL
Lab Code:	K1511794WGG1	**Basis:**	2 A
Extraction Method:	S Dr E T -	**Level:**	Low
Analysis Method:	5N5HN		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
E exacplodobcyclo*entaFiene	2 -	U	G4G97	1	1G0N7015	110G 015	K/ O151G5N	
bluodene	2 -	U	G4G 9	1	1G0N7015	110G 015	K/ O151G5N	P
hdo*acplod	2 -	U	G4G97	1	1G0N7015	110G 015	K/ O151G5N	
E exacplodobzenmene	2 -	U	G4G97	1	1G0N7015	110G 015	K/ O151G5N	
MB amine	2 -	U	G4G 9	1	1G0N7015	110G 015	K/ O151G5N	
Atdamine	2 -	U	G4G97	1	1G0N7015	110G 015	K/ O151G5N	
S etdzumin	2 -	U	GHNG	1	1G0N7015	110G 015	K/ O151G5N	
Alacplod	2 -	U	G4G7G	1	1G0N7015	110G 015	K/ O151G5N	
6 doB acil	2 -	U	GHNG	1	1G0N7015	110G 015	K/ O151G5N	
S etolacplod	2 -	U	G4G47	1	1G0N7015	110G 015	K/ O151G5N	
6 utacplod	2 -	U	G4G97	1	1G0N7015	110G 015	K/ O151G5N	
6 is(NWtpylpexyl) AFi*ate	2 -	U	G54	1	1G0N7015	110G 015	K/ O151G5N	
6 is(NWtpylpexyl) hptpalate	2 -	U	G54	1	1G0N7015	110G 015	K/ O151G5N	
6 enmo(a)*ydene	2 -	U	G4GNG	1	1G0N7015	110G 015	K/ O151G5N	

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Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,3W iB etpyl WWitdobzenmene	131	7GW3G	110G 015	TutsiFe Contdol LiB its
r di*penyl hpos*pate	94	7GW3G	110G 015	Acce*tazle
hedyleneW1N	83	7GW3G	110G 015	TutsiFe Contdol LiB its

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Longview, City of	**Service Request:**	K1511794
Project:	Dentinel Well r EogEaT	**Date Collected:**	MA
Sample Matrix:	HEinSing wateE	**Date Received:**	MA

Semivolatile Organics by EPA Method 525.2

Sample Name:	h etdoB k lanS	**Units:**	ugNL
Lab Code:	KWG151052- /-	**Basis:**	MA
Extraction Method:	h O. Ux H	**Level:**	Low
Analysis Method:	525p2		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
UeFacdloEocycloPentaBiene	MH	*	0p10	1	10N27N5	11N0- N5	KWG151052-	
z luoEene	MH	*	0p050	1	10N27N5	11N0- N5	KWG151052-	b
r EoPacdloE	MH	*	0p10	1	10N27N5	11N0- N5	KWG151052-	
UeFacdloEomen6ene	MH	*	0p10	1	10N27N5	11N0- N5	KWG151052-	
DiT a6ine	MH	*	0p050	1	10N27N5	11N0- N5	KWG151052-	
AtEa6ine	MH	*	0p10	1	10N27N5	11N0- N5	KWG151052-	
h etEimu6in	MH	*	0p20	1	10N27N5	11N0- N5	KWG151052-	
AlacdloE	MH	*	0p072	1	10N27N5	11N0- N5	KWG151052-	
k EoT acil	MH	*	0p20	1	10N27N5	11N0- N5	KWG151052-	
h etolacdloE	MH	*	0p090	1	10N27N5	11N0- N5	KWG151052-	
k utacdloE	MH	*	0p10	1	10N27N5	11N0- N5	KWG151052-	
k is)2/etdyldeFyl3 ABiPate	MH	*	0p(0	1	10N27N5	11N0- N5	KWG151052-	
k is)2/etdyldeFyl3 r dtdalate	MH	*	0p(0	1	10N27N5	11N0- N5	KWG151052-	
k en6o)a3PyEene	MH	*	0p020	1	10N27N5	11N0- N5	KWG151052-	

b Dee Case MaEEative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,8/HiT etdyl/2/nitEomen6ene	117	70/180	11N0- N5	AccePtanle
. EiPdenyl r dosPdate	9-	70/180	11N0- N5	AccePtanle
r eEylene/B12	9(	70/180	11N0- N5	AccePtanle

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Longview, City of
Project: Sentinel Well MograE
Sample Matrix: Drinking water

Service Request: K1511794

Surrogate Recovery Summary
Semivolatile Organics by EPA Method 525.2

Extraction Method: T HO2 . D
Analysis Method: 5P5cP

Units: Mcr- ent
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
DW09	K15117940**1	181 3	94	B8 3
T etGod b lank	KWh 151*5P606	117	96	9B
DW09T S	KWh 151*5P601	1P5	1*8	48
DW09DT S	KWh 151*5P60P	1P6	1*7	91
LamControl SaE ple	KWh 151*5P608	1P8	116	9B

Surrogate Recovery Control Limits (%)

Sur1	=	1,80DiE etGyl0P0nitromenzene	7*018*
SurP	=	OripGenyl MGospGate	7*018*
Sur8	=	Mcrylene0d1P	7*018*

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K5755914
Project:	l entine2We223 rogrSM	**Date Extracted:**	50/. 9/. 057
Sample Matrix:	Drinaing wSter	**Date Analyzed:**	55/0E/. 057

Matrix Spike/Duplicate Matrix Spike Summary
Semivolatile Organics by EPA Method 525.2

Sample Name:	DW-1	**Units:**	Ng/L
Lab Code:	K5755914-005	**Basis:**	k A
Extraction Method:	T HOG6 D	**Level:**	Low
Analysis Method:	7. 7u	**Extraction Lot:**	KW8 57507. E

		DW-1T l KW8 57507. E-5 Matrix Spike			DW-1DT l KW8 57507. E-. Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
GebSzd2brozyz2opentSmiene	k D	0ul51	0ul h.	1h	0ul c.	0ul h.	19	90-5c0	5	c0
P2Nbrene	k D	5u 5	0ul h.	5. h	5u E	0ul h.	5. 1	90-5c0	.	c0
3ropSzd2br	k D	0ul11	0ul h.	50E	5u07	0ul h.	501	90-5c0	7	c0
GebSzd2bro(enxene	k D	5u09	0ul h.	555	5u09	0ul h.	555	90-5c0	0	c0
l iMSxine	k D	0ul cc	0ul h.	19	0ul 0c	0ul h.	1E	90-5c0	c	c0
AtrSxine	k D	0ul c.	0ul h.	19	0ul 50	0ul h.	17	90-5c0	.	c0
T etri(Nxin	k D	5u05	0ul h.	507	5u0c	0ul h.	509	90-5c0	.	c0
A2Szd2br	k D	0ul 0E	0ul h.	1E	0ul. 7	0ul h.	1h	90-5c0	.	c0
) roMSzi2	k D	5u05	0ul h.	507	5u0.	0ul h.	50h	90-5c0	5	c0
T eto2Szd2br	k D	0u44.	0ul h.	1.	0ul 07	0ul h.	1E	90-5c0	c	c0
) NtSzd2br	k D	5u0E	0ul h.	504	5u07	0ul h.	501	90-5c0	5	c0
) i*B -etdy2dleby2s AmipSte	k D	5u60	0ul h.	55E	5u54	0ul h.	5. c	90-5c0	4	c0
) i*B -etdy2dleby2s 3dtdS2Ste	k D	5u67	0ul h.	5. 0	5u 4	0ul h.	5cc F	90-5c0	50	c0
) enxoBSspyrene	k D	0u45c	0ul h.	47	0u4hE	0ul h.	10	90-5c0	h	c0

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

3erzent rezoverie* Snmre2Stive perzent mifferenze* BR3Ds Sre neterMinem(y tde *oftwSre N*ing vS2Ne* in tde zS2zN2Stion wdizd dSve not (een roNnnemu

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	DWWWK5
Project:	kentineNS eNNOrogr. a	**Date Extracted:**	W2/71/72W
Sample Matrix:	TrinHing w. ter	**Date Analyzed:**	WW23/72W

Lab Control Spike Summary
Semivolatile Organics by EPA Method 525.2

Extraction Method:	G68chT	**Units:**	4g/L
Analysis Method:	-7-97	**Basis:**	0 A
		Level:	Low
		Extraction Lot:	DS1 WW2-73

L. u ControNk. a pNe
DS1 WW2-73ME
Lab Control Spike

Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
c eb. zdNorozyzNopent. miene	29K52	W922	K5	12MWE2
(N4orene	W9EW	W922	WEW P	12MWE2
Orop. zdNor	W9W7	W922	WW7	12MWE2
c eb. zdNorouenxene	W9WW	W922	WWW	12MWE2
kia . xine	W92W	W922	W2W	12MWE2
Atr. xine	W92E	W922	W2E	12MWE2
G etriu4xin	W9W2	W922	WW2	12MWE2
ANzdNor	W921	W922	W21	12MWE2
) roa . ziN	W921	W922	W21	12MWE2
G etoNzdNor	W921	W922	W21	12MWE2
) 4t. zdNor	W9WE	W922	WWE	12MWE2
) i*B7MetdyNdebyNs Amip. te	W9WW	W922	WWW	12MWE2
) i*B7MetdyNdebyNs Odtd. Nte	W9WF	W922	WWF	12MWE2
) enxoB spyrene	W9WI	W922	WWI	12MWE2

Results flagged with an asterisk (*) indicate values outside control criteria.

Oerzent rezoverie* . nmreNtive perzent mifferenze* BROTs . re metera inemuy tde *oftw. re 4*ing v. N4e* in tde z. N4Ntion wdizd d. ve not ueen ro4nmem9

Diquat and Paraquat by EPA Method 549.2

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Analytical Results

Client:	Longview, City of	**Service Request:**	K151179-
Project:	r entinel 2 ell kMgMaE	**Date Collected:**	1/ N9NS/ 15
Sample Matrix:	WinTing wateM	**Date Received:**	1/ N9NS/ 15

Diquat and Paraquat by EPA Method 549.2

Sample Name:	W2 09	**Units:**	ugNL
Lab Code:	K151179- 0/ / 1	**Basis:**	DA
Extraction Method:	H O4 . 3 W	**Level:**	Low
Analysis Method:	5G9US		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Wi: uat	DW	P	/ UG/ /	1	1/ NSqN5	11N5N5	K2 8 151/ qGq	
kaMa: uat	DW	P	/ U-/ /	1	1/ NSqN5	11N5N5	K2 8 151/ qGq	

Comments:

kMnteFd 11N7NS/ 15 11d59d15 moME 1A 03 Mganic kage 1 of 1

udr tealth\CMystalUpt\moME 1E DewUpt H eMgeF r upeMet ReferMnced RR1- q- 1-

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Longview, City of	**Service Request:**	K151179W
Project:	Dentinel G ell r EogEaT	**Date Collected:**	MA
Sample Matrix:	HEinSing wateE	**Date Received:**	MA

Diquat and Paraquat by EPA Method 549.2

Sample Name:	h etdoB k lanS	**Units:**	ugNL
Lab Code:	KG 0 15134- 4/5	**Basis:**	MA
Extraction Method:	h O. 2 UH	**Level:**	Low
Analysis Method:	5- 9c8		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Hi: uat	MH	P	3q- 33	1	13N84N5	11N35N5	KG 0 15134- 4	
r aEa: uat	MH	P	3qW33	1	13N84N5	11N35N5	KG 0 15134- 4	

Comments:

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511798
Project:	DentinekS ekkl rograW	**Date Extracted:**	10/2M2015
Sample Matrix:	u rinNing water	**Date Analyzed:**	11/05/2015

Matrix Spike/Duplicate Matrix Spike Summary
Diquat and Paraquat by EPA Method 549.2

Sample Name:	Batch QC	**Units:**	6g/L
Lab Code:	K1511794-001	**Basis:**	3 A
Extraction Method:	E THOGu	**Level:**	Low
Analysis Method:	549.2	**Extraction Lot:**	KS q 1510M4M

		Batch QCE D KS q 1510M4M1 Matrix Spike			Batch QCu E D KS q 1510M4M2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
u iP6at	3 u	14.2	12.0	118	1M5	12.0	112	70-1M0	5	M0
l araP6at	3 u	11.M	12.0	94	11.F	12.0	9F	70-1M0	M	M0

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

l ercent recoveries and relative percent differences (Rl u) are deterWined by the software 6sing val6es in the calc6lation which have not been ro6nded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511794
Project:	mentineSG eSSErogrbW	**Date Extracted:**	13/u- /u315
Sample Matrix:	k rinMing wbter	**Date Analyzed:**	11/35/u315

Lab Control Spike Summary
Diquat and Paraquat by EPA Method 549.2

Extraction Method:	T HOq P k	**Units:**	Ng/L
Analysis Method:	5. 92u	**Basis:**	a A
		Level:	Low
		Extraction Lot:	KG 0 1513- . -

	Lbl ControSmbWpSe KG 0 1513- . - D Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
k iFNbt	1- 21	1u23	113	73D1- 3
EbrbFNbt	1329	1u23	91	73D1- 3

Results flagged with an asterisk (*) indicate values outside control criteria.

Eerdent redoveries bn: reSbtive perdent : ifferendes (REk) bre : eterWine: l y the softwbre Nsing vbSNes in the dbSdNSbtion whidh hbve not l een roNn: e: 2

Subcontract Lab Results

ALS Environmental—Kelso Laboratory
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NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

[illegible]

[illegible]

Certificate of Analysis

[illegible]	**SOCs**	[illegible]	**2103035**
[illegible]	**51K1511798**	[illegible]	**K1511798**

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

Kelli Wolfgang

[illegible]

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.

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[illegible] Page 1 of [illegible]

Page 13[illegible] of 152

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
21[illegible]3[illegible]35[illegible]1	[illegible]1511[illegible]8[illegible]1	[illegible]g [illegible]	1[illegible]1[illegible]2[illegible]15 [illegible]23	1[illegible]21[illegible]2[illegible]15 [illegible]8[illegible]51	[illegible]

Notes

[illegible]

Standard Acronyms/Flags

[illegible]

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ANALYTICAL RESULTS

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Kelli Wolfgang

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QUALITY CONTROL DATA

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QC Batch: □P□□□□□□ **Analysis Method:** □P□ 531□1

QC Batch Method: □P□ 531□1

Associated Lab Samples: 21□3□35□□1

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QUALITY CONTROL DATA

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

QUALITY CONTROL DATA CROSS REFERENCE TABLE

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ALS Environmental Chain of Custody

1317 South 13th Avenue • Kelso, WA 98626 • 1-360-577-7222 • FAX 1-360-636-1068

2103035

Project Number: K1511798
Project Manager: Chris Leaf
QAP: LAB QAP

Lab Code	Sample ID	# of Cont.	Matrix	Sample Date	Sample Time	Lab ID	CARBAM 531.1
K1511798-001	DW-9	3	Drinking Water	10/19/15	0923	Middletown ALS	X

	Y	N	Initials	Cooler Temp: 2 °C
Custody Seals Present?				
(if present) Seals Intact?				Cooler #
Received on Ice?	✓			
COC/Lbls Complete	✓			Therm ID: 94-294
Cont in Good Cond?	✓			
Correct Containers?	✓			Ship Carrier:
Correct Samp Vol?	✓			RedEx UPS
Correct Preservation?	✓			
Headspace/Volatiles?		✓		DHL

Tracking # 6449 9264 3319

Test Comments

CARBAM - 531.1 K1511798-001 Full list for WA Regulations - no compliance report required.

Folder Comments:

Report all metals in mg/L. No DW State form required.

10/21

Special Instructions/Comments

Please provide the electronic (PDF and EDD) report to the following e-mail address: ALKLS.Data@alsglobal.com

CL 10/20/15

H - Test is On Hold P - Test is Authorized for Prep Only

Turnaround Requirements

____ RUSH (Surcharges Apply)

PLEASE CIRCLE WORK DAYS

1 2 3 4 5

✓ STANDARD

Requested FAX Date: _____

Requested Report Date: 11/05/15

Report Requirements

____ I. Results Only

✓ II. Results + QC Summaries

____ III. Results + QC and Calibration Summaries

____ IV. Data Validation Report with Raw Data

PQL/MDL/J N

EDD Y Basic w/QC

Invoice Information

PO# 51K1511798 ✓

Bill to

Relinquished By: K Smith 10/20/15 1200 Received By: ALS 10/21/15 0851 Airbill Number:

LABORATORY REPORT

November 4, 2015

Jeff Coleman
Longview, City of
W/S Operation Center
P.O. Box 128
Longview, WA 98632

RE: Sentinel Well Program

Dear Jeff:

Enclosed are the results of the sample submitted to our laboratory on October 21, 2015. For your reference, this analysis has been assigned our service request number K1511798.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

Kate Aguilera

By Kate Aguilera at 4:38 pm, Nov 04, 2015

Kate Aguilera
Project Manager

Client: Longview, City of
Project: Sentinel Well Program

Service Request No: K1511798

CASE NARRATIVE

The sample was received intact under chain of custody in Simi Valley on October 21, 2015 and was stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the sample at the time of sample receipt.

Hydrogen Sulfide Analysis

The sample was analyzed for hydrogen sulfide using a gas chromatograph equipped with a sulfur chemiluminescence detector (SCD). This method is not included on the laboratory's NELAP, DoD-ELAP, or AIHA-LAP scope of accreditation.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
AIHA	http://www.aihaaccreditedlabs.org	101661
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0694
DoD ELAP	http://www.pjlabs.com/search-accredited-labs	L14-2-R1
Florida DOH (NELAP)	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E871020
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/labcert.htm	2014025
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	876241
New Jersey DEP (NELAP)	http://www.nj.gov/dep/oqa/	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-001
Pennsylvania DEP	http://www.depweb.state.pa.us/labs	68-03307 (Registration)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704413-15-6
Utah DOH (NELAP)	http://www.health.utah.gov/lab/labimp/certification/index.html	CA016272015-5
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

Intra-Network Chain of Custody

1317 South 13th Avenue • Kelso, WA 98626 • 1-360-577-7222 • FAX 1-360-636-1068

ALS Contact: Chris Leaf

Project Name: Sentinel Well Program
Project Number:
Project Manager: Jeff Coleman
Company: Longview, City of
QAP: LAB QAP

Lab Code	Client Sample ID	# of Cont.	Matrix	Sample Date	Sample Time	Date Received	Send To	Sulfur Sulfur Liq
K1511798-001	DW-9	3	Drinking Water	10/19/15	0923	10/19/15	SIMIVALLEY	II

27.28.40

Test Comments

Sulfur - Sulfur Liq K1511798-001 Hydrogen Sulfide

Folder Comments:

Report all metals in mg/L. No DW State form required.

Special Instructions/Comments

Please provide the electronic (PDF and EDD) report to the following e-mail address: ALKLS.Data@alsglobal.com.

C. Leaf

pH Checked _____

Turnaround Requirements

____ RUSH (Surcharges Apply)

PLEASE CIRCLE WORK DAYS

1 2 3 4 5

✓ STANDARD

Requested FAX Date: _____

Requested Report Date: 11/05/15

Report Requirements

____ I. Results Only

✓ II. Results + QC Summaries

____ III. Results + QC and Calibration Summaries

____ IV. Data Validation Report with Raw Data

PQL/MDL/J N

EDD Y

Invoice Information

PO# 51K1511798

Bill to

Relinquished By: K Smith 10/20/15 1200 Received By: [illegible] 10/21/15 0948 [illegible] Airbill Number: _____

ALS Environmental
Sample Acceptance Check Form

Client: Longview, City of Work order: K1511798
Project: Sentinel Well Program
Sample(s) received on: 10/19/15 Date opened: 10/19/15 by: KKELPE

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Did **sample containers** arrive in good condition?	☒	☐	☐
3	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
4	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
5	Was **sample volume** received adequate for analysis?	☒	☐	☐
6	Are samples within specified holding times?	☒	☐	☐
7	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: ° C Blank Temperature: 1° C **Gel Packs**			
8	Were **custody seals** on outside of cooler/Box/Container?	☒	☐	☐
	Location of seal(s)? SEALING LID OF COOLER Sealing Lid?	☒	☐	☐
	Were signature and date included?	☒	☐	☐
	Were seals intact?	☒	☐	☐
9	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☒	☐	☐
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☒	☐	☐
10	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
11	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
K1511798-001.27	40mL VOA NP		7	1	A	MC 11/3/2015
K1511798-001.28	40mL VOA NP				A	
K1511798-001.40	40mL VOA NP				A	

Explain any discrepancies: (include lab sample ID numbers):
The sample was received at ALS-Kelso on 10/19/15.

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Longview, City of**
Client Project ID: **Sentinel Well Program** ALS Project ID: K1511798

Hydrogen Sulfide

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 7890A/GC22/SCD Date(s) Collected: 10/19/15
Analyst: Mike Conejo Date Received: 10/19/15
Sample Type: Drinking Water Date Analyzed: 11/3/15
Test Notes:

Client Sample ID	ALS Sample ID	Sample Amount ml(s)	Purge Volume Liter(s)	Injection Volume ml(s)	**Result µg/L**	MRL µg/L	Data Qualifier
DW-9	K1511798-001	10.0	0.30	1.0	ND	0.84	
Method Blank	P151103-MB	10.0	0.30	1.0	ND	0.84	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Longview, City of**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **Sentinel Well Program**

ALS Project ID: K1511798
ALS Sample ID: P151103-DLCS

Test Code: GC/SCD Reduced Sulfur Analysis
Instrument ID: Agilent 7890A/GC22/SCD
Analyst: Mike Conejo
Sample Type: Drinking Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 11/03/15
Liquid Amount: 10.0 ml(s)
Purge Volume: 0.30 Liter(s)
Injection Volume: 0.20 ml(s)

CAS #	Compound	Spike Amount LCS / DLCS ug/L	Result LCS ug/L	Result DLCS ug/L	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
7783-06-4	Hydrogen Sulfide	416	404	422	**97**	**101**	45-151	4	28	

ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
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F : +1 360 636 1068
www.alsglobal.com

December 09, 2015

Analytical Report for Service Request No: K1511795

Jeff Coleman
Longview, City of
W/S Operation Center
P.O. Box 128
Longview, WA 98632

RE: Sentinel Wells

Dear Jeff,

Enclosed are the results of the sample(s) submitted to our laboratory October 19, 2015
For your reference, these analyses have been assigned our service request number **K1511795.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3275. You may also contact me via email at Chris.Leaf@ALSGlobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Chris Leaf
Project Manager

ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
T : +1 360 577 7222
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www.alsglobal.com

Table of Contents

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□ □a□f□e□□
□□a□e □e□□f□□a□o□□□□□□□e□□a□o□□□□□□ □□e□□e□
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Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L14-51
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	Not available	-
Idaho DHW	http://www.healthandwelfare.idaho.gov/Health/Labs/CertificationDrinkingWaterLabs/tabid/1833/Default.aspx	-
ISO 17025	http://www.pjlabs.com/	L14-50
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	03016
Maine DHS	Not available	WA01276
Michigan DEQ	http://www.michigan.gov/deq/0,1607,7-135-3307_4131_4156---,00.html	9949
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Chain of Custody

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636- 1068
www.alsglobal.com

ALS Environmental

58081

CHAIN OF CUSTODY

58081

001

SR# [illegible]

COC Set____of____

COC#_____

1317 South 13th Ave, Kelso, WA 98626 Phone (360) 577-7222 / 800-695-7222 / FAX (360) 636-1068
www.alsglobal.com

Project Name: Sentinel Wells
Project Number:
Project Manager: Jeff Coleman
Company: City of Longview
Address: PO Box 128 Longview WA 98632
Phone #
email
Sampler Signature: T Daly
Sampler Printed Name: T Daly

CLIENT SAMPLE ID	LABID	SAMPLING Date	SAMPLING Time	Matrix	NUMBER OF CONTAINERS	7D 900.0 / Radioact	7D 903.1 / Radium 226	7D 904.0 / Radium 228	180D 200.8 / Metals T	1	2	3	4	5	Remarks
1. DW-9		10/19/15	923		2	✓	✓	✓	✓						
2.															
3.															
4.															
5.															
6.															
7.															
8.															
9.															
10.															

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. CLP Like Summary (no raw data)
___ IV. Data Validation Report
___ V. EDD

Invoice Information

P.O.# ~~36-~~ 4735
Bill To: City of Longview
PO Box 128
Longview WA 98632

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
___ Standard

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments:

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other_____(Circle One)

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature: T Daly	Signature: Dwight	Signature	Signature	Signature	Signature
Printed Name: T Daly	Printed Name: Dwight ALS	Printed Name	Printed Name	Printed Name	Printed Name
Firm: CoL	Firm	Firm	Firm	Firm	Firm
Date/Time: 10/19/15 1540	Date/Time: 10-19-15 15:41	Date/Time	Date/Time	Date/Time	Date/Time

PC CL

Cooler Receipt and Preservation Form

Client / Project: City of Longview Service Request K15 11795

Received: 10/19/15 Opened: 10/19/15 By: KB Unloaded: 10/19/15 By: KB

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? _____

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected. Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
9.8	10.0	3.5	3.7	+.2	371			

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time
DW-9	Cubi				X	HNO3	5ml	RE1-31-L	KB	1600

Notes, Discrepancies, & Resolutions: _____

Page ____ *of* ____

Metals

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Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511795
Project:	Sentinel Wells	**Date Collected:**	10/19/15 09:23
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15 15:41
Sample Name:	DW-9	**Basis:**	NA
Lab Code:	K1511795-001		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Uranium	200.8	ND U	mg/L	0.000020	1	11/04/15 01:11	10/27/15	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Longview, City of	**Service Request:**	K1511795
Project:	Sentinel Wells	**Date Collected:**	NA
Sample Matrix:	Drinking Water	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	NA
Lab Code:	KQ1512448-01		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Uranium	200.8	ND U	mg/L	0.000020	1	11/04/15 12:37	10/27/15	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511795
Project	Sentinel Wells	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
		Date Analyzed:	11/04/15

Replicate Sample Summary
Total Metals

Sample Name:	DW-9	**Units:**	mg/L
Lab Code:	K1511795-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample KQ1512448-04 Result	Average	RPD	RPD Limit
Uranium	200.8	0.000020	ND U	ND U	ND	-	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Printed 11/24/15 1:32:54 PM

Superset Reference:

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511795
Project:	Sentinel Wells	**Date Collected:**	10/19/15
Sample Matrix:	Drinking Water	**Date Received:**	10/19/15
		Date Analyzed:	11/4/15
		Date Extracted:	10/27/15

Matrix Spike Summary
Total Metals

Sample Name:	DW-9	**Units:**	mg/L
Lab Code:	K1511795-001	**Basis:**	NA
Analysis Method:	200.8		
Prep Method:	EPA CLP-METALS ILM04.0		

Matrix Spike
KQ1512448-05

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Uranium	ND U	0.0207	0.0200	104	70-130

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Printed 11/24/15 1:32:54 PM

Superset Reference:

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Longview, City of	**Service Request:**	K1511795
Project:	Sentinel Wells	**Date Analyzed:**	11/04/15
Sample Matrix:	Drinking Water	**Date Extracted:**	10/27/15

Lab Control Sample Summary
Total Metals

Analysis Method:	200.8	**Units:**	mg/L
Prep Method:	EPA CLP-METALS ILM04.0	**Basis:**	NA
		Analysis Lot:	470354

Lab Control Sample
KQ1512448-02

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
Uranium	0.0205	0.0200	102	85-115

Subcontract Lab Results

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Wednesday, November 11, 2015

Chris Leaf
ALS Environmental
1317 South 13th Ave
Kelso, WA 98626

Re: ALS Workorder: 1510336
Project Name:
Project Number: K1511795

Dear Ms. Leaf:

One water sample was received from ALS Environmental, on 10/21/2015. The sample was scheduled for the following analyses:

Gross Alpha/Beta
Radium-226
Radium-228

The results for these analyses are contained in the enclosed reports.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Thank you for your confidence in ALS Environmental. Should you have any questions, please call.

Sincerely,

ALS Environmental
Jeff R. Kujawa
Project Manager

ALS Environmental – Fort Collins is accredited by the following accreditation bodies for various testing scopes in accordance with requirements of each accreditation body. All testing is performed under the laboratory management system, which is maintained to meet these requirement and regulations. Please contact the laboratory or accreditation body for the current scope testing parameters.

ALS Environmental – Fort Collins	
Accreditation Body	License or Certification Number
Alaska (AK)	UST-086
Alaska (AK)	CO01099
Arizona (AZ)	AZ0742
California (CA)	06251CA
Colorado (CO)	CO01099
Connecticut (CT)	PH-0232
Florida (FL)	E87914
Idaho (ID)	CO01099
Kansas (KS)	E-10381
Kentucky (KY)	90137
L-A-B (DoD ELAP/ISO 170250)	L2257
Louisiana (LA)	05057
Maryland (MD)	285
Missouri (MO)	175
Nebraska(NE)	NE-OS-24-13
Nevada (NV)	CO000782008A
New York (NY)	12036
North Dakota (ND)	R-057
Oklahoma (OK)	1301
Pennsylvania (PA)	68-03116
Tennessee (TN)	2976
Texas (TX)	T104704241
Utah (UT)	CO01099
Washington (WA)	C1280

1510336

Gross Alpha/Beta:
The samples were analyzed for gross alpha and beta activity by gas flow proportional counting according to the current revision of SOP 724. Gross alpha results are referenced to ^{241}Am. Gross beta results are referenced to ^{90}Sr/Y.

All acceptance criteria were met.

Radium-228:
The samples were analyzed for the presence of ^{228}Ra by low background gas flow proportional counting of ^{228}Ac, which is the ingrown progeny of ^{228}Ra, according to the current revision of SOP 724.

All remaining acceptance criteria were met.

Radium-226:
The samples were prepared and analyzed according to the current revision of SOP 783.

All acceptance criteria were met.

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1510336
Client Name: ALS Environmental
Client Project Name:
Client Project Number: K1511795
Client PO Number: K1511795

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
DW-9	1510336-1		WATER	19-Oct-15	9:23

ALS Environmental Chain of Custody

1317 South 13th Avenue • Kelso, WA 98626 • 1-360-577-7222 • FAX 1-360-636-1068

ALS Contact: Chris Leaf

1510336

Project Number: K1511795
Project Manager: Chris Leaf
QAP: LAB QAP

Lab Code	Sample ID	# of Cont.	Matrix	Sample Date	Sample Time	Lab ID	Radioact 900.0	Radium 226 903.1	Radium 228 904.0
K1511795-001	DW-9 (1)	2	Drinking Water	10/19/15	0923	Fort Collins ALS	X	X	X

Folder Comments:
preserved with HNO3 on 10/19/15 @ 1600.

Special Instructions/Comments
Please provide the electronic (PDF and EDD) report to the following e-mail address: ALKLS.Data@alsglobal.com.

CL 10/20/15

H - Test is On Hold P - Test is Authorized for Prep Only

Turnaround Requirements
____ **RUSH** (Surcharges Apply)
PLEASE CIRCLE WORK DAYS
1 2 3 4 5
✓ **STANDARD**
Requested FAX Date: _____
Requested Report Date: 11/16/15

Report Requirements
____ I. Results Only
✓ II. Results + QC Summaries
____ III. Results + QC and Calibration Summaries
____ IV. Data Validation Report with Raw Data
PQL/MDL/J N
EDD Y Basic w/QC

Invoice Information
PO# 51K1511795
Bill to

Relinquished By: K Smith 10/20/15 1300 Received By: 10-21-15 @ 0935 Airbill Number:

ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: ALS Helso Workorder No: 1510336

Project Manager: JRK Initials: SDM Date: 10-21-15

1. Does this project require any special handling in addition to standard ALS procedures?		YES	NO
2. Are custody seals on shipping containers intact?	NONE	YES	NO
3. Are Custody seals on sample containers intact?	NONE	YES	NO
4. Is there a COC (Chain-of-Custody) present or other representative documents?		YES	NO
5. Are the COC and bottle labels complete and legible?		YES	NO
6. Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		YES	NO
7. Were airbills / shipping documents present and/or removable?	DROP OFF	YES	NO
8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	N/A	YES	NO
9. Are all aqueous non-preserved samples pH 4-9?	N/A	YES	NO
10. Is there sufficient sample for the requested analyses?		YES	NO
11. Were all samples placed in the proper containers for the requested analyses?		YES	NO
12. Are all samples within holding times for the requested analyses?		YES	NO
13. Were all sample containers received intact? (not broken or leaking, etc.)		YES	NO
14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: ____ < green pea ____ > green pea	N/A	YES	NO
15. Do any water samples contain sediment? Amount Amount of sediment: ____ dusting ____ moderate ____ heavy	N/A	YES	NO
16. Were the samples shipped on ice?		YES	NO
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #2 #4	RAD ONLY	YES	NO

Cooler #:	1							
Temperature (°C):	Amb							
No. of custody seals on cooler:	1							
DOT Survey/ Acceptance Information — External µR/hr reading:	11							
Background µR/hr reading:	11							

Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? **YES / NO / NA** (If no, see Form 008.)

Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXCEPT #1 AND #16.

* ⇒ Sample Lab ID label from Helso lab says "unpreserved" . when I took a pH the pH came out < 2.

If applicable, was the client contacted? **YES / NO / NA** Contact: _____ Date/Time: _____

Project Manager Signature / Date: [signature] 10-21-15

*IR Gun #2: Oakton, SN 29922500201-0066
*IR Gun #4: Oakton, SN 2372220101-0002

Form 201r24.xls (06/04/2012)

ORIGIN ID:LOGA (360) 577-7222
SAMPLE RECEIVING
ALS ENVIRONMENTAL
1317 S 13TH AVE

KELSO, WA 98626
UNITED STATES US

SHIP DATE: 20OCT15
ACTWGT: 68.3 LB MAN
CAD: 102641/CAFE2806
DIMS: 26x14x13 IN

BILL SENDER

TO SAMPLE RECEIVING
ALS LBORATORY GROUP
225 COMMERCE DRIVE

FORT COLLINS CO 80524
(970) 490-1511
PO: CL/CL/CL

REF: SAMPLE K1511795 1511793 11796

FedEx Express

TRK# 0201 6447 9267 3306

WED - 21 OCT 10:30A
PRIORITY OVERNIGHT

XH FTCA

80524
CO-US DEN

Part # 156148-434 RIT2 03/14

1510336

Client: ALS Environmental
Project: K1511795
Sample ID: DW-9
Legal Location:
Collection Date: 10/19/2015 09:23

Date: *11-Nov-15*
Work Order: 1510336
Lab ID: 1510336-1
Matrix: WATER
Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Gross Alpha/Beta by GFPC		**PAI 724**			Prep Date: **11/4/2015**	PrepBy: **DKL**
GROSS ALPHA	ND (+/- 1.1)	U	2.7	pCi/l	NA	11/6/2015 10:16
GROSS BETA	ND (+/- 1.5)	U	3.2	pCi/l	NA	11/6/2015 10:16
Radium-226 by Radon Emanation - Method 903.1		**PAI 783**			Prep Date: **11/3/2015**	PrepBy: **PJW**
Ra-226	ND (+/- 0.13)	U	0.19	pCi/l	NA	11/10/2015 12:27
Carr: BARIUM	*96.6*		*40-110*	*%REC*	DL = NA	11/10/2015 12:27
Radium-228 Analysis by GFPC		**PAI 724**			Prep Date: **10/26/2015**	PrepBy: **DKL**
Ra-228	ND (+/- 0.31)	U	0.65	pCi/l	NA	11/2/2015 10:46
Carr: BARIUM	*96.6*		*40-110*	*%REC*	DL = NA	11/2/2015 10:46

Client:	ALS Environmental	**Date:**	*11-Nov-15*
Project:	K1511795	**Work Order:**	1510336
Sample ID:	DW-9	**Lab ID:**	1510336-1
Legal Location:		**Matrix:**	WATER
Collection Date:	10/19/2015 09:23	**Percent Moisture:**	

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed

Explanation of Qualifiers

Radiochemistry:

U or ND - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
Y2 - Chemical Yield outside default limits.
W - DER is greater than Warning Limit of 1.42
* - Aliquot Basis is 'As Received' while the Report Basis is 'Dry Weight'.
# - Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'.
G - Sample density differs by more than 15% of LCS density.
D - DER is greater than Control Limit
M - Requested MDC not met.
LT - Result is less than requested MDC but greater than achieved MDC.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS, Matrix Spike Recovery within control limits.
N - Matrix Spike Recovery outside control limits
NC - Not Calculated for duplicate results less than 5 times MDC
B - Analyte concentration greater than MDC.
B3 - Analyte concentration greater than MDC but less than Requested MDC.

Inorganics:

B - Result is less than the requested reporting limit but greater than the instrument method detection limit (MDL).
U or ND - Indicates that the compound was analyzed for but not detected.
E - The reported value is estimated because of the presence of interference. An explanatory note may be included in the narrative.
M - Duplicate injection precision was not met.
N - Spiked sample recovery not within control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike duplicate fail and the native sample concentration is less than four times the spike added concentration.
Z - Spiked recovery not within control limits. An explanatory note may be included in the narrative.
* - Duplicate analysis (relative percent difference) not within control limits.
S - SAR value is estimated as one or more analytes used in the calculation were not detected above the detection limit.

Organics:

U or ND - Indicates that the compound was analyzed for but not detected.
B - Analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user.
E - Analyte concentration exceeds the upper level of the calibration range.
J - Estimated value. The result is less than the reporting limit but greater than the instrument method detection limit (MDL).
A - A tentatively identified compound is a suspected aldol-condensation product.
X - The analyte was diluted below an accurate quantitation level.
* - The spike recovery is equal to or outside the control criteria used.
+ - The relative percent difference (RPD) equals or exceeds the control criteria.
G - A pattern resembling gasoline was detected in this sample.
D - A pattern resembling diesel was detected in this sample.
M - A pattern resembling motor oil was detected in this sample.
C - A pattern resembling crude oil was detected in this sample.
4 - A pattern resembling JP-4 was detected in this sample.
5 - A pattern resembling JP-5 was detected in this sample.
H - Indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest.
L - Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest.
Z - This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products:
- gasoline
- JP-8
- diesel
- mineral spirits
- motor oil
- Stoddard solvent
- bunker C

QC BATCH REPORT

Batch ID: **RE151103-1-1** Instrument ID **Alpha Scin** Method: **Radium-226 by Radon Emanation**

LCS Sample ID: **RE151103-1** Units: **pCi/l** Analysis Date: **11/10/2015 13:25**
Client ID: Run ID: **RE151103-1A** Prep Date: **11/3/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-226	23.8 (+/- 6.1)	0.3	30.71		77.6	67-120					P
Carr: BARIUM	32520		33320		97.6	40-110					

LCSD Sample ID: **RE151103-1** Units: **pCi/l** Analysis Date: **11/10/2015 13:25**
Client ID: Run ID: **RE151103-1A** Prep Date: **11/3/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-226	27 (+/- 6.8)	0.4	30.71		87.8	67-120		23.8	0.3	2.1	P
Carr: BARIUM	32660		33320		98	40-110		32520			

MB Sample ID: **RE151103-1** Units: **pCi/l** Analysis Date: **11/10/2015 12:27**
Client ID: Run ID: **RE151103-1A** Prep Date: **11/3/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-226	ND	0.19									Y1,U
Carr: BARIUM	33370		33320		100	40-110					Y1

The following samples were analyzed in this batch: 1510336-1

Client: ALS Environmental
Work Order: 1510336
Project: K1511795

QC BATCH REPORT

Batch ID: **AB151104-1-4** Instrument ID **LB4100-C** Method: **Gross Alpha/Beta by GFPC**

LCS Sample ID: **AB151104-1** Units: **pCi/l** Analysis Date: **11/6/2015 12:26**

Client ID: Run ID: **AB151104-1A** Prep Date: **11/4/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
GROSS ALPHA	204 (+/- 38)	7	224.1		91	70-130					P,M3
GROSS BETA	194 (+/- 34)	11	204.2		94.9	70-130					P,M3

MB Sample ID: **AB151104-1** Units: **pCi/l** Analysis Date: **11/6/2015 15:12**

Client ID: Run ID: **AB151104-1A** Prep Date: **11/4/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
GROSS ALPHA	ND	0.82									U
GROSS BETA	ND	1.12									U

The following samples were analyzed in this batch: 1510336-1

Client: ALS Environmental
Work Order: 1510336
Project: K1511795

QC BATCH REPORT

Batch ID: **RA151026-1-1** Instrument ID **LB4100-A** Method: **Radium-228 Analysis by GFPC**

LCS Sample ID: **RA151026-1** Units: **pCi/l** Analysis Date: **11/2/2015 10:05**
Client ID: Run ID: **RA151026-1A** Prep Date: **10/26/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-228	7.5 (+/- 2)	1	7.362		102	70-130					P
Carr: BARIUM	32520		33320		97.6	40-110					

LCSD Sample ID: **RA151026-1** Units: **pCi/l** Analysis Date: **11/2/2015 10:05**
Client ID: Run ID: **RA151026-1A** Prep Date: **10/26/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-228	7.8 (+/- 2)	1	7.362		106	70-130		7.5	0.1	2.1	P
Carr: BARIUM	32660		33320		98	40-110		32520			

MB Sample ID: **RA151026-1** Units: **pCi/l** Analysis Date: **11/2/2015 10:46**
Client ID: Run ID: **RA151026-1A** Prep Date: **10/26/2015** DF: **NA**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-228	ND	0.56									Y1,U
Carr: BARIUM	33370		33320		100	40-110					Y1

The following samples were analyzed in this batch: 1510336-1