Lead in Drinking Water Sampling Report

Spring Valley Elementary School
817 Murchison Drive, Millbrae, CA 94030

Prepared For:

Millbrae Elementary School District
555 Richmond Drive
Millbrae, CA 94030

Prepared By:

Air & Water SCIENCES
Environmental Consultants
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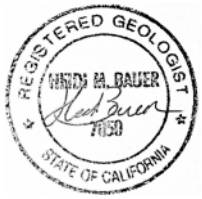
December 2016



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Lead in Drinking Water Sampling Report

Spring Valley Elementary School

Introduction

Millbrae Elementary School District (MESD) requested that the potable water at this school used for drinking and cooking by students and staff be tested for the presence of the heavy metal lead. Schools are not required under federal or state law to test potable water sources for lead if their water is supplied by a public water supply system. Federal regulation requires public water supply districts to test water for lead at select residential customer taps and to take corrective action if lead levels exceed the US Environmental Protection Agency (EPA) action level of 15 µg/L. The MESD recognizes that schools, particularly older facilities (pre-1990), may contain sources of lead in the plumbing pipes and fixtures which could contribute to lead levels in school drinking water. The presence of lead in drinking water can lead to adverse health effects in people, especially children. Therefore, AWS was requested to prepare a sampling plan to quantitatively assess the presence and/or amount of lead in the drinking water at schools within the district that were constructed before 1990.

Sources of Lead in Drinking Water at Schools

Lead can enter the drinking water at a school either by being present in the water entering the school from the municipal water source (i.e. public water supply agency) or through the plumbing system within the school where materials containing lead, such as lead pipes, lead solder and fluxes may be present. Stagnant water in the school pipes can have extended contact with lead containing materials and components. Due to these irregular use patterns elevated concentrations of lead could be present in the drinking water. Other factors such as the pH of the water and the temperature can also affect the rate at which lead is absorbed into the water.

Summary of Regulations to Reduce Lead in Drinking Water

In 1986 the Safe Water Drinking Act (SWDA) required the use of “lead-free” pipe, solder, and flux in the installation or repair of any public water system or any plumbing in a residential or non-residential facility providing water for human consumption. Solders and flux are considered to be lead-free when they contain less than 0.2% lead. Before this ban took effect on June 19, 1986, solders used to join water pipes typically contained about 50% lead. Pipes and pipe fittings were considered “lead-free” under the Lead Ban when they contained less

than 8% lead. In January 2010, California enacted a law which reduced the maximum allowable lead content of pipes, pipe fittings, plumbing fittings and fixtures used to convey water for human consumption to less than 0.25% lead of wetted surfaces as determined by a weighted average. On January 4, 2014 the "Reduction of Lead in Drinking Water Act", more commonly known as the Lead Free law, went into effect. This resulted in a national mandate requiring that every pipe, fixture, and fitting used to convey water for potable use contain less than 0.25% of lead by weight.

In 1988, the Lead Contamination Control Act (LCCA) was signed. This required the identification of water coolers that were not lead-free, the removal or repair of water coolers with lead lined tanks, banned the manufacture and sale of water coolers that are not lead-free and required the identification and resolution of lead problems in schools. The LCCA was aimed at secondary and primary schools, kindergartens, daycare centers, water cooler manufacturers and federal, state and local agencies.

In 1991 the Lead and Copper Rule (LCR) was signed into law. The LCR requires public water suppliers to monitor for lead and copper in drinking water at select residential dwellings supplied water by the public agency. If lead or copper are found above the EPA action levels, the water supply agency must provide corrosion treatment.

Lead Contaminant Levels in Drinking Water

The State of California and the City of Millbrae must comply with the LCR which sets the federal regulatory action level for lead in water at 15 µg/L for public water supply systems. The regulatory action level is the concentration of a contaminant which, when exceeded, triggers treatment or other requirements that a water system must follow.

The lead testing protocol specified by the LCR and used by public water systems is aimed at identifying system-wide problems rather than problems at outlets in individual buildings. The LCR for public water systems established the US EPA lead action level of 15 µg/L for one liter samples collected at high-risk residences. If more than 10 percent of the samples at residences exceed 15 µg/L, system-wide corrosion control treatment may be necessary. The 15 µg/L action level for public water systems is the trigger level for treatment.

The EPA guidance document for testing for lead in the potable water supply at schools is entitled "*3Ts for Reducing Lead in Drinking Water in Schools, Revised Technical Guidance, October 2006" (EPA 3Ts).* This document recommends that water fountains and/or other

outlets used for consumption be taken out of service if lead levels exceed 20 µg/L. This is based on the collection of 250 mL first-draw samples (i.e., samples of water that have remained stagnant for 8-18 hours prior to flushing or use occurs). The EPA recommends this first-draw sample combined with the 8-18 hour waiting period in order to maximize the likelihood that the highest concentrations of lead are found in the outlets being tested.

Although EPA recommends using a concentration of 20 µg/L as the trigger level to conduct additional testing to determine the source, AWS has recommended, with the school district's concurrence, to use exceedances of 15 µg/L lead in drinking water in the schools as the trigger point to take an outlet out of service and to perform additional testing to determine the source of lead.

Purpose and Scope of Work

The scope of work is to determine if the drinking water in the school contains elevated levels of the heavy metal lead (Pb). The scope of work includes:

- Conduct a school survey with MESD representatives to identify drinking water outlets throughout the school.
- Collect drinking water samples from high priority outlets.
- Record the manufacturer and model of any water coolers identified and compare them against the list of lead lined water coolers banned by EPA in 1990.
- Compare water sampling results to EPA action level of 15 µg/L for lead.
- Provide recommendations for additional sampling, if needed.

This sampling strategy, procedures and analytical tests were based on guidance provided by the *EPA 3T's* guidance document.

Site Background

The Spring Valley Elementary School (SVES) is located at 817 Murchison Drive in Millbrae, CA. The school is an elementary school and serves children from pre-school through 5th grade. The exact year the school was built is not known and it is not known if there have been any plumbing improvements, replacements, or modernizations since its original construction.

Drinking Water Outlet Selection Procedure

Water samples were collected from high priority drinking water outlets at SVES identified by AWS. High priority outlets are defined as those that are used regularly for cooking and drinking. These include: drinking fountains (all types), kitchen sinks, classroom combination sinks with drinking fountains, and sinks in teachers' lounges, nurse's offices, and special education and/or home economics classrooms.

AWS visited the site in October 2016 with a MESD representative and noted locations and types of high priority drinking water outlets on site maps. From this initial survey the total number of outlets to be tested was identified.

Where practical, all exterior and wall mounted water fountains were sampled. Samples were collected from the following types of outlets, if present: kitchen faucets, home economic faucets, classroom water fountain/sink combinations, and pairs of drinking water fountains. Generally AWS did not sample medium and low priority outlets such as bathroom faucets, utility sinks and ice machines during the initial sampling, unless the faucets appeared to be used for drinking or cooking (i.e. cups or mugs nearby).

Water samples representative of the service connection and municipal water supply main were also collected during the testing.

There were no water coolers observed at this school which were banned by EPA in 1990 due to lead lining of the tanks.

Water Sampling Procedures

Drinking water samples were initially collected at SVES on October 28, 2016 and follow-up samples were collected on December 9, 2016. The day before sampling school representatives taped off all outlets selected for sampling using tape and plastic bags. This was done on a school day after 3:00PM. The water samples were collected by an AWS environmental scientist in accordance with the *EPA's 3T's* guidance document.

AWS collected a first-draw water sample from each selected outlet, with the exception of the service connection samples, between the hours of 6:00AM-9:00AM. A first-draw sample of water is the first to come out of the tap after a period of inactivity. This water was stagnant, meaning that the outlet was not used for at least eight hours prior to sampling. Since the selected outlets were

taped off after the end of the previous school day the outlets had remained stagnant for a period between 8 and 18 hours.

Three (3) samples representative of the water service connection and the municipal water supply main were collected from the cold water outlet that was assumed to be closest to the service connection. Following the *EPA's 3Ts* sampling guidelines these samples were not first-draw. The first sample was collected approximately 30 seconds after running the water and the second sample was collected after running the water for approximately three minutes. These samples should be representative of the water quality entering the facility from the service connection and the municipal water supply main, respectively. A duplicate sample was also collected from this outlet as a Quality Assurance/Quality Control (QA/QC) sample.

Samples were collected in a 250 milliliters (ml) laboratory provided container. The sample size is representative of a smaller section of plumbing primarily associated with the fixture providing the water and, therefore, more effective in identifying the source if elevated lead levels are identified. A smaller sample is also more representative of the water serving size consumed by a child.

Samples were each given a unique sampling identification number. The sample location, date, time of collection and the type of outlet were recorded, and are shown on the attached chain-of-custody (COC), proceeded by the attached laboratory report.

Initial Sampling

AWS collected a total of twenty-nine (29) primary (first-draw) samples from selected high-priority faucets and drinking water fountains from SVES. In addition, three (3) flush samples were collected from the outlet assumed closest to the service connection. These included: one (1) 30-second flush sample, one (1) 3-minute flush sample and one (1) field duplicate of the 3-minute flush sample for QA/QC. The sample locations and types of samples collected are shown on the attached table (Table 1) and the attached figure (Figure 1).

Follow-Up Sampling

One high-priority drinking water outlet at SVES was recommended for follow-up sampling. This was a drinking water fountain located outside of Room D. Follow-up sampling was performed since the initial sample had a concentration over the EPA action level of 15 µg/L (refer to analytical results below). Two follow-up samples were collected, a first-draw sample followed by 30-second flush sample. These samples were collected in order to determine if the source of

elevated lead in the initial sample was the fixture itself or the pipes supplying water to the fixture. The follow-up samples were collected on December 9, 2016.

Analytical Methods

Samples were delivered by courier to Alpha Analytical Laboratories in Ukiah, California under standard chain-of-custody procedures. This laboratory is certified by the State of California as part of the Environmental Laboratory Accreditation Program (ELAP# 1551). Water samples were analyzed for lead (Pb) by EPA Method 200.8 which is the determination of trace elements in waters and wastes by Inductively Coupled Plasma - Mass Spectrometry (ICP-MS). The reporting limit as determined by the laboratory is 4 µg/L.

Analytical Results

Initial Sampling Results

The analytical results from the initial testing are shown on Table 1. All of the samples collected from this site were below both the EPA's action level of 15 µg/L for lead in public water supply systems and the EPA's 20 µg/L recommendation for lead in school drinking water with the exception of one sample. Sample SVES-DWS-25B-P collected from one of the drinking water fountains outside of Room D had a lead concentration of 31 µg/L. The sample results are presented in Table 1 and the sampling location is shown on the attached figure (Figure 1).

Follow-Up Sampling Results

The drinking water fountain that exceeded the action level of 15 µg/L was therefore designated for re-sampling. The outlet had been taken out of service based on the initial results and turned off at the shut-off valve. Both a first-draw sample and a 30-second flush sample were collected from this outlet during the follow-up sampling. The analytical results are shown on Table 2.

The second first-draw sample (SVES-DWS-25B-P2) collected from the drinking water fountain had a lead concentration of 670 µg/L. The follow-up 30-second flush sample (SVES-DWS-25B-F) had a lead concentration of 13 ug/L. Based on these results and the initial sample result (SVES-DWS-25A-P) for the adjacent drinking water fountain, the source of lead is likely a component of the fountain and associated valves.

Conclusions and Recommendations

As mentioned above, the *EPA's 3Ts* guidance document recommends that the sample results should be below 20 µg/L in all outlets that provide drinking or cooking water and that remedial measures be implemented to reduce or eliminate lead sources in outlets that exceed 20 µg/L. The EPA's action level for lead and the maximum contaminant level (MCL) in public water supply systems is 15 µg/L and is used as a trigger to determine when system-wide corrosion control treatment may be necessary. AWS uses an exceedance of 15 µg/L lead in drinking water in the schools as the trigger point to recommend that additional testing be performed to determine the source.

In summary, all of the outlets initially tested at SVES, with the exception of one drinking water fountain located outside of Room D, had lead levels below the EPA's action level. AWS recommends that this fountain and all components between the fountain and the supply line be replaced or that the fountain be pulled out of service. As none of the other water samples collected at the school site exceeded the EPA action level of 15 µg/L, no additional testing is warranted at this time.

It is also recommended that periodic monitoring of the outlets be performed at all of the schools built before 1990 to ensure that the older suspected lead containing fixtures and solders do not leach into the drinking water supply in the future.

The presence of aerators may contribute to lead in the water if lead-bearing solids have accumulated over time on the aerator; therefore it is also recommended that all aerators in the school be put on a regular maintenance schedule which includes the removal and cleaning of the aerator or the removal and replacement of the aerator if needed.

Limitations

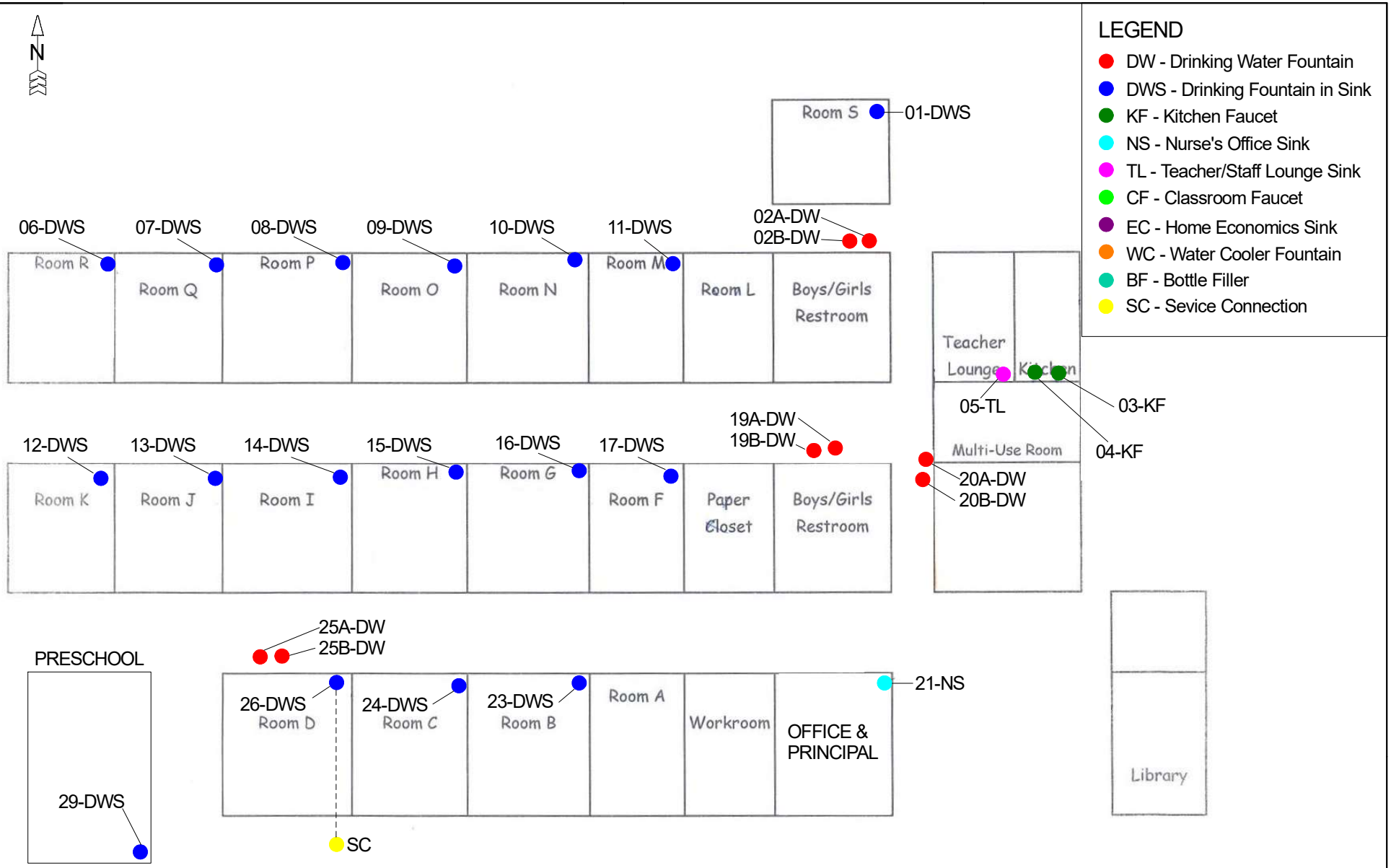
The conclusions and results contained herein are based solely on the information presented in this report. Additional information or contamination that was hidden, undiscovered, inaccessible, or are not a part of the finding presented herein, would result in the modification of the conclusions and recommendations of this report. Any remediation guidelines are minimum general guidelines based solely on the findings contained herein and are not to be considered a complete or detailed set of remediation specifications. AWS is not responsible for the accuracy of information provided by others, or for conditions or consequences arising from relevant facts that were withheld, concealed, undiscovered or not fully disclosed.

The scope of services provided by AWS was limited to the sampling of drinking water outlets identified in this report. Drinking water outlets, hazardous materials or controlled substances not specifically mentioned in this report were not evaluated. AWS is not qualified to present medical advice. If any present or future health issues are in question, it is recommended that the findings in this report be presented to a qualified medical professional for evaluation. AWS is not a law firm and, therefore, makes no representations regarding any potential liability of any person or entity for site conditions.

References

3Ts for Reducing Lead in Drinking Water in Schools: Revised Technical Guidance
United States Environmental Protection Agency, October 2006.

Drinking Water Best Management Practices, United States Environmental Protection Agency, April 2013



Air & Water SCIENCES
Environmental Consultants

SPRING VALLEY ELEMENTARY SCHOOL
817 Murchison Dr
Millbrae, CA 94030

BASEMAP: MILLBRAE ELEMENTARY SCHOOL DISTRICT

LEAD IN WATER SAMPLING
LOCATION MAP

PROJECT NO 1769

Table 1
Analytical Results
Lead (Pb) in Drinking Water
Spring Valley Elementary School

Sample ID Number	Sample collection date	Type of Outlet	Sample Location	Type of Sample	Lead (Pb) (µg/L)
SVES-26-DWS-P	10/28/2016	Drinking Water Fountain with Sink	Room D	Initial	ND
SVES-1S-F	10/28/2016	Drinking Water Fountain with Sink	Room D	Initial	ND
SVES-1M-F	10/28/2016	Drinking Water Fountain with Sink	Room D	Initial	ND
SVES-1MQ-F	10/28/2016	Drinking Water Fountain with Sink	Room D	Initial	ND
SVES-29-DWS-P	10/28/2016	Drinking Water Fountain with Sink	Preschool	Initial	ND
SVES-6-DWS-P	10/28/2016	Drinking Water Fountain with Sink	Room R	Initial	ND
SVES-7-DWS-P	10/28/2016	Drinking Water Fountain with Sink	Room Q	Initial	ND
SVES-8-DWS-P	10/28/2016	Drinking Water Fountain with Sink	Room P	Initial	ND
SVES-9-DWS-P	10/28/2016	Drinking Water Fountain with Sink	Room O	Initial	ND
SVES-10-DWS-P	10/28/2016	Drinking Water Fountain with Sink	Room N	Initial	ND
SVES-11-DWS-P	10/28/2016	Drinking Water Fountain with Sink	Room M	Initial	ND
SVES-02A-DW-P	10/28/2016	Drinking Water Fountain	Outside near Room S	Initial	ND
SVES-02B-DW-P	10/28/2016	Drinking Water Fountain	Outside near Room S	Initial	ND
SVES-05-TL-P	10/28/2016	Faucet	Teachers' Lounge	Initial	ND
SVES-04-KF-P	10/28/2016	Faucet	Kitchen	Initial	6.0
SVES-01-DWS-P	10/28/2016	Drinking Water Fountain with Sink	Room S	Initial	ND
SVES-20A-DW-P	10/28/2016	Drinking Water Fountain	Outside of Multi-Use Room	Initial	ND
SVES-20B-DW-P	10/28/2016	Drinking Water Fountain	Outside of Multi-Use Room	Initial	ND
SVES-16-DWS-P	10/28/2016	Drinking Water Fountain with Sink	Room G	Initial	7.8
SVES-15-DWS-P	10/28/2016	Drinking Water Fountain with Sink	Room H	Initial	ND
SVES-13-DWS-P	10/28/2016	Drinking Water Fountain with Sink	Room J	Initial	ND
SVES-12-DWS-P	10/28/2016	Drinking Water Fountain with Sink	Room K	Initial	4.0
SVES-25A-DW-P	10/28/2016	Drinking Water Fountain	Outside near Room D	Initial	7.6
SVES-25B-DW-P	10/28/2016	Drinking Water Fountain	Outside near Room D	Initial	31
SVES-24-DWS-P	10/28/2016	Drinking Water Fountain with Sink	Room C	Initial	ND

Notes:
1) Primary= sampled at first draw. Flush= sampled after water running for time indicated.
2) EPA Action Level is 15 ug/L
3) ND = None detected
4) Samples analyzed by EPA Method 200.8. Reporting limit is 4 ug/L

Air&WaterSciences

Table 1
Analytical Results
Lead (Pb) in Drinking Water
Spring Valley Elementary School

Sample ID Number	Sample collection date	Type of Outlet	Sample Location	Type of Sample	Lead (Pb) (µg/L)
SVES-23-DWS-P	10/28/2016	Drinking Water Fountain with Sink	Room B	Initial	12
SVES-21-NS-P	10/28/2016	Faucet	Nurse's Station	Initial	ND
SVES-19A-DW-P	10/28/2016	Drinking Water Fountain	Outside of Restrooms (middle wing)	Initial	ND
SVES-19B-DW-P	10/28/2016	Drinking Water Fountain	Outside of Restrooms (middle wing)	Initial	ND
SVES-17-DWS-P	10/28/2016	Drinking Water Fountain with Sink	Room F	Initial	ND
SVES-03-KF-P	10/28/2016	Faucet	Kitchen	Initial	6.3
SVES-14-DWS-P	10/28/2016	Drinking Water Fountain with Sink	Room I	Initial	ND

Notes:
1) Primary= sampled at first draw. Flush= sampled after water running for time indicated.
2) EPA Action Level is 15 ug/L
3) ND = None detected
4) Samples analyzed by EPA Method 200.8. Reporting limit is 4 ug/L

Air&WaterSciences

Table 2
Follow-Up Sampling - Analytical Results
Lead (Pb) in Drinking Water
Spring Valley Elementary School

Initial Sampling						Follow-Up Sampling			
Initial Sampling Date/	**Sample ID**	**Type of Outlet**	**Sample Location**	**Lead (Pb) (µg/L)**	**Action Taken**	**Follow-Up Sample (Date:Sample ID)**	**Type of Sample**	**Lead (Pb) (µg/L)**	**Recommendation**
10/28/2016	SVES-DWS-25B-P	Faucet	Outside of Room D	31	Taken out of service	12/09/2016 : SVES-DWS-25B-P2	Primary	670	Take out of service or replace parts/unit
						12/09/2016 : SVES-DWS-25B-F	Flush	13	

Notes:
1) Primary= sampled at first draw. Flush= sampled after water running for time indicated.
2) EPA Action Level is 15 ug/L
3) ND = None detected
4) Samples analyzed by EPA Method 200.8. Reporting limit is 4 ug/L

Alpha Analytical Laboratories Inc.
e-mail: clientservices@alpha-labs.com
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Bay Area: 6398 Dougherty Rd., Suite 35, Dublin, CA 94568 • Phone: (925) 828-6226 • Fax: (925) 828-6309
Central Valley: 9090 Union Park Way, Suite 113, Elk Grove, CA 95624 • Phone: (916) 686-5190 • Fax: (916) 686-5192

ELAP Certificates 1551, 2728, and 2922

29 December 2016

Air & Water Sciences
Attn: Aniko Molnar
625 2nd Street, Suite 210
Petaluma, CA 94952
RE: Lead Monitoring Project
Work Order: 16J2626

Enclosed are the results of analyses for samples received by the laboratory on 10/28/16 15:42. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jeanette Poplin

Jeanette L. Poplin For Robbie C. Phillips
Project Manager

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Air & Water Sciences	Project Manager: Aniko Molnar	
625 2nd Street, Suite 210	Project: Lead Monitoring Project	Reported:
Petaluma, CA 94952	Project Number: Millbrae ESD - Spring Valley	12/29/16 13:33

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SVES-26-DWS-P	16J2626-01	Water	10/28/16 07:11	10/28/16 15:42
SVES-1S-F	16J2626-02	Water	10/28/16 07:12	10/28/16 15:42
SVES-1M-F	16J2626-03	Water	10/28/16 07:15	10/28/16 15:42
SVES-1MQ-F	16J2626-04	Water	10/28/16 07:15	10/28/16 15:42
SVES-29-DWS-P	16J2626-05	Water	10/28/16 07:20	10/28/16 15:42
SVES-6-DWS-P	16J2626-06	Water	10/28/16 07:24	10/28/16 15:42
SVES-7-DWS-P	16J2626-07	Water	10/28/16 07:25	10/28/16 15:42
SVES-8-DWS-P	16J2626-08	Water	10/28/16 07:27	10/28/16 15:42
SVES-9-DWS-P	16J2626-09	Water	10/28/16 07:30	10/28/16 15:42
SVES-10-DWS-P	16J2626-10	Water	10/28/16 07:31	10/28/16 15:42
SVES-11-DWS-P	16J2626-11	Water	10/28/16 07:32	10/28/16 15:42
SVES-02A-DW-P	16J2626-12	Water	10/28/16 07:33	10/28/16 15:42
SVES-02B-DW-P	16J2626-13	Water	10/28/16 07:35	10/28/16 15:42
SVES-05-TL-P	16J2626-14	Water	10/28/16 07:37	10/28/16 15:42
SVES-04-KF-P	16J2626-15	Water	10/28/16 07:38	10/28/16 15:42
SVES-01-DWS-P	16J2626-16	Water	10/28/16 07:48	10/28/16 15:42
SVES-20A-DW-P	16J2626-17	Water	10/28/16 07:50	10/28/16 15:42
SVES-20B-DW-P	16J2626-18	Water	10/28/16 07:51	10/28/16 15:42
SVES-16-DWS-P	16J2626-19	Water	10/28/16 07:52	10/28/16 15:42
SVES-15-DWS-P	16J2626-20	Water	10/28/16 07:54	10/28/16 15:42
SVES-13-DWS-P	16J2626-21	Water	10/28/16 07:57	10/28/16 15:42
SVES-12-DWS-P	16J2626-22	Water	10/28/16 07:59	10/28/16 15:42
SVES-25A-DW-P	16J2626-23	Water	10/28/16 08:00	10/28/16 15:42
SVES-25B-DW-P	16J2626-24	Water	10/28/16 08:01	10/28/16 15:42
SVES-24-DWS-P	16J2626-25	Water	10/28/16 08:03	10/28/16 15:42
SVES-23-DWS-P	16J2626-26	Water	10/28/16 08:05	10/28/16 15:42
SVES-21-NS-P	16J2626-27	Water	10/28/16 08:07	10/28/16 15:42
SVES-19A-DW-P	16J2626-28	Water	10/28/16 08:09	10/28/16 15:42

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Air & Water Sciences	Project Manager: Aniko Molnar	
625 2nd Street, Suite 210	Project: Lead Monitoring Project	Reported:
Petaluma, CA 94952	Project Number: Millbrae ESD - Spring Valley	12/29/16 13:33

SVES-19B-DW-P	16J2626-29	Water	10/28/16 08:11	10/28/16 15:42
SVES-17-DWS-P	16J2626-30	Water	10/28/16 00:00	10/28/16 15:42
SVES-03-KF-P	16J2626-31	Water	10/28/16 07:45	10/28/16 15:42
SVES-14-DWS-P	16J2626-32	Water	10/28/16 07:55	10/28/16 15:42

This represents an amended copy of the original report.
Sample ID for 16J2626-16 revised at client request.

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Petaluma, CA 94952	Project Number: Millbrae ESD - Spring Valley	12/29/16 13:33

	Result	Reporting Limit	Dilution	Batch	Prepared	Analyzed	Method	Note
SVES-26-DWS-P (16J2626-01)		**Sample Type: Water**				**Sampled: 10/28/16 07:11**		
Metals by EPA Method 200.8 ICP/MS								**P-02**
Lead	ND ug/L	4.0	1	AK63079	11/02/16 09:20	11/09/16 21:35	EPA 200.8	
SVES-1S-F (16J2626-02)		**Sample Type: Water**				**Sampled: 10/28/16 07:12**		
Metals by EPA Method 200.8 ICP/MS								**P-02**
Lead	ND ug/L	4.0	1	AK63079	11/02/16 09:20	11/09/16 21:42	EPA 200.8	
SVES-1M-F (16J2626-03)		**Sample Type: Water**				**Sampled: 10/28/16 07:15**		
Metals by EPA Method 200.8 ICP/MS								**P-02**
Lead	ND ug/L	4.0	1	AK63079	11/02/16 09:20	11/09/16 21:50	EPA 200.8	
SVES-1MQ-F (16J2626-04)		**Sample Type: Water**				**Sampled: 10/28/16 07:15**		
Metals by EPA Method 200.8 ICP/MS								**P-02**
Lead	ND ug/L	4.0	1	AK63079	11/02/16 09:20	11/09/16 21:57	EPA 200.8	
SVES-29-DWS-P (16J2626-05)		**Sample Type: Water**				**Sampled: 10/28/16 07:20**		
Metals by EPA Method 200.8 ICP/MS								**P-02**
Lead	ND ug/L	4.0	1	AK63079	11/02/16 09:20	11/09/16 22:05	EPA 200.8	
SVES-6-DWS-P (16J2626-06)		**Sample Type: Water**				**Sampled: 10/28/16 07:24**		
Metals by EPA Method 200.8 ICP/MS								**P-02**
Lead	ND ug/L	4.0	1	AK63079	11/02/16 09:20	11/09/16 22:12	EPA 200.8	
SVES-7-DWS-P (16J2626-07)		**Sample Type: Water**				**Sampled: 10/28/16 07:25**		
Metals by EPA Method 200.8 ICP/MS								**P-02**
Lead	ND ug/L	4.0	1	AK63079	11/02/16 09:20	11/09/16 22:19	EPA 200.8	
SVES-8-DWS-P (16J2626-08)		**Sample Type: Water**				**Sampled: 10/28/16 07:27**		
Metals by EPA Method 200.8 ICP/MS								**P-02**
Lead	ND ug/L	4.0	1	AK63079	11/02/16 09:20	11/09/16 23:03	EPA 200.8	
SVES-9-DWS-P (16J2626-09)		**Sample Type: Water**				**Sampled: 10/28/16 07:30**		
Metals by EPA Method 200.8 ICP/MS								**P-02**
Lead	ND ug/L	4.0	1	AK63079	11/02/16 09:20	11/09/16 23:11	EPA 200.8	
SVES-10-DWS-P (16J2626-10)		**Sample Type: Water**				**Sampled: 10/28/16 07:31**		
Metals by EPA Method 200.8 ICP/MS								**P-02**
Lead	ND ug/L	4.0	1	AK63079	11/02/16 09:20	11/09/16 23:18	EPA 200.8	
SVES-11-DWS-P (16J2626-11)		**Sample Type: Water**				**Sampled: 10/28/16 07:32**		

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Air & Water Sciences	Project Manager: Aniko Molnar	
625 2nd Street, Suite 210	Project: Lead Monitoring Project	Reported:
Petaluma, CA 94952	Project Number: Millbrae ESD - Spring Valley	12/29/16 13:33

	Result	Reporting Limit	Dilution	Batch	Prepared	Analyzed	Method	Note
SVES-11-DWS-P (16J2626-11)		**Sample Type: Water**				**Sampled: 10/28/16 07:32**		
Metals by EPA Method 200.8 ICP/MS								**P-02**
Lead	ND ug/L	4.0	1	AK63079	11/02/16 09:20	11/09/16 23:25	EPA 200.8	
SVES-02A-DW-P (16J2626-12)		**Sample Type: Water**				**Sampled: 10/28/16 07:33**		
Metals by EPA Method 200.8 ICP/MS								**P-02**
Lead	ND ug/L	4.0	1	AK63079	11/02/16 09:20	11/09/16 23:33	EPA 200.8	
SVES-02B-DW-P (16J2626-13)		**Sample Type: Water**				**Sampled: 10/28/16 07:35**		
Metals by EPA Method 200.8 ICP/MS								**P-02**
Lead	ND ug/L	4.0	1	AK63079	11/02/16 09:20	11/09/16 23:40	EPA 200.8	
SVES-05-TL-P (16J2626-14)		**Sample Type: Water**				**Sampled: 10/28/16 07:37**		
Metals by EPA Method 200.8 ICP/MS								**P-02**
Lead	ND ug/L	4.0	1	AK63079	11/02/16 09:20	11/09/16 23:48	EPA 200.8	
SVES-04-KF-P (16J2626-15)		**Sample Type: Water**				**Sampled: 10/28/16 07:38**		
Metals by EPA Method 200.8 ICP/MS								**P-02**
Lead	**6.0 ug/L**	**4.0**	1	AK63079	11/02/16 09:20	11/11/16 06:40	EPA 200.8	C-04
SVES-01-DWS-P (16J2626-16)		**Sample Type: Water**				**Sampled: 10/28/16 07:48**		
Metals by EPA Method 200.8 ICP/MS								**P-02**
Lead	ND ug/L	4.0	1	AK63079	11/02/16 09:20	11/10/16 00:02	EPA 200.8	
SVES-20A-DW-P (16J2626-17)		**Sample Type: Water**				**Sampled: 10/28/16 07:50**		
Metals by EPA Method 200.8 ICP/MS								**P-02**
Lead	ND ug/L	4.0	1	AK63079	11/02/16 09:20	11/09/16 20:36	EPA 200.8	
SVES-20B-DW-P (16J2626-18)		**Sample Type: Water**				**Sampled: 10/28/16 07:51**		
Metals by EPA Method 200.8 ICP/MS								**P-02**
Lead	ND ug/L	4.0	1	AK63080	11/02/16 09:23	11/03/16 14:29	EPA 200.8	
SVES-16-DWS-P (16J2626-19)		**Sample Type: Water**				**Sampled: 10/28/16 07:52**		
Metals by EPA Method 200.8 ICP/MS								**P-02**
Lead	**7.8 ug/L**	**5.0**	4	AK63187	11/04/16 10:44	11/08/16 13:16	EPA 200.8	
SVES-15-DWS-P (16J2626-20)		**Sample Type: Water**				**Sampled: 10/28/16 07:54**		
Metals by EPA Method 200.8 ICP/MS								**P-02**
Lead	ND ug/L	4.0	1	AK63080	11/02/16 09:23	11/03/16 17:56	EPA 200.8	
SVES-13-DWS-P (16J2626-21)		**Sample Type: Water**				**Sampled: 10/28/16 07:57**		

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Air & Water Sciences	Project Manager: Aniko Molnar	
625 2nd Street, Suite 210	Project: Lead Monitoring Project	Reported:
Petaluma, CA 94952	Project Number: Millbrae ESD - Spring Valley	12/29/16 13:33

	Result	Reporting Limit	Dilution	Batch	Prepared	Analyzed	Method	Note
SVES-13-DWS-P (16J2626-21)		**Sample Type: Water**				**Sampled: 10/28/16 07:57**		
Metals by EPA Method 200.8 ICP/MS								**P-02**
Lead	ND ug/L	4.0	1	AK63080	11/02/16 09:23	11/03/16 18:02	EPA 200.8	
SVES-12-DWS-P (16J2626-22)		**Sample Type: Water**				**Sampled: 10/28/16 07:59**		
Metals by EPA Method 200.8 ICP/MS								**P-02**
Lead	**4.0 ug/L**	**4.0**	1	AK63080	11/02/16 09:23	11/03/16 18:08	EPA 200.8	
SVES-25A-DW-P (16J2626-23)		**Sample Type: Water**				**Sampled: 10/28/16 08:00**		
Metals by EPA Method 200.8 ICP/MS								**P-02**
Lead	**7.6 ug/L**	**4.0**	1	AK63080	11/02/16 09:23	11/03/16 18:15	EPA 200.8	
SVES-25B-DW-P (16J2626-24)		**Sample Type: Water**				**Sampled: 10/28/16 08:01**		
Metals by EPA Method 200.8 ICP/MS								**P-02**
Lead	**31 ug/L**	**4.0**	1	AK63080	11/02/16 09:23	11/03/16 18:21	EPA 200.8	C-04
SVES-24-DWS-P (16J2626-25)		**Sample Type: Water**				**Sampled: 10/28/16 08:03**		
Metals by EPA Method 200.8 ICP/MS								**P-02**
Lead	ND ug/L	4.0	1	AK63080	11/02/16 09:23	11/03/16 19:06	EPA 200.8	
SVES-23-DWS-P (16J2626-26)		**Sample Type: Water**				**Sampled: 10/28/16 08:05**		
Metals by EPA Method 200.8 ICP/MS								**P-02**
Lead	**12 ug/L**	**4.0**	1	AK63080	11/02/16 09:23	11/03/16 19:13	EPA 200.8	C-04
SVES-21-NS-P (16J2626-27)		**Sample Type: Water**				**Sampled: 10/28/16 08:07**		
Metals by EPA Method 200.8 ICP/MS								**P-02**
Lead	ND ug/L	4.0	1	AK63080	11/02/16 09:23	11/03/16 19:19	EPA 200.8	
SVES-19A-DW-P (16J2626-28)		**Sample Type: Water**				**Sampled: 10/28/16 08:09**		
Metals by EPA Method 200.8 ICP/MS								**P-02**
Lead	ND ug/L	4.0	1	AK63080	11/02/16 09:23	11/03/16 19:26	EPA 200.8	
SVES-19B-DW-P (16J2626-29)		**Sample Type: Water**				**Sampled: 10/28/16 08:11**		
Metals by EPA Method 200.8 ICP/MS								**P-02**
Lead	ND ug/L	4.0	1	AK63080	11/02/16 09:23	11/03/16 19:32	EPA 200.8	
SVES-17-DWS-P (16J2626-30)		**Sample Type: Water**				**Sampled: 10/28/16 00:00**		
Metals by EPA Method 200.8 ICP/MS								**P-02**
Lead	ND ug/L	4.0	1	AK63080	11/02/16 09:23	11/03/16 19:39	EPA 200.8	
SVES-03-KF-P (16J2626-31)		**Sample Type: Water**				**Sampled: 10/28/16 07:45**		

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Air & Water Sciences	Project Manager: Aniko Molnar	
625 2nd Street, Suite 210	Project: Lead Monitoring Project	Reported:
Petaluma, CA 94952	Project Number: Millbrae ESD - Spring Valley	12/29/16 13:33

	Result	Reporting Limit	Dilution	Batch	Prepared	Analyzed	Method	Note
SVES-03-KF-P (16J2626-31)		**Sample Type: Water**				**Sampled: 10/28/16 07:45**		
Metals by EPA Method 200.8 ICP/MS								**P-02**
Lead	**6.3 ug/L**	**4.0**	1	AK63080	11/02/16 09:23	11/03/16 19:45	EPA 200.8	
SVES-14-DWS-P (16J2626-32)		**Sample Type: Water**				**Sampled: 10/28/16 07:55**		
Metals by EPA Method 200.8 ICP/MS								**P-02**
Lead	ND ug/L	4.0	1	AK63080	11/02/16 09:23	11/03/16 19:51	EPA 200.8	

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Air & Water Sciences	Project Manager: Aniko Molnar	
625 2nd Street, Suite 210	Project: Lead Monitoring Project	Reported:
Petaluma, CA 94952	Project Number: Millbrae ESD - Spring Valley	12/29/16 13:33

Metals by EPA Method 200.8 ICP/MS - Quality Control

Analyte(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Batch AK63079 - EPA 200 Series										
Blank (AK63079-BLK1)				Prepared: 11/02/16 Analyzed: 11/09/16						
Lead	ND	4.0	ug/L							
LCS (AK63079-BS1)				Prepared: 11/02/16 Analyzed: 11/09/16						
Lead	21.2	4.0	ug/L	20.0		106	85-115			
Duplicate (AK63079-DUP1)		**Source: 16J2624-14**		Prepared: 11/02/16 Analyzed: 11/09/16						
Lead	ND	4.0	ug/L		ND			1.06	20	
Matrix Spike (AK63079-MS1)		**Source: 16J2624-14**		Prepared: 11/02/16 Analyzed: 11/09/16						
Lead	102	4.0	ug/L	100	ND	98.6	70-130			
Matrix Spike (AK63079-MS2)		**Source: 16J2626-17**		Prepared: 11/02/16 Analyzed: 11/09/16						
Lead	101	4.0	ug/L	100	ND	100	70-130			
Matrix Spike Dup (AK63079-MSD1)		**Source: 16J2624-14**		Prepared: 11/02/16 Analyzed: 11/09/16						
Lead	102	4.0	ug/L	100	ND	99.0	70-130	0.424	20	
Batch AK63080 - EPA 200 Series										
Blank (AK63080-BLK1)				Prepared: 11/02/16 Analyzed: 11/03/16						
Lead	ND	4.0	ug/L							
LCS (AK63080-BS1)				Prepared: 11/02/16 Analyzed: 11/03/16						
Lead	21.6	4.0	ug/L	20.0		108	85-115			
Duplicate (AK63080-DUP1)		**Source: 16J2626-18**		Prepared: 11/02/16 Analyzed: 11/03/16						
Lead	ND	4.0	ug/L		ND			4.01	20	

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Air & Water Sciences	Project Manager: Aniko Molnar	
625 2nd Street, Suite 210	Project: Lead Monitoring Project	Reported:
Petaluma, CA 94952	Project Number: Millbrae ESD - Spring Valley	12/29/16 13:33

Metals by EPA Method 200.8 ICP/MS - Quality Control

Analyte(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Batch AK63080 - EPA 200 Series										
Matrix Spike (AK63080-MS1)	**Source: 16J2626-18**			Prepared: 11/02/16 Analyzed: 11/03/16						
Lead	115	4.0	ug/L	100	ND	115	70-130			
Matrix Spike (AK63080-MS2)	**Source: 16J2500-01**			Prepared: 11/02/16 Analyzed: 11/03/16						
Lead	113	4.0	ug/L	100	ND	113	70-130			
Matrix Spike Dup (AK63080-MSD1)	**Source: 16J2626-18**			Prepared: 11/02/16 Analyzed: 11/03/16						
Lead	114	4.0	ug/L	100	ND	114	70-130	0.486	20	
Batch AK63187 - EPA 200.8										
Blank (AK63187-BLK1)				Prepared: 11/04/16 Analyzed: 11/08/16						
Lead	ND	5.0	ug/L							
LCS (AK63187-BS1)				Prepared: 11/04/16 Analyzed: 11/08/16						
Lead	21.1	5.0	ug/L	20.0		106	85-115			
Duplicate (AK63187-DUP1)	**Source: 16J2562-01**			Prepared: 11/04/16 Analyzed: 11/08/16						
Lead	ND	5.0	ug/L		ND				20	

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Air & Water Sciences	Project Manager: Aniko Molnar	
625 2nd Street, Suite 210	Project: Lead Monitoring Project	Reported:
Petaluma, CA 94952	Project Number: Millbrae ESD - Spring Valley	12/29/16 13:33

Notes and Definitions

C-04	Result confirmed by re-analysis
P-02	Sample was received with insufficient preservative. Sample was preserved and allowed to sit 24 hours before further processing.
ND	Analyte NOT DETECTED at or above the reporting limit
dry	Sample results reported on a dry weight basis
REC	Recovery
RPD	Relative Percent Difference

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Chain of Custody - Work Order

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Lab No 16J2626 Pg 1 of 3

Report to

Company: Air and Water Sciences
Attn: Heidi Bauer, Aniko Molnar, Chip Prokop and Bryn Kirk
Address: 625 2nd Street, ste 210, Petaluma, CA 94952
Phone: 707-769-2289

Contact: Heidi Bauer
INVOICE TO: lesley@awsciences.com, Attn: Lesley Hunter
Ph: 707-769-2289

Phone: 707-769-2289

PROJECT NUMBER: AWS 1769- SVES
PROJECT Name: Millbrae ESD Spring Valley

Email Addresses for Reports: heidi@awsciences.com, amolnar@awsciences.com, cprokop@awsciences.com, bryn@awsciences.com

Signature below authorizes work under terms stated on reverse side.

Field Sampler - Printed Name & Signature: Mischa Minkler-Green

TAT: Standard 10 days ●; RUSH: 5 days ○, 48 hours ○, Other: ○; Lab preapproval required

Temp upon Receipt: Ukiah temp: 3.0; Dublin temp:

Analysis Request

Sample Identification	Sampling Date	Sampling Time	Container: 250 ml poly	Preservative: NONE	Matrix: Water	Total Number of Containers per Sample ID	Lead (Epa 200.8)	Sample Notes or DDW Source Numbers:
SVES-20DWS-P	10/28/16	7:11	X	X	X	1	X	
SVES-1S-F		7:12						
SVES-1M-F		7:15						
SVES-1MQ-F		7:15						
SVES-29DWS-P		7:20						
SVES-6DWS-P		7:24						
SVES-7DWS-P		7:25						
SVES-8DWS-P		7:27						
SVES-9DWS-P		7:30						
SVES-10DWS-P		7:31						
SVES-11DWS-P		7:32						
SVES-02A-GW-P	↓	7:33	↓	↓	↓	↓	↓	

Relinquished by	Received by	Date	Time
Mischa Minkler-Green	David Poma	10/28/16	11:15
David Poma	Lesley Chism	10.28.16	1542

DDW Write On EDT Transmission? ○ Yes
State System Number:
If "Y" please enter the Source Number(s) in the column above

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Lab No 1602026 Pg 2 of 3

Report to

Company: Air and Water Sciences
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Address: 625 2nd Street, ste 210
Petaluma, CA 94952

Phone: 707-769-2289

Contact: Heidi Bauer

Phone: 707-769-2289

INVOICE TO:
lesley@awsciences.com
Attn: Lesley Hunter
Ph: 707-769-2289

PROJECT NUMBER: AWS 1769- SVES

PROJECT Name: Millbrae ESD Spring Valley

Email Addresses for Reports: heidi@awsciences.com, amolnar@awsciences.com, cprokop@awsciences.com, bryn@awsciences.com

Field Sampler - Printed Name & Signature: Mischa Minkler-Green [signature]

Signature below authorizes work under terms stated on reverse side.

TAT: Standard 10 days ● | RUSH: 5 days ○ | 48 hours ○ | Other: | Lab preapproval required

Temp upon Receipt: Ukiah temp: 3.0 | Dublin temp:

Sample Identification	Sampling Date	Sampling Time	Container: 250 ml poly	Preservative: NONE	Matrix: Water	Total Number of Containers per Sample ID	Analysis Request: Lead (EPA 200.8)	Sample Notes or DDW Source Numbers
SVES-02B-DW-P	10/28/16	7:35	X	X	X	1	X	
* SVES-05TL-P		7:37						
SVES-04-KF-P		7:38						dripping & has spray/direct aireaiter
* SVES-05KF-P		7:45					* missed in original log in-	dripping
SVES-10DWS-P		7:48					added to last page of COC (initials)	
SVES-20A-DW-P		7:50					Sample ID should be SVES-01-DWS-P per Aniko 12.27.16 (initials)	
SVES-20B-DW-P		7:51						
SVES-16DWS-P		7:52						
SVES-15DWS-P		7:54						
* SVES-14DWS-P		7:55					* missed in original log in-	
SVES-13DWS-P		7:57					added to last page of COC (initials)	
SVES-12DWS-P		7:59						

Relinquished by	Received by	Date	Time
Mischa Minkler-Green	David Poma	10-28-16	11:15
David Poma	Leslie [signature]	10-28-16	1542

DDW Write On EDT Transmission? ○ Yes

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PROJECT NUMBER: AWS 1769- SVES
PROJECT Name: Millbrae ESD Spring Valley

Email Addresses for Reports: heidi@awsciences.com, amolnar@awsciences.com, cprokop@awsciences.com, bryn@awsciences.com

Signature below authorizes work under terms stated on reverse side.

Field Sampler - Printed Name & Signature: Mischa Minkler-Green

TAT: Standard 10 days ●; RUSH: 5 days ○, 48 hours ○, Other: ○ (Lab preapproval required)

Temp upon Receipt: Ukiah temp: 3.0; Dublin temp:

Analysis Request

Sample Identification	Sampling Date	Sampling Time	Container: 250 ml poly	Preservative: NONE	Matrix: Water	Total Number of Containers per Sample ID	Lead (Epa 200.8)	Sample Notes or DDW Source Numbers:
SVES-29ADW-P	10/28/16	8:00	X	X	X	1	X	
SVES-25BDW-P		8:01						
SVES-24DWS-P		8:03						
SVES-23DWS-P		8:05						
SVES-21-NS-P		8:07						
SVES-19A-DW-P		8:09						
SVES-19B-DW-P		8:11						
SVES-17DWS-P	↓		↓	↓	↓	↓	↓	
SVES-08-KF-P	10.28.16	0745						
SVES-14-DWS-P	10.28.16	0755						

Relinquished by	Received by	Date	Time
Mischa Minkler-Green	David Poma	10/28/16	11:15
David Poma	[signature]	10.28.16	1542

DDW Write On EDT Transmission? ○ Yes
State System Number:
If "Y" please enter the Source Number(s) in the column above

Travel and Site Time:	Mileage:	Misc. Supplies:

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