Report of Drinking Water Testing for Lead Content

Issaquah School District Facilities
Issaquah, Washington

Prepared for:
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PBS Project 40115.039

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SUPPORTING DATA

ATTACHMENTS

1 EXECUTIVE SUMMARY

PBS was requested to test all accessible fixtures/sources from which drinking water could be consumed. Drinking water in Washington State is regulated by both the Environmental Protection Agency (EPA) and the Washington State Department of Health (DOH). The testing process followed the protocols described in the Environmental Protection Agency (EPA) document, *"3T's for Reducing Lead in Drinking Water in Schools."*

The Issaquah School District selected 28 facilities to be tested for lead in drinking water. The facilities/sites tested included 15 elementary schools, 5 middle schools, 4 high schools, 1 administrative building and 3 operation complexes. A complete list of the facilities can be found in Section 2.0. None of the 28 facilities tested were found to have systemic or facility-wide lead contamination in the drinking water. Individual fixtures at some facilities were found to exceed the EPA recommended action level of >20 parts per billion (ppb) lead, indicating localized contamination. The typical cause of lead contamination at the Issaquah School District facilities appeared to be lead-containing fixtures, lead-containing (brass) fittings, and/or lead-containing pipe joint solder.

PBS collected water samples from a total of 4,202 water fixtures throughout the Issaquah School District. Of the 4,202 sampling locations, a total of three-hundred and forty-five (345) of the sampling locations contained levels of lead above the EPA recommended action level. Of the 345 locations that failed, two-hundred and thirty-five (235) locations were either external or internal hose bibs, shower fixtures, eye wash stations, laboratory sinks, or custodial mop sinks that are not used for drinking purposes. The Issaquah School District affixed "NON-POTABLE Do Not Drink" signage at each of the 235 non-drinking water fixtures. The remaining one-hundred and ten (110) fixture locations that failed to meet the EPA drinking water standards were taken out of service within 24 hours of notification of test results. Each of those failed sites were evaluated, appropriate remedial activities were preformed to reduce the level of lead to below the EPA criteria and all 110 fixtures were placed back into service.

The Issaquah School District understands that public education and communication is an important element to this project. The Lead Contamination Control Act of 1988 has mandatory public notice requirements for reporting lead test results. There are two separate public availability notifications the schools must perform: (1) making a copy of the sampling results available in the school administrative offices, and (2) providing notification to relevant parents, staff, students, local health officer and employee organizations that the sampling program results are available.

2 INTRODUCTION

The Issaquah School District wanted to take precautionary action for potential lead in drinking water, and requested PBS to conduct drinking water sampling and analysis for lead content. The following 28 buildings were selected by the Issaquah School District for drinking water testing:

Elementary Schools

- Apollo Elementary School
- Briarwood Elementary School
- Cascade Ridge Elementary School
- Challenger Elementary School
- Clark Elementary School
- Cougar Ridge Elementary School
- Creekside Elementary School
- Discovery Elementary School
- Endeavour Elementary School

Middle Schools

- Beaver Lake Middle School
- Issaquah Middle School
- Maywood Middle School
- Pacific Cascade Middle School
- Pine Lake Middle School

High Schools

- Gibson Ek High School
- Issaquah High School
- Liberty High School

- Grand Ridge Elementary School
- Issaquah Valley Elementary School
- Maple Hills Elementary School
- Newcastle Elementary School
- Sunny Hills Elementary School
- Sunset Elementary School
- Skyline High School

Administration Facilities

- Administration Building
- May Valley Service Center
- Transportation Center - Satellite
- Transportation Center - Main

2.1 Background Information

Lead is commonly found in drinking water. Levels of lead in drinking water are regulated by the Environmental Protection Agency (EPA) and Washington Department of Health (DOH) due to its ability to have negative impacts on human health.

Lead, a metal found in natural deposits, is commonly found in plumbing materials and water service lines. Although the main sources of exposure to lead are ingestion of paint chips and dust inhalation, EPA estimates that 10 to 20 percent of human exposure to lead may come from lead in drinking water. Infants who consume mixed formula can receive 40 to 60 percent of their exposure to lead from drinking water.

Lead in drinking water can cause a variety of adverse health effects. The health effects of lead are most severe for infants and children for whom, exposure to lead in drinking water above the action level can result in delays in physical and mental development along with slight deficits in attention span and learning abilities. In adults, it can cause increases in blood pressure. Adults who drink this water over many years can develop kidney problems or high blood pressure.

Lead is rarely found in source water. Federal and state regulations require that public drinking water suppliers regularly test for contaminants such as lead. Typically, lead gets into the system after the water leaves the local treatment plant or well. The source of lead in a facility's water is most likely the corrosion of lead containing pipes, fixtures or solder. This corrosion often occurs from a reaction between the water and the plumbing materials caused by dissolved oxygen, low pH (acidity) and low mineral content in water.

Through the early 1900s, lead pipes were commonly used for interior plumbing. Plumbing installed before 1930 is most likely to contain lead. Between 1920 and 1950, galvanized pipes were also used for plumbing. After 1930, copper generally replaced lead as the most commonly used material for water pipes. Until the mid to late 1980s, before the lead-free requirements of the 1986 Safe Drinking Water Act, lead solder was used to join copper pipes. Buildings constructed after this period should have joints made of lead-free solders.
In summary, homes and other buildings built before 1986 are more likely to have lead pipes, fixtures and solder. New buildings are not likely to have lead pipes in their plumbing systems but are very likely to have copper pipes with solder joints or fixtures that contain lead alloys. However, newer facilities are also at risk. Between 1986 and 2014 plumbing that is legally considered "lead-free" could still contain up to 8 percent lead in the alloy. In 2014, the International Plumbing Code was updated to require "lead-free" components to contain no more than 0.25 percent lead. The most common problem is with brass or chrome-plated brass faucets and fixtures, which can leach significant amounts of lead into the water, especially hot water. The efforts of the public water suppliers over the years to minimize corrosiveness of the water may have helped mineral deposits forming a coating on the inside of the pipes (scaling), which insulates the water from the plumbing and results in decreased lead levels. If the coating does not exist or is disturbed, water comes in direct contact with lead in the system.

3 METHODOLOGY

PBS conducted a walkthrough of each facility to help determine sampling locations, building use patterns, and potential access issues. Based on the initial site walkthrough, a sampling plan was developed by PBS and the Issaquah School District. The following drinking water sources were selected and mapped for testing:

- All drinking fountains
- All sinks
- All ice makers (except refrigerators)
- All kitchen kettles
- All hose bibs
- All shower heads
- All eye washes

The sampling process followed the protocols described in the Environmental Protection Agency (EPA) document, *"3T's for Reducing Lead in Drinking Water in Schools."*

The drinking water sampling was conducted from November 2017 to January 2019. The sample collection procedures were generally as follows:

1. First draw water samples were collected after the water had been sitting in the pipes for 8-18 hours. The first draw samples consisted of the first 250 milliliters (ml) of water from the source without wasting any water.
2. The samples were assigned unique identification numbers and drawings were labeled to identify each location. Electronic drawings were provided by the Issaquah School District.
3. Chain-of-custody documentation was completed and cross-matched with drawings and sample container labels.
4. The samples were delivered to the laboratory for analysis within 24 - 48 hours of sample collection.

A total of 4,202 fixtures were tested from the 28 facilities. The water samples were delivered for analysis under chain-of-custody protocols to Onsite Environmental Inc. in Redmond, Washington, and Friedman and Bruya Inc. in Seattle, Washington (Both Washington State Certified Drinking Water Laboratories). Sample containers were provided by the laboratory. All samples were collected and tested in accordance with EPA Method 200.8 for total lead in drinking water. Copies of the laboratory drinking water certifications are provided as Attachment 1.

Laboratory Analysis Reports for each facility are provided in the Report Attachments 2-29. Each facility report includes a table that lists sample identification numbers, sample locations and laboratory results for lead content. Additionally, each facility report includes drawings that show sample locations.

On sample sites that failed to meet the EPA criteria for lead in drinking water in schools, the following summary information has been provided:

- Initial, follow-up and confirmation laboratory data
- Summary of Remedial Activities for Site

4 FINDINGS

Water samples collected from the Issaquah School District buildings were compared to the EPA drinking water standard, in which concentrations of lead greater than 20 ppb are considered contaminated. When this action

level is reached, follow-up sampling is recommended by EPA to help pinpoint the source of the lead contamination. In general, the sources of elevated lead content in drinking water at the Issaquah School District sites were thought to have been caused by the following:

- Leaded pipe solder,
- Corrosion of pipes and fittings containing lead,
- Corrosion of fixtures containing alloys of lead.

A total of 4,574 samples were collected at the 4,202 samples sites, 110 or <3% of drinking water sources were found to exceed the lead threshold concentration of >20 ppb. See Section 4.1, Summary of Remedial Activities for Sites that Failed to Meet EPA Criteria. No systemic or widespread lead contamination was revealed in the drinking water as a result of this sampling activity.

In general, widespread lead contamination in drinking water can be expected when:

- The building's plumbing is less than 5 years old and lead solder had been illegally used (i.e., after the "lead-free" requirements of the 1986/2014 Safe Drinking Water Act took effect).
- Brass fittings, faucets, and valves were installed throughout the building prior to 2014 (even though they may contain less than 8 percent lead as required under the lead-free requirements of the Safe Drinking Water Act).
- The water is corrosive.
- Sediment in the plumbing and screens contains lead.
- Lead pipes are used throughout the building.
- The service connector (i.e., the pipe that carries water from the public water system main to the
- building) is made of lead.

In general, localized contamination can be expected if:

- The water is non-corrosive.
- Lead pipes are used in some locations.
- Some brass fittings, faucets, and valves have been installed prior to 2014 (even though they may contain less than 8 percent lead).
- Numerous lead solder joints were installed in short sections of pipe before 1986 or were illegally installed after 1986 (i.e., after the lead-free requirements of the Safe Drinking Water Act took effect).
- There are areas in the building's plumbing with low flow or infrequent use.
- Sediment in the plumbing and screens at isolated locations contain lead.

4.1 Summary of Remedial Activities for Sites that Failed to Meet EPA Criteria

When the EPA "threshold" or "action" level is reached, remedial action ("Remediation Plan") and "Follow-up Testing" is recommended by EPA. The following table is a list of drinking water sources/sites tested that did not meet the EPA criteria for lead content in drinking water and the associated remedial activity performed by the District.

Table 1 – Summary of Remedial Activities

Elementary Schools			
SCHOOL	**SAMPLE**	**LOCATION**	**REMEDIAL ACTIVITY**
Apollo Elementary	AES-042-S	Office 213 Sink	Fixture Replaced
Apollo Elementary	AES-088-S	Storage Rm 226 Sink	Fixture Replaced
Apollo Elementary	AES	All External Hose Bibs	Sign posted at fixture - Non-potable water - Do Not Drink

Table 1 – Summary of Remedial Activities			
Briarwood Elementary	BES	All External Hose Bibs	Sign posted at fixture - Non-potable water - Do Not Drink
Briarwood Elementary	BES	All Shower Heads	Sign posted at fixture - Non-potable water - Do Not Drink
Cascade Ridge Elementary	CRES	All External Hose Bibs	Sign posted at fixture - Non-potable water - Do Not Drink
Cascade Ridge Elementary	CRES	All Shower Heads	Sign posted at fixture - Non-potable water - Do Not Drink
Challenger Elementary	CHES-031-K	Kitchen Kettle	Fixture Replaced
Challenger Elementary	CHES	All External Hose Bibs	Sign posted at fixture - Non-potable water - Do Not Drink
Clark Elementary	CLES	All External Shower Heads	Sign posted at fixture - Non-potable water - Do Not Drink
Clark Elementary	CLES	All External Hose Bibs	Sign posted at fixture - Non-potable water - Do Not Drink
Cougar Ridge Elementary	COES-024-S	Room 142 Classroom Left Sink	Fixture Replaced
Cougar Ridge Elementary	COES-036-S	Room 148 Classroom Sink	Fixture and soldered feed lines replaced
Cougar Ridge Elementary	COES	All External Hose Bibs	Sign posted at fixture - Non-potable water - Do Not Drink
Creekside Elementary	CSES-091-S	Music 171 Sink	Fixture Replaced
Creekside Elementary	CSES	All External Hose Bibs	Sign posted at fixture - Non-potable water - Do Not Drink
Creekside Elementary	CSES	All Shower Heads	Sign posted at fixture - Non-potable water - Do Not Drink
Discovery Elementary	DES-004-K	Kitchen Kettle	Fixture Replaced
Discovery Elementary	DES-006-HB	Kitchen - Faucet to Right of Kettle	Fixture Replaced
Discovery Elementary	DES-009-S	Room 13	Fixture Replaced
Discovery Elementary	DES-012-S	Room 14	Fixture Replaced
Discovery Elementary	DES-020-S	Activity Center Across Rooms 17&18	Fixture Replaced
Discovery Elementary	DES-031-S	Rooms 18-24 Wing Activity Center Sink Left	Fixture Replaced
Discovery Elementary	DES-032-S	Rooms 18-24 Wing Activity Center Sink Right	Fixture Replaced
Discovery Elementary	DES-033-S	Music Room Sink	Fixture Replaced
Discovery Elementary	DES-036-S	Media Center/Library Office	Fixture Replaced
Discovery Elementary	DES-041-S	Staff Workroom	Fixture Replaced
Discovery Elementary	DES-043-S	Staff Workroom Men's Bathroom	Fixture Replaced
Discovery Elementary	DES-047-S	Room 1 Bathroom Hallway Sink	Fixture Replaced
Discovery Elementary	DES-053-S	Room 2 - Office	Fixture Replaced
Discovery Elementary	DES-054-S	Room 3	Fixture Replaced
Discovery Elementary	DES-062-S	Room 6	Fixture Replaced
Discovery Elementary	DES-069-S	Room 8 - Left Sink	Fixture Replaced
Discovery Elementary	DES-071-S	Room 8 - Right Sink	Fixture Replaced
Discovery Elementary	DES-074-S	Ell Room - Left Sink	Fixture Replaced
Discovery Elementary	DES-075-S	Ell Room - Middle Sink	Fixture Replaced
Discovery Elementary	DES-076-S	Ell Room - Right Sink	Fixture Replaced
Discovery Elementary	DES-084-S	Room 11	Fixture Replaced
Discovery Elementary	DES	All External Hose Bibs	Sign posted at fixture - Non-potable water - Do Not Drink
Endeavor Elementary	EES-004-K	Kitchen Kettle	Fixture Replaced
Endeavor Elementary	EES-009-S	Room 306 Work Room Sink	Fixture Replaced
Endeavor Elementary	EES-018-S	Room 603 Activity Center Left Room Sink	Fixture Replaced
Endeavor Elementary	EES-034-S	Room 506 Classroom Sink Fixture - Sink	Fixture Replaced
Endeavor Elementary	EES-054-S	Room 511 Book Room Sink	Fixture Replaced

Table 1 – Summary of Remedial Activities			
Endeavor Elementary	EES-075-S	Room 204 Activity Center Left Fixture - Sink	Fixture Replaced
Endeavor Elementary	EES-093-S	Room 209 Library Office	Fixture Replaced
Endeavor Elementary	EES	All External Hose Bibs	Sign posted at fixture - Non-potable water - Do Not Drink
Endeavor Elementary	EES	All Shower Heads	Sign posted at fixture - Non-potable water - Do Not Drink
Grand Ridge Elementary	GRES	All External Hose Bibs	Sign posted at fixture - Non-potable water - Do Not Drink
Grand Ridge Elementary	GRES	All Shower Heads	Sign posted at fixture - Non-potable water - Do Not Drink
Issaquah Valley Elementary	IVES-059-S	Music Room Office Sink	Fixture and soldered feed lines replaced
Issaquah Valley Elementary	IVES-121-DF	Room 202 Drinking Fountain	Fixture Replaced
Issaquah Valley Elementary	IVES-132-S	Computer Lab Office Sink	Removed from service
Issaquah Valley Elementary	IVES	All External Hose Bibs	Sign posted at fixture - Non-potable water - Do Not Drink
Maple Hills Elementary	MHES-003-K	Kitchen Kettle	Fixture Replaced
Maple Hills Elementary	MHES-005-HB	Kitchen, Left HB	Removed from service
Maple Hills Elementary	MHES-022-S	400 Wing Shared Area Sink Left	Fixture Replaced
Maple Hills Elementary	MHES-026-S	Room 407 Sink	Fixture Replaced
Maple Hills Elementary	MHES-037-S	300 Wing Shared Area Sink Right	Fixture and soldered feed lines replaced
Maple Hills Elementary	MHES-078-S	Room 601 Upper Sink	Fixture Replaced
Maple Hills Elementary	MHES-084-S	Music Room Office 609 Sink	Fixture and soldered feed lines replaced
Maple Hills Elementary	MHES	All External Hose Bibs	Sign posted at fixture - Non-potable water - Do Not Drink
Maple Hills Elementary	MHES	All Shower Heads	Sign posted at fixture - Non-potable water - Do Not Drink
Newcastle Elementary	NES-076-S	2nd Floor 240 Hallway - Room 247 Custodian - Sink	Sign posted at fixture - Non-potable water - Do Not Drink
Newcastle Elementary	NES	All External Hose Bibs	Sign posted at fixture - Non-potable water - Do Not Drink
Newcastle Elementary	NES	All Shower Heads	Sign posted at fixture - Non-potable water - Do Not Drink
Sunny Hills Elementary	SHES-099-S	First Floor Custodial Sink	Sign posted at fixture - Non-potable water - Do Not Drink
Sunny Hills Elementary	SHES	All External Hose Bibs	Sign posted at fixture - Non-potable water - Do Not Drink
Sunny Hills Elementary	SHES	All Shower Heads	Sign posted at fixture - Non-potable water - Do Not Drink
Sunset Elementary	SES-059-S	"C" Wing Janitor Room Sink	Sign posted at fixture - Non-potable water - Do Not Drink
Sunset Elementary	SES-086-S	"A" Wing Storage Room Sink	Sign posted at fixture - Non-potable water - Do Not Drink
Sunset Elementary	SES	All External Hose Bibs	Sign posted at fixture - Non-potable water - Do Not Drink
Middle Schools			
SCHOOL	**SAMPLE**	**LOCATION**	**REMEDIAL ACTIVITY**
Beaver Lake Middle	BLMS-014-S	Room M-2 Sink	Fixture and soldered feed lines replaced
Beaver Lake Middle	BLMS-015-S	Music Room Office Sink	Fixture Replaced
Beaver Lake Middle	BLMS-019-S	Front Office Work Room Sink	Fixture Replaced
Beaver Lake Middle	BLMS-053-S	Room B-6 Classroom Sink	Fixture Replaced
Beaver Lake Middle	BLMS-056-S	Room B-7 Classroom Sink	Fixture Replaced

Table 1 – Summary of Remedial Activities			
Beaver Lake Middle	BLMS-061-S	Room B-5 Classroom Sink	Fixture Replaced
Beaver Lake Middle	BLMS-063-S	Room B-3 Classroom Sink	Fixture Replaced
Beaver Lake Middle	BLMS-065-S	Room B-2 Classroom Sink	Fixture Replaced
Beaver Lake Middle	BLMS-069-S	Room B-1 Classroom Left Sink	Fixture Replaced
Beaver Lake Middle	BLMS-071-S	Room B-1 Classroom Office Sink	Fixture and soldered feed lines replaced
Beaver Lake Middle	BLMS-083-S	Room A-3 Classroom North Wall Middle Sink	Fixture Replaced
Beaver Lake Middle	BLMS-084-S	Room A-3 Classroom North Wall Right Sink	Sign posted at fixture - Non-potable water - Do Not Drink
Beaver Lake Middle	BLMS-085-S	Room A-3 Office Sink	Fixture Replaced
Beaver Lake Middle	BLMS-104-S	Room D-10 Classroom Sink	Fixture Replaced
Beaver Lake Middle	BLMS-125-S	Room D-6 Classroom Sink	Fixture Replaced
Beaver Lake Middle	BLMS-127-S	Room D-5 Classroom Sink	Fixture Replaced
Beaver Lake Middle	BLMS-129-S	Room D-4 Classroom Sink	Fixture Replaced
Beaver Lake Middle	BLMS-131-S	Room D-3 Classroom Sink	Fixture Replaced
Beaver Lake Middle	BLMS-135-S	Room D-2 Classroom Sink	Fixture Replaced
Beaver Lake Middle	BLMS-145-S	Room C-12 Classroom Sink	Fixture Replaced
Beaver Lake Middle	BLMS-147-S	Room C-11 Classroom Sink	Fixture Replaced
Beaver Lake Middle	BLMS-165-S	Room C-10 Classroom Sink	Fixture Replaced
Beaver Lake Middle	BLMS-167-S	Room C-8 Classroom Sink	Fixture Replaced
Beaver Lake Middle	BLMS-169-S	Room C-6 Classroom Sink	Fixture Replaced
Beaver Lake Middle	BLMS-171-S	Room C-5 Classroom Sink	Fixture Replaced
Beaver Lake Middle	BLMS-175-S	Room C-3 Classroom Sink	Fixture Replaced
Beaver Lake Middle	BLMS-179-S	Room C-2 Classroom Sink	Fixture Replaced
Beaver Lake Middle	BLMS	All Science Classroom Sinks	Sign posted at fixture - Non-potable water - Do Not Drink
Beaver Lake Middle	BLMS	All Science Eyewash Stations	Sign posted at fixture - Non-potable water - Do Not Drink
Beaver Lake Middle	BLMS	All Showerheads	Sign posted at fixture - Non-potable water - Do Not Drink
Beaver Lake Middle	BLMS	All External Hose Bibs	Sign posted at fixture - Non-potable water - Do Not Drink
Issaquah Middle	IMS	All Showerheads	Sign posted at fixture - Non-potable water - Do Not Drink
Issaquah Middle	IMS	All External Hose Bibs	Sign posted at fixture - Non-potable water - Do Not Drink
Issaquah Middle	IMS	All Science Eyewash Stations	Sign posted at fixture - Non-potable water - Do Not Drink
Maywood Middle	MMS-134-S	Classroom 103 Sink	Fixture and soldered feed lines replaced
Maywood Middle	MMS-154-S	Library Office Sink	Fixture Replaced
Maywood Middle	MMS	All Showerheads	Sign posted at fixture - Non-potable water - Do Not Drink
Maywood Middle	MMS	All External Hose Bibs	Sign posted at fixture - Non-potable water - Do Not Drink
Maywood Middle	MMS	All Science Eyewash Stations	Sign posted at fixture - Non-potable water - Do Not Drink
Pacific Cascade Middle	PCMS-002-S	Kitchen North Wall Right Sink	Fixture Replaced
Pacific Cascade Middle	PCMS	All Showerheads	Sign posted at fixture - Non-potable water - Do Not Drink
Pacific Cascade Middle	PCMS	All External Hose Bibs	Sign posted at fixture - Non-potable water - Do Not Drink
Pacific Cascade Middle	PCMS	All Science Eyewash Stations	Sign posted at fixture - Non-potable water - Do Not Drink

Table 1 – Summary of Remedial Activities			
Pine Lake Middle	PLMS-004-S	Room 435 Kitchen, South Dishwash Bay - Left Sink	Sign posted at fixture - Non-potable water - Do Not Drink / just for rinsing dishes prior to wash
Pine Lake Middle	PLMS-005-S	Room 435 Kitchen, South Dishwash Bay - Right Sink	Sign posted at fixture - Non-potable water - Do Not Drink / just for rinsing dishes prior to wash
Pine Lake Middle	PLMS-006-S	Room 435 Kitchen, South Wall Sink	Removed from service
Pine Lake Middle	PLMS-078-S	Room 207 Classroom Sink	Removed from service
Pine Lake Middle	PLMS-106-S	Room 215 - Prep Room Sink	Sign posted at fixture - Non-potable water - Do Not Drink
Pine Lake Middle	PLMS-110-S	Room 210 Culinary - West Wall - West Sink	Fixture Replaced
Pine Lake Middle	PLMS-111-S	Room 210 Culinary - West Wall - Northwest Sink	Removed from service
Pine Lake Middle	PLMS-112-S	Room 210 Culinary - North Wall - Northwest Sink	Fixture Replaced
Pine Lake Middle	PLMS-113-S	Room 210 Culinary - North Wall - Northeast Sink	Removed from service
Pine Lake Middle	PLMS-116-S	Room 202 Classroom Sink	Removed from service
Pine Lake Middle	PLMS-162-S	Room 204 Classroom Sink	Removed from service
Pine Lake Middle	PLMS-170-S	Room 235 Classroom Sink	Removed from service
Pine Lake Middle	PLMS-176-S	Room 236 Classroom Sink	Removed from service
Pine Lake Middle	PLMS-178-S	Room 228 Classroom Sink	Removed from service
Pine Lake Middle	PLMS-180-S	Room 241 Classroom Sink	Removed from service
Pine Lake Middle	PLMS-186-S	Room 224 Classroom Sink	Removed from service
Pine Lake Middle	PLMS-206-S	Room 208 Classroom Drinking Fountain	Removed from service
Pine Lake Middle	PLMS	All Science Classroom Sinks	Sign posted at fixture - Non-potable water - Do Not Drink
Pine Lake Middle	PLMS	All Science Eyewash Stations	Sign posted at fixture - Non-potable water - Do Not Drink
Pine Lake Middle	PLMS	All Showerheads	Sign posted at fixture - Non-potable water - Do Not Drink
Pine Lake Middle	PLMS	All External Hose Bibs	Sign posted at fixture - Non-potable water - Do Not Drink
High Schools			
SCHOOL	**SAMPLE**	**LOCATION**	**REMEDIAL ACTIVITY**
Gibson Ek High	GEHS	All External Hose Bibs	Sign posted at fixture - Non-potable water - Do Not Drink
Gibson Ek High	GEHS	All Eyewash Stations	Sign posted at fixture - Non-potable water - Do Not Drink
Issaquah High	IHS-139-S	Room 1202 Southwest Corner Left Sink	Removed from service
Issaquah High	IHS-186-S	Floor 1, Sect C, Room 1419 Shop Left Sink	Fixture Replaced
Issaquah High	IHS-375-S	Room 2218	Fixture Replaced
Issaquah High	IHS-382-S	Room 2309	Fixture Replaced
Issaquah High	IHS	All Science Classroom Sinks	Sign posted at fixture - Non-potable water - Do Not Drink
Issaquah High	IHS	All Science Eyewash Stations	Sign posted at fixture - Non-potable water - Do Not Drink
Issaquah High	IHS	All Showerheads	Sign posted at fixture - Non-potable water - Do Not Drink
Issaquah High	IHS	All External Hose Bibs	Sign posted at fixture - Non-potable water - Do Not Drink
Liberty High	LHS-029-I	Room 4205, Refrigerator Ice Machine	Removed from service

Table 1 – Summary of Remedial Activities			
Liberty High	LHS-039-S	Room 4207, Teachers' Desk (Science) Sink	Sign posted at fixture - Non-potable water - Do Not Drink
Liberty High	LHS-132-S	Room 4209, Teachers' Desk (Science) Sink	Sign posted at fixture - Non-potable water - Do Not Drink
Liberty High	LHS-149-K	Kitchen Kettle	Fixture and soldered feed lines replaced
Liberty High	LHS-232-S	Lower Floor Room 2128 Laundry Sink	Sign posted at fixture - Non-potable water - Do Not Drink
Liberty High	LHS-321-S	Stadium - Women's Restroom Right Sink	Fixture Replaced
Liberty High	LHS-332-S	Stadium Concessions Left Sink	Fixture Replaced
Liberty High	LHS	All Science Classroom Sinks	Sign posted at fixture - Non-potable water - Do Not Drink
Liberty High	LHS	All Science Eyewash Stations	Sign posted at fixture - Non-potable water - Do Not Drink
Liberty High	LHS	All Showerheads	Sign posted at fixture - Non-potable water - Do Not Drink
Liberty High	LHS	All External Hose Bibs	Sign posted at fixture - Non-potable water - Do Not Drink
Skyline High	SHS-011-S	Servery - Outside of Kitchen - Hand Wash Sink	Fixture Replaced
Skyline High	SHS-104-S	Room 1302 Sink	Fixture Replaced
Skyline High	SHS-105-S	Room 1402 Sink	Fixture Replaced
Skyline High	SHS-106-S	Room 1404 Sink	Fixture Replaced
Skyline High	SHS-199-S	Room 2404 Classroom Sink	Fixture Replaced
Skyline High	SHS-208-S	Room 2414 Classroom Sink	Fixture Replaced
Skyline High	SHS-212-S	Room 2218 Classroom Sink	Fixture Replaced
Skyline High	SHS-278-S	Practice Rooms Sink	Fixture Replaced
Skyline High	SHS-368-S	Stadium Concessions Left Hand Washing Sink	Fixture Replaced
Skyline High	SHS	All Science Classroom Sinks	Sign posted at fixture - Non-potable water - Do Not Drink
Skyline High	SHS	All Science Eyewash Stations	Sign posted at fixture - Non-potable water - Do Not Drink
Skyline High	SHS	All Showerheads	Sign posted at fixture - Non-potable water - Do Not Drink
Skyline High	SHS	All External Hose Bibs	Sign posted at fixture - Non-potable water - Do Not Drink
District Facility Buildings			
SCHOOL	**SAMPLE**	**LOCATION**	**REMEDIAL ACTIVITY**
Administration Building	AES-011-S	Se Hallway, Janitor's Office - Sink	Sign posted at fixture - Non-potable water - Do Not Drink
Administration Building	AES-019-S	Janitorial Closet 204	Sign posted at fixture - Non-potable water - Do Not Drink
Administration Building	AES	All External Hose Bibs	Sign posted at fixture - Non-potable water - Do Not Drink
May Valley Service Center	MVSC-014-S	Electrical Shop Sink	Fixture Replaced
May Valley Service Center	MVSC-018-S	Metal Shop Sink	Sign posted at fixture - Non-potable water - Do Not Drink
May Valley Service Center	MVSC	All External Hose Bibs	Sign posted at fixture - Non-potable water - Do Not Drink
May Valley Service Center	MVSC	All Eyewash Stations	Sign posted at fixture - Non-potable water - Do Not Drink
Transportation - Main	TM	All External Hose Bibs	Sign posted at fixture - Non-potable water - Do Not Drink
Transportation - Main	TM	All Shower Heads	Sign posted at fixture - Non-potable water - Do Not Drink

Table 1 – Summary of Remedial Activities			
Transportation - Satellite	ST	All External Hose Bibs	Sign posted at fixture - Non-potable water - Do Not Drink
Transportation - Satellite	ST	All eyewash stations	Sign posted at fixture - Non-potable water - Do Not Drink

5 CONCLUSIONS AND RECOMMENDATIONS

Laboratory analysis revealed lead concentrations above the EPA threshold of >20 ppb, at 345 water sources throughout the District. EPA recommended remedial actions were taken at all sites identified and lead concentrations were either lowered below EPA recommended guidelines or actions were taken to make sure fixtures were not used as drinking water sources.

It is prudent to provide short-term and long-term remedies to help prevent possible future exposures to lead. PBS provided Issaquah School District with guidance on appropriate options of short-term remedies to be enacted immediately upon any lead detections until long-term remedies were established and performed. Short-term remedy included switching off the fixture within 24 hours of being notified by PBS with results, until a long-term remedy was determined.

It is our understanding that the long-term remedies established and performed by the Issaquah School District on sampling sites that contained elevated concentrations of lead included the following:

- Performed outlet/fixture replacement;
- Permanently removed the fixture;
- Permanently removed the supply piping and turned off the water source;
- Performed piping replacement;
- "Non-potable water Do Not Drink" signage posted to identify non-drinking water sources.

Actions taken by the Issaquah School District were all recommended remedial actions described in the Environmental Protection Agency (EPA) document, *"3T's for Reducing Lead in Drinking Water in Schools."*

6 RESOURCES - LEAD IN DRINKING WATER

American Water Works Association (AWWA)

Central Puget Sound Water Suppliers' Forum - A forum to discuss and represent a shared input into the State and regional water supply strategies and programs

Department of Ecology

EPA Office of Ground Water and Drinking Water (OGWDW) - EPA Spanish Web Site

EPA Region 10

EPA Drinking Water and Health Advisories

EPA Drinking Water Academy Training courses

Local Health Departments- Washington State

National Sanitation Foundation (NSF) Product Certification Listings

USC Foundation for Cross Connection Control and Hydraulic Research -Approved backflow assemblies and more

U.S. Geological Survey (USGS)

Water Wiser: Conservation/Water-Related Internet Resources

Water Supply Advisory Committee (WSAC)

WA State Public Works Board Financial assistance

Washington Environmental Training Center (WETRC)

Laws and Regulations

Attorney General Opinions

Code of Federal Regulations

WAC 246-290 Public Water Supplies Search for Title 246 (Dept. of Health), Chapter 290 (Public Water Supplies) WA Legislation site

2nd DRAFT of proposed changes to Chapter 246-366 Washington Administrative Code (WAC)

Washington State Register Publishes proposed changes, announcements of public hearings, and final rules.

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TAB 1

Laboratory Certifications

TAB 2

Apollo Elementary School

Sample Location Diagrams
Results of Water Quality Testing
Laboratory Analytical Data

TAB 3

Briarwood Elementary School

Sample Location Diagrams
Results of Water Quality Testing
Laboratory Analytical Data

TAB 4

Cascade Ridge Elementary School

Sample Location Diagrams
Results of Water Quality Testing
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TAB 5

Challenger Elementary School

Sample Location Diagrams
Results of Water Quality Testing
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TAB 6

Clark Elementary School

Sample Location Diagrams
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TAB 7

Cougar Ridge Elementary School

Sample Location Diagrams
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Laboratory Analytical Data

TAB 8

Creekside Elementary School

Sample Location Diagrams
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TAB 9

Discovery Elementary School

Sample Location Diagrams
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Endeavor Elementary School

Sample Location Diagrams
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Grand Ridge Elementary School

Sample Location Diagrams
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TAB 12

Issaquah Valley Elementary School

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Maple Hills Elementary School

Sample Location Diagrams
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Newcastle Elementary School

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TAB 15

Sunny Hills Elementary School

Sample Location Diagrams
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TAB 16

Sunset Elementary School

Sample Location Diagrams
Results of Water Quality Testing
Laboratory Analytical Data

TAB 17

Beaver Lake Middle School

Sample Location Diagrams
Results of Water Quality Testing
Laboratory Analytical Data

TAB 18

Issaquah Middle School

Sample Location Diagrams
Results of Water Quality Testing
Laboratory Analytical Data

TAB 19

Maywood Middle School

Sample Location Diagrams
Results of Water Quality Testing
Laboratory Analytical Data

TAB 20

Pacific Cascade Middle School

Sample Location Diagrams
Results of Water Quality Testing
Laboratory Analytical Data

TAB 21

Pine Lake Middle School

Sample Location Diagrams
Results of Water Quality Testing
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TAB 22

Gibson Ek High School

Sample Location Diagrams
Results of Water Quality Testing
Laboratory Analytical Data

TAB 23

Issaquah High School and Stadium

Sample Location Diagrams
Results of Water Quality Testing
Laboratory Analytical Data

TAB 24

Liberty High School and Stadium

Sample Location Diagrams
Results of Water Quality Testing
Laboratory Analytical Data

TAB 25

Skyline High School and Stadium

Sample Location Diagrams
Results of Water Quality Testing
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TAB 26

Administrative Building

Sample Location Diagrams
Results of Water Quality Testing
Laboratory Analytical Data

TAB 27

May Valley Service Center

Sample Location Diagrams
Results of Water Quality Testing
Laboratory Analytical Data

TAB 28

Transportation - Main

Sample Location Diagrams
Results of Water Quality Testing
Laboratory Analytical Data

TAB 29

Transportation - Satellite

Sample Location Diagrams
Results of Water Quality Testing
Laboratory Analytical Data