LA18-17

# STATE OF NEVADA

# Performance Audit

## State Department of Conservation and Natural Resources
## Division of Environmental Protection

## Bureau of Safe Drinking Water

2018

Legislative Auditor
Carson City, Nevada

# Audit Highlights

Highlights of performance audit report on the Bureau of Safe Drinking Water issued on May 2, 2018. Legislative Auditor report # LA18-17.

## Background

The mission of the Bureau of Safe Drinking Water (Bureau) is to protect the health of the citizens and visitors of Nevada by ensuring that public water systems provide safe and reliable drinking water. The Bureau is a part of the Division of Environmental Protection, tasked with maintaining Nevada's primary implementation and enforcement authority (primacy) for the Federal Safe Drinking Water Act (SDWA) granted in 1978.

The SDWA aims to protect public water supplies from harmful contaminants. The United States Environmental Protection Agency sets national, enforceable standards to protect against particular contaminants shown to cause health problems. Public water systems are responsible for ensuring that contaminants in drinking water do not exceed the standards, by treating their water, and having it frequently tested by water quality testing laboratories.

The Bureau licenses and regulates public water systems and water quality testing laboratories. Through facility inspections, engineering plan reviews, technical assistance, ongoing monitoring efforts, and enforcement activities, the Bureau assists public water systems in safeguarding the safety of drinking water.

The Bureau regulated 598 public water systems and 97 water quality testing laboratories in fiscal year 2017. The majority (82%) of Nevadans are served by five public water systems. The Bureau had expenditures of about $3.4 million in fiscal year 2017. Primary funding sources were federal grants and fees.

## Purpose of Audit

The purpose of this audit was to determine whether the Bureau is effectively regulating public water systems and water quality testing laboratories to help ensure safe and reliable drinking water. Our audit focused on Bureau activities in fiscal years 2016 and 2017.

## Audit Recommendations

This audit report contains three recommendations to strengthen the Bureau's drinking water efforts.

The Bureau accepted the three recommendations.

## Recommendation Status

The Bureau's 60-day plan for corrective action is due on July 27, 2018. In addition, the six-month report on the status of audit recommendations is due on January 27, 2019.

# Bureau of Safe Drinking Water

## Division of Environmental Protection

## Summary

The Bureau of Safe Drinking Water (Bureau) ensures that Nevadans are provided with safe and reliable drinking water. The Bureau effectively supervises public water systems and water quality testing laboratories through regular monitoring of water quality samples, facility inspections, and permitting. However, the Bureau did not always inspect laboratories timely. Additionally, for some small water facilities, the Bureau did not follow up on inspection deficiencies. Implementing these enhancements would strengthen the Bureau's drinking water efforts.

Although the Bureau has provided information to school districts regarding a new voluntary project to test for lead in school drinking water, most school districts have not taken advantage of this project funded by a federal grant. After the project's first year, many schools have not yet been tested for lead, though the Division has received commitments for testing from most districts.

## Key Findings

Reviews of water quality testing allow the Bureau to identify and address problems with drinking water standards. Water system operators take samples for numerous contaminants frequently, in some cases hundreds every month. Samples are tested by certified water quality testing laboratories and reported directly to the Bureau. Based on our review of testing data and problem follow up, the Bureau monitored water quality results and ensured any problems were resolved timely. (page 4)

The Bureau's water facility inspections provide assurance that public water systems maintain substantial compliance in many key areas designed to ensure water quality and reliability. For 30 public water system inspections we reviewed, inspections were thorough and any issues noted were usually resolved timely. However, in a few instances, some concerns noted during inspections of small water systems were not followed up on until our inquiries. Lastly, we found inspections were timely for all active public water systems. (page 6)

The Bureau has an effective process for reviewing system plans for water operations, ensuring they are prepared and designed appropriately, in accordance with federal and state laws and regulations. Water systems must submit plans for Bureau review and approval. Additions and modifications for facility operations must also be submitted for Bureau review. In our review of 10 addition and modification requests, we found the Bureau conducted thorough assessments. (page 7)

The Bureau's proficiency testing program allows the Bureau to assess and ensure the accuracy of water quality testing conducted by certified laboratories. Water quality testing laboratories are certified in various methods, which are specific types of tests used to assess contaminants. Laboratories must demonstrate to the Bureau that they are proficient in each certified method by accurately testing a water sample provided by an independent third party every 6 months. The proficiency results for 10 laboratories we reviewed were complete and acceptable for each certified method. (page 9)

The Bureau's onsite laboratory inspections provide assurance that water quality testing laboratories have sufficient expertise and procedures to accurately assess water samples. In our review of 28 laboratories, inspections were comprehensive and any issues noted were resolved quickly. However, when we reviewed inspections for all Nevada laboratories, we found that inspections were not always timely. Nevertheless, all inspections were eventually completed, and most untimely inspections were only a few months late. (page 10)

The Bureau has an extensive process for certifying laboratories to perform water quality tests. Laboratory operations are reviewed to ensure compliance with federal and state laws and regulations, as well as several industry best practices adopted by reference in state regulation. These standards, as assessed by the Bureau promote the consistency and accuracy of water quality testing. (page 11)

Although the Bureau has provided information to school districts regarding a new voluntary project to test for lead in school drinking water, most school districts have not taken advantage of this project funded by a 2-year federal grant. After the project's first year, many schools have not yet been tested for lead, though the Division has received commitments for testing from most districts. For those tested, a very small portion showed unacceptable lead levels at one or more water fixtures. These incidents were resolved by replacing problem water fixtures. The voluntary project pays for schools to test for lead and receive replacement equipment through a federal grant. The Bureau coordinates with public water systems to provide testing personnel to conduct testing, and provides informational and technical assistance. (page 13)

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**Audit Division**
**Legislative Counsel Bureau**

STATE OF NEVADA
LEGISLATIVE COUNSEL BUREAU
LEGISLATIVE BUILDING
401 S. CARSON STREET
CARSON CITY, NEVADA 89701-4747

RICK COMBS, *Director*
(775) 684-6800

LEGISLATIVE COMMISSION (775) 684-6800
JASON FRIERSON, *Assemblyman, Chairman*
Rick Combs, *Director, Secretary*

INTERIM FINANCE COMMITTEE (775) 684-6821
JOYCE WOODHOUSE, *Senator, Chair*
Mark Krmpotic, *Fiscal Analyst*
Cindy Jones, *Fiscal Analyst*

BRENDA J. ERDOES, *Legislative Counsel* (775) 684-6830
ROCKY COOPER, *Legislative Auditor* (775) 684-6815
MICHAEL J. STEWART, *Research Director* (775) 684-6825

Legislative Commission
Legislative Building
Carson City, Nevada

This report contains the findings, conclusions, and recommendations from our performance audit of the Bureau of Safe Drinking Water of the Division of Environmental Protection, State Department of Conservation and Natural Resources. This audit was conducted pursuant to the ongoing program of the Legislative Auditor as authorized by the Legislative Commission. The purpose of legislative audits is to improve state government by providing the Legislature, state officials, and Nevada citizens with independent and reliable information about the operations of state agencies, programs, activities, and functions.

This report includes three recommendations to enhance the oversight of drinking water. We are available to discuss these recommendations or any other items in the report with any legislative committees, individual legislators, or other state officials.

Respectfully submitted,

Rocky Cooper, CPA
Legislative Auditor

March 21, 2018
Carson City, Nevada

# Bureau of Safe Drinking Water
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# Introduction

## Background

The mission of the Bureau of Safe Drinking Water (Bureau) is to protect the health of the citizens and visitors of Nevada by ensuring that public water systems provide safe and reliable drinking water. The Bureau, as part of the Division of Environmental Protection of the State Department of Conservation and Natural Resources, is tasked with maintaining Nevada's primary implementation and enforcement authority (primacy) for the Safe Drinking Water Act granted in 1978.

The federal Safe Drinking Water Act aims to protect public water supplies from harmful contaminants. The United States Environmental Protection Agency (U.S. EPA) sets national, enforceable standards to protect against particular contaminants shown to cause health problems. These standards set maximum exposure levels to minimize public health risk while considering available technology and cost.

Public water systems are responsible for ensuring that contaminants in drinking water do not exceed the standards. Systems treat their water, and must test for contaminants frequently. This testing is required to be conducted by certified water quality testing laboratories and reported to the Bureau.

The Bureau licenses and regulates public water systems, water quality testing laboratories, and water system operators. Through facility inspections, engineering plan reviews, technical assistance, ongoing monitoring efforts, and enforcement activities, the Bureau assists public water systems in safeguarding the safety of drinking water.

The Bureau regulated 598 public water systems and 97 water quality testing laboratories in fiscal year 2017. The majority (82%) of Nevadans are served by five public water systems. Exhibit 1 lists the five largest public water systems in Nevada, and the number of persons served.

**Nevada's Largest Public Water Systems** **Exhibit 1**

| System Name | Persons Served |
|---|---|
| Las Vegas Valley Water District | 1,347,550 |
| Truckee Meadows Water Authority | 311,932 |
| North Las Vegas Utilities | 306,570 |
| City of Henderson | 275,000 |
| Carson City Public Works | 56,000 |
| **Total** | **2,297,052** |

Source: Data from the Bureau's Safe Drinking Water Information System (SDWIS) as of July 21, 2017.

Washoe County and Southern Nevada Health Districts are contracted to provide services for drinking water supervision within their jurisdictions. Additionally, U.S. EPA provides oversight of the Bureau through communication, reporting, and rulemaking.

The Bureau had expenditures of about $3.4 million in fiscal year 2017. Primary funding sources were federal grants and fees. In November 2017, the Bureau had 29 employees including engineers, environmental scientists, administrative assistants, and management.

## Scope and Objective

The scope of our audit included a review of Bureau activities in fiscal years 2016 and 2017. Follow-up work related to school drinking water testing was performed through January 2018. Our audit objective was to:

- Determine whether the Bureau of Safe Drinking Water is effectively regulating public water systems and water quality testing laboratories to help ensure safe and reliable drinking water.

This audit is part of the ongoing program of the Legislative Auditor as authorized by the Legislative Commission, and was made pursuant to the provisions of NRS 218G.010 to 218G.350. The Legislative Auditor conducts audits as part of the Legislature's

oversight responsibility for public programs. The purpose of legislative audits is to improve state government by providing the Legislature, state officials, and Nevada citizens with independent and reliable information about the operations of state agencies, programs, activities, and functions.

# Public Water System Supervision Helps Ensure Safe Drinking Water

The Bureau of Safe Drinking Water (Bureau) is effectively supervising public water systems, ensuring Nevadans are provided with safe and reliable drinking water. We found the Bureau's monitoring of water quality sample results, water facility inspections, and water system permitting, provide assurance for drinking water safety and reliability. However, for some small water facilities, the Bureau did not follow up on inspection deficiencies. Improvements to deficiency follow-up would strengthen the Bureau's drinking water efforts.

## Water Sample Monitoring Ensures Problems Are Identified and Resolved

Reviews of water quality testing allow the Bureau to identify and address problems with drinking water standards. Water system operators take samples for numerous contaminants frequently, in some cases hundreds every month. Samples are tested by certified water quality testing laboratories and reported directly to the Bureau. In our review of testing data for 30 public water systems, we did not identify indications of water quality sample tampering. The Bureau monitored water quality results and ensured any problems were resolved timely.

### Water Sample Results Are Reviewed

We found that the Bureau's practices protect the integrity of water quality testing, ensuring that drinking water provided by public water systems is accurately represented to the Bureau and other stakeholders. Practices also substantially reduce the risk of tampering with water quality samples.

To maintain safe drinking water, public water systems must sample their water frequently, and these samples are assessed by certified water quality testing laboratories. Based on testing results, systems must address problems by implementing corrective action. Corrective action could include changes to

where systems get their water or techniques used to treat water to control contaminants.

The Bureau receives results from all water quality testing, and enters this information into its Safe Drinking Water Information System (SDWIS). Information in SDWIS is made available to United States Environmental Protection Agency (U.S. EPA) to identify any concerns they may have as well.

The Bureau conducts several systematic reviews of water testing data in SDWIS. Staff review results for indications of problems which may develop over time, and questionable results which could indicate mistakes or fraud. Further, the Bureau coordinates with public water systems when results exceed drinking water standards. Measures to protect public health in these instances could include notifications, boil water orders, or do not drink orders.

To identify potentially fraudulent water quality testing, we reviewed testing data for 25 randomly selected public water systems, and for the 5 largest systems in terms of the population they serve. We sought to identify whether water testing results showed questionable trends. In our testing, we considered questionable trends to exist when systems had chronic problems with drinking water standards, and these problems suddenly resolved without an obvious cause as to why this occurred. If any such trends could not be explained by a change in water sourcing or treatment, this could be an indication of tampering with water samples or testing fraud. We found such questionable trends in 6 of 30 public water systems for which we reviewed water testing results. In all six instances, systems had revised their water sourcing or treatment, which explained the sudden improvement regarding drinking water standards.

**Appropriate Action Was Taken for Water Quality Problems**

Our testing found the Bureau sufficiently addressed violations of drinking water standards through a fair and comprehensive process. The Bureau issues violations to systems for exceeding drinking water standards, and chronic problems with meeting standards were addressed through a formal enforcement process.

The Bureau and U.S. EPA use an Enforcement Targeting Tool (ETT) to coordinate on which systems are priorities for enforcement based on how many – and how severe – violations are for each system.

The formal enforcement process involves a set of meetings with water system personnel and Division officials. The process aims to develop a path to compliance, formalized in an Administrative Order.

We reviewed the Bureau's ETT for July 2016 – the tool is revised quarterly. We identified seven systems which met U.S. EPA criteria for enforcement priority. Of these systems, five were returned to compliance, one was under a formal enforcement order, and the last had been taken over by a court after the system's board resigned.

## Water Facility Inspections Are Thorough and Timely

The Bureau's water facility inspections provide assurance that public water systems maintain substantial compliance in many key areas designed to ensure water quality and reliability. For 30 public water system inspections we reviewed, inspections were thorough and any issues noted were usually resolved timely. However, in a few instances, some concerns noted during inspections of small water systems were not followed up on until our inquiries. Lastly, we found inspections were timely for all active public water systems.

As part of regulating public water systems, the Bureau conducts regular inspections. These inspections involve a physical assessment of water facilities and a review of system records. After inspections, the Bureau summarizes minor and significant deficiencies in inspection reports sent to the inspected system. Significant deficiencies are ones that pose a potential public health risk. Systems are required to form a plan to correct these deficiencies within 45 days.

We reviewed inspection reports for 25 randomly selected public water systems, and for the 5 largest systems in terms of the population they serve. We found that inspections were thoroughly conducted, and were supported by appropriate documentation.

Further, we tested how timely public water systems were inspected. Inspections are required every 3 or 5 years, depending on where systems source their water from, and the size of the population the system serves. For all active systems, we found that inspections were generally timely – 87% (513) of systems were inspected within the required number of years. The remaining 13% (78) system inspections were not significantly late, at an average of 90 days late. No inspections were more than a year late, and all systems received at least one inspection.

**Follow-Up on Some Inspections Needs Improvement**

In our review of 30 public water system inspections, we found 13 had deficiencies classified as significant. For these, corrective action plans were received for all but two, and one plan was received almost 2 years late. The 3 systems with missing or late plans were for very small public water systems, serving an average of 48 persons.

The Bureau is responsible for conducting public water system inspections regularly, and ensuring systems take reasonable steps towards resolving deficiencies discovered during those inspections. Although the Bureau uses a system to track inspection deficiencies, staff did not adequately follow up on reports generated from that system. Though problems affecting smaller public water systems potentially pose risk to a fewer number of people, the Bureau should still take steps to ensure all problems are corrected for all public water systems.

## Permitting of System Plans Is Comprehensive

The Bureau has an effective process for reviewing system plans for water operations, ensuring they are prepared and designed appropriately, in accordance with federal and state laws and regulations. Water systems must submit plans for Bureau review and approval. Additions and modifications for facility operations must also be submitted for Bureau review. In our review of 10 such requests, we found the Bureau conducted thorough assessments.

Before public water systems may begin providing drinking water, they must be permitted by the Bureau. The permitting process includes reviews of water quality, water facilities, system plans,

and system personnel qualifications, as well as the collection of fees.

Specifically, the Bureau's review of water quality involves evidence that system water is in compliance with drinking water standards, through initial water quality testing. Water facility reviews by the Bureau involve reviewing plans for proposed changes to public water system infrastructure.

We tested 10 randomly selected water facility reviews for existing public water systems. These reviews included projects to improve water distribution, finished water storage, and wells. We found that water facility reviews were complete and comprehensive. Further, the Bureau collected the correct fees for these reviews.

The Bureau is responsible for ensuring only qualified public water systems are able to serve Nevadans with drinking water. The Bureau's thorough review of prospective systems, and of changes to infrastructure for existing systems, provides additional assurance regarding the safety and reliability of drinking water.

## Recommendation

1. Develop additional controls to ensure deficiencies noted on water system inspections are resolved.

# Oversight of Water Quality Testing Laboratories Is Effective

The Bureau of Safe Drinking Water is effectively supervising water quality testing laboratories, ensuring Nevadans are provided with safe and reliable drinking water. We found the Bureau's monitoring of laboratory proficiency, as well as laboratory inspections and certification, provide a reasonable degree of assurance for drinking water safety and reliability. However, the Bureau did not always inspect laboratories timely. Improvements to inspection timeliness would strengthen the Bureau's drinking water efforts.

## Monitoring of Laboratory Proficiency Assures Testing Accuracy

The Bureau's proficiency testing program allows the Bureau to assess and ensure the accuracy of water quality testing conducted by certified laboratories. Water quality testing laboratories are certified in various methods, which are specific types of tests used to assess contaminants. Laboratories must demonstrate to the Bureau that they are proficient in each certified method by accurately testing a water sample provided by an independent third party every 6 months. The proficiency results for 10 laboratories we reviewed were complete and acceptable for each certified method.

To maintain safe drinking water, public water systems must sample their water frequently, and these samples are assessed by certified water quality testing laboratories. Water quality samples can be tested by in-state or out-of-state laboratories, and both types of labs must maintain certification by the Bureau to test samples from Nevada public water systems. In fact, most laboratories are out-of-state (65), not in-state (32).

For laboratories to continue to perform water quality testing, they must perform proficiency tests for each certified method every 6 months. Water samples are provided to laboratories by an independent third party, where for testing purposes, laboratories

are purposefully not made aware of each sample's contents. Labs then run tests on those samples and report results. The third party assesses how accurate lab test results were, and these assessments are provided to labs and the Bureau. If the lab fails proficiency testing for a method, that method's certification will be suspended or revoked.

We reviewed the certified methods and proficiency testing results for 10 randomly selected water quality testing laboratories. We found complete, acceptable and timely proficiency testing results for all 300 certified methods among the labs we reviewed.

Further, we found that the Bureau has a robust program to discourage laboratory fraud. The Bureau provides fraud training to laboratory staff, reviews lab policies and documentation, physically and electronically inspects equipment used for testing for signs of alteration or misuse, and assesses electronic lab data for indicators of fraud. Laboratories are also required to perform checks for indications of sample tampering, and must have robust quality control procedures. The Bureau's practices in monitoring laboratory proficiency and the potential for fraud ensures the reliability and integrity of water quality testing.

## Laboratory Inspections Were Thorough

The Bureau's onsite laboratory inspections provide assurance that water quality testing laboratories have sufficient expertise and procedures to accurately assess water samples. In our review of 28 laboratories, inspections were comprehensive and any issues noted were resolved quickly. However, when we reviewed inspections for all Nevada laboratories, we found that inspections were not always timely. Nevertheless, all inspections were eventually completed, and most untimely inspections were only a few months late.

In-state laboratories are required by state regulation to have regular on-site inspections by the Bureau. For out-of-state laboratories, the Bureau is required to obtain current on-site inspection records conducted by the lab's state environmental regulatory agency, an independent certifying authority, or the U.S. EPA. Further, the Bureau may pursue on-site inspections for out-of-state laboratories at its discretion.

We reviewed on-site inspection records for seven randomly selected in-state labs, one large and notable in-state lab, and one in-state lab newly certified in fiscal year 2017. We found that inspections were thoroughly conducted, and supported by appropriate documentation. The Bureau also followed up on any problems requiring corrective action.

We reviewed on-site inspection records for 18 randomly selected out-of-state labs and 1 out-of-state lab newly certified in fiscal year 2017. For the Bureau to accept on-site inspections conducted by other authorities, the evaluation has to have been conducted within the 2 years prior to the lab's application for certification. We found that these inspection records showed that comprehensive and timely evaluations were conducted. Further, corrective action was sufficient to address any problems.

**Laboratory Inspections Were Not Always Timely**

We tested how timely in-state water quality testing laboratories were inspected. Inspections are required every 2 years by state regulation. For all in-state labs, we found that inspections were not always timely. Specifically, only 41% (13) of labs were inspected within the required 2 years. The remaining 59% (19) were late an average of 5 months, and 3 labs were late for over a year.

The untimely inspections were caused by personnel believing they could conduct laboratory inspections every 3 years, in accordance with federal standards. However, state regulation specifies a 2-year schedule, and further explains that stricter standards should be followed when conflicts arise. Bureau management agreed that on-site inspections of in-state laboratories should be conducted on the stricter 2-year schedule to provide greater assurance regarding the reliability of water quality tests for drinking water in Nevada.

## Certification Practices Promote High Quality Water Testing

The Bureau has an extensive process for certifying laboratories to perform water quality tests. Laboratory operations are reviewed to ensure compliance with federal and state laws and regulations, as well as several industry best practices adopted by reference in

state regulation. These standards, as assessed by the Bureau, promote the consistency and accuracy of water quality testing.

New water quality testing laboratories must apply for certification to test water quality samples from Nevada. Application materials include the methods for which the lab is seeking certification, policies and procedures, personnel qualifications, and fees. Further, state regulation adopts requirements from certain industry and federal publications. All labs must pass initial proficiency testing for each certified method in their application.

In-state applicants must undergo an on-site inspection by the Bureau. Out-of-state applicants must be certified by its state environmental regulatory agency or the U.S. EPA. Additionally, out-of-state applicants must fall under the jurisdiction of an equivalent regulatory framework to Nevada's, and that jurisdiction has to accept the results of Nevada's in-state laboratories.

Existing water quality testing laboratories must renew their certifications annually. Also, the Bureau must approve any changes to certified methods for existing labs.

The Bureau employs a systematic method to assess whether laboratories are able to provide reliable water quality testing, by employing independent validation, multiple levels of fraud review, and industry best practices. The Bureau's assessments provide a high degree of assurance regarding the reliability of certified water testing laboratories.

## Recommendation

2. Clarify policies and procedures on the frequency for conducting laboratory inspections.

# Most School Districts Have Not Taken Advantage of an Opportunity to Test Lead in School Drinking Water

Although the Bureau has provided information to school districts regarding a new voluntary project to test for lead in school drinking water, most school districts have not taken advantage of this project funded by a 2-year federal grant. After the project's first year, many schools have not yet been tested for lead, though the Division has received commitments for testing from most districts. For those tested, a very small portion showed unacceptable lead levels at one or more water fixtures. These incidents were resolved by replacing problem water fixtures. The voluntary project pays for schools to test for lead and receive replacement equipment through a federal grant. The Bureau coordinates with public water systems to provide testing personnel to conduct testing, and provides informational and technical assistance.

**Lead Is a Unique Drinking Water Contaminant**

An important regulated contaminant in drinking water is lead. Children are especially susceptible to lead exposure as they absorb lead at a higher rate than adults, and they can experience reduced mental and physical development when exposed to lead.

The source of lead in drinking water is different than most contaminants. Its most common source is corrosion, or wearing away, of plumbing equipment containing lead. Importantly, this corrosion can occur both in water distribution systems operated by public water systems, and in service lines connecting those distribution systems to individual homes, schools, and businesses (see Appendix A on page 16). While systems may treat water to control corrosion, drinking water can still break down lead-containing service lines, resulting in high levels of lead in plumbing fixtures.

Events prior to our audit have brought attention to issues lead can present in drinking water. For example, nearly 100,000 residents of Flint, Michigan were exposed to lead when the city switched its water source in April 2014, without implementing corrosion control treatment. Furthermore, in a subdivision in Mt. Charleston in southern Nevada, a few homes were exposed to lead after a road deicing agent introduced chloride into groundwater which increased water corrosivity. Corrosion control treatment was subsequently enhanced to reduce corrosivity and therefore lead exposure.

## Many Schools Have Not Been Tested for Lead in Drinking Water

The Division pursued a grant to investigate lead exposure in the most vulnerable group, children, through a U.S. EPA grant for Nevada that made federal funds available in October 2016 to address lead in elementary schools. This grant provides money for testing school water fixtures, including drinking fountains, kitchen sinks, and nurse's office sinks. Further, the grant provides money for replacing water fixtures which have high levels of lead.

The Bureau reached out to school district superintendents at a meeting in January 2017 to inform them of the voluntary lead testing project. Letters with information about the project were sent out to superintendents in March 2017. Another set of letters were sent out in September 2017 to follow up with districts that had not yet taken advantage of the testing project. Federal funding for the project expires in September 2018.

We reviewed the Bureau's records for the project in January 2018 after the end of the program's first year. We reviewed testing data for Nevada school districts and state-sponsored charter schools. Lead testing had only been conducted in 6 districts. Three districts have begun coordinating with the Bureau, and testing is expected to begin shortly, with many other districts committing to the project. Further, 48% (189) of the 391 eligible schools had undergone testing (see Appendix B on page 17).

For the 189 schools tested, water samples from 8 nurse's office and kitchen sinks showed unhealthy levels of lead. The problem water fixtures responsible for these elevated lead levels were replaced, or the fixtures were taken out of service. Additional

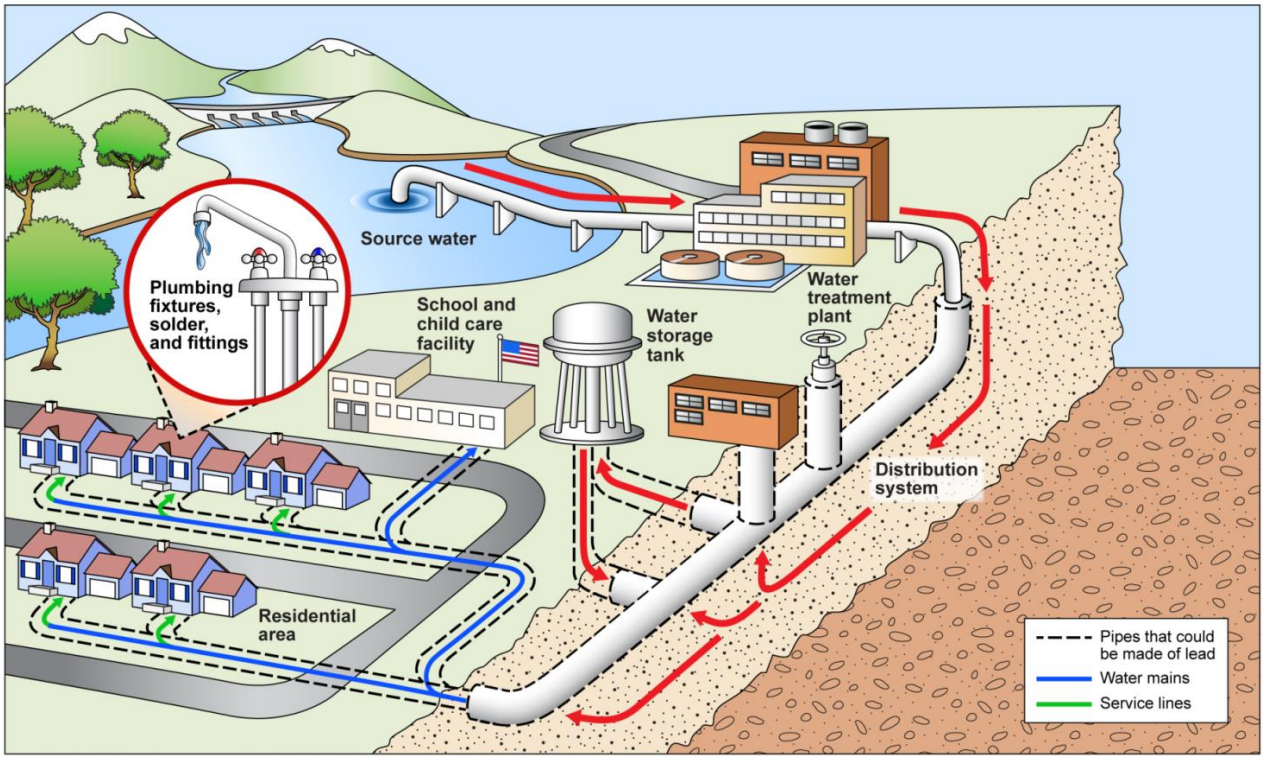
problem water fixtures are potentially present in schools yet to be tested for lead.

## Recommendation

3. Continue working with school districts and public water systems to advance lead testing efforts.

# Appendix A

## Example of How a Water System Delivers Drinking Water




Source: United States Government Accountability Office Report 17-424.

# Appendix B

## Status of School Lead Testing as of January 2018

| School District | Schools Tested | Schools Eligible |
|---|---|---|
| Carson City | 8 | 8 |
| Churchill County[1] | 0 | 4 |
| Clark County | 112 | 228 |
| Douglas County | 4 | 6 |
| Elko County[2] | 0 | 12 |
| Esmeralda County[2] | 0 | 2 |
| Eureka County[2] | 0 | 2 |
| Humboldt County | 0 | 6 |
| Lander County[2] | 0 | 2 |
| Lincoln County[2] | 0 | 4 |
| Lyon County[1] | 0 | 7 |
| Mineral County[1] | 0 | 1 |
| Nye County | 2 | 11 |
| Pershing County | 0 | 3 |
| State Sponsored Charter Schools[2] | 0 | 17 |
| Storey County | 1 | 2 |
| Washoe County | 62 | 73 |
| White Pine County[2] | 0 | 3 |
| **Totals** | **189** | **391** |

Source: Data from the Bureau's school lead testing tracking spreadsheet as of January 12, 2018.

[1] These school districts have begun coordinating with the Bureau, and testing is expected to begin shortly.

[2] These school districts stated their intention to participate in the lead testing program.

# Appendix C
## Audit Methodology

To gain an understanding of the regulatory activities at the Bureau of Safe Drinking Water, we interviewed staff and reviewed statutes, regulations, federal rules, policies, and procedures significant to the Bureau's operations. We reviewed financial information, budgets, legislative committee minutes, and other information addressing Bureau activities. Further, we reviewed significant processes and controls related to public water systems and water quality testing laboratories.

To determine whether the Bureau effectively regulated public water systems, we first evaluated whether the Bureau took appropriate action to resolve public water system violations. This included reviewing a July 2016 version of the Bureau's Enforcement Targeting Tool (ETT). Next, we selected systems prioritized for enforcement action based on United States Environmental Protection Agency's criteria of an ETT score greater than 10 that exists for over 6 months. Next, we requested details for enforcement actions taken for these priority systems, and determined whether these actions constituted appropriate action to achieve resolution.

Further, we determined whether public water system inspections were timely by obtaining a list of active public water systems with original permit dates and dates for the most recent two inspections. We found this data to be reliable, as it is from the Bureau's Safe Drinking Water Information System (SDWIS), which is the primary record in this case, and SDWIS data is reviewed by U.S. EPA. We assessed inspection timeliness for all active systems by comparing the time between the two most recent inspections, or between the most recent inspection and the system's permit date for newly permitted systems. We determined whether the time between these events was timely by referring to regulatory criteria requiring inspections every 3 or 5 years,

depending on where systems source their water and the number of persons the system serves.

For additional water system testing, we randomly sampled 25 systems from a list of 598 active systems published on the Bureau's Drinking Water Watch website. Further, we judgmentally sampled the five largest systems by population served. For these sampled systems, we reviewed Bureau documentation for each system's most recent inspection, including reports, correspondence, and corrective action plans. We then assessed whether documentation was complete and acceptable, and whether any corrective action necessary was sufficient, timely, and properly reviewed.

In addition, we reviewed water quality testing data for our sample of 25 random and 5 large systems. We reviewed monitoring data for lead, arsenic, nitrate, nitrite, and any contaminants for which systems had previous violations. We reviewed testing results for sudden improvements, to determine whether these improvements were the result of legitimate remedies for water quality, such as source changes or treatment.

We also determined whether requests for changes to water facility plans were reviewed appropriately by the Bureau, by randomly selecting 15 requests from a list of 106 approved requests from fiscal years 2016 and 2017. We reviewed supporting documentation, including fees, request forms, correspondence, and water test results. We determined whether fees were appropriately charged and deposited, and that the Bureau's reviews were complete and supported by adequate documentation.

To determine whether the Bureau effectively regulated water quality testing laboratories, we randomly sampled 25 labs from a list of 97 active labs certified by the Bureau. Next, we judgmentally sampled one notable lab at the Southern Nevada Water Authority, and two labs newly certified in fiscal years 2016 and 2017. We used these 28 sampled labs to assess the completeness and accuracy of a Bureau spreadsheet used to track laboratory inspections, by comparing information in the spreadsheet to the Bureau's electronic laboratory files.

To determine whether laboratory inspections were timely, we reviewed the Bureau's onsite inspection tracking spreadsheets for 2012 through 2017 for in-state labs. We used this spreadsheet to identify the two most recent inspections for each in-state lab, and gathered certification dates from the Bureau. We assessed inspection timeliness by comparing the time between the two most recent inspections, or between the most recent inspection and the lab's certification date for newly certified labs. We determined whether the time between these events were timely based on state regulation requiring inspections every 2 years.

For our 28 sampled laboratories, we reviewed Bureau documentation for each lab's most recent inspection, including reports, correspondence, and corrective action plans. For in-state labs, we determined whether the Bureau's inspection was complete and acceptable, and whether any corrective action was sufficient and properly reviewed. For out-of-state labs, we determined whether inspections conducted by other regulators or certifying bodies were complete, thorough, and timely, as well as whether corrective action was sufficient.

We reviewed proficiency testing data for our 28 sampled laboratories, by comparing each lab's proficiency tests against its certified methods. We determined whether labs received passing proficiency tests for each of their certified methods, and that tests were conducted at least every 6 months. After extensive review of proficiency tests for eight labs and not identifying any issues, we reviewed two notable labs, Nevada State Public Health Laboratory and Truckee Meadows Water Authority, to complete our testing.

To determine the status of a U.S. EPA grant authorizing federal funding for testing lead in school drinking water, we first held discussions with Bureau and Division management. We received a spreadsheet used to track the status of lead testing in January 2018 for all 391 eligible schools. To assess the completeness and accuracy of this spreadsheet, we randomly sampled 10 schools from the list, and matched testing information with hard copy test results. Further, we determined whether test results were correctly entered for all schools in all school districts except Washoe and Clark – where we tested 10 schools each.

We then used the spreadsheet to determine how many Nevada schools had conducted lead testing, as well as how many samples revealed lead levels which exceeded federal drinking water standards. To determine whether any schools had tested for lead without informing the Bureau, we contacted the school districts which had no test results on the Bureau's spreadsheet.

For some of our testing, we used non-statistical audit sampling, which was the most appropriate and cost-effective method for concluding on our audit objectives. Based on our professional judgment, review of authoritative sampling guidance, and careful consideration of underlying statistical concepts, we believe that non-statistical sampling provides sufficient appropriate audit evidence to support the conclusions in our report. For these tests, we did not project the errors noted in our sample to the population. All problems found during our various tests were confirmed by providing the results to applicable Bureau personnel.

Our audit work was conducted from February 2017 to January 2018. We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

In accordance with NRS 218G.230, we furnished a copy of our preliminary report to the Administrator of the Division of Environmental Protection. On March 6, 2018, we met with agency officials to discuss the results of the audit and requested a written response to the preliminary report. That response is contained in Appendix D, which begins on page 22.

Contributors to this report included:

| | |
|---|---|
| Drew Fodor, CIA, MBA<br>Deputy Legislative Auditor | Rick Neil, CPA<br>Audit Supervisor |

# Appendix D

## Response From the Division of Environmental Protection

NEVADA DIVISION OF
**ENVIRONMENTAL PROTECTION**

**STATE OF NEVADA**
Department of Conservation & Natural Resources
Brian Sandoval, Governor
Bradley Crowell, Director
Greg Lovato, Administrator

March 16, 2018

Mr. Rocky Cooper, CPA
Legislative Auditor
Legislative Counsel Bureau
401 S. Carson Street
Carson City, NV 89701

Dear Mr. Cooper:

As required by NRS 218G.230.1, I am submitting this written statement of explanation to the audit report for the Nevada Division of Environmental Protection (NDEP) Bureau of Safe Drinking Water (BSDW). The NDEP accepts all three of the recommendations included in the report, as discussed at our March 6, 2018 meeting, and has included the attached page entitled "Division of Environmental Protection's Response to Audit Recommendations" with each recommendation marked as accepted. The NDEP would like to also take this opportunity to provide additional explanation related to each of the recommendations.

*Recommendation 1. Develop additional controls to ensure deficiencies noted on water system inspections are resolved.* **Recommendation 1 accepted.**

We acknowledge that follow-up on some inspection results would benefit from additional tracking and oversight to ensure that a public water system with a deficiency fulfills its responsibility to rectify the finding.

The BSDW has developed Standard Operating Procedures (SOPs) to help guide staff in certain procedures and timelines to comply with water system inspections and follow up actions. They include:

- SOP for Sanitary Survey – General Instructions and Regulatory Timelines;
- SOP for Sanitary Survey – Resolving Deficiencies in the Safe Drinking Water Information System (SDWIS) database; and
- SOP for Significant Deficiency Follow-up.

In 2015, BSDW assigned a compliance position with the partial responsibility to help track and remind BSDW facility managers, using monthly queries from SDWIS, of the status of unresolved deficiencies. The staff assigned with this duty also must manage the new "found" water systems and new enforcement activities. Due to these program priorities and staff vacancies in the past few years, the priority has been to address "significant" deficiencies based on the regulatory timeframe, and some public water system deficiencies were left unresolved by the public water system.

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In the 2018 biennial budget, the BSDW received approval for one new position assigned to the Public Water System Compliance Branch. Job duties related to this position have a focus on Sanitary Surveys and follow up actions to address deficiencies that pose risks to public health. This new position was filled on January 29, 2018. Staff is working closely with the public water system compliance supervisor to:

(1) prioritize and oversee sanitary survey compliance,
(2) enhance procedures to make the process more fluid for both the PWS personnel to respond to deficiencies and BSDW staff to issue violations, and
(3) continue to provide training for inspection staff to ensure procedures are followed and consistently documented.

It is anticipated that this process will be completed by December 2018. BSDW will continue to review the process on an annual basis as needed.

*Recommendation 2. Clarify policies and procedures on the frequency for conducting laboratory inspections.* **Recommendation 2 accepted.**

We acknowledge that there was an error in interpreting conflicting state and federal requirements for inspection frequency for certified laboratories in the drinking water program. This error is rectified and inspections will occur on the appropriate frequency required by Nevada regulation.

The Laboratory Certification Program has adopted, by reference, the *Manual for the Certification of Laboratories Analyzing Drinking Water: Criteria and Procedures, Quality Assurance*, 3rd Edition, EPA 815-B-97-001, which requires that that laboratory should pass an on-site audit at least once every three years. NAC 445A.5428 requires that the Bureau conduct an inspection "not less than once every 2 years". Program practices gave staff leeway between 2 and 3 years for inspections while addressing staff vacancies. With this audit, it has been made clear that the more stringent requirement in NAC 445A.5428 must be followed.

Staff have completed an internal review and updated the Laboratory Certification Program to ensure that on-site inspections follow the two year requirement with some allowance:

- An updated inspection schedule procedure was created to clearly identify when onsite visits were last conducted and when the upcoming assessments are due, with flags that identify inspections that are within 2 months out. Monthly Outlook reminders to review the inspection schedule will enhance the program's ability to stay on top of upcoming inspection with more accuracy.
- Additionally, when the Laboratory Certification Program updates regulations in the near future, staff will propose that inspections must be done every 2 years ± 90 days in order to account for unforeseen circumstances that might necessitate a small extension on the 2-year schedule.

*Recommendation 3. Continue working with school districts and public water systems to advance lead testing efforts.* **Recommendation accepted.**

Mr. Rocky Cooper
March 16, 2018
Page 3

In support of this recommendation, the NDEP intends to pursue the following strategies to continue outreach to districts that have been hesitant to participate, and communicate project outcomes to date.

NDEP will:

- Complete coordination of sampling activities among the districts and State-sponsored charter schools committed to this voluntary effort,
- Seek an audience with the Nevada Association of School Superintendents to share aggregate statewide project results, and
- Continue outreach to the two remaining non-participatory districts to answer questions or concerns they may have with project participation.

NDEP has received initial concurrence from the US EPA that the grant for this project can be extended for an additional year as we continue to work toward 100% participation. As this is an ongoing effort, the following table updates the school testing counts as of March 14, 2018.

***Participation Update:***

| School District | Participating? | Schools Tested | Schools Eligible |
|---|---|---|---|
| Carson City | Yes | 8 | 8 |
| Churchill County | Yes | 4 | 4 |
| Clark County | Yes | 208 | 228 |
| Douglas County | Yes | 6 | 6 |
| Elko County | Yes | 0 | 12 |
| Esmeralda County | Yes | 0 | 2 |
| Eureka County | Yes | 0 | 2 |
| Humboldt County | | 0 | 6 |
| Lander County | Yes | 0 | 2 |
| Lincoln County | Yes | 0 | 4 |
| Lyon County | Yes | 5 | 7 |
| Mineral County | Yes | 1 | 1 |
| Nye County | Yes | 10 | 11 |
| Pershing County | | 0 | 3 |
| Storey County | Yes | 2 | 2 |
| Washoe County | Yes | 65 | 73 |
| White Pine County | Yes | 0 | 3 |
| State Sponsored Charter Schools | Yes | 0 | 18 |
| Totals | 16 | 310 | 392 |

*School counts based on Nevada Department of Education information

***Interim Results:***

- Out of 620 sample locations (2 per school), only 9 individual fixtures have exceeded the project action level during initial screening
  - All 9 involved sink faucets that were NOT drinking water fountains.
  - All 9 have been addressed or are being actively investigated further (all are out of service)

Given the extremely low number of problem fixtures to address, a substantial amount of grant funding remains. In addition to seeking a one-year extension, NDEP will also request an expansion in the scope of the grant to sample more fixtures at elementary schools and expand the program to middle schools and then high schools if districts continue to be interested in the project.

The NDEP appreciates the excellence of your staff involved in this audit and the clear communication we received throughout the process. We would like to thank you for the thorough review of our program and reinforcement that we are meeting our mission of protecting human health; ultimately finding that the Bureau of Safe Drinking Water is ensuring that Nevadans are provided with safe and reliable drinking water.

Sincerely,

Greg Lovato
Administrator

cc: Bradley Crowell, Director, DCNR
Jim Lawrence, Deputy Director, DCNR
Jennifer Carr, Deputy Administrator
My-Linh Nguyen, Bureau Chief, BSDW

# Division of Environmental Protection's Response to Audit Recommendations

| | Recommendations | Accepted | Rejected |
|---|---|---|---|
| 1. | Develop additional controls to ensure deficiencies noted on water system inspections are resolved | X | |
| 2. | Clarify policies and procedures on the frequency for conducting laboratory inspections | X | |
| 3. | Continue working with school districts and public water systems to advance lead testing efforts | X | |
| | TOTALS | 3 | |