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An Economic analysis of the arsenic standard on Nevada

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Abstract

In 2001, the arsenic standard for drinking water was lowered from 50 parts per billion to 10 parts per billion. The clean-up costs for Nevada are estimated at approximately 400 million dollars. The purpose of this project is to examine the economic impacts the State of Nevada will absorb as a result of the new regulation. Research of historical data will be the basis for the project. National data from the U.S. Environmental Protection Agency and data collected from the State of Nevada will be accompanied by comparable research data found through other sources.

I. Introduction

On October 31, 2001, the drinking water standard for arsenic was lowered from 50 parts per billion (ppb) to 10 ppb based on U.S. Environmental Protection Agency (EPA) guidance received from Congress. This decision was based on the uncertain health effects from low levels of exposure to arsenic in drinking water. The revised rule will require that the current maximum containment level (MCL) for community water systems (CWS) be reduced from 50 ppb to 10 ppb, non-transient non-community water systems (NTNCWS) meet the new standard, and the current monitoring requirements for are revised to be consistent with the Standard Monitoring Framework (40 CFR 141.23(c)). The new standard was evaluated and based on factors that included; compliance capabilities for systems size and properties, natural occurrence of arsenic, effects on subpopulations (i.e., children, individuals with pre-existing diseases that affect specific organs), and costs for reduction of health risk. Arsenic is a naturally occurring element in soils and groundwater throughout the United States at levels that currently exceed the EPAs action levels.

The purpose of this project is to research the economic impact on the State of Nevada resulting from the regulatory change of the drinking water standard for arsenic by the U.S. Environmental Protection Agency. This case study will provide a cost analysis of the systems currently affected and will determine if there are water systems that can be excluded from the rule based on scientific and economic reasons.

Arsenic occurs naturally in the Earth's crust in rock and soil. Other sources of arsenic include the wood treatment and mining industries. As water comes into contact with the arsenic enriched soil and rocks, it dissolves and arsenic carried in the water (surface and groundwater). In the United States, the highest concentrations have been identified in the West and are primarily found in groundwater due to high arsenic concentrations in rock and geothermal activity (Walker, 2001). An example of an arsenic enriched aquifer is the Basalt Aquifer below Fallon, Nevada. The State of Nevada has among the highest groundwater concentration levels in the country.

Nevada is considered to be a rural state with the majority of the 1.9 million person population concentrated in Clark County (estimated population is 1.3 million) and Washoe County (estimated population is 340,000) (Clark County Assessor, 2000) (U.S. Census, 2000). Throughout the remainder of the state, the majority of cities have less than 10,000 people. More than two-thirds of the wells with arsenic concentrations higher than 10 ppb are located in communities with less than 10,000 people, which are supported by groundwater systems and not surface-water systems. Larger cities in Nevada (i.e., Reno, Elko) have city water systems; however, many of the systems in the cities are supported by wells. Due to demographics and Nevada's geology, it has been estimated that over 75 percent of the systems in Nevada will be affected by the new ruling, and 95 percent of those systems will impact a city with less than 10,000 inhabitants. The new ruling is expected to have an economic impact throughout the country, however, Nevada will be among the states where the impact is felt the greatest.

Costs to clean up individual wells will be incurred through many possible sources. Federal funding through the EPA's State Revolving Fund, Federal funding through adjacent properties effected by the ruling, State tax dollars, Federal Energy and Water appropriations funding, and/or the Small Community Safe Drinking Water Funding Act are possible funding sources (Stedge, 2000). Additional sources of funding may be received from private industry and interest groups that provide loans to small disadvantages communities with weak infrastructure.

The remainder of this thesis is organized as follows: Section II reviews the literature on the issues and data surrounding the new regulation; Section III details the method used to perform the cost analysis; Section IV provides the data used for this analysis; Section V describes the results; Section VI provides the findings; and Section VII is the conclusion. Additional appendices and attachments will be available following the paper.

II. Literature Review

The basis for this thesis is to provide an economic baseline, cost, and comparative analysis of the new arsenic ruling and specifically the impact it will have on the State of Nevada. Current information is limited on the state and local arsenic levels for Nevada, but documents have been released regarding the impact and the costs to implement the new regulation on wells that have 10 ppb or more. Information is provided on the reason that the U.S. EPA decided to lower the regulatory level. The five following documents are the primary sources of information for this project; however, other additional sources will be cited throughout the document.

The fact sheet named, "Arsenic in Ground-Water Resources of the United States" by the U.S. Geological Survey (USGS) is the basis for geological and national information regarding the naturally occurring arsenic levels throughout the United States. The resource provides maps and figures about regions based on information from the USGS (USGS, 2000). The USGS provides arsenic specific information on research conducted recently that discusses the need for regulatory change and why regulatory change will be difficult. Since the identification of the problem, Federal agencies have released specific information as to how the new regulation evolved and the parameters behind the decision to set the MCL at 10 ppb.

The U.S. Environmental Protection Agency has issued press releases regarding their decision to lower the arsenic drinking water standard from 50 ppb to 10 ppb. The releases from meetings prior to and following the October 31, 2001 decision provide scientific-and policy-based information about the old standard and the reasoning behind the change (U.S. EPA, 2001). Scientific evidence regarding the geology of the United

States emphasizes the difficulty and range of the problem in the United States. Studies cited throughout the press releases became the basis for the decision made by the EPA.

The report submitted to Congress, "RS20672: Arsenic in Drinking Water: Recent Regulatory Developments and Issued," by the National Council for Science and the Environment provides a regulatory background for the old standard and justification for changing the current standard (National Council for Science and the Environment (NCSE), 2001).

The document, "Arsenic in Drinking Water Rule Economic Analysis" (Stedge, 2000) overviews the need for a new regulation, regulatory alternatives, baseline analysis, cost analysis, and an economic impact analysis for the change of the United States drinking water standard for arsenic. The document breaks down the costs and number wells affected by the ruling by the two types of wells, NTNCWSs and CWSs. Risk analysis in the report regarding the different levels also provides important data to support the decision to lower the level to 10 ppb. Three large CWSs were evaluated: Los Angeles, Houston, and Phoenix. Although the arsenic levels are not as high in Phoenix, that city faces the same problem as Nevada. Arsenic levels in Phoenix are elevated and the geological makeup is similar to Nevada's. The analysis examined the health-related issues, economic burden, and unfunded entities for the United States (Stedge, 2000). Information found in this national report is valuable for comparison to the data specific to the State of Nevada.

Preliminary data provided by the State of Nevada, Division of Drinking Water, Bureau of Health Protection Services categorizes the counties and wells to identify which wells will be affected by the new ruling. Additionally, the population, well size, arsenic levels (ppb), well name, and the dollars per gallon and construction costs to mitigate the hazard

are available through this analysis. The systems have been broken down into the two groups most likely to be regulated, NTNCWS and CWS, per the State of Nevada (BHPS, 2002). This background information is important to understanding the regulation change and how it was developed

The literature identified for use in this project has constantly evolved since former President Clinton initiated changing the regulatory limit until the present. New information released daily may provide answers that the documentation identified in this project does not explain. The documents used are relatively comprehensive and provide economic and scientific evidence as to why the regulation is needed or not needed and if it is scientifically and economically feasible to implement.

III. Method

This study will provide details of the ruling and supporting literature that provided background information to determined the change in the arsenic regulation from 50 ppb to 10 ppb. The EPA used geologic studies, policy reviews, and economic studies to support the decision to lower the MCL. This project will review the current information available, expenses projected for compliance and other associated costs, and will apply the data to the cost analysis to determine the cost projection.

A. Design

The cost analysis for the project will examine the following:

1. Identify all advantages and disadvantages of the new regulatory limit of 10 ppb.
2. The relationships involved with the new MCL (Federal and State of Nevada).
3. Dollar values assigned for cleanup from Federal and state studies.
4. Comparison of costs of the Federal versus the State of Nevada on decisions about the regulation.
5. Alternatives to adjust the regulation based on data comparison.

B. Procedure

The cost analysis will examine the ruling and the inputs that have been determined to be the deciding factors for the new MCL. The anticipated Federal dollars for the country to meet compliance will be compared to State of Nevada estimated dollars based on the wells and current arsenic levels in groundwater from those wells (BHPS, 2002).

C. Materials

Data for this project will include data and information published through May 30, 2002. Materials used for this project include economic analyses performed by a contractor to the EPA (Stedge, 2000) and the new Arsenic Rule (EPA, 2000). Other materials from various interest groups are included in the project to provide additional specific information not covered in the EPA's documents. The USGS background information provides scientific data on naturally occurring arsenic and groundwater levels in the United States (USGS, 2000). The State of Nevada, Bureau of Health Protection Services provided the data and information regarding the wells, arsenic levels, output, populations impacted, and dollars anticipated for this project in Nevada. Section II, Literature Review, provides a description of the literature sources used in this analysis. Section IV, Data, provides a detailed explanation of the data sources used in this analysis.

D. Validity

An independent contractor performed the Economic Assessment research for the EPA (Stedge, 2000) and based the work on four suggested MCLs (3, 5, 10, and 20). The assessment considered small and large water systems, as well as NTNCWS and CWS types that would be impacted by the regulation. The economic assessment was subject to review and public release by the EPA.

IV. Data

Data used for this project came from three sources: the U.S. EPA, the State of Nevada, and the U.S. Census Bureau and was applied using the method described in Section III. The data from the EPA are based on an overall analysis of the U.S. The State of Nevada Bureau of Health Protection Services compiled the data and background information for the wells involved throughout the State of Nevada. The following is an explanation of each type of data used to compile the analysis following the method as described in Section III.

U.S. EPA Data

A report entitled, *Arsenic in Drinking Water an Economic Analysis* (Stedge, 2000), provides the primary data for this project. The data throughout the report was broken down into NTNCWS and CWS for the requirements set forth by the EPA. Since the ruling, although final that the MCL will be lowered, the EPA has not declared the final MCL for arsenic. Data is based on the four different proposed levels for arsenic in water (3, 5, 10, and 20 ppb) for this report and the costs associated are broken down in to two additional subgroups of 3 percent and 7 percent discount for the compliance offered by the EPA. The discounts refer to the length of time a system will need to come into compliance. The current regulation is enforcing wells currently out of compliance to meet the 10-ppb MCL by 2006. Those wells not in compliance are subject to Federal fines for each day out of compliance.

The national costs for NTNCWSs and CWSs have been estimated to total 180 million to 205 million dollars to meet compliance with the 10-ppb MCL. The costs for NTNCWSs are expected to average 7 million dollars a year in compliance and treatment costs for the entire country according to the EPA study (Stedge, 2000). The CWSs are more difficult to estimate as a whole because a water system can provide to less than 100 customers to

more than 1 million customers; therefore, CWSs are broken down into system sizes and the dollars associated per resident per system size.

The costs associated with the new Arsenic Rule that the states are anticipated to absorb are the administrative costs of compliance. These costs include program management, inspections, and enforcement activities. Federal programs are expected to provide financial assistance with the rule. For example, the Drinking Water State Revolving Fund (DWSRF) and the Housing and Urban Development Block Grant Program are two types funding entities. Each state will determine the design and implementation of its program. Individual states will be responsible for the direction of available dollars, and allocation to programs based on urgency. States will be able to contract with other states to combine resources (e.g., Nevada and Arizona). However, states will not be allowed to contract with regulated entities (i.e., water systems). (Stedge, 2000)

State of Nevada Data

The Bureau of Health Protection Services collected data for the wells throughout Nevada that exceed the new regulatory limit of 10 ppb. The data were separated out into two groups, NTNCWSs and CWSs. Population, service connections, and system size all contributed to determining the construction costs to clean up a well based on dollars per gallons per minute (well size). The data also include the current arsenic level for each well. The data for individual wells will be important to determine the costs that will result from a change from the old regulation. It is proposed that EPA remove wells from the list that are less than 11 ppb but are more than 10 ppb (referred to as "bubble wells") (BHPS, 2002).

U.S. Geological Survey

Geochemical data for arsenic levels in soils, surface water, and groundwater is managed by the USGS for the Unites States. The data are maintained on the county and local levels and are viewable through a series of maps of counties as well as specific areas of high arsenic concentration throughout the United States. (USGS, 2000)

U.S. Census Bureau Data

Population data for the State of Nevada and effected cities and counties are based on the 1990 and 2000 census data as available (U.S. Census Bureau, 1990) (U.S. Census Bureau, 2000).

A cost analysis performed on the available data at the national and state level will be the basis for this study; however, recent regulatory changes, historical information, scientific findings, and policies are also necessary to make conclusions on the economics of the new arsenic standard.

V. Results

For this project, the data sources for comparison was from described in Section IV. The EPA (Stedge 2000) and the State of Nevada, Bureau of Health Protection Services (BHPS, 2001) provided projected costs associated with the Arsenic Rule. The following is a description of the results from the cost analysis.

For the analysis, the table entitled "System Compliance Technology Costs Assuming Influent Concentrations of 11 ppb and MCL of 10 ppb (Dollars)" (Stedge, 2000), identified the size category of 3,301 to 10,000 was identified for this project. This population level was used because 97 percent of the wells in the State of Nevada serve fewer than 10,000 people. The EPA based their economic analysis on costs to clean up only 1 ppb of arsenic contamination. Clean-up costs from the State of Nevada are based on actual arsenic levels of the well and the costs associated with cleaning and monitoring the well.

There are several different types of methods that can be used to clean up arsenic in water. Of the treatment types, there were thirteen reviewed by the EPA for their economic analysis. The removal efficiency ranged from 50 percent to 95 percent effectiveness. For this project, it was assumed that the 95 percent effectiveness was what the State of Nevada would use to clean-up arsenic in water due to the fact that Nevada arsenic levels were among the highest in the country. This reduced the number of technologies used for the analysis from thirteen to seven. The seven treatment technologies (4 variations of

activated alumina (AA), two variations of anion exchange (AE), and modify coagulation/filtration) were identified.

The costs related to cleanup of a system, using the one of the seven treatment technologies with 95 percent effectiveness, with a 7 percent discount rate for a population of 3,301 to 10,000 person system as determined by the EPA are:

- Total Capital Costs: $145,700 per system
- Operations and Maintenance (O&M): $25,500 per system per year (Stedge, 2000).

For the State of Nevada, the costs associated with the cleanup were based on all wells identified that arsenic concentrations were greater than 10 ppb. For the state, the costs are broken down by system type without any discount rates. The costs estimated for the CWS cleanup of arsenic as determined by the State of Nevada are as follows:

- Total Capital Costs: $104,123 per system
- O&M: $10,412 per system per year (10% of Total Capital Costs) (BHPS, 2001).

For the NTNCWSs, the Nevada estimated costs associated with the cleanup are as follows:

- Total Capital Costs: $123,641 per system
- O&M: $12,364 per system per year (10% of Total Capital Costs) (BHPS, 2001).

To show that higher arsenic levels would create higher clean-up costs, arsenic levels in Nevada were compared against the county with the highest concentration, Churchill County the location of Fallon. Levels in the Fallon area ranged from 17 ppb to 115 ppb. The costs associated with the clean up for CWSs in Churchill County are:

- Total Capital Costs: $1,002,617 per system
- O&M: $100,262 per system per year (10% of Total Capital Costs) (BHPS, 2001).

The costs associated with the clean up for NTNCWSs in Churchill County are:

- Total Capital Costs: $14, 302 per system
- O&M: $1,430 per system per year (10% of Total Capital Costs) (BHPS, 2001).

The State of Nevada identified wells that have not had consistent readings over 10 ppb as "bubble wells". For CWSs, there are 170 wells that are effected by the new ruling, and 49 of the wells have 15 ppb or less. If these wells were sampled and monitored only, the cost savings would be:

- Total Capital Costs Savings: $42,074,523
- O&M Savings: $4,207,452 per system per year (10% of Total Capital Costs) (BHPS, 2001).

Although the costs for the NTNCWSs are much less, the savings would be based on 14 "bubble wells" and the estimated savings would be:

- Total Capital Costs Savings: $3,582,491 per system
- O&M Savings: $358,249 per system per year (10% of Total Capital Costs) (BHPS, 2001).

This section presents the results and how they were compiled. Next, Section V, Discussion, will provide the analysis of the inputs for the Arsenic Rule. Information from the previous sections will be brought together to provide the cost analysis.

VI. Discussion

This section presents the findings of the cost analysis. The analysis is based on the method as described in Section III. The analysis and findings are based on information and data described in the Sections II, IV, and V of this project.

A. Advantages and Disadvantages to the Arsenic Rule

In this section, the advantages that support the 10-ppb ruling are identified and the disadvantages of the ruling are also identified. Sources are the data from Section IV and supporting documents from the EPA, State of Nevada, USGS, and Census Bureau.

The first advantage is that the health risk is reduced and the costs are justified with an MCL of 10 ppb (Stedge, 2000). Originally, in 1996, former President Clinton proposed a MCL of 5 ppb for arsenic. In 2001, Christie Whitman, Administrator of the EPA, finalized the ruling at 10 ppb. By making the MCL 10 ppb, the systems impacted were reduced by over 50 percent for CWSs and over 65 percent for NTNCWSs (Stedge, 2000).

The next advantage is the technologies available for treatment expanded as a result of not setting the MCL lower. Although treatment capabilities range from 90- 95 percent effectiveness, an alternative treatment, oxidation/filtration, offers only 50 percent effectiveness (Stedge, 2000). If the MCL is set too stringent, the effectiveness of the technologies may be reduced and treatment technologies available would be reduced.

The final advantage for the 10-ppb MCL is the burden placed on an individual state to clean up the groundwater. Currently, the State of Nevada has estimated that the costs placed on the consumer will exceed $400 million (Walker, 2001). Due to our weak infrastructure and low population costs will be higher and a lower ruling would cost our resident more money.

The first disadvantage of the new 10-ppb MCL is similar to the last advantage. The groundwater in the State of Nevada has high arsenic content, yet a very low population in comparison. Over 85 percent of the land in the state is managed or owned by the Federal government. As stated in the introduction, the majority of Nevada inhabitants are located in Clark and Washoe Counties where infrastructure handles most of the water sources. Although these locations do have wells that are above the 10 ppb MCL, they do not have the highest levels in the State. Less populous counties such as Churchill and Nye, that have a large Federal and military presence, are most effected by the regulation. Although Nevada is funding the cleanup out of the state's budget, some burden is placed on the citizens. It is estimated that the cost per households is expected to be $38 to $327 per year for a system serving less than 10,000 people and $0.86 to $32 per year for the large system serving over 10,000 people (CRS, 2001). If the arsenic regulatory limit were set higher or remained at the 50 ppb, then Nevadans would not be as impacted by the ruling.

Another disadvantage is that although the averages identified in the data section of this report, show that cost for Nevada appears to be less than the national average, the costs that will apply will be based on the concentration of arsenic in the wells and not on a 1

ppb clean-up estimate. Groundwater from wells throughout Nevada have significantly higher arsenic levels, some as high as 115 ppb in Churchill County. There are some water-supply locations in the state, which have already been undergoing EPA-approved treatment because of high arsenic concentrations. These locations will be required to undergo additional monitoring and maintenance because of the Arsenic Rule. The costs for these wells is only going to be based on the maintenance criteria and not on the construction and treatment expenses that other wells may need. Therefore, Nevada's average is much lower than the national average (BHPS, 2001). If the EPA's estimate for the whole U.S. was based on actual ppb cleanup the costs would be closer to the actual costs Nevada has estimated for the clean up.

Finally, the last identified disadvantage is that the initial monitoring and reporting date for communities can be extended until 2008 and, the initial readings on effected wells must start reporting in 2003. However, the MCL has not been finalized, and the well readings may be disputed based on what the State of Nevada refers to as "bubble wells" (BHPS, 2002). The disputed wells are those which do not give a consistent sample reading and are on the borderline of the new regulation. Some wells may have provided readings at 9 ppb to 12 ppb. By averaging the wells current arsenic level, the reading would be 10.5 ppb based on those two readings. However, it is noted that the well does range above and below the MCL of 10 ppb. This situation has yet to be clearly defined by the EPA.

B. Cost Comparison for Arsenic Cleanup

This section identifies the costs by the EPA for cleanup on the Federal level were based on the following criteria:

- Summary of national costs for MCLs based on the technology available;
- Costs by system size and type for the MCL options.

As discussed in Section V: total capital costs of $145,700 per system and $25,500 a year for O&M for systems serving less than 10,000 people. This also factors in a 7 percent discount that reflects the rate of return on capital investment. This is required for any Federal projection by the Office of Management and Budget (OMB).

The cost projections for the State of Nevada were based on the actual system levels for arsenic. Factors considered included wells that will not require treatment and construction, as well as, extremely small systems. For the State of Nevada, the CWSs average costs are estimated at $104,123 per system for total capital costs and $10,412 per year for O&M costs (Nevada determined the O&M costs to be 10% of the total capital costs.) For NTNCWSs, the total capital costs were averaged to be $123,641 per system and $12, 364 for O&M. These fall below the Federal average, however the systems effected are varied due to the varied arsenic concentrations.

In comparing the costs for an effected small system, wells in Churchill County where Fallon is located were selected. For Churchill County, the arsenic levels in water are some of the highest in the country. Churchill County's total capital costs averaged

$1,002,617 per system and $100,262 per year for O&M (BHPS, 2001). These costs are much higher than the federal averages. Fallon has gained much national attention in recent months, and as a result of high arsenic levels, the federal government has awarded Fallon over $4.5 million to jumpstart the treatment construction. Federal reporting of arsenic levels in Fallon's water is scheduled to begin in 2003 (CRS, 2002).

C. Potential Cost Savings

The State of Nevada identified wells that have not had consistent readings over 10 ppb as "bubble wells". These wells show a substantial cost savings which is up for debate due to the ruling's ambiguity.

For CWSs, the new ruling effects 170 wells, and 49 of the wells have 15 ppb or less. In estimating the savings, if these wells were sampled and monitored the cost savings would be $42,074,523 for total capital costs and the O&M would be $420,745 per year. Until further studies have been completed on the wells and the regulation has been finalized without protest, the savings for the State of Nevada would be approximately $41,000,000. For example, a system in Washoe County named High Street that has a average arsenic concentration of 10 ppb and the costs for construction are estimated at $4,000,000.

Although the costs for the NTNCWS are much less, the savings would be based on 14 "bubble wells" and the total construction costs savings would be $3,582,491 and the O&M costs would be $358,249 per year.

If the EPA would consider the "bubble wells" and suspend construction activity until the ruling has been finalized without protest, the savings for the State of Nevada could potentially be over $45 million. Currently the EPA is being sued over the 10-ppb decision. Until the final outcome of the Arsenic Rule, there are issues like the "bubble wells" that will not be resolved.

Another alternative decision would be to consider lower effectiveness percentage treatment technologies for wells and monitoring systems with low arsenic concentrations. The wells with known low concentrations and "bubble wells" could use a cost-effective technology to bring the MCL under 10 ppb and reduce the costs. Although the EPA only based on the economic analysis on thirteen technologies, there may be less expensive and/or alternative ways of treating the water.

This section has resolved the design of the method for this project. First, the advantages and disadvantages were identified. Within those advantages and disadvantages the relationships between the State of Nevada and Federal were addressed. Next, the dollars assigned for the Nevada clean up (as discussed in Section V) were compared to the Federal costs. And finally, the alternatives regarding "bubble wells" and alternative technologies were discussed.

VII. Conclusion

This project has provided a background of the Arsenic Rule, the method that the project would follow to complete the cost analysis, literature and data sources that provided the basis for the analysis, the results of the cost analysis, and a discussion of the findings. The information provided by the EPA is extremely comprehensive. However, each state has its own set of unique circumstances and as identified in the comparison, the data from the State of Nevada differs from the EPA's economic analysis.

This project has identified the advantages and disadvantages of the Arsenic Rule and compared the Federal supporting evidence to the data provided by the State of Nevada. In reviewing the factors that influenced the rule, the costs associated with the State of Nevada versus the Federal costs revealed that the State of Nevada may have been projecting the costs to be too low. However, after identifying areas of high concentration wells, it appears that the costs to cleanup high arsenic areas are much higher than the Federal estimates. The costs for Nevada could be substantially reduced if "bubble wells" are not subject to the Arsenic Rule.

The State of Nevada has provided an overview of costs associated with the new regulation for both NTNCWSs and CWSs based on the EPA guidance provided to the states. One initial observation is that the costs for Nevada will be much higher than other states due to the fact that the majority of the wells will be impacted at the 10-ppb MCL. If the MCL was increased to 20 ppb, Nevada could remove most of the wells for the

impacted list. The costs and savings to remove borderline wells would be approximately $45 million for Nevada as a result of the Arsenic Rule. The indirect costs associated with the ruling (i.e., administrative, monitoring) will remain constant.

Based on the results of my research, I have determined that the costs associated with the new arsenic ruling will have a large impact on the State of Nevada. Although the Federal government will provide some or all funding for the currently identified systems that will need to be brought into compliance, costs associated with future wells and increases in current water systems which are effected will pose a burden on Nevada.

Additional research needs to be conducted to determine the most reasonable and feasible level of arsenic acceptable for health, to have compliance at a reasonable level. States that are faced with the problem of high arsenic levels are the less densely populated states with weaker infrastructures relative to states that are less affected. The burden is imposed on the national level, and therefore, should be a national problem through regulatory compliance of all wells and future planned wells. Planning and implementation of new systems will be necessary so future wells and systems can be properly budgeted such that taxpayers do not bear the burden of unforeseen costs associated with the new MCL.

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