CITY OF TETONIA, IDAHO

2011 Drinking Water Facility Planning Study:

Amended Engineering Report

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September 2011
Updated January 2013 per the EID

Table of Contents

I Introduction……1

II General Discussion on Approach……4

III Procedures and Results……9

IV Conclusions and Recommendations……..22

V Supplement to the S&A Study……...25

Figure 1 Vicinity Map……...2

Figure 2 Planned Projects Map……5

Figure 3 Comprehensive Plan……27

Figure 4 Zoning Map……...28

Tables 1 – 9

Exhibit 1 Water System Map

Appendices

This version differs from the July version reviewed by DEQ in that the location of the proposed well changed from on the south side of Egbert Avenue to a little north of Egbert in a City owned park. It also has minor updates to be consistent with changes made in the EID approval process. All else is the same.

Gerald R Williams

January 18, 2013

1 INTRODUCTION

The complete City of Tetonia Drinking Water Facility Planning Study consists of the Schiess & Associates limited ***2008 Drinking Water Facility Planning Study,*** this ***2011 Drinking Water Facility Planning Study: Amended Engineering Report,*** and the ***2011 Drinking Water Facility Planning Study: Environmental Information Document.*** This is discussed in more detail below.

WATER SYSTEM DEFICIENCIES

The City of Tetonia is a small community in Teton County in Southeastern Idaho. A vicinity Map is provided in Figure 1. As is typical with most small community water systems, the City of Tetonia's water system is functional and serves the community fairly well despite deficiencies because of limited available funds. One significant deficiency is that the system does not meet current requirements for having at least two water supply sources. However, because all drinking water sources were constructed before July 1, 1985, per IDAPA 58.01.08.513 the system is acceptable with the single source unless and until, after July 2002, the system is substantially modified. Once substantially modified, a second water source per 501.17 is required. The system also does not have adequate pumping and water storage to meet current fire code. Under present conditions, there would need to be 382,000 gallons of water storage available, but instead there is only 100,000 gallons. Also, distribution lines cannot convey required fire flow to all existing hydrants, let alone to all areas where fire hydrants should be located as per fire code spacing. Furthermore, some hydrants are on 4 inch lines. Moreover, some lines are very shallow and subject to freezing.

Thus far the City has been able to get by with the existing system, but there have been times when the situation was precarious. The City now has a standby well pump and motor in City shops, but even so, the current average daily water usage (and it would be higher during the summer) is 120,000 gallons per day (GPD), meaning that if the well was down, the existing tank has less than an average day of water use without rationing. That is not a desirable situation.

PREVIOUS STUDIES AND REPORTS

1. **2008 Schiess & Associates Drinking Water Facility Planning Study** Recognizing these deficiencies in general, and wanting to be proactive in making the first steps towards correction, the City hired Schiess & Associates (S&A Study) to perform a ***limited*** water system study that updated the City water system map, created a calibrated water system model, and evaluated, per the Idaho Department of Environmental Quality (DEQ) and limited fire code conditions, the existing and proposed system with potential growth that was anticipated at the time of the study, which was between 2007 and 2008. The study provided the City with information necessary to evaluate impacts from and serviceability to proposed development. A copy of the report is provided on a CD inside the back cover of hard copies of this report.

Insert Figure 1

2. **2010 DEQ Sanitary Survey** This survey post-dates the above study and provides useful updated information. A copy is provided in Appendix A.

3. **2010 Water Line Leak Location Project** The City hired Utilities Services Associates (USA) to perform a leak detection study that located the position and rate of water leaks in the system. This provides very useful information that was not available at the time of the S&A Study. A copy is provided in Appendix B.

NEED FOR COMPLETE FACILITY PLANNING STUDY

The cost of proposed facilities identified in the S&A Study were substantial, and with the change in economic conditions that affected development and potential private sector assistance with water system upgrades, the City found itself in a situation where it could not afford needed improvements, even for just the existing system serving current customers, without a grant and/or low interest funding. This outside funding participation would require a complete Facility Planning Study.

REPORT FORMAT OF THIS FACILITY PLANNING STUDY AMENDMENT

The WEI 2011 study, engineering report, and environmental information document do not stand alone, nor do they supersede the S&A Study. The intent is that together, the S&A Study and the WEI study and reports, make a complete DEQ required Facility Planning Study. This study does provide updates and revisions where there are known changes or updated information, but for the most part it only amends the S&A Study to add those missing components of a full DEQ Facility Planning Study. The contract scope of work included a list of understood missing items, which list is provided in Appendix C. In general, what is added are alternative analyses, cost analyses, and the environmental information document.

II GENERAL DISCUSSION ON APPROACH

STUDY APPROACHES

The S&A Study was of limited scope. It looked first at deficiencies in serving the existing 190 equivalent design dwelling units (DDUs), which are similar to equivalent dwelling units (EDUs), with the difference and use of the term DDUs explained in the S&A Study Executive Summary footnote as being a distinction between equivalencies for hydraulic modeling and that used for utility billing purposes. Hereinafter in this report, the more conventional term EDU will be used. The S&A Study was not scoped to provide an evaluation of what would be necessary to meet fire flows and DEQ regulations for the existing EDUs only. It did look at, with one three evaluated scenarios, how to meet DEQ and fire flow requirements under the proposed condition of adding 200 EDUs south of town where, at the time, development was in the planning process for the approximate equivalent of 200 single family residential units. Reference is made on the next page to their Figure 2, updated with new City boundaries, which also shows the areas of development then in the planning process. Thus their study was focused on addressing requirements for what was thought soon to be rather than on what then and now still exists. The intent was to provide a tool for the City to evaluate the feasibility of servicing planned growth and the impacts to the existing water system, and their study capably met that objective. Again this study supplements the S&A Study by covering other aspects which are required in a full Facility Planning Study.

Insert Figure 2

This Facility Planning Study looked first at what would be needed for the existing condition, which remains at 190 EDUs, and then what would be required for the projected addition of 200 EDUs south of town. This projection is not based on an extrapolation of growth records, for over the last many decades there has been no increase in population at all—it has remained a constant. It is simply based on potential growth as represented by development plans that started and which may yet some day be realized, or an equivalent condition. This may take longer than the 20 year forward look required by DEQ, or possibly even less, but it is as good of a responsible estimate as any, and this WEI amendment will not change the future design population condition established in the S&A Study. Moreover, the City confirms that both the regulatory intent of the Comprehensive Plan and Zoning Map and other developer driven issues suggest that most growth will likely be to the south and southeast of the City, which is where the S&A evaluated development at. Consequently, this WEI amendment will follow the same course as the S&A study with respect to growth amount and location, except that 11 of the 200 added EDUs were evaluated in the northeast portion of town in the Rammell subdivision, as suggested by the City.

Again, the focus of this amendment is to determine what is needed to best serve the existing population and dwellings, for functionality and reliability, secondly for conformance to regulation, and thirdly to investigate potential future conditions so that when upgrades are made for servicing the existing population, the size and capacities will likely be adequate to also meet future conditions. It does not make any sense to upgrade or install a new line only to have it be inadequate after new growth. It is better to install what is needed for the design future, and then have development "pay its own way" by reimbursement for its individual share of the upgrade. In other words, the approach used in this study is to first meet the needs of the existing citizens and water customers, but also to well manage the system using foresight and preparatory efforts to minimize long term costs.

WATERCAD COMPUTER MODEL

The S&A WaterCAD model of the water distribution system appears to be very good. There clearly was substantial effort made to gather information, verify data, use realistic flow data based on actual usage, estimate leakage (which turned out to be fairly accurate system wide), and especially to calibrate and thereby create a reliable hydraulic model of the water system.

MODIFIED APPROACH TO IDENTIFYING REGULATION CONFORMING IMPROVEMENTS

Noted above is that this amendment study focused first and foremost on addressing issues with the existing system for existing customers. This resulted in some changes to the approach of addressing regulatory requirements. Secondly, the S&A study did not address the need for backup power to the existing well. However, the most significant factors in revising the approach relates to the fire code. Specific items are listed below.

- The school, and perhaps the LDS Church building (S&A Tables 5-1 and 5-2 are inconsistent on this matter), are required to have fire flows of 2000 gallons per minute (gpm). Per fire code Appendix C Table C105.1 (see Appendix D in this report), a minimum of two hydrants must be in the area to provide that flow rate (hydrants typically have a capacity limit of 1500 gpm or so). The school and church are adjacent to each

other, but only one hydrant is available anywhere near the buildings to draw from. So whereas S&A recommended improvements to have the existing hydrant on an 8" mainline instead of the present 4" line, there were no improvements proposed to provide the second fire hydrant. This amended study provides for the additional fire hydrant and supply line.

- While not directly a modeling issue but rather a regulatory issue, the City ought to pass an ordinance limiting all new construction to be served by the City water system to be constructed so that, per the fire code at the time of construction, required fire flows do not exceed 1500 gpm. This pertains to building size, materials and type of construction, and whether fire suppression sprinklers are used. Using fire suppression sprinklers, all conceivable building sizes feasible for development in Tetonia can meet this criterion. Most new growth will of necessity be on the outskirts of the existing water distribution system where large flows will have the greatest impact on flow capacity. These and all areas should not be allowed to build with fire flow requirements that inordinately impact the entire water system infrastructure.
- The S&A study and model only evaluated fire flows outside the City grid at 1000 gpm, a fire flow rate which is for smaller 1 and 2 family residential units, and not higher flow rates required for larger residential units or for denser residential or commercial buildings as likely to occur and as was planned per Figure 2. The one exception was a 1500 gpm flow as part of the Tetonia Village complex. Proposed improvements allowed the flow rate with required residual pressure to be sufficient at that location, but having probable similar high flow rate requirements elsewhere in the potential growth area was not really addressed, and it is possible that what was proposed would be insufficient for such areas. This amended study evaluates and recommends facilities that should have capacity for up to 1750 gpm flows, which covers 1 and 2 single family residences having floor areas (includes non-livable area) up to 4800 square feet without having sprinklers, and of course higher density residential and commercial limited to 1500 gpm fire flow rates as per the above recommended ordinance. This would be the case not only along Egbert Avenue, but with reasonable losses in waterline extensions going southward through and to all likely proposed development. (For fire flow rate requirements, reference is made to the fire code Appendix B, a copy of which is also provided in Appendix D of this report.)
- The S&A improvements upgraded two lines so that three existing fire hydrants on 4" lines were connected to 6" or larger lines. Two additional fire hydrants were proposed along existing lines where there were no nearby fire hydrants. And, along lines proposed for serving planned development south of town, additional fire hydrants were proposed. However, there was not a detailed look at adding fire code required fire hydrants, and lines required to service them, in the existing area of town. Per Appendix C of the fire code (see Appendix D in this report), the location of hydrants along access roads adjacent to served buildings shall not exceed the following:
    - For buildings having a required fire flow of 1750 gpm or less, no more than 500 feet average between hydrants and a maximum of 250 feet from any point on a street or road frontage to a hydrant; and
    - For buildings having a required fire flow greater than 1750 and up to 2250 gpm, no more than 450 feet average between hydrants and a maximum of 225 feet from any point on a street or road frontage to a hydrant.

Following this criteria, a lot more hydrants are needed, which necessitate waterline upgrades and extensions. This study incorporates improvements to meet the above fire code criteria.

III Procedures and Results

The S&A Study covered everything relating to the existing water system and the hydraulic model. Specific information requested in the DEQ Facility Planning Study checklist that was not addressed in the S&A Study is covered in Section V of this report. In this section, only the supplementary work performed as part of this complementary work is described.

A. AREA WELL CAPACITIES

Well flows in the area are fairly unpredictable and highly variable. The existing City well west of town has at least 400 to 500 gpm capacity, and an irrigation well just to the north of the City well 700 gpm, and just to the south only 300 gpm. Just south of the City is a 500 gpm well. Conversations were had with four well drillers having experience in the area, and opinions were as variable as the well capacities. There did seem to be consensus, however, that south of town was more likely to result in better flows. This is fortunate, because that is where future growth will likely occur, and it also provides balance to supply, the existing well being west of town and the tank to the northeast.

Tom Wood, PhD and P.G., a hydrogeologist and owner of Clearwater Geosciences, did a preliminary evaluation and indicated that 400 gpm seemed to be a mean capacity, and that a high of 600 gpm was possible as well as a low of 100 gpm. He recommended not planning on having more than 600 gpm available, with a possible production perhaps up to 800 gpm. He also indicated that the water source was perched, and that deeper wells would not necessarily produce more water. However, there are known higher capacity wells in the area, and a test hole could be used to evaluate capacity at desired locations.

Well capacities up to 1000 gpm were evaluated in alternatives. However, it was ever kept in mind that the feasibility of greater capacity wells was not high. Furthermore, the City currently has an adequate water right for only 400 gpm. Pumping at higher rates other than for fire flow is not allowed unless the City purchased more water rights. Consequently, if wells of higher capacity were added to the system, there would need to be some means of controlling pumping rates to prevent an excess of 400 gpm unless system pressures were low as would be the case during a fire flow condition. Controls of various types do exist, but generally they result in inefficiency at flows much less than capacity, and in some cases there can be less facility life. On the other hand, a pump having 400 gpm capacity at normal high pressures most likely will have approximately 500 gpm capacity at lower fire flow pressures, which condition would not result in any inefficiency.

Again, well flow rates from 400 gpm up to 1000 gpm were evaluated in options, but anything above 500 gpm was considered potentially not available and perhaps not even desirable because of the water rights issue and because the additional pumps would then not be the same as the existing pumps, thus not simplifying O&M and backup equipment.

B. CONVERSION OF EXISTING IRRIGATION WELL

There is an existing irrigation well just south of town that is owned by Brad Egbert that, as part of a previous development process that is now on hold, was tentatively agreed to be given, well and water rights, to the City. The well is known to be a reliable high producer at approximately 1250 gpm.

If the well and rights did, in fact, end up being owned by the City, there is hope by some in the possibility of simply converting the well to a lower flow rate drinking water well. However, preliminary investigations did not indicate that such is a sure thing or even the best option. One driller indicated that conversion costs approximately the same as drilling a new well, and there are more unknowns with conversion. If pursued, recommended first was to run a camera down the well to see if a bowl assembly is on the bottom of the well. There are also water quality issues. Many old irrigation pumps were oil filled, and often oil leaked into the water and well hole, which is difficult and costly to remove. Dennis Dunn of the Idaho Water Resources Department did not think conversion was likely a cost effective solution if even feasible, but it has been done before. Denning Well drilling indicated that the cost to convert is nearly as much as drilling a new well. So whether a new well is drilled near the existing well with the benefit of having both 3 phase power available and confidence in a good yield, or whether the well is converted, certainly there would be benefit in the City owning the well besides potentially obtaining the additional water right.

For the purposes of this study, the source or method of obtaining a well was not an issue except in cost, and for that the conservative approach of assuming starting from scratch was assumed, with capacity as needed for the given alternative.

C. ALTERNATIVES AND OPTIONS FOR OBTAINING CONFORMANCE

1. **Alternatives** As mentioned earlier, the City has only one well with 400 gpm capacity and only one tank with 100,000 gallons capacity, which is not sufficient to meet DEQ and fire code requirements. There are two extreme approaches to obtaining conformance: add no wells and increase storage capacity to meet requirements; and add no storage and add wells to meet requirements. These two extremes and conforming combinations evaluated in between are referred to herein as alternatives.

2. **Options** In addition to alternatives is what is referred to herein as options, of which there are four, and all are available for every alternative, except that only two options are available to the 'add no well' alternative. Options are as follows:
    - **Option A** – This is the standard condition, following DEQ's requirement of redundancy where the highest capacity pump is out of operation, and the fire flow is per existing conditions 2000 gpm;
    - **Option B** – Using a Wesley Tool, have two submersible pumps in the same well, so if one is down, there is still one to operate and the well

capacity is not ignored in DEQ and fire flow evaluations. The 2000 gpm fire flow is used;

- **Option C** – Only one pump per well is assumed, as with Option A, but fire suppression sprinklers are added to the school (and church if needed) so that the maximum fire flow required is 1500 gpm; and
- **Option D** – Both the Wesley Tool and fire suppression sprinklers are used.

Option A does not require special conditions or requirements. Option B meets regulatory requirements with additional improvements having less capacity than under Option A. It involves two pumps being in one of the proposed wells, situated vertically one on top of the other but piped in parallel. While this provides a backup pump situation so that all wells can be counted during a fire flow event, both pumps would have to be pulled in order to service one pump. This would also result in a different pump type and set-up for at least one of the additional wells than for the existing well, and if any standby or reserve pump and motor were kept in stock, one unit could not work for both or all wells. Moreover, submersibles are not usually as efficient or as long lasting as vertical turbine pumps that are in the existing well. Option C meets regulatory requirements with additional improvements having less capacity than under Option B. Option C involves installation of fire suppression sprinklers in the school, and possibly in the church. City personnel indicated that they thought it would make no sense and would not likely be approved to spend a lot of money on the old school to add sprinklers. On the other hand, the district did just receive funding for upgrading the entire HVAC system, so there may be interest in continuing on with the old school well into the future. Option D meets regulatory requirements with additional improvements having less capacity than under Option A. Option D combines the Wesley Tool 'all well capacities count' scenario with the sprinklers and lower fire flow requirement.

Evaluations were performed with all options, but it is understood that the most desirable situation for the City is the simplified operation and maintenance where all well pumps are interchangeable vertical turbine pumps, with one backup unit functional for all wells, or Options A and C. Having required fire flow rates reduced would certainly be nice, but it is not in the City's control, and while such may be a possibility, it is not a sure option if desired.

D. ADDING TANK VOLUME VERSUS WELL CAPACITY

1. **Alternative Selection Process** The various tank/well combination alternatives were selected based on the incremental addition of well capacity to allow a step-down in tank size and/or to eliminate the need for an additional tank under one or more options. This resulted in 10 alternatives between the extremes of no additional wells and no additional storage volume, where there is a combination of both well and tank storage increased capacity. For each alternative, all four options were evaluated, except that for Alternative 1, where no additional wells

were added, only two options were available (assuming the existing well was not converted over to a two pump system, which would not make sense when the existing and new standby pump units could not be used).

2. **Alternative and Option Capacity Evaluation Results** Evaluation of the twelve alternatives under the four options is summarized in Table 1 (tables are presented after the narrative). Flow requirements are per the S&A Study. With the addition of wells of various capacities, the resulting additional storage volume is presented. It can be seen that if no wells were added, which is Alternative 1, then 282,000 additional gallons of water storage is required for Option A and 207,000 gallons for Option C. At the opposite extreme, if three 740 gpm or four 500 gpm wells are added per Alternatives 10 and 12, respectively, then no additional storage capacity is needed for conformance.

E. SCENARIO IDENTIFICATION AND SUMMARY

1. **Definition of Improvement Scenarios** In this report, an improvement scenario is defined as a combination of an alternative and an option. Alternatives are numbered 1 through 12, and options are lettered A through D. For simplicity, a scenario is identified by combining the applicable alternative number and option letter. For example, Scenario 2A is the condition involving Alternative 2 and Option A.

2. **Scenario Identification and Summary** Table 2 summarizes the improvement scenario identification and conditions evaluated in this study, and summarizes the conditions and potential roadblocks. Also noted thereon is the preliminarily selected scenario and the reasoning for the selection.

3. **Preliminary Scenario Selection** WEI preliminarily evaluated the following:
   - Information contained in Tables 1 and 2;
   - General facility capital and operation and maintenance (O&M) cost information that already, at the time, was preliminarily summarized in what is presented herein as Tables 3, 4, and 5; and
   - Conversations with public works directors of the cities of Rexburg, Idaho Falls, Pocatello, and Ucon.

   WEI concluded that Scenario 2A was the most feasible and desirable scenario within the control of the City and in their best interests. However, that determination was not disclosed or persuasion made that direction when presenting Tables 1 and 2 and generally the information in Tables 3, 4, and 5 to the City mayor and public works operator, who independently also concluded that Scenario 2A seemed to be the most feasible and desirable. This was a preliminary and unofficial conclusion, of course, as the full information needed to be presented to the City Council for consideration and informed decision making. However, it was important to make a preliminary selection and focus on it when preparing subsequent evaluations, because otherwise a refined investigation on

every scenario would be too time consuming and beyond the scope. Having preliminarily chosen Scenario 2A, subsequent investigations could accurately depict both capital and O&M costs for that scenario, and with modifications using simplifying assumptions, reasonable cost values could be generated for all other scenarios. That approach seemed reasonable at the onset and, having completed the evaluations, still seems to have been a good approach and resulting in reliable information.

F. ESTIMATED TANK CAPITAL COSTS

1. **Steel or Concrete** Municipal water tanks are typically of steel or concrete. WEI likes the concrete tanks as they are generally longer lasting and need less maintenance, but for smaller volumes the cost is higher, and the difference in cost increases the smaller the tank. For the sizes needed by the city of Tetonia, a steel tank would clearly be the lowest cost and probably the best value. WEI proceeded on that basis.

2. **Bolted or Welded** There are two types of steel tanks: welded and bolted. The disadvantage of bolted plate tanks is the challenge of keeping them from leaking. The advantages are substantially reduced capital cost and, because all surfaces are factory coated, reduced O&M and longer overall life. The lowest budget cost received for a welded tank for Scenario 2A was $335,000, whereas for a bolted tank the lowest was $130,000 and the highest was $196,000. The cost difference being so different, WEI pursued the issue further. United Tank Company fabricates both bolted and welded tanks, and while they have their respective divisions, which WEI talked to, WEI also talked to the manager of maintenance operations for both tank types. In summary, newer tanks use materials that seal well and have not been a problem to construct without leaking, both initially and long term, so long as they are fabricated properly (United does all their own fabrication rather than allow local laborers). Furthermore, this same maintenance manager for both bolted and welded tanks confirmed that O&M and longevity are better for bolted tanks. Given this information, WEI proceeded assuming bolted tanks were used.

3. **Tank Budgetary Capital Costs** Table 3 summarizes tank capital costs received from vendors and the values further used in this study. Tanks meeting the requirements of Scenario 2A are highlighted in yellow. It can be seen that a tank for Scenario 2A is estimated to cost approximately $269,000 or roughly just over ¼ million dollars.

G. ESTIMATED WELL AND PUMP HOUSE CAPITAL COSTS

Table 4 presents well and well house cost estimates based on duplicating the existing well plus a well house with equipment as required by DEQ, with backup generator and inter-well/tank controls and minimal web based monitoring with emergency stop and start. Costs are based on prices obtained from three well drilling companies. It can be seen that

each well and well house (only one is needed for Scenario 2A) is estimated to cost approximately $237,000 or roughly ¼ million dollars. This is for a 400 gpm well that, under low pressure fire flow conditions, can pump approximately 500 gpm. Higher capacity wells will be more expensive, but not much more for hardware. Availability and cost of extra capacity is unknown and only approximated herein.

H. ESTIMATED TANK AND WELL O&M COSTS

The estimated frequency and cost of tank and well O&M maintenance is presented in Table 5. The tank values are based on information from several city public works directors, the City of Tetonia, tank vendors in general, and especially the tank maintenance manager for United that is over both bolted and welded steel tanks. The well pump values are based on information from several city public works directors, the City of Tetonia, well drillers and pump service companies in general, and especially American Pump who performed the most recent service on the City well. Cost information is presented in at- the time cost, present worth cost of 45 years of maintenance, and the sinking fund annual cost.

It can be seen that for the city of Tetonia tank, a bolted tank should have less O&M cost than welded steel tanks, and that tank O&M is significantly less than for a well. That was noted before in the narrative and on Table 2, which is why multiple well alternatives and scenarios were not further considered in detail.

The O&M values shown on the table are for Scenario 2A, where there are two wells and two tanks. Of course this is not the current situation and so the O&M would be more than the City currently experiences. However, it is also fair to say that the O&M schedules presented in Table 5, and costs associated therewith, would for existing facilities be significantly higher than what is and has been being spent. In other words, the limited budget available has hardly been sufficient to properly maintain the system. The inability to fix known leaks and maintain the existing well house is indicative of the hardship. Efforts to improve the system so that needed O&M can go down and ways to increase the budget would be beneficial. A city's water system is an extremely valuable though rarely thought of asset that needs commensurate attention.

I. ESTIMATED DISTRIBUTION SYSTEM CAPITAL COSTS

1. **Improvement Selection Process** The study approach was discussed in Section II, which outlined the focus used in this study to identify needed improvements. As the approach substantially governs the improvements proposed in the distribution system, it may be beneficial to briefly review that approach.

   First and foremost considered were the improvements needed to serve existing users of the water system. Prioritization was given to those that provided functionality and reliability to the water system, and then those that were needed strictly to conform to DEQ and fire code regulation. It can be argued that these are one and the same, as the objective and purpose of both the DEQ and fire code

regulation are to provide functionality and fire flow capability under probable conditions. However, in terms of prioritization, there can be a difference. For example, having sufficient water flow for nearly the required fire flow duration per code, and with all wells working rather than with one down, is a better first step than to meet the "what if" scenario of a well being inoperable when a fire occurs, but then not have the lines and hydrants to get the water to where it needs to go, the latter being a restriction guaranteed to impact the system and the former a restriction only if the fire occurs when a well is down.

In terms of the distribution system, this first priority resulted in a secondary line to the city from the tank that had sufficient capacity to get flow to the grid with minimal pressure losses so that there would be adequate pressures in the balance of the system. It meant upgrading and adding other lines so that all areas are serviced by hydrants at spacing and capacity per fire code.

The second priority was to look at potential future growth and what would be needed to service it, so that when improvements are made to service existing water customers, the new construction is adequate for probable future condition as well.

2. **Source of Estimated Costs** Budgetary prices for materials came from three vendors (Ferguson, HD Supply, and HD Fowler), except that the meters pits, meters, and remote meter reading equipment prices came from only two vendors (Ferguson and HD Supply). Average prices were used. Budgetary prices for pipeline construction, excluding the materials cost obtained per above, came from three contractors (DePatco, Owens PC, and MD Nursery), except that meter pit replacement and providing freeze protection for shallow water lines came from only 1 contractor (DePatco and 3H, respectively).

3. **Estimated Distribution System Capital Costs** Table 6 shows the estimated distribution system capital costs, and also provides, in the summary at the end, the cost of well and tank components also for total project costs. In the summary, 40% is added to the distribution system costs to cover miscellaneous associated construction and contingencies, engineering design and construction administration, and grant/loan administration, as these were not covered previously in the table.

J. IMPROVEMENT PRIORITIES

1. **Distribution System Priorities** It is not hard to see that costs are substantially more than the City can afford without a great deal of financial assistance that may not be available. In order to assist with improvement prioritization if work is phased, WEI evaluated and provided prioritization.

2. **Priority or Phase I** A distribution system improved for fire flow conveyance capacity benefits little if there is insufficient water to be conveyed. Moreover, the

critical need for the City's domestic water is not met with distribution system upgrades, but rather with water supply, from a tank or a well. Both a second tank and a second well each cost approximately ¼ million dollars. So if only one or the other can be done, which is best? It may have been observed from previous information provided herein that a tank provides more bang for the buck than a well. And from a fire flow standpoint, that is particularly true as indicated by Table 7, which shows the conformance or degree of non-conformance to fire code, both with and without DEQ's criteria of evaluation under the conditions of one well being out of operation at the time of the fire event.

The addition of a 225,000 gallon tank will provide not only fire flow volume, or required flow rate over a required flow duration (except that the distribution system cannot convey the flow rate to all areas), but it also will provide water storage for 2.7 days of average water use in the City, and approximately 3.6 average days of water use if a few known leaks are repaired. Inasmuch as the City has a standby spare well pump and motor in their shop, it is probable that if the well went down (and there was no simultaneous fire flow event), that the City could have the well system up and going again before the tank ran out of water. Yes, probable, but not sure. Running out of water in the city would be a dire situation. True, if the system went down, the word could be quickly spread to conserve until the well was functional again, but still it is just not a good idea to have an entire town dependent on a single source of water. As much as it is recognized that the tank provides more obvious bang for the buck, there just seems to be no substitute for having a second source.

Although going first with the additional tank is a good option, it is our recommendation to have the 2nd well as the first priority. With both wells operating at fire flow condition low pressure in the system, they will add 1000 gpm to the system, enough for current residential fire flow requirements, and half of the requirement for the school, and that is available for the required fire flow duration and beyond to help quickly refill the existing tank. If one well is inoperable for whatever reason, there is still water supply for the city, and up to 500 gpm for fire flow in addition to what the tank provides. This would not meet regulatory requirements, but it is a good start.

The second well can also provide a supply of water from a different location in town, which is good from a redundancy standpoint when line repairs are being made, and also to supply fire water that results in reduced pressure losses, because flow is conveyed in more lines to the point of need.

3. **Priority or Phase II** If the tank added so much benefit, then surely after the well it would be next in priority, it seems. However, once either the second well or second tank are added, the priority seems to shift to make use of the extra water, and that is to improve the distribution system to get the water to the fire hydrants and the buildings. Phased improvements are detailed in Table 6 previously

referred to, and are shown graphically on Exhibit 1 located after the narrative portion of this report.

a. **Phase II-A** This phase adds fire flow rate capacity to critical areas.

   Phase II-A.1 adds fire flow capacity to the school and church, and also to a commercial area where there currently are no fire hydrants or water lines that could support hydrants. Phase II-A.2 is less critical than A.1, but it changes a situation where commercial and residential areas served by two hydrants on a way undersized 4" line are served by four hydrants on a larger line. This upgrade requires a bore under the highway, which at a minimum should be done when the bore under the highway is performed for Phase II-A.1. Phase II-A.3 is also less critical than A.1, but it provides adequate flow rate capacity to existing hydrants south of town.

   With Phase I improvements (the second well) and Phase II-A improvements, the distribution system is sufficient to meet fire code flow rates to all hydrants in the system when both wells are running. And even with one well inoperable, only two hydrants, H-9 on Egbert Avenue and H-12 southeast of town along the highway, have pressures drop below the required 20 psi, and even they retain adequate pressures to a fire pumper truck while providing fire flow.

b. **Phase II-B** This phase is lower priority than Phase A, but Phases I, II-A, and II-B together are needed to bring the water system fully into conformance with DEQ and fire code regulations.

   Phase II-B.1 adds the redundant and higher capacity line from the tank site to the system grid. This not only is beneficial in case there is a line down on the existing supply to town, but the higher capacity reduces pressure losses to a point where required pressures are met during fire flows throughout the town, even with the 2nd well inoperable. Phase II-B.2 provides a vital connection between the new and old tank to town supply line. Phases II-B.3, B.4, and B.5 provide line sizes to the balance of existing buildings in the town to add code required fire hydrants where there are none now.

4. **Priority or Phase III** Improvements in this category are NOT required to meet DEQ or fire code regulations. They are nonetheless beneficial improvements.

   Phase III-A improvements provide miscellaneous looping and secondary lines, and also includes replacing a marginally sized line from the existing well that is too shallow and subject to freezing with a larger line at a lower depth. Phase III-B adds insulation board over a number of shallow lines in the system that are otherwise adequate and in good condition. Specific locations are not shown on the

exhibit. Phase III-C covers replacement of all the meter pits in town with frost protected pits and all the meters with units that can be read and monitored remotely.

K. THE FIRE FLOW BURDEN

It may be well to interject a concept at this point. Most are familiar with the concept of economy of scale, and that applies to construction of water systems, but WHAT system is required and the cost thereof is far more affected by the fire flow burden. The purpose of this discussion is not to suggest that having fire flow capacity in a water system is unnecessary or an unjustifiable nicety. Instead, this discussion is provided to help clarify why costs are so high per user for small systems, and that the only substantial way to bring down the cost per user, besides grants for construction but even that does not help with O&M costs, is to share the cost among more users.

City domestic use is approximately 266 gpm for 24 hours on the maximum use day of the year. The fire flow requirement for Tetonia is 2000 gpm, meaning that a system that otherwise must be capable of 266 gpm must instead be capable of 2266 gpm. Required fire flow necessitates an 852% increase in flow capacity. Building material construction and size, and whether equipped with fire suppression sprinklers or not, affects required fire flow rates, but assuming the same structures in both cities, the city of Idaho Falls would have the same fire flow requirement as Tetonia. However, in Idaho Falls, because of the large population base, the fire flow requirement is very small compared with domestic use, representing only about a 6% increase over domestic use. Again, the difference is an 852% increase versus a 6% increase.

The fire flow requirement in Tetonia will not be changing based on the population. However, population increase will decrease the cost of fire flow capacity per user. This should be understood when considering the overall "impact" of new development on the water system. As long as development pays for its own facilities and impacts, the ability to spread general system costs is advantageous.

L. PRELIMINARY FUNDING OPTIONS

There is an Aesop fable entitled *Belling the Cat.* In the story, the mice have gathered to discuss how to protect themselves from the cat. Eventually a young mouse suggests putting a bell around the cat's neck so that when it came around, the mice would all hear in time to scamper to safety. The suggestion brought much applause until an old sage stood and asked, "Yes, but who will bell the cat?" Engineering effort has resulted in a cost-effective determination of what facilities are needed to meet DEQ and fire code requirements. The solution is presented herein. But like belling the cat, it represents a rather ominous requirement of funding the improvements. This section provides preliminary considerations regarding funding, but the full strategy of how to bell this cat will no doubt involve future political activities and funding agency investigations.

1. **Grants and Low Interest Loans** The common approach for small communities in southeastern Idaho, when they have significant facility upgrade needs, is to obtain grants supplemented with low interest loans. Grants typically come from the USDA Rural Development or Idaho Department of Commerce Community Block Grant programs. Grants, low interest loans, and out of pocket funding typically work together to meet matching and total cost needs. However, to be considered for grant money these days, residential service fees need to be at least as high as $40 to $50 per month. The current City rate for a 3/4" inch water service is only $25. That would need to be raised substantially to have any hope of receiving a grant. Raising the service fee also helps in that revenue will be generated against which low interest lows can be obtained. On the downside, charging citizens additional costs, particularly on the heels of a substantial sewer service fee increase to $60, will be no less a challenge politically and economically than belling the cat.

   WEI briefly looked into Rural Development grants and loans. The loan is required to be able to obtain a grant, and the loan interest is 4.75%. Grants are available only if the community has a median household income of $36,997 or less (last year's figure, this year's figure was not yet available). The most recent five-year median household income (MHI) for Tetonia was $42,778. It appears, then, that grants would not be available for this project.

   DEQ's 2.25% interest rate can be reduced to as low as 0% and even come with some loan forgiveness ***if*** the monthly service fee to residences is at least 1.5% of the MHI. At the $42,778 figure above, that represents $641.67 per household per year or $53.47 per month. This would be the minimum monthly residential service rate for which interest rate reduction could be considered, and probably an even higher rate would be required before any loan forgiveness would be allowed.

2. **Potential Loan Amount** Grants generally require matching funds to some extent, which can be from loans, and loans are only available if there is a proven means of repayment. For the city of Tetonia, this probably can come only by way of a rate increase.

   Table 8 shows monthly user rated required to cover operation and maintenance (O&M) and rehabilitation and replacement (R&R). It is $44 per month. It also shows the monthly cost of debt service on loans to construct the capital improvements. With 2.25% interest, the debt service fee would be $46 per month, requiring a total monthly service fee of $90. With a 0% interest loan, the total would be $77. There could be loan forgiveness up to an unlikely $1,593,252 and still the monthly fee would equal the 1.5% of MHI at $53.47.

   It can be seen that in order to get the City water system up to current functional and safety standards, there will need to be a "bite-the bullet" experience.

3. **Phasing Versus the Whole Project** As with most budgets, if there are not dollars for the full project here and now, one can phase the project into smaller portions and do them here and there as able. There are two drawbacks to that approach with respect to the improvements needed to the city of Tetonia water system.

   a. **When Will It Get Done?** This is not a case where if one does not have the funds now, the project is spread over 3 or 5 years. If the City did not significantly raise the rates, there would not be funds to construct the full project in who knows how long. Under current conditions, there is not even sufficient funding to provide standard O&M in the system, so being able to fund at least 25% shares of projects year after year will not complete or approach completion of the project before major upgrades or maintenance are required. It is doubtful the City will ever arrive.

   b. **Grants Versus Local Match** Willie Teuscher of DEQ and others have made an interesting point. When it comes to municipal funding of projects, sometimes phasing the project does little more than remove grant money. The municipality is ALWAYS required to do what they can or what funding criteria expects them to do, and grant monies as available will cover the balance. If the project is scaled down, first goes the grant money, then the low interest or lower interest loans. If the project is scaled down much, it almost for sure will become a City low interest loan project where the City ends up paying every penny of the project. That would be admirable from a fiscal responsibility standpoint, but under current circumstances, as noted in (3a) above, the City would be hard pressed to ever "arrive." And, if higher rates are needful either way, there may as well be grants obtained and lower rate and perhaps forgivable loans involved.

4. **The Funding Plan** This subsection was entitled "Preliminary Funding Options" because funding possibilities have only been preliminarily explored herein. Just as this study looked in detail at engineering alternatives and options, the same detail of investigation should be made to figure out a way to fund the project. This can consist of a program an ongoing public education, obtaining updated and refined MHI information, and exploring funding options available, on the part of the City and others. Willie Teuscher of DEQ indicated his willingness to help with ideas of pulling various funding components together, and The Development Company (also known as ECIPDA) has successfully pulled together funding miracles for Tetonia and other communities in the past and are willing to help do so again.

M. SCENARIO COST SUMMARY

Table 9 shows costs for all 48 scenarios evaluated, with total capital costs, total annual costs, for O&M and loan payoff, and also the present worth of the capital and 45 years worth of O&M costs. The summary excludes Phase III work, because the intent was to provide a relative cost difference between scenarios, and Phase III work is the same

regardless of the scenario chosen. Costs are figured fairly accurately for Scenario 2A, or Alternative 2 Option A, as that was the preliminarily preferred option by the Engineer and City mayor and public works operator, of scenarios considered feasible. Factors were applied to other scenarios that provide a ballpark understanding of costs associated with the scenario, but variations of a minor amount between scenarios should not be considered absolute, as values are not that accurate. Footnotes on the table provide additional information regarding method of determining costs.

The total capital, tank O&M, well and house O&M, total O&M, and total present worth values in Table 6 are color coded. If costs are on the lower end, they appear in green. If they are on the higher end, they appear in red. If in the middle, they appear in black. It can be seen that, as originally predicted, the lowest capital cost is when a large tank and no additional well is added as per Alternative 1. But also, as previously mentioned, having no second source may not be accepted by DEQ and is not a desirable situation for the City. On the opposite end, adding 3 or more wells, even if it means no additional tank is needed, is not cost effective because of the high O&M cost. Alternatives adding one or two wells fared relatively well, although the ability to get two high end wells for Alternatives 5, 6, and 7 is questionable. Even so, the most cost effective alternatives are 1 through 4 of adding 0 to 2 wells of expectable capacity. If the 'only one water source' Alternative 1 is eliminated, then Alternative 2 is the lowest cost, and of those, Option C is expectedly the lowest cost where the required fire flow is lowered, but that requires other costs of adding sprinkler systems to the school and possibly the church, an the politically approvals, and that is not likely or even worth the minor long term difference. Hence the preliminary selection of Scenario 2A has been validated through the full study.

IV Conclusions and Recommendations

A. FIRE FLOW ORDINANCE

WEI recommends that the City adopt a fire flow ordinance that restricts all new construction such that fire flow requirements per the at-the-time current International Fire Code do not exceed 1750 gpm. This will result in larger buildings on the perimeter or extremities of the grid system, or even future buildings within town, to not unnecessarily burden the entire City water system with having the capacity to supply very large quantities of fire flow water. By the way, this would not be a burdensome restriction on the building industry, because with fire suppression sprinklers, as large of buildings as are conceivable in Tetonia would still conform.

B. SCENARIO SELECTION

Before discussing the final selection of a scenario, it may be well first to directly discuss two other scenarios (or alternatives).

1. **The Null Scenario** Evaluating null or the "do nothing" scenario is usually a requirement. However, because it does not result in meeting either DEQ or fire flow requirements, it was not discussed earlier in the investigation of regulation conforming scenarios. The capital cost of the do nothing scenario is minimal but unknown. Under this scenario, whatever issues come up are either dealt with if funds are available or they are not and the service suffers. Consequently, this is a low monetary cost scenario, but also a reduced quality and preparedness scenario, not only in terms of normal operations, but especially in times of emergency.

2. **The Pay-As-You-Go Scenario** This scenario is an option to the other scenarios. It was indirectly discussed on page 20 in paragraph 3. One can select Scenario 2A, for example, and implement it as time and resources allow. When development returns, however, the amount of cost to bring the system up to current standards as per regulation will likely be cost prohibitive, and development will have to go elsewhere. Some may deem that a good thing, but it will preclude the shift of substantial water system upgrade costs to new development. Phasing of scenarios that involve debt burden are undesirable too, of course, and current water system users pay the full brunt of the cost of upgrades that they benefit from. But if the infrastructure is in place to serve current users in accordance with regulation, then there is readiness for development to occur, pay for extensions and reasonable upgrades, and to substantially share the debt burden through connection fees that spread the overall system cost. For example, the 200 new EDUs anticipated in this study which were close to a reality before the economic turn down would have doubled the City services, resulting in what the current users pay for overall conforming infrastructure being reduced by at least 50% and probably more. Stated in other terms, there is a missed opportunity to reduce monthly service fees, for example, from $60 to $30. But perhaps a far more serious drawback to the pay-as-you-go

scenario in the case of the City water system is the potential for serious problems to occur, such as significant water deficiencies or even substantial loss of personal goods or life. The possibility is certainly there, and given more and more time, the likelihood increases of some tragedy occurring. Of significance is that this is not a matter of a 5 or even 10 year process under the pay-as-you-go scenario, but truthfully the cost to upgrade the system is so far beyond the City's ability to pay for the upgrades that, more than likely, full conformance would not be realized until far, far into the future, as repairs and mandatory upgrades would consume most available resources. That is a precariously long time to be so deficient with such a vital life supporting and safety providing infrastructure.

3. **The Recommended Scenario** As noted earlier, in order to be efficient with study funds, it was needful to get a feel early on as to what may be the best scenario, and to be sure it received sufficient close examination. WEI presented preliminary findings to the mayor and public works operator, and all three more or less independently were of the same opinion that Scenario 2A was the best scenario. The balance of the yet unbiased study never revealed any reason to change that preliminary opinion, but instead only confirmed it. Consequently, when study results and all scenarios were presented in a public hearing meeting on June 13, Scenario 2A was presented as the engineer recommended scenario. WEI recommended Scenario 2A as shown on Exhibit 1 and described herein as the best of scenarios investigated for bringing the city of Tetonia's water system up to DEQ and fire code standards, and to provide a functional and reliable water system to meet the City's needs now and well into the future.

4. **The 30 Day Comment Period** passed without a single comment. There was none from the public, and none from the City. This was surprising when the recommended solution could more than double current monthly service fees. There was general consensus during the public hearing meeting that Scenario 2A was the tough but needed scenario. Subsequently, on July 20 at a special meeting, City Council unanimously adopted Scenario 2A, implementation to depend on, among other things, funding.

C. PURSUE PROJECT AND O&M FUNDING

WEI recommends a continued effort to obtain means of implementing Scenario 2A construction. This will no doubt require a substantial water service rate increase to be able to:

- better provide O&M for existing facilities;
- provide sufficient O&M for future facilities;
- become eligible for grants not otherwise available when monthly service rates are substantially below the thresholds considered appropriate for grant assistance; and
- to be able to have the borrowing or loan payoff ability required to get a loan.

It is likely that such efforts will include performing a new median household income survey per Rural Development standards, or awaiting and finding beneficial the 2010

census information. It would also be wise to explore all options and combinations of funding to obtain the best available package for the City. On a parallel track, public education and awareness efforts can help to inform the public and gain acceptance of what is clearly a hard solution to a very tough problem, particularly on the heels of a substantial sewer rate hike.

V Supplement to the S&A Study

The balance of this report will follow the DEQ Engineering Report format, but only those items identified in the Scope of Work and which are provided in Appendix C. The balance of DEQ Engineering Report Items is provided already in the 2008 S&A Study.

A.1.c Narrative of System Owner Responsibility Acceptance Reference is made to a letter from the City of Tetonia that is provided in Appendix E of this report.

B.2 Narrative of Existing Environmental Conditions Reference is made to the separate WEI report entitled *2011 Drinking Water Facility Planning Study: Environmental Information Document,* Section B.2, that was prepared according to DEQ requirements outlined in Form 5-B.

B.3.f Cross Connection Control Program This program is covered in Chapter 2 of Title 7 of the municipal code, which is copied in Appendix F. It was written in 1981 and updated to some extent in 2008. Even so, the *2010 DEQ Sanitary Survey*, which is copied in Appendix A, contains Recommendation 17 that says "the outdated 1981 Cross Control Program needs updated." Notwithstanding, the City has indicated that at present there are no plans to update or modify the cross connection control regulation.

B.5 Existing Conditions Water System Hydraulic Model As noted earlier, in conjunction with the 2008 S&A Study, Schiess prepared a very good hydraulic model of the system. That model was used as the basis for all modeling performed with this study. A few topological corrections were made in accordance with City instructions, such as line sizes in the Rammell subdivision, and also for a few updates since the S&A Study.

B.7 Narrative of User Charges and O&M Budget The City water system budget that covers the years 2009, 2010, and 2011 is provided in Appendix G. It can be observed from the budget that monthly service fees areas follows:

- 3/4" service $25
- 1" service $29.58
- 1.5" service $89.34
- 2" service $124.47

It can also be seen that beyond budget for 1/3 of personnel time and electricity cost, there is not a lot available to budget for O&M. More typical and needful O&M budgets will be further discussed later, with explanation and support, but suffice it to say here, it is estimated based on normal operations that the O&M for the proposed system would be approximately $30,000 per year *excluding* the distribution system; that is, for two wells and two tanks. Granted, under present conditions, the City has only one well and one tank, but it also has a city-wide distribution system with O&M requirements as well. There simply is not enough income generation in the monthly service fees to allow for conventional O&M. Again, the details of O&M service schedules and costs will be provided hereafter.

B.9 List and Status of Deficiencies A general discussion of system deficiencies is provided in the second paragraph of this report. Elaborating on that, there are deficiencies with respect to DEQ requirements, which are mostly identified in the *DEQ 2010 Sanitary Survey* provided in Appendix A, deficiencies with respect to not being able to meet fire code flow and duration requirements while simultaneously providing maximum daily flow as per DEQ requirements, and there are also additional deficiencies from the perspective of the City. These were all described on an attachment to the water planning grant Letter of Interest, which attachment is copied in Appendix H. For the most part the deficiencies still exist. However, the verification of deficiencies and seeking of current status was pursued by letter and follow up meeting with the City Mayor and public works worker. The questions and answers are provided in Appendix I.

C.1 20 Year Population Growth Originally it was thought that an updated population growth would be estimated. However, the City indicated that there has been zero growth over the last several decades. Based on that, there would be no growth over the next 20 or 40 years. However, it would not be wise to plan for no growth, so it was decided to maintain the same growth estimate used in the S&A Study, as previously discussed in paragraph 1 of page 6 of this report.

C.3 Planning Period As per above, water demands were evaluated using the S&A Study growth estimate. However, when evaluating O&M, which has cyclic maintenance, refurbishing, and replacement costs, the least common denominator of the cycles was 45 years, so that is what was used for the tank and well investigation. Waterline replacements for structural reasons were not considered, but only for capacity.

C.5 Land Use Plans Since the S&A Study, the Comprehensive Plan Land Use Map and Zoning Map have changed, along with the City boundaries. Figures 3 and 4 show these updated maps. As noted earlier, the City indicated that growth should be considered as happening south and southeast of the present developed area of the City, plus infill in the Rammell Subdivision in the northeast portion of town,

C.6 Future Conditions Water System Hydraulic Model As was discussed in Section III, 12 improvement alternatives were evaluated, each with the same 4 options, and that the improvement scenario recommended by the engineer and selected by the City is improvement Scenario 2A. For improvement Scenario 2A, 13 separate hydraulic modeling scenarios were run. The various hydraulic scenarios allowed evaluation of phased improvements and also checking system conformance with fire flows at different locations and with both wells operating and also with only one well in operation as per DEQ's redundancy requirements. The scenario results show the various gains and conformances to criteria with each phase, but full conformance is not achieved until after Phases I, II-A, and II-B are completed. Only Phase III is unneeded to meet DEQ and fire code requirements. As such, Phase III improvements were not evaluated in hydraulic scenarios.

[Insert Figure 3]

[Insert Figure 4]

D.1 Deficiencies to be Corrected by the Project Nearly all water system deficiencies would be eliminated by proposed improvements. Of the five DEQ *Sanitary Survey* deficiencies, the additional source, fire hydrants on minimum 6 inch lines, and auxiliary power would be provided. As for backflow protection correction in the well house, City personnel will fix that soon separate from this study proposed project. As for the water loss exceeding a 15% ceiling, the City intends soon to fix Leak #3, which is 5 gpm per the leak detection study, and thereafter Leak #9, which is another 5 gpm leak. With those two leaks repaired, half the leaks in the system will be fixed, leaving 10 gpm total leakage in the system, or 12%, which is below the DEQ ceiling. The balance of leaks will be repaired by City forces when resources permit.

Proposed improvements will also provide sufficient fire flow rate and duration, with one well out of service, simultaneous with maximum day flows, both with respect to supply and distribution, and all in conformance with DEQ pressure residual requirements. Also provided would be a redundant line from the storage tanks to the system grid.

D.2c Optimum Operation of Existing Facilities With only one well and only one undersized tank, the system is fairly simple. As long as everything is functioning properly, and there are no fire flow demands, everything seems to work satisfactorily. The well functions based on a float to keep the tank near full. Operationally, the one procedure that should be re-evaluated by the City, especially with present conditions, is to set the float higher. Currently it is set, per the S&A Study and which is consistent with what the City public works operator indicated, at 4 feet below the overflow. This means that if a problem occurred just before or just after the pump was to turn on, there is only 82% of the available storage volume to start with. It would seem wise to maximize the available volume for emergency periods by having the pump turn on at a higher level, and start with more in the range of 95% volume.

D.2d Regionalization Options The only water system anywhere hear Tetonia is in Driggs, but that is 8 miles away. Distribution between the two would not be practical, and storage tanks are needed locally anyway to provide fire flows. Having an independent system that only needs upgrading makes sense over a regionalization solution.

D.2e Environmental Impacts of Alternatives Reference is made to the separate WEI report entitled *2011 Drinking Water Facility Planning Study: Environmental Information Document,* Section C.3, that was prepared according to DEQ requirements outlined in Form 5-B.

D.3 Service to and Management of Isolated Areas Tetonia is not an urbanized area with outlier neighborhoods and development. There really isn't anything nearby except Felt, Idaho, an unincorporated area located 5 miles north northwest. Isolated areas needing service are currently not an issue.

D.4 New Water Supplies Finding and buying new water rights is not easy or inexpensive. And, since the City has subsurface water rights for 400 gpm, which is sufficient to meet current and estimated future conditions with double the population, there is no need.

What is needed, however, is a second source. The most economical way to obtain good water, and it is in accordance with their existing water rights, is to drill another well and transfer the rights to the other well as an optional diversion point; that is, the City would have the right to draw or divert the water from either well. When the tank water level drops to a well pump on position, controls can alternate which well turns on. Either by float or system pressure, an override can allow both pumps to run simultaneously for what would be fire flow low pressure conditions. Water rights are not needed for fire flow water. Thus, the two wells would cost effectively utilize existing water rights to provide adequate service to the city.

D.5 Treatment Requirements Groundwater quality has been good and there has not been the need for treatment. Space exists, as per DEQ requirements, for chlorination or other treatment if the need arose. If the source water became bad, depending upon the pollutant found, treatment would have to be provided as needed.

Concerning the source water, an assessment was performed by DEQ dated July 16, 2001, a copy of which is provided in Appendix E of the S&A Study, and therefore it is not provided again with this study report. Therein is the following summary statement: "In terms of total susceptibility, the City of Tetonia well water rated high for IOCs, VOCs, SOCs, and moderate for microbial contaminants primarily due to agricultural land uses, the geologic composition of the vadose zone, and the nearby location of various potential contaminant sources" (p. 9)

Part of the problem is that the "hydrologic sensitivity was high for the well. This reflects the shallow depth to groundwater in the area (less than 300 feet) and well drained soils. Additionally, the vadose zone (zone from land surface to the water table) is composed of sand and gravel, which also facilitates downward movement of contaminants. The well does not have the requisite 50 feet cumulative low permeability formations to help retard the downward movement of contaminants..." (Ibid, p. 8)

Recommendations are that "since the aquifer appears to have alternating layers of clay and sand, a deeper well could be installed to offer better protection from total coliform bacteria and inorganic contaminants…Water should be taken from beneath a confining clay layer since the upper aquifer has a high potential for becoming contaminated" (Ibid p. 10)

The existing well is 320 feet deep, but the water is drawn at approximately 160 feet. The City already has a backup pump and motor for those conditions, and would like to have any future wells have the same hydraulic characteristics, if possible, so that one set of pumps and motors can be a backup for either well. This is good practice, but the above recommendations should be considered at the time of well construction to obtain as safe a well as is practical.

It would be well to locate the future well outside of the source water area of the existing well, which is roughly delineated as Figure 2 in the *Source Water Assessment* report. Unfortunately, the source water area includes the area determined to be the most reliable

and the most beneficial location for a second well. With a tank and future tanks on the hill to the northeast of town, and a well west of town, and projected growth being south of town, and well south of town makes the most sense. And south of town is where the most reliable water sources areas well. The proposed second well is right on the edge of the approximate source water area delineation, however, so most of the source water area affecting the existing well would not affect the proposed future well.

D.9 **Separate Irrigation Facilities** As noted earlier, the City owns irrigation water rights, but has no facilities to draw and distribute them to properties within the city. Consequently, there are no separate irrigation facilities, and there likely will not be.

D.10 **Staged Distribution** It is presumed that this refers to phased improvements, which was discussed in the *Procedures and Results* section.

D.11 **Public Input** Reference is made to the separate WEI report entitled *2011 Drinking Water Facility Planning Study: Environmental Information Document,* Section H, that was prepared according to DEQ requirements outlined in Form 5-B.

D.12 **Impact to System Classification** The system already has a well, tank, and waterlines, so the addition of a second well and tank, along with waterline upgrades and extensions, will not change the classification or operator licensure. Currently the well is operated by telemetry from the tank. Adding a second well and tank, with only one well allowed to operate at a time under non-fire flow conditions, may add minor complexity to the control system, but that is all.

E.1 **Evaluation of Costs** Reference is made to the *Procedures and Results* section.

E.2 **Evaluation of Environmental Impacts** Reference is made to the separate WEI report entitled *2011 Drinking Water Facility Planning Study: Environmental Information Document,* Section C.4c, that was prepared according to DEQ requirements outlined in Form 5-B.

E.3 **Impacts to Water Supply Systems** There will be no impacts to public or drinking water systems. The proposed well location is close to an irrigation well, but preliminarily there has been discussion by the developer to grant the well and rights to the City. If not, then the newly constructed well should be at least far enough away to not impact the irrigation well capacity.

E.4 **Source Water Reliability** Well capacity is hard to predict as flows vary substantially from spot to spot in the area, but a given well is fairly constant in recharge, output, and capacity. The aquifer is fed by snow from the Grand Tetons to the east, which is a reliable source. There is no major water user above the City in the watershed. The existing and proposed new well should prove to be long term reliable sources.

E.5 **Comparison of Alternatives** Reference is made to the *Procedures and Results* section for evaluation of alternatives and costs, and for environmental impacts to the separate

WEI report entitled *2011 Drinking Water Facility Planning Study: Environmental Information Document,* Section C.3, that was prepared according to DEQ requirements outlined in Form 5-B.

E.6 Evaluation of Final Public Input Reference is made to the separate WEI report entitled *2011 Drinking Water Facility Planning Study: Environmental Information Document,* Section H, that was prepared according to DEQ requirements outlined in Form 5-B.

E.7 Cost Effective Analysis per 40 CFR 35.2030 (b.)(3.) The referenced regulation says "A cost-effectiveness analysis of the feasible conventional, innovative and alternative wastewater treatment works, processes and techniques capable of meeting the applicable effluent, water quality and public health requirements over the design life of the facility while recognizing environmental and other non-monetary considerations." This and sections before and after all pertain to wastewater systems, not water. However, reference is made to the *Procedures and Results* section for evaluation of alternatives and costs.

F.1-4 Selected Alternative Description Reference is made to the *Procedures and Results* section. The cost to the customer could be as much as $20 to $25 more per month, depending upon grants and loan interest rates.

F.4-5 System Owner Certification This will have to come separately from the Owner at the time they finalize their funding package for construction. Until then, there are too many variables.

F.6 Availability of Land for Facilities There is only one logical location for the proposed additional tank, and it is on the hill next to the existing tank. There is not room on the City owned tank site for another tank, so additional land must be acquired. The tank site was purchased from George Rammell, who still owns the surrounding land, and would likely continue to cooperate with the City in selling the land. The well site is proposed south of town on the Egbert property, and preliminary discussions have already been had regarding a City well being located there, as this would also benefit the landowner who seeks to develop the property.

F.7 Environmental Information Reference is made to the separate WEI report entitled *2011 Drinking Water Facility Planning Study: Environmental Information Document,* the entire document.

F.8 Miscellaneous Issues There need not be any intergovernmental agreements as a result of the proposed project. Financing arrangements, if they can be had, will happen after this study. The O&M requirements and operator licensing will not change technically, but with more facilities there will be more to operate and maintain, which is covered in the *Procedures and Results* section. Without immediate answers on funding, there can be no planned schedule. Preliminarily the plan is to get an approved study and project, continue an information campaign and solicit support for increasing water fees substantially, which is the only way the funds can be made available for financing the project, and then soliciting funding help to finance the project.

G.1 Relevant Engineering Data Reference is made to Tables 1 through 9, the S&A Study, and WaterCAD files.

G.2 User Charge Ordinance and Latest O&M Budget Reference is made to Appendix G for the O&M budget and Appendix J for the User Charge Ordinance.

G.3 Graphic Aids Figures appear in the body of the text, Tables are presented after the narative, and the Exhibit is behind the Tables in front of the Appendices.

G.4 **Mailing Lists** Reference is made to the separate WEI report entitled *2011 Drinking Water Facility Planning Study: Environmental Information Document*.

G.5 Hydraulic Analyses Reference is made to Appendix K.

G.6 Public Participation Information Reference is made to the separate WEI report entitled *2011 Drinking Water Facility Planning Study: Environmental Information Document*, Section H.

G.7 Reference Documents Consulted All documents consulted are either provided as appendices in this report or in the S&A report.

G.8 Water Quality Test Results Reference is made to Appendix L.

G.9 DEQ Sanitary Survey Reference is made to Appendix A.

Table 1 - Alternative and Option Capacity Evaluation Results

(Required additional tank and well capacities to meet DEQ and fire flow requirements)

EXISTING domestic maximum daily demand[1] (gpm) =	266	Fire flow: Current with school not having sprinklers[1] (gpm) =	2000
FUTURE domestic maximum daily demand[1] (gpm) =	546	Fire flow: School and all future commercial with sprinklers (gpm) =	1500
Capacity of existing well (gpm) =	400	Volume of existing tank (gallons) =	100000
Time to deplete water supply (minutes) =	120		

Description of Conditions	ALTERNATIVES											
	1	2	3	4	5	6	7	8	9	10	11	12
	Add 0 wells[4]	Add one 400 gpm well	Add two 400 gpm wells	Add two 490[2] gpm wells	Add two 740[2] gpm wells	Add two 813[2] gpm wells	Add two 980[2] gpm wells	Add three 400 gpm wells	Add three 500[2] gpm wells	Add three 740[2] gpm wells	Add four 400 gpm wells	Add four 500[2] gpm wells
Number of additional wells =	0	1	2	2	2	2	2	3	3	3	4	4
Capacity of each additional well (gpm) =	0	400	400	490	740	813	980	400	494	740	400	494
Volume of proposed tank for EXISTING CONDITIONS (gallons) =	239900	179900	119900	106400	68900	57950	32900	59900	31700	0	0	0
Volume of proposed tank for FUTURE CONDITIONS (gallons):												
Option A (Standard - one well off, 2000 gpm fire flow) =	281900	221900	161900	148400	110900	99950	74900	101900	73700	0	41900	0
Option B (Wesley[3] - one pump but not well off, 2000 gpm fire flow) =		161900	101900	74900	0	0	0	41900	0	0	0	0
Option C (School Sprinklers - one well off, 1500 gpm fire flow) =	206900	146900	86900	73400	35900	24950	0	26900	0	0	0	0
Option D (Wesley & School Sprinklers) =		86900	26900	0	0	0	0	0	0	0	0	0

Footnotes

1 From 2008 Schiess Facility Planning Study

2 Wells with higher than 400 gpm capacity must be strictly fire flow wells or be limited to 400 gpm under non-fire flow conditions. Capacity limited wells could be controlled at 400 gpm until pressures drop below a certain level indicative of fire flow conditions, and then the flow rate could be increased. For efficiency purposes, limited pumps on 500 gpm wells would be designed to produce the 400 gpm at or close to standard 60 hertz, and the 500 gpm would be on a higher hertz. For 740 to 980 gpm wells, either inefficiencies are involved which are not desirable, or the Wesley tool (see footnote 3) with dual pumps per well can be used so that pumping rates remain in the efficient range.

3 Using a Wesley Tool, which allows two pumps to be situated vertically in the same well, the pump redundancy requirement can be met without having an extra well, thus saving costs. However, the Wesley Tool only works using submersible pumps.

4 ***If*** City improvements are classified as "substantially modifying the system" per IDAPA 58.01.08.513.01, then Subsection 501.17 applies requiring a second water source (well), and this option would not be allowed.

Table 2 - Scenario Identification and Summary

(Combinations of tank/well alternatives and pump/fire flow options)

Alternative		Options			
ID	Description	"A" Std - 1 well off, 2000 gpm fire flow	"B" 1 pump but not 1 well off, 2000 gpm fire flow[3]	"C" 1 well off, school (and church?) on sprinklers for 1500 gpm fire flow[4]	"D" 1 pump but not 1 well off, sprinklers for 1500 gpm fire flow[3,4]
1	Add 0 wells[1]	1A		1C	
2	Add 1-400 gpm well	2A	2B	2C	2D
3	Add 2-400 gpm wells	3A	3B	3C	3D
4	Add 2-490 gpm wells	4A	4B	4C	4D
5	Add 2-740 gpm wells[2]	5A	5B	5C	5D
6	Add 2-813 gpm wells[2]	6A	6B	6C	6D
7	Add 2-980 gpm wells[2]	7A	7B	7C	7D
8	Add 3-400 gpm wells	8A	8B	8C	8D
9	Add 3-500 gpm wells	9A	9B	9C	9D
10	Add 3-740 gpm wells[2]	10A	10B	10C	10D
11	Add 4-400 gpm wells	11A	11B	11C	11D
12	Add 4-500 gpm wells	12A	12B	12C	12D

Footnotes

1. If City improvements are classified as "substantially modifying the system" per IDAPA 58.01.08.513.01, which was DEQ's preliminary determination, then Subsection 501.17 applies requiring a second water source (well), and this alternative would not be allowed.
2. Without add'l water rights, which are otherwise unneeded, well flows cannot exceed 400 gpm under normal flow/pressure conditions. This will require special controls or inefficiencies for wells with flows exceeding 500 gpm. This affects Alternatives 5, 6, 7, and 10.
3. Requires two submersible pumps in one well rather than one superior vertical turbine pump per well. City and engineer do not recommend this situation. The greater reliability, power efficiency, ease of maintenance, and consistency of equipment is worth the one pump per well option.
4. The Schiess Report is not consistent on whether the school alone or also the church needs 2000 gpm fire flow, but fire suppression sprinkler systems are required to reduce fire flows from 2000 gpm to 1500 gpm. This may not be cost effective nor politically feasible to have sprinklers added.

Considering Footnotes (1) through (4) above, only Option A is deemed feasible and/or desirable. Also, additional storage has less construction, operation, and maintenance cost than more wells, which was known by the Engineer and confirmed through conversations with public works directors of the cities of Rexburg, Idaho Falls, Pocatello, and Ucon. This suggests either Alternatives 1 or 2. However, per Footnote (1), Alternative 1 may not be allowed by DEQ, and even if it was, not having a second source of water for a municipality is not a good idea. Therefore, Scenario 2A has been and is the recommended scenario.

Table 3 - Estimated Tank Capital Costs

Tank Size			Welded Tanks (AWWA D-100)[1]			Bolted Tanks (AWWA D-103)[1]				Tank Site Costs				Total Tank Cost	
Gallons	Diameter (ft)	Height (ft)	Pittsburg	United	Average Tank Cost	Columbian Tec (CTS)	United[4]	Superior	Average Tank Cost	Land[2]	Found-ation[3]	Piping, Site Work, Misc	Site Engineering	Welded	Bolted
300000	40.5	32	365000												
291500	46.15	24.55		455000	410000		150000		189000	40000	10000	30000	30000	520000	299000
282000	54.962	18.06				227000									
250000	37	32	335000												
228000	40	24						150000							269000
225300	36.92	29.39		405000	370000		130000		159000	40000	10000	30000	30000	480000	
222000	47.534	18.06				196000									
200000	33	32	305000		305000					40000	10000	30000	30000	415000	
173500	40	19.72		335000	335000		110000		110000	40000	10000	30000	30000	445000	220000
162000	32.68	26.12				128000			128000	40000	10000	30000	30000		238000
150000	28.5	32	270000		270000					40000	10000	30000	30000	380000	
125000	30.5	24	235000		235000					40000	10000	30000	30000	345000	
102969	26.154	26.12				99000			99000	40000	10000	30000	30000		209000
102500	30.77	19.72		245000	245000		85000		85000	40000	10000	30000	30000	355000	195000
100000	27	24	200000		200000					40000	10000	30000	30000	310000	
50000	19	24	125000		125000		70000		70000	40000	10000	30000	30000	235000	180000
0															

Footnotes

1. Costs shown are based on budgetary quotes received from the companies listed.
2. Site cost estimated by the City of Tetonia.
3. There are five types of foundations for steel tanks, which can be as simple as 6" thick 3/4" minus road base gravel for the diameter plus 10 ' or the diameter plus 2' with a 12 gauge metal retaining band, which would not cost but approximately $2000 plus leveling earthwork. Lava rock may be encountered, but $10,000 for the foundation is feasible. Unnecessary concrete foundations could cost in the range of $50,000 to $70,000 per quotes for 100,000 gallon to 300,000 gallon tanks, respectively, without site earthwork, but this expense is not necessary. The tanks are typically designed to withstand 100 MPH winds without movement when empty and not anchored, but only resting on gravel.
4. Value for 50000 gallons was extrapolated.

Table 4 - Estimated Well and Pump House Capital Costs

Well Information

Design flow rate per well (gpm)	400	Total dynamic head (TDH) in well to surface (ft)			142.2
Anticipated drawdown water depth (ft)	140	Distribution system TDH, or high pump design point head (ft)			146
Anticipated depth to pump setting (ft)	162	Estimated pump efficiency			0.78
Anticipated total well depth (ft)	322	Estimated hp req'd	38	Selected horsepower	40
Pump discharge line diameter (in)	6	Estimated pump diameter (in)			8
Friction headloss in well pipe (ft)	2.2	Estimated main casing size required (in)			12
Pump type:	Vertical Turbine	Number of wells per pump house			1.0
Drilling cost per inch diameter per vertical foot	6				

Well Quantities and Costs[1]

Drilling and casing diameter (in)	Unit	Quantity/ Well			Unit Cost		Ext. Cost
		Drilling	Casing		Drilling	Casing	
			Permanent	Temporary			
16	LF	60	0	60	$96	73	$6,417
12	LF	260	300	0	$72	60	$36,720
10	LF	0	0	0	$60	56	$0
8	LF	0	0	0	$48	46	$0
6	LF	0	0	0	$36	38	$0
Description	**Unit**	**Quantity/ Well**				**Unit Cost**	**Ext. Cost**
Mill perforations or slots in casing pipe	LF		0			20	$0
Screen	20		20			85	$1,700
Mobilization	LS		1			5000	$5,000
Wesley tool for dual pumps per well	EA		0			4500	$0
Pump & Motor (High Capacity)	EA		1			9000	$9,000
Annular space sealing labor	LS		1			3500	$3,500
Annular space sealing cement	CY		1.4			500	$700
Test pumping	LS		1			5000	$5,000
Discharge line	LF		162			13	$2,106
Electrical wire	LF		0			3	$0
Pitless adapter	EA		0			2500	$0
Hydrogeologist and water testing	EA		1			10000	$10,000
						Well(s) Subtotal	**$81,000**

Pump House Quantities and Cost

Water system building that houses controls, valving, and special appurtenances	EA		1			$10,000	$10,000
Site piping, isolation valve, and waste line and hydrant	LS		1			$6,000	$6,000
Well house piping and appurtenances required per well, including swing check valve, two isolation valves (one to system and one to waste), pressure gage	LS		1			$5,000	$5,000
Well house piping and appurtenances required per well house, including deep well pump control valve, pressure relief valve, pressure gauge, transducer switch, sample tap, flow meter, controls and panel	LS		1			$10,000	$10,000
VFDs	EA		0			$8,000	$0
Harmonic filter & power factor correction	EA		0			$3,000	$0
Backup generator with all weather and sound attenuated housing, and automatic transfer switch	EA		1			$35,000	$35,000
Bladder tank	EA		0			$750	$0
Web view monitoring,emergency stop and start, controls between two wells and tank	EA		1			$10,000	$10,000
Miscellaneous well site materials, labor, site work	LS		1			$10,000	$10,000
Contingencies	LS		1			$10,000	$10,000
Land Cost	LS		0			$40,000	$0
Engineering	LS		1			$20,000	$20,000
						Pump House Subtotal	**$116,000**
						Well and Pump House Construction Total	**$197,000**

Footnotes

1 Based on budgetary figures from Denning, Vollmer, and Andrew well drilling companies. Used average price or higher.

Table 5 - Estimated Tank and Well O&M Costs

Tank O&M Cost for Periodic Service Items[8]

Description	Welded Tank: Existing 100,000 gal Frequency	Welded Tank: Existing 100,000 gal Cost[2]	Welded Tank: Proposed 225,000 gal Frequency	Welded Tank: Proposed 225,000 gal Cost[2]	Bolted Tank: Proposed 225,000 gal Frequency[1]	Bolted Tank: Proposed 225,000 gal Cost[2]	Combined Existing & Proposed Tanks Present Worth[3], Proposed Tank Type: Welded	Combined Existing & Proposed Tanks Present Worth[3], Proposed Tank Type: Bolted	Combined Existing & Proposed Tanks Sinking Fund Annual Cost[3,4], Proposed Tank Type: Welded	Combined Existing & Proposed Tanks Sinking Fund Annual Cost[3,4], Proposed Tank Type: Bolted
Cleaning, inspection, and touch up[5]	5	$2,000	5	$3,000	5	$3,000	$30,000	$30,000	$1,448	$1,448
Panting interior (sandblast and recoat)	15	$26,752	15	$47,595	45	$47,595	$223,041	$127,851	$10,765	$6,170
Panting exterior (overcoat)	11.25	$7,015	11.25	$11,750	11.25	$11,750	$75,060	$75,060	$3,623	$3,623
					Tanks Total O&M		**$328,101**	**$232,911**	**$15,836**	**$11,241**

Wells O&M Cost for Periodic Service Items and Power[9]

Description	Frequency (Years)	Cost Per Well (400gpm)	Combined Existing & (1) 400 gpm Proposed Wells, Present Worth[3]	Combined Existing & Proposed Wells Sinking Fund Annual Cost[3,4]	
Operator cost[6]	1	5000	$450,000	21718	24951
Motors pulled, cleaned, windings revarnished, bottom bearings replaced, reconditioning as needed, and reset	5	$1,000	$16,000	772	
Motor replacement	30	$3,500	$7,000	338	
Pump pull, replace seals and bearings in pump and shaft, and miscellaneous reconditioning, and reset (not on pump replacement cycle)	15	$6,000	$24,000	1158	
Pump pull and replace with new pump	30	$10,000	$20,000	965	
Pump electricity (all one well or split between wells--value at right assumes 50/50 split)[7]	1	$2,200	$301,950	14573	16745
Well house ancillary use electricity and miscellaneous repair and upkeep	1	$500	$45,000	2172	
	Wells Total O&M		**$413,950**	**$41,696**	

Footnotes

1 The factory applied coating on the bolted tank will last approximately 45 years before recoating is needed, but subsequent field recoats will be needed approximately every 15 years the same as for welded tanks that are field coated.

2 Cost figured at $2.75 per square foot for exterior coating and $7.50 per square foot for interior coating. Add'l 65% area added for the interior lid per Superior Tank Company for coating roof structural and other inside components.

3 Based on a service and replacement period of: 45 years

4 Based on inflation and interest rates as follows:
Inflation rate on the cost of services: 4.00%
Interest rate of return on sinking fund: 0.00%

5 This tank cleaning is with divers and water in the tank, which is not necessary when the interior of the tank is sandblasted and recoated, so this occurs only on the 5 year cycles that are not also the 15 year cycle.

6 The annual budget for the public works operator time spent on water systems is $14,560. It was assumed that the time split is essentially as follows: 1/3 for the well, 1/3 for the distribution system, and 1/3 for meter reading, tank, and miscellaneous work. Thus, WEI used a value of $5000 for the well operational time.

7 The City budget for pump electricity is $4500 for 2011. Using the 2006 pumped volume per the Schiess 2008 report and pump characteristics, the amount should be approximately $4300 to $4400, the balance likely being for lighting and ancillary uses, such as a heater. The pumping electricity is separated out because it will change as the population changes and the ancillary uses will not. The ancillary uses should double with a second well and well house. The increased pumping amount will change with the population change. Per the Schiess study, 190 EDUs will increase to 390 EDUs, an increase of 205%. The increase was based not upon past growth in the City, but rather on the potential for development activity that at the time was planned and may at some point still happen. This growth over a 20 year period represents a 3.66% growth per year. Instead of growth by 3.66% each year, a straight line growth is assumed; that is, assume an average of 1.525 times the current usage for each year. That is what will be used when figuring the present worth of pumping power costs.

8 The frequency and cost of maintenance is based on information from several city public works directors, the City of Tetonia, tank vendors in general, and especially the tank maintenance manager for United that is over both bolted and welded steel tanks.

9 The frequency and cost of maintenance is based on information from several city public works directors, the City of Tetonia, well drillers and pump service companies in general, and especially American Pump who performed the most recent service on the City well.

Table 6 Estimated Distribution System Capital Costs										
Phase, System, or Component	Location/Description	Item	Unit	Qty	Unit Cost					Extended Cost
					Pipeline Materials[1]	Pipeline Construc-tion[2]	Gravel Resur-facing	Misc Work	Total	
I	2nd well (not distribution system, see other worksheet)									
I	2nd well tie-in to system	8" DIP	LF	550	20	18	2	5	45	24750
I	2nd well tie-in to system	8" valve	EA	2					843	1686
I	2nd well tie-in to system	4" Valve	EA	2					400	800
I	2nd well tie-in to system	Tie-in	EA	2					2000	4000
	2nd well tie-in to system	FH	EA	1					4350	4350
II-A.1	Fire line from Main & Leigh Avenue to 5th & Perry	8" DIP	LF	730	20	18	2	5	45	32850
II-A.1	Fire line from Main & Leigh Avenue to 5th & Perry	Bore & Casing	LF	100					160	16000
II-A.1	Fire line from Main & Leigh Avenue to 5th & Perry	8" Valve	EA	5					843	4215
II-A.1	Fire line from Main & Leigh Avenue to 5th & Perry	Tie-in	EA	2					2000	4000
II-A.1	Fire line from Main & Leigh Avenue to 5th & Perry	FH	EA	2					4350	8700
II-A.2	Fire flow line upgrade on Central Avenue from 2nd to 5th Street	6" DIP	LF	1070	15	16	2	5	38	40660
II-A.2	Fire flow line upgrade on Central Avenue from 2nd to 5th Street	Bore & Casing	LF	100					160	16000
II-A.2	Fire flow line upgrade on Central Avenue from 2nd to 5th Street	6" valves	EA	4					618	2472
II-A.2	Fire flow line upgrade on Central Avenue from 2nd to 5th Street	2" & 4" valves	EA	4					400	1600
II-A.2	Fire flow line upgrade on Central Avenue from 2nd to 5th Street	Tie-in	EA	6					2000	12000
II-A.2	Fire flow line upgrade on Central Avenue from 2nd to 5th Street	FH	EA	2					4350	8700
II-A.3	6th and Perry to 6-1/2 Street and south to Egbert Avenue	12" DIP	LF	1160	34	23	2	5	64	74240
II-A.3	6th and Perry to 6-1/2 Street and south to Egbert Avenue	8" DIP	LF	250	20	18	2	5	45	11250
II-A.3	6th and Perry to 6-1/2 Street and south to Egbert Avenue	6" DIP	LF	10	15	16	2	5	38	380
II-A.3	6th and Perry to 6-1/2 Street and south to Egbert Avenue	Bore & Casing	LF	100					200	20000
II-A.3	6th and Perry to 6-1/2 Street and south to Egbert Avenue	12" Valves	EA	5					1350	6750
II-A.3	6th and Perry to 6-1/2 Street and south to Egbert Avenue	8" Valves	EA	2					843	1686
II-A.3	6th and Perry to 6-1/2 Street and south to Egbert Avenue	6" Valves	EA	1					618	618
II-A.3	6th and Perry to 6-1/2 Street and south to Egbert Avenue	Tie-in	EA	4					2000	8000
II-A.3	6th and Perry to 6-1/2 Street and south to Egbert Avenue	FH	EA	5					4350	21750
II-A.4	Main & Perry Fire Hydrant	FH	EA	1					4350	4350
II-A.5	Well 2 tie-in to Egbert Avenue	8" DIP	LF	600	20	18	2	5	45	27000
II-A.5	Well 2 tie-in to Egbert Avenue	FH	EA	1					4350	4350
II-B.1	Transmission main (east side, 6-1/2, 7th, and 7-1/2 Street or alignment)	12" DIP	LF	2700	34	23	2	5	64	172800
II-B.1	Transmission main (east side, 6-1/2, 7th, and 7-1/2 Street or alignment)	8" DIP	LF	370	20	18	2	5	45	16650
II-B.1	Transmission main (east side, 6-1/2, 7th, and 7-1/2 Street or alignment)	12 Valve	EA	5					1350	6750
II-B.1	Transmission main (east side, 6-1/2, 7th, and 7-1/2 Street or alignment)	8" Valve	EA	1					843	843
II-B.1	Transmission main (east side, 6-1/2, 7th, and 7-1/2 Street or alignment)	6" Valve	EA	1					618	618
II-B.1	Transmission main (east side, 6-1/2, 7th, and 7-1/2 Street or alignment)	Tie-in	EA	5					2000	10000

Table 6 Estimated Distribution System Capital Costs

Phase, System, or Component	Location/Description	Item	Unit	Qty	Unit Cost: Pipeline Materials[1]	Unit Cost: Pipeline Construc-tion[2]	Unit Cost: Gravel Resur-facing	Unit Cost: Misc Work	Unit Cost: Total	Extended Cost
II-B.1	Transmission main (east side, 6-1/2, 7th, and 7-1/2 Street or alignment)	FH	EA	2					4350	8700
II-B.2	Leigh Avenue line from 6th Street to 6-1/2 Street	8" DIP	LF	180	20	18	2	5	45	8100
II-B.2	Leigh Avenue line from 6th Street to 6-1/2 Street	FH	EA	1					4350	4350
II-B.3	1st & Jackson lines and Teton & Perry FHs	8" DIP	LF	1820	20	18	2	5	45	81900
II-B.3	1st & Jackson lines and Teton & Perry FHs	8" Valve	EA	5					843	4215
II-B.3	1st & Jackson lines and Teton & Perry FHs	6" Valve	EA	3					618	1854
II-B.3	1st & Jackson lines and Teton & Perry FHs	Tie-in	EA	8					2000	16000
II-B.3	1st & Jackson lines and Teton & Perry FHs	FH	EA	7					4350	30450
II-B.4	1st, 2nd, & Leigh system	8" DIP	LF	1070	20	18	2	5	45	48150
II-B.4	1st, 2nd, & Leigh system	8" Valve	EA	6					843	5058
II-B.4	1st, 2nd, & Leigh system	1-1/2" Valve	EA	1					400	400
II-B.4	1st, 2nd, & Leigh system	Tie-in	EA	3		10000			2000	6000
II-B.4	1st, 2nd, & Leigh system	FH	EA	3					4350	13050
II-B.5	2nd Tank (not distribution system, see other worksheet)									
III-A	Misc. looping (& freeeze protection for 1st St line)	8" DIP	LF	910	20	18	2	5	45	40950
III-A	Misc. looping	6" DIP	LF	720	15	16	2	8	41	29520
III-A	Misc. looping	8" Valve	EA	1					843	843
III-A	Misc. looping	Tie-in	EA	2					2000	4000
III-B	Freeze protection	2" insul. board	LF	3000					$14.00	42000
III-C	Meter and pit replacement with coil meters, radio read, and software	Meter & Pit	EA	146					2226	325000
Summary (Includes approximately 40% added to distribution system costs to cover miscellaneous associated construction and										
II-A	Upgrades to provide required fire code flow rates (not durations) to all existing hydrants (not south of Letham									**$459,000**
II-B.1 TO I-B.4	Additional lines and hydrants to service all existing areas per fire code flow rates (not duration)									**$611,000**
III	Important looping redundancy, shallow line freeze protection, and meter & pit replacement									**$620,000**
	Total distribution system upgrades									**$1,690,000**
I	Well # 2 (Scenario 2A)									**$247,000**
II-B.5	Tank #2 (Scenario 2A)									**$269,000**
II-C	Generator for Well #1									**$35,000**
	Total Scenario 2A Water System Improvements (excluding known leak repairs)									**$2,241,000**
	Total Scenario 2A Water System Improvements (excluding known leak repairs and Phase III work)									**$1,621,000**
Footnotes										
1	Budgetary prices for materials came from 3 vendors (Ferguson, HD Supply, and HD Fowler), except that the meters pits,									
2	Budgetary prices for pipeline construction came from 3 contractors (DePatco, Owens PC, and MD Nursury), except that meter pit replacement and providing freeze protection for shallow water lines came from only 1 contractor (DePatco and 3H, respectively)									

Table 7 - Fire Flow Capacities

(Current and future conditions, with and without largest pump in service)

Well Flows (gpm)[1]	Tank Vol. (gal)[2]	FF Rate (gpm)[3]	Duration (min)[4]		Comments[1]
			190 EDUs	390 EDUs	
500	100000	1000	104	76	Current well and tank, assuming well operating, or with 2nd well and one inoperable. Duration at 104 minutes is close to required 120 minutes. Commercial flow at 1500 gpm is available only for an hour, and for the school or church only for 45 minutes.
500	100000	1500	63	52	
500	100000	2000	45	39	
0	325000	1000	205	168	Condition with new tank added but not a new well, assuming well inoperable. Fire flow conditions are met for all but the school and possibly the church, suggesting that for fire flow considerations alone, the addition of the tank is of greater importance than adding a well.
0	325000	1500	147	127	
0	325000	2000	115	102	
1000	100000	1000	301	147	Condition with new well added but not a new tank, assuming both wells operable. The 1000 gpm fire flow condition meets fire code, and the 1500 gpm is close for current population, but the 2000 gpm for the school and church can only be sustained for an hour.
1000	100000	1500	104	76	
1000	100000	2000	63	52	
500	325000	1000	339	249	Condition with new tank added but not a new well, assuming well operable, or with 2nd well added and one inoperable (Scenario 2A). All fire flow conditions are met, suggesting again that for fire flow considerations alone, the addition of the tank is of greater importance than adding a well.
500	325000	1500	205	168	
500	325000	2000	147	127	

1) Under normal flows and pressures, well capacities are 400 gpm, but under fire flow and low pressure conditions, the wells are capable of approximately 500 gpm. DEQ regulations are that 1 well is out of service results at the time of fire event, but short of meeting all criteria, it is well to know what is likely during a fire flow event, which is that both wells are functional. Both all wells operable and with one inooerable per regulations are presented (see comments for each line).

2) The existing tank is 100,000 gallons, and the proposed tank 225,000.

3) Residences should have 1000 gpm fire flow. Commercial should have 1500 gpm, except the school and maybe the LDS church , which should be 2000 gpm.

4) All fire flows in the City are to be sustained for 120 minutes. Those less are in red, those sufficient are in green. The additional tank was sized based on well flows of 400 gpm rather than 500 gpm, and thus the DEQ specified 'one well out of production' 500 gpm well supply, 325,000 gallons storage, 2000 gpm fire flow value, 390 EDU value is 127 minutes instead of 120. 190 EDUs is existing, and without major development, that will not likely change as the population has remained fairly constant over the last 20 years. Therefore, only if the started and now on hold development south of town proceeds again will the 390 EDU figure, or anything like it, be of significance. Until then, the real focus is on the 190 EDU column. And, if development creates the need for additional infrastructure, then it can pay for it. But as can be seen, meeting the one meets the other, becauses the fire flow is much more substantial than the added domestic flow.

Table 8 - Loans and Service Rates

Monthly User Rates to Cover O&M and R&R[1]

Description	Cost
Equivalent dwelling units (EDUs) currently being serviced:[2]	190
Amount of proposed total annual sinking fund for Alt. 2A per Table 5:[3]	$52,937
O&M and R&R annual expenses funded this past year:[4]	$11,000
Add'l funds needed to cover O&M and R&R annual expenses:	$41,937
Add'l EDU monthly service fee needed to cover O&M and R&R costs:[5]	$19
Current monthly service fee for other coverages:[6]	$25
Total Monthly EDU Rate to Cover All "Non-Debt Service" Costs	$44

Monthly User Rates to Cover Debt Service

Description	2.25% Loan[7]	0% Loan[8]
Total loan amount:[9]	$2,241,000	$2,241,000
Total City monthly debt service amount:[10]	$8,628	$6,225
Monthly debt service fee spread over EDUs currently being serviced:	$46	$33

Total Monthly EDU Rate to Cover All Costs

Current and add'l O&M & R&R, and debt service costs per EDU:[8]	**$90**	**$77**
Amount of loan forgiveness with 0% interest to have service fee not exceed 1.5% MHI:[8]		**$1,593,252**

Footnotes

1) O&M is operation and maintenance, and R&R is refurbishment or rehabilitation and replacement.
2) Each residential service counts as 1 EDU.
3) For a 45 year LCCA analysis period. Covers tank and well O&M and R&R and not other items.
4) Based on City 2011 budget for tank and well O&M ($5000 operator, $1500 repairs, and $4500 power)
5) Add'l EDU monthly service fee needed to cover O&M and R&R costs divided by the number of EDUs
6) This covers everything else required in the system that is currently being covered that is NOT associated with tank and well O&M and R&R.
7) The median household income (MHI) for the Planning Area is $42,778, which is assumed to be above the threshold for grant money assistance, which was $36,997 two years ago. Thus, grant monies are not likely available, and the lowest typical loan rates are through DEQ at 2.25% over 20 or 30 years.
8) If the required monthly service fee is more than 1.5% of the service area MHI, or more than $53.47 per EDU, then the DEQ rate of 2.25% might be able to be reduced. Maximum reduction is to 0% interest, at which point there possibly could even be some loan "forgiveness" as well.
9) Capital cost of Alternative 2A, all three phases, from Table 6.
10) Based on a 100% loan over 30 years.

Table 9 - Scenario Cost Summary

(Does not include Phase III or Debt Service)

			Capital Cost[8]					Tank and Well O&M and R&R			Present
Alternative	Option	Vol (gal)[1]	Tank[2]	Well & Well House[3]	Distribution System[4]	Generator for Ex Well	Total Cost	Tank O&M[6]	Well/House O&M[7]	Total O&M	Worth Cost[8]
1	A	282000	299000	0	1070000	35000	$1,404,000	12665	29221	41886	2271869
1	B										
1	C	222000	269000	0	1070000	35000	$1,374,000	11241	29221	40462	2212364
1	D										
2	A	222000	269000	197000	1070000	35000	$1,571,000	11241	41696	52937	2667857
2	B	162000	238000	197000	1070000	35000	$1,540,000	9667	66647	76314	3121229
2	C	150000	238000	197000	1070000	35000	$1,540,000	9368	41696	51064	2598048
2	D	100000	195000	197000	1070000	35000	$1,497,000	8119	66647	74766	3046154
3	A	162000	238000	288000	1070000	35000	$1,631,000	9667	54172	63839	2953736
3	B	102500	195000	288000	1070000	35000	$1,588,000	8181	72885	81066	3267686
3	C	100000	195000	288000	1070000	35000	$1,588,000	8119	54172	62291	2878662
3	D	50000	180000	288000	1070000	35000	$1,573,000	6870	72885	79755	3225522
4	A	150000	238000	318000	1070000	35000	$1,661,000	9368	56043	65411	3016315
4	B	100000	195000	318000	1070000	35000	$1,618,000	8119	75692	83811	3354562
4	C	100000	195000	318000	1070000	35000	$1,618,000	8119	56043	64162	2947436
4	D	0	0	318000	1070000	35000	$1,423,000	5621	75692	81313	3107803
5	A	125000	238000	378000	1070000	35000	$1,721,000	8743	57914	66657	3102139
5	B	0	0	378000	1070000	35000	$1,483,000	5621	78499	84120	3225964
5	C	50000	180000	378000	1070000	35000	$1,663,000	6870	57914	64784	3005330
5	D	0	0	378000	1070000	35000	$1,483,000	5621	78499	84120	3225964
6	A	100000	195000	378000	1070000	35000	$1,678,000	8119	57914	66033	3046209
6	B	0	0	378000	1070000	35000	$1,483,000	5621	78499	84120	3225964
6	C	50000	180000	378000	1070000	35000	$1,663,000	6870	57914	64784	3005330
6	D	0	0	378000	1070000	35000	$1,483,000	5621	78499	84120	3225964
7	A	100000	195000	378000	1070000	35000	$1,678,000	8119	57914	66033	3046209
7	B	0	0	378000	1070000	35000	$1,483,000	5621	78499	84120	3225964
7	C	0	0	378000	1070000	35000	$1,483,000	5621	57914	63535	2799451
7	D	0	0	378000	1070000	35000	$1,483,000	5621	78499	84120	3225964
8	A	102500	195000	379000	1070000	35000	$1,679,000	8181	66647	74828	3229439
8	B	50000	180000	379000	1070000	35000	$1,664,000	6870	83281	90151	3531932
8	C	50000	180000	379000	1070000	35000	$1,664,000	6870	66647	73517	3187275
8	D	0	0	379000	1070000	35000	$1,484,000	5621	83281	88902	3326053
9	A	100000	195000	389000	1070000	35000	$1,689,000	8119	69142	77261	3289853
9	B	0	0	389000	1070000	35000	$1,494,000	5621	86608	92229	3404984
9	C	0	0	389000	1070000	35000	$1,494,000	5621	69142	74763	3043094
9	D	0	0	389000	1070000	35000	$1,494,000	5621	86608	92229	3404984
10	A	0	0	479000	1070000	35000	$1,584,000	5621	71637	77258	3184793
10	B	0	0	479000	1070000	35000	$1,584,000	5621	89935	95556	3563916
10	C	0	0	479000	1070000	35000	$1,584,000	5621	71637	77258	3184793
10	D	0	0	479000	1070000	10000	$1,559,000	5621	89935	95556	3538916
11	A	50000	180000	389000	1070000	35000	$1,674,000	6870	79123	85993	3455768
11	B	0	0	389000	1070000	35000	$1,494,000	5621	94717	100338	3573005
11	C	0	0	389000	1070000	35000	$1,494,000	5621	79123	84744	3249889
11	D	0	0	389000	1070000	35000	$1,494,000	5621	94717	100338	3573005
12	A	0	0	434000	1070000	35000	$1,539,000	5621	82241	87862	3359512
12	B	0	0	434000	1070000	35000	$1,539,000	5621	98615	104236	3698784
12	C	0	0	434000	1070000	35000	$1,539,000	5621	82241	87862	3359512
12	D	0	0	434000	1070000	35000	$1,539,000	5621	98615	104236	3698784

Footnotes

1. Tank sizes are incremental, so the smallest size tank that is equal to or larger than the required tank size is identified here.

2. The smallest tank size that is equal to or larger than the required may not be the lowest cost. Sometimes a larger tank is less cost, such as a larger bolted tank versus a smaller welded tank.

3. If the well capacity exceeds 400 gpm, then the cost of the wells will be more. For the 490 and 500 gpm wells $15,000 per well is added for VFD and harmonic filter, and also for pump, motor, and controls upsize. For 740 gpm to 980 gpm wells, $40,000 per well is added for larger well diameter, VFD and harmonic filter, and also for pump, motor, and controls upsize. For each new well over one, extra was added to cover generator cost increases and additional piping, $10,000 for <= 500 gpm wells, and $20,000 for larger wells.

4 Excludes Phase III work. Options C and D at lower fire flow could potentially allow some reduction in distribution cost, but this was not specifically evaluated. Alternative 1 with no added well would likely result in a minor increase in pipe size or more urgent time frame or phasing.

5. Assumed a low interest 2.25% loan through DEQ based on a monthly service fee increase of $35/EDU and a 30 year term, with the balance of capital cost being a grant; or alternatively, a rate increase of $46.36 per month with 0% interest and forgivable loans and grants to reduce the monthly debt payment to the same as in the first condition given this footnote. Cost is specific to Scenario 2A, and reasonably close for ather scenarios.

6. A detailed O&M was figured for the existing tank and a proposed 225,000 gallon tank (Scenario 2A). For other proposed tank sizes, the existing tank was assumed to require half the Scenarion 2A O&M, and the O&M for the new tank at half the Scenario 2A O&M value times the ratio of its size to 225,000 gallons.

7. The pump electricity will remain essentially the same, as will the well house costs, so they do not vary. However, the pump and motor O&M will vary depending upon the conditions. If there is a Wesley Tool and a dual pump, some things double, some more than double, and two things remain aproximately the same, but overall the cost wpi;d be at least 50% more, so that is applied for dual pump systems. If the pumps and motors are for 490 to 500 gpm units, there is a cost increase for component upgrades and also for additional components to upkeep, such as VFDs and harmonic filters, so a factor of 1.25 is applied. If the pumps and motors are for 740 to 980 gpm units, a factor of 2.0 was applied.

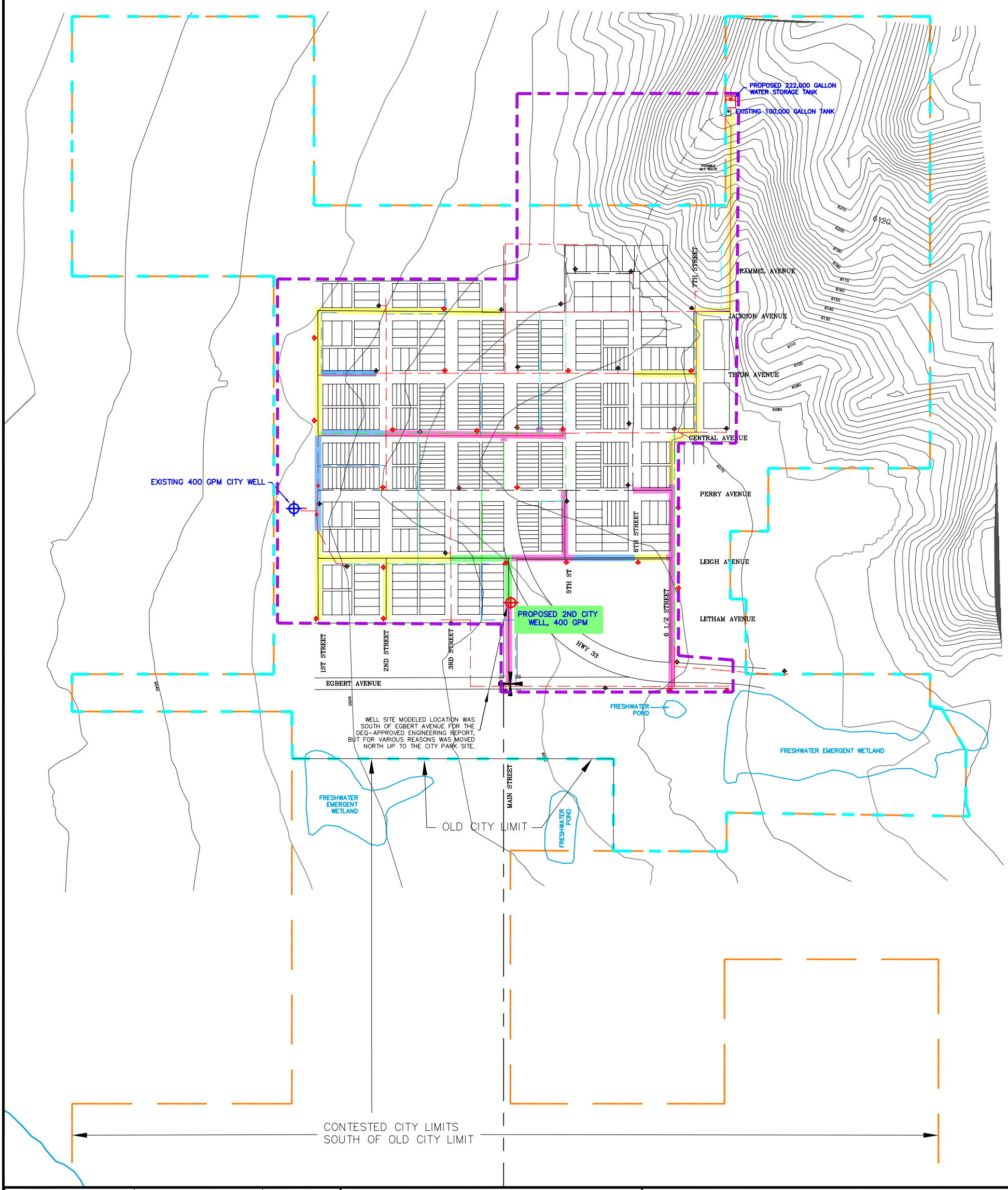
8. Costs are figured fairly accurately for Scenario 2A, or Alternative 2 Option A, as that was the preliminarily preferred option by the Engineer and City mayor and public works operator, of scenarios considered feasible. Factors were applied to other scenarios that provide a ballpark understanding of costs associated with the scenario, but variations of a minor amount between scenarios should not be considered absolute, as values are not that accurate.

LEGEND

FACILITY	EXISTING	PROPOSED	REMOVE & REPLACE	WATERLINE	EXISTING	PROPOSED
CITY OF TETONIA LIMITS				1.5 INCH		
PROJECT PLANNING AREA				2 INCH		
AREA OF POTENTIAL EFFECTS				4 INCH		
FIRE HYDRANT				6 INCH		
ISOLATION VALVE				8 INCH		
WELL				12 INCH		
STORAGE TANK						

PHASE	SYMBOL	DESCRIPTION
I		2ND WELL, CRITICAL 2ND SOURCE, AND TIE-IN
II-A		ADDS FIRE FLOW RATE CAPACITY TO CRITICAL AREAS: A.1 – SCHOOL AND CHURCH, AND ALSO TO A COMMERCIAL AREA WHERE THERE IS NO FIRE HYDRANTS; A.2 – LESS CRITICAL BUT IMPORTANT COMMERCIAL AND RESIDENTIAL AREA, CONSTRUCTED WHILE A.1 PIPE BORING CONTRACTOR IS ON THE JOB; A.3 – LESS CRITICAL FIRE FLOW CAPACITY TO SOUTHEAST PORTION OF CITY, INTERCONNECT TO LINE IN EGBERT CONSTRUCTED WHILE A.1 PIPE BORING CONTRACTOR IS ON THE JOB. PROVIDES REGULATORY FIRE FLOW RATE TO ALL AREAS CURRENTLY SERVED WHEN BOTH WELLS ARE ON, AND EVEN WITH ONE WELL OFF EXCEPT AT HYDRANTS H-9 AND H-12, WHERE PRESSURES DROP BELOW 20 PSI BUT REMAIN ABOVE MINIMUM REQUIRED TO SUPPLY A FIRE PUMPER TRUCK.
II-B		II-B.1 THROUGH II-B.4 PROVIDE ADEQUATE FIRE FLOW RATE CAPACITY TO ALL EXISTING BUILDINGS SERVED, EVEN WITH ONE WELL DOWN, AS REQUIRED BY DEQ AND FIRE CODE. II-B.5 PROVIDES A SECOND TANK SO THAT FIRE CODE FLOW DURATION AND VOLUME REQUIREMENTS ARE MET.
III		NOT REQUIRED TO MEET DEQ OR FIRE FLOW REQUIREMENTS, BUT STILL BENEFICIAL IMPROVEMENTS. III-A PROVIDES MISCELLANEOUS LOOPING AND SECONDARY LINES AND LOWERS A KEY SUPPLY LINE THAT IS SHALLOW AND SUBJECT TO FREEZING. III-B ADDS INSULATION OVER SHALLOW LINES IN THE SYSTEM TO PROTECT AGAINST FREEZING. III-C REPLACES ALL METERS AND PITS WITH FREEZE PROTECTED UNITS THAT ALLOW FOR REMOTE METER READING AND FLOW MONITORING.

TOWNSHIP 6N, RANGE 45E



GRAPHIC SCALE:	FILE NAME:	EDIT DATE:		
0 150 300 600	TETONIA BASE A.DWG	01/23/2013	WILLIAMS ENGINEERING, INC. 217 NORTH 2nd EAST REXBURG, ID 83440 208-359-5353 PH. 208-359-8181 FAX	EXHIBIT 1A WATER SYSTEM MAP

APPENDICES

Appendix A	DEQ 2010 Sanitary Survey
Appendix B	2010 Leak Detection
Appendix C	Contract Exhibit D Listing
Appendix D	Fire Code Appendix B & C
Appendix E	Owner Responsibility Letter
Appendix F	Cross Connection Program
Appendix G	Water System Budget (2009 to 2011)
Appendix H	Deficiencies Noted in Water Planning Grant LOI
Appendix I	Discussion with City Regarding Deficiencies
Appendix J	User Charge Ordinance
Appendix K	WaterCAD Files
Appendix L	Water Quality Test Results
Appendix M	Loan Option Correspondence

Appendix A DEQ 2010 Sanitary Survey

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

900 North Skyline Drive, Suite B • Idaho Falls, Idaho 83402 • (208) 528-2650

C.L. "Butch" Otter, Governor
Toni Hardesty, Director

May 21, 2010

City of Tetonia
Charlie Robison
P.O. Box 57
Tetonia, ID. 83452

Re: Sanitary Survey Results for the City of Tetonia Public Water System (PWS) # 7410012

Dear Charlie:

On May 7, 2010 you and I conducted a sanitary survey of the Tetonia public water system. I appreciated your help, cooperation, and support in scheduling and performing this survey.

A sanitary survey is a security and safety measure that should be performed every 5 years for groundwater sources. The purpose of the survey was to identify any areas where the system does not meet the requirements of the State of Idaho Drinking Water Rules and Regulations and identify potential sources of contamination.

During this inspection there were **(5) deficiencies** observed that need to be addressed in order to comply with the State of Idaho Drinking Water Rules and Regulations (IDAPA). A Sanitary Deficiency is defined in IDAPA 58.01.08.003.71. that states: As identified during a sanitary survey, any defect in a system's design, operation, maintenance, or administration, as well as any failure or malfunction of any system component, that the Department determines to cause, of have the potential to cause, risk to health and safety, or that could affect the reliable delivery of safe drinking water.

Recommendations are made as an item to consider in order to improve the overall operations of the water system. Recommendations are not deemed as an eminent health threat, but are helpful suggests that should be considered to enhance the operations of the water system. Some recommendations maybe in violation of the current Rule or may not, but do not present a potential health or safety concern.

Overall, the City of Tetonia public water system is in good order. A copy of the Enhanced Sanitary Survey form and photo log are enclosed for your records. DEQ appreciates your commitment to providing adequate and responsive service, as well as supplying a safe and reliable supply of drinking water to your users.

If you have any questions or need any further assistance, please feel free to call me at 528-2650.

Sincerely,

Rochelle Mason

Rochelle Mason
Drinking Water Quality Analyst

Encl: (2)
C: TRIM: WQ DW Compliance Document ESS-Enhanced Sanitary Survey

State of Idaho Public Water System Enhanced Sanitary Survey

WATER SYSTEM INVENTORY INFORMATION

SURVEY DATE: 5/17/2010 (mm/dd/yyyy)

PWS #: 7410012

Name of Public Water System: City of Tetonia

# of Groundwater Sources: 1

# of Storage Facilities: 1

#of Surface Water Sources: NA

Total Storage (gal): 100,000

Date of Last Survey: 02/10/2005

Health District: ☑ N/A

DEQ Region: ☐ N/A IFDEQ

County: Teton

Number of Service Connections: 139

Residential Population: 258

Status: ☑ Approved ☐ Disapproved

Water Purchased From: ☑ N/A PWS #: Name:

Water Sold To: ☑ N/A PWS #: Name:

Owner Type: City of Tetonia

Legal Entity: City of Tetonia

Water System Classification: ☑ Community Water System ☐ Nontransient Noncommunity ☐ Transient Noncommunity - NC

Combined Sources? ☐ Yes ☑ No If yes, ☐ Well Field ☐ Manifold/Spring Box Sources Combined:

System Classification: Distribution: VSWS Treatment: ☑ N/A

Seasonal Operation Dates: ☑ N/A Date Open: Date Closed:

Responsible Charge Operator (DO): ☐ No DO ☐ N/A - Identify Operator for GW-NC PWS

☑ Mr. ☐ Ms. Charlie Robison

Properly Licensed? ☑ Yes ☐ No ☐ N/A-GW-NC

License Type: DWDVSWS ☐ N/A

License Number: 16027

Mailing Address: P.O. Box 57

City, State, Zip Code: Tetonia, ID 83452

Telephone Day: 208-456-2249 Night: 208-456-1130 Fax:

E-mail: tetoniagov@tetontel.com

Legal Owner's Name: ☐ Mr. ☐ Ms. City of Tetonia

Mailing Address: P.O. Box 57

City, State, Zip Code: Tetonia, ID 83452

Telephone Day: 208-456-2249 Night: Fax:

E-mail:

Substitute Responsible Charge Operator (OP): ☐ No OP ☐ N/A for GW-NC PWS

☐ Mr. ☐ Ms. same as above

Properly Licensed? ☐ Yes ☐ No ☐ N/A-GW-NC

License Type: ☐ N/A

License Number:

Mailing Address:

City, State, Zip Code:

Telephone Day: Night: Fax:

E-mail:

Individuals present during inspection:

Name	Title
Charlie Robison	Water Operator

Physical location of the PWS (Township, Range, Section): Twn 07S Rg 45E Sec 14

Samples taken at the time of survey by inspector? ☐ Yes ☑ No

If yes, what:

Survey performed by: Name: Rochelle Mason Title: Drinking Water Analyst Phone #: 208-528-2650

Agency: ☑ IDEQ ☐ Health Dept. ☐ Other:

General Information

yes	no	n/a	unk	note	
☐	☑	☐	☐	☑	1. Have previously required Significant Deficiencies & Deficiencies been addressed?
☐	☑	☐	☐	☐	2. Have modifications been made to the PWS since the last ESS?
☐	☐	☑	☐	☐	3. If yes, are the modifications considered to be significant?
☐	☐	☑	☐	☐	4. If yes, were plans and specs submitted to and approved by DEQ?
☐	☑	☐	☐	☐	5. Are there any known issues or problems with equipment or operation of the PWS that could negatively effect the quality of the water produced? *(If yes, comment)*

Comments:

1. system has only (1) source which can not meet fire support (deficiency noted in past surveys and 08 Planning Study)

Sanitary Survey Index

Modules used:	#
☑ General Information	1
☑ Groundwater Source	1
☑ Storage	1
☐ Hydropneumatic Tanks	
☑ Distribution	1
☑ Pumping	1
☑ Financial Capacity	1
☑ Managerial Capacity	1
☐ Treatment Application	
☐ Disinfection	
☐ Notes	
☑ Photo Log	1
Total Modules	8

GROUNDWATER SOURCE - PG.1

A separate sources form must be filled out for **each** groundwater source in the PWS.

SURVEY DATE: 5/17/2010 (mm/dd/yyyy)

PWS #: 7410012

Tag #: [redacted] E0007050

Common Name of Source: well

Source: [redacted] ☑ Well → ☐ Manifold ☐ Spring → ☐ Spring Box

Is this Source Treated? ☐ Yes ☑ No

Treatment Objective: ☑ N/A

Treatment Types: ☑ N/A
(Identify Treatment Train in Comments)

Physical Location: [redacted]

Is there a well log for the groundwater source? ☑ Yes ☐ No ☐ N/A ☐ Unk

Pump Capacity (GPM)	Casing Size (In)	Date Drilled:	Well Depth (Ft)	Casing Depth (Ft)	Grout Depth(Ft)	Static Water Depth (Ft)
416 ☐ Unk	12 ☐ Unk	1912 ☐ Unk	322 ☐ Unk	322 ☐ Unk	☑ Unk	☑ Unk

Is the Casing Screened? ☐ Yes ☑ No ☐ Unk ☐ N/A

Screen Depth (Ft): ☑ N/A ☐ Unk
From:
To:

Is the Casing Perforated? ☐ Yes ☑ No ☐ Unk ☐ N/A

Perforation Depth (Ft): ☑ N/A ☐ Unk
From:
To:

Latitude (Decimal): 43.813225

Longitude (Decimal): 111.165208

COMMENTS:
(Please indicate question number)

All Sources

1. This source is:
   ☑ Active ☐ Proposed
   ☐ Inactive ☐ Emergency (<60 days per year)

yes	no	n/a	unk	note	
☑	☐	☐	☐	☐	2. Has there been a Source Water Assessment conducted for the source? Date: 2001
☑	☐	☐	☐	☐	3. Has a final GWUDI determination been done for this source? Date: 2000

☐ N/A 4-36 if source is a spring

WELL INFORMATION

yes	no	n/a	unk	note	
☑	☐		☐	☐	4. Is the well on a separate lot that is large enough to provide a minimum distance of 50 feet between the well and the nearest property line? (applicable if constructed after 11/1/77) ☐ Significant ☐ Deficiency
					Are the following minimum distances from the PWS well being met?
☑	☐		☐	☐	5. - Gravity sewer line.....50 Ft.
☑	☐		☐	☐	6. - Pressure sewer line.....100 Ft.
☑	☐		☐	☐	7. - Individual home septic tank.....100 Ft.
☑	☐		☐	☐	8. - Individual home disposal field.....100 Ft.
☑	☐		☐	☐	9. - Individual home seepage pit.....100 Ft.
☑	☐		☐	☐	10. - Privies.....100 Ft.
☑	☐		☐	☐	11. - Livestock.....50 Ft.
☑	☐		☐	☐	12. - Canals, streams, ditches, lakes, ponds and tanks used to store nonpotable substances.....50 Ft.
☐	☑		☐	☐	13. Are pesticides, herbicides, fertilizers, portable containers of petroleum products, or other toxic or hazardous materials stored on the well lot?
☐	☑		☐	☐	14. Are pesticides, herbicides, or fertilizers applied to the well lot?
☐	☑		☐	☐	15. Is the well in a pit? If yes, Date constructed:
☐	☐	☑	☐	☐	16. Was the well that is located in a pit installed after 11/5/64?
☐	☐	☑	☐	☐	17. If pit was installed prior to 11/5/64 – Has DEQ granted an exception and does the pit have water tight construction of pit walls and floor, a floor drain and an acceptable pit cover?
yes	no	n/a	unk	note	
☑	☐	☐	☐	☐	18 Is the well protected from unauthorized entry? *(Recommended)*
☑	☐	☐	☐	☐	19. Does the casing extend a minimum of 18 inches above the final ground surface and/ or 12 inches above the pump house floor? ☐ Significant ☐ Deficiency
☑	☐	☐	☐	☐	20. Is the well vented with the open end of the vent screened and terminated downward at least 18 inches above the final ground surface?
☑	☐		☐	☐	21. Is the well provided with a sanitary cap that prevents surface water entry?
☑	☐		☐	☐	22. Is the well cased and sealed in such a manner that surface water cannot enter the well?

Page _____ Of _____

Common Name	SURVEY DATE		PWS #
well	5/17/2010	(mm/dd/yyyy)	7410012

yes	no	n/a	unk	note	WELL INFORMATION (cont.)
✓					23. Is there a smooth nosed sample tap provided on the well discharge pipe prior to treatment? (Threaded tap is approved with backflow preventer)
✓					24. Is an instantaneous and totalizing flow meter equipped with nonvolatile memory installed on the pump distribution line of the well and is it maintained and working properly? [ ] gallons (☐ Unnecessary)
✓					25. Is a pressure gauge provided at all installations and is it maintained and working properly? 70 psi.
✓				✓	26. Can the well be pumped to waste at the design capacity of the well via an approved air gap at a location prior to the first service connection?

yes	no	n/a	unk	note	PUMP HOUSE *(Any structure containing important water system components)*
✓					27. Is the source located in a pump house?
					28. Is the pump house kept clean and in good repair? *(Floor cracks?)*
✓					29. Is the pump house protected from unauthorized personnel?
✓					30. Does the pump house have adequate lighting throughout? *(Recommended)*
	✓			✓	31. Are all non-sample taps installed in the pump house equipped with an appropriate backflow prevention device?
✓					32. Is adequate ventilation provided in the pump house for dissipation of excess heat and moisture from the equipment? (☐ Significant ☐ Deficiency)
✓					33. Is adequate heating provided in the pump house to provided safe and efficient operation of equipment to prevent freezing? (☐ Significant ☐ Deficiency)
✓					34. Is the pump house protected from flooding, have adequate drainage, is the floor surface at least six (6) inches above the final ground surface, and is the ground surface graded so as to lead surface water away from the pump house?
		✓			35. Is the sump for pump house floor drains closer than 30 feet from the well?
		✓			36. Is the floor drain connected to sewer, storm drains, chlorination room drains, or any other source of contamination?

yes	no	n/a	unk	note	SPRING INFORMATION
		✓			37. Is the entire area within a one hundred (100) foot radius of the spring box fenced to prevent trespassing of livestock and void of buildings, dwellings and sources of contamination?
		✓			38. Is surface water diverted from the 100 foot protection zone around the spring?
		✓			39. Is the spring housed in a permanent structure and protected from contamination including the entry of surface water, animals and dust?
		✓			40. Is there a smooth nosed sample tap provided on the spring discharge pipe prior to treatment? (Threaded tap is approved with backflow preventer)
		✓			41. Is a flow meter or other flow measuring device provided?

yes	no	n/a	unk	note	SPRING BOX INFORMATION *(Not all existing springs have a spring box)*
		✓			42. Is the spring box equipped with a screened overflow?
		✓			43. Is the supply intake located above the floor of the collection chamber?
		✓			44. Is the spring box protected from contamination including the entry of surface water, animals, and dust?
		✓			45. Is the access port fitted with a solid water tight cover which overlaps a framed opening and extended down around the frame at least 2 inches?
		✓			46. Is the access port a framed opening that is at least 4 inches high with a locking device?
		✓			47. Is the access port elevated at least twenty-four (24) inches above the top of the box or ground level, whichever is higher?

COMMENTS:
(Please indicate question number)
26. fire hydrant
31. deficancy noted (see picture # 3)

STORAGE

A separate storage form must be filled out for **each** storage unit in the PWS.

SURVEY DATE: 5/17/2010 (mm/dd/yyyy) | PWS #: 7410012

Storage Structure Name: storage tank	Storage Structure ID #:	COMMENTS: (Please indicate question number)
Physical Location:	Date in service: ☐ Unk 1980	Note: has tank cleaning scheduled for Spring of 2011
	Volume (gal): ☐ Unk 100,000	Past Survey Note: storage tank periodically over flowed, electrical short was idenitifed and corrected
Storage Type: ☑ Reservoir/Tank ☐ Standpipe	Construction: ☐ Elevated ☑ Above Ground ☐ Partially Below Ground ☐ Below Ground	Type of material: ☐ Plastic ☐ Wood ☐ Fiberglass ☑ Metal ☐ Concrete ☐ Naturally Contained
Total Days Supply (This structure): 10 hours ☐ Unk	Date Last: Inspected: ☐ Unk 2005	Cleaned: ☐ Unk 2005
How is the water level measured? ☐ Unk float		14. interior integrity good during 2005 inspection 16-17. verified with operator

yes	no	n/a	unk	note	ALL STORAGE STRUCTURES
☑	☐	☐	☐	☐	1. Is the storage structure safely accessible to the inspector?
☐	☑	☐	☐	☐	2. Is the PWS storage tank located within 500 feet of any municipal or Industrial wastewater treatment plant or any land which is spray irrigated with wastewater or used for sludge disposal?
☐	☑	☐	☐	☐	3. Are any of the storage structure drains directly connected to a sewer or storm drain?
☑	☐	☐	☐	☐	4. Is an overflow provided that discharges to daylight in a way that will preclude the possibility of backflow to the reservoir and, where practical, provided with an expanded metal screen installed within the pipe that will exclude rodents and deter vandalism?
☑	☐	☐	☐	☐	5. Are overflows brought down to an elevation between 12 and 24 inches above the ground surface? *(2X the diameter of the discharge pipe above a basin rim)*
☑	☐	☐	☐	☐	6. Do overflows discharge over a drainage inlet structure or splash plate?(storm or sanitary)
☑	☐	☐	☐	☐	7. Is the storage structure secure from unauthorized access?
☑	☐	☐	☐	☐	8. Does the storage reservoir have a watertight roof or cover and is it sloped to facilitate drainage?
☑	☐	☐	☐	☐	9. Is the storage water protected from contamination?
☑	☐	☐	☐	☐	10. Is the storage structure structurally sound?
☐	☑	☐	☐	☐	11. Could vegetation in the area potentially impact the storage structure?*(Recommended)*
☑	☐	☐	☐	☐	12. Is the storage structure designed so that it can be isolated from the distribution system without necessitating loss of pressure in the distribution system?
☐	☑	☐	☐	☐	13. Is leakage evident at time of inspection?
☐	☑	☐	☐	☑	14. Is the storage structure interior coating or liner peeling or cracked?
☐	☑	☐	☐	☐	15. Is the storage structure used to store finished water?
☑	☐	☐	☐	☑	16. Are access manhole openings for the storage structure 4 inches or greater above the surface of the roof, with a cover 2 inches overlapping, water tight, hinged and locked?
☑	☐	☐	☐	☑	17. Are all vents extended 12 inches above the roof and constructed to exclude potential sources of contamination? *(The overflow pipe shall not be considered a vent)*

yes	no	n/a	unk	note	ABOVE GROUND STORAGE
☑	☐	☐	☐	☐	18. Do all vents open downward and are they fitted with a 4 mesh non-corrodible screen?

yes	no	n/a	unk	note	GROUND-LEVEL, PARTIALLY BURIED, or BELOW-GROUND STORAGE
☐	☐	☑	☐	☐	19. Does the overflow for the storage structure have a vertical section of pipe at least 2 pipe diameters in length?
☐	☐	☑	☐	☐	20. Is the overflow for the storage structure provided with either a 24 mesh non-corrodible screen installed within the pipe when practical, or an expanded metal screen installed within the pipe plus a weighted flapper or check?
☐	☐	☑	☐	☐	21. Is the area surrounding the storage structure graded in a manner that will prevent surface water from standing within 50 feet of it?
☐	☐	☑	☐	☐	22. Are all vents for the storage structure open downward with the opening at least 24 inches above the roof or the ground level and covered with 24 mesh non-corrodible screen to exclude potential contamination?

yes	no	n/a	unk	note	PARTIALLY BURIED OR BELOW-GROUND STORAGE
☐	☐	☑	☐	☐	23. Are "ALL" manholes elevated 24 inches above the surface of the roof or the ground level, which ever is higher?
☐	☐	☑	☐	☐	24. Is there a minimum distance of 50 feet between the storage structure and any non-potable main, standing water, or other possible source of contamination?

DISTRIBUTION

One form for **all** distribution systems in the PWS.

SURVEY DATE: 5/17/2010 (mm/dd/yyyy)

PWS #: 7410012

What are water lines made of:

Material(s): ☐ Unk

☐ Steel ☐ HDPE (black) ☐ Asbestos/Cement

☑ PVC ☑ Ductile Iron ☐ Copper

☑ Other: unk

Size(s): ☐ Unk

1.5 - 8 inches

How many services are metered?

133 out of 139

Number of Fire Hydrants:

25

yes	no	n/a	unk	note	DISTRIBUTION
☐	☑	☐	☐	☐	1. Have there been any interruptions in service during the past year? (including pressure loss)
☐	☐	☑	☐	☐	2. If a loss of pressure occurred (>20 psi), did the PWS provide public notice and disinfect the system? *(Reminder)*
☑	☐	☐	☐	☐	3. Is the PWS able to maintain a minimum pressure of twenty (20) psi throughout the distribution system (including fire flow), or forty (40) psi for PWSs constructed after 7/1/1985 (excluding fire flow), during maximum hourly demand conditions?
☐	☑	☐	☐	☐	4. Was the pressure observed at a service connection?
					5. If yes: psi. Location: Time: ☐ A.M. ☐ P.M.
☐	☑	☐	☐	☐	6. Do all water mains that provide fire flow have a diameter of at least 6 inches?
☑	☐	☐	☐	☐	7. Are valves exercised regularly? *(Recommended)* If yes, how often? annually
☐	☑	☐	☐	☐	8. Is there a leak detection program? *(Recommended)*
☑	☐	☐	☐	☑	9. Is 15% or more of the water unaccounted for?
☐	☑	☐	☐	☐	10. Is a water conservation program in effect? *(Recommended)*
☐	☑	☐	☐	☑	11. Is an adequate map of the distribution system maintained? *(Recommended)*
☑	☐	☐	☐	☐	12. Does the system flush all main lines annually? *(Recommended)*
☑	☐	☐	☐	☐	13. Are all dead end water mains equipped with a means to flush?
☑	☐	☐	☐	☐	14. If yes, are the deadends flushed at least semiannually?
☐	☑	☐	☐	☐	15. Are there any distribution materials used that should not be in contact with the drinking water? *If yes, explain in comments section.*
☑	☐	☐	☐	☐	16. Is the system adequately protected from freezing?
☑	☐	☐	☐	☑	17. Is there a cross connection control program? *(Community PWSs Only)*
☐	☑	☐	☐	☐	18. Is the operator trained in cross connection control? *(Recommended)*
☐	☑	☐	☐	☐	19. Is the operator aware of any cross connections or were any cross connections observed during the course of the survey?
☐	☐	☑	☐	☐	20. If a separate non-potable irrigation system is provided for the consumer, are all mains, hydrants, and appurtenances easily identified as non-potable? (Purple Tape or other) *(Recommended)*

yes	no	n/a	unk	note	**Air/Vacuum Relief Valves** - *Placed at high points in water mains.*
☐	☐	☑	☐	☐	21. Are all automatic air relief valves equipped with a means of backflow protection?

COMMENTS:
(Please indicate the question number)

non-metered connections: George Rammell, Main Street Park, Fire Hall, Rodeo

6. Deficiency: not all hydrants are served by a 6-inch line

9. Deficiency: 15% or more of the water is unaccounted for, which is not in accordance with IDAPA 58.01.08.542.10. Causes identified in 2008 Planning Study - water leakage, low estimations of water used of unmetered connections, occasional storage tank overflow, electrical malfunctions where the pump continues to run, incorrect meter readings.

18. Recommendation: DEQ recommends the certified operator obtain training in cross connection control to better serve the water system in implementing a "Cross Connection Control" program.

11. work in progress - not considered a deficiency

17. Recommendation: Out dated 1981 Cross Control Prgram needs updated - **Recommendation**: ideally the piping from the air release valve should be directed into the floor drain than drain back into the well (see Fig. # 3), upon system upgrades that should be addressed

PUMPING - PG. 1

One form for **all** Pumps.

SURVEY DATE: 5/17/2010 (mm/dd/yyyy)

PWS #: 7410012

PUMPS, PUMPHOUSES, AND CONTROLS

Pump ID#:	Physical Location:	Type of Pump:	Brand:	Model:	Horsepower:	Purpose:
1	well	verticle turbine	Bryon Jackson	816W1415	40	storage

yes	no	n/a	unk	note	
					ALL PUMPS
	✓			✓	1. Are all pumps capable of providing the maximum pumping demand of the system?
	✓				2. Does the pump(s) cycle excessively? *(Recommended)*
✓					3. Are all pumps provided with readily available spare parts and tools?
✓					4. Is a water pressure relief valve installed where the pump is directly connected to the distribution system?
✓					5. Is a standard pressure gauge installed on the discharge line?
					WELL PUMPS
✓					6. Is there an accessible check valve installed in the discharge line of each well between the pump and the shut-off valve?
✓					7. If the system has a vertical turbine motor driven pump(s), is an air release-vacuum relief valve located upstream from the check valve, with exhaust/relief piping terminating in a down-turned position at least 18 inches above the floor and covered with a 24 mesh corrosion resistant screen?
✓					8. If the pump(s) is "oil lubricated", is the oil NSF approved and suitable for human consumption?
					WATER PUMPS *(not well pumps)*
		✓			9. Is an accessible check valve on the discharge side between the pump and the shut-off valve?
					AUXILIARY POWER
	✓			✓	10. Is there auxiliary power on-site?
Significant			Deficiency		
		✓			11. Is auxiliary power tested? *(Recommended)*
		✓			12. If a diesel or gasoline fueled engine is used on the well lot; is the fuel tank and connecting piping double walled?
		✓			13. Is the fuel tank above ground?
		✓			14. Is a certified operator present during the filling of the fuel tank?
					If the engine is in the well house
		✓			15. Is the engine exhaust directly discharged outside the well house?
		✓			16. Is a spill containment structure surrounding all fuel tanks adequate? *(Secondary containment - 110% fuel tank volume)*
					Community Systems Only
		✓			17. (*Community Systems built after 4/15/07 only*) Is on-site power or standby storage provided so water can be treated and supplied to pressurize the entire distribution system during a power outage for a minimum of 8 hours?
		✓			18. (*Community Systems built after 4/15/07 only*) If standby power is provided, Is there a minimum of 8 hours of fuel stored and located on site?

COMMENTS:
(Please indicate the question number)

1. Deficency: (noted in 2008 Planning Study) Well pump is not capable of providing the maximum pumping demand of the system, as required by IDAPA 58.01.08.541.02.a. **2.** pump runs approximately 6X/hr.

10. Deficency - There is no Auxilliary power on-site for the well, as required by IDAPA 58.01.08.501.07. According to the operator, the power outages experienced by the system are minimal frequency and duration that auxiliary power will not be required. The need for auxiliary power on-site will be reevaluated every time and ESS is conducted.
(No action required at this time)
* Well produces 416 GPM

Page _____ Of _____

SURVEY DATE 5/17/2010 (mm/dd/yyyy) PWS # 7410012

COMMENTS:
(Please indicate the question number)

BOOSTER PUMPS

yes	no	n/a	unk	note	
☐	☐	☑	☐	☐	19. Is an instantaneous and totalizing flow meter installed where the booster pump is directly connected to the distribution system? ☐ Unnecessary
☐	☐	☑	☐	☐	20. Are all in-line booster pumps supplied with an automatic cutoff that activates when intake pressure is less than or equal to 5 psi?
☐	☐	☑	☐	☐	21. Is the booster pump located on a suction line that is directly connected to any storage reservoir?
☐	☐	☑	☐	☐	22. If yes, are all booster pumps protected by an automatic cutoff to prevent pump damage and avoid excessive reservoir drawdown?

PUMP HOUSE *(Only pump houses that don't contain a Groundwater Source)*

yes	no	n/a	unk	note	
☐	☐	☑	☐	☐	23. Is the pump house kept clean and in good repair? *(Floor cracks?)*
☐	☐	☑	☐	☐	24. Is the pump house protected from unauthorized personnel?
☐	☐	☑	☐	☐	25. Does the pump house have adequate lighting throughout? *(Recommended)*
☐	☐	☑	☐	☐	26. Are all non-sample taps installed in the pump house equipped with an appropriate backflow prevention device?
☐	☐	☑	☐	☐	27. Is adequate ventilation provided in the pump house for dissipation of excess heat and moisture from the equipment? ☐ Significant ☐ Deficiency
☐	☐	☑	☐	☐	28. Is adequate heating provided in the pump house to provided safe and efficient operation of equipment *(prevent moisture buildup and/or freezing)*? ☐ Significant ☐ Deficiency
☐	☐	☑	☐	☐	29. Is the pump house protected from flooding, have adequate drainage, is the floor surface at least six (6) inches above the final ground surface, and is the ground surface graded so as to lead surface water away from the pump house?
☐	☐	☑	☐	☐	30. Is the sump for pump house floor drains closer than 30 feet from the well?
☐	☐	☑	☐	☐	31. Is the floor drain connected to sewer, storm drains, chlorination room drains, or any other source of contamination?

FINANCIAL CAPACITY

SURVEY DATE: 5/17/2010 (mm/dd/yyyy)

PWS #: 7410012

yes	no	n/a	unk	note	FINANCIAL CAPACITY
✓					1. Is the PWS current with the payment of drinking water fees?
✓					2. Does the PWS charge a drinking water fee to the user? If yes, what is the fee: $ 25/month
	✓				3. Is the PWS in the business of selling water?
					#3 Note: → **- If no, identify why in the comments section and mark "N/A" on questions 4 - 19.**
✓					4. Does the PWS provide and use an annual budget? *(Recommended)*
			✓		5. If applicable, is the PWS fund separate from the waste water/sewer utility fund? *(Recommended)*
			✓		6. Do water system revenues exceed expenditures? *(Recommended)*
			✓		7. Are controls established to prevent expenditures from exceeding revenues?
✓					8. Has an independent financial audit been completed? *(Recommended)*
✓					9. If yes, is a copy of the most recent balance sheet for the water system available? *(Recommended)* completed in 2000
			✓		10. Does the water system include a cash budget within its annual budget for cash flow? *(Recommended)*
	✓				11. Does the water system management review the user fee, user charge, or rate system at least annually? *(Recommended)*
					12. When was the last user fee, user charge, or rate system adjustment? 2008 *mm/dd/yyyy*
	✓				13. Does the water system management review financial reports at least monthly? *(Recommended)*
			✓		14. Does the PWS provide and use a capital budget? *(Recommended)*
			✓		15. Has this PWS produced and does it currently utilize a capital improvements plan? *(Recommended)*
					16. If yes, when was the capital improvements budget produced? *mm/dd/yyyy*
			✓		17. Has the capital improvement budget been updated in the last 18 months? *(Recommended)*
✓					18. Does the water system budget provide funding for depreciation of existing plant in service and/or for the funding of reserves for system replacement?
✓					19. Are there sufficient funds for training personnel?

COMMENTS:
(Please indicate the question number)

MANAGERIAL CAPACITY

yes	no	n/a	unk	note		
✓					1.	Is a properly licensed operator available at all times? (N/A for GW-NC PWS)
			✓		2.	Is there a Drinking Water Source Protection Plan developed for this system? Date:
✓					3.	Does this PWS have a governing body or board of directors? If no, please indicate: ☐ Sole Proprietorship ☐ Partnership ☐ Limited Liability Corp. ☑ Other: City Council
					4.	How often does the board meet? ☐ N/A ☐ weekly ☐ semi-annually ☐ never ☑ monthly ☐ annually ☐ unknown ☐ bimonthly ☐ as necessary ☐ other:

Are the following records maintained onsite or located near by?

yes	no	n/a	unk	note		
✓					5.	- Bacteriological Analysis - **5 years retention.**
✓					6.	- Chemical Analysis - **10 years retention.**
✓					7.	- Records of actions taken to correct violations - **3 years retention.**
✓					8.	- Copies of reports, summaries or communication related to sanitary surveys - **10 years retention.**
✓					9.	- Reports concerning variances or exemptions - **5 years retention.**
✓					10.	- Copies of public notices issued - **3 years retention.**
		✓			11.	- Daily free chlorine residuals *(required disinfection)* - **1 year retention.**
✓					12.	Are routine maintenance schedules established? *(Recommended)*
✓					13.	Is an operation and maintenance manual(s) provided for the PWS and does it include; daily operating instructions, operator safety procedures, location of valves and other key system features, parts list and parts order form, and information for contacting the water system operator?
✓					14.	Is there a clear plan of organization and control among the people responsible for management and operations of the water system? *(Recommended)*

Are any samples of the following parameters past due?

yes	no	n/a	unk	note		
	✓				15.	Coliform
	✓				16.	Nitrates
	✓				17.	Nitrites
	✓				18.	Lead and Copper
	✓				19.	IOCs
	✓				20.	VOCs
	✓				21.	SOCs
		✓			22.	Disinfection Byproducts
	✓				23.	Radionuclide
	✓			✓	24.	Is a written total coliform rule (TCR) sample site plan available for review?
		✓			25.	Does the (TCR) sample site plan meet the minimum requirements?
✓					26.	Does the system have a sufficient supply of approved sampling bottles properly stored? *(Recommended)*
✓					27.	Does the PWS provide stairways, ladders and handrails where needed?
		✓			28.	Are treads of non-slip material provided where needed?
					29.	Is a health concern produced from inadequately protected electrical wiring?
		✓			30.	Are all confined space entry requirements considered? *(Recommended)*
	✓				31.	Are there any unused subsurface water storage tanks that need to be abandoned?
	✓				32.	Are there any water supply wells that are no longer being used that need to be abandoned?

COMMENTS:
(Please indicate the question number)

24. Recommendation: The total coliform rule (TCR) sample site plan is required by IDAPA 58.01.08.100.01. which incorporates by reference 40 CFR 141.21 It is recommended developing a sampling plan that in the event other than the operator is sampling there is a clear and precise map as to where bacteria sampling is to be completed. An example of such plan can be found at the following web site: http://www.idahooperatortraining.com/

State of Idaho
Department of Environmental Quality
Photo Log

Name of Facility:		Inspection Date	PWS#
City of Tetonia		5/17/2010 (mm/dd/yyyy)	7410012
Camera Type: ☑ Digital ☐ 35mm ☐ Other:	Camera Brand: Olympus	Camera Model:	Camera ID#:

Photo:	Date:	By: (initials)	Direction: (N,S,E,W, etc.)	File Name:	Description:
1	5/17/2010	RM		Tetonia	well house
2	5/17/2010	RM		Tetonia	well source
3	5/17/2010	RM		Tetonia	pressure reducer
4	5/17/2010	RM		Tetonia	flow meter, check meter, isolation valve
5	5/17/2010	RM		Tetonia	discharge line
6	5/17/2010	RM		Tetonia	threaded tap
7	5/17/2010	RM		Tetonia	floor drain
8	5/17/2010	RM		Tetonia	well house
9	5/17/2010	RM		Tetonia	discharge piping
10	5/17/2010	RM		Tetonia	pump to waste
11	5/17/2010	RM		Tetonia	storage tank lot
12	5/17/2010	RM		Tetonia	storage tank
13	5/17/2010	RM		Tetonia	screen vent

The photographers signature below signifies that the images identified on this photo log have not been tampered with and are representative of what was seen in the field.

Photographer(s) Signature(s): Date:

Page 8 Of 8

Photo log: City of Tetonia Sanitary Survey 5/17/2010

Fig. # 1 – well house

Fig. # 2 – well source

Fig. # 3 – pressure reducer

Fig. # 4 – check valve, flow meter and isolation valve

Fig. # 5 – discharge piping

Fig. # 6 – (Deficiency Noted) threaded tap

Fig. # 7 – floor drain

Fig. # 8 – overall view of well house

Photo log cont.: City of Tetonia Sanitary Survey 5/17/2010

Fig. # 9 – discharge piping

Fig. # 10 – pump to waste hydrant

Fig. # 11 – storage tank lot

Fig. # 12 – storage tank secured access ladder

Fig. # 13 – screened vent

Appendix B 2010 Leak Detection

Water Line Leak Location Project

Final Report

Prepared For:

City of Tetonia, ID

Prepared By:

Utility Services Associates LLC

You Leak, We Seek℠

Project Dates:

08/3/10 through 08/4/10
and 10/29/10

TABLE OF CONTENTS

COVER LETTER

EXECUTIVE SUMMARY

PROJECT OBSERVATIONS

SURVEY PHASE REVIEW

PINPOINTING PHASE REVIEW

LEAK REPORTS

CONCLUSION

COVER LETTER

Utility Services Associates LLC
You Leak, We Seek℠

November 8, 2010

City of Tetonia
Attn: Carol Lenz
PO Box 57
Tetonia, ID 83452

Dear Ms. Lenz:

Utility Services Associates, LLC, (USA) is pleased to submit the enclosed Final Report on leak detection services recently completed.

The information contained in this Final Report details the procedures and results specific to this project. When applicable, recommendations have been made concerning the best approach for the repair of leaks detected and preparation for future leak detection projects.

As you review this Final Report, please pay close attention to the Field Technician's remarks and field observations in the Project Observation section of this report. These may assist you in determining the best course of action regarding specific leaks.

At times specific individual Leak Reports may differ in the Final Report from those provided during the course of the project. These changes, usually insignificant, generally pertain to the manner in which we report leaks and do not alter the methods used or results of pinpointing.

We strongly suggest you contact us prior to excavating any leak that we have labeled with "CAUTION" for further explanation.

This leak detection project is productive since we pinpointed leakage that, when repaired, can reduce your water loss, saving the City of Tetonia dollars now and in the future. We appreciate your confidence in USA. If you have any questions, call us at (877) 585-5325 or (206) 244-0370.

Sincerely,

Rob Meston
President

919 SW 150th Street
Suite B
Burien, WA 98166
www.usaleaksllc.com

Main Office: 877.585.LEAK (5325)
Montana: 877.647.LEAK
Idaho: 800.241.3420
Fax: 206.244.0278

EXECUTIVE SUMMARY

LEAK DETECTION EXECUTIVE SUMMARY

From August 3, 2010 through August 4, 2010 and On October 29, USA performed a leak survey for the **City of Tetonia, ID.** Our Field Technician, Tom Ruppenthal, used and appreciated the information provided by Charlie Robinson to expedite and provide an accurate survey. The tables below detail the information gathered.

Time Spent on Project	
Surveying:	11 Hr
Pinpointing:	7.25 Hr
Other Time:	0.00 Hr
Total Time:	18.25 Hr

Total Areas Surveyed	
Total Distance in Miles	5.25
Total Distance in feet	27,720

The mileage was estimated by the technician and may not match maps.

Access Points Contacted	
Hydrants	26
Valves	24
Services	135
Other	3
Total	188

Leak Type Noises Detected	
Hydrants	3
Valves	3
Services	12
Other	0
Total	18

Leaks Pinpointed	
Main	0
Hydrant	1
Valve	2
Service Line	2
Service Connection	5
Meter	1
Total	11

Total Water Loss Identified	
Gallons Per Minute (GPM):	19.75
Gallons Per Day (GPD):	28,440
Gallons Per Year (GPY):	10,380,600

Average Water Loss Identified	
Gallons Per Minute (GPM):	1.8
Gallons Per Day (GPD):	2,592
Gallons Per Year (GPY):	946,080

This project was divided into two phases; the survey phase and the pinpointing phase. The following pages outline exactly how those two phases progressed and the results of each. Any leaks pinpointed will be detailed in the attached Leak Reports

PROJECT OBSERVATIONS

PROJECT OBSERVATIONS
(Water Distribution Lines)

GENERAL
On October 29, 2010 USA completed a leak detection survey on the **entire** water distribution system for the City of Tetonia, ID. The notes below have been generated by our Field Technician and have been included as part of the Executive Summary.

SPECIFICS
The survey was broken down in two different phases:

1. *Survey Phase* – sounding of appurtenances and recording leak type noises that were detected.

2. *Pinpointing Phase* – pinpointing noises that were detected during the Survey Phase.

1. Survey Phase Information

The survey was started back in August of 2010; however, we did not finish due to health issues of our assistant with the City. We were able to finish the survey portion during August 3 and 4, 2010. We returned to complete the pinpointing on the 29th of October.

Overall, the survey portion of the project went well with regards to sound travel and appurtenances location and condition.

2. Pinpointing Phase Information

As result of our survey, we were able to locate and pinpoint eleven (11) leaks. We have also listed one (1) location as "undefined", which is a location we suspect a leak(s) exist but after extensive investigation, we could not pinpoint the suspected leak. Leak information and a drawing can be found for each leak in the Leak Report section of this Final Report. More information follows:

Leak Report #3 – Well House
This appears to be a failing check valve that is letting water pass back when the well is not running.

Leak Report #7 - Picnic Yard
Use caution, as this leak location may be off. Exact line location is unclear. Also, the well line is tied in very closely.

Undefined Leak Report #U-1 – Park Bathroom
This service has been shut down since we first detected the noise back in August. We suggest, prior to turning the system back on in the spring, that the noise be investigated and the suspected leak pinpointed.

CONCLUSION
We were able to locate and pinpoint leaks indicating not all leaks readily surface in this water system. Make note of any discrepancies in our estimates as they may have a

substantial effect on non-revenue water calculations. Note that the service line leaks that were found are all on short services.

We would like to thank Charlie and Carol for their field assistance, which proved invaluable. We look forward to working with the City of Tetonia on future conservation projects.

Compiled from field notes respectfully submitted from:

Tom Ruppenthal
Field Technician

SURVEY PHASE REVIEW

SURVEY PHASE REVIEW
(Water Distribution Lines)

The first step in our survey was to review the distribution maps of the system for familiarization of the pipe network and available appurtenances to be used for contact points.

As the leak survey progressed, we determined the distances that even quiet leak type sounds traveled in various pipe materials, pipe sizes and pressure zones in each area of the system. This might have been done by slightly turning on fire hydrants, hose bibs, etc., creating a simulated, quiet leak sound. Appurtenances in that area were then checked with a sound amplification instrument to see how far the simulated leak sounds traveled, thus determining how often we would make contact with appurtenances in a given section of the water distribution system. In most areas, contact was made with pipe appurtenances at intervals no greater than 300 feet where contact points were available and accessible at pre-determined distances as noted in Paragraph B (whichever distance is necessary to obtain complete coverage). This allowed for even more quiet leaks to be located. Whenever we surveyed PVC lines, all available appurtenances were contacted.

We then conducted a comprehensive survey by making physical contact with all available main line appurtenances (valves, hydrants, etc.) and necessary customer services. USA used a sonic leak detection amplification instrument designed for this purpose.

Appurtenances Surveyed

Hydrant	26
Valves	24
Services	135
Other	3
Total	**188**

When normal contact points were not available or could not be created within a reasonable distance, we made an attempt to use a sonic ground listening instrument to make physical ground contact at intervals no greater than 6 feet directly over the pipe. If conditions did not allow this procedure our Field Technician advised you at time of project and notes of such are included in the Project Observations. Ground listening devices are employed when ground cover is pavement, cement or similar hard surface.

When ground cover was not a hard surface and normal contact points were not available, we made an attempt to use probe rods or a specially designed sounding plate at 6-foot intervals. A sound amplification instrument with 3VG or greater transducer was employed in conjunction with this equipment, directly over the pipe. If conditions did not allow this procedure our Field Technician advised you at time of project and was detailed in the Project Observations section of this Final Report. Direct contact to the main line at intervals outlined in Preparation for Service resulted in the most thorough survey.

A detailed report of decibel levels at suspected leak sound locations and observations were compiled during the survey for reinvestigation and possible pinpointing at a later time. This reinvestigation increased the speed of the survey and eliminated correlating on most false leak sounds.

Leak Type Noises Detected

Contact Points	Noises Detected
Hydrant	3
Valves	3
Services	12
Other	0
Total	**18**

All indications of leaks found during the survey were verified a second time, after which, the leaks were pinpointed with a computer based sound correlator when possible. Pinpointing information can be found in the Pinpointing and Leak Reports Sections.

Areas Surveyed

From	To	Distance
All of Main St	All points / system to west	13,120
All points and pipe	East of Main St	14,600
Total Area Surveyed in Feet		**27,720**
Total Area Surveyed in Miles		**5.25**

End of Section

PINPOINTING PHASE REVIEW

PINPOINTING PHASE REVIEW
(Water Distribution Lines)

All indications of leaks found during the survey were verified a second time, after which, the leaks were pinpointed with a computer based sound correlator when possible. Pinpointing leak locations through interpretation of sound intensity, either by ear, decibel metering or other like methods was not used when contact points were available for use with the correlator. However, ground listening devises were used as a quick double check on pinpointed leaks.

The equipment used did not normally require valves to be operated during surveying and pinpointing. However, on occasion, services or valves were operated to eliminate service draw noises or to change velocity noise.

The correlator equipment used had the capability to prompt the operator to input the variables when different pipe sizes and/or pipe material were encountered in the same span to be investigated. This is necessary to insure accuracy of results based on the automatic computation of the correct leak sound velocity in leak pinpointing operations. Our correlators have the capability of correlating up to seven various pipe sizes and types at one time in a given space. To insure effective performance in all field environments encountered in the distribution system (i.e. traffic noise, draw, pump operation, industrial noise, etc.), the correlator equipment provides 16 auto filter options and/or infinite manual filter options.

We provided a copy of leak reports, when pinpointed, which included leak locations and estimated GPM loss.

Leaks Pinpointed

Number	Leak Type	Location	GPM
1	Service Connection	Park Irrigation Meter	2.00
2	Hydrant	Barry Oil Fire Hydrant	0.50
3	Valve	Well House	5.00
4	Service Connection	Picnic Yard Hydrant	1.00
5	Service Line	Zelda Hill House	0.50
6	Meter	Main St & Leigh Ave	1.00
7	Service Connection	Old Tetonia Club	2.00
8	Valve	Main St & Central Ave	2.00
9	Service Connection	Inez EK Service	5.00
10	Service Line	Ron Barry Service	0.50
11	Service Connection	Richard Barry Meter	0.25
Total			**19.75**

These leak reports, also included a leak repair priority classification. These classifications are as follows:

Class I Any leak which is hazardous in terms of potential undermining, possibly resulting in surface collapse, encroachment and/or damage to nearby utilities, commercial or private properties or leaks severe enough to warrant immediate repair.

Class II All leaks that display water losses significant enough to be monitored on a regular repair schedule.

Class III Relatively small leaks that should be repaired as workload permits.

Repair Priority

Number	Leak Type	Location	GPM
Total Class I			**0.00**

Number	Leak Type	Location	GPM
1	Service Connection	Park Irrigation Meter	2.00
3	Valve	Well House	5.00
7	Service Connection	Old Tetonia Club	2.00
8	Valve	Main St & Central Ave	2.00
9	Service Connection	Inez EK Service	5.00
Total Class II			**16.00**

Number	Leak Type	Location	GPM
2	Hydrant	Barry Oil Fire Hydrant	0.50
4	Service Connection	Picnic Yard Hydrant	1.00
5	Service Line	Zelda Hill House	0.50
6	Meter	Main St & Leigh Ave	1.00
10	Service Line	Ron Barry Service	0.50
11	Service Connection	Richard Barry Meter	0.25
Total Class III			**3.75**

Whenever any of the leaks detected by USA were repaired prior to completion of the field work, we gave the City of Tetonia the option to have that section of the system re-surveyed to be sure no very quiet leaks were missed due to an over powering noisy leak sound.

Please note that leakage that was detected and pinpointed may be larger or smaller than estimated. Estimates are based on several variables including type and size of pipe, pressure and interpretation of correlation filter results.

It should be noted that we have listed one area as "Undefined". This is an area where we believe one or more leaks exist, however, after spending considerable time at each location, we could not pinpoint the suspect leakage. This may be due to one or more of many different variables including; poor sound travel, limited number of appurtenances, etc. For further information and/or assistance, please contact our main office.

Undefined Leaks

Leak Location	Notes
Park Bathroom Meter	Leak noise on meter serving bathroom and drinking fountain. Meter shut off for now. Noise gone.

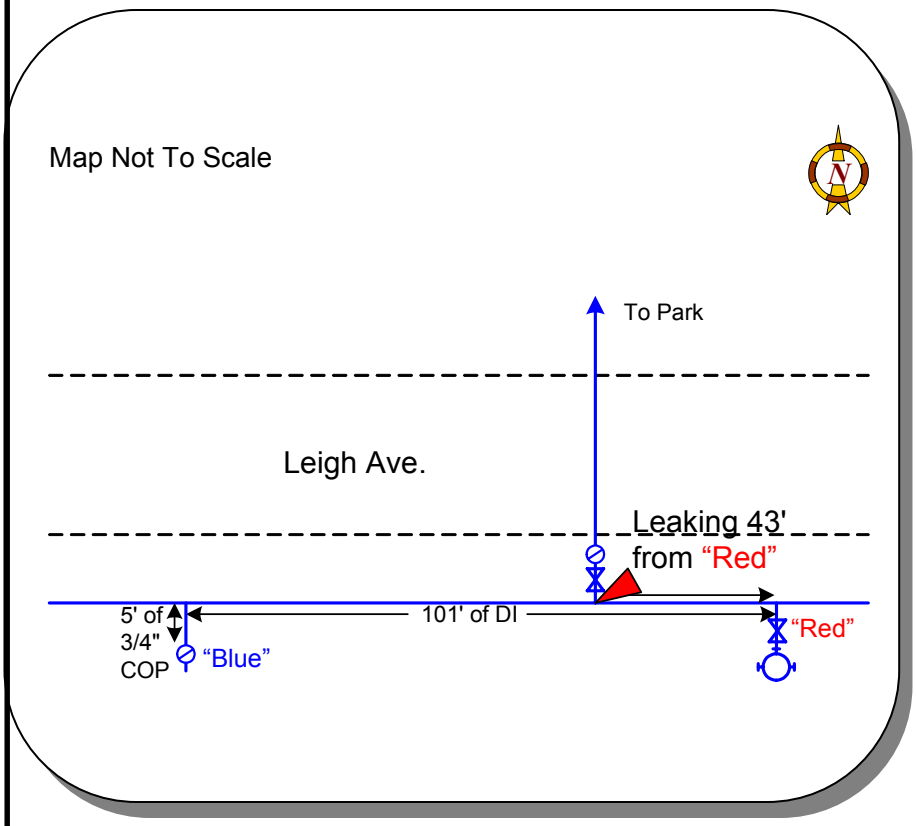
End of Section

LEAK REPORTS

Leak Report

Utility Services Associates, LLC

Location: Park irrigation meter
Map #: _____ GPS: _____
Remarks: Multiple correlations lead to this 2" valve tap at main.
Leak Type: Service Connection
Recommendations: Excavate & Repair



Field Tech: TR
Leak No: 1
Leak Class: II
Leak Rate: 2.0 GPM
Cover Type: Gravel
Site Marked: No
Date: 08/04/10
Job No: 10124

Space left blank for digital photo.

Equipment used: S-30 Portable Listening Device & LC-2500 Correlator

Computer Correlation Results

Scan Time	Grade	Dist "Red"	Dist "Blue"
10	A-Good	43'	63'

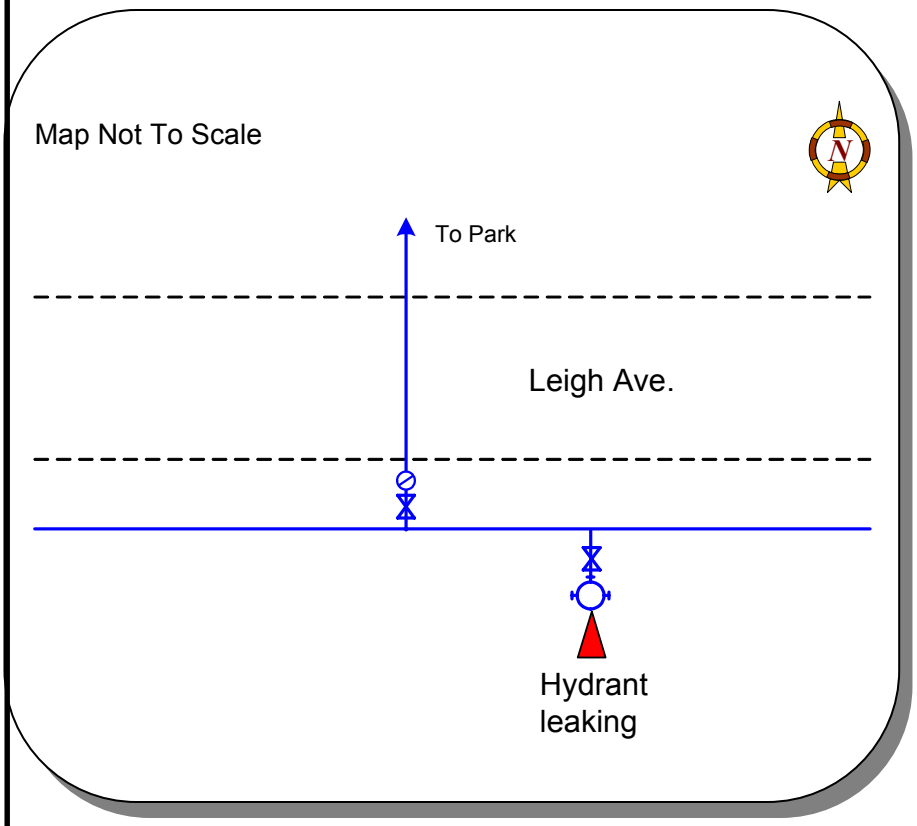
Water Loss
(this leak, in gallons)

DAILY..... 2,880
WEEKLY..... 20,160
MONTHLY 80,640

Leak Report

Utility Services Associates, LLC

Location: Barry Oil Fire Hydrant
Map #: _____ GPS: _____
Remarks: Hydrant leaking. Waterous brand. Flushed and tightened hydrant. Leak continued.
Leak Type: Hydrant
Recommendations: Repair / Replace



Field Tech: TR
Leak No: 2
Leak Class: III
Leak Rate: .50 GPM
Cover Type: Gravel
Site Marked: No
Date: 08/04/10
Job No: 10124

Space left blank for digital photo.

Equipment used: S-30 Portable Listening Device & LC-2500 Correlator

Computer Correlation Results

Scan Time	Grade	Dist "Red"	Dist "Blue"

Water Loss
(this leak, in gallons)

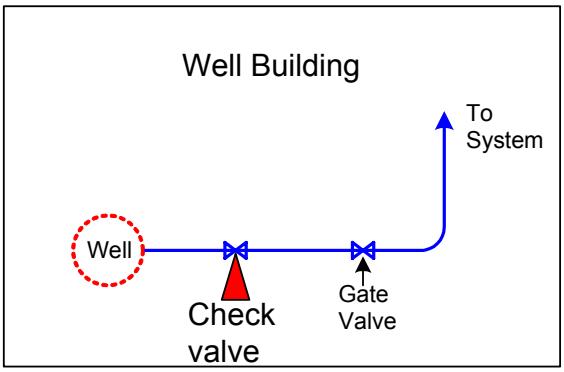
DAILY..... 720
WEEKLY..... 5,040
MONTHLY 20,160

Leak Report

Utility Services Associates, LLC

Location: Well House
Map #: _____ GPS: _____
Remarks: Failing swing check valve. When well is off water flows backward back into well. When gate valve closed the noise stops.
Leak Type: Valve
Recommendations: Repair / Replace

Map Not To Scale



Field Tech: TR
Leak No: 3
Leak Class: II
Leak Rate: 5.0 GPM
Cover Type: _____
Site Marked: No
Date: 08/04/10
Job No: 10124

Space left blank for digital photo.

Equipment used: S-30 Portable Listening Device

Computer Correlation Results

Scan Time	Grade	Dist "Red"	Dist "Blue"

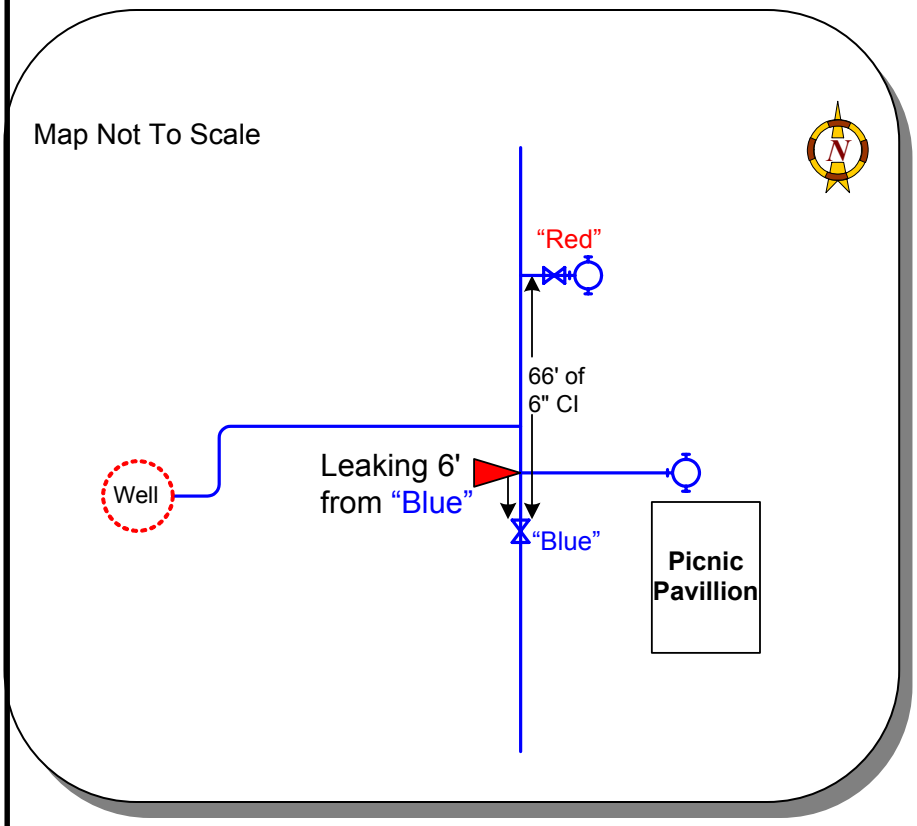
Water Loss
(this leak, in gallons)

DAILY..... 7,200
WEEKLY..... 50,400
MONTHLY 201,600

Leak Report

Utility Services Associates, LLC

Location: Picnic Yard Hydrant
Map #: _____ GPS: _____
Remarks: All correlation setups attempted led to a yard hydrant. Use caution as exact line location is unclear and well output line connects very close at 6" tee.
Leak Type: Service Connection
Recommendations: Excavate & Repair



Field Tech: TR
Leak No: 4
Leak Class: III
Leak Rate: 1.0 GPM
Cover Type: Soil
Site Marked: No
Date: 08/04/10
Job No: 10124

Space left blank for digital photo.

Equipment used: S-30 Portable Listening Device & LC-2500 Correlator

Computer Correlation Results

Scan Time	Grade	Dist "Red"	Dist "Blue"
	B-Average	60'	6'

Water Loss
(this leak, in gallons)

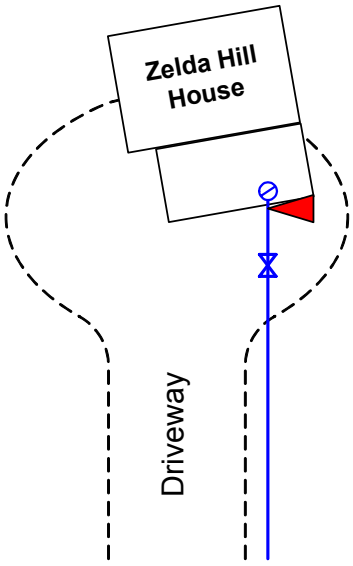
DAILY..... 1,440
WEEKLY..... 10,080
MONTHLY 40,320

Leak Report

Utility Services Associates, LLC

Location: Zelda Hill House
Map #: _____ GPS: _____
Remarks: Small leak on service line likely very close to meter setter. Earlier repair reported at this location.
Leak Type: Service Line
Recommendations: Excavate & Repair

Map Not To Scale



Field Tech: TR
Leak No: 5
Leak Class: III
Leak Rate: .50 GPM
Cover Type: Gravel
Site Marked: No
Date: 08/05/10
Job No: 10124

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Equipment used: S-30 Portable Listening Device

Computer Correlation Results

Scan Time	Grade	Dist "Red"	Dist "Blue"

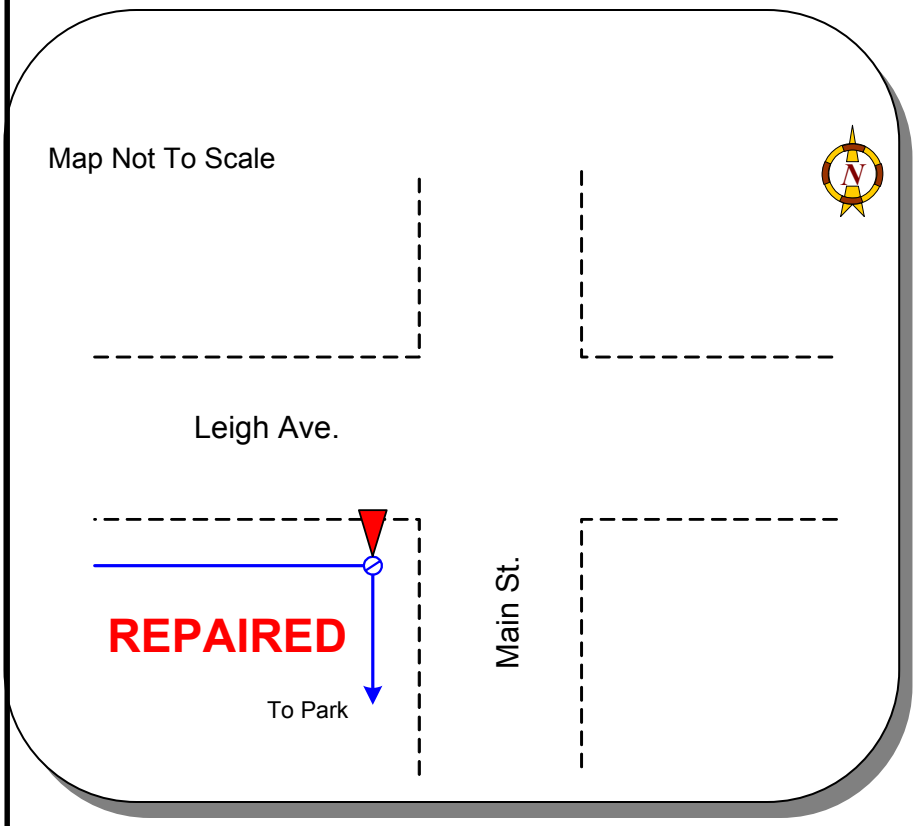
Water Loss
(this leak, in gallons)

DAILY..... 720
WEEKLY..... 5,040
MONTHLY 20,160

Leak Report

Utility Services Associates, LLC

Location: Main St. & Leigh Ave.
Map #: _____ GPS: _____
Remarks: Visible leak in meter pit for city irrigation service to park and garden area. This leak was fixed during the survey as it was only a very loose fitting.
Leak Type: Meter
Recommendations: _____



Field Tech: TR
Leak No: 6
Leak Class: III
Leak Rate: 1.0 GPM
Cover Type: _____
Site Marked: No
Date: 08/05/10
Job No: 10124

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Equipment used: Visible

Computer Correlation Results

Scan Time	Grade	Dist "Red"	Dist "Blue"

Water Loss
(this leak, in gallons)

DAILY..... 1,440
WEEKLY..... 10,080
MONTHLY 40,320

Utility Services Associates, LLC

Leak Report

Location: Old Tetonia Club

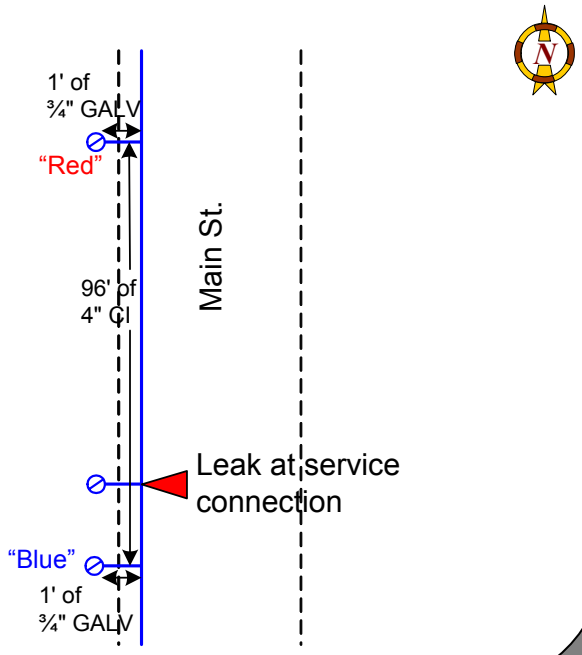
Map #: _____ GPS: _____

Remarks: Very short service lines. This leak is easily heard with ear in meter barrel. Perfect correlation to this service connection.

Leak Type: Service Connection

Recommendations: Excavate & Repair

Map Not To Scale



Field Tech: TR

Leak No: 7

Leak Class: II

Leak Rate: 2.0 GPM

Cover Type: Asphalt

Site Marked: No

Date: 10/29/10

Job No: 10124

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Equipment used: S-30, LD-12, & LD-15 Portable Listening Devices
LC-2500 Correlator

Computer Correlation Results

Scan Time	Grade	Dist "Red"	Dist "Blue"
1	A	83'	15'

Water Loss
(this leak, in gallons)

DAILY..... 2,880
WEEKLY..... 20,160
MONTHLY 80,640

Utility Services Associates, LLC

Leak Report

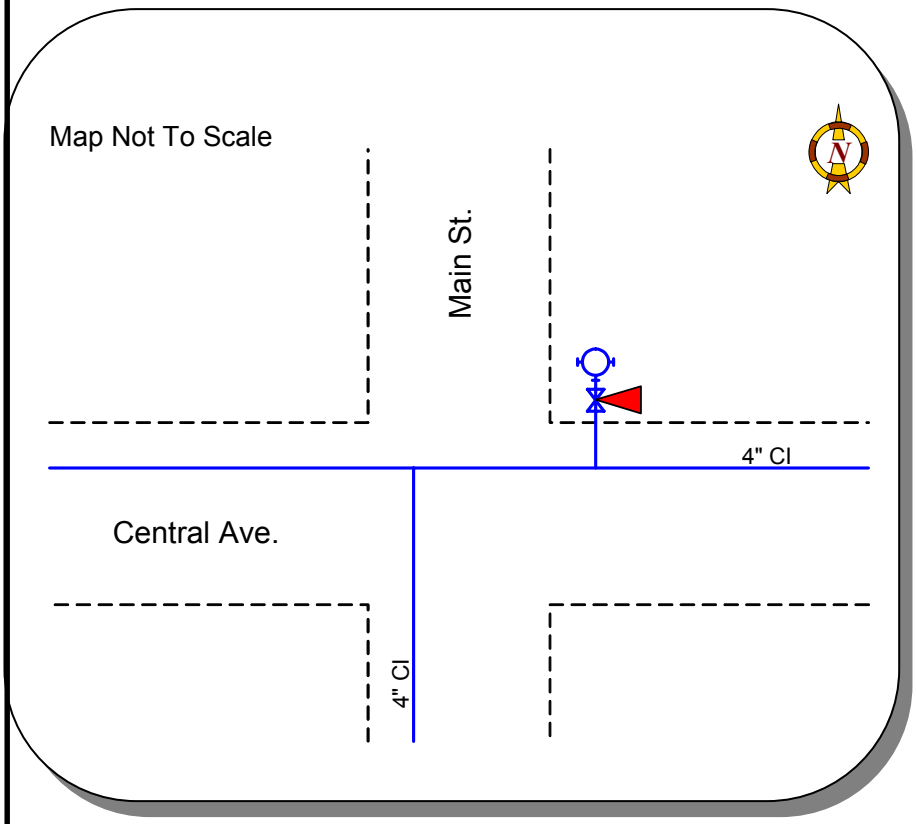
Location: Main St & Central Ave.

Map #: _____ GPS: _____

Remarks: Leak on valve or associated fittings. All possible correlations lead to 0' distance from this valve.

Leak Type: Valve

Recommendations: Excavate & Repair



Field Tech: TR

Leak No: 8

Leak Class: II

Leak Rate: 2.0 GPM

Cover Type: Asphalt

Site Marked: No

Date: 10/29/10

Job No: 10124

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Equipment used: S-30, LD-12, & LD-15 Portable Listening Devices
LC-2500 Correlator & Probe Rod

Computer Correlation Results

Scan Time	Grade	Dist "Red"	Dist "Blue"

Water Loss
(this leak, in gallons)

DAILY..... 2,880
WEEKLY..... 20,160
MONTHLY 80,640

Utility Services Associates, LLC

Leak Report

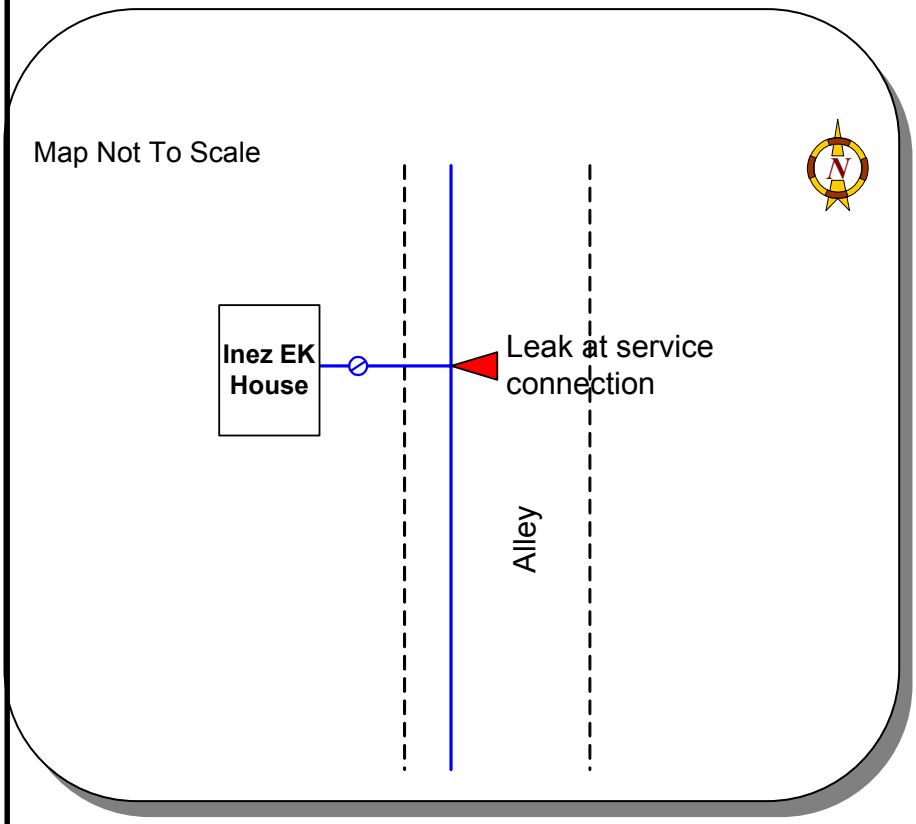
Location: Inez EK Service

Map #: _____ GPS: _____

Remarks: Very loud leak noise at this meter. Barrel has water in it. Leak sound heard around meter. Service line extremely short.

Leak Type: Service Connection

Recommendations: Excavate & Repair



Field Tech: TR

Leak No: 9

Leak Class: II

Leak Rate: 5.0 GPM

Cover Type: Gravel

Site Marked: No

Date: 10/29/10

Job No: 10124

Space left blank for digital photo.

Equipment used: S-30, LD-12, & LD-15 Portable Listening Devices
Probe Rod

Computer Correlation Results

Scan Time	Grade	Dist "Red"	Dist "Blue"

Water Loss
(this leak, in gallons)

DAILY..... 7,200
WEEKLY..... 50,400
MONTHLY 201,600

Utility Services Associates, LLC

Leak Report

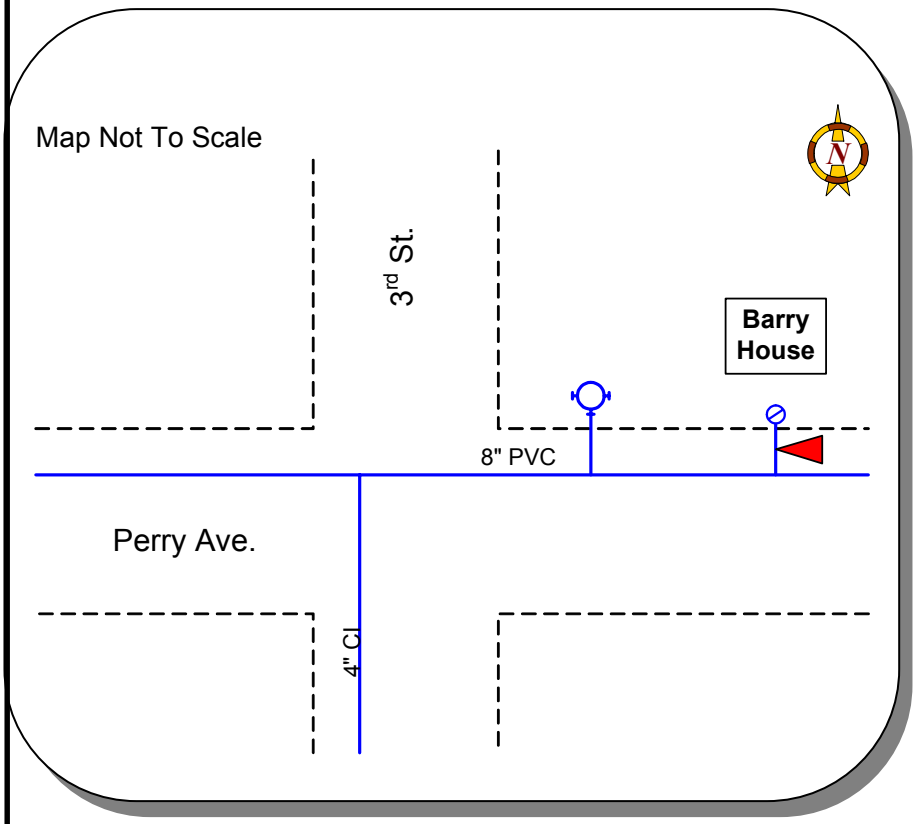
Location: Ron Barry Service

Map #: _____ GPS: _____

Remarks: Small service line leak on very short service line. Leak sounds small and close.

Leak Type: Service Line

Recommendations: Excavate & Repair



Field Tech: TR

Leak No: 10

Leak Class: III

Leak Rate: .50 GPM

Cover Type: Gravel

Site Marked: No

Date: 10/29/10

Job No: 10124

Space left blank for digital photo.

Equipment used: S-30 Portable Listening Device & Probe Rod

Computer Correlation Results

Scan Time	Grade	Dist "Red"	Dist "Blue"

Water Loss
(this leak, in gallons)

DAILY..... 720
WEEKLY..... 5,040
MONTHLY 20,160

Utility Services Associates, LLC

Leak Report

Location: Richard Barry Meter

Map #: _____ GPS: _____

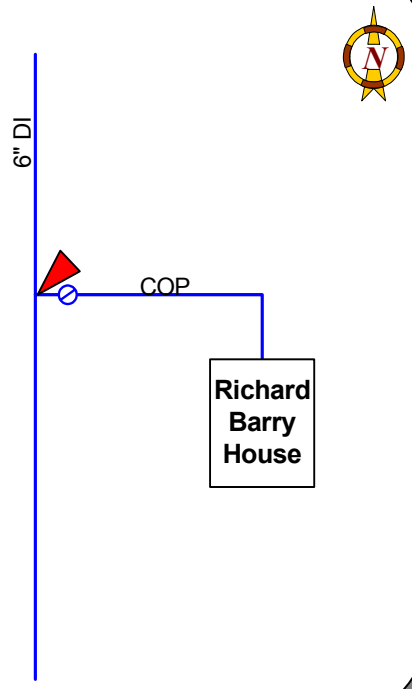
Remarks: Very small leak on service line or connection. Service line is about 1' long. Barely audile with survey tool but confirmed that this is a utility side leak.

Leak Type: Service Connection

Recommendations: Excavate & Repair

Map Not To Scale

CAUTION: Exact Location May Not Be Precise.



Note: This main is on a country easement.

Field Tech: TR

Leak No: 11

Leak Class: III

Leak Rate: .25 GPM

Cover Type: Gravel

Site Marked: No

Date: 10/29/10

Job No: 10124

Space left blank for digital photo.

Equipment used: S-30, LD-12, & LD-15 Portable Listening Devices
LC-2500 Correlator

Computer Correlation Results

Scan Time	Grade	Dist "Red"	Dist "Blue"

Water Loss
(this leak, in gallons)

DAILY..... 360
WEEKLY..... 2,520
MONTHLY 10,080

Utility Services Associates, LLC

Leak Report

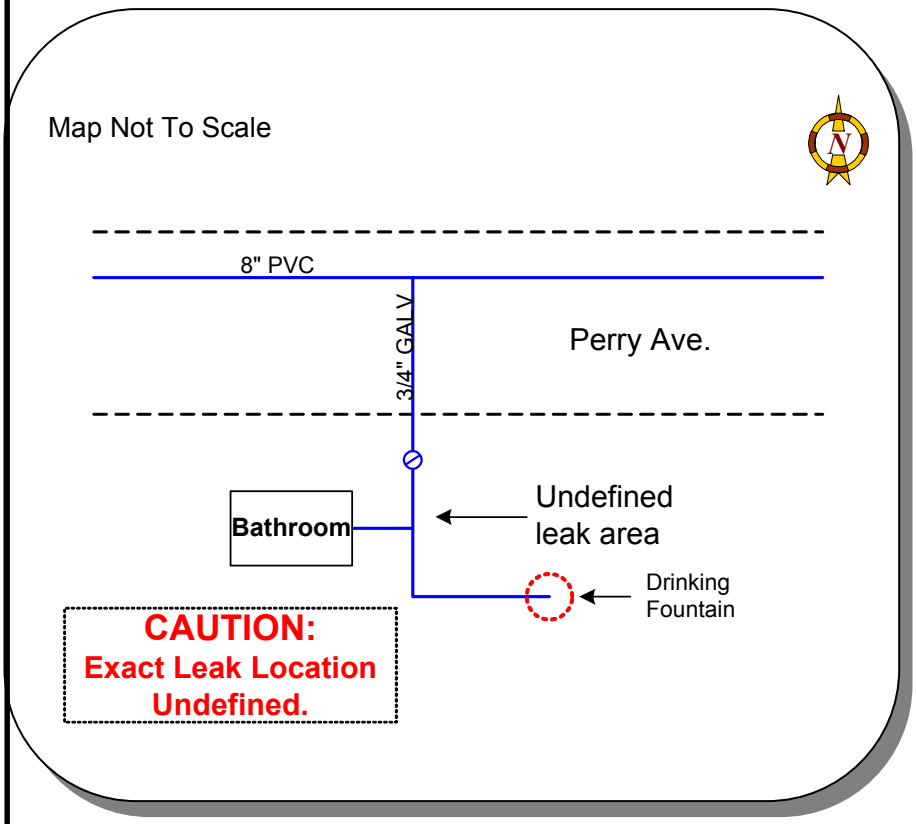
Location: Park Bathroom Meter

Map #: _____ GPS: _____

Remarks: Leak noise on meter servicing Park bathroom and drinking fountain. Meter is shut off now for winter and don't want to turn on until spring. Noise gone now.

Leak Type: Undefined

Recommendations: _____



Field Tech: TR

Leak No: U-1

Leak Class: 0

Leak Rate: 0 GPM

Cover Type: Soil

Site Marked: No

Date: 10/29/10

Job No: 10124

Space left blank for digital photo.

Equipment used: S-30, LD-12, & LD-15 Portable Listening Devices
LC-2500 Correlator

Computer Correlation Results

Scan Time	Grade	Dist "Red"	Dist "Blue"

Water Loss
(this leak, in gallons)

DAILY..... 0
WEEKLY..... 0
MONTHLY 0

CONCLUSION

Utility Services Associates LLC
You Leak, We Seek℠

LEAK SURVEY CONCLUSION

Our thanks to Carol Lenz and all persons involved with this project for their assistance in gathering all the necessary paperwork and personnel to create, with USA, a mutually beneficial leak detection project.

With this survey you have demonstrated concern for prudent water utilization and conservation.

Capitalizing on the most advanced leak detection technology available today, USA has successfully completed this Leak Detection Survey. The contents of this Final Report provide the City of Tetonia with a permanent record of the activities performed to complete a Leak Survey along with the results achieved.

An important characteristic of this Leak Report is that the facts contained herein can be used in formulating a database for decision making regarding: the need for possible future meter programs, rehabilitation and pipe line replacement and/or the investigation of new water sources, etc. These types of decisions, regarding your utilization of water, now can be predicated more on facts rather than supposition or conjecture.

Prompt repair of any leaks reported provide an immediate benefit to the City of Tetonia, which includes recovery of most water revenue and water conservation, etc.

Having achieved these results, we recommend that you continue to set up the infrastructure necessary to continue investigating leakage in the water distribution system. Implementation of any on-going leak survey program will ensure that leak losses are kept to a minimum, and the added enhancement of saving costs due to emergency call outs.

Utility Services Associates, LLC, is proud to have served the City of Tetonia in this way and we wish to thank you for your substantial assistance and cooperation in this project.

If you or your staff has any questions regarding this Final Report, please feel free to call us at (877) 585-5325 or (206) 244-0370.

Best Regards,

Rob Meston
President

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Suite B
Burien, WA 98166
www.usaleaksllc.com

Main Office: 877.585.LEAK (5325)
Montana: 877.647.LEAK
Idaho: 800.241.3420
Fax: 206.244.0278

Appendix C Contract Exhibit D Listing

EXHIBIT D to GENERAL PROVISIONS attached to

for the

CITY OF TETONIA WATER FACILITY PLANNING STUDY

SCOPE OF WORK TASKS	
DEQ ENGINEERING REPORT (Supplement to Schiess report)	
A.1.c	Narrative of system owner responsibility acceptance
B.2	Narrative of existing environmental conditions
B.3.f	Investigate and discuss cross-connection control program
B.5	Update hydraulic model for fire flows per code
B.7	Narrative of user charges and O&M budget
B.9	List and status of defects or deficiencies
C.1	20 year population growth
C.2	20 year water demand projection
C.3	Needs evaluation of treatment facilities for 20 years and collection and distribution for 40 years
C.5	Land use plans for the area served
C.6	Revise and update hydraulic model for fire flows per code and for phasing, and make corresponding changes and updates to the alternatives evaluated
D.1	Evaluate and describe problems and deficiencies of the existing water system to be corrected by the project
D.2c	Evaluate and discuss optimum operation of existing facilities
D.2d	Evaluate and discuss regionalization options
D.2.e	Evaluate and discuss environmental impacts of all alternatives
D.3	Evaluate and discuss service to and management of isolated areas
D.4	Evaluate and discuss new water supply sources
D.5	Evaluate and discuss treatment requirements for new or upgraded facilities
D.9	Description of separate irrigation facilities
D.10	Evaluate and discuss staged distribution
D.11	Prepare for, obtain, and discuss public input
D.12	Discussion of alternative impacts to system classification and operator licensure
E.1	Evaluation of costs (see (a) through (e))
E.2	Evaluation of environmental impacts in accordance with NEPA, federal cross-cutting authorities, and IDAPA 58.01.20
E.3	Discussion of impacts to water systems
E.4	Consideration of water supply reliability per EPA reliability criteria
E.5	Comparison of alternatives, including environmental effects and costs of mitigation
E.6	Evaluation of final public input per 40 CFR Part 25 and State of Idaho regulations
E.7	Description of cost effectiveness analysis per 40 CFR 35.2030(b.)(3.)
F.2.e	Proposed design criteria of the selected alternative
F.3	Justification of selected alternative
F.4	Total project costs (capital, debt service, and O&M), monthly charges, and added cost to customer
F.5	Owner certification of financial and managerial capabilities
F.6	Land acquisition issues
F.7	Entire EID per DEQ Form 5-B, 12 pages, plus Note #2 regarding responses and recommendations from consulted
F.8	Miscellaneous financial and managerial issues
G.2	Appendix: User charge ordinance and latest O&M budget
G.4	Appendix: Mailing list and correspondence
G.6	Appendix: Public participation information
CITY DESIRED SUPPLEMENTAL INVESTIGATIONS	
1	Infrastructure pumping and distribution system deficiencies
2	Infrastructure storage system deficiencies
3	Other system deficiencies
4	Leak detection testing
REPORT PREPARATION AND EXHIBITS	
1	Compiling, editing, revisions
2	Drafting of base mapping and exhibits
3	Reproduction
4	Revisions for DEQ approval

Appendix D Fire Code Appendix B & C

APPENDIX B

FIRE-FLOW REQUIREMENTS FOR BUILDINGS

The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance.

SECTION B101
GENERAL

B101.1 Scope. The procedure for determining fire-flow requirements for buildings or portions of buildings hereafter constructed shall be in accordance with this appendix. This appendix does not apply to structures other than buildings.

SECTION B102
DEFINITIONS

B102.1 Definitions. For the purpose of this appendix, certain terms are defined as follows:

FIRE-FLOW. The flow rate of a water supply, measured at 20 pounds per square inch (psi) (138 kPa) residual pressure, that is available for fire fighting.

FIRE-FLOW CALCULATION AREA. The floor area, in square feet (m^2), used to determine the required fire flow.

SECTION B103
MODIFICATIONS

B103.1 Decreases. The fire chief is authorized to reduce the fire-flow requirements for isolated buildings or a group of buildings in rural areas or small communities where the development of full fire-flow requirements is impractical.

B103.2 Increases. The fire chief is authorized to increase the fire-flow requirements where conditions indicate an unusual susceptibility to group fires or conflagrations. An increase shall not be more than twice that required for the building under consideration.

B103.3 Areas without water supply systems. For information regarding water supplies for fire-fighting purposes in rural and suburban areas in which adequate and reliable water supply systems do not exist, the fire code official is authorized to utilize NFPA 1142 or the *International Wildland-Urban Interface Code.*

SECTION B104
FIRE-FLOW CALCULATION AREA

B104.1 General. The fire-flow calculation area shall be the total floor area of all floor levels within the exterior walls, and under the horizontal projections of the roof of a building, except as modified in Section B104.3.

B104.2 Area separation. Portions of buildings which are separated by fire walls without openings, constructed in accordance with the *International Building Code,* are allowed to be considered as separate fire-flow calculation areas.

B104.3 Type IA and Type IB construction. The fire-flow calculation area of buildings constructed of Type IA and Type IB construction shall be the area of the three largest successive floors.

> **Exception:** Fire-flow calculation area for open parking garages shall be determined by the area of the largest floor.

SECTION B105
FIRE-FLOW REQUIREMENTS FOR BUILDINGS

B105.1 One- and two-family dwellings. The minimum fire-flow requirements for one- and two-family dwellings having a fire-flow calculation area which does not exceed 3,600 square feet (344.5 m^2) shall be 1,000 gallons per minute (3785.4 L/min). Fire-flow and flow duration for dwellings having a fire-flow calculation area in excess of 3,600 square feet (344.5 m^2) shall not be less than that specified in Table B105.1.

> **Exception:** A reduction in required fire flow of 50 percent, as approved, is allowed when the building is provided with an approved automatic sprinkler system.

B105.2 Buildings other than one- and two-family dwellings. The minimum fire-flow and flow duration for buildings other than one- and two-family dwellings shall be as specified in Table B105.1.

> **Exception:** A reduction in required fire-flow of up to 75 percent, as approved, is allowed when the building is provided with an approved automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2. The resulting fire-flow shall not be less than 1,500 gallons per minute (5678 L/min) for the prescribed duration as specified in Table B105.1.

SECTION B106
REFERENCED STANDARDS

ICC	IBC	International Building Code	B104.2, Table B105.1
ICC	IWUIC	International Wildland-Urban Interface Code	B103.3
NFPA	1142	Standard on Water Supplies for Suburban and Rural Fire Fighting	B103.3

TABLE B105.1
MINIMUM REQUIRED FIRE-FLOW AND FLOW DURATION FOR BUILDINGS[a]

FIRE-FLOW CALCULATION AREA (square feet)					FIRE-FLOW (gallons per minute)[c]	FLOW DURATION (hours)
Type IA and IB[b]	Type IIA and IIIA[b]	Type IV and V-A[b]	Type IIB and IIIB[b]	Type V-B[b]		
0-22,700	0-12,700	0-8,200	0-5,900	0-3,600	1,500	2
22,701-30,200	12,701-17,000	8,201-10,900	5,901-7,900	3,601-4,800	1,750	
30,201-38,700	17,001-21,800	10,901-12,900	7,901-9,800	4,801-6,200	2,000	
38,701-48,300	21,801-24,200	12,901-17,400	9,801-12,600	6,201-7,700	2,250	
48,301-59,000	24,201-33,200	17,401-21,300	12,601-15,400	7,701-9,400	2,500	
59,001-70,900	33,201-39,700	21,301-25,500	15,401-18,400	9,401-11,300	2,750	
70,901-83,700	39,701-47,100	25,501-30,100	18,401-21,800	11,301-13,400	3,000	3
83,701-97,700	47,101-54,900	30,101-35,200	21,801-25,900	13,401-15,600	3,250	
97,701-112,700	54,901-63,400	35,201-40,600	25,901-29,300	15,601-18,000	3,500	
112,701-128,700	63,401-72,400	40,601-46,400	29,301-33,500	18,001-20,600	3,750	
128,701-145,900	72,401-82,100	46,401-52,500	33,501-37,900	20,601-23,300	4,000	4
145,901-164,200	82,101-92,400	52,501-59,100	37,901-42,700	23,301-26,300	4,250	
164,201-183,400	92,401-103,100	59,101-66,000	42,701-47,700	26,301-29,300	4,500	
183,401-203,700	103,101-114,600	66,001-73,300	47,701-53,000	29,301-32,600	4,750	
203,701-225,200	114,601-126,700	73,301-81,100	53,001-58,600	32,601-36,000	5,000	
225,201-247,700	126,701-139,400	81,101-89,200	58,601-65,400	36,001-39,600	5,250	
247,701-271,200	139,401-152,600	89,201-97,700	65,401-70,600	39,601-43,400	5,500	
271,201-295,900	152,601-166,500	97,701-106,500	70,601-77,000	43,401-47,400	5,750	
295,901-Greater	166,501-Greater	106,501-115,800	77,001-83,700	47,401-51,500	6,000	
—	—	115,801-125,500	83,701-90,600	51,501-55,700	6,250	
—	—	125,501-135,500	90,601-97,900	55,701-60,200	6,500	
—	—	135,501-145,800	97,901-106,800	60,201-64,800	6,750	
—	—	145,801-156,700	106,801-113,200	64,801-69,600	7,000	
—	—	156,701-167,900	113,201-121,300	69,601-74,600	7,250	
—	—	167,901-179,400	121,301-129,600	74,601-79,800	7,500	
—	—	179,401-191,400	129,601-138,300	79,801-85,100	7,750	
—	—	191,401-Greater	138,301-Greater	85,101-Greater	8,000	

For SI: 1 square foot = 0.0929 m^2, 1 gallon per minute = 3.785 L/m, 1 pound per square inch = 6.895 kPa.

a. The minimum required fire flow shall be allowed to be reduced by 25 percent for Group R.

b. Types of construction are based on the *International Building Code.*

c. Measured at 20 psi.

APPENDIX C

FIRE HYDRANT LOCATIONS AND DISTRIBUTION

The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance.

SECTION C101
GENERAL

C101.1 Scope. Fire hydrants shall be provided in accordance with this appendix for the protection of buildings, or portions of buildings, hereafter constructed.

SECTION C102
LOCATION

C102.1 Fire hydrant locations. Fire hydrants shall be provided along required fire apparatus access roads and adjacent public streets.

SECTION C103
NUMBER OF FIRE HYDRANTS

C103.1 Fire hydrants available. The minimum number of fire hydrants available to a building shall not be less than that listed in Table C105.1. The number of fire hydrants available to a complex or subdivision shall not be less than that determined by spacing requirements listed in Table C105.1 when applied to fire apparatus access roads and perimeter public streets from which fire operations could be conducted.

SECTION C104
CONSIDERATION OF EXISTING FIRE HYDRANTS

C104.1 Existing fire hydrants. Existing fire hydrants on public streets are allowed to be considered as available. Existing fire hydrants on adjacent properties shall not be considered available unless fire apparatus access roads extend between properties and easements are established to prevent obstruction of such roads.

SECTION C105
DISTRIBUTION OF FIRE HYDRANTS

C105.1 Hydrant spacing. The average spacing between fire hydrants shall not exceed that listed in Table C105.1.

Exception: The fire chief is authorized to accept a deficiency of up to 10 percent where existing fire hydrants provide all or a portion of the required fire hydrant service.

Regardless of the average spacing, fire hydrants shall be located such that all points on streets and access roads adjacent to a building are within the distances listed in Table C105.1.

TABLE C105.1
NUMBER AND DISTRIBUTION OF FIRE HYDRANTS

FIRE-FLOW REQUIREMENT (gpm)	MINIMUM NUMBER OF HYDRANTS	AVERAGE SPACING BETWEEN HYDRANTS[a, b, c] (feet)	MAXIMUM DISTANCE FROM ANY POINT ON STREET OR ROAD FRONTAGE TO A HYDRANT[d]
1,750 or less	1	500	250
2,000-2,250	2	450	225
2,500	3	450	225
3,000	3	400	225
3,500-4,000	4	350	210
4,500-5,000	5	300	180
5,500	6	300	180
6,000	6	250	150
6,500-7,000	7	250	150
7,500 or more	8 or more[e]	200	120

For SI: 1 foot = 304.8 mm, 1 gallon per minute = 3.785 L/m.

a. Reduce by 100 feet for dead-end streets or roads.

b. Where streets are provided with median dividers which can be crossed by fire fighters pulling hose lines, or where arterial streets are provided with four or more traffic lanes and have a traffic count of more than 30,000 vehicles per day, hydrant spacing shall average 500 feet on each side of the street and be arranged on an alternating basis up to a fire-flow requirement of 7,000 gallons per minute and 400 feet for higher fire-flow requirements.

c. Where new water mains are extended along streets where hydrants are not needed for protection of structures or similar fire problems, fire hydrants shall be provided at spacing not to exceed 1,000 feet to provide for transportation hazards.

d. Reduce by 50 feet for dead-end streets or roads.

e. One hydrant for each 1,000 gallons per minute or fraction thereof.

Appendix E Owner Responsibility Letter

Appendix F Cross Connection Program

The City's cross connection requirements are listed in Municipal Code, Title 7, Chapter 2. That is provided on the City's website at tetoniaidaho.org.

Appendix G Water System Budget (2009 to 2011)

WATER ACCOUNT EXPENSES	DD code #060	Budgeted FY 2009	Budgeted FY 2010	Proposed FY 2011
Mayor (4 mn Feb-May)	610/216	$660.00	$660.00	$660.00
Council (12 mn)	615/216	$660.00	$660.00	$660.00
Clerk/Treasurer (4 mn) ($16 hour)	619/216	$11,787.00	$6,934.00	$6,933.33
Public Works Director (4 mn) ($21 hour)	620/216	$13,173.00	$14,560.00	$14,560.00
Employee Benefit	621	$0.00	$0.00	
PERSI (Employer Portion)	622/215	$2,730.00	$2,371.00	$2,371.84
Federal Taxes (Employer Portion)	623/215	$2,010.00	$1,746.00	$1,745.22
Attorney	625	$1,200.00	$1,700.00	$1,700.00
Planning Consultant	627	$2,500.00	$0.00	$0.00
Membership Dues	629	$100.00	$200.00	$400.00
Office	630	$900.00	$1,100.00	$1,100.00
Education	631	$200.00	$150.00	$100.00
Travel Expenses	632	$64.00	$100.00	$150.00
Software Support	633	$300.00	$400.00	$400.00
Audit	635	$1,280.00	$1,300.00	$1,500.00
ICRMP	640	$758.00	$700.00	$778
State Insurance Fund	645	$530.00	$600.00	$250.00
Maintenance & Repair	650	$5,000.00	$8,500.00	$1,500.00
Fuel	652	$1,000.00	$500.00	$250.00
Water Tank Phone	655	$516.00	$505.00	$400.00
Advertizing	665	$500.00	$100.00	$100.00
Election	670	$471.00	$500.00	$250.00
Water Testing	673	$930.00	$750.00	$400.00
Pump Electricity	675	$6,500.00	$7,000.00	$4,500.00
1981 FHA Water Loan	677	$5,550.00	$0.00	$0.00
DEQ Water Assessment	678	$800.00	$900.00	$750.00
Depreciation Expenses	680	$12,816.00	$13,200.00	$8,752.71
Water Study	685	$15,000.00	$10,000.00	$21,000.00
Misc.	690	$200.00	$500.00	$500.00
Capital Improvements	691	$7,250.00	$8,114.00	$0.00
Contingency Fund	692	$1,060.00	$250.00	$0.00
TOTAL WATER ACCOUNT EXPENSES		**$96,445.00**	**$84,000.00**	**$71,711.44**

WATER ACCOUNT REVENUES	DD code #060	Budgeted FY 2009	Budgeted FY 2010	Proposed FY 2011
Cash Carry-Over	**400**	**$37,000.00**	**$30,000.00**	**$10,500.00**
131 services @ $25 (Res 117 & Com 14)	0.75" line	$38,592.00	$40,200.00	$39,300.00
8 hookups paid for	0.75" line	$0.00	$0.00	$0.00
0 services @ $29.58	1" line	$0.00	$0.00	$0.00
11 hookups paid for	1" line	$0.00	$0.00	$0.00
2 services @ $89.34	1.5" line	$3,169.00	$3,300.00	$2,144.16
2 service @ $124.47	2" line	$1,434.00	$1,494.00	$2,987.28
Meter Reading over 10,000 Gal	1.00 per 1000	$7,000.00	$4,006.00	$1,500.00
Total Water Billing Revenue	**401**	**$50,195.00**	**$49,000.00**	**$45,931.44**
Grant Income				**$10,500.00**
Interest Income	**405**	**$200.00**	**$400.00**	**$180.00**
1 Hookup Fees @ $4,500.00 ea.	**420**	**$9,000.00**	**$4,500.00**	**$4,500.00**
Misc. & Water Rev from Hydrants	**490**	**$50.00**	**$100.00**	**$100.00**
TOTAL WATER ACCOUNT REVENUE		**$96,445.00**	**$84,000.00**	**$71,711.44**

Appendix H Deficiencies Noted in Water Planning Grant LOI

Appendix H LOI Deficiencies

Water Planning Grant Letter of Interest
Section 2 Responses to "Yes" Answers
(Deficiencies)

1. Infrastructure deficiencies of pumping facilities, distribution lines, or treatment facilities

- **Water Source** The city of Tetonia has only one source of water, which is one well. There is only one pump in the well, and no backup power supply. Not ***if*** but ***when*** the well goes down because of a motor, pump, power failure, groundwater situation, or for any other reason such as contamination, the entire City system is reliant solely upon a 100,000 gallon storage tank. For years the wintertime usage has been 80,000 to 82,000 gallons per day, and the summer time usage has ranged from 160,000 to 185,000 gallons per day. Assuming the water drawdown in the tank was at normal pump activation when the well failure was discovered, there would be 80,000 gallons available for use, enough for one day during the winter and only a half day with normal usage during the summer. The City would like to explore options for providing a secondary source of water.
- **Pumping Capacity** The existing well can pump 416 gpm, which is adequate to provide enough water for domestic and fire flow usage, so long as there was sufficient storage. On the other hand, there is no redundancy as is appropriate. The benefit of further evaluation of addressing source redundancy and flow/storage capacity for fire flow conditions is discussed hereafter.
- **Backup Power** The City would like to evaluate options for providing backup power to all pumped sources of water, with documentation in a DEQ approved facility planning study so that financial assistance could be applied for.
- **Distribution Lines** The current City water system consists of main water lines ranging from 1 inch to 8 inch. Waterline materials are PVC, a minimal amount of ductile iron pipe, and galvanized iron, the latter of which is 40 to 50 years old. DEQ has a copy of the December 2008 Schiess & Associates prepared *City of Tetonia Drinking Water System Study*, which does not include everything required for a DEQ Facility Planning Study. The 2008 study shows a map of the water system, a copy of which is attached (Water Study, Appendix A). The map is not fully accurate per the City water operator, but it does provide a general idea of the system. There is only one 8 inch line in the entire system, and there are locations with up to eight homes served by a single 1 inch galvanized iron line. Inadequate capacity and pressure are discussed in the following subsections, and the balance of this paragraph will pertain to structural integrity of the lines. The lines are old and have substantial leaking, as evidenced by the fact that wintertime non-irrigation use is 80,000 to 82,000 gallons per day, but only 40,000 to 41,000 gallons per day reaches the wastewater treatment plant. That means that approximately 50% of the water may be lost to leakage. However, because of the gravelly soils, knowing where the leaks are so that they can be fixed is a real challenge. Infrequently, wet spots do appear on the surface, and repairs are made. In the process of repair, galvanized iron pipelines were often observed to be full of pinhole leaks. The City wants to be able to perform a leak investigation as part of a full Facility Planning Study.
- **Water Quality** With only one well, no backup power supply, and a limited capacity storage tank, it is not a matter of if but when the system will be out of water and pressure. With the substantial leakage points in the system, water pressure loss may reverse the process from leaking or exfiltrating to inflow or infiltrating into the water lines, which is of water quality concern, especially considering that the potential number of backflow places into leak points likely exceeds the potential backflow locations through water services and irrigation facility connections. In conjunction with the leak tests, having recommendations for proposed

replacements and improvements not only for capacity but also water quality protection is desired by the City.

2. Inadequate or deficient storage, capacity to meet pressure or customer demand, etc.

- **Peak Hour Flow** With the exception of one home located very high up in the system near the storage tank, pressures at all nodes in the system are least 40 PSI under peak hour flow conditions.
- **Maximum Daily Demand and Fire Flow: Flow Rates** Waterline sizes are inadequate to convey maximum daily demand and fire flows to all points of the system. For example, the 2008 report documents that approximately only 827 gpm are available at a hydrant on the south side of town, which hydrant is close to a hotel where 1500 gpm would likely be required. While reviewing for the City a proposed development application, Williams Engineering, Inc. (WEI) evaluated capacities a short distance further out on the system where townhomes were proposed. The capacity while maintaining at least 20 PSI at all nodes in the system, except at the aforementioned home located high up in the system, was only 726 gpm, and yet the fire code would require 1500 gpm. If only 1000 gpm fire flow was provided at that location, there would still be nine nodes throughout the system that would have negative pressures and four more that were below the required 20 PSI, these numbers excluding the home located high up in the system. The system cannot deliver required fire flow rates. Line sizes need to be increased, which was addressed in the 2008 study, but fire flows for any future structures were only considered to be 1000 gallons per minute, and fire flows were also only considered internal to the existing grid and nothing external. In other words, it would be well to evaluate the system with appropriate fire flows required around the perimeter of the existing city, as would be necessary for projects that are already in the works. Furthermore, the only future conditions model was with 200 additional units, with no phased scenario in between to determine prioritization for a potential phased project. The City would like to benefit from these additional evaluations for planning and budgeting purposes, and also to assist in administrating and regulating future development.
- **Maximum Daily Demand and Fire Flow: Flow Volumes** Fire flow requirements are a minimum of 1000 gpm for homes and small commercial buildings, 1500 gpm for other buildings, and 2000 gpm for the school, all for a minimum of 120 minutes (these can be reduced for each building with an approved sprinkler system, but not for those without one). This would require flow volumes of 120,000 gallons, 180,000 gallons, and 240,000 gallons, respectively. This means that through combined storage and pumping during the 120 minutes, these volumes must be available, and with the highest capacity pump out of service. The redundant pump criterion means that the storage tank would have to provide the full flow volume, which its effective 80,000 gallons cannot do. Even with the well pump active, which will add another 50,000 gallons over the 120 minutes, the system is still inadequate.
- **Adequate Source, Storage, and Redundancy** The existing system has only one source, a well with limited capacity and without a backup power supply. There is only one storage tank, and it is also of inadequate size in tandem with the well to meet domestic and fire flow demands. The 2008 report discusses three alternatives, of which only Alternative C was intended to bring the system up to current criteria, the first two alternatives being different levels of system enhancements at lower cost that will nonetheless provide beneficial improvements. With only one alternative presented to bring the condition up to current standards, it is unknown whether other options were looked at that would also bring the condition up to current standards. Alternative C recommends adding two additional wells, each with 600 gallons per minute capacity, and an additional storage tank having a capacity of 140,000 gallons. Costs were provided in Appendix D for a generator at each of the two new wells, but not at the existing well. The cost estimates provided are $500,000 for each

new well, pump, well house, and generator combination, and approximately a dollar per gallon for tank storage capacity. The new well and site costs estimates may be high, but even so a few calculations will show that one additional well, even with only 400 gpm capacity, and a larger storage tank is a lower-cost solution than Alternative C. Feasible well capacities, storage costs, generator costs, and all other costs associated with the new well site, should all be considered together to evaluate various cost options to obtain a more cost effective approach to bring the system up to current standards. The savings in cost could exceed $200,000. The City would like to have further investigation regarding a low-cost practical solution to upgrading the system to meet current standards.

3. **Other system deficiencies**

The discussions above address capacity, redundancy, leakage, and potential contamination through leaky pipes. There are other deficiencies or benefits that could come from an expanded study by amending the 2008 study into a full Facility Planning Study. These are briefly discussed below.

- As part of the Facility Planning Study, the existing backflow protection program can be evaluated and recommendations made to increase provided protection.
- Currently there is only one line, which is approximately 3 blocks long, from the tank to the City water grid. As part of other investigations for capacity, storage, redundancy, and function, it would be well to evaluate whether a parallel line should be provided for redundancy.
- Having only 80% of tank volume available at pump on should be reevaluated. That approach eliminates a substantial amount of tank volume available under fire flow conditions.
- Evaluate ordinances and regulation that the City should adopt to ensure that new development does not adversely affect the water system capacity, but makes improvements that are consistent with an approved masterplan, which may include approved fire suppression sprinkler systems under certain conditions.

Appendix I Discussion with City Regarding Deficiencies

Appendix I Discussion with City Regarding Deficiencies

March 30, 2011

Carol Lentz/Mitch Smaellie
105 Perry Avenue
Tetonia, ID 83452

Re: Tetonia Water System Questions

Dear Carol and Mitch:

I thought it would be well to list all the issues and questions that have come up as I have gone through various documents. I have questions with many of them. These can be answered by email and phone as much as possible, and I can and do plan to go to Tetonia. I understand that Mitch is there this week, so I will follow this email up with a phone call if I do not here from anyone sooner.

[ANSWERS FROM THE CITY ARE PROVIDED IN RED TEXT]

Sanitary Survey (DEQ - May 21, 2010)

1. **Deficiencies** Five deficiencies are noted in the survey which are listed below.
   - **Adequate Source (p1 #1 and p4.5 #1)** There is only one source of water, and that well with water storage combined cannot meet fire flow requirements (no question here—only a summary).
   - **Backflow Prevention (p2 #31)** All non-sample taps installed in the pump house were not equipped with a backflow prevention device. Has this been corrected? This has not been addressed yet, but soon will.
   - **Fire Hydrant Supply (p4 #6)** All water mains to fire hydrants are not at least 6 inches (no question here—only a summary).
   - **Water Loss (p4 #9)** Unaccounted for losses exceed 15%. The Leak Detection Report indicates 19.75 gallons per minute (gpm) and the Schiess report indicates from water well usage records that the average system flow is 83 gpm. Based on these two sources, water loss is approximately 24%.
   - **Auxiliary Power (p4.5 #10)** It was noted that power outage frequency and duration are minimal—meaning what; that is, what has been experienced? Outages are not frequent, but they do occur. There was a 6 hour outage during the 2010/2011 winter.
2. **Well Lot (p1.4 #4)** What are the well lot dimensions? 100' x 100'
3. **Storage Tank Cleaning (p3 heading)** This was scheduled for 2010. Did the cleaning occur? No, because Victor was having theirs cleaned in 2011 and there would be a savings to have both cleaned during the same trip. It was budgeted for 2010 and carried over, and scheduled for 2011.
4. **Non-metered Connections (p4 heading)** The comments say that George Rammell, Main Street Park, Fire Hall, and the Rodeo Grounds are unmetered, but the box answer indicates that there are 6 unmetered connections. Where are the other two, and does the City plan to meter any of these connections and when? The Sanitary Survey is incorrect. There are only two unmetered services. One

is to the Fire Hall, and the other is to George Rammell. The reason there is no meter to George is that when he sold the land to the City for the water tank, the agreement was that he would receive an unmetered service. Why there is no service to the Fire Hall was not disclosed. Main Street Park is metered, and the Rodeo Grounds are not even on the City water system. There is a known non-functioning water meter that serves Dave's Pub, and it is under the sidewalk and inaccessible after ITD last did road improvements. Rather than go through the effort to change all that, the pub simply pays a flat monthly rate.

5. **Adequate Map (p4 #11)** Was noted as not currently adequate. What are known errors and deficiencies? The line sizes in the Rammell Subdivision were not shown correctly.
6. **Cross Connection Program (p4 17 & 18)** This was noted as being vintage 1981and outdated. Is the City looking to update this? It is not on any agenda. Will the City be changing the pump valve drain to go to waste rather than back to the well? No, the issue is a faucet on the discharge line. Is the City operator going to be trained in cross connection control? No, not for now.
7. **Water Sampling Plan (p7 #24)** Will the City be preparing a sampling plan? The City already has a written plan.

Leak Detection Report (Utility Services Associates - 2010)

1. **Undefined Leak Report** A leak was detected in the service line to the park restroom and drinking fountain. However, the line was shut down for the winter season without an exact leak location being pinpointed. The report recommended that prior to turning the system back on the spring, that the noise be investigated and the suspected leak pinpointed. Will the City be having that work done this spring?
2. **Leak Mitigation** What are the plans of the City to mitigate water system leaks? Is it anticipated that it will it be done here and there by the City as time and resources permit, as part of system upgrades recommended in the Water Facility Planning Study, or a combination thereof? What are the anticipated costs of repairing each leak (by the City or by a contractor, however the City prefers to handle each leak repair)? The City will just have to dig up each location and repair the leak when able.

City of Tetonia Source Water Assessment Final Report (DEQ - 2001)

1. **Deficiencies** It is recommended to first focus on correcting deficiencies outlined in the Sanitary Survey. With respect to water quality protection, this would pertain to the backflow prevention, cross connection program update, and water sampling plan, all of which is fairy minimal to address.
2. **Source Watershed Protection** The report discusses coordination and partnerships with other agencies because the aquifer source is mostly outside of city limits and jurisdiction. It speaks of agricultural practices and onsite wastewater systems. Have there been any efforts or interest in pursuing anything of this sort?
3. **Source Water Protection** Has the City been concerned at all with this issue? This is not a front burner concern of the City. The County has never even recognized the City passed impact area, because the County wants an additional (and unavailable) $20,000 for law enforcement within an impact area if so designated. Given that apparent lack of cooperation, it hardly seems as if the County would allow the City any review and approval privileges to be able to better protect their source watershed.

City of Tetonia Drinking Water Facility Planning Study (Schiess- December 2008)

1. **Appendix E Summary of Tetonia's Water Rights** There are 5 pages of water rights summary prepared by Anna Trentadue of VARD. What is the status and potential use of these water rights and sources? No change. The City has drinking water rights for approximately 400 gpm, and also 2.1 cfs irrigation water rights out of Spring Creek, but no means of receiving or distributing the irrigation water rights. What is the update on the considered conversion of an agricultural well to a City well south of town? Per former discussion with Brad Egbert, the City would be given the well and the water rights as part of a development agreement. This has never been finalized.
2. **Appendix E Pump Design** The diagram shows the bottom of pump intake at approximately 159 feet deep, but the Sanitary Survey page 1.5 of 8 shows the well depth and casing at 322 feet. Does this information all seem correct?

Other

1. **Existing Pump and Motor** How old and in what condition is the existing well pump and motor? They were replaced in 1997 by American Pump in Ucon, and the City has a new spare pump and motor on standby.
2. **Well Maintenance** What has been the ongoing maintenance cost for the well? The budget is $4,500 for electricity, but what else have been ongoing costs, and when is pump and motor replacement or major repair anticipated and at what cost?
3. **Tank Maintenance** What has been the ongoing maintenance cost for the tank? What as the cost to clean the tank?
4. **Tank Site** Is there enough land at the existing tank site to construct another tank?
5. **Conversion of Egbert Irrigation Well** IDAPA 58.01.08.510.07 allows conversion of irrigation wells to public drinking water wells so long as all water quality issues are met. At best that will be costly. Drillers are saying that conversion, if even possible, would cost as much as a new well. Dennis Dunn at IDWR said that the well probably could not be converted because old irrigation pumps were oil filled and over time typically leaked, and oil gets into the well walls, and cleaning it out and meeting drinking water specifications is NOT cost feasible. Furthermore, pumping in excess of 400 gpm would not be permitted unless more water rights were obtained or the 400 gpm were exceeded only during fire flow conditions. I do not think that conversion of the well is a worthwhile gamble.

Sincerely,

Williams Engineering, Inc.

By: Gerald R. Williams, P.E., President

Appendix J User Charge Ordinance

RESOLUTION No. 2010-8
Water, Sewer, General and Land Use Application Fees

A RESOLUTION OF THE CITY OF TETONIA, TETON COUNTY, IDAHO ESTABLISHING WATER, SEWER, GENERAL AND LAND USE APPLICATION FEES.

BE IT RESOLVED BY THE MAYOR AND CITY COUNCIL OF THE CITY OF TETONIA, TETON COUNTY, IDAHO, THAT:

The following water, sewer, general and land use application fees are hereby established beginning October 1, 2010 and thereafter until amended shall be (* fee increase):

WATER FEES (Title 7: Ch 1, 2, & 4):

Base Water User Monthly Gallon Allowances and Fees are Determined from Meter Line Sizes:

May 1st – October 31st	Gallon Allowance	Monthly Base Fee
0.75" line:	10,0000	**$25.00**
1" line:	11,800	**$29.58**
1.5" line:	36,700	**$89.34**
2" line:	49,800	**$124.47**
3" line:	69,400	**$173.36**
4" line:	84,000	**$210.05**
6" line:	123,100	**$307.84**

(10,000 gallons extra a month are given in the winter to help users prevent frozen pipes)

November 1st – April 30th	Gallon Allowance	Monthly Base Fee
0.75" line:	20,0000	**$25.00**
1" line:	21,800	**$29.58**
1.5" line:	46,700	**$89.34**
2" line:	59,800	**$124.47**
3" line:	79,400	**$173.36**
4" line:	94,000	**$210.05**
6" line:	133,100	**$307.84**

Excess Monthly Water Consumption: $1.00 per 1,000 gallons over monthly allowance

Water Connection Fees:

Connection Line Size	Hookup Fee
0.75" line:	$4,500
1" line:	$5,400
1.5" line:	$6,480
2" line:	$7,680
3" line:	$12,282
4" line:	$27,142
6" line:	$63,300

Outside City Limits:

The rate for water users outside the corporate city limits of the city will be **1.5 times** the in-city rate.

Fire Hydrant Water:
The rate for water used by companies, excluding City and County Road & Fire Departments, will be **1.5 times** the 0.75" line water base rate for every 10,000 gallons purchased.

Water Service Unlock Fee:
The account is still billed the monthly water/sewer fee and subject to $4 late fee but water meter has been locked either by request or by failure to pay. To have the lock removed the account will be charged an unlock fee of **$25 plus will need to pay any outstanding balance due** (in payments or in full)

Water Cross Connection Ordinance Violation: Guilty of a Misdemeanor and subject to the penalties

SEWER FEES (Title 7: Ch 3 & 4):

*** The Sewer User Fee:** $60.00 per 1.00 EDU

The City of Tetonia has adopted the Federal Equivalent User Rate Schedule (EDUs):

Classification	EDUs	Seasonal EDUs
Single Dwelling Unit (residence, apartment, trailer)	1.00	0.50
Assembly Hall or Lodge (no café)	1.00	1.00
Bar or Tavern (for each seat/total occupancy)	0.06	0.03
Barber and Beauty Shops (per chair)	0.50	0.25
Bowling Alley (per lane)	0.50	0.25
Bunkhouse with showers	0.50	0.25
- Without showers	0.25	0.125
Café, up to 50 seats –	2.00	1.00
- For each additional 25 seats	1.00	0.50
Café, Drive-In, less than 20 inside seats –	2.00	1.00
- For each additional 20 inside seats	1.00	0.50
Car Wash, per stall	2.00	1.00
Clinic and Hospitals (no beds)	2.00	1.00
- Additional for each bed	0.50	0.25
Commercial Food Preparation	2.00	1.00
Churches (single congregation)	2.50	1.50
- Additional for each additional congregation	2.50	1.50
- Additional for kitchen	1.00	0.50
Garage or Maintenance Shop	1.00	0.50
Hotels and Motels		
- Per unit with showers	0.50	0.25
- Per unit without showers	0.25	0.125
- Additional per unit with kitchen	0.25	0.125
Laundromat, up to 10 washers	4.00	2.00
- For each additional washer	0.25	0.125
Office, up to 20 employees	1.00	0.50
- For each additional employee	0.03125	0.015625
Dry Store, up to 20 employees	1.00	0.50
- for each additional employee	0.03125	0.015625
Grocery Store	2.00	1.00
- Additional with butcher shop	1.00	0.50

Service Station (includes gas stations) with public restrooms - Without public restrooms	2.00 1.00	1.00 0.50
School with a cafeteria, per student and employee - Without a cafeteria, per student and employee	0.05 0.03	0.05 0.03
Trailer Parks or RV Parks - Per Permanent Resident Trailers - Per Overnight Trailers (with showers/bath) - Per Overnight Trailers (no showers/bath) - Per Dump Station	 1.00 0.50 0.25 4.00	 0.50 0.25 0.125 2.00
Swimming Pools, per average person per day	0.06	0.03
Public restrooms per toilet, urinal, etc	0.125	0.0625
Public Showers and Bathrooms (per average person per day)	0.50	0.25

Sewer Connection Fee: $4,500

Public Works Permit Fee: $75

Outside City Limits:
The rate for sewer users outside the corporate city limits of the city will be **1.5 times** the in-city rate per EDUs.

Water and Sewer Late Fee:
All accounts with an outstanding balance after 30 days (when the new billing cycle begins) will automatically be charged a **$4 late fee** (split ½ to water and ½ to sewer).

Abandoned Meter/Permanently Disconnected:
Once an account/meter has been determined **ABANDONED (payment has not been received on the account for at least four months and/or a monthly water/sewer fee has not been billed)**, the current hookup fees for both the water and sewer connections will be required to be paid for that account/meter to be hooked back into the city system.

GENERAL FEES:

Animal Control (Title 4: Ch 1):

Permit or License Type (renewable yearly on May 1st; nontransferable)	Fee
Dog Tag License - For each Male and Spayed Female Dog - For each Unspayed Female Dog - Replacement Tag is lost or misplaced	 $5 $15 $1
Noncommercial Kennel License – more than 3 dogs - License for 4 dogs - Each additional dog	 $15 $5
Commercial Kennel License – more than 3 dogs	$25
Leash Law (involving the same dog and not to exceed $100) - First Offense - Second Offense - Third Offense	 $5 $15 $25
Violation Animal Control Ordinance (not to exceed)	$100

Business License (Title 2: Ch 1):

Business Type (expires Dec 31st; renew yearly)	Fee
Investigation (Background Check) Fee (for a new business) - Inside the State of Idaho - Outside the State of Idaho	 $0 $0
Bar or Restaurant	$0
Circuses, Menageries, Carnival (6 days)	$0
Clothing or Home Furnishing Business	$0
Gas Station/Convenience Store	$0
Grocery or General Food Store	$0
Group Daycare or Daycare Center Registration	$0
Lodge, Hotel, Motel, RV Park	$0
Lumber & Supply Business	$0
Oil Refining or Mill	$0
Pawnbroker	$0
Second Hand Store	$0
Solicitor	$0
Theatres	$0
Tire or Lube Service Shop	$0
Woodworking or Metalworking Business	$0
Home Business (not selling/distributing merchandise)	$0
Miscellaneous Businesses (if not listed above)	$0
Late Fee for renewal of License	$0

Beer, Liquor, & Wine License (Title 2: Ch 4, 5, & 6):

Permit Type (expires Dec 31; renew yearly)	Fee
Beer (retailing of bottled, canned, or draft beer and the same is consumed on premises)	$200
Beer (retailing of bottled or canned beer none of which is to be consumed on the premises)	$50
Beer License Transfer (paid by transferee)	$20
Liquor (retailing of liquor by the drink/glass)	$225
Liquor Catering Permit (single party/convention not to exceed 3 consecutive days; by any person holding an Idaho retail Liquor License)	$50
Liquor License Transfer (paid by transferee)	$100
Wine (retailing of wine by the bottle)	$200
Wine (retailing of wine by the drink/glass)	$50
Wine License Transfer (paid by transferee)	$100

Copies:

Type of Copy	Fee
Black & White (per page)	**$0.15**
Color (per page)	**$0.50**
Greater than 100 pages or a recorded document (per page)	**$1.00**
With non-public information deleted (per page)	**$3.00**
Plus Clerk's hourly wage for each hour > (2) hours	**TBD**

CD Copies:

Type of CD	Fee
City Council Meeting or Public Hearing	$5
Planning & Zoning Meeting or Public Hearing	$5
Tetonia Comprehensive Plan (includes Land Use Map and Transportation Map)	$10
Tetonia Municipal Code (Titles 1-9) (includes City Zoning Map; Impact Area & Zoning Map; and any related maps)	$10
Tetonia Public Works Standards Book	$20
2008 Tetonia Water Study (includes Water CAD files)	$10

Dead Storage Parking on Public Streets Fine (Title 5: Ch 1):
$100 (Violators may be towed at their own expense)

Engine Brakes & Compression Brakes within City Limits (Title 5: Ch 3): $50

Fireworks Permit (Title 3: Ch 3):

Type of Permit (granted after investigation and recommendation from the Fire Department Chief and then the city council)	Fee
Selling "Safe and Sane Fireworks"	$2.50
Fireworks Permit for Public Display (council may charge $75 for investigation)	$0
Violation of Fireworks Ordinance (guilty of a misdemeanor)	$300

Nuisances Fine (Title 3: Ch 1):
Not less then $25 nor more then $500 for each offense and a separate offense shall be deemed committed on each day during or on which such nuisance is permitted to exist.

Ordinance Violation Fine (Tetonia Municipal Code):
$300 for any offense and such person may be confined in jail for a period of not more than **6 months** (either or both shall be imposed).

Park Reservation Fee (Title 6: Ch 1):

Length of Event	Fee
Single Day Event or Reunion (includes folding tables & chairs if requested)	$20 (plus $10 per each additional day up to 2 more days)
Folding Tables and Chairs (reserved for a function OUTSIDE of the park)	$20 (plus $10 per each additional day up to 2 more days)
Ball Practice (up to 14 weeks)	$50 per coach (team)
Ball Game Schedule (up to 14 weeks)	$75 per league
Ball Tournament - 2 days long - 3 days long	 $30 per league $40 per league

Peddlers, Itinerant Merchants/Vendor License Fee (Title 2: Ch 3):

Type	Fee
License (yearly & expires 90 days after issued)	$25
License Transfer (re-issue license to transferee)	$50

Returned Check Fee: $20

* **On-line Payment Fee**: $3.00 each transaction

Staff Time: $30 an hour (charged only if it takes an hour or more)

LAND USE APPLICATION FEES (Title 9: Ch 4):

Annexation:

Acre Size	Fee
5 acres or less	$500
6-20 acres	$875
21-50 acres	$1,750
51 acres or greater	$2,500

Appeals: $250

Commercial Sign Design Review Fee: $50 plus professional fees

Commercial Site and Building Design Review Fee: $150 plus professional fees

Comprehensive Plan Land Use Map Amendment Request: $250

Conditional Use Permit: $350

Development Review CD: $25 a CD

Land Use Code Amendment: $250

Lot Split or Lot Line Adjustment: $125

Planning Office Review: $150

Plat Amendment: $500

Preliminary Plat Application:

Lot size	Fee
1-4 lots	$750 plus professional fees
5-15 lots	$1,000 plus professional fees
16+ lots	$1,500 plus professional fees

Final Plat Application: $50 per lot or per unit (if apartment or condos) plus professional fees

Vacation Application: $350

Variance Application: $350

Zoning/Rezone Application:

Acre Size	Fee
5 acres or less	$500
6-20 acres	$800

21-50 acres	$1,100
51 acres or greater	$2,500

NOW, THEREFORE, I, Rex Jardine, Mayor of the City of Tetonia, do hereby declare these water, sewer, general, and land use application fees to be effective October 1, 2010.

UNANIMOUSLY APPROVED AND PASSED BY THE CITY COUNCIL AND MAYOR THIS 13th DAY OF September 2010.

_____
Rex Jardine, Mayor

ATTEST:

_____
Carol Lenz, City Clerk

(SEAL)

Appendix K WaterCAD Files

Files are provided on a CD or DVD inside the back cover of WEI-furnished hard copies of this report.

Appendix L Water Quality Test Results

LAB FEDERAL ID# ID00952	DATE REPORTED BY LAB 12/29/2010
DATE RECEIVED: 12/9/2010	
COMPLIANCE SAMPLE: Yes	REPLACEMENT SAMPLE: No
PWS #: 7410012	PWS NAME: Ctiy of Tetonia
CONTACT NAME: C. W. Robison	CONTACT PHONE: 208-456-2249

IAS EnviroChem

3314 Pole Line Rd.
Pocatello, ID 83201
phone: (208) 237-3300
fax: (208) 237-3336
email: iasec3308@iasenvirochem.com
www.iasenvirochem.com

LAB SAMPLE NUMBER: I012064-01	COLLECTION DATE/TIME: 12/09/10 08:30
SAMPLE TYPE:	SAMPLING POINT/LOCATION - TAG#/FACILITY ID: City Well # 1

INORGANIC CHEMICAL ANALYSIS REPORT For Public Water Systems

FRDS	*Compound*	*Result*	*Units*	*MCL*	*MDL*	*Method*	*Analysis Date*	*Analyst*
1040	Nitrate as N	ND	mg/L	10	1	300.0	12/9/2010	BWH
1041	Nitrite as N	ND	mg/L	1	0.1	300.0	12/9/2010	BWH
1052	Sodium	2.00	mg/L	N/A	0.01	200.7	12/17/2010	GRP

ND = Not Detected

City of Tetonia
C. W. Robison
P.O. Box 57
Tetonia, ID 83452

G. Ryan Pattie
Laboratory Director

LAB FEDERAL ID#: ID00952	DATE REPORTED BY LAB: 12/29/2010
DATE RECEIVED: 12/9/2010	
COMPLIANCE SAMPLE: Yes	REPLACEMENT SAMPLE: No
PWS #: 7410012	PWS NAME: Ctiy of Tetonia
CONTACT NAME: C. W. Robison	CONTACT PHONE: 208-456-2249

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LAB SAMPLE NUMBER: I012064-01	COLLECTION DATE/TIME: 12/09/10 08:30
SAMPLE TYPE:	SAMPLING POINT/LOCATION - TAG#/FACILITY ID: City Well # 1

Public Drinking Water Systems Synthetic Organic Chemical (SOC) Analysis Report

FRDS	*Compound*	*Result*	*Units*	*MCL*	*MDL*	*Method*	*Analysis Date*	*Analyst*
			Regulated SOC Contaminants					
2031	Dalapon	ND	ug/L	200	0.1	EPA 515.3	12/21/2010	SAT
2040	Picloram	ND	ug/L	500	0.1	EPA 515.3	12/21/2010	SAT
2041	Dinoseb	ND	ug/L	7	0.1	EPA 515.3	12/21/2010	SAT
2105	2,4-D	ND	ug/L	70	0.1	EPA 515.3	12/21/2010	SAT
2110	2,4,5-TP	ND	ug/L	50	0.1	EPA 515.3	12/21/2010	SAT
2326	Pentachlorophenol	ND	ug/L	1	0.08	EPA 515.3	12/21/2010	SAT
			Unregulated SOC Contaminants					
2440	Dicamba	ND	ug/L		0.1	EPA 515.3	12/21/2010	SAT
	2,4-DB	ND	ug/L		0.1	EPA 515.3	12/21/2010	SAT

ND = Not Detected

SUB - AT 125

City of Tetonia
C. W. Robison
P.O. Box 57
Tetonia, ID 83452

G. Ryan Pattie
Laboratory Director

LAB FEDERAL ID# ID00952	DATE REPORTED BY LAB 12/29/2010
DATE RECEIVED: 12/9/2010	
COMPLIANCE SAMPL: Yes	REPLACEMENT SAMPL No
PWS #: 7410012 / PWS NAME:	Ctiy of Tetonia
CONTACT NAME: C. W. Robison	CONTACT PHONE: 208-456-2249

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LAB SAMPLE NUMBER: I012064-01	COLLECTION DATE/TIME: 12/09/10 08:30
SAMPLE TYPE:	SAMPLING POINT/LOCATION - TAG#/FACILITY ID: City Well # 1

Public Drinking Water Systems Volatile Organic Chemical (VOC) Analysis Report

FRDS	Compound	Result	Units	MCL	MDL	Method	Analysis Date	Analyst
	Regulated VOC Contaminants							
2378	1,2,4-Trichlorobenzene	ND	ug/L	70	0.5	EPA 524.2	12/17/2010	CAS
2380	c-1,2-Dichloroethene	ND	ug/L	70	0.5	EPA 524.2	12/17/2010	CAS
2950	Total Trihalomethanes	ND	ug/L	80	0.5	EPA 524.2	12/17/2010	CAS
2941	Chloroform	ND	ug/L		0.5	EPA 524.2	12/17/2010	CAS
2942	Bromoform	ND	ug/L		0.5	EPA 524.2	12/17/2010	CAS
2943	Bromodichloromethane	ND	ug/L		0.5	EPA 524.2	12/17/2010	CAS
2944	Dibromochloromethane	ND	ug/L		0.5	EPA 524.2	12/17/2010	CAS
2955	Xylenes (total)	ND	ug/L	10000	0.5	EPA 524.2	12/17/2010	CAS
2964	Dichloromethane	ND	ug/L	5	0.5	EPA 524.2	12/17/2010	CAS
2968	o-Dichlorobenzene	ND	ug/L	600	0.5	EPA 524.2	12/17/2010	CAS
2969	p-Dichlorobenzene	ND	ug/L	75	0.5	EPA 524.2	12/17/2010	CAS
2976	Vinyl chloride	ND	ug/L	2	0.5	EPA 524.2	12/17/2010	CAS
2977	1,1-Dichloroethylene	ND	ug/L	7	0.5	EPA 524.2	12/17/2010	CAS
2979	t-1,2-Dichloroethylene	ND	ug/L	100	0.5	EPA 524.2	12/17/2010	CAS
2980	1,2-Dichloroethane	ND	ug/L	5	0.5	EPA 524.2	12/17/2010	CAS
2981	1,1,1-Trichloroethane	ND	ug/L	200	0.5	EPA 524.2	12/17/2010	CAS
2982	Carbon Tetrachloride	ND	ug/L	5	0.5	EPA 524.2	12/17/2010	CAS
2983	1,2-Dichloropropane	ND	ug/L	5	0.5	EPA 524.2	12/17/2010	CAS
2984	Trichloroethylene	ND	ug/L	5	0.5	EPA 524.2	12/17/2010	CAS
2985	1,1,2-Trichloroethane	ND	ug/L	5	0.5	EPA 524.2	12/17/2010	CAS
2987	Tetrachloroethylene	ND	ug/L	5	0.5	EPA 524.2	12/17/2010	CAS
2989	Monochlorobenzene	ND	ug/L	100	0.5	EPA 524.2	12/17/2010	CAS
2990	Benzene	ND	ug/L	5	0.5	EPA 524.2	12/17/2010	CAS
2991	Toluene	ND	ug/L	1000	0.5	EPA 524.2	12/17/2010	CAS
2992	Ethyl Benzene	ND	ug/L	700	0.5	EPA 524.2	12/17/2010	CAS
2996	Styrene	ND	ug/L	100	0.5	EPA 524.2	12/17/2010	CAS
	Unregulated VOC Contaminants							
2993	Bromobenzene	ND	ug/L		0.5	EPA 524.2	12/17/2010	CAS
2430	Bromochloromethane	ND	ug/L		0.5	EPA 524.2	12/17/2010	CAS
2214	Bromomethane	ND	ug/L		0.5	EPA 524.2	12/17/2010	CAS
2422	n-Butylbenzene	ND	ug/L		0.5	EPA 524.2	12/17/2010	CAS
2428	s-Butylbenzene	ND	ug/L		0.5	EPA 524.2	12/17/2010	CAS
2426	t-Butylbenzene	ND	ug/L		0.5	EPA 524.2	12/17/2010	CAS
2216	Chloroethane	ND	ug/L		0.5	EPA 524.2	12/17/2010	CAS
2210	Chloromethane	ND	ug/L		0.5	EPA 524.2	12/17/2010	CAS
2965	o-Chlorotoluene	ND	ug/L		0.5	EPA 524.2	12/17/2010	CAS
2966	p-Chlorotoluene	ND	ug/L		0.5	EPA 524.2	12/17/2010	CAS

LAB FEDERAL ID# ID00952	DATE REPORTED BY LAB 12/29/2010
DATE RECEIVED: 12/9/2010	
COMPLIANCE SAMPL Yes	REPLACEMENT SAMPL No
PWS #: 7410012	PWS NAME: Ctiy of Tetonia
CONTACT NAME: C. W. Robison	CONTACT PHONE: 208-456-2249

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LAB SAMPLE NUMBER: I012064-01	COLLECTION DATE/TIME: 12/09/10 08:30
SAMPLE TYPE:	SAMPLING POINT/LOCATION - TAG#/FACILITY ID: City Well # 1

Public Drinking Water Systems Volatile Organic Chemical (VOC) Analysis Report

FRDS	*Compound*	*Result*	*Units*	*MCL*	*MDL*	*Method*	*Analysis Date*	*Analyst*
			Unregulated VOC Contaminants					
2408	Dibromomethane	ND	ug/L		0.5	EPA 524.2	12/17/2010	CAS
2967	m-Dichlorobenzene	ND	ug/L		0.5	EPA 524.2	12/17/2010	CAS
2212	Dichlorodifluoromethane	ND	ug/L		0.5	EPA 524.2	12/17/2010	CAS
2978	1,1-Dichloroethane	ND	ug/L		0.5	EPA 524.2	12/17/2010	CAS
2413	1,3-Dichloropropene	ND	ug/L		0.5	EPA 524.2	12/17/2010	CAS
2416	2,2-Dichloropropane	ND	ug/L		0.5	EPA 524.2	12/17/2010	CAS
2410	1,1-Dichloropropene	ND	ug/L		0.5	EPA 524.2	12/17/2010	CAS
2412	1,3-Dichloropropane	ND	ug/L		0.5	EPA 524.2	12/17/2010	CAS
2246	Hexachlorobutadiene	ND	ug/L		0.5	EPA 524.2	12/17/2010	CAS
2994	Isopropylbenzene	ND	ug/L		0.5	EPA 524.2	12/17/2010	CAS
2030	p-Isopropyltoluene	ND	ug/L		0.5	EPA 524.2	12/17/2010	CAS
2248	Naphthalene	ND	ug/L		0.5	EPA 524.2	12/17/2010	CAS
2998	n-Propylbenzene	ND	ug/L		0.5	EPA 524.2	12/17/2010	CAS
2986	1,1,1,2-Tetrachloroethane	ND	ug/L		0.5	EPA 524.2	12/17/2010	CAS
2988	1,1,2,2-Tetrachloroethane	ND	ug/L		0.5	EPA 524.2	12/17/2010	CAS
2420	1,2,3-Trichlorobenzene	ND	ug/L		0.5	EPA 524.2	12/17/2010	CAS
2218	Trichlorofluoromethane	ND	ug/L		0.5	EPA 524.2	12/17/2010	CAS
2414	1,2,3-Trichloropropane	ND	ug/L		0.5	EPA 524.2	12/17/2010	CAS
2424	1,3,5-Trimethylbenzene	ND	ug/L		0.5	EPA 524.2	12/17/2010	CAS
2418	1,2,4- Trimethylbenzene	ND	ug/L		0.5	EPA 524.2	12/17/2010	CAS

ND = Not Detected

SUB - AT 125

City of Tetonia
C. W. Robison
P.O. Box 57
Tetonia, ID 83452

G. Ryan Pattie
Laboratory Director

IAS EnviroChem
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email: iasec3308@iasenvirochem.com • www.iasenvirochem.com

EPA Laboratory Number: ID00952

Microbiological Analysis Report

City of Tetonia
C. W. Robison
P.O. Box 57
Tetonia, ID 83452

Lab Sample ID: M012070-01
Collection Date: 12/8/10 10:30
Water System: 7410012 - City of Tetonia
Sample ID/Location: 6406 North 1st St
Collector Name: C. W. Robison

Jurisdiction: Idaho Falls DEQ
Date Received by Lab: 12/8/10 11:30
Collector Phone: 208-456-2249

Method Desc: SM9223 B P/A Colilert

Cmp Name	Result	Analysis Date/Time	Analyst
Total Coliforms	Absent /100 ml	12/8/10 15:00	GRP
E. coli	Absent /100 ml	12/8/10 15:00	GRP

Aux. Data

Sample Type Code: S - Routine Sample
Residual Chlorine:
PWS Date of Original Positive:
PWS Repeat Sample Location:
Tag #/ Facility ID:

Glenn R Patten

Signature of Laboratory Supervisor

12/9/2010
Date

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email: iasec3308@iasenvirochem.com • www.iasenvirochem.com

EPA Laboratory Number: ID00952

Microbiological Analysis Report

City of Tetonia
C. W. Robison
P.O. Box 57
Tetonia, ID 83452

Lab Sample ID: M011017-01
Collection Date: 11/1/10 9:15
Water System: 7410012 - City of Tetonia
Sample ID/Location: Perry Ave. City Well #1
Collector Name: Don Hathaway

Jurisdiction: Idaho Falls DEQ
Date Received by Lab: 11/1/10 16:30
Collector Phone: 208-456-2249

Method Desc: SM9223 B P/A Colilert

Cmp Name	Result	Analysis Date/Time	Analyst
Total Coliforms	Absent /100 ml	11/1/10 17:10	GRP
E. coli	Absent /100 ml	11/1/10 17:10	GRP

Aux. Data

Sample Type Code: S - Routine Sample
Residual Chlorine:
PWS Date of Original Positive:
PWS Repeat Sample Location:
Tag #/ Facility ID:

Glenn R Pattie

Signature of Laboratory Supervisor

11/3/2010
Date

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EPA Laboratory Number: ID00952

Microbiological Analysis Report

City of Tetonia
C. W. Robison
P.O. Box 57
Tetonia, ID 83452

Lab Sample ID: M011017-04
Collection Date: 11/1/10 9:53
Water System: 7410012 - City of Tetonia
Sample ID/Location: 6229 N. Main
Collector Name: Don Hathaway

Jurisdiction: Idaho Falls DEQ
Date Received by Lab: 11/1/10 16:30
Collector Phone: 208-456-2249

Method Desc: SM9223 B P/A Colilert

Cmp Name	Result	Analysis Date/Time	Analyst
Total Coliforms	Absent /100 ml	11/1/10 17:10	GRP
E. coli	Absent /100 ml	11/1/10 17:10	GRP

Aux. Data

Sample Type Code: D - Downstream Repeat
Residual Chlorine:
PWS Date of Original Positive:
PWS Repeat Sample Location:
Tag #/ Facility ID:

Glenn R Patten

Signature of Laboratory Supervisor

11/3/2010
Date

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EPA Laboratory Number: ID00952

Microbiological Analysis Report

City of Tetonia
C. W. Robison
P.O. Box 57
Tetonia, ID 83452

Lab Sample ID: M011017-03
Collection Date: 11/1/10 10:34
Water System: 7410012 - City of Tetonia
Sample ID/Location: 6299 N. Main
Collector Name: Don Hathaway

Jurisdiction: Idaho Falls DEQ
Date Received by Lab: 11/1/10 16:30
Collector Phone: 208-456-2249

Method Desc: SM9223 B P/A Colilert

Cmp Name	Result	Analysis Date/Time	Analyst
Total Coliforms	Absent /100 ml	11/1/10 17:10	GRP
E. coli	Absent /100 ml	11/1/10 17:10	GRP

Aux. Data

Sample Type Code: U - Upstream Repeat
Residual Chlorine:
PWS Date of Original Positive:
PWS Repeat Sample Location:
Tag #/ Facility ID:

Glenn R Potter

Signature of Laboratory Supervisor

11/3/2010
Date

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EPA Laboratory Number: ID00952

Microbiological Analysis Report

City of Tetonia
C. W. Robison
P.O. Box 57
Tetonia, ID 83452

Lab Sample ID: M011017-02
Collection Date: 11/1/10 10:10
Water System: 7410012 - City of Tetonia
Sample ID/Location: 6401 N. Main
Collector Name: Don Hathaway

Jurisdiction: Idaho Falls DEQ
Date Received by Lab: 11/1/10 16:30
Collector Phone: 208-456-2249

Method Desc: SM9223 B P/A Colilert

Cmp Name	Result	Analysis Date/Time	Analyst
Total Coliforms	Absent /100 ml	11/1/10 17:10	GRP
E. coli	Absent /100 ml	11/1/10 17:10	GRP

Aux. Data

Sample Type Code: P - Repeat Sample (At Original Tap)
Residual Chlorine:
PWS Date of Original Positive:
PWS Repeat Sample Location:
Tag #/ Facility ID:

Glenn R Patten

Signature of Laboratory Supervisor

11/3/2010
Date

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email: iasec3308@iasenvirochem.com • www.iasenvirochem.com

EPA Laboratory Number: ID00952

Microbiological Analysis Report

City of Tetonia
C. W. Robison
P.O. Box 57
Tetonia, ID 83452

Lab Sample ID: M011127-01
Collection Date: 11/16/10 11:00
Water System: 7410012 - City of Tetonia
Sample ID/Location: 6170 South Main
Collector Name: C. W. Robison

Jurisdiction: Idaho Falls DEQ
Date Received by Lab: 11/17/10 11:15
Collector Phone: 208-456-2249

Method Desc: SM9223 B P/A Colilert

Cmp Name	Result	Analysis Date/Time	Analyst
Total Coliforms	Absent /100 ml	11/17/10 16:45	GRP
E. coli	Absent /100 ml	11/17/10 16:45	GRP

Aux. Data

Sample Type Code: S - Routine Sample
Residual Chlorine:
PWS Date of Original Positive:
PWS Repeat Sample Location:
Tag #/ Facility ID:

Glenn R Patten

Signature of Laboratory Supervisor

11/18/2010
Date

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EPA Laboratory Number: ID00952

Microbiological Analysis Report

City of Tetonia
C. W. Robison
P.O. Box 57
Tetonia, ID 83452

Lab Sample ID: M011127-02
Collection Date: 11/16/10 11:10
Water System: 7410012 - City of Tetonia
Sample ID/Location: 2969 Egbert Ave
Collector Name: C. W. Robison

Jurisdiction: Idaho Falls DEQ
Date Received by Lab: 11/17/10 11:15
Collector Phone: 208-456-2249

Method Desc: SM9223 B P/A Colilert

Cmp Name	Result	Analysis Date/Time	Analyst
Total Coliforms	Absent /100 ml	11/17/10 16:45	GRP
E. coli	Absent /100 ml	11/17/10 16:45	GRP

Aux. Data

Sample Type Code: S - Routine Sample
Residual Chlorine:
PWS Date of Original Positive:
PWS Repeat Sample Location:
Tag #/ Facility ID:

Glenn R Patten

Signature of Laboratory Supervisor

11/18/2010
Date

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EPA Laboratory Number: ID00952

Microbiological Analysis Report

City of Tetonia
C. W. Robison
P.O. Box 57
Tetonia, ID 83452

Lab Sample ID: M011127-03
Collection Date: 11/16/10 11:20
Water System: 7410012 - City of Tetonia
Sample ID/Location: 3193 Leigh Ave
Collector Name: C. W. Robison

Jurisdiction: Idaho Falls DEQ
Date Received by Lab: 11/17/10 11:15
Collector Phone: 208-456-2249

Method Desc: SM9223 B P/A Colilert

Cmp Name	Result	Analysis Date/Time	Analyst
Total Coliforms	Absent /100 ml	11/17/10 16:45	GRP
E. coli	Absent /100 ml	11/17/10 16:45	GRP

Aux. Data

Sample Type Code: S - Routine Sample
Residual Chlorine:
PWS Date of Original Positive:
PWS Repeat Sample Location:
Tag #/ Facility ID:

Glenn R Patten

Signature of Laboratory Supervisor

11/18/2010
Date

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EPA Laboratory Number: ID00952

Microbiological Analysis Report

City of Tetonia
C. W. Robison
P.O. Box 57
Tetonia, ID 83452

Lab Sample ID: M011127-04
Collection Date: 11/16/10 11:30
Water System: 7410012 - City of Tetonia
Sample ID/Location: 6405 North 6th
Collector Name: C. W. Robison
Jurisdiction: Idaho Falls DEQ
Date Received by Lab: 11/17/10 11:15
Collector Phone: 208-456-2249

Method Desc: SM9223 B P/A Colilert

Cmp Name	Result	Analysis Date/Time	Analyst
Total Coliforms	Absent /100 ml	11/17/10 16:45	GRP
E. coli	Absent /100 ml	11/17/10 16:45	GRP

Aux. Data

Sample Type Code: S - Routine Sample
Residual Chlorine:
PWS Date of Original Positive:
PWS Repeat Sample Location:
Tag #/ Facility ID:

Glenn R Patten

Signature of Laboratory Supervisor

11/18/2010
Date

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EPA Laboratory Number: ID00952

Microbiological Analysis Report

City of Tetonia
C. W. Robison
P.O. Box 57
Tetonia, ID 83452

Lab Sample ID: M011127-05
Collection Date: 11/16/10 11:40
Water System: 7410012 - City of Tetonia
Sample ID/Location: 6406 North 1st St
Collector Name: C. W. Robison
Jurisdiction: Idaho Falls DEQ
Date Received by Lab: 11/17/10 11:15
Collector Phone: 208-456-2249

Method Desc: SM9223 B P/A Colilert

Cmp Name	Result	Analysis Date/Time	Analyst
Total Coliforms	Absent /100 ml	11/17/10 16:45	GRP
E. coli	Absent /100 ml	11/17/10 16:45	GRP

Aux. Data

Sample Type Code: S - Routine Sample
Residual Chlorine:
PWS Date of Original Positive:
PWS Repeat Sample Location:
Tag #/ Facility ID:

Glenn R Patten

Signature of Laboratory Supervisor

11/18/2010
Date

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EPA Laboratory Number: ID00952

Microbiological Analysis Report

City of Tetonia
C. W. Robison
P.O. Box 57
Tetonia, ID 83452

Lab Sample ID:	M010165-01	**Jurisdiction:**	Idaho Falls DEQ
Collection Date:	10/27/10 10:00	**Date Received by Lab:**	10/27/10 15:00
Water System:	7410012 - City of Tetonia		
Sample ID/Location:	6401 N Main		
Collector Name:	C. W. Robison	**Collector Phone:**	208-456-2249

Method Desc: SM9223 B P/A Colilert

Cmp Name	Result	Analysis Date/Time	Analyst
Total Coliforms	Present /100 ml	10/28/10 11:34	GRP
E. coli	Absent /100 ml	10/28/10 11:34	GRP

Aux. Data

Sample Type Code: S - Routine Sample
Residual Chlorine:
PWS Date of Original Positive:
PWS Repeat Sample Location:
Tag #/ Facility ID:

Glenn R Patten

10/28/2010

Signature of Laboratory Supervisor — Date

INTERMOUNTAIN ANALYTICAL SERVICES, INC.

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EPA Laboratory Number: ID00952

Microbiological Analysis Report

City of Tetonia
C. W. Robison
P.O. Box 57
Tetonia, ID 83452

Lab Sample ID:	M009090-01	**Jurisdiction:**	Idaho Falls DEQ
Collection Date:	9/8/10 8:30	**Date Received by Lab:**	9/8/10 15:00
Water System:	7410012 - City of Tetonia		
Sample ID/Location:	DRAFT: Morth Country Store 6170 South Main		
Collector Name:	C. W. Robison	**Collector Phone:**	208-456-2249

Method Desc: SM9223 B P/A

Cmp Name	Result	Analysis Date/Time	Analyst
Total Coliforms	Absent /100 ml	9/8/10 16:45	GRP
E. coli	Absent /100 ml	9/8/10 16:45	GRP

Aux. Data

Sample Type Code: S - Routine Sample
Residual Chlorine:
PWS Date of Original Positive:
PWS Repeat Sample Location:
Tag #/ Facility ID:

9/9/2010

Signature of Laboratory Supervisor — Date

Thursday, September 9, 2010

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Email: iasec3308@iasenvirochem.com

EnviroChem

INDUSTRIAL · WATER · WASTE · SOIL · GEOCHEMICAL · FIRE ASSAY · GA/OS

EPA Laboratory Number: ID00952

Microbiological Analysis Report

City of Tetonia
C. W. Robison
P.O. Box 57
Tetonia, ID 83452

Lab Sample ID:	M008128-01	**Jurisdiction:**	Idaho Falls DEQ
Collection Date:	8/16/10 7:30	**Date Received by Lab:**	8/16/10 15:30
Water System:	7410012 - City of Tetonia		
Sample ID/Location:	6405 N 6th St		
Collector Name:	C. W. Robison	**Collector Phone:**	208-456-2249

Method Desc: SM9223 B P/A

Cmp Name	Result	Analysis Date/Time	Analyst
Total Coliforms	Absent /100 ml	8/16/10 16:50	GRP
E. coli	Absent /100 ml	8/16/10 16:50	GRP

Aux. Data

Sample Type Code: S - Routine Sample
Residual Chlorine:
PWS Date of Original Positive:
PWS Repeat Sample Location:
Tag #/ Facility ID:

Glenn R Patten

Signature of Laboratory Supervisor

8/17/2010
Date

Tuesday, August 17, 2010

IAS-Envirochem, warrants the test results, from accepted analytical work, to be of precision normal for sample type and methodology employed for each sample submitted. IAS-Envirochem disclaims any other warranties, express of implied, including warranty of fitness for a particular purpose and warranty which the client used test results. Any analytical work performed must be governed by the terms and conditions set forth herein.

INTERMOUNTAIN ANALYTICAL SERVICES, INC.

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EnviroChem

INDUSTRIAL - WATER - WASTE - SOIL - GEOCHEMICAL - FIRE ASSAY - GASES

EPA Laboratory Number: ID00952

Microbiological Analysis Report

City of Tetonia
C. W. Robison
P.O. Box 57
Tetonia, ID 83452

Lab Sample ID:	M007142-01	**Jurisdiction:**	Idaho Falls DEQ
Collection Date:	7/14/10 8:20	**Date Received by Lab:**	7/14/10 16:10
Water System:	7410012 - City of Tetonia		
Sample ID/Location:	3059 Jackson Ave		
Collector Name:	C. W. Robison	**Collector Phone:**	208-456-2249

Method Desc: SM9223 B P/A

Cmp Name	Result	Analysis Date/Time	Analyst
Total Coliforms	Absent /100 ml	7/14/10 17:30	GRP
E. coli	Absent /100 ml	7/14/10 17:30	GRP

Aux. Data

Sample Type Code: S - Routine Sample
Residual Chlorine:
PWS Date of Original Positive:
PWS Repeat Sample Location:
Tag #/ Facility ID:

Glenn R Patten

7/16/2010

Signature of Laboratory Supervisor — Date

Friday, July 16, 2010

IAS-Envirochem, warrants the test results, from accepted analytical work, to be of precision normal for sample type and methodology employed for each sample submitted. IAS-Envirochem disclaims any other warranties, express of implied, including warranty of fitness for a particular purpose and warranty which the client used test results. Any analytical work performed must be governed by the terms and conditions set forth herein.

INTERMOUNTAIN ANALYTICAL SERVICES, INC.

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3314 Pole Line Road • Pocatello, Idaho 83201
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INDUSTRIAL - WATER - WASTE - SOIL - GEOCHEMICAL - FIRE ASSAY - QA/QC

EPA Laboratory Number: ID00952

Microbiological Analysis Report

City of Tetonia
C. W. Robison
P. O. Box 57
Tetonia, ID 83452

Lab Sample ID: M006202-01
Collection Date: 6/21/10 14:45
Water System: 7410012 - City of Tetonia
Sample ID/Location: 3204 Perry Ave
Collector Name: C. W. Robison

Jurisdiction: Idaho Falls DEQ
Date Received by Lab: 6/21/10 16:35
Collector Phone: 208-456-2249

Method Desc: SM9223 B P/A

Cmp Name	Result	Analysis Date/Time	Analyst
Total Coliforms	Absent /100 ml	6/21/10 17:20	BEN
E. coli	Absent /100 ml	6/21/10 17:20	BEN

Aux. Data

Sample Type Code: S - Routine Sample
Residual Chlorine:
PWS Date of Original Positive:
PWS Repeat Sample Location:
Tag #/ Facility ID:

Glenn R Patten

Signature of Laboratory Supervisor

6/22/2010
Date

Tuesday, June 22, 2010

IAS-Envirochem, warrants the test results, from accepted analytical work, to be of precision normal for sample type and methodology employed for each sample submitted
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INTERMOUNTAIN ANALYTICAL SERVICES, INC.

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EnviroChem

INDUSTRIAL - WATER - WASTE - SOIL - GEOCHEMICAL - FIRE ASSAY - QA/QC

EPA Laboratory Number: ID00952

Microbiological Analysis Report

City of Tetonia
C. W. Robison
P. O. Box 57
Tetonia, ID 83452

Lab Sample ID: M005114-01
Collection Date: 5/18/10 9:45
Water System: 7410012 - City of Tetonia
Sample ID/Location: 2969 EGBERT Ave.
Collector Name: C. W. Robison

Jurisdiction: Idaho Falls DEQ
Date Received by Lab: 5/18/10 14:45
Collector Phone: 208-456-2249

Method Desc: SM9223 B P/A

Cmp Name	Result	Analysis Date/Time	Analyst
Total Coliforms	Absent /100 ml	5/18/10 17:40	BEN
E. coli	Absent /100 ml	5/18/10 17:40	BEN

Aux. Data

Sample Type Code: S - Routine Sample
Residual Chlorine:
PWS Date of Original Positive:
PWS Repeat Sample Location:
Tag #/ Facility ID:

Glenn R Pattin

Signature of Laboratory Supervisor

5/19/2010
Date

Wednesday, May 19, 2010

IAS-Envirochem, warrants the test results, from accepted analytical work, to be of precision normal for sample type and methodology employed for each sample submitted
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INTERMOUNTAIN ANALYTICAL SERVICES, INC.

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Email: iasec3308@iasenvirochem.com

EnviroChem

INDUSTRIAL - WATER - WASTE - SOIL - GEOCHEMICAL - FIRE ASSAY - QA/QC

EPA Laboratory Number: ID00952

Microbiological Analysis Report

City of Tetonia
C. W. Robison
P. O. Box 57
Tetonia, ID 83452

Lab Sample ID: M004087-01
Collection Date: 4/14/10 10:00
Water System: 7410012 - City of Tetonia
Sample ID/Location: 6405 North 6th
Collector Name: C. W. Robison

Jurisdiction: Idaho Falls DEQ
Date Received by Lab: 4/14/10 14:35
Collector Phone: 208-456-2249

Method Desc: SM9223 B P/A

Cmp Name	Result	Analysis Date/Time	Analyst
Total Coliforms	Absent /100 ml	4/14/10 16:10	BEN
E. coli	Absent /100 ml	4/14/10 16:10	BEN

Aux. Data

Sample Type Code: S - Routine Sample
Residual Chlorine:
PWS Date of Original Positive:
PWS Repeat Sample Location:
Tag #/ Facility ID:

Signature of Laboratory Supervisor

4/15/2010
Date

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Thursday, April 15, 2010

INTERMOUNTAIN ANALYTICAL SERVICES, INC.

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3314 Pole Line Road • Pocatello, Idaho 83201
Phone: (208) 237-3300 • Fax: (208) 237-3336
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EnviroChem

INDUSTRIAL - WATER - WASTE - SOIL - GEOCHEMICAL - FIRE ASSAY - QA/QC

EPA Laboratory Number: ID00952

Microbiological Analysis Report

City of Tetonia
C. W. Robison
P. O. Box 57
Tetonia, ID 83452

Lab Sample ID: M003048-01
Collection Date: 3/4/10 8:30
Water System: 7410012 - City of Tetonia
Sample ID/Location: DRAFT: 3204 West Perry
Collector Name: C. W. Robison

Jurisdiction: Idaho Falls DEQ
Date Received by Lab: 3/4/10 14:00
Collector Phone: 208-456-2249

Method Desc: SM9223 B P/A

Cmp Name	Result	Analysis Date/Time	Analyst
Total Coliforms	Absent /100 ml	3/4/10 16:20	BN
E. coli	Absent /100 ml	3/4/10 16:20	BN

Aux. Data

Sample Type Code: S - Routine Sample
Residual Chlorine:
PWS Date of Original Positive:
PWS Repeat Sample Location:
Tag #/ Facility ID:

3/5/2010

Signature of Laboratory Supervisor — Date

Friday, March 5, 2010

IAS-Envirochem, warrants the test results, from accepted analytical work, to be of precision normal for sample type and methodology employed for each sample submitted
IAS-Envirochem disclaims any other warranties express of implied, including warranty of fitness for a particular purpose and warranty which the client used test results Any analytical work performed must be governed by the terms and conditions set forth herein

INTERMOUNTAIN ANALYTICAL SERVICES, INC.

IAS — ENVIRO CHEM
3314 Pole Line Road • Pocatello, Idaho 83201
Phone: (208) 237-3300 • Fax: (208) 237-3336
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EnviroChem

INDUSTRIAL - WATER - WASTE - SOIL - GEOCHEMICAL - FIRE ASSAY - QA/QC

EPA Laboratory Number: ID00952

Microbiological Analysis Report

City of Tetonia
C. W. Robison
P. O. Box 57
Tetonia, ID 83452

Lab Sample ID:	M002057-01	**Jurisdiction:**	Idaho Falls DEQ
Collection Date:	2/8/10 10:00	**Date Received by Lab:**	2/8/10 14:20
Water System:	7410012 - City of Tetonia		
Cust Sample ID:	Armstrong 6401 North Main	**Location:**	City of Tetonia
Collector Name:	C. W. Robison	**Collector Phone:**	208-456-2249

Method Desc: SM9223 B P/A

Cmp Name	Result	Analysis Date/Time	Analyst
Total Coliforms	Absent /100 ml	2/8/10 17:10	BN
E. coli	Absent /100 ml	2/8/10 17:10	BN

Aux. Data

Sample Type Code: S - Routine Sample
Residual Chlorine:
PWS Date of Original Positive:
PWS Repeat Sample Location:
Tag #/ Facility ID:

Glenn R Patten

Signature of Laboratory Supervisor

2/9/2010
Date

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Tuesday, February 9, 2010

INSTRUCTIONS REVERSE SIDE

Water System Name: Tetonia
PWS ID No.: 4110012
Collector: C.W. Robison
Date Collected: 1-18-2010
County:
Person Transporting Sample to Lab:

Condition of Transport: ☑ Cooled ☐ Mail ☑ Carrier ☐ Other

Report Results To:
Name: City of Tetonia
Address: P.O. Box 57
City: Tetonia
State: ID
Zip Code: 83452
Phone Number: 208-456-2249

IAS — EnviroChem

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COLIFORM BACTERIA ANALYSIS REPORT
CONTAMINANT ID# 3100

☑ Public Drinking Water System
☐ Private Drinking Water

Shaded areas must be fully filled out or samples will not be run. Private samples need not have pws# or Chlorine residual. Clear areas are for lab use only.

Your sample will be analyzed for TOTAL COLIFORMS unless you specify another analysis under Remarks.

For PWS only, if this is a repeat sample, mark the date of the **ORIGINAL POSITIVE SAMPLE**.

(F)

LAB ID # ID00952

REPORT RESULTS TO:
- ☐ Dist. 6 Health Dept.
- ☐ Dist. 7 Health Dept.
- ☐ Denver EPA
- ☐ Seattle EPA
- ☑ Idaho Falls DEQ
- ☐ Pocatello DEQ

PAYMENT:
☐ No Charge ☐ Prepaid
☐ Bill ☐ Pmt. Rec'd

RESULTS

Sample Number	Sample Type Code	Sampling Location	Time Collected	Chlorine Residual PPM	Original Sample Date	Total Coliforms Method Code	Total Coliforms (P)resent (A)bsent #100ml	Fecal Coliforms Method Code	Fecal Coliforms (P)resent (A)bsent #100ml	Escherichia Coli Method Code	Escherichia Coli (P)resent (A)bsent #100ml	HPC Method Code	HPC CFU/ml
M001093-01A	S	6229 South Main	8:00 A.M.			WMMO	A			WMUG	A		

Sample Type Codes
S - Routine Sample
P - Repeat Sample *(At Original Tap)*
U - Upstream Repeat
D - Downstream Repeat
E - Enforcement *(Chain of Custody Required)*
X - Other Repeat
W - Untreated *(Source)*
C - Construction/Special

Chain-of-Custody Information

Relinquished by	Date	Time	Received by	Relinquished by	Date	Time	Received by
			Lisa [illegible]				
Relinquished by	Date	Time	Received by	Relinquished by	Date	Time	Received by

DATE/TIME RECEIVED 011810 1410
DATE/TIME ANALYZED 011810 1715
DATE REVIEWED 011910

ANALYST BN
SUPERVISOR [illegible]

REMARKS

LITHO 2-1305

Appendix M Loan Option Correspondence

From: William.Teuscher@deq.idaho.gov
Sent: Tuesday, May 03, 2011 10:28 AM
To: gwilliams@grwei.com
Subject: RE: Message from 2088810827

Gerald, to answer your question pertaining to our loan dollars there really is no limit on our loan amounts, however if we get to projects that are 12-15 million then we may try and fund them over two or three fiscal years. Or we could refer them to the state bond bank instead of the DEQ SRF loan. We usually have 45-50 million each year that we loan state wide in each program (45 million for Drinking water projects and 45 million for Wastewater projects).
For the City of Tetonia we could loan them what they are willing to borrow or could afford to borrow.

With their MHI @ $42, 813 they could qualify for a Hardship loan from us but not until their water rates reach 2% of the MHI which would be $856.26 per household per year or $71.36 per month. So what this means is that if their water rates reach $71.36 per month then they would qualify for a hard ship loan which than their interest rate could drop to as low as 0% interest and maybe even some loan or principle forgiveness. The amount of loan or principle forgiveness would be determined base on the amount of money DEQ would have available for that particular year.

If you have additional question or are not sure how this would work give me a call back.

Willie

From: Unified Messaging System - DEQMAIL
Sent: Tuesday, May 03, 2011 9:30 AM
To: William Teuscher
Subject: Message from 2088810827