FINAL PROJECT REPORT
SQUAW CREEK WATER SUPPLY LEVEL II STUDY

FOR THE

WYOMING WATER DEVELOPMENT COMMISSION

AND

SQUAW CREEK WATER DISTRICT
SEPTEMBER 2012

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SEPTEMBER 2012

• ENGINEER’S AND GEOLOGIST’S CERTIFICATE •

We hereby certify that we have prepared or directly supervised the preparation of this report and that we are duly registered professionals in the State of Wyoming.

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TABLE OF CONTENTS

FINAL REPORT
SQUAW CREEK WATER SUPPLY
LEVEL II STUDY
SEPTEMBER 2012

REPORT SECTIONS PAGE(S)
SECTION 1 INTRODUCTION ................................................................. 1-5

SECTION 2 SCOPE OF SERVICES

Task 1 Scoping and Project Meeting .................................................. 6-10
Task 2 Review of Existing Information ........................................... 11-15
Task 3 Inventory, Evaluation, and Map of Existing Systems ............... 16-20
Task 4 Water Source Data Collection ............................................... 21-25
Task 5 Water Quality ................................................................. 26-28
Task 6 Review of Water Rights ..................................................... 29-32
Task 7 Evaluation of System Operations ........................................ 33-34
Task 8 Population Growth and Water Demands ............................. 35-36
Task 9 Consultant Field Services ................................................... 37
Task 10 Field Testing Sub Contracts ............................................. 38
Task 11 Water System Financing .................................................. 39-53
  ▪ Squaw Creek Table 11.1
  ▪ Squaw Creek Table 11.2
  ▪ Squaw Creek Table 11.3
  ▪ Squaw Creek Table 11.4
  ▪ Squaw Creek Table 11.5

Task 12 Identification of Alternatives, Prioritization of Recommendations .......... 54-74
Task 13 Cost Estimates

- Cost Estimates:
  - Flat Creek Well on South Park Wildlife Habitat Management Area
  - Convert Test Well No. 3 to Production
  - Purchase/Convert Mackenzie Well
  - Drill Well at Old West Cabins
  - Snake River Alluvial Well
  - Flat Creek Alluvial Well South Site
  - 15,000 Gallon Fiberglass Tank
  - Replace System Pumps, Upgrade SCADA
  - Replace Game Creek Well Pumps
  - Rehab Game Creek Wells
  - Replace Spring Booster Pump
  - Drill/Test Nugget Well (w/pipeline)
  - Drill/Test Camp Davis Well (w/pipeline)
  - Connect to Town of Jackson System
  - Connect to Rafter J System
  - Purchase/Connect Teton County No. 1 Well
  - Drill/Test New Well at Teton County No. 1 Well
  - Pipeline/Appurtenances, New Well
  - Summary of Costs: Supply Alternatives and System Upgrade Options

Task 14 Environmental Report

Task 15 Reports

APPENDICES

- Appendix A Well Permits
- Appendix B Sanitary Survey
- Appendix C Water Quality Information
- Appendix D Technical Attachments to Teton County No. 1 Aquifer Report
WATER SUPPLY HISTORY

Introduction

Residential development in the area now comprising the Squaw Creek Water District (District) began in 1975. Between 1975 and 1981, the Squaw Creek Water Supply Company provided water to 25 residents from a collection system supplied by a spring on Squaw Creek.

The District was formed in 1981 with the spring supplying water to 67 lots. In the fall of 1982, an enlarged and improved subsurface collection system was constructed at the spring.

As build-out of the area progressed and additional developments were annexed into the District, water demand increased. Residents sought additional water supplies. The Wyoming Water Development Commission (WWDC) funded the following studies and test drilling projects to assist the District.

Squaw Creek Water Supply Project, Level I (1990-1991)

In 1990, the District requested assistance from the WWDC to:

- Locate an additional source of water to supplement the spring supply and accommodate increased peak demands.
- Avoid the possibility that EPA might designate the spring as groundwater under the influence of surface water.
- Maximize water production from the spring.
- Establish a meter-reading program and a billing system based on usage.
- Establish fire suppression capability
- Update system documentation and permits in the State Engineer’s Office.
- Develop an as-constructed map of the system.

AVI Professional Corporation (AVI) of Cheyenne and Lidstone & Anderson (LA) of Fort Collins, Colorado were selected by WWDC to perform the study. AVI and LA recommended improvements to system components and operations. The study also recommended a Level II project to construct and test a deep groundwater well.


The 1992 Legislature approved funding for a deep test well sited on the District. Lidstone & Anderson, Inc. (LA) was selected to identify a well location, supervise construction, and direct lithological logging activities. The exploratory well was permitted as Squaw Creek No. 1 hole. NuCor Drilling Inc. from Riverton commenced well construction on September 22, 1992.
Adverse drilling conditions led to termination of well construction with the borehole still above the hydrogeologic target. LA concluded from information obtained during drilling that it was unlikely sufficient water would be found or produced economically at that location, so the hole was abandoned and properly plugged on December 14, 1992.

Following abandonment of Squaw Creek Test well No. 1, LA evaluated other options to develop a supplemental source for the District including:

- A deep well on Bridger-Teton National Forest: (Failed to achieve access agreement from adjacent landowner)
- Purchase of water from the Teton County Landfill well: (Failed to achieve purchase agreement with County)
- Flat Creek/Snake River Alluvial wells: (Failed to achieve access agreement with Wyoming Game and Fish Department, with owners of the Old West Cabins, or other area landowners.)
- Further Development/Enlargement of the District Spring: (No action.)
- Development of additional springs in or adjacent to the District: (No action.)
- Snake River Infiltration Gallery: (No action.)
- Purchase Water from Town of Jackson: (No action.)
- Game Creek Infiltration Gallery: Drilled shallow wells and encountered confining clay layer.
- Game Creek Alluvial wells: Drilled alluvial test wells which fully penetrated aquifer and achieved water requirements of approximately 50 gpm.

**Groundwater Exploration Grant, Squaw Creek Water District (2004 – 2009)**

In 2004, the District’s water supply consisted of the spring on Squaw Creek (SEO Permit No. 27641) and two alluvial wells on the Bridger-Teton National Forest along Game Creek. The wells are Squaw No. 1 well, also referred to as Game Creek No. 1 well (SEO Permit No. U.W. 102953), and Squaw No. 2 well, also referred to as Game Creek No. 2 (SEO Permit No. U.W. 102954). A new pump house with capability for filtration and disinfection had been constructed at the spring. The collection system for the spring had been improved and total storage increased to 50,000 gallons by adding two 15,000-gallon fiberglass tanks adjacent to the existing pair of 10,000-gallon steel tanks.

By 2004, the District had 72 occupied lots and residents were complaining of water shortages which occurred despite water conservation measures imposed by the District Board, including progressive water rates based on metered use.

In response to these concerns, the District again approached the WWDC to request assistance in enhancing its water supply. WWDC responded with a Ground Water Exploration Grant and awarded a contract to Rendezvous Engineering (Rendezvous) of Jackson in May of 2004.

Rendezvous performed the following ground water exploration activities on behalf of the District:

- Drilled two exploratory wells – Squaw Creek Test No. 1 and Squaw Creek Test No. 2 in
the alluvial deposits adjacent to Game Creek and downstream of the existing district wells. The two successful wells completed by Lidstone & Anderson in Game Creek alluvium were a good reason to pursue further development of this source. However, observations made during the drilling of both wells indicated very poor water supply potential and pump tests were considered a waste of resources.

- Drilled Squaw Creek Test well No. 3 in the summer of 2006. The target aquifer for test well No. 3 was the Camp Davis Formation. The geology in the area is complex. The Camp Davis Formation was ranked poorly for water development potential. However, two private wells adjacent to the District reported significant yields. The Wadsworth well (SWAMIS No. 1 P13054.0W, priority date November 1, 2000) was originally permitted for 25 gpm for domestic use. In 2006, the owners filed an enlargement of 15 gpm for stock water (P176748OW). Rendezvous sited No. 3 immediately adjacent to SWAMIS No. 1 across the property line on the Forest. The well was advanced to a total depth of 338 feet, fully penetrating the target aquifer. While initial indications were promising, subsequent testing revealed the well was completed in a confined aquifer that could not maintain a satisfactory yield if subjected to sustained pumping. Additional testing by Rendezvous in the fall of 2007 confirmed that as a single well, No. 3 was not sufficiently productive to justify the costs of converting the well to production status and connecting it to the District.

- Drilled Squaw Creek Test well No. 4 in the fall of 2009. The siting strategy was to penetrate a more extensive zone of permeability in the Camp Davis Formation. The intent was to locate the assumed zone of supply for SWAMIS No. 1 and the No. 3 wells. Well construction with an air rotary rig occurred between October 23 and November 3, 2009. Total depth was 403 feet. Water production during drilling was so limited that a static water level could not be established. Water was air lifted from the bore, but production was extremely limited and the well recovered at a rate of less than 1.5 gpm even after draw down to 275 feet. Based on these results, the well was plugged and abandoned.

- Readers seeking detailed information on these projects may obtain reports from the Wyoming Water Development Office. Some reports are available in electronic format from the Water Resources Data System Library at:
  
  http://library.wrds.uwyo.edu/wwdcrept/wwdcrept.html

AUTHORIZATION AND PURPOSE SQUAW CREEK STUDY LEVEL II, 2010

The District applied to WWDC to continue the search for additional water supplies. A Level II Water Supply Study was included in the WWDO Planning Omnibus Water Bill approved by the Legislature during the 2010 Session. WWDC selected the team of AVI Professional Corporation, Pierson Land Works, Dahlgren Consulting, and Stockdale Consulting.

The purpose of the current study as defined in the Scope of Services is “To perform a Level II study in order to explore the feasibility of acquiring additional source supply to supplement the existing system.”
PROJECT LOCATION AND SUMMARY

The District encompasses 540 acres in Section 35 T40N R116W seven miles south of the town of Jackson. The District currently has 72 occupied lots. Some homes are occupied year around. Others are seasonal occupancy. Eight additional lots are available for development.

The District’s water supply is provided by Squaw No. 1 and Squaw No. 2, often referred to as Game Creek No. 1 and Game Creek No. 2 because they are completed in the Game Creek alluvium. The spring is centrally located in the District. Water is pumped from the wells (elevations 6130’ and 6150’) to the spring (elevation 6360’), comimgled with spring water, and then pumped to the storage tanks in the southeast corner of the District (elevation 6725’).

The water system situation in the District is complicated by conflicting information about system components:

- **Storage:** The 1994 LA report describes “…two 10,000-gallon storage tanks.” The EPA Sanitary Survey conducted on July 22, 2009 says there are “four 15,000-gallon underground storage tanks.” Report documents verify two 10,000-gallon tanks and two 15,000-gallon tanks for a total of 50,000 gallons of storage.

- **Well Yields:** The Game Creek wells were originally tested at 38 gpm (Squaw No. 1) and 45 gpm (Squaw No. 2). Both wells are permitted for 50 gpm, but there is no evidence the wells ever produced that amount. The project recommendation sheet provided by WWDO in 2010 reports the total yield of both wells as 25 gpm. Well yields are influenced by seasonal variations in the alluvial flows of Game Creek and by longer term weather cycles. The District expressed a preference for a new source rather than attempting to increase yields from existing sources. However, rehabilitation of the Game Creek wells was evaluated as an option.

- **Spring Yields:** A similar inconsistency exists in the yields reported from the District spring. The 1989 EPA Sanitary Survey reported the spring yield was .111 cfs or 50 gpm. There is no indication that EPA measured output to verify yield. Information may have been taken from the SEO Permit because the spring is permitted for .111 cfs. The District estimated spring production at 30 gpm in 2009. Flows of 12-14 gpm were reported in the 1994 LA report. At that time, the spring could produce 40 gpm for three to four hours but then was shut down for 14 to 18 hours to recharge. Spring yield is dependent on seasonal precipitation/runoff variations and drought cycles.

GOAL OF CURRENT STUDY, DISTRICT PRIORITIES

The District identified the following priorities for the current study:

- **Additional Supply:** Locate a source of supply that will provide a minimum of 35 gpm. Given variations in reported well and spring production, the 35 gpm figure is arbitrary but served as the baseline target yield for evaluation of options.

- **Fire Protection:** Evaluate options for access to water for fire suppression. The District’s storage tanks are located in a remote corner of the development. No fire reserve is maintained because the entire storage capacity is often depleted to meet domestic demands.
This study evaluated options to meet both needs, with emphasis on finding a supplemental supply. Resources to complete contract tasks ancillary to this primary goal were kept to a minimum to preserve funding for test drilling or aquifer testing of an existing well. As explained in Section 12, AVI encountered significant roadblocks in pursuit of the primary goal.

After multiple options were eliminated for reasons explained in this report Section 12, focus of the study turned to Teton County No. 1 well. WWDC approved an extension of the AVI contract to provide time to pump test the well. AVI contracted with Treasure Valley Drilling of Rexford MT. Treasure Valley mobilized at the site on June 4th, 2012 and pumped the well for 32 hours on June 5th and 6th. Based on the results of the pump test and video log, AVI recommended the District request funding for construction of a new test well in the vicinity of the County well.

The WWDO contact scope of work directed the AVI Team to complete the following tasks:

- Task 1. Scoping and Project Meetings
- Task 2. Review of Existing Information
- Task 3. Inventory, Evaluate, and Map Existing System
- Task 4. Water Source Data Collection
- Task 5. Water Quality
- Task 6. Review of Water Rights
- Task 7. Evaluation of System Operations
- Task 8. Population and Water Demand Projections
- Task 9. Consultant Field Services
- Task 10. Field Testing Subcontracts
- Task 11. Water System Financing
- Task 12. Identification of Alternatives, Prioritization of Recommendations
- Task 13. Cost Estimates
- Task 14. Environmental Report (WWDO must authorize in writing)
- Task 15. Reports

The report is organized by contract tasks.
INTRODUCTION

During the course of the study, the AVI Team held meetings with the Squaw Creek District Board of Directors in conjunction with field trips to evaluate supply options. The meeting to present the draft final report was held on July 26, 2011.

AVI and WWDO met with the District Board on September 11, 2012 to discuss the results of aquifer testing Teton County No. 1 and to recommend the next steps for the District to continue its pursuit of a supplemental water supply.

In addition, multiple informal meetings were held with the staff of WWDO including Project Manager Kevin Boyce, Deputy Director for Planning Jon Wade, Deputy Director for Construction Dave Zelenka, and Director Mike Purcell. Meetings were also held with the Wyoming Department of Environmental Quality regarding discharge permits for pump tests and acquisition of as-built permits for existing wells. See the end of this section for an itemization of other miscellaneous meetings held in conjunction with the project.

Following is a description of meetings with the District on the dates indicated.

JUNE 21, 2010 MEETING WITH DISTRICT BOARD REPRESENTATIVE

On June 21, 2010, the AVI Team met in the office of Pierson Land Works. In attendance were AVI Project Manager Evan Green, Groundwater Geologist Russ Dahlgren, Project Representative George Putnam of Pierson Land Works, John Hisey representing the District, and Teton County Engineer Sean O’Malley.

The Team’s presentation included the information that Game and Fish property in the South Park Wildlife Habitat Management Area was not available for test wells. Other options were discussed including acquisition of the Mackenzie No. 1 well located south of the District boundary and connecting to the Squaw Creek Well No. 3 constructed as a test well during the ground water grant project funding by the WWDC. The potential to increase available water supplies by upgrading or rehabilitating existing system components was also discussed.

Board Member John Hisey made several points on behalf of the District. He requested a preliminary cost estimate and feasibility determination of connecting the Squaw Creek test well No. 3 to the District system.

Hisey stated the District would support acquisition of the Teton County No. 1 well, or water from that source, in preference to negotiations for the Mackenzie well. Access to the Mackenzie well is complicated by landowner issues and County concerns over road conditions. O’Malley said use of the County well might be conditioned on bringing subdivision roads up to standards. The formation of a Service and Improvement District to resolve road maintenance issues was discussed.
Hisey said the District preferred to delay upgrades of the existing system if such work would jeopardize project budget for acquisition of a new supply source.

**AUGUST 19, 2010 MEETING WITH DISTRICT BOARD**

The AVI Team met with the District Board at the residence of Dick Shuptrine. In attendance were Chairman Shuptrine, John Hisey, Kip Roe, Chip Marvin, and John Spahr. Evan Green and Russ Dahlgren represented AVI.

After an update of project work, Board Members provided the following information:

- Recorded use during the summer of 2010 peaked at 40,000 gallons per day. Assuming 72 occupied lots with three people per household (216 people), the maximum use of 40,000 gallons per day is about 185 gallons per capita per day. This use is not excessive compared to maximum day consumption in other Wyoming districts and municipalities.
- When use exceeds 30,000 gallons per day, users complain about air in the system.
- The Board wants a long-term supplemental supply of 35-50 gpm. Small increases from rehabbing the Game Creek wells, improving the spring, or connecting Well No. 3 are a low priority.
- The Board said the costs for connecting Well No. 3 were too high for the estimated additional 5 gpm, the predicted long-term yield of the well based on tests during construction.
- The Board is willing to expand the District and provide water to other developments if water supply is adequate. This could be a condition if WWDC participates in purchasing the County well.
- The Board discussed access road improvements as a possible condition of using the County well. The Board attempted to form a Service and Improvement District when the Water District was formed, but the vote did not pass. A water district has no authority to assess property owners for road construction or improvements.

In conjunction with this meeting, AVI representatives inspected the County well and discussed preliminary issues associated with a pump test to the well. AVI also met with other entities and agencies as described below.

**MAY 17, 2011 MEETING WITH DISTRICT and MACKENZIE WELL REPRESENTATIVES**

AVI met with the District Operator and inspected the water system to gather information for evaluation of system operations. AVI and members of the District Board also met with representatives of the owner of the Mackenzie well. See below for details of that discussion.
JULY 26, 2011 MEETING WITH DISTRICT BOARD

AVI and the WWDO Project Manager met with the District Board to present the draft Level II report. In summary, all options for a supplemental supply have been eliminated from consideration except acquisition of the County well or construction of a new well. WWDO requested cost estimates for new wells to Nugget and Camp Davis formations be included in the final report. WWDO also asked for cost estimates to connect the District to the Rafter J and Town of Jackson water supply systems.

The District expressed interest in pump testing the County well as a preliminary step in determining the feasibility of either the purchase of water or acquisition of the well. At the request of the District and with approval from WWDO, AVI agreed to proceed with the steps necessary to conduct a pump test. These steps include acquiring permission from Teton County and preparation of the documents required for a Special Use Permit from the Bridger Teton National Forest for improvements to the access road to the County well and a pipeline from the well to the District. The anticipated delays in a decision on the Special Use Permit led to a recommendation to pump test the well while the permit application was in process.

AVI noted the pump test process would require an extension of the WWDO contract and due date for the final report.

SEPTEMBER 11, 2012 MEETING WITH DISTRICT BOARD

AVI, Dahlgren Consulting, and the WWDO Project Manager attended a regular meeting of the District Board to discuss recommendations for an extension of the Level II study for construction of a test well in the vicinity of Teton County No. 1. Board members had reviewed the feasibility analysis prepared after the pump test and agreed with AVI and WWDO recommendations the County well was not suitable as a public water supply source. Contributing factors are the lack of a surface seal, encrustation/blockage of milled casing slots, and sediment accumulation in the bottom of the well. Also, the District was reluctant to assume responsibility for the existing delivery pipeline to the shooting range and the transfer station.

AVI was directed to complete and submit the final report incorporating the results of the pump test with the recommendation that a new well be constructed for the District in the vicinity of the County well. The District requested an extension of the Level II study and an additional appropriation to complete construction and testing of the well.

MISCELLANEOUS MEETINGS IN CONJUNCTION WITH PROJECT WORK

- **Wyoming Department of Environmental Quality:** The AVI team held several meetings with staff of the Wyoming Department of Environmental Quality regarding discharge permits for pump tests and acquisition of as-built permits for existing wells. Neither the County well nor the Mackenzie well were completed to DEQ Chapter 12 standards for a Public Water System supply. If either well were proposed for use by the District, modifications would be required to meet those standards.
- **Wyoming Game and Fish Department:** AVI met with Game and Fish personnel in Jackson on June 21, 2010.

The WGFD representative stated that access for test or production wells would be denied in part because the South Park WHMA was acquired with federal funds. He would not recommend approval of a Special Use Permit application and said previous applications for test wells on WGFD property had routinely been denied.

- **Teton County Engineer:** Over the course of the project, several meetings were held with County Engineer Sean O’Malley.

AVI met with O’Malley on August 20, 2010 to discuss a pump test. He wanted assurance that the test would not damage the existing system or disrupt supply to the shooting range or transfer station. He stated authorizing a pump test would be a commitment by the County to negotiate in good faith for access to the well.

The County Engineer was instrumental in obtaining preliminary approval from the Bridger Teton National Forest to submit a Special Use Permit. He provided a commitment from Teton County to negotiate for transfer of the County well if the pump test was successful.

- **Jack Weber of Weber Drilling:** AVI met with Jack Weber on June 21, 2010. Mr. Weber has completed several wells near the District, including the Teton County No. 1 well. Weber Drilling also drilled the Old West Cabins wells, which produce over 100 gpm. Weber was not optimistic about wells in the Flat Creek alluvium, citing presence of poorly drained areas and wetland vegetation indicating either groundwater close to the surface or containing shale layers.

AVI met with Weber Drilling again on August 19 and 20, 2010 to determine if he could pull the County well pump, install a larger pump, and discharge to a sprinkler system while continuing to provide water to the shooting range and transfer station during the pump test. Weber expressed doubt that this would work, since there is no way to connect to the pitless adapter with the pump pulled for the test. There would not be enough room in the casing for both pipes. He suggested connecting to the manhole near the well, where a pressure relief pressure-sustaining valve is installed.

Jack Weber and Russ Dahlgren toured the hillside and plateau adjacent to the County well to evaluate sites for a well to serve the District. There are no geologic indications that such a well would be successful.

- **Bridger-Teton National Forest:** The AVI Team met with the Special Uses Permit Coordinator on August 20, 2010.

The Coordinator would not accept preliminary paperwork for a SUP for a pipeline from the Teton County well unless it could be documented in writing that there were no off-Forest options regardless of cost. When it became apparent through the evaluation of other alternatives that the County well or a new well in the vicinity were the only viable options for a new supply, AVI prepared the documentation required by the Forest Service, and submitted additional information answering questions from the Coordinator regarding the first submission.
- **Wyoming Department of Transportation:** AVI met with WYDOT in Cheyenne, Wyoming on two occasions. Once to acquire the bore logs for the support pillars of the Flat Creek and Snake River bridges on Highway 89 west of the District. The bore logs confirmed that the saturated sands and gravels at both locations are shallow and found in thin bands. Although there are excellent wells in the Snake River alluvium at Evans Construction and in the Flat Creek alluvium at Old West Cabins, WYDOT bore logs indicate there is no guarantee of a well meeting District requirements in either location. In a second meeting, WYDOT provided plans for the widening of Highway 89 and construction of a bike/pedestrian path west of the District. All new construction will occur within the existing right of way. The footprint is important because a successful well west of the Highway 89 requires a bore starting and ending outside the right of way.

- **Representatives of Mackenzie Well Owner:** On May 17, 2011, AVI met at the Mackenzie well site with members of the District Board and representatives of the well owner. The representatives said the owner was not interested in selling only the well or water system, but would entertain an offer for the well and the storage/distribution system serving the subdivided 40-acre parcel. See Section 12 Identification of Alternatives, Prioritization of Recommendations for a discussion of this option.
INTRODUCTION
The Squaw Creek Water District’s need for a supplemental water supply has been the subject of thorough and on-going analysis by the Wyoming Water Development Office. As District population increased through buildout of existing lots and the incorporation of neighboring subdivisions, the initial spring source proved inadequate to meet user demand. WWDO authorized a series of studies.

PREVIOUS WWDO STUDIES
The AVI Team reviewed the following reports prior to initiating the work described in this study.

- **Level I Study Squaw Creek Water Supply Project:** AVI Professional Corporation in association with Lidstone and Anderson. October, 1991.
- **Draft Report, Construction and Results of the Squaw Creek Water District No. 1 Test Well:** Lidstone and Anderson, Inc. March 3, 1993.
- **Groundwater Exploration Grant Final Report:** Rendezvous Engineering and Hinckley Consulting. December 28, 2009

The conclusion drawn from this work is that additional wells into either the Camp Davis Formation or the alluvium of Game Creek are not warranted. The WWDO project manager directed AVI to pursue other options.

In addition to WWDO studies, the AVI Team located and reviewed other sources of information relating to the District and geologic conditions in the project area.

ADDITIONAL INFORMATION

- Wyoming State Engineer records for wells and springs in the project area, including the Teton County No. 1 well, Wadsworth well, Mackenzie well, Old West Cabins well, Evans Construction wells, and the Teuscher Springs.
- WYDOT construction plans for the widening of U.S. Highway 89 in the area near the Squaw Creek Water District.
- WYDOT records of bridge piling bore holes over the Snake River and Flat Creek near the Squaw Creek Water District.
- FEMA Flood Plain maps, Confluence of Flat Creek and the Snake River.
- Love and Love, Geologic Mapping of Squaw Creek District and environs.
- Geologic Cross Section of Squaw Creek District area, confluence of Snake River and Flat Creek.
- Water Quality and Consumer Confidence Reports.
- United States Environmental Protection Agency Sanitary Survey.
- District water quality records.
- Records of water metered through the spring pump and end user meters.
- District assessment and billing records.

PLANS, ZONING ORDINANCES, ANNEXATION POLICIES

- **Wyoming Game and Fish Department:** During initial research into viable water supply options, AVI contacted the Wyoming Game and Fish Department (WGFD) concerning access to the South Park Wildlife Habitat Management Area along Flat Creek near Game Creek Road. While the initial response from the Department was positive, an application for a Special Use Permit (SUP) to construct test wells was denied. This denial was due in part to Federal participation in the purchase of the area and in part to a determination by the Department that public water system wells were not compatible with the use plan for the area.

- **Bridger Teton National Forest:** After the South Park option was eliminated from consideration, attention was turned to the Teton County No. 1 well. Because the well is located on the National Forest, a Special Use Permit (SUP) is required to construct a new well, a pipeline from a well to the District’s system, and an access road. Forest Service personnel would not consider a SUP application unless it could be demonstrated that there were no off-forest options. The District submitted a pre application and supporting documentation. Based on this information, the Forest determined there are no off-forest options and agreed to receive a formal application. A temporary easement is required for construction of test well in the vicinity of Teton County No. 1 well. If the test well is successful, the Forest Service will review the application for a permanent easement.

- **Teton County:** Certain roads within the District boundaries are not constructed to Teton County standards. During discussions of District acquisition of Teton County No. 1 and the Mackenzie well, county staff raised the issue of improvements to District roads as a condition of access to either well. Construction of a new test does not require County participation, so this issue is moot.

No other plans, ordinances, polices, or regulations were identified which may affect this project.
IMPROVEMENTS RECOMMENDED IN PREVIOUS REPORTS

   - Reconstruct the surface runoff ditch around the spring to divert runoff. Completed in conjunction with spring reconstruction in 1996.
   - Seal the top of the spring collection area with an impervious membrane. Completed in conjunction with spring reconstruction in 1996.
   - Repair the fence around the spring to make it animal proof. Fence appears secure from large animals.
   - Keep the gate to the spring locked and lock the storage tanks. On May 17, 2011, the tanks and gates to the spring were locked.
   - Installation of an additional 30,000 gallons of storage. Recommendation implemented with two 15,000-gallon fiberglass tanks in 1998.
   - Installation of a 6” fire hydrant on 6” main. Not installed.
   - Add chlorination equipment. Installed.
   - Stockpile standby equipment include pump motor, generator, chlorination equipment, and all necessary appurtenances for proper connections. No standby equipment stored on-site.
   - Loop all dead-end mains or install flushing valves at dead ends. System is not looped, but flushing valves installed and exercised annually as part of the maintenance schedule for the District.
   - Drill a deep groundwater well. Squaw Creek Water District No. 1 Test well commenced on September 11, 1992 and abandoned due to adverse drilling conditions.

   - The design, construction, and testing of two Game Creek alluvial wells. Successfully completed.
   - The design and construction of a 4-inch DIP transmission line from the alluvial wells to the District spring. PVC pipe was installed.
   - The design and construction of a new 4” DIP transmission line from the District spring to the existing storage tanks. PVC pipe was installed.
   - Design and construction of water treatment (chlorination and bag filtration facilities at the District spring.) Completed. The chlorination system is in place and functional but filtration system is not in use.
   - Design and installation of a new booster pump at the District spring. Completed.
   - Design and construction of 20,000 gallons of additional storage at the current storage location. Completed with the installation of two 15,000-gallon tanks.
   - Design and construction of a 6” hydrant at current storage location. Not completed due to difficult access for fire trucks.
3. Environmental Protection Agency Region VIII Sanitary Survey, Squaw Creek Water District July 22, 2009 See Appendix B.

- To prevent contamination of well No. 1 and well No. 2 concrete slabs approximately 4’X4’ should be installed around the casings. Before installation of the slab, the area immediately around the well should be mounded so that surface water or other liquids drain away from the wellhead. As of September 11, 2012 no slabs had been installed.

- The well cap on well No. 2 is loose and needs to be secured. Quality, sealed, and vented well caps are necessary for proper operation and to keep well supplies sanitary. Seals should be inspected at least annually and replaced as necessary. Well cap has been secured.

- The rubber gasket on well No. 2 needs to be replaced. It is currently hanging loosely by the side of the head. Seals should be inspected at least annually and replaced as necessary. Gasket has been replaced.

- The vertical casing used as a spring box is not watertight. A watertight properly sealed lid or cover is necessary to avoid contamination of the water source. Lid has been properly sealed.

- Chlorine residual was undetectable at POE and only a trace residual was detectable within the system. A minimum residual level of 0.2 mg/l should be maintained at all times. More reliable chlorine residuals might be measured at POE if the injection point and sampling point were reversed. Currently, chlorine residual at POE is measured before the injection point. No changes in the plumbing of the chlorine injection system were observed on May 17, 2011.

- The spring overflow line was inaccessible due to a large amount of brush. The area should be thinned out so that inspection and repairs can be made if necessary. Brush has been cleared.

- The overflow/drain line for the tanks should be downward facing and a minimum of 3 pipe diameters above the ground. Drain line issues not corrected.

- A written operation and maintenance manual should be provided so that all operators follow the same procedures. Written procedures should cover items such as daily operations/inspections (checklist), startup and shutdown procedures, repair and maintenance schedules and response to equipment failure and other emergency conditions (contingency plans). Manuals may also contain any other information that is pertinent to the PWS. This would enable the operator to have all the PWS information in a single reference source. No manual was available for inspection.

- A source water assessment and protection plan should be developed. Information can be found at the website deq.state.wy.us. No source water assessment and protection plan was available for review.


- Rendezvous recommended construction of a second test well immediately adjacent to Squaw Creek No. 3 well. This second test well (Squaw Creek No. 4) was completed but was not productive.
Rendezvous recommended rehabilitation of the existing Game Creek alluvial wells (Squaw No. 1 and Squaw No. 2). However, investigation during the present study led to the conclusion that such work would not significantly increase production.
INTRODUCTION
The Squaw Creek District system consists of two wells, a spring collection system, a transmission line from the wells to the spring, a transmission line from the pump house to four underground storage tanks, and distribution lines providing water to 72 residential service connections.

WATER SUPPLY – GAME CREEK WELLS
Squaw #1, also known as Game Creek #1, SEO Permit No. UW 102953 is completed in the unconfined alluvial aquifer of Game Creek. The well is 37’ deep and cased to the bottom with 12” casing, screened from 13’ to 28’ bgs. Squaw #2, also known as Game Creek #2, SEO Permit No. UW 102954 is completed in the same alluvial aquifer and is 40’ deep with well screen from 17’ to 32’ bgs.

There is confusion regarding the numerical designation of the Game Creek wells. Maps submitted with previous reports are in conflict as to which well is which. In discussing the video log performed on one of the wells on May 31, George Putnam of Pierson Land Works made the following observation:

“Per your questions, the well we looked at (video logged) was the one further upstream. I believe this is referenced as Game Creek Well #2 on the permit with the State Engineer. Interestingly, according to Brendan Shulte, at the pump control box located next to the parking lot (near Well #1) the labels for the wells are incorrect - or at least confusing. The stenciled label Well #1 has a hand written Well #2 above it in marker and the stenciled label Well #2 has a Well #1 above it hand written in marker. We should confirm this with Dave Stickel and recommend to the District that this be corrected.”

See Task 4 for detailed information on the wells.

WATER SUPPLY – DISTRICT SPRING
The District spring was the original water source for the first developments in what is now Squaw Creek Water District. The initial developments were Badger Heights (8 lots), C – B Ranch (6 lots), LaBonte Ranches (10 lots), Porcupine Ridge (6 lots), Squaw Creek Draw (6 lots), Squaw Creek Ranch (4 lots), Western Tanager (9 lots), and 17 additional lots or segregated tracts not identified by name.

See Task 4 for detailed information on the spring.
When SEO Permit No. 27641 was issued, it described the spring as follows: “Squaw Creek is a live stream flowing year-around, originating naturally at a spring area located approximately at the pump house. Typical flow from the spring is in the order of 30 gpm. Squaw Creek north of the spring area is intermittent flow, mainly occurring during spring run-off.” The appropriated quantity was 0.111 cfs or approximately 50 gpm.

The wells and the spring have potential for surface water influence, i.e., surface water infiltrating into the source. If evidence of infiltration is present, the source would be subject to the Surface Water Treatment Rule (SWTR). EPA would require water from the source be treated as surface water in a conventional water treatment unit or the source be abandoned. See Section 12 of this report for recommendations on steps the District should take to protect its water sources. As noted in Section 5 Water Quality of this report, the District is current with all water quality testing requirements. No evidence of microbiological contamination has been found. All other water quality parameters are within regulatory limits.

TRANSMISSION LINES

The transmission system consists of approximately 4,400 feet of 4” PVC line between the wells and the spring pump house and approximately 2,600 feet of 4” PVC line between the spring and the storage tanks.

STORAGE TANKS

System storage consists of two steel and two fiberglass underground tanks located at elevation 6725’ at the southeast corner of the District. The steel tanks were installed in 1993 and are 10,000 gallons each. The fiberglass tanks were installed in 1998 and are 15,000 gallons each.

DISTRIBUTION SYSTEM

The District’s distribution system consists of approximately 21,000 feet of 6” distribution line carrying water to 72 service connections in two pressure zones. As is typical with systems serving widely dispersed residences on acreages, there are several dead end lines which are flushed annually as part of the District’s scheduled maintenance. The District reports that when usage exceeds 30,000 gallons per day, customers complain of air in the distribution system. Air relief valves or hydrants to vent entrained air are not present on the system.

AVI and the WWDO project manager discussed the value of developing a hydraulic model of the system. The project contract requires Bentley/Haestad Methods WaterCad or WaterGems software for this task. The first step in completion of an accurate model is a survey of major system components and identification of key nodes. AVI and the Project Manager agreed the cost the survey and associated work to build a hydraulic model outweighed the benefits from the work product. Mapping water system components with a GPS unit capable of sub-meter accuracy was also discussed. Again, benefits were outweighed by cost.
Secondary work products such as a system hydraulic model and a system map of sub-meter accuracy were considered supplemental to the District’s higher priorities of an additional supply. As alternatives were considered and fatal flaws identified, preservation of funds for test wells and/or pump tests became paramount.

The project budget was consumed in the evaluation of alternatives and an aquifer test of the Teton County Well. The test required included additional travel and a supplemental report. As a result of this additional work, contract budget was not available for system modeling, detailed mapping, development of an operating manual, and preparation of a source water protection plan.

EVALUATION OF SYSTEM COMPONENTS

A thorough evaluation of system components was handicapped by the lack of reliable and consistent data, especially in regards to production capacity. Also missing is an operations manual which describes how the system operates. See more on system operation issues in Task 7. With the exception of a few maintenance issues, the District’s transmission and distribution systems are capable of meeting current and projected future demand. The variability of production from the wells and spring is a problem during periods of high demand.

UNACCOUNTED FOR WATER

The District provided information on water production and water use. The only record of water produced is generated by the meter at the spring pump station. End-use meters are the other source of water quantity information. There is no unmetered use. In periods of low demand in 2008, up to 20% of water metered through the spring pump station is not accounted for through use meters. In summer months when demand is high, the amount of water unaccounted for drops to less than 5%. Information provided by the District for 2010 indicated that unaccounted for water was 11.5 to 13.5% of the water metered through the spring pump. This amount of loss is slightly higher than normal for a public water system, but not high enough to justify a leak detection study.

CAPACITY OF SPRING BOOSTER PUMP

During the field inspection on May 17, 2011, the system operator said the spring booster pump was capable of lifting only 80 gpm to the storage tanks regardless of the combined production of the spring and wells. However, it should be understood that additional water from a supplemental source would not be devalued by the 80 gpm limitation. As the system now operates, pumping from both the wells and the spring must be interrupted to allow the source to recover. In periods of drought or low runoff, these “rest” periods can be 12 to 18 hours. So a new source providing the District’s target yield of 35-50 gpm could be delivered to the storage tanks when the spring and Game Creek wells are off-line. An upgraded Supervisory Control and Data Acquisition (SCADA) system would be required to manage three sources efficiently.
AIR IN SYSTEM

AVI was unable to identify the cause of water user complaints about air in the system when water use exceeds 30,000 gallons per day, with peak instantaneous and peak hour demands relatively higher. Regardless of the source, air relief valves at the high points of each of the two pressure zones would eliminate user complaints. A less expensive option is the installation of 2” flushing hydrants at high points in the two pressure systems. These hydrants could be purged when complaints of air in the system are received.

SYSTEM MAP

The map on the following page was created by Pierson Land Works of Jackson, Wyoming. The base map graphic (2009 Color Aerial Photography, 1 ft. and 1 m.) was obtained from the Teton County Geographic Information System. Note that the District Boundaries encompass most of Section 35, T40N, R116W, 6th P.M.
INTRODUCTION

The AVI Project Team gathered information on the spring and the two wells currently supplying potable water to the Squaw Creek District. Other wells in the area were identified and evaluated during the search for an acceptable supplemental supply source.

DISTRICT WELLS

Squaw No. 1, SEO Permit No. U.W. 102954 (also known as Game Creek No. 1)

- Capacity: Permitted for 50 gpm.
- Pumping Rate: Capacity is 40 gpm. Actual sustainable pumping rate fluctuates with local and seasonal conditions. Neither Squaw No. 1 nor Squaw No. 2 are equipped with meters, so determination of actual production is an estimate based on the total gallons of water delivered to the District’s storage tanks by the wet well pump at the spring. Data from this source indicate that production is probably less than 20-25 gpm.
- Well Construction: Completed on May 2, 1997 to a depth of 37 feet. 12” diameter steel casing set from ground level to 13 feet and from 28 to 37 feet bgs. 12” slotted screen (0.050 slot) set from 13 feet to 28 feet. Cemented from ground level to 8 feet 3 inches.
- Original Pump: Aerometer A-plus stainless steel super submersible set at 28 feet with a capacity of 40 gpm. Horsepower not specified, assumed to be 5 HP.
- Hydrogeologic Unit: Quaternary Alluvium of Game Creek.
- Yield upon completion was reported to be 30 gpm. During construction, the Squaw No. 1 was pumped at 38 gpm with 9.8 feet of drawdown after 29 hours. When pumped at 30 gpm, drawdown was 7.0 feet after 39 hours.
- In August, 2011 Squaw No. 1 was video logged by Weber Drilling in conjunction with servicing the pump. The video was of poor quality in black and white. The camera used was not capable of rotating to view the condition of the slotted screen, but from the limited observation the screen appeared to be in good condition with no significant blockage or encrustation. As noted, the declining yield of this well is probably due to seasonal and drought cycle conditions and not to the condition of the well bore or screen.

Squaw No. 2, SEO Permit No. U.W. 102954 (also known as Game Creek No. 2)

- Capacity: Permitted for 50 gpm.
- Pumping Rate: Capacity is 40 gpm. Actual sustainable pumping rate fluctuates with local and seasonal conditions, but is between 20-25 gpm based on available records.
Well Construction: Completed on May 2, 1997 to a depth of 42 feet. 12” diameter steel casing set from ground level to 17 feet and from 32 to 42 feet bgs. 12” slotted screen (0.050 slot) set from 17 feet to 32 feet. Cemented from ground level to 8 feet 3 inches.

Original Pump: Aerometer A-plus stainless steel super submersible set at 33 feet with a capacity of 40 gpm. Horsepower not specified, assumed to be 5 HP.

Hydrogeologic Unit: Quaternary Alluvium of Game Creek.

During construction in September of 1994, the well was pumped at 23 gpm for 40 hours with 6 feet of drawdown. When pumped at 45 gpm, drawdown was 12.0 feet after one hour. Recovery to static water level occurred within an hour, even when the well was pumped at 37 gpm.

The District estimated total yield from each well at 25 gpm in its 2009 application to the Water Development Commission for additional Level II analysis.

DISTRICT SPRING

The spring collection system (Permit No. UW 27641) consists of 270 feet of perforated 6” PVC pipe installed six to eight feet below ground surface as part of a rehabilitation project completed in 1998. The collection system feeds a 14” diameter wet well. A 10 HP US Electric motor and Peerless pump with a variable frequency drive lifts water from the pump house to the four underground storage tanks. Previous reports and information from the District’s Operator give the yield of the spring in a range from 12 to 40 gpm. As with the wells, yield is dependent on shallow groundwater and is influenced by seasonal variations and drought cycles.

To achieve disinfection of water delivered to end users, sodium hypochlorite is injected at the pump house at a dosage of 0.2 mg/l. The EPA Sanitary Survey notes that chlorine residual was “…undetectable at POE (Point of Entry) and only a trace was detectable within the System. A minimum residual level of 0.2 mg/l should be maintained at all times.”

According to DEQ District Engineer James Brough, and to Section 16 of the EPA Sanitary Survey, the greater than or equal to 0.2 mg/l residual is a Surface Water Treatment Rule requirement that does not apply to ground water systems. Ground water systems are required to have a detectable residual throughout the system. The pump house contains a filtration system that is not currently in use.

ABILITY TO MEET PRESENT AND FUTURE DEMAND

Determining the ability of the current water supply sources to meet present and future demand in the District is complicated by several factors:

- Absence of accurate and detailed records of present use. District records contain only two reliable data points: total gallons per month through the spring pump to the storage tanks and the monthly use recorded by individual customer meters. All other information, including the daily amount delivered by the spring pump and daily customer use, is derived from these two data points by averaging monthly totals. No maximum instantaneous, maximum hour, or maximum day demand can be documented. The
maximum average day use derived by averaging monthly totals from existing records is 27,000 gallons per day between July 20 and August 17, 2008. The District provided anecdotal reports of maximum day demand up to 40,000 gallons in 2010. Assuming a resident population of approximately 220 people, 40,000 gallons per day equates to 180 gallons per person per day for maximum day demand. Average day per capita use is approximately 122 gallons, well within the range for other districts and municipalities in Wyoming. A 2009 WWDO survey of 108 Wyoming public water systems reports an average use of 155 gallons per person per day. To deliver 40,000 gallons per day without drawing down the storage tanks requires the wells and spring to deliver 28 gallons per minute for 24 hours. Production from both sources of 35 gpm for 24 hours is required to fill the District’s 50,000 gallons of storage, assuming the tanks are completely empty. Records from 2012 show the following averages:

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Average Gallons per Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>12/23/11 to 4/18/12</td>
<td>8602</td>
</tr>
<tr>
<td>4/18/12 to 5/24/12</td>
<td>9359</td>
</tr>
<tr>
<td>5/24/12 to 6/24/12</td>
<td>17,113</td>
</tr>
<tr>
<td>6/24/12 to 7/20/1</td>
<td>25,277</td>
</tr>
<tr>
<td>7/20/12 to 8/20/12</td>
<td>21,374</td>
</tr>
</tbody>
</table>

- Discrepancies in reported yield. Various sources describe substantially different yields from the wells and the spring. (See Task 2, Review of Existing Information for a list of reports and Appendix A for well yields recorded during construction.) No attempt was made during this study to correlate seasonal fluctuations in Game Creek surface flows with well production because there are no stream gauges on Game Creek. Longer-term drought cycles were not reviewed. Based on reported production and the shallow Quaternary Alluvial sources for both the wells and spring, yield is affected by seasonal changes in surface flows and drought cycles. Consequently, the District can expect periods of water shortage from existing sources now and in the future.

- Vulnerability of existing sources to be declared Ground Water Under Direct Influence of Surface Water. A significant threat to the District’s water supply is the possibility that the wells and/or spring are under the influence of surface water. This determination can be made based on characteristics of the source and water quality tests. See the EPA Sanitary Survey in Appendix B for the Assessment Document used to evaluate vulnerability of the District’s shallow groundwater sources. Water quality tests showing presence of microbiological contamination (Coliform, Giardia cysts, etc.) could lead to a directive from EPA for the suspect source to be taken off-line or treated under Surface Water Treatment Rule regulations.

Water demand and supply calculations were developed from estimates and assumptions based on the District’s records. Using the most conservative estimates of yields and user demands, the District needs a new, reliable source capable of delivering a steady 35-40 gallons per minute to the system. In addition to meeting current demand, a new source
could provide redundancy of supply not only in times of high use but also in case of an
interruption of water from the existing sources due to contamination or a determination of
ground water under the influence of surface water.

In order to make the best use of the current supply, the District has implemented a tiered
water rate structure that includes penalties for excessive use. Signs are posted at the
entrance to the area informing residents of periods of high demand and requesting
voluntary reductions in water use.

Future demand could be increased by build out of the vacant lots within the District
boundaries. Depending on development decisions, an additional five to eight homes
could be constructed on these lots. Eight homes using the same amount of water in an
average month would increase demand by approximately 3,000 gallons per day.

Given conditions in 2012, the District is unwilling to provide water to existing or future
users outside its boundaries unless a reliable supplemental water source is located.

**WATER SUPPLY ALTERNATIVES TO MEET DEMAND**

In identifying and evaluating alternative water sources for the District, AVI used several criteria:

- Potential to meet the District’s goal of 35-40 gallons per minute.
- Reasonable proximity of the District.
- Reasonable pumping head from the source to the storage tanks.
- Access for test wells, road rights of way, pipeline easements.
- Private or public landowners between the source and the District.

The following ground water source options were evaluated. Due to the high cost of conventional
water treatment, no surface water sources were considered. Details are found in Task 12:
Identification of Alternatives and Prioritization of Recommendations.

- Flat Creek alluvial test wells in the South Park Wildlife Habitat Management Area.
- Convert Squaw Creek Test well No. 3 to a production well.
- Purchase Mackenzie well and water system or water from that system.
- Construction of a well at Old West Cabins.
- Snake River alluvial well on private property.
- Flat Creek alluvial well on private property.
- Nugget Formation well within District boundary.
- Camp Davis Formation well within District boundary.
- Purchase of Teton County No. 1 well
- Construction of a new well in the vicinity of Teton County No. 1 well.

In addition to new ground water sources, AVI evaluated the alternatives not involving
construction or acquisition of a new well:
- Install additional storage capacity
- Purchase of water from the Town of Jackson
- Purchase of water from Rafter J Subdivision
- Purchase of water from the Old West Cabins
- Purchase of water from the Wadsworth well
- Replace system pumps and upgrade control system
- Rehabilitate Game Creek wells

AVI team gathered information about wells in the area. While these wells are not available to the District, records provided information used to evaluate other options. As noted in another section of this report, the District was required to demonstrate to the Bridger Teton National Forest that there are “no off-forest options” for a water supply before the Forest Service would consider a Special Use Permit for a new test well, an access road, or a pipeline on Forest land. Forest Service requirements were an additional reason for reviewing these wells.

- Evans Construction Company wells completed in the Snake River alluvium. Production from wells at this location is reported in the range of 100 to 150 gpm.
- Wadsworth well completed in the Camp Davis Formation. The reported production of this well is 20 to 30 gpm. Squaw Creek Test wells No. 3 and No. 4 constructed during the Rendezvous Study were located based on proximity to the Wadsworth well.
- Old West Cabins wells in the Flat Creek alluvium. Production reported in the SEO Statement of Completion reports production of 100 gpm for each of two wells.
INTRODUCTION

The Squaw Creek Water District maintains records of water quality testing and is current with all testing and reporting requirements. The District provided copies of the Annual Drinking Water Quality Report – Annual Consumer Confidence Report for calendar years 2008, 2009 and 2010. The reports are summarized below. The Environmental Protection Agency provided the most recent Sanitary Survey conducted on July 22, 2009. See Appendix B and C for copies of the Annual Consumer Confidence Reports, the Sanitary Survey, and water quality results from samples taken on August 31, 2010. Observations and recommendations from the Survey are reported in this section. The recommendations are also addressed in Task 12, Identification of Alternatives, and Prioritization of Recommendations.

CONSUMER CONFIDENCE REPORTS, INDIVIDUAL DISTRICT TEST RESULTS

Consumer Confidence Reports for calendar years 2008, 2009, and 2010 were reviewed. No microbiological contaminants were identified (total Coliform, fecal Coliform, e-coli, turbidity.)

Radioactive contaminants (tested only for Alpha emitters) were at Non Detect (ND) levels. The few inorganic contaminants identified in samples (barium, copper, fluoride, lead, and nitrate) were well below MCL for the respective constituents.

Tests for synthetic organic contaminants including pesticides and herbicides were all ND, as were the tests for volatile organic contaminants.

The Consumer Confidence Report for 2010 was similar to 2008 and 2009 reports. There were no changes in the levels of listed contaminants, reflecting a short-term consistency in the District’s water quality. Results reported in the Consumer Confidence reports were verified by individual test results.

EPA SANITARY SURVEY

The Sanitary Survey completed in July of 2009 made recommendations for system improvements to ensure the water supply and delivery system is protected from possible contamination. These recommendations should be implemented, either as part of system-wide improvements funded through a WWDO Level III project or independently by the District.

- To prevent contamination of Well #1 (Squaw #1) and Well #2 (Squaw #2), a concrete slab approximately 4’ by 4’ square should be installed around the casing. Before installation of the slab, the area immediately around the well should be mound so that surface water or other liquids drain away from the wellhead.
The well cap on Well #2 is lose and needs to be secured. Quality sealed and vented well caps are necessary for proper operation and to keep well supplies sanitary. Seals should be inspected at least annually and replaced as necessary.

The rubber gasket on Well #2 needs to be replaced. It is currently hanging loosely by the side of the wellhead. Seals should be inspected at least annually and replaced as necessary.

The vertical casing used as a spring box is not watertight. A watertight properly sealed lid or cover is necessary to avoid contamination of the water source.

Chlorine residual was undetectable at Point of Entry (POE) and only a trace residual was detectable within the system. A minimum residual level of 0.2 mg/l should be maintained at all times. A more accurate and reliable chlorine residual might be measured at POE if the injection point and sampling point were reversed. Currently chlorine residual at POE is measured before the injection point.

The spring overflow line was inaccessible due to a large amount of brush. The area should be thinned out so that inspections and repairs can be made as necessary.

The overflow/drain line for the tanks should be downward facing and a minimum of three (3) pipe diameters above the ground.

A written operation and maintenance manual should be provided so that all operators follow the same procedures. Written procedures should cover items such as daily operations/inspections (checklist), start-up and shutdown procedures, repair and maintenance schedules, response to equipment failure, and other emergency conditions (contingency plans). Manuals may also contain any other information that is pertinent to the Public Water System (PWS). This would enable the operator to have all the PWS information in a single reference source.

A source water assessment and protection plan should be developed. Information can be found at the website deq.state.wy.us.

Refer to the report section Task 2, Review of Existing Information for details on the implementation of these recommendations.

GROUNDWATER UNDER THE INFLUENCE OF SURFACE WATER

Previous reports and the EPA Sanitary Survey expressed concerns that the Squaw Creek water supply – two alluvial wells and a spring collection system – may be “Ground Water Under the Direct Influence of Surface Water (GWUDISW). GWUDISW is subject to the Surface Treatment Rule.

If the wells or the spring are determined to be GWUDISW, then the source would have to be treated according to the Surface Water Protection Rule or taken off-line. Although the sources are considered “at risk” because the wells and spring draw from shallow sources, there has been no determination that either the wells or the spring are currently GWUDISW.
In order to evaluate the degree of risk and/or the need for additional source evaluation, the EPA uses an assessment document that assigns points for various components of risk or for water quality samples that exceed the Maximum Contaminant Levels (MCL).

A score greater than or equal to 40 indicates a need for further assessment. Both of the District wells scored 15 points because the casings are not properly sealed (such as no concrete slab extending 4 feet around the casing and sloping away from the casing.) See the first bullet item from the Sanitary Survey recommendations. This score could be reduced if the District installs appropriate slabs around each well casing.

The District Spring scored 25 points on the Assessment sheet. Ten points are allocated because the source is a spring. An additional 15 points are given because the “spring box is not watertight with a watertight overlapping lid or cover.” The District could reduce the ratings for the wells and the spring with a minimal amount of maintenance work. It would be advisable for the District to address these issues as soon as possible to avoid further scrutiny of its system and a possible GWUDISW determination.

HOUSEHOLDS USING SEPTIC SYSTEMS

All of the 72 residential structures in the District have individual septic systems. However, there are no septic systems within 100 feet of either the wells or the spring. There have been no water quality test results on record of any coliform contamination or presence of nitrates in excess of 2.0 parts per million (PPM). The maximum nitrate contaminate level is 10 PPM. Individual septic systems are not impacting the District’s water quality. While an impact could occur in the future, the location of the District’s source water, the distance of septic systems from the sources, and the characteristics of geologic formations in the area make contamination from septic systems unlikely.
INTRODUCTION

The Squaw Creek Water District holds four water rights as described below. Permits for the Squaw No. 1 and Squaw No. 2 have not been adjudicated by the State Engineer’s Office. A correct map documenting the location of beneficial use was submitted to the State Engineer’s Office (SEO) in 1998. Due to the call for regulation of the District spring by a downstream appropriator, the SEO did not proceed with the inspection necessary to complete the adjudication process. During this study, WWDO contacted the SEO regarding adjudication of the wells. As a result of this inquiry, paperwork for adjudication was placed in active status and the inspection is pending at the time of this report.

The SEO has no record the District has submitted the annual reports required in permit conditions for Squaw No. 1 and Squaw No. 2. Neither well has the meter required by the SEO to measure the total quantity of water produced from each well, nor have the semi-annual static water level measurements been submitted. The District should either install meters and comply with other permit conditions or submit a written request for a waiver to the SEO.

SQUAW CREEK DISTRICT WATER RIGHTS

Squaw Creek Water District Pipeline water right is for a surface water spring development. Initially, the spring was the only source of water for District residents.

- State Engineer Permit No. 27641, Priority date, December 29, 1981.
- Location – NE1/4SW1/4 of Section 35, Township 40 North, Range 116 West.
- Use – Miscellaneous (Subdivision).
- Appropriated quantity – 0.111 CFS (~50 gpm).

Squaw No. 1 well (Game Creek No. 1) was developed by Lidstone & Anderson in the Level II work completed in November of 1994.

- State Engineer Permit No. U. W. 102953, Priority date, July 5, 1996.
- Location SE¼ SW¼ of Section 26, Township 40 North, Range 116 West.
- Use – Miscellaneous (Subdivision).
- Appropriated Quantity – Tested at 38 gpm
- Permit Status – Not adjudicated (Beneficial Use Notices and Map have been submitted. Adjudication pending field inspection by State Engineer’s Office Personnel.)
- Permit Conditions – Annual report of total production and static water level required. No reports have been filed.

**Squaw No. 2 well** (Game Creek No. 2 well) was developed by Lidstone & Anderson in Level II study completed in November of 1994.

- Location – SE¼ SW¼ of Section 26, Township 40 North, Range 116 West
- Use – Miscellaneous (Subdivision).
- Appropriated Quantity – Tested at 45 gpm.
- Permit Status – Not adjudicated (Beneficial Use Notices and Map have been submitted. Adjudication pending field inspection by State Engineer’s Office Personnel.) Permit Conditions – Annual report of total production and static water level required. No reports have been filed.

**Squaw Creek well No. 3** was completed in August 2006 during the Rendezvous Groundwater Grant Project. Sustained yield was insufficient to justify costs of connecting the well to the District’s system. During present study, it was discovered that the Temporary Permit had expired. Dahlgren Consulting re-filed in July of 2010 as the District requested and received an extension to December 31, 2013.

- State Engineer Permit No. U.W. 194150 Priority Date, July 30, 2010
- Location – SE ¼ NE ¼ Section 2 Township 39 North, Range 116 West on Bridger-Teton Forest
- Use – Miscellaneous
- Appropriated Quantity – 80 gallons per minute (Note: During pump tests conducted in 2006 and 2007, the Squaw Creek No. 3 well could not sustain a production rate of 5 gpm.)
- Permit Status – Application for Permit to Appropriate Ground Water
- Permit Conditions – meter, annual report.
- The value of the water right for Squaw Creek Test well No. 3 is limited by the difficulties of acquiring a Special Use Permit from the Forest for conversion of the well to production status or for a pipeline from the well to a point of use on or off the Forest. However, the District should take the necessary steps to keep this permit in active status because it has value and could be sold to another user.

**GENERAL INFORMATION**

The original Squaw Creek Water District water right filing was permitted as a surface water right with the State Engineer under Permit No. 25896 with a priority date of April 17, 1978. This permit was ultimately cancelled by the State Engineer due to the failure of the permittee to submit the Notice of Commencement of Construction.
The cancellation is significant because another appropriator filed for and was granted ground water rights immediately downstream of the Squaw Creek Spring. These rights were filed as Leaf Spring No. 1 and Bed Spring No. 2, Permits No. U. W. 50088 and U.W. 50087, respectively. The priority dates are September 21, 1979, making these two water rights senior to the Squaw Creek Spring water right under the District’s later filing, Permit No. 27641 (priority 12/29/81).

The holder of the senior water rights called for water right regulation of the Squaw Creek spring in August, 2004. The call for regulation was very contentious. Involved in the discussions were the local water Commissioner, State Engineer Personnel, a Squaw Creek Water District Board member, a consultant for the State Engineer, the Superintendent of Water Division IV, and the owner of Leaf Spring. The issue was resolved when the Leaf Spring owner used a backhoe to dig out and clean the spring area which enabled him to draw the appropriated quantity from Leaf Spring.

There has been no further rights issue for the three springs since 2004. However, the existence of senior rights was considered a detriment to rehabilitating the District Spring to increase yield. If this option were pursued, the senior right could call for regulation of the District spring, negating any increase in yield.

As noted in the summary above, the permits for Squaw No. 1 and Squaw No. 2 Wells contain conditions which call for each well to have a meter acceptable to the State Engineer which is capable of accurately measuring the total quantity of water produced. Using information from this meter, the District is required to submit annual reports no later than February 15 of each year stating the total amount of water produced from the well each month during the previous calendar year. The report must identify the well by name, location, permit number and must identify the type of meter used for measurement.

The report must also contain at least two semi-annual measurements of the static water level in the well as measured 24 consecutive hours after pumping has ceased. The dates the measurements were obtained and the period of time the well was “shut in” prior to obtaining the measurements must be specified. An examination of State Engineer records found no reports had been submitted as of February, 2011. If reports had been prepared and submitted, the information would be useful in managing the system and would provide information on system operation. The current study was handicapped by the lack of baseline data on well and spring performance.

To maintain existing water rights in good standing, the District should contact the State Engineer’s office to schedule an adjudication field inspection for Squaw Creek No. 1 and No. 2 wells. The inspection will establish the adjudicated quantity of water under each permit. The purpose of the adjudication field inspection should be taken into account when scheduling the inspection. It will be to the District’s advantage in maximizing its adjudicated quantity to schedule the inspections when the wells are likely to be producing the maximum amount, i.e., the alluvium is saturated after spring runoff. Installation of a meter on each well should be completed before the inspection.

**OTHER WATER RIGHT ISSUES AND CONSIDERATIONS**

Two of the options under consideration as a supplemental source of supply could present water rights issues if the alternatives are pursued in a Level III project.
Mackenzie well and the Teton County No. 1 well have existing water rights and priority dates. Any arrangement to share water from either well between the current water right holder and the District would result in difficulties associated with priority dates and regulation or administration by the State Engineer’s Office. While not a fatal flaw from a regulatory or technical standpoint, the potential issues were a factor in recommending construction of a new well which would be owned by the District.

Ownership of all system components necessary for the State to operate the system is a necessary condition to provide collateral for a WWDO loan. Two water rights with different priority dates in the same well could result in the senior right (current owner) calling for regulation of the junior right (District). This situation is unacceptable to the WWDO.

WWDO Project Manager Kevin Boyce provided the following comments specific to acquisition of the Mackenzie well by the District. However, the issues relate to the purchase of any well and water rights.

“Existing adjudicated water rights are for domestic and miscellaneous use on the five Mackenzie lots only. Acquiring the existing water rights does not grant the District any water or use on District lands. The District would have to acquire an additional enlargement permit for miscellaneous use on District land, however this scenario places three priorities (original Mackenzie permit, Mackenzie enlargement permit, and District enlargement) in one well with the Mackenzie lots having the senior rights. The cleaner approach would be for Mackenzie to relinquish those existing rights (voluntary abandonment petition to the State Board of Control) as a term of the final agreement and the District subsequently file for all uses/lands, including serving the Mackenzie lots, under one present-day priority permit. So the value here of the Mackenzie water rights is the ‘taking’ price of his senior adjudicated priority, for which there is no market value but one which would arbitrarily be agreed upon. In the end, it should be understood that the Mackenzie lots would have water rights attached, supplied by same well, under responsibility of the District as a public water supply.”

Purchase of the Teton County well would make the District the Public Water System responsible for the services at the shooting range and transfer station.
INTRODUCTION

The Squaw Creek Water System has a certified contract operator and a certified backup as required by the Environmental Protection Agency (EPA) and the Wyoming Department of Environmental Quality (WDEQ). The operator takes water samples and performs routine operational tasks for a monthly fee. He also performs system maintenance at an additional charge to the District.

SYSTEM PHYSICAL DEFICIENCIES

AVI reviewed existing information, discussed the District’s system with Board members, and conducted a physical inspection of system components.

EPA conducted a sanitary survey of the District’s water system on July 22, 2009. The survey included the recommendations for physical upgrades to the system. See Task 5, Water Quality for the Sanitary Survey recommendations. A copy of the complete survey is in Appendix B.

SYSTEM OPERATIONAL DEFICIENCIES

In addition to the physical deficiencies identified in the EPA sanitary survey, AVI’s analysis of available information raised questions about system operation.

Comparing the amount of water pumped through the spring pump with the amount metered to end users yields unaccounted for water of 3.5% to over 20%. AVI could not determine if apparent loss is due to leakage in the system, metering errors, or other factors.

Using available records and basing analysis on the amount of water pumped through the spring pump, AVI calculated Maximum Day Demand (MDD) and Peak Hour Demand (PHD). The MDD (1.8 times the average day through the spring pump) is approximately 47,000 gallons or 33 gpm over the 24-hour period. PHD is 54 gpm.

The District has 50,000 gallons of storage and total production capability estimated to be 25 gpm for both wells and 30 gpm for the spring (WWDC project recommendation, 2010). Based on information provided by the system operator the July 2009 sanitary survey gave the “actual yield” of Well No. 1 as 30 gpm, Well No. 2 as 20 gpm. Spring yield was estimated at 35 gpm, there is no indication the flow was measured.

If the combined yield of the two wells and the spring is 45-50 gpm, the system should meet peak hour and maximum day demands with the existing supply sources. However, there is no record of actual production from the wells, and the District reports water shortages during periods of peak demand.
OPERATIONAL UNKNOWNS

The District does not have an operations manual for the system, nor are there records available to document how the wells and springs are cycled when the tanks call for water. District Board members reported that the spring and wells must be “rested” after a few hours of pumping. Without further information and analysis, it is impossible to determine if the system could be operated at lower production rates for longer periods of time to produce more water than is available if the wells and springs are pumped at maximum capacity.
INTRODUCTION

Refer to the Project History section of the Report Introduction for a description of population growth in the Squaw Creek Water District.

PROJECTED POPULATION INCREASE

The number of water system customers has increased through build-out of homes on existing platted lots and expansion of the District to incorporate adjacent residential developments.

In 2012, there were 72 lots in the District boundaries with residential structures. These structures have water taps and meters.

There are 8 unoccupied lots in the District where homes could be built. Build out of these lots would increase demand 6% to 7%. As noted in Task 4, eight homes using the same amount of water as existing homes in an average month would increase demand by approximately 3,000 gallons per day, assuming three persons per household each using 125 gallons per day.

There are areas adjacent to the District with potential for residential development. Given the current water supply situation, the District will not expand boundaries or water supply unless the expansion resulted in the acquisition of an additional water source.

CURRENT RECORDED USE AND DEMAND

At AVI’s request, the District provided water production and use records for the calendar year of 2008, July through September of 2010, and December 2011 through July 2012.

The records show monthly total use and average daily use calculated from the monthly total. Neither maximum daily demand nor peak instantaneous demand figures were available.

In 2008, average daily use in the system varied from a low of 7,900 gallons per day (metered use totals January through April of 2008) to a high of 26,039 gallons per day (metered usage from mid July to mid August of 2008). The reported high daily usage of just over 26,000 gallons per day in 2008 would require steady state production from all sources of 18 gallons per minute. With the system storage of 50,000 gallons, usage of 26,000 gallons per day is sustainable with recharge from the wells and spring. However, the system as presently supplied and configured may not be capable of meeting peak day or peak hour demand.
2010 ANECDOTAL INFORMATION

AVI project team members Evan Green and Russ Dahlgren met with the District Board on August 19, 2010.

During the meeting, the Board provided the following information:

- Recorded use during the summer of 2010 peaked at 40,000 gallons per day. Using 72 occupied lots with 3 people per household (225 people), equates to 175 gallons per capita per day, significantly below the reported maximum day use for other districts and municipalities in Wyoming.

- When use exceeds 30,000 gallons per day, there are complaints of air in the system.

Evaluation of demand and the ability of the current system to meet demand is compromised by the lack of consistent information on the current water supply sources and the absence of records of peak day and peak instantaneous demand.

However, the seasonal and drought cycle fluctuations in system yield, and the desirability of a supplemental source not subject to surface water influence justify the District’s request for additional water.
INTRODUCTION

This task and the contract budget were intended for use by AVI to supervise aquifer evaluation activities including new test wells and/or testing of existing wells. As the study progressed, it became increasingly apparent that access to new test well locations would be difficult to obtain due to access issues.

The task budget was held in reserve given the possibility that aquifer tests might be performed at the Teton County No. 1 well or the Mackenzie well.

The District and the owner of the Mackenzie well were unable to agree on purchase conditions, so there was no justification to test the well.

Funds in this task were expended on fieldwork to evaluate alternative sources of supply and for supervision of the pump test of Teton County No. 1 well. See Task 12.
INTRODUCTION

This task was intended for subcontract work to construct and test new supply wells or to perform aquifer tests on existing wells, including drilling or pumping contractors and professional supervision of drilling and pump test activities.

PUMP TEST OF TETON COUNTY #1 WELL

See Task 12 Identification of Alternatives, Prioritization of Recommendations for a description of testing the Teton County well.
INTRODUCTION

This section of the report addresses two issues. First, the existing system financing is examined to determine if revenues from tap fees and water rates are supporting the system expenses. This analysis includes not only current operating expenses, but also sinking fund accounts to accommodate emergency repairs to the system and replacement of key components over time as required by WWDO for funding assistance.

Second, a determination is made of the water rates and fees necessary to make the system self-supporting under several scenarios of system improvements and funding sources. A detailed analysis is made of revenues required to operate the system, fully fund the emergency/replacement accounts, and repay loans for upgrades. AVI prepared a project financing model for all alternatives evaluated during the study regardless of the feasibility of the option. Refer to the tables at the end of this section.

WWDO FINANCIAL ANALYSIS REQUIREMENTS

WWDO provides guidelines for completing the water system financing analysis. The goal is to develop a rate structure and fiscal plan that results in a self-supporting water system. AVI used these guidelines to develop models which will assist the WWDO and the District with decisions regarding options for supplemental supply sources and for improvements to the existing system. The information contained in this report can also be used to plan for system maintenance and major repairs over the next 20 years.

Funding Assumptions. WWDO requires AVI to develop financing models under two funding scenarios: first that the self-supporting system will be funded by user-generated revenues only, and second, that costs will be supplemented by funding assistance from State and Federal sources. Because the Squaw Creek District may be ineligible or a low priority for several of these sources, AVI prepared models for two scenarios:

1. That existing operating expenses, system improvements, an emergency fund, and contributions to a 20-year major repair fund will be financed solely by water user revenues or assessments against property in the District.
2. That WWDO standard grant/loan financing, usually 67% grant, 33% loan at 4% at a preferred term (e.g. 20 to 40 years), will be available in addition to user rates and assessments for certain system improvements.

The WWDO task specifies that the Consultant will prepare financing models assuming the availability of grant or loan funds from numerous State and Federal sources in addition to WWDO. However, AVI contacted staff of the Rural Utilities Service (RUS), State Loan and Investment Board (SLIB), Abandoned Mine Land Program (AML), and the Drinking Water
State Revolving Fund Program (DWSRF). Based on these conversations, AVI determined that a shortage of grant funds and agency policies mean that the District is unlikely to receive funding to supplement any portion of the WWDO loan. Consequently, only the WWDO loan/grant package was included in the financial analysis.

Self-Supporting System. In order for the system to be self-supporting, revenues must be sufficient to cover these costs:

- Retire existing water related debt (principal and interest) and any new debt created by financing of the recommended improvements.
- Pay the cost of employees
- Pay the costs of materials, supplies, utilities, and outside services necessary to operate and maintain the water system and normal replacement requirements for the system.
- Pay for administrative and overhead expenses
- Provide an emergency fund that annually accrues at least an amount equal to 1.5-2.5% of the operating expenses
- Provide a fund that accrues sufficient funds to pay for major repairs and replacement that will be required during the next twenty (20) years. See Table 11.1 for assumptions used to develop this portion of the financing model.
- Pay other costs as may be identified by the Consultant.

Refer to Table 11.2 for Fixed Cost Calculations.

For efficient system budgeting, the fixed costs described above should be covered by the base rate charged to system customers for water service. Incremental additional water use above the amount covered by the base rate should be charged at an increasing rate per 1000 gallons of use to encourage water conservation.

**CURRENT SYSTEM EXPENSES AND REVENUES**

All service connections in the District are metered. Users are charged a base rate of $15.00 per month plus $1.00 per thousand gallons. Average monthly bills are $25.00, which is within the low average range for other districts and municipalities. Average annual income includes the monthly water usage charges of $22,000 to $25,000 and a District assessment against all lots of $27,887.38. The average assessment per lot is $353.01. The assessment is collected as part of the property tax for each lot and is based on the tax valuation. If the assessment in averaged into water rates, an additional $29.42 per month is added to the monthly bill for a total of about $55.00. Using this calculation pushes the District’s rates above the State average.

Tap fees for new connections are $8,500.00. Because there are only eight empty lots in the District, tap fees are not a significant source of future revenue.

For the calendar year of 2011, the District had expenses including WWDC loan payments, employees (system operator and accounting), and routine operating and maintenance costs. As of September 2012, the balance owed to WWDC is $57,325.00 with an annual payment of $12,877.00. See Table 11.2 at the end of this section for a summary of the District’s fixed costs.
The table shows a monthly per tap income of about $76.00 is required to cover all fixed costs. However, that total includes over $16.00 for deposits in the emergency fund and the major repair and replacement fund. The District reported a balance of over $40,000 in its major repair/replacement fund.

Best management practices for public water systems suggest that the base rate (in this case, the base rate plus the per lot assessment) cover all fixed costs.

**SOURCES OF FUNDING ASSISTANCE (See Table 11.5)**

- **Wyoming Water Development Office:** The usual WWDO funding package for Level III construction projects includes a 67% grant with the balance of eligible project costs incorporated into a loan from the Water Development Account. WWDO does not fund treatment facilities, meters, or distribution system components. The Sponsor, in this case the District, can request more favorable loan conditions. For example, extending the loan period to 40 years would result in lower annual debt service but a higher total cost over the term of the loan. WWDO has the option of recommending loan terms depending on Sponsor requests and ability to pay. Calculations for the purpose of this report used a 30-year term at 4% interest. Actual loan terms will be based on the District’s request, WWDO’s recommendations, and final action by the Commission. The first loan payment is due one year after substantial completion of project construction. The Water Development Commission has the option of providing a grant for up to 75% of eligible costs and of extending the loan repayment period to 40 years. The District is advised to submit a request for Level III funding to implement its preferred option if the request for an extension of the existing Level II work is approved. Refer to the cost estimate tables in this report Section 13 for information on the District’s obligation if purchase of the test well is pursued. WWDO staff will review the District’s request for Level III funding and present a recommendation to the full Commission.

- **Rural Utilities Service:** RUS can provide grant and loan funding to supplant some of the WWDO loan. However, in order to receive a grant from RUS, the District must meet Annual Median Household Income (AMHI) guidelines. The Census Designated Place (CDP) closest to the Squaw Creek District is the Rafter J Ranch, which has a population of about 1200 people living in 430 households. The AMHI for Rafter J Ranch is $100,125.00. Teton County’s AMHI for 2010 was reported at $70,271.00. Although the District has the option of conducting an income study specific to households in the service area, it is unlikely that such a study would show that the AMHI is low enough to qualify for an RUS grant.

- **State Lands and Investment Board (SLIB):** The State Loan and Investment Board can provide grants up to 75% of eligible project costs. However, the 75% grants are limited to municipalities with a population of less than 1,300 or are located within a county where the three-year average of the local government share of state sales and use tax per capita is less than seventy percent (70%) of the statewide average. Applicants who do not meet these requirements can apply for grants of up to 50% of the eligible project costs. The State Loan and Investment Board use the following criteria when prioritizing funding decisions. The project must:
o Alleviate an emergency situation which poses a direct and immediate threat to health, safety or welfare.

o Be needed to comply with Federal or State mandate addressing public health and safety.

o Provide an essential public service, including water supply.

The Board’s rules set forth the following additional criteria used in awarding Mineral Royalty Grants:

o The extent of match committed to the project from all sources

o The applicant has made a significant commitment of local resources

o The applicant has matching funds from other than State grants

o The project is appropriately sized in relation to the population served

o The relative urgency of the project

o The applicant is current on repayment obligations to the Board

o The applicant plans to use Wyoming professional firms and contractors

o The financial need of the applicant as determined by the Board

o The percentage of the applicant’s population served by the project

o In addition, the Board gives priority to applicants socially or economically impacted by development of minerals leased under the Federal Mineral Leasing Act of 1920.

o Project must be reviewed by appropriate State Agencies and the reviews are used in formulating funding recommendations.

The Mineral Royalty Grant program has no set priority list or numerical ranking of projects. If a project meets the requirements and funding is available, then funding has been traditionally recommended and approved for those projects. However, applications for assistance exceed available appropriations. Funding available for distribution to districts and municipalities has been drastically reduced in recent years. According to SLIB staff, applications from Teton County with an AMHI in 2010 of $70,271.00 are not viewed favorably in competition with districts or municipalities having a greater perceived need for assistance and a lower AMHI.

- **Wyoming Drinking Water State Revolving Fund (SRF):** This program is administered by the Wyoming Department of Environmental Quality, the Office of State Lands and Investments (OSLI), and the WWDO. Each year, these agencies prepare an Intended Use Plan which contains a comprehensive priority list of public water systems in Wyoming that have expressed interest in the DWSRF, are planning capital improvement projects, have been identified as serious public health risks, have received notices of Safe Drinking Water Act (SDWA) violations, or were issued administrative orders. Projects with higher ranking are considered to have immediate public health issues. Funding from the DWSRF has traditionally been a 100% loan for up to 20 years at 2.5% interest. However, policy changes now allow some loans to be “forgiven” and some projects to be funded with up to a 75% grant. As with other funding sources,
competition for these funds is fierce and it is unlikely that Squaw Creek would receive funding in preference to entities with lower AMHIs, a higher ranking on the Intended Use Plan, and a greater perceived need for such assistance.

- **Abandoned Mine Land Program:** The Abandoned Mine Land Program (AML) is a division of the Department of Environmental Quality. Legislation passed in 2006 mandated that AML coal tax funds held by the Federal Government be returned to the states of origin. This resulted in a windfall for Wyoming. While a portion of each annual State allocation is committed to reclaiming remaining mine sites, the balance is available for appropriation by the Legislature. In 2011, a loan and grant package totaling over $16 million was allocated to the City of Gillette to fund a portion of the expansion of the Madison well field and pipeline. In the 2012 Budget Session, the Legislature passed House Bill 121 (HEA-0025) which appropriated $83,406,724 from the Abandoned Mine Land Funds to various State agencies including the University of Wyoming, Department of Environmental Quality, the State Engineer, the Wildlife Trust Account, and the Department of Transportation. Over $23 million was appropriated to the Wyoming Water Development Commission for the Gillette Madison water project as previously authorized. In 2012, Congress passed legislation that cut Wyoming’s allocation from the Abandoned Mine Land Fund from over $150 million per year to $15 million. It’s unlikely that funding for water projects will be available from this source.

- **Teton County Special Purpose Excise Tax (SPET):** Teton County has the option of imposing a Special Purpose Excise Tax, also known as the 6th Penny Sales or Capital Facilities Tax. The tax requires approval of a majority of eligible voters in the county at a special election. The ballot identifies specific projects of benefit to the electors. In Teton County, County Commissioners and the Jackson Town Council review funding requests and select the projects to be included on the ballot. The tax is collected until sufficient revenues have been accumulated to fund the projects identified on the ballot. Distribution of the tax revenues is described in State Statute 39-15-211 (a) (i) (B) (I).

**State Statute 39-15-211. Distribution.**

(a) All revenue collected by the department from the taxes imposed under W.S. 39-15-204(a)(i), (ii), (v) and (vi) shall be transferred to the state treasurer who shall:

(i) For revenues collected under W.S. 39-15-204(a)(i):

  (A) Deduct one percent (1%) to defray the costs of collecting the tax and administrative expenses incident thereto which shall be deposited into the general fund;

  (B) Deposit the remainder into an account for monthly distribution to counties imposing the tax and its cities and towns. The distribution to the county and its cities and towns shall be equal to the amount collected in each county less the costs of collection as provided by subparagraph (a)(i)(A) of this section. The distribution shall be as follows:
(I) To the county for deposit into its general fund in the proportion the population of the county situated outside the corporate limits of its cities and towns bears to the total population of the county;

(II) To the incorporated cities and towns within the county for deposit into their treasuries in the proportion the population of each city or town bears to the total population of the county.

Note that the Statute makes no provision for the distribution of tax revenues to Special Purpose Districts, only to the county and its cities and towns. In order for the District to receive funding from this source, the project must be sponsored by the County. According to Sherry Daigle of the Teton County Clerk’s Office, no projects for Special Purpose Districts have ever been funded from the SPET. She stated the enabling State Statute does not, in her opinion, allow distribution to Special Purpose Districts.

Any public assistance program receiving federal funding, including RUS and SRF, now requires compliance with all aspects of Davis-Bacon and Related Acts (DBRA) minimum wage and project reporting requirements during the construction phase.

- **Private Source Funding Options:** There is no guarantee that the public agencies above will have funds available or will agree to provide financing for the Squaw Creek water system. The District has the option of seeking private funding. AVI contacted Kaiser & Company in Cheyenne, Wyoming to discuss private options. Kaiser has worked with other types of assessment districts to provide funding for improvements, including water and sewer system upgrades.

  The District, with assistance from a bonding company, could issue general obligation bonds in the amount necessary to fund some or all system improvements. This approach would make construction funding available up front with repayment guaranteed by a mill levy assessment against homeowners in the District. The bonding process requires approval of a majority of homeowners in the District at a special election. The amount assessed against each homeowner would be based on a percentage of the valuation of the property. Based on preliminary estimates of project costs, property valuation, and conditions of bond repayment, this private option could fund $500,000 in improvements for approximately $600.00 annual cost per landowner for 15 years. If the District is interested in this funding option, the Board should contact a bonding company for specific details and a more accurate estimate of end user costs.

**WWDO FINANCIAL AND FUNDING MODEL REQUIREMENTS**

WWDO provides guidelines for completing a water system financing analysis. The goal is a fiscal plan for a self-supporting water system based on user rates with and without financial assistance for system improvements. AVI used these guidelines in developing spreadsheet models to assist WWDO and the District with decisions regarding options for water system improvements. The information in this section can also be used to plan for system maintenance and major repairs over the next 20 years.

Note that these spreadsheets are formula driven. Items can be added or removed, costs changed, or loan conditions adjusted and the resulting water rate will be generated by the model. AVI can
supply the District with functional Excel spreadsheets for this purpose. Changes in conditions or assumptions can be inserted and the water rate displayed in the original spreadsheet.

WWDO requires development of financing models under two funding scenarios: first, that the self-supporting system will be funded by user-generated revenues only, and second, that costs will be supplemented by funding assistance from State and Federal sources, including but not limited to the standard WWDO financing package. However, because funding from sources other than WWDO are highly unlikely, only those funding conditions were included in the analysis.

**SPREADSHEET TABLES**

- **Table 11.1 Twenty-Year Cycle – Major Repairs and Replacements**
  
  WWDO identified a problem with district and municipal water systems failing to budget for major repairs, maintenance, and component replacement over a 20-year planning horizon. As a result, WWDO saw funding requests for system improvements that should have been covered by the entity’s revenue stream.

  WWDO now requires, as a component of planning studies, an estimate of the major system costs likely to be incurred in the next 20 years. Table 11.1 represents those anticipated costs for the District.

  The assumptions and costs in this table are very conservative and include recommendations developed in the course of this study. Note that a 2% inflation factor was included on all items for the 20-year cycle to achieve a total cost for the period. If repairs and replacements are funded before the end of the cycle, the amount of inflation is reduced accordingly.

- **Table 11.2 System Fixed Costs**
  
  To achieve the goal of a rate structure that will make the system self-supporting, it is necessary to identify the fixed costs of operation and maintenance, including personnel and loan repayment. Table 11.2 quantifies fixed costs based on 2010 and 2011 information provided by the District.

  The component columns of Table 10.2 are specified by WWDO.

  - **Column 1 - Retire Existing WWDC Loan:** The District has $57,325 remaining balance in a WWDO loan, with an annual payment of $12,877.00.
  
  - **Column 2 - Employees:** This column represents costs allocated to employment of the contract system operator and minor stipend for administrative services such as meter reading and preparation of water bills.
  
  - **Column 3 - O&M:** Cost items included in this column are utilities, water testing, maintenance agreements, postage, chemicals, and supplies.
  
  - **Column 4 - Admin and Overhead:** The District does not have specific charges for administration and overhead.
  
  - **Column 5 - Emergency Fund Deposit:** WWDO requires, as a component of a self-supporting system, calculation of an emergency fund that annually accrues at least an
amount equal to 1.5-2.5% of the operating expenses. For the purpose of this model, the midrange 2% of total operating costs was used to derive this value.

- **Column 6 - Major Repair Fund Deposit:** This column is derived from Table 11.1 Twenty Year Cycle Major Repairs and Replacements.

- **Column 7 - Total Fixed Costs:** This represents the total of columns 1 through 6 and is the total fixed cost for system operation. Best management practices for public water systems recommend that the base rate cover these costs. Because the District also uses assessments against real property as an additional source of revenue, those assessments are included in Column 10.

- **Column 8 - Current Income, Base Rate plus Use:** This column is the average monthly water bill reported by the District.

- **Column 9 - Base Rate to Pay Fixed Costs:** This figure is the base rate which would cover all fixed costs reported by the District. The rate does not include a factor for the income from the annual property assessment, which is the equivalent of an additional $29.42 per tap per month.

- **Column 10 - Current Assessment:** As noted, the District levies an assessment against all property within its boundary as an additional revenue source to support the water system.

- **Column 11 - 2.5% of Teton County AMHI:** The Annual Median Household Income (AMHI) for Teton County is $70,271, among the highest in the country. 2.5% of AMHI is used as an indication of ability to pay and as a guideline for average water rates. The high AMHI in Teton County, in Rafter J, and Hoback may not be representative of the AMHI in the District. Unfortunately, the figure will be used to evaluate the District’s rates, ability to pay, and eligibility for grants and loans from some funding agencies.

### Table 11.3 Cost of Options, No Funding Assistance

WWDO requires calculation of the revenue stream required if no state or federal funding assistance is available to supplement water rates, tap fees, and other local sources of income. Following is an explanation of the columns in the spreadsheet.

- **Column 1 - System Option:** This column lists all options for new sources of supply or enhancement of existing sources regardless of cost or feasibility.

- **Column 2 - Estimated Cost:** Estimated cost of the option.

- **Column 3 - Base Rate, Fixed Costs:** Base rate required to cover the fixed costs in Table 11.2

- **Column 4 - Rate to Fund Major Repairs:** Rate required to meet the requirements for a sinking fund for major repairs and component replacements in Table 11.1.

- **Column 5 - Rate to Fund Emergency Reserve:** 2% of current operating costs.

- **Column 6 - Rate Increase to Fund Option:** This column is the amount above the base rate necessary to fund the option. Realistically, monthly rates above $100.00 per tap may be unacceptable to District residents, and there is no expectation that monthly
rates will be raised to $5,555.00 to fund a connection to the Town of Jackson water system. However, these calculations meet WWDO requirements and provide perspective on the cost of options.

- **Column 7 - Total Rate, All Costs:** This represents the total monthly rate required to fund the 20-year replacement costs, the emergency fund, fixed costs, and the supply/enhancement option.

- **Column 8 - Assessment in Lieu of Rate Increase:** The annual assessment required in to pay all fixed costs, fund sinking accounts, and pay for the system option.

### Table 11.4 Loan and Grant Calculations – WWDO

A variety of State and Federal agencies have programs in place to offer loans and grants to local municipalities. As noted, the WWDO is the only agency to support the District’s request for assistance in developing a new supply. As with Table 11.3, all options evaluated in this study are included in this table without regard to cost or feasibility.

Table 10.4 displays the loan conditions, eligible components, and water rate increase necessary to service debt.

- **Column 1 - System Option:** Option evaluated during study.

- **Column 2 - Estimated Cost:** This column represents the estimated cost of the option.

- **Column 3 - Loan Amount:** Figures in this column represent the standard WWDO loan of 33% of total estimated cost.

- **Column 4 - Annual Loan Payment:** The loan payment is based on amortization tables.

- **Column 5 - Rate Increase to Repay New Loan:** The amount of rate increase necessary to repay a loan for each option.

- **Column 6 - Base Rate, Fixed Costs:** This column is the calculated base rate necessary to pay the fixed costs calculated in table 11.2.

- **Column 7 - 2% Rate for Emergency:** Carried forward from Table 11.2.

- **Column 8 - Rate to Fund Major Repairs:** Carried forward from Table 10.1.

- **Column 9 - Total Rate All Costs:** Represents the total rate given the base rate assumptions.

- **Column 10 - 2.5% of Teton AMHI/12:** WWDO requires that monthly water bills calculated throughout this section be compared to 2.5% of the AMHI divided by 12.

- **Column 11 - Assessment in Lieu of Rate Increase:** Assumes the increase in cost will be paid by annual assessments rather than rate increases.

### ADDITIONAL COMMENTS AND REQUIREMENTS

Any public funding program receiving federal assistance, including USDA Rural Development and the Safe Drinking Water Revolving Fund, now requires compliance with all aspects of
Davis-Bacon and Related Acts (DBRA) minimum wage and project reporting requirements. DBRA may not apply to AML funds. This requirement applies to project construction activities.

Rural Development and the State Revolving Loan Fund also require an Environmental Report prior to project construction. The environmental review prepared by the Bridger Teton National Forest as part of the Special Use Permit process may meet this requirement if the District seeks funding from sources other than the Water Development Commission.

**FINANCIAL MODEL SPREADSHEETS**

The following spreadsheets were used to display conditions and requirements for the District’s water system to become self-supporting under various options and funding scenarios.

- Table 11.1 Major Repair and Replacement Costs
- Table 11.2 Calculation of District’s Fixed Costs
- Table 11.3 Rates or Assessments to Fund Options, No Funding Assistance
- Table 11.4 Rates/Assessments to Fund Options, WWDO Loan/Grant
- Table 11.5 Funding Sources Summary
## TWENTY YEAR MAJOR REPAIRS AND REPLACEMENTS

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>A. Game Creek well pumps, Two 5 HP</td>
<td>$52,500.00</td>
<td>1</td>
<td>$52,500.00</td>
<td>$21,000.00</td>
<td>$73,500.00</td>
<td>$6,125.00</td>
<td>$6.81</td>
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<tr>
<td>B. Spring booster pump, one 10 HP with VFD</td>
<td>$25,000.00</td>
<td>1</td>
<td>$25,000.00</td>
<td>$10,000.00</td>
<td>$35,000.00</td>
<td>$2,916.67</td>
<td>$3.24</td>
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<td>C. Spring pump 10HP</td>
<td>$30,000.00</td>
<td>1</td>
<td>$30,000.00</td>
<td>$12,000.00</td>
<td>$42,000.00</td>
<td>$3,500.00</td>
<td>$3.89</td>
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<tr>
<td>D. Clean Fiberglass Tanks</td>
<td>$5,000.00</td>
<td>2</td>
<td>$10,000.00</td>
<td>$4,000.00</td>
<td>$14,000.00</td>
<td>$1,166.67</td>
<td>$1.30</td>
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<tr>
<td>E. Replace lining in steel storage tanks</td>
<td>$12,500.00</td>
<td>1</td>
<td>$12,500.00</td>
<td>$5,000.00</td>
<td>$17,500.00</td>
<td>$1,458.33</td>
<td>$1.62</td>
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<tr>
<td>F. Address Sanitary Survey recommendations replumb chlorine injection system develop/impliment well head protection plan</td>
<td>$2,500.00</td>
<td>1</td>
<td>$2,500.00</td>
<td>$1,000.00</td>
<td>$3,500.00</td>
<td>$291.67</td>
<td>$0.32</td>
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<td>G. Two Air Relief Hydrants</td>
<td>$12,500.00</td>
<td>1</td>
<td>$12,500.00</td>
<td>$5,000.00</td>
<td>$17,500.00</td>
<td>$1,458.33</td>
<td>$1.62</td>
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**TOTAL 20 YEAR FUND REQUIREMENT** | $18,80
### Squaw Creek Table 11.2
#### SYSTEM FIXED COSTS

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</thead>
<tbody>
<tr>
<td><strong>Annual</strong></td>
<td>$12,877.00</td>
<td>$28,000.00</td>
<td>$13,500.00</td>
<td>$0.00</td>
<td>$830.00</td>
<td>$13,708.33</td>
<td>$68,915.33</td>
<td>$22,042.58</td>
<td>$918.87</td>
<td>$27,887.38</td>
<td>$1,756.78</td>
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<tr>
<td><strong>Monthly</strong></td>
<td>$1,073.08</td>
<td>$2,333.33</td>
<td>$1,125.00</td>
<td>$0.00</td>
<td>$69.17</td>
<td>$1,142.36</td>
<td>$5,742.94</td>
<td>$1,836.88</td>
<td>$76.57</td>
<td>$2,323.95</td>
<td>$146.40</td>
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<tr>
<td><strong>Monthly per tap</strong></td>
<td>$14.31</td>
<td>$31.11</td>
<td>$15.00</td>
<td>$0.00</td>
<td>$0.92</td>
<td>$15.23</td>
<td>$76.57</td>
<td>$24.49</td>
<td>$76.57</td>
<td>$29.42</td>
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</tr>
<tr>
<td><strong>Account balances on 9/30/12</strong></td>
<td>$57,235.00</td>
<td>$19,000.00</td>
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</tbody>
</table>
### Squaw Creek Table 11.3

NO FUNDING ASSISTANCE AVAILABLE, COSTS PAID IN ONE YEAR

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>1. Flat Creek Well, SPWHMA</td>
<td>$865,000.00</td>
<td>$76.57</td>
<td>$16.53</td>
<td>$0.92</td>
<td>$961.11</td>
<td>$1,055.13</td>
<td>$11,609.90</td>
</tr>
<tr>
<td>2. Convert Test Well #3 to production</td>
<td>$540,000.00</td>
<td>$76.57</td>
<td>$16.53</td>
<td>$0.92</td>
<td>$600.00</td>
<td>$694.02</td>
<td>$7,276.57</td>
</tr>
<tr>
<td>3. Purchase/Connect Mackenzie well</td>
<td>$1,150,000.00</td>
<td>$76.57</td>
<td>$16.53</td>
<td>$0.92</td>
<td>$1,277.78</td>
<td>$1,371.80</td>
<td>$15,409.90</td>
</tr>
<tr>
<td>4. Drill Well at Old West Cabins</td>
<td>$1,025,000.00</td>
<td>$76.57</td>
<td>$16.53</td>
<td>$0.92</td>
<td>$1,138.89</td>
<td>$1,232.91</td>
<td>$13,666.67</td>
</tr>
<tr>
<td>5. Snake River Alluvial Well</td>
<td>$1,175,000.00</td>
<td>$76.57</td>
<td>$16.53</td>
<td>$0.92</td>
<td>$1,305.56</td>
<td>$1,399.58</td>
<td>$15,666.67</td>
</tr>
<tr>
<td>6. Flat Creek Alluvial Well, South Site</td>
<td>$800,000.00</td>
<td>$76.57</td>
<td>$16.53</td>
<td>$0.92</td>
<td>$888.89</td>
<td>$982.91</td>
<td>$10,743.24</td>
</tr>
<tr>
<td>7. 15,000 Gallon Fiberglass Tank</td>
<td>$105,000.00</td>
<td>$76.57</td>
<td>$16.53</td>
<td>$0.92</td>
<td>$116.67</td>
<td>$210.69</td>
<td>$1,476.57</td>
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<tr>
<td>8. Replace System Pumps, Upgrade SCADA.</td>
<td>$145,000.00</td>
<td>$76.57</td>
<td>$16.53</td>
<td>$0.92</td>
<td>$161.11</td>
<td>$255.13</td>
<td>$2,009.90</td>
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<tr>
<td>9. Replace Game Creek Well Pumps</td>
<td>$75,000.00</td>
<td>$76.57</td>
<td>$16.53</td>
<td>$0.92</td>
<td>$83.33</td>
<td>$177.35</td>
<td>$1,076.57</td>
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<tr>
<td>10. Rehab Game Creek Wells</td>
<td>$100,000.00</td>
<td>$76.57</td>
<td>$16.53</td>
<td>$0.92</td>
<td>$111.11</td>
<td>$205.13</td>
<td>$1,409.90</td>
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<tr>
<td>11. Replace Spring Booster Pump</td>
<td>$30,000.00</td>
<td>$76.57</td>
<td>$16.53</td>
<td>$0.92</td>
<td>$33.33</td>
<td>$127.35</td>
<td>$476.57</td>
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<tr>
<td>12. Drill/Test Nugget Well (w/Pipeline)</td>
<td>$1,000,000.00</td>
<td>$76.57</td>
<td>$16.53</td>
<td>$0.92</td>
<td>$1,111.11</td>
<td>$1,205.13</td>
<td>$13,409.90</td>
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<tr>
<td>13. Drill/Test Camp Davis Well (w/pipeline)</td>
<td>$450,000.00</td>
<td>$76.57</td>
<td>$16.53</td>
<td>$0.92</td>
<td>$500.00</td>
<td>$594.02</td>
<td>$6,076.57</td>
</tr>
<tr>
<td>14. Connect to Town of Jackson System</td>
<td>$5,000,000.00</td>
<td>$76.57</td>
<td>$16.53</td>
<td>$0.92</td>
<td>$5,555.56</td>
<td>$5,649.58</td>
<td>$66,743.24</td>
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<tr>
<td>15. Connect to Rafter J System</td>
<td>$3,050,000.00</td>
<td>$76.57</td>
<td>$16.53</td>
<td>$0.92</td>
<td>$3,388.89</td>
<td>$3,482.91</td>
<td>$40,743.24</td>
</tr>
<tr>
<td>16. Purchase/Connect Teton County #1</td>
<td>$1,250,000.00</td>
<td>$76.57</td>
<td>$16.53</td>
<td>$0.92</td>
<td>$1,388.89</td>
<td>$1,482.91</td>
<td>$16,743.24</td>
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<tr>
<td>17. Drill/Test New Well at Teton County #1</td>
<td>$275,766.00</td>
<td>$76.57</td>
<td>$16.53</td>
<td>$0.92</td>
<td>$307.52</td>
<td>$401.54</td>
<td>$3,766.78</td>
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<tr>
<td>18. Pipeline/appurtenances, New Well</td>
<td>$850,000.00</td>
<td>$76.57</td>
<td>$16.53</td>
<td>$0.92</td>
<td>$944.44</td>
<td>$1,038.46</td>
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### Squaw Creek Table 11.4

**ASSUME WWDO LOAN/GRANT PACKAGE - 67% GRANT 33% LOAN AT 4% FOR 30 YEARS**

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<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>1. Flat Creek Well, SPWHSU</td>
<td>$865,000.00</td>
<td>$285,450.00</td>
<td>$50,023.00</td>
<td>$55.58</td>
<td>$76.57</td>
<td>$0.92</td>
<td>$16.53</td>
<td>$149.80</td>
<td>$146.40</td>
<td>$666.97</td>
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<tr>
<td>2. Convert Test Well #3 to Production</td>
<td>$540,000.00</td>
<td>$178,200.00</td>
<td>$31,228.00</td>
<td>$34.70</td>
<td>$76.57</td>
<td>$0.92</td>
<td>$16.53</td>
<td>$128.72</td>
<td>$146.40</td>
<td>$416.37</td>
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<tr>
<td>3. Purchase/Connect Mackenzie Well</td>
<td>$1,150,000.00</td>
<td>$66,805.00</td>
<td>$10,019.06</td>
<td>$11.13</td>
<td>$76.57</td>
<td>$0.92</td>
<td>$16.53</td>
<td>$105.15</td>
<td>$146.40</td>
<td>$133.59</td>
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<tr>
<td>4. Drill/Connect Well at Old West Cabins</td>
<td>$1,025,000.00</td>
<td>$338,250.00</td>
<td>$59,276.00</td>
<td>$65.86</td>
<td>$76.57</td>
<td>$0.92</td>
<td>$16.53</td>
<td>$159.88</td>
<td>$146.40</td>
<td>$790.35</td>
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<tr>
<td>5. Snake River Alluvial Well</td>
<td>$1,175,000.00</td>
<td>$387,750.00</td>
<td>$67,960.00</td>
<td>$75.51</td>
<td>$76.57</td>
<td>$0.92</td>
<td>$16.53</td>
<td>$169.53</td>
<td>$146.40</td>
<td>$906.13</td>
</tr>
<tr>
<td>6. Flat Creek Alluvial Well, South Site</td>
<td>$800,000.00</td>
<td>$264,000.00</td>
<td>$46,264.00</td>
<td>$51.40</td>
<td>$76.57</td>
<td>$0.92</td>
<td>$16.53</td>
<td>$145.42</td>
<td>$146.40</td>
<td>$616.85</td>
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<td>7. 15,000 Gallon Fiberglass Tank</td>
<td>$105,000.00</td>
<td>$34,650.00</td>
<td>$6,072.00</td>
<td>$6.75</td>
<td>$76.57</td>
<td>$0.92</td>
<td>$16.53</td>
<td>$100.77</td>
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<td>$80.96</td>
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<td>8. Replace Pumps, Upgrade SCADA</td>
<td>$145,000.00</td>
<td>$47,850.00</td>
<td>$8,385.00</td>
<td>$9.32</td>
<td>$76.57</td>
<td>$0.92</td>
<td>$16.53</td>
<td>$103.34</td>
<td>$146.40</td>
<td>$111.80</td>
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<td>9. Replace Game Creek Well Pumps</td>
<td>$75,000.00</td>
<td>$24,750.00</td>
<td>$4,337.00</td>
<td>$4.82</td>
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<td>$0.92</td>
<td>$16.53</td>
<td>$98.84</td>
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<td>10. Rehab Game Creek Wells</td>
<td>$100,000.00</td>
<td>$33,000.00</td>
<td>$5,783.00</td>
<td>$6.43</td>
<td>$76.57</td>
<td>$0.92</td>
<td>$16.53</td>
<td>$100.45</td>
<td>$146.40</td>
<td>$77.11</td>
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<td>11. Replace Spring Booster Pump</td>
<td>$30,000.00</td>
<td>$9,900.00</td>
<td>$1,735.00</td>
<td>$1.93</td>
<td>$76.57</td>
<td>$0.92</td>
<td>$16.53</td>
<td>$95.95</td>
<td>$146.40</td>
<td>$23.13</td>
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<tr>
<td>12. Drill/Test Nugget Well (w/pipeline)</td>
<td>$600,000.00</td>
<td>$198,000.00</td>
<td>$34,689.00</td>
<td>$38.54</td>
<td>$76.57</td>
<td>$0.92</td>
<td>$16.53</td>
<td>$132.56</td>
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<td>$462.52</td>
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<td>13. Drill/Test Camp Davis Well (w/pipeline)</td>
<td>$450,000.00</td>
<td>$148,500.00</td>
<td>$26,024.00</td>
<td>$28.92</td>
<td>$76.57</td>
<td>$0.92</td>
<td>$16.53</td>
<td>$122.94</td>
<td>$146.40</td>
<td>$346.99</td>
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<td>14. Connect to Town of Jackson System</td>
<td>$5,000,000.00</td>
<td>$1,650,000.00</td>
<td>$289,151.00</td>
<td>$321.28</td>
<td>$76.57</td>
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<td>$16.53</td>
<td>$415.30</td>
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<td>$3,855.35</td>
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<td>15. Connect to Rafter J System</td>
<td>$3,050,000.00</td>
<td>$1,006,500.00</td>
<td>$176,382.00</td>
<td>$195.98</td>
<td>$76.57</td>
<td>$0.92</td>
<td>$16.53</td>
<td>$290.00</td>
<td>$146.40</td>
<td>$2,351.76</td>
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<tr>
<td>16. Purchase/connect Teton County #1</td>
<td>$1,250,000.00</td>
<td>$412,500.00</td>
<td>$72,288.00</td>
<td>$60.32</td>
<td>$76.57</td>
<td>$0.92</td>
<td>$16.53</td>
<td>$174.34</td>
<td>$146.40</td>
<td>$963.84</td>
</tr>
<tr>
<td>17. Drill/Test New Well at Teton County #1</td>
<td>$276,766.00</td>
<td>$91,332.78</td>
<td>$16,005.00</td>
<td>$17.78</td>
<td>$76.57</td>
<td>$0.92</td>
<td>$16.53</td>
<td>$111.40</td>
<td>$146.40</td>
<td>$213.40</td>
</tr>
<tr>
<td>18. Pipeline/appurtenances, New Well</td>
<td>$850,000.00</td>
<td>$280,500.00</td>
<td>$49,156.00</td>
<td>$54.62</td>
<td>$76.57</td>
<td>$0.92</td>
<td>$16.53</td>
<td>$148.64</td>
<td>$146.40</td>
<td>$655.41</td>
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<tr>
<td>Funding Source</td>
<td>Type of Projects</td>
<td>Grant</td>
<td>Required Match for Grant</td>
<td>Loan</td>
<td>Environmental Review Required?</td>
<td>Application Due Date</td>
<td>Comments</td>
<td>Contact</td>
<td></td>
<td></td>
</tr>
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</tr>
<tr>
<td>WWAC</td>
<td>Storage, treatment, transmission, raw water source</td>
<td>67% typical</td>
<td>33%</td>
<td>35% of project costs 20-50 years</td>
<td>No</td>
<td>Aug. 15 for new, Oct. 1 for ongoing</td>
<td>Will not fund treatment, distribution, or meters. Likely source for new well and pipeline.</td>
<td>Jon Wade [link]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DWSRF (Drinking Water State Revolving Fund)</td>
<td>All municipal drinking water projects</td>
<td>None</td>
<td>N/A</td>
<td>100% of project costs Up to 20 years</td>
<td>Yes</td>
<td>60 days PRIOR to the next regular scheduled Board meeting. Delinquencies must be addressed 45 days PRIOR to meeting</td>
<td>Refer to DEQ WG Website</td>
<td>Brian Mark [link]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OSLI (Office of State Lands and Investments) Mineral Royalty Grant Program</td>
<td>Public projects, including streets, water, sewer, etc.</td>
<td>50% to 75%</td>
<td>25% to 50%</td>
<td>25-50% of project costs. Town provides match from other sources.</td>
<td>No</td>
<td>Refer to OSLI Website: [link]</td>
<td>Intense competition for limited funds</td>
<td>Christine Gillett [link]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OSDBO (Community Development Block Grants administered by Wyoming Business Council)</td>
<td>Community and economic development, including infrastructure (water projects eligible)</td>
<td>Up to $100,000</td>
<td>Varies</td>
<td>N/A</td>
<td>Yes</td>
<td>September 1st and March 1st</td>
<td>Must meet HUD guidelines. Public hearing is required. Difficult source for Teton County projects</td>
<td>Julie Kochowski [link]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BPC – Business Committed – Wyoming Business Council</td>
<td>Assisted with start-up, retention, expansion, or location of a business committed to the community.</td>
<td>Up to $250,000</td>
<td>5% match</td>
<td>$1,000,000 max.</td>
<td>No</td>
<td>September 1, December 1, and March 1 each year (Confirm with Business Council)</td>
<td>Public hearing is required. Various business related items required.</td>
<td>Dave Simonsen [link]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BRC – Business Readiness – Wyoming Business Council</td>
<td>Proposed business or industrial park infrastructure needs</td>
<td>Up to $250,000</td>
<td>5% match</td>
<td>$1,000,000 max.</td>
<td>No</td>
<td>September 1, March 1 each year (Confirm with Business Council)</td>
<td>Public hearing is required. Comprehensive Economic Development Strategy (CEDS) and other employment related items required.</td>
<td>Dave Simonsen [link]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>U.S. Department of Agriculture Rural Development Program</td>
<td>Water and sewer projects for small municipalities meeting specific eligibility requirements.</td>
<td>50% to 75% based on Median Household Income</td>
<td>Required match funds from other sources</td>
<td>25% to 50% loan amount, term, and interest based on Median Household Income</td>
<td>Yes</td>
<td>RUS provides grants and loan. Loan may be required to receive grant. Contact RUS Office to confirm due dates and grant/loan conditions. [<a href="http://www.rurdev.usda.gov/key">www.rurdev.usda.gov/key</a>]</td>
<td>Preliminary Engineering Report (PER) Required. Median Household Income for Teton County (over $70,000) may eliminate this option. Bond election for loan.</td>
<td>Alana Cannon [link]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abandoned Mine Land Program</td>
<td>Legislative discretion, but can include water and sewer projects for municipalities, Revenue Cut in 2012</td>
<td>No limit. Recent Congressional action reduced Wyoming funds</td>
<td>May require match</td>
<td>No</td>
<td>No formal application or funding process. District should contact Teton County Legislators to request special appropriation. (Legislations may change after 2012 election.)</td>
<td>Cost estimates required for a specific project (distribution lines, etc.)</td>
<td>Rep. Ruth Ann Power [link] Senator Leland Christensen [link]</td>
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INTRODUCTION
The District expressed a clear priority for the development of a new source over efforts to enhance existing supply, storage, or distribution system. AVI evaluated multiple sources of supplemental water supply. At the direction of WWDO, AVI also evaluated options for increasing system efficiency including additional storage.

IDENTIFICATION OF ALTERNATIVES
Flat Creek Alluvial Wells on South Park Wildlife Management Area
Prior to submitting a proposal for the Squaw Creek Study, AVI and Pierson Land Works researched existing information including previous WWDC reports and the State Engineer’s well records in the project area.

During this review, the Project Team identified several wells in the alluvial deposits of Flat Creek and the Snake River producing water in excess of the 35-40 gpm sought by the District. Old West Cabins, a high-density residential development located 0.15 miles north of the intersection of Highway 89 and Game Creek Road, is served by two wells. Each well produced over 100 gpm during initial testing. Wells are assumed to be completed in Flat Creek alluvium.

One mile south of the Old West Cabins site, Evans Construction Company owns several wells completed in the Snake River alluvium. These wells range in depth from 30 to 100 feet and produce from 50 to 300 gpm.

Based on this information, AVI planned to locate test wells in the Flat Creek alluvium west of the junction of Highway 89 and Game Creek Road. This area is owned by the Wyoming Game and Fish Department (WGFD) and is part of the South Park Wildlife Habitat Management Area (SPWHMA). AVI contacted WGFD personnel who said obtaining access to Game and Fish property was “difficult but doable.”

Based on that information, AVI proposed to WWDC and the Squaw Creek District that test wells in this location were feasible and a potential source of the District’s target quantity of water.

At the start of the study, AVI submitted a detailed proposal and a map of well sites to WGFD on June 9, 2010.

AVI scheduled a field trip to the project site on June 21 and 22, 2010 with the intent of selecting test well sites.

At a meeting with WGFD staff, AVI was informed a request for access would be denied, in part because the SPWHMA was purchased with Federal funds and test wells would require approval...
from the U.S. Fish and Wildlife Service. In addition, WGFD staff would not endorse an application for a SUP to access the area. Previous applications for test wells on G&F property had routinely been denied.

Given the negative nature of these comments, AVI determined it would be pointless to locate test well sites on SPWHMA.

For documentation purposes, an application for a SUP was submitted on July 19, 2010. The permit was denied because “...the project does not meet the management goals for the South Park Wildlife Habitat Management Area.”

With the preferred option unworkable, the Project Team turned to evaluation of the Teton County No. 1 well.

**Teton County No. 1 Well**

The Teton County No. 1 well was drilled on the Bridger-Teton National Forest in 1988 as a geotechnical bore to determine site suitability for a landfill. Based on an evaluation of area geohydrology, no water production was anticipated. The well was completed to a depth of 295 feet and was pumped at 190 gpm for 24 hours with a drawdown of 16 feet.

The well now provides water to the shooting range and the composting facility at the County transfer station. There are no foreseeable County demands for additional water. Teton County Commissioners have final authority over sale of water or transfer of the well to the District.

The Teton County well is an attractive option because the reported yield exceeds both the District needs and projected County uses.

AVI intended to verify the long-term sustainable yield of the well with a step test and aquifer test. The District, WWDO, and the County wanted documentation of yield prior to agreement among the parties regarding purchase of the well or water from the well. Verification was also necessary before funding for a pipeline to connect the well to the Squaw Creek system was requested.

To determine the conditions under which a test could be conducted, the AVI Team met with Teton County Engineer and with the USFS Permit Coordinator on August 20, 2011.

The County Engineer agreed that a pump test was desirable, but said test activities could not compromise the existing well or delivery system and water service to the shooting range and transfer station could not be interrupted. He agreed to support a test under those conditions.

The AVI Team then met with the Special Uses Permit Administrator the Bridger Teton National Forest, who provided a copy of USFS regulations addressing issuance of a SUP. The following is an excerpt from that regulation:

**2703 – POLICY**

**2703.1 - Review of Proposed Use**

*The following must be considered when reviewing written requests for use of National Forest System lands:*

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---
Analysis of the proposed use's conformance with the Forest land and resource management plan;

1. Environmental analysis of the project proposal (FSM 1950);
2. Analysis of the need to use National Forest System lands; and
3. Analysis of the appropriateness of the use on National Forest System lands.

2703.2 - Denial of Use

Deny proposals for uses of National Forest System land which:

1. Are inconsistent with Forest land and resource management plans;
2. Are in conflict with other forest management objectives; or applicable Federal statutes and regulations; or
3. Can reasonably be accommodated on non-National Forest System lands, provided however, that First Amendment group uses (freedom of assembly and worship) may not be denied on this basis.

Do not authorize the use of National Forest System lands just because it affords the applicant a lower cost and less restrictive location when compared with non-National Forest System lands.

After receiving this input from the USFS and considering other factors, the Project Team concluded that a pump test of the County well should be delayed for the following reasons:

- **Special Use Permit (SUP):** The well cannot be accessed on the existing Teton County easement. The County has serviced the well by crossing USFS property outside the pipeline easement. A pump test would require well service equipment to use the same route in what could be considered a breach of permit conditions. Teton County maintains the SUP allows it to access the well for maintenance including a pump test.

- **Pump Test With Existing Pump:** The well pump is 5 hp and cannot produce the yield of 190 gpm reported at the time of construction. A test using the existing pump will provide only an approximate estimate of long-term sustainable yield.

- **Long-Term Pump Test:** Estimated cost of a 72-hour pump test using the existing system (pump and pipeline) was over $17,000 for supervisory time, county oversight, and equipment rental. This cost was considered excessive while project funds were needed for evaluation of other alternatives. Cost of a pump test with a 10 horsepower pump is estimated to be $25,000 to $30,000. Test pump size may be limited to 7.5 hp because the casing is 8” from ground surface to total depth of 295 feet and power to the site is single phase. Lower Valley Energy reported that the service is “being metered with a 200 amp base on an H-frame structure. The service would not be greater than 200 amps, but may be less than 200 amps. It is being fed from a 10KVA transformer.”

- **Problems With Existing System:** AVI identified issues with the existing system. The manhole nearest the well was full of water. The resident manager of the shooting range reported that a portion of the 3” pipeline had been exposed by erosion during a recent storm event. He reported low water pressure in his house despite a reading of 110 psi in the manhole at the Range. Modifications required for a pump test and operation of the
system during a test could interrupt service or result in liability if the County claimed
damage to existing components.

- **Department Of Environmental Quality (DEQ) Public Water System Issues:** The
county well was not constructed as a public water system source and is not permitted as
such by DEQ. In order to incorporate the well into the Squaw Creek District system, an
“as built” permit from DEQ would be required. At a minimum, the permit requires a
pump test, a video log of the well bore, a surface seal, and compilation of information on
well completion. If the data submitted is inadequate, or the results of the tests and logs
are inconclusive, the permit might not be issued. If the District purchases water from the
well, the County would become a public water system subject to all DEQ and EPA
requirements. If the County sells the well, the District would inherit responsibility for the
delivery system and service to existing users.

- **Water Rights:** Shared use of an existing well creates water right administration
problems. Adjudicated water rights at the County well are for domestic and
miscellaneous use at the transfer station only. Acquisition of the existing water right will
not grant the District water nor provide for use on District lands. The District would have
to apply to the State Engineer’s Office for an enlargement permit for miscellaneous use
and additional points of use. However, this scenario places two priorities (original
County permit and District enlargement) in one well with the County having the senior
right. The preferred approach would be for the County to relinquish existing rights
(voluntary abandonment petition to the State Board of Control) as a term of the final
agreement. The District could then file for all uses/lands, including service to shooting
range and transfer station under one present-day priority permit.

If all other obstacles to use of the County well are resolved, it would be necessary to secure
funding for a pipeline and appurtenances to deliver water from the well to the Game Creek wells
where it would be boosted to the District spring for eventual delivery to the existing storage
tanks. The pipeline length would be approximately 6300 feet across difficult terrain.

Teton County has a SUP from the Forest Service for .35 acres to: “Maintain and operate a well
situated at the head of a small draw SE of the public shooting range. A 20-foot linear right of
way extends 761’ from the well to the boundary between the National Forest and Wyoming
Game & Fish lands (public shooting range). The well and 3” pipeline supplies required water to
the Teton County Waste Transfer Station located on Public lands in Section 28, T40 R116 W.”

The SUP includes an ROW for the pipeline, but there is no provision for an access road to the
well site. The existing access road crosses shooting range, which is located in the South Park
Wildlife Habitat Management Area. A new Special Use Permit for an easement across the
shooting range to the Forest Service Boundary may be necessary to reach a new well owned by
the District because the existing easement agreement was issued to Teton County.

At a meeting with the District Board on July 26, 2011, the WWDO Project Manager approved a
request by the Board to direct AVI to prepare the documents necessary to request permission to
submit a SUP application to the Forest Service for a pipeline from the County well to the Game
Creek wells and an access road from the shooting range to the well. On August 19, 2011
documents were provided to the District for signature and submission to the USFS. After review
of the request, the USFS requested additional documentation that all off-forest options had been
eliminated. AVI prepared the supporting information, and the District submitted it to the USFS in December, 2011.

In May 2012, AVI received the following email from the USFS Special Uses Permit Coordinator:

I have reviewed your letter/proposal that Dick dropped off a few weeks ago and discussed this with Dale Deiter. We are satisfied that our concerns were addressed and it is now clear that there appears to be no non-FS land alternative at this point in time. Therefore, we’d welcome you to provide a formal application for us to begin our environmental analysis. We’ll need you to fill out the attached SF-299 and include a map (similar to that which you provided this fall). As I think I mentioned previously, once we receive and determine the level of analysis, we would need to charge a cost recovery fee, which is like an application fee. We may also need to charge a monitoring fee when/if the pipeline is built.

Thanks for taking the time to provide the documentation that you did. It really helps our being able to conclude that your options are limited.

This preliminary approval led WWDO and AVI to proceed with scheduling a pump test of Teton County No. 1. See the narrative at the end of this section for results of the test.

Development of Squaw Creek No. 3 Test Well

In 2004, WWDC initiated a Groundwater Exploration Grant project to identify new sources for the District. Two exploratory wells were drilled in the Game Creek alluvium near the intersection of Game Creek Road and Highway 89. These wells are identified as Squaw Creek Test No. 1 and No. 2. Neither well produced useful amounts of water. Two deeper wells, Squaw Creek Test No. 3 and No. 4, were drilled into the Camp Davis Formation near the southeast corner of the District.

Squaw Creek No. 3 was completed in the summer of 2006. The initial production was promising, but extended testing led to the conclusion that the well was completed in an aquifer of limited extent. The exploratory well maintained a constant flow of 5 gpm over the two-week pumping period but showed continual drawdown without reaching an equilibrium level during the duration of the test. The recovery showed similar results, taking about 13 days to recover to the 90 percent level (Rendezvous, 2009). Projected long-term production capacity and rate of recharge do not justify the expense of converting the well to production status and connecting it to the District system.

The Groundwater Exploration Grant program was terminated in 2009 after unsuccessful completion of the Squaw Creek Test No. 4 well, which was a dry hole completed next to Squaw Creek No. 3. The report (Rendezvous 2009) concluded “…this groundwater exploration program has not succeeded in identifying a new source of sufficient productivity to usefully augment the District’s existing supplies…and the demand for addition supplies remains unfulfilled.”

Conversion of Squaw Creek Test No. 3 to a production well was considered again during the present study as the feasibility of other alternatives dropped out.

Judicious use of the No. 3 well could add 5 gpm to District supplies for short periods to meet peak demand. However, initial cost estimates to convert the well to production (pump, controls, well house, etc.), bring power to the site, and construct a pipeline from the well to the storage tanks is $540,000.00. Given the low yield and limited recharge, the cost is unacceptable to the District.
In addition to the cost, the Forest Service would require a Special Use Permit and apply the same restrictions to this well as to the Teton County No. 1 well.

**Mackenzie Well**

AVI contacted owners of wells and water systems in proximity to the District to determine interest in selling wells or water. In part, this effort was intended to document to the USFS the unavailability of “off-Forest” options as a part of the SUP application process. A representative of the owner of a 40-acre tract south of the District with well and water system responded positively to this query.

The Mackenzie well (Permit No. 165487) has a priority date of September 24, 2008 and is fully adjudicated for 90 gpm (Enlargement Permit No. 189032)

The well was constructed by Weber Drilling. According to State Engineer form U.W. 6, the well was completed to a total depth of 430 feet on April 15, 2007. Static water level is 244 feet below ground surface. The well is cased to 390 feet with 8” welded steel casing and completed with 6” diameter screen, slot size .032, set from 390 feet to 430 feet. A 7.5 horsepower FPS submersible pump is set at 400 feet below land surface.

The well was intended as a supply to a family exemption subdivision of five lots on a forty-acre parcel. The Mackenzie system includes a well house and two delivery lines – one for potable use and one for fire protection. The two delivery systems are supported by 10,000 gallons of potable storage and 60,000 gallons of fire storage.

Acquisition of the Mackenzie well is an attractive option. Located approximately 3200 feet from the District spring, it is the closest of all alternatives to the District system. Elevation change from the well (6416 feet) to the spring (6360 feet) means that pumping costs would be minimized. There is a 60’ road and utility easement across an intervening landowner to the District boundary. No county, state, or federal agencies/permits would be required.

Preliminary negotiations led to the conclusion that no agreement could be reached between the well owner and the District. Issues include:

- The owner has documentation that expenses associated with construction of the well and water system including engineering, construction, permitting, and drilling is $553,000.
- During May 17, 2011 field meetings on site the District reported it had submitted a letter of intent to the owner without specifying a price. The owner’s representative said the letter of intent was unacceptable and urged the District to make an offer for the entire 40-acre Mackenzie property including the water system and five undeveloped lots. In deliberations following this meeting, the District Board questioned its legal ability to purchase and own land and the wisdom of investing a substantial sum in lots that are currently ineligible for building permits due to access road issues.
- DEQ Public Water System permit. The Mackenzie well was not completed and permitted through the Wyoming Department of Environmental Quality (DEQ) as a public water system well. To incorporate the well into the District system, an “as built” permit from DEQ will be required. This permit requires a pump test, well construction information, a video log of the well bore, and confirmation or construction of the surface casing seal. If the data submitted is inadequate or the results of the tests and logs are inconclusive, the DEQ will not issue the permit for the well to be used as a public water supply source.
Water Rights. The WWDO Project Manager Kevin Boyce provided this analysis:

“Existing adjudicated water rights are for domestic and miscellaneous use on the five
Mackenzie lots only. Acquiring the existing water rights does not grant the District any
water nor provide for use on District lands. The District would have to acquire an
additional enlargement permit for miscellaneous use on District lands, however this
scenario places three priorities (original Mackenzie permit, Mackenzie enlargement
permit, and district enlargement) in one well with the Mackenzie lots having the senior
rights. The cleaner approach would be for Mackenzie to relinquish those existing rights
(voluntary abandonment petition to the State Board of Control) as a term of the final
agreement and the district subsequently file for all uses/lands, including serving the
Mackenzie lots, under one present-day priority permit. So, the value here of the
Mackenzie water rights is the ‘taking’ price of his senior adjudicated priority, for which
there is no market value but one which would arbitrarily be agreed upon. In the end, it
should be understood that the Mackenzie lots would have water rights attached, supplied
by same well, under responsibility of the District as a public water supply.”

Acquisition of the Mackenzie well and water system was rejected by the District due to
conditions imposed by the owner, who would not sell the water system unless the District also
purchased the 40 acres the system serves.

Old West Cabins, Well or Water Purchase

Old West Cabins is a high-density residential development near the intersection of Highway 89
and Game Creek Road. The two permitted wells were tested during construction at over 120 gpm
each. Given the depth, both wells are assumed to be completed in the Flat Creek alluvium,
although the geology in the area is complex and the well logs are inconclusive as to the water
source.

If water is acquired at the Old West Cabins site, either through purchase of an existing well or
construction of a new one, the pipeline to the Game Creek wells would be approximately 6750’
with an elevation increase of 135’.

Larry Huhn, the owner of Old West Cabins, was contacted during this study and declined to
participate in negotiations to provide water to the District or allow construction of a District well
on Old West property.

Flat Creek and Snake River Alluvial Test Wells

AVI contacted representatives of a landowner with property on the alluvial plains of both Flat
Creek and the Snake River west of the District boundary and south of the South Park Wildlife
Habitat Management Area. Access to these sites would allow construction of alluvial wells on
Flat Creek and the Snake River. However, distance from test wells sites to the District pump
house or storage tanks and the pumping head make these options expensive. Construction costs
would be high and on-going operation costs would be excessive.

A Flat Creek well could be piped approximately 5500 feet to the District spring with an elevation
gain of approximately 400 feet. The pipeline would require easement agreements with two
intervening landowners. A Snake River well would require a pipeline of 8490 feet with an
elevation gain of 770 feet to reach the existing storage tanks. A pipeline from the Snake River to
the District spring would be about 4,700 feet with an elevation gain of approximately 360 feet,
but would require crossing three intervening landowners before reaching the District boundary.
A proposal for construction of test wells was sent to the landowner in November 2010. On February 7, 2011, a response was received requesting additional information. AVI provided a map showing potential test well locations and pipeline routes. A meeting to discuss development options was requested.

Despite several follow up contacts, no response was received. After considering the cost of wells, pipelines, long-term pumping costs, and lack of response from the landowner, this option was removed from further consideration.

**Additional Water Storage**

As alternatives for a new supplemental water supply dropped from consideration, AVI evaluated upgrades which would allow more efficient operation of the existing system. Another 15,000 gallon buried fiberglass tank at the location of the existing tanks would provide water during periods of maximum/peak demand.

The easement for the existing tanks is limited in extent. Installation of one or more new tanks would require acquisition of additional space either from the current landowner or on the adjacent State section.

**Replace System Pumps and Install New Controls**

Existing system infrastructure, including both well pumps and the two pumps at the spring, are probably nearing the end of useful life. Replacement of all four pumps will certainly be needed within the 20-year horizon specified by WWDO for planning and financial analysis. Balancing the pumps with efficient system operation enabled by an automated or SCADA (Supervisory Control and Data Acquisition) system could result in maximizing the fluctuating yields of the spring and Game Creek wells.

**Replace Game Creek Well Pumps**

Cost opinions were developed for well pump replacement primarily for inclusion in the financial analysis portion of this study. As long as the existing pumps are functional, the District should delay replacement as no significant additional yield or system efficiency would be achieved by immediate replacement.

**Rehabilitation of Game Creek Wells**

During the course of evaluating options for a supplemental supply for the Squaw Creek District, the potential to increase production from the existing Game Creek supply wells was considered. These wells are officially Squaw No. 1 and Squaw No. 2 on State Engineer permit documents, but are referred to as Game Creek No. 1 and Game Creek No. 2 locally and in reports.

The wells were completed as part of WWDC water supply project (Lidstone and Anderson, 1997). The L&A report states that Squaw No. 1 (the well immediately adjacent to the parking area at Game Creek and the Game Creek Road) yielded 20 gpm and Squaw Creek No. 2 (located about 800 feet upstream of well No. 1) yielded 31.5 gpm based on the constant discharge test. (Note that well number designations vary from map to map in previous reports and even on the pump control box at the parking lot.)

By 2009, the District reported to WWDC (Rendezvous, 2009) that the combined yield of the two wells had declined to 25 gpm.
During a May 17, 2011 site visit, well No. 2 was not producing water. On May 31, 2011, Weber Drilling pulled the pump and discovered that the problem was a short in the control box.

AVI used this opportunity to video log the casing and screen. Unfortunately, the log was inconclusive due to the type of camera supplied by Weber. There does not appear to be significant encrustation the inside of the screens, but the camera angle did not provide sufficient visual information to determine if the well screen slots are clogged with fine material or otherwise obstructed.

AVI developed a cost estimate for acid treatment and mechanical cleaning of the well screens. Given the difficulty of disposing of product water from this process, it is unlikely that approvals could be obtained from the Forest Service and DEQ for the acid treatment. The fact that the well No. 1 is completed in the same horizon with the same screens and was producing 30 gpm on May 17, 2011, AVI believes the rehabilitation of the wells has very limited potential to increase existing yields. Fluctuating yields are likely the result of variations in alluvial flows.

**Replace the Spring Booster Pump**

During the May 17, 2011 site visit, the system operator reported the spring booster pump, a 10 HP US Electric motor driving a Peerless pump with a variable frequency drive, is capable of pumping no more than 85 gpm regardless of the amount of water produced by the wells and spring. When more than 85 gpm is available from the wells and spring, the excess cannot be pumped to storage regardless of tank level or system demand. The excess water is released to waste. Replacing the 10 HP motor and pump with a unit capable of moving 100 gpm or more would require bringing three-phase power to the pump house, an improvement beyond the financial resources of the District. Also, the combined yield of the wells and spring is usually less than 85 gpm. An enhanced SCADA system would reduce “wasting” water pumped from the wells and springs through improved management of the existing sources and a new supply.

The capacity of the Game Creek well pumps and the District Spring booster pump come into question when considering additional supply options using these facilities to lift water to the storage tanks. Can the well pumps and spring pumps lift additional water to the tanks? The answer is yes, because the pumps are not now running 24/7. If the two well pumps can together pump 50 gpm and the spring booster can pump 85, the daily capacity of the system is 85 gpm x 60 minutes x 24 hours = 122,000 gallons per day without increasing the spring pump capacity. The reported maximum day demand in the District system is 40,000 gallons.

**Connect To the Town Of Jackson**

AVI evaluated the option of constructing a pipeline to connect the Town of Jackson’s water system to the Squaw Creek water system. Representatives of the Town confirmed in an email dated August 8, 2011 that the connection could be made, but would require the Town Council to approve supplying an “out of town” system and to negotiate with the District for a bulk water rate. The District would be responsible for operation and maintenance of the system downstream of the Town limits at High School Road. AVI estimated the pipeline from High School Road to Game Creek Road would require a new main extension 27,300 feet in length and four pressure-reducing valves (PRVs). An additional 5375 feet of pipeline would be required to deliver water from Highway 89 ROW to the Game Creek wells. The WYDOT Resident Engineer in Jackson said a pipeline could be constructed in the WYDOT ROW if the appropriate permits were obtained by the District. Total cost is estimated at $5,000,000.
Connect To the Rafter J Improvement And Service District

AVI evaluated the construction of a pipeline to connect the Rafter J Improvement and Service District’s system to Squaw Creek. Rafter J recently completed a new well yielding 1000 gpm. The well is 550 feet deep, completed to bedrock. Productive zones are lens of fine sands grading to coarser material at depth. Rafter J’s water system includes 12” transmission lines on both sides of Highway 89, so a tap from this line could feed a pipeline directly down the ROW to the Game Creek Road, then north on Game Creek Road to the District’s wells. Representatives of the Squaw Creek District met with the Board of Directors of the Rafter J District in January 2012 to request that Rafter J sell water to Squaw Creek. In a letter dated January 13, 2012, Rafter J declined the request.

Wells on Porcupine Plateau

Previous attempts to construct deep wells on the Porcupine Plateau in or adjacent to the District boundary were unsuccessful. This option remains attractive if funding can be obtained from WWDO or if the District chooses to use its own resources for an exploration well. Two formations are potential target aquifers if another well on the plateau is considered. The Nugget Formation would require drilling a minimum of 1400 feet with water bearing zones expected between 1200 and 1400 feet. A Camp Davis Formation well is estimated to require drilling to 550 feet unless water bearing zones are encountered above that depth.

According to Lidstone & Anderson (1991), the majority of the District is underlain by Tertiary and Cretaceous Age rocks with relatively poor water-bearing characteristics. In the northeast quarter of Section 35 and within the Game Creek Subdivision, Mesozoic Age rocks of the Triassic and Jurassic Period outcrop (editor’s note: Game Creek Subdivision has been annexed into the Squaw Creek District since the L&A Report). The subsurface of the District and the adjacent Game Creek Subdivision is characterized by a series of imbricate thrust sheets which serve to transmit ground water towards the District and the Snake River Plain. The depth to these thrust sheets and to a suitable water bearing target (Nugget Formation) exceeds 1,200 feet in the northeast corner of the District.

In 1991, Lidstone and Anderson analyzed geology in the area and selected a site for a test well drilled in 1992. The Jurassic Age Nugget Formation was the target aquifer and the intent of the drilling program was to either drill and complete a well in this favorable water-bearing formation or to terminate the well below the Game Creek Thrust Plate into the Tertiary Camp Davis Formation. Drilling commenced in September and terminated in December, 1992. Prohibitive drilling conditions were encountered during borehole construction. The well was abandoned. The hydrogeologic target was not achieved (Lidstone & Anderson, 1994).

Beginning in 2004 and terminating in 2009, Rendezvous Engineering investigated the potential to develop a new groundwater source for the District. Geologic analysis reported by Rendezvous indicated that the District is primarily underlain by the Camp Davis Formation (beneath a mantle of loess and glacial deposits). Although texturally a conglomerate, in most places the formation has a clay matrix that greatly limits groundwater production (Rendezvous, 2009).

After consideration of alternative drilling sites, Rendezvous elected to move south of the District boundary adjacent to the Wadsworth well. Two wells were constructed to a depth of 338 feet and 403 feet respectively. Neither well produced enough water to justify further development.
As noted, the Nugget Formation was the target for the 1991 Lidstone and Anderson drilling program. L&A terminated test well construction due to adverse drilling and adverse weather conditions. L&A reported evidence of water bearing zones identified during construction.

At the request of WWDO, AVI developed cost estimates for test and production wells in the Nugget and Camp Davis Formations at locations within the District boundary.

Given the complex geology in the area and the results of previous test wells, a thorough geologic analysis should proceed the siting of another well. Even with such analysis, there is no guarantee of positive results. However, proximity to the District’s system, the absence of intervening landowners, and the lack of federal permitting requirements may justify the risk of constructing additional test wells inside the District boundaries.

In the absence of specific well locations, the cost opinions for the Nugget and Camp Davis Formations included 1,000 feet of pipeline to connect a new well to the existing system at the spring or the existing storage tanks.

Rehabilitation/Reconstruction of District Spring

The AVI Team considered the potential to work on the spring collection system. However, the current collection system maximizes the amount of water available. Also, any work on the spring to increase yield could result in a protest from the senior water right immediately downstream. No action is recommended for this option and no cost estimate was prepared.

Access to Water for Fire Suppression

As noted in the description of the Mackenzie well, the forty-acre parcel has a well, storage, and distribution system to supply five lots with water for potable use and fire suppression. The District was offered access to 60,000 gallons of fire storage on this property. Access to the Mackenzie property is complicated by Teton County regulations and an intervening landowner. However, AVI recommends that the District continue negotiations to secure permanent access to the fire storage tank. There is no other option readily available option to provide fire protection.

Drill and Test a New Well In The Vicinity Of Teton County No. 1

The follow section is a supplemental report prepared by AVI and Dahlgren Consulting following the aquifer testing of Teton County No. 1 in June of 2012. Some material is a repeat of information in other sections. In the interest of continuity, the entire supplemental report is included here. The technical addendums to the report are in Appendix C.

- Introduction
  All alternatives and options for developing a supplemental water supply evaluated during the present study were found to have fatal flaws or yields insufficient to meet the District’s water needs.

  In the fall of 2011, attention refocused on the Teton County No. 1 well, Permit No. U.W. 76440.

- Background Information
  Teton County No. 1, also known as the Transfer Station well, was drilled on the Bridger-Teton National Forest in 1986 as an exploratory geotechnical borehole to determine site suitability for a County landfill. Based on an evaluation of area geohydrology and other
wells in the area, the drilling was not expected to encounter groundwater. The well was constructed by Weber Drilling of Jackson using a cable tool rig. Construction was supervised by Nelson Engineers, also of Jackson.

According to U.W. 6 forms received by the State Engineer’s Office in September of 1988, the well was drilled and cased to a total depth of 295 feet and completed with 3/8” x 1-7/8” mill perforations. The depth to static water level was reported at 176 feet. Water bearing zones were encountered at depths between 184 feet and 214 feet and 220 feet to 264 feet. Depth to principal water bearing formation was listed at 220 feet to 231 feet.

The well was pump tested by Weber Drilling with the following reported results:

- 102 gallons per minute with 14.5 foot drawdown after 5 hours 30 minutes.
- 190 gallons per minute with 16 foot drawdown after 24 hours.

The presence of a significant amount of groundwater eliminated the site from consideration as a landfill location.

A 7.5 hp pump was installed in August 1988. A 5 hp pump was subsequently installed, but date of installation is unknown. Teton County acquired a Special Use Permit (SUP) from the Bridger Teton National Forest for the well site and a pipeline right of way to serve the Jackson Hole Gun Club Shooting Range, a residence at the range, and the Teton County Transfer Station. The Teton County Engineer said the County has no immediate demands for what appears to be water in excess of current needs, but wants to retain a reserve amount regardless of the conditions under which the District would receive water from the well. The County Commissioners have final authority over sale or transfer of the well.

### Suitability As Water Supply For Squaw Creek

Two major tasks were required to determine the availability and suitability of the Teton County No. 1 well as a source for the District.

- **Forest Service Special Use Permit (SUP)**

  Conditions established by Forest regulations had to be met before the Forest would accept an application for a SUP allowing construction of a pipeline from the well to the District system. The foremost obstacle was demonstrating to the Forest’s satisfaction that there are no off-Forest options for a District water supply or proposed pipeline route. With assistance from AVI, the District submitted documentation on two occasions. The first submission was taken directly from the Identifications of Alternatives section of the draft version of this report. This information, the identification of alternatives sections and additional documentation was sent to the District on August 18, 2011. The District subsequently submitted the information to the Forest with a cover letter on District letterhead.

  On November 10, 2011, the District received a response from the Jackson District Ranger requesting additional documentation of the reasons certain alternatives had been eliminated from consideration, and suggested certain other alternatives such as purchase of water from the Rafter J Subdivision.
The District again requested assistance from AVI in responding to these questions. AVI prepared a second package of material documenting the reasons other options were not viable. For example, the District attended a meeting of the Rafter J Board of Directors to request water service. The Board rejected the District’s request and provided a written response. AVI obtained a letter from the County Engineer committing to negotiate “in good faith” for transfer of the well to the District. AVI also documented the reasons alluvial wells along Flat Creek and the Snake River were deemed infeasible, and provided a letter from a private landowner declining to negotiate for water sale to the District.

This second package of documentation was sent to the District on March 9, 2012 and subsequently submitted to the Forest.

On May 11, 2012, the District and AVI received an email from the SUP Coordinator for the Forest stating: “We are satisfied that our concerns were addressed and it is now clear that there appears to be no non-FS land alternative at this point in time. Therefore, we’d welcome you to provide a formal application for us to begin our environmental analysis.”

On May 21, 2012, AVI provided the District with a completed Standard Form 299 application for Transportation and Utility Systems on Federal Land with attachments for District to sign and submit. Review of the application, and assessing a processing fee, has been delayed until the results of an aquifer test of the County well are available for review.

- **Pump/Aquifer Test**

  All parties involved in the option to use Teton County No. 1 as a supplemental source of supply for the District are rightly concerned about the long-term sustainable yield of the well and/or the aquifer. Estimates of long-term yield are needed:

  1. By the Teton County to verify existing uses can continue, and a reasonable reserve is available for unspecified future use.
  2. By the District before it makes a decision to purchase the well, construct a new well, and pay for a pipeline.
  3. By the WWDO or other funding agencies before consideration of committing loans or grants to purchase the County well, drill a new well, or construct the transmission pipeline, pump station and other appurtenances necessary to connect a new source to the District’s system.
  4. By AVI before making recommendations to all the above.

To determine the conditions under which a test could be conducted, the AVI Team met with the Teton County Engineer on August 20, 2011.

The County Engineer agreed that a pump test was desirable, but said test activities could not compromise the existing well or delivery system and water service to the shooting range and transfer station could not be interrupted. He agreed to support a test under those conditions. Subsequent negotiations with the resident manager of the shooting range and the County manager of the transfer station resulted in water and sanitary arrangements acceptable to both parties. Although the existing access road is
outside the ROW granted to the County under the Forest SUP, the County interprets the SUP to allow access for maintenance work, including a pump test. The Forest was informed of the planned test and registered no objection.

On May 1, 2012 AVI issued a call for proposals and cost estimates to pump test Teton County No. 1 well. Three responses were received. Treasure Valley Drilling (TVD) of Weiser Idaho was selected to perform the work.

TVD mobilized on the well site at 9:30 a.m. on Monday, June 4th, 2012. Rendezvous Engineering p.c. represented AVI during the mobilization process. The Wyoming Water Development Office (WWDO) Project Manager and the AVI Project Manager arrived at the well site at on Monday, June 4th, 2:00 p.m. The pitless adapter, pipe string, and pump/motor had been pulled. Difficulties with the pump and motor provided by TVD delayed start of the pump test until 10:30 a.m. on Tuesday, June 5.

In the interim, the static water level was measured at 191.35 feet below the top of the casing (TOC). An area next to the casing was excavated by hand to a depth of about 2.5 feet, and another 5 feet was probed with a spud bar. No evidence of a surface seal was encountered.

At about 5:00 p.m. on June 4th, TVD began running the pump, motor, and pipe string with the WWDO In-Situ Pressure Transducer (250 psi) attached down the well casing. The motor was a Franklin Electric 60 Hz 7.5 HP 230 V23.0 A 3450 RPM with a thrust load 6500N 1500LB. The pump was a Robbco Submersible – 3600, 5LHE 3 Stage, diameter 4.32 inches. Work terminated when the string was replaced in the well bore at about 8:15 p.m. on June 4th with the pump setting at approximately 220 feet.

On Tuesday June 5th, TVD encountered further issues attempting to use a phase converter (changing the single-phase power available at the site to three-phase) to run the pump motor. When the phase converter would not run the motor, TVD brought a generator to the site and was able to start step testing at 10:30 a.m. on June 5th. It was determined that the TVD sounder and data logger were not calibrated correctly and therefore not generating accurate data. Rendezvous’s probe was put down the bore and data logger activated (InSitu Level Troll 700 69’ vented 107137 mfg date 2006). Static Water Level (SWL) was measured on June 4th at 191.35 from top of casing. The WWDO Hermit 3000 Data Wager (SN#45179) on June 5th recorded SWL of 193 feet from top of casing.

With redundant recording equipment in place and the generator running the pump motor, the step test was started at 10:29 a.m. on June 5th.

The well was pumped at approximately 38 gpm from 10:29 a.m. to 10:59 a.m. on June 5th. Flow measurements were taken using a 15 gallon tub and stop watch. Water was 9.1 Celsius (48 degrees Fahrenheit). Conductivity was 494; TVD measured Total Dissolved Solids (TDS) at 380.

The second step test began at 11:20 a.m. on June 5th at a pumping rate of 67 gpm. The test concluded at 11:39 a.m. Production was measured with tub and stop watch.

Maximum flow test started at 11:50 a.m. on June 5th. Initial flow rate in three tub measurements a minute apart was 94.4 gpm. Measurement was perhaps
compromised by a kink in the discharge hose. A second test beginning at 11:54 a.m. measured 106.2 gpm. Another tub measurement at 12:16 p.m. yielded a rate of 111.9 gpm.

The well was allowed to recover for an hour.

The constant rate discharge test was started at 1:15 p.m. on June 5\(^{th}\) and terminated on Wednesday, June 6 at 9:15 p.m. for a total duration of 32 hours.

On Wednesday, June 6, TVD continued to take measurements with tub and stop watch. Measurements over the course of the test indicated that production gradually declined from 105 gpm to 94 gpm at the end of the constant rate test. Discharge was monitored as per Forest concerns about erosion. All water, approximately 192,000 gallons, was absorbed in the native grass cover within 150 yards of the discharge site. No water reached the shooting range, the highway, or waters of the state. The constant rate discharge test was terminated at 9:15 p.m. on June 6\(^{th}\). Total drawdown was approximately 13 feet.

On Thursday June 7 at 7:15 a.m., water level had recovered approximately 7 feet.

At 8:30 a.m. on June 7th, Layne Pumps Inc. of Kimberly Idaho arrived on site to video log the well bore. TVD had the pipe out of the well bore by 9:15 a.m.

The video logging started at approximately 9:20 a.m. on June 7\(^{th}\) and gave excellent quality images of the interior of the casing and the perforations. As noted in the Analysis of County Well (attached), only 25% of the perforations observed during the video log were open. Others were clogged with encrustation or obstructed with what appeared to be rock chips. However, the performance of the well during the constant rate test (maintaining a flow rate of 95 to 100 gpm), indicated that the water flowing into the well bore was relatively consistent and production was not significantly limited by the condition of the perforations. The camera began to encounter extreme silt and turbidity at depth of 269-270 feet, indicating approximately 25 feet of sediment or other unknown material had accumulated in the bottom of the well. The log was stopped at that level to prevent the possibility of damage to the light bulb or camera. The equipment was retrieved from the bore at 9:45 a.m.

TVD replaced the original motor on the pipe string and replaced the string in the well bore. Pitless adapter was installed and the pump rewired. Water service to the shooting range and transfer station was restored by 2:30 p.m. on Thursday June 7.

Notice of Termination of the DEQ WYPDES Permit was submitted on June 12, 2012. The Forest Service was notified on June 12 that the test was completed and that no erosion or other damage occurred to USFS land due to discharge of water from the test.

- **Remaining Issues**

There are complications associated with making this existing source supply well available to the District.

1. The well is owned by Teton County and currently supplies water to the Jackson Hole Gun Club, the residence at the range, and the Teton County Transfer Station
located in Horsethief Canyon. Informal discussions with the County Engineer confirmed the County is willing to negotiate sale of the well. If the County retained ownership of the well and sold water to the District, the County would be considered a public water system subject to all requirements imposed by the Wyoming Department of Environmental Quality (DEQ) and the U.S. Environmental Protection Agency. The County also has the opportunity to review the results of the pump test before deciding to negotiate with the District for acquisition of the well.

2. The well is located on the Bridger Teton National Forest (Forest). A Special Use Permit will be required for an access road and a pipeline across the Forest to the District system. A booster pump and clearwell or storage tank may be needed where the new pipeline intersects the existing transmission line from the Game Creek wells to the District spring. Topography dictates that these appurtenances will be located on Forest land. The tank or clearwell could be placed under the existing parking lot at the Game Creek Road junction. The District submitted documentation to the Forest to support its application for a SUP. The documentation was sufficient for the Forest to determine that “no off-Forest option exists.” That determination is a necessary prerequisite for the issuance of the SUP, and indicates the SUP application is likely to be approved.

3. Teton County No. 1 well was originally designed and constructed as a geotechnical test borehole to determine the presence or absence of groundwater prior to siting a new landfill. The well was not designed as a public water system supply well. The SEO UW Form submitted for Permit No. UW 76440, Teton County No. 1 states that “Production Casing was grouted in to an estimated depth of 35’ to provide a surface seal”. The well was completed with a cable tool rig, which would have made grouting difficult. Prior to the pump test, on June 4, 2012, the area around the casing was excavated by hand to a depth of about 2.5 feet, and a spud bar was used to probe an additional 4 to 5 feet. No evidence of a surface seal was encountered. There is no verifiable evidence that the well was completed to DEQ Chapter 12 requirements. In order to comply with these regulations and received a DEQ “as-built” permit, installation of a surface seal to a minimum of 20 feet below ground surface would be required. Costs for installing a seal are included in the analysis of this option. In addition, the upper mill perforations (six perforations at 184 foot depth) are exposed above the present static water level. The video log of the well verified that the remaining perforations are partially plugged by debris or encrustation. Rehabilitation of the well would dictate sealing of the exposed mill slots and some recompletion/rehabilitation method to open slots in the submerged completion zones.

4. Due to issues associated with the age of the County well, the method of completion, the lack of a surface seal, and the costs of rehabilitation, the option of a new well in the vicinity of Teton County No. 1 well is an advantageous alternative. A new well would be completed to DEQ Chapter 12 requirements. A new well could be pump tested extensively to secure a more reliable indication of
aquifer conditions and potential to provide a reliable long-term supply to the District.

5. AVI evaluated options for a pipeline route from the County well and a new well to the District System. The terrain is extremely rough and broken. The preferred pipeline route runs from the well locations (County well and proposed new well site) to the Game Creek road, avoiding the boundary of the South Park Wildlife Habitat Management Area. See attached plan sheet and pipeline profile in Appendix D. Power to the well site is single phase, which limits the pump motor to 7.5 horsepower. The preliminary pipeline route circumvents the WGFD boundary and then runs directly south to the Game Creek Road. This route is recommended whether the County well is acquired by the District or a new well is drilled. A plan sheet, pipeline profile, and cost estimates for this route are included in Appendix D.

- **Recommendations**

  Teton County No. 1 is not suitable as a long-term supply source for the District for the following reasons.

  1. **Decline of reported static water level:** The Statement of Completion for the County well reports the depth to static water level (SWL) at 176 in the fall of 1988. As noted in the above sections, SWL was measured at 191.35 feet below the top of the casing (TOC) on June 4th prior to the pump test. If the SWL was accurately measured and correctly reported on the Statement of Completion, the SWL has declined by 15 feet in 25 years. For the purposes of this evaluation, the shooting range and transfer station were estimated to use the equivalent of two domestic services, roughly two acre-feet per year. (325,851 gallons per acre-foot x 2 = 651,702 gallons per year, a pumping rate equivalent to 1.24 gpm.) The static water level decline, if accurate, raises questions about the ability of the well to sustain additional production over the long term. Assume the District uses the well to supplement the supply from the Game Creek wells and the District spring. Assume an average withdrawal of 10 gpm for six months (supplemental use only during summer peak demand). This equates to 2.6 million gallons or eight-acre feet per year, about four times the estimated volume withdrawn by existing use of the well. The District expressed a need for 35 gpm as a reliable supplemental source. If that amount is withdrawn at a constant rate, the annual use is almost 27 million gallons, or 82 acre-feet per year. Actual use by the District is expected to be closer to the lower number; potentially eight to ten acre feet per year, but local water levels may decline in proportion to increased withdrawals from either the County well or a new well.

  2. **Pump test drawdown and recovery:** After pumping for 32 hours and resting for 10 hours, static water level had recovered about half of the 13 feet of drawdown recorded during the test. The relatively slow rate of recovery may be an indication of a low transmissivity in the aquifer or presence of a confined aquifer that slowly refills the cone of depression created by the pump test.

  3. **Complications and Cost to Rehabilitate Teton County No. 1:** Costs to convert the existing well to meet DEQ Chapter 12 standards, to rehabilitate the well bore and
mill slots, to seal the slots above the static water level, and remove sediment from the bottom of the casing are considerable. No cost estimate was prepared for rehabilitation because of the determination the well was not an acceptable source for a public water system. There is no guarantee that such efforts would be successful enough to allow the well to be used as a public water system source. The well is 25 years old and was never intended to be a public water system supply.

Given these considerations, AVI recommends the District abandon plans to acquire Teton County No. 1 and instead request an extension of the WWDC Level II study to secure funding for construction of a new well in the vicinity of to the County well. This approach resolves many issues:

1. The District would own and control the well.
2. The District would not be responsible for maintaining a water supply to the shooting range and transfer station.
3. The District would have a new well designed and constructed according to DEQ Chapter 12 standards for a public water system.
4. The water rights issues associated with the County well (change in permitted amount, change in points of use, etc.) will not affect a new well, with the exception that the District would have a junior ground water right.

Whether the District negotiates to acquire Teton County #1 or requests WWDC Level II funding for new test well, AVI recommends the additional source be used only as a supplemental backup supply for the relatively brief periods in July and August when water use in the District exceeds 30,000 gallons per day.

The District must decide if this amount of supplemental water justifies the expenditures required to construct a new well and finance a pipeline and pump station. The District should continue to vigorously promote water conservation to preserve both existing sources and the new source, either the County well or a new well. Refer to Section 13 for cost estimates of the pipeline and appurtenances to deliver water from either well.

If the District is successful in securing an extension of the present Level II study and an appropriation is made to construct a new well, there would be no initial cost to the District. If the new well is successful and the District decides to proceed with acquisition of the well and construction of a pipeline, the District would be required to purchase the well. Purchase terms would be determined in the Level III negotiations, but are assumed to be 33% of the cost of drilling the well during the Level II work.

- **Construct Pipeline from the New Well to the District System**

If the results of testing the new well are positive, the District should request funding for a pipeline and appurtenances to connect the well to the existing system. Preliminary costs estimates were prepared and included in this report. Concept designs and cost estimates of sufficient accuracy to request Level III funding from WWDC will be prepared in the next phase of the project.
PRIORITIZATION OF RECOMMENDATIONS

1. Request an extension of the Level II Study to construct a new test well in the vicinity of Teton County No. 1. Submit an application to the USFS for a temporary easement to drill the well. Request that the existing Special Use Permit for the access road and pipeline be placed on hold pending outcome of the test well project. Maintain communication with the WGFD regarding a new access agreement across the shooting range to the USFS boundary. A new access agreement with WGFD may be required because the existing easement was issued to Teton County.

2. Negotiate a binding agreement with owner of the Mackenzie well and water system to ensure the District has permanent access to the fire suppression storage tanks on Mackenzie’s property. This agreement should be structured to protect the District’s interests in the event of a change in ownership and would meet one of the goals of the present study.

3. Install meters on the Game Creek wells and submit annual reports to the State Engineer’s Office. Conditions and Limitations on the permits for both Squaw No. 1 and Squaw No. 2 require the District to submit annual reports that include the total quantity of water produced from the wells and at least two semi-annual measurements of the static water leveling the wells as measured twenty-four consecutive hours after pumping has ceased. (SEO Permit Nos. 102953 and 102954). Meters and records of well production would be useful in managing the District’s supply. Complete adjudication of ground water rights for both wells.

4. Implement the recommendations in the most recent EPA Sanitary Survey. Priority should be given to those items such as concrete well pads which will prevent contamination by surface water infiltration and/or a determination by EPA that the source is under the influence of surface water. If that determination is made, the source would be taken off line or a water treatment system installed. The District should develop a Source Water Protection Plan to reduce the potential for such a determination. Information on developing a plan can be obtained on the Department of Environmental Quality webpage (http://deq.state.wy.us/) or from the Lander DEQ Office by contacting District Engineer James Brough at 307-335-6961.

5. Install 2” flushing hydrants at high points on the distribution system in each of the two pressure zones. Purge these hydrants when customers complain of air in the distribution system and on a regular basis during periods of high demand.

6. Continue to practice water conservation through customer education and a progressive rate schedule.

The following options were evaluated during the study, but are not recommended pending the District’s request for an extension of the Level II project and results of the testing of a new well.

1. Request Level II funding from the WWDO for a feasibility study to site and construct a deep well to the Camp Davis or Nugget formation. This request should be delayed until the County well option is resolved. The resolution may be a
denial of the District’s request to submit a Special Use Permit application for the access road and pipeline.

2. Request Level III funding from the WWDO for the design and construction of 30,000 gallons of additional water storage. Storage is not as desirable as an additional source of supply, but will assist the District in meet peak instantaneous and peak hour demand.

3. Existing storage tanks should be professionally inspected and cleaned or relined if necessary.

4. If water loss in the system can be documented in the range of 13-15%, the District should consider a leak detection survey. However, loss up to 10% is considered normal. Reducing loss from 15% to 5% would save only 3000 gallons per day, the equivalent of less than 2 gpm.

The map following this section shows the location of the alternatives evaluated in this report, the configuration of the District system, and the location of test wells drilled in other projects.
INTRODUCTION

AVI prepared cost opinions for alternatives for supplemental water supply sources and system improvements evaluated during the study. Estimates were developed regardless of the apparent feasibility of the option. Some options are restricted by cost or access issues.

1. Construct and test production well in the Flat Creek alluvium on the South Park Wildlife Habitat Management Area. Connect at Game Creek Wells.
2. Convert Squaw Creek test well No. 3 to a production well and connect at the existing tanks.
3. Purchase Mackenzie well and water system, connect at the spring pump house.
4. Drill and complete a production well at the Old West Cabins site.
5. Drill and test production well in the Snake River alluvium on property
6. Drill and test production well in the Flat Creek alluvium
7. Add one 15,000-gallon storage tank to increase total storage capacity to 65,000 gallons.
8. Replace all system pumps and upgrade the SCADA to improve system efficiency.
9. Replace the Game Creek well pumps
10. Rehabilitate the Game Creek wells with an acid treatment.
11. Replace the booster pump at the spring pump house.
12. Drill test and production well to the Nugget Formation.
13. Drill test and production well to the Camp Davis Formation.
14. Connect to Town of Jackson Water System
15. Connect to Rafter J Water System
16. Purchase and connect to Teton County No.1 well.
17. Drill and test production well in the vicinity of Teton County No.1 well.
18. Construct pipeline and appurtenances, new well to District system.

A summary of option costs and detailed cost estimates for each alternative are on the following pages.
## 1. Cost Estimate - Flat Creek Well, South Park Wildlife Habitat Management Area

<table>
<thead>
<tr>
<th>Bid Item</th>
<th>Description</th>
<th>Unit</th>
<th>Bid Quantity</th>
<th>Unit Price</th>
<th>Item Total</th>
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Total Component Cost (sub #2) $625,200.00

- Prepare Final Designs/Specifications $46,890.00
- Permits and Mitigation $5,000.00
- Legal Fees $5,000.00
- Easement $10,000.00
- Access and ROW $2,000.00

Pre-Construction Costs (sub #1) $68,890.00

Construction Engineering Cost $62,520.00

Components and Engineering (sub #3) $687,720.00

Contingency (Sub #3 x 15%) $103,158.00

Construction Cost Total (sub #4) $790,878.00

Total Project Cost $859,768.00

USE FOR ANALYSIS $865,000.00
## 2. Cost Estimate - Convert Well #3 to Production Well

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<th>Bid Item</th>
<th>Description</th>
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<th>Item Total</th>
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<td>$12,500.00</td>
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<td>Control Wires, Well to Tank</td>
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<td>1</td>
<td>$15,000.00</td>
<td>$15,000.00</td>
</tr>
<tr>
<td>7</td>
<td>Upgrade SCADA</td>
<td>LS</td>
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<td>$15,000.00</td>
<td>$15,000.00</td>
</tr>
<tr>
<td>8</td>
<td>Pipeline Appurtenances</td>
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<td>1</td>
<td>$7,500.00</td>
<td>$7,500.00</td>
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<tr>
<td>9</td>
<td>Pump House, Appurtenances</td>
<td>LS</td>
<td>1</td>
<td>$35,000.00</td>
<td>$35,000.00</td>
</tr>
<tr>
<td>10</td>
<td>Blow-off Hydrant Assembly</td>
<td>LS</td>
<td>1</td>
<td>$3,500.00</td>
<td>$3,500.00</td>
</tr>
<tr>
<td>11</td>
<td>Access Road Improvements</td>
<td>LF</td>
<td>1,000</td>
<td>$25.00</td>
<td>$25,000.00</td>
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<tr>
<td>12</td>
<td>Site and Easement Reclamation</td>
<td>LF</td>
<td>3,000</td>
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</table>

Total Component Cost (sub #2) $388,000.00

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<td>Permitting and Mitigation</td>
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</tr>
<tr>
<td>Legal Fees</td>
<td>$5,000.00</td>
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<td></td>
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</tr>
<tr>
<td>Easement</td>
<td>$5,000.00</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Access and ROW</td>
<td>$2,000.00</td>
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</table>

Pre-Construction Costs (sub #1) $46,100.00

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<tr>
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<td>Components and Engineering (sub #3)</td>
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<td>Construction Cost Total (sub #4)</td>
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Total Project Cost $536,920.00

USE FOR ANALYSIS $540,000.00
### 3. Cost Estimate - Purchase/Connect Mackenzie Well, DEQ Upgrades

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<thead>
<tr>
<th>Bid Item</th>
<th>Description</th>
<th>Unit</th>
<th>Bid Quantity</th>
<th>Unit Price</th>
<th>Item Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pipeline to District Pump House</td>
<td>LF</td>
<td>3,400</td>
<td>$75.00</td>
<td>$255,000.00</td>
</tr>
<tr>
<td>2</td>
<td>Pump Control System</td>
<td>LS</td>
<td>1</td>
<td>$7,500.00</td>
<td>$7,500.00</td>
</tr>
<tr>
<td>3</td>
<td>Control Floats at Tanks</td>
<td>LS</td>
<td>1</td>
<td>$12,500.00</td>
<td>$12,500.00</td>
</tr>
<tr>
<td>4</td>
<td>Control Wire, District Pump to Well</td>
<td>LF</td>
<td>3,400</td>
<td>$4.00</td>
<td>$13,600.00</td>
</tr>
<tr>
<td>5</td>
<td>Upgrade SCADA</td>
<td>LS</td>
<td>1</td>
<td>$15,000.00</td>
<td>$15,000.00</td>
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<tr>
<td>6</td>
<td>Pump House Retrofit, Mackenzie</td>
<td>LS</td>
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<td>$4,500.00</td>
<td>$4,500.00</td>
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<tr>
<td>7</td>
<td>Pump House Retrofit, District</td>
<td>LS</td>
<td>1</td>
<td>$4,500.00</td>
<td>$4,500.00</td>
</tr>
<tr>
<td>8</td>
<td>Blow-off Hydrant Assembly</td>
<td>LS</td>
<td>1</td>
<td>$3,500.00</td>
<td>$3,500.00</td>
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<tr>
<td>9</td>
<td>Set Surface Casing, Chapter 12</td>
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<td>$3,500.00</td>
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<tr>
<td>10</td>
<td>Access Road Improvements</td>
<td>LF</td>
<td>500</td>
<td>$20.00</td>
<td>$10,000.00</td>
</tr>
<tr>
<td>11</td>
<td>Pipeline Easement Reclamation</td>
<td>LF</td>
<td>3,400</td>
<td>$5.00</td>
<td>$17,000.00</td>
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</table>

**Total Component Cost (sub #2) $346,600.00**

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<th>cost (as listed)</th>
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<tr>
<td>Legal Fees</td>
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<tr>
<td>Pokorny easement 500 ft</td>
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<tr>
<td>Mackenzie - 100 ft</td>
<td>$1,000.00</td>
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**Pre-Construction Costs (sub #1) $41,995.00**

|Construction Engineering Cost                                              |$34,660.00       |
|Components and Engineering (sub #3)                                       |$381,260.00      |
|Contingency (Sub #3 x 15%)                                                 |$57,189.00       |

**Construction Cost Total (sub #4) $438,449.00**

|Total Project Cost                                                         |$480,444.00      |

(Purchase Price Unconfirmed)

|Purchase Well                                                              |$650,000.00      |

**USE FOR ANALYSIS $1,140,000.00**

|USE FOR ANALYSIS                                                          |$1,150,000.00    |
### 4. Cost Estimate - Drill New Well at Old West Cabins

<table>
<thead>
<tr>
<th>Bid Item</th>
<th>Description</th>
<th>Unit</th>
<th>Bid Quantity</th>
<th>Unit Price</th>
<th>Item Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Drill New Well With Pump and Parts</td>
<td>LS</td>
<td>1</td>
<td>$50,000.00</td>
<td>$50,000.00</td>
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<tr>
<td>2</td>
<td>Pipeline to District Pump House</td>
<td>LF</td>
<td>7,000</td>
<td>$75.00</td>
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<tr>
<td>3</td>
<td>Pump Control System</td>
<td>LS</td>
<td>1</td>
<td>$7,500.00</td>
<td>$7,500.00</td>
</tr>
<tr>
<td>4</td>
<td>Control Floats at Tanks</td>
<td>LS</td>
<td>1</td>
<td>$12,500.00</td>
<td>$12,500.00</td>
</tr>
<tr>
<td>5</td>
<td>Control Wire, District Pump to Well</td>
<td>LF</td>
<td>14,000</td>
<td>$2.00</td>
<td>$28,000.00</td>
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<tr>
<td>6</td>
<td>Upgrade SCADA</td>
<td>LS</td>
<td>1</td>
<td>$15,000.00</td>
<td>$15,000.00</td>
</tr>
<tr>
<td>7</td>
<td>Appurtenances</td>
<td>LS</td>
<td>1</td>
<td>$15,000.00</td>
<td>$15,000.00</td>
</tr>
<tr>
<td>8</td>
<td>Pump House Retrofit, District</td>
<td>LS</td>
<td>1</td>
<td>$4,500.00</td>
<td>$4,500.00</td>
</tr>
<tr>
<td>9</td>
<td>Blow-off Hydrant Assembly</td>
<td>LS</td>
<td>1</td>
<td>$3,500.00</td>
<td>$3,500.00</td>
</tr>
<tr>
<td>10</td>
<td>Access Road Improvements</td>
<td>LF</td>
<td>500</td>
<td>$20.00</td>
<td>$10,000.00</td>
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<tr>
<td>11</td>
<td>Pipeline Easement Reclamation</td>
<td>LF</td>
<td>7,000</td>
<td>$5.00</td>
<td>$35,000.00</td>
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<tr>
<td>12</td>
<td>Highway Bore</td>
<td>LS</td>
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<td>$20,000.00</td>
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**Total Component Cost (sub #2) $726,000.00**

**Pre-Construction Costs (sub #1) $94,450.00**

- Prepare final designs/specifications $54,450.00
- Permitting and Mitigation $5,000.00
- Legal Fees $5,000.00
- Easement $25,000.00
- Access and ROW $5,000.00

**Construction Engineering Cost $72,600.00**

**Components and Engineering (sub #3) $798,600.00**

**Contingency (Sub #3 x 15%) $119,790.00**

**Construction Cost Total (sub #4) $918,390.00**

**Total Project Cost $1,012,840.00**

**USE FOR ANALYSIS $1,025,000.00**
## 5. Cost Estimate - Snake River Alluvial Well

<table>
<thead>
<tr>
<th>Bid Item</th>
<th>Description</th>
<th>Unit</th>
<th>Bid Quantity</th>
<th>Unit Price</th>
<th>Item Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Drill/Test/Equip Production Well</td>
<td>LS</td>
<td>1</td>
<td>$50,000.00</td>
<td>$50,000.00</td>
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<tr>
<td>2</td>
<td>Pipeline to District Pump House</td>
<td>LF</td>
<td>8,500</td>
<td>$75.00</td>
<td>$637,500.00</td>
</tr>
<tr>
<td>3</td>
<td>Pump Control System</td>
<td>LS</td>
<td>1</td>
<td>$7,500.00</td>
<td>$7,500.00</td>
</tr>
<tr>
<td>4</td>
<td>Control Floats at Tanks</td>
<td>LS</td>
<td>1</td>
<td>$12,500.00</td>
<td>$12,500.00</td>
</tr>
<tr>
<td>5</td>
<td>Control Wire, District Pump to Well</td>
<td>LF</td>
<td>17,000</td>
<td>$2.00</td>
<td>$34,000.00</td>
</tr>
<tr>
<td>6</td>
<td>Upgrade SCADA</td>
<td>LS</td>
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<td>$15,000.00</td>
<td>$15,000.00</td>
</tr>
<tr>
<td>7</td>
<td>Appurtenances</td>
<td>LS</td>
<td>1</td>
<td>$15,000.00</td>
<td>$15,000.00</td>
</tr>
<tr>
<td>8</td>
<td>Pump House Retrofit, District</td>
<td>LS</td>
<td>1</td>
<td>$4,500.00</td>
<td>$4,500.00</td>
</tr>
<tr>
<td>9</td>
<td>Blow-off Hydrant Assembly</td>
<td>LS</td>
<td>1</td>
<td>$3,500.00</td>
<td>$3,500.00</td>
</tr>
<tr>
<td>10</td>
<td>Access Road Improvements</td>
<td>LF</td>
<td>500</td>
<td>$20.00</td>
<td>$10,000.00</td>
</tr>
<tr>
<td>11</td>
<td>Pipeline Easement Reclamation</td>
<td>LF</td>
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| Total Component Cost (sub #2) | $832,000.00 |

<table>
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<th>Description</th>
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<td>Permitting and Mitigation</td>
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<tr>
<td>Easement</td>
<td>$35,000.00</td>
</tr>
<tr>
<td>Access and ROW</td>
<td>$5,000.00</td>
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</table>

| Pre-Construction Costs (sub #1)    | $112,400.00|

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<th>Description</th>
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<tr>
<td>Construction Engineering Cost</td>
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<tr>
<td>Components and Engineering (sub #3)</td>
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<td>Contingency (Sub #3 x 15%)</td>
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<td>Construction Cost Total (sub #4)</td>
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| Total Project Cost                 | $1,164,880.00|

USE FOR ANALYSIS $1,175,000.00
### 6. Cost Estimate - Flat Creek Alluvial Well

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<tr>
<th>Bid Item</th>
<th>Description</th>
<th>Unit</th>
<th>Bid Quantity</th>
<th>Unit Price</th>
<th>Item Total</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Drill/Equipment Production Well</td>
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<td>$50,000.00</td>
<td>$50,000.00</td>
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<td>3</td>
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<td>LS</td>
<td>1</td>
<td>$7,500.00</td>
<td>$7,500.00</td>
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<tr>
<td>4</td>
<td>Control Floats at Tanks</td>
<td>LS</td>
<td>1</td>
<td>$12,500.00</td>
<td>$12,500.00</td>
</tr>
<tr>
<td>5</td>
<td>Control Wire, District Pump to Well</td>
<td>LF</td>
<td>9,800</td>
<td>$2.00</td>
<td>$19,600.00</td>
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<tr>
<td>6</td>
<td>Upgrade SCADA</td>
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<td>1</td>
<td>$15,000.00</td>
<td>$15,000.00</td>
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<tr>
<td>7</td>
<td>Appurtenances</td>
<td>LS</td>
<td>1</td>
<td>$15,000.00</td>
<td>$15,000.00</td>
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<tr>
<td>8</td>
<td>Pump House Retrofit, District</td>
<td>LS</td>
<td>1</td>
<td>$4,500.00</td>
<td>$4,500.00</td>
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<tr>
<td>9</td>
<td>Blow-off Hydrant Assembly</td>
<td>LS</td>
<td>1</td>
<td>$3,500.00</td>
<td>$3,500.00</td>
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<tr>
<td>10</td>
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<td>$20.00</td>
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**Total Component Cost (sub #2) $569,600.00**

- Prepare Final Designs/Specifications $42,720.00
- Permitting and Mitigation $5,000.00
- Legal Fees $5,000.00
- Easement $19,600.00 ($4/LF)
- Access and ROW $5,000.00

**Pre-Construction Costs (sub #1) $77,320.00**

- Construction Engineering Cost $56,960.00
- Components and Engineering (sub #3) $626,560.00
- Contingency (Sub #3 x 15%) $93,984.00
- Construction Cost Total (sub #4) $720,544.00

**Total Project Cost $797,864.00**

**USE FOR ANALYSIS $800,000.00**
## 7. Cost Estimate - 15,000 Gallon Fiberglass Storage Tank

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<th>Item Total</th>
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<td>$4,500.00</td>
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<td>$6,000.00</td>
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<td>$20,000.00</td>
<td>$20,000.00</td>
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<td>Crane to Set Tank</td>
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<td>7</td>
<td>Mobe and Demobe</td>
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**Total Project Cost** $102,078.00

**USE FOR ANALYSIS** $105,000.00

---

**Total Component Cost (sub #2)** $71,700.00

Prepare Final Designs/Specifications $5,377.50
Permitting and Mitigation $1,500.00
Legal Fees $500.00
Easement $4,000.00
Access and ROW $-

**Pre-Construction Costs (sub #1)** $11,377.50

Construction Engineering Cost $7,170.00
Components and Engineering (sub #3) $78,870.00
Contingency (Sub #3 x 15%) $11,830.50
Construction Cost Total (sub #4) $90,700.50
8. Cost Estimate - Replace System Pumps and Upgrade SCADA

<table>
<thead>
<tr>
<th>Bid Item</th>
<th>Description</th>
<th>Unit</th>
<th>Bid Quantity</th>
<th>Unit Price</th>
<th>Item Total</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Replace Two Well Pumps, 10HP</td>
<td>LS</td>
<td>2</td>
<td>$15,000.00</td>
<td>$30,000.00</td>
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<tr>
<td>2</td>
<td>Pump Control System</td>
<td>LS</td>
<td>2</td>
<td>$7,500.00</td>
<td>$15,000.00</td>
</tr>
<tr>
<td>3</td>
<td>VFD for Well Pumps</td>
<td>LS</td>
<td>2</td>
<td>$6,500.00</td>
<td>$13,000.00</td>
</tr>
<tr>
<td>4</td>
<td>Replace Spring Booster Pump 15HP</td>
<td>LS</td>
<td>1</td>
<td>$15,000.00</td>
<td>$15,000.00</td>
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<tr>
<td>5</td>
<td>VFD for Spring Booster Pump</td>
<td>LS</td>
<td>1</td>
<td>$6,500.00</td>
<td>$6,500.00</td>
</tr>
<tr>
<td>6</td>
<td>Upgrade SCADA System</td>
<td>LS</td>
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<td>$25,000.00</td>
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</table>

**Total Component Cost (sub #2) $104,500.00**

<table>
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</thead>
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<td>Prepare Final Designs/Specifications</td>
<td>$7,837.50</td>
</tr>
<tr>
<td>Permitting and Mitigation, USFS</td>
<td>$1,500.00</td>
</tr>
<tr>
<td>Legal Fees</td>
<td>-</td>
</tr>
<tr>
<td>Easement</td>
<td>-</td>
</tr>
<tr>
<td>Access and ROW</td>
<td>-</td>
</tr>
</tbody>
</table>

**Pre-Construction Costs (sub #1) $9,337.50**

**Construction Engineering Cost $10,450.00**

**Components and Engineering (sub #3) $114,950.00**

**Contingency (Sub #3 x 15%) $17,242.50**

**Construction Cost Total (sub #4) $132,192.50**

**Total Project Cost $141,530.00**

**USE FOR ANALYSIS $145,000.00**
### 9. Cost Estimate - Replace Pumps in Game Creek Wells

<table>
<thead>
<tr>
<th>Bid Item</th>
<th>Description</th>
<th>Unit</th>
<th>Bid Quantity</th>
<th>Unit Price</th>
<th>Item Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10 HP Submersible Well Pump</td>
<td>LS</td>
<td>2</td>
<td>$15,000.00</td>
<td>$30,000.00</td>
</tr>
<tr>
<td>2</td>
<td>Basic Pump Control System</td>
<td>LS</td>
<td>2</td>
<td>$7,500.00</td>
<td>$15,000.00</td>
</tr>
<tr>
<td>3</td>
<td>VFD for 10 HP Pump</td>
<td>LS</td>
<td>2</td>
<td>$6,500.00</td>
<td>$7,500.00</td>
</tr>
</tbody>
</table>

**Total Component Cost (sub #2)**  $52,500.00

- Prepare Final Designs/Specifications  $5,000.00
- Permitting and Mitigation, USFS  $2,000.00
- Legal Fees  -
- Easement  -
- Access and ROW  -

**Pre-Construction Costs (sub #1)**  $7,000.00

- Construction Engineering Cost  $5,250.00
- Components and Engineering (sub #3)  $57,750.00
- Contingency (Sub #3 x 15%)  $8,662.50
- Construction Cost Total (sub #4)  $66,412.50

**Total Project Cost**  $73,412.50

**USE FOR ANALYSIS**  $75,000.00
### 10. Cost Estimate - Rehab Game Creek Wells, Acid Treatment (Per Well)

<table>
<thead>
<tr>
<th>Bid Item</th>
<th>Description</th>
<th>Unit</th>
<th>Bid Quantity</th>
<th>Unit Price</th>
<th>Item Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mobilization, Treatment and Pumping</td>
<td>LS</td>
<td>1</td>
<td>$7,500.00</td>
<td>$7,500.00</td>
</tr>
<tr>
<td>2</td>
<td>Initial Pumping</td>
<td>HR</td>
<td>8</td>
<td>$125.00</td>
<td>$1,000.00</td>
</tr>
<tr>
<td>3</td>
<td>Remove Existing Pump</td>
<td>LS</td>
<td>1</td>
<td>$1,500.00</td>
<td>$1,500.00</td>
</tr>
<tr>
<td>4</td>
<td>Pollution Control Measures</td>
<td>LS</td>
<td>1</td>
<td>$15,000.00</td>
<td>$15,000.00</td>
</tr>
<tr>
<td>5</td>
<td>Acid Treatment</td>
<td>LS</td>
<td>1</td>
<td>$2,500.00</td>
<td>$2,500.00</td>
</tr>
<tr>
<td>6</td>
<td>Surge, Bail, and Brush Well</td>
<td>HR</td>
<td>12</td>
<td>$250.00</td>
<td>$3,000.00</td>
</tr>
<tr>
<td>7</td>
<td>Flush Well, Remove Acid, Treat Water</td>
<td>Gallons</td>
<td>5,000</td>
<td>$2.50</td>
<td>$12,500.00</td>
</tr>
<tr>
<td>8</td>
<td>Haul and Dispose of Water</td>
<td>Gallons</td>
<td>5,000</td>
<td>$2.50</td>
<td>$12,500.00</td>
</tr>
<tr>
<td>9</td>
<td>Video Well</td>
<td>LS</td>
<td>1</td>
<td>$1,200.00</td>
<td>$1,200.00</td>
</tr>
<tr>
<td>10</td>
<td>Install Test Pump</td>
<td>LS</td>
<td>1</td>
<td>$1,500.00</td>
<td>$1,500.00</td>
</tr>
<tr>
<td>11</td>
<td>Test Pumping</td>
<td>HR</td>
<td>8</td>
<td>$250.00</td>
<td>$2,000.00</td>
</tr>
<tr>
<td>12</td>
<td>Reinstall Old Pump, Connect</td>
<td>LS</td>
<td>1</td>
<td>$2,000.00</td>
<td>$2,000.00</td>
</tr>
</tbody>
</table>

Total Component Cost (sub #2) $62,200.00

- Prepare Final Designs/Specifications $4,665.00
- Permitting and Mitigation, USFS $3,500.00
- Legal Fees $15.00
- Easement $4,000.00
- Access and ROW $-

Pre-Construction Costs (sub #1) $12,180.00

- Construction Engineering Cost $6,220.00
- Components and Engineering (sub #3) $68,420.00
- Contingency (Sub #3 x 15%) $10,263.00
- Construction Cost Total (sub #4) $78,683.00

Total Project Cost $90,863.00

USE FOR ANALYSIS $100,000.00
## 11. Cost Estimate - Replace Spring Booster Pump

<table>
<thead>
<tr>
<th>Bid Item</th>
<th>Description</th>
<th>Unit</th>
<th>Bid Quantity</th>
<th>Unit Price</th>
<th>Item Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Replace Spring Booster Pump, 15 HP</td>
<td>LS</td>
<td>1</td>
<td>$15,000.00</td>
<td>$15,000.00</td>
</tr>
<tr>
<td>2</td>
<td>VFD for Spring Booster Pump</td>
<td>LS</td>
<td>1</td>
<td>$6,500.00</td>
<td>$6,500.00</td>
</tr>
</tbody>
</table>

**Total Component Cost (sub #2)** $21,500.00

- Prepare Final Designs/Specifications $2,150.00
- Permitting and Mitigation -
- Legal Fees -
- Easement -
- Access and ROW -

**Pre-Construction Costs (sub #1)** $2,150.00

- Construction Engineering Cost $2,150.00
- Components and Engineering (sub #3) $23,650.00
- Contingency (Sub #3 x 15%) $3,547.50
- Construction Cost Total (sub #4) $27,197.50

**Total Project Cost** $29,347.50

**USE FOR ANALYSIS** $30,000.00
# 12. Cost Estimate - Drill/Test Nugget Well on Plateau

## Phase 1 - Drilling and Geophysically logging of Pilot Hole

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Unit</th>
<th>Quantity</th>
<th>Unit Price</th>
<th>Item Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mobilization</td>
<td>LS</td>
<td>1</td>
<td>$40,000.00</td>
<td>$40,000.00</td>
</tr>
<tr>
<td>2</td>
<td>Drill pilot hole</td>
<td>LF</td>
<td>1,400</td>
<td>$50.00</td>
<td>$70,000.00</td>
</tr>
<tr>
<td>3</td>
<td>Air Lifting of Pilot Hole</td>
<td>EA</td>
<td>4</td>
<td>$1,000.00</td>
<td>$4,000.00</td>
</tr>
<tr>
<td>4</td>
<td>Geophysical logging</td>
<td>LF</td>
<td>1,400</td>
<td>$6.50</td>
<td>$9,100.00</td>
</tr>
<tr>
<td>5</td>
<td>Abandon Pilot Hole</td>
<td>LF</td>
<td>1,400</td>
<td>$5.00</td>
<td>$7,000.00</td>
</tr>
<tr>
<td></td>
<td><strong>Sub-Total Phase 1 - Pilot Hole Drilling</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>$130,100.00</strong></td>
</tr>
</tbody>
</table>

## Phase 2 - Production Well

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Unit</th>
<th>Quantity</th>
<th>Unit Price</th>
<th>Item Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Drill 12-1/2&quot; borehole Furnish and Install 8&quot; ID - 0.322&quot; Wall Steel Well</td>
<td>LF</td>
<td>1250</td>
<td>125.00</td>
<td>156,250.00</td>
</tr>
<tr>
<td>8</td>
<td>Casing Furnish and Install 8&quot; 0.030 slot stainless steel well screen</td>
<td>LF</td>
<td>1100</td>
<td>55.00</td>
<td>60,500.00</td>
</tr>
<tr>
<td>9</td>
<td>Furnish and Install Bentonite Seal around casing</td>
<td>LF</td>
<td>120</td>
<td>165.00</td>
<td>19,800.00</td>
</tr>
<tr>
<td>10</td>
<td>Furnish and Install Bentonite Seal around casing</td>
<td>LF</td>
<td>100</td>
<td>17.00</td>
<td>1,700.00</td>
</tr>
<tr>
<td>11</td>
<td>Furnish and install neat cement grout around casing</td>
<td>LF</td>
<td>500</td>
<td>25.00</td>
<td>12,500.00</td>
</tr>
<tr>
<td>12</td>
<td>Furnish and Install Pitless Adapter</td>
<td>EA</td>
<td>1</td>
<td>8,500.00</td>
<td>8,500.00</td>
</tr>
<tr>
<td>13</td>
<td>Develop well by surging, jetting and air lifting</td>
<td>HR</td>
<td>16</td>
<td>350.00</td>
<td>5,600.00</td>
</tr>
<tr>
<td>14</td>
<td>Install and remove temporary pump</td>
<td>LS</td>
<td>1</td>
<td>3,500.00</td>
<td>3,500.00</td>
</tr>
<tr>
<td>15</td>
<td>Install and maintain water conveyance and discharge</td>
<td>LS</td>
<td>1</td>
<td>3,500.00</td>
<td>3,500.00</td>
</tr>
<tr>
<td>16</td>
<td>Conduct stepped discharge test</td>
<td>HR</td>
<td>8</td>
<td>175.00</td>
<td>1,400.00</td>
</tr>
<tr>
<td>17</td>
<td>Conduct constant rate discharge test</td>
<td>HR</td>
<td>96</td>
<td>175.00</td>
<td>16,800.00</td>
</tr>
<tr>
<td>18</td>
<td>Well Disinfection</td>
<td>LS</td>
<td>1</td>
<td>500.00</td>
<td>500.00</td>
</tr>
<tr>
<td>19</td>
<td>Stand-By Time</td>
<td>HR</td>
<td>8</td>
<td>350.00</td>
<td>2,800.00</td>
</tr>
<tr>
<td>20</td>
<td>Drilling Site Restoration</td>
<td>EA</td>
<td>1</td>
<td>1,500.00</td>
<td>1,500.00</td>
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<td></td>
<td><strong>Sub-Total Phase 2 - Production Well</strong></td>
<td></td>
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<td></td>
<td><strong>294,850.00</strong></td>
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</tbody>
</table>

## Total Component Costs (sub #2) 424,950.00

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
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</thead>
<tbody>
<tr>
<td>Prepare Final Designs/Specifications</td>
<td>31,871.25</td>
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<tr>
<td>Permitting and Mitigation</td>
<td>5,000.00</td>
</tr>
<tr>
<td>Legal Fees</td>
<td>2,500.00</td>
</tr>
<tr>
<td>Easement</td>
<td>10,000.00</td>
</tr>
<tr>
<td>Access and ROW</td>
<td>2,000.00</td>
</tr>
</tbody>
</table>

## Pre-Construction Costs (sub #1) 51,371.25

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction Engineering Cost</td>
<td>$42,495.00</td>
</tr>
<tr>
<td>Components and Engineering (sub #3)</td>
<td>$467,445.00</td>
</tr>
<tr>
<td>Contingency (Sub #3 x 15%)</td>
<td>$70,116.75</td>
</tr>
<tr>
<td>Construction Cost Total (sub #4)</td>
<td>$537,561.75</td>
</tr>
</tbody>
</table>

## Total Project Cost 588,933.00

Use for Analysis: (includes pipeline) $600,000.00
### Phase 1 - Drilling and Geophysically logging of two Pilot Holes

<table>
<thead>
<tr>
<th>Bid Item</th>
<th>Description</th>
<th>Unit</th>
<th>Quantity</th>
<th>Unit Price</th>
<th>Item Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mobilization</td>
<td>LS</td>
<td>1</td>
<td>$20,000.00</td>
<td>$20,000.00</td>
</tr>
<tr>
<td>2</td>
<td>Drill two 6-1/4&quot; diameter pilot holes</td>
<td>LF</td>
<td>1,200</td>
<td>$25.00</td>
<td>$30,000.00</td>
</tr>
<tr>
<td>3</td>
<td>Air Lifting of Pilot Holes</td>
<td>EA</td>
<td>8</td>
<td>$790.00</td>
<td>$6,320.00</td>
</tr>
<tr>
<td>4</td>
<td>Geophysical logging</td>
<td>LF</td>
<td>1,200</td>
<td>$6.50</td>
<td>$7,800.00</td>
</tr>
<tr>
<td>5</td>
<td>Abandon Pilot Hole</td>
<td>LF</td>
<td>600</td>
<td>$5.00</td>
<td>$3,000.00</td>
</tr>
<tr>
<td>6</td>
<td>Reclaim Site</td>
<td>EA</td>
<td>1</td>
<td>$1,500.00</td>
<td>$1,500.00</td>
</tr>
</tbody>
</table>

**Sub-Total - Phase 1 Pilot Hole Drilling** $67,900.00

### Phase 2 - Production Well

<table>
<thead>
<tr>
<th>Bid Item</th>
<th>Description</th>
<th>Unit</th>
<th>Quantity</th>
<th>Unit Price</th>
<th>Item Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Ream Pilot Hole to 12-1/2&quot; borehole</td>
<td>LF</td>
<td>550</td>
<td>$70.00</td>
<td>$38,500.00</td>
</tr>
<tr>
<td>8</td>
<td>Furnish and Install 8&quot; ID - 0.322&quot; Wall Steel Well Casing</td>
<td>LF</td>
<td>440</td>
<td>$45.00</td>
<td>$19,800.00</td>
</tr>
<tr>
<td>9</td>
<td>Furnish and Install 8&quot; 0.030 slot stainless steel well screen</td>
<td>LF</td>
<td>100</td>
<td>$165.00</td>
<td>$16,500.00</td>
</tr>
<tr>
<td>10</td>
<td>Furnish and Install Sand Pack</td>
<td>LF</td>
<td>250</td>
<td>$25.00</td>
<td>$6,250.00</td>
</tr>
<tr>
<td>11</td>
<td>Furnish and Install Bentonite Seal around casing</td>
<td>LF</td>
<td>20</td>
<td>$17.00</td>
<td>$340.00</td>
</tr>
<tr>
<td>12</td>
<td>Furnish and install neat cement grout around casing</td>
<td>LF</td>
<td>300</td>
<td>$25.00</td>
<td>$7,500.00</td>
</tr>
<tr>
<td>13</td>
<td>Furnish and Install Pilotless Adapter</td>
<td>EA</td>
<td>1</td>
<td>$8,500.00</td>
<td>$8,500.00</td>
</tr>
<tr>
<td>14</td>
<td>Develop well by surging, jetting and air lifting</td>
<td>HR</td>
<td>12</td>
<td>$350.00</td>
<td>$4,200.00</td>
</tr>
<tr>
<td>15</td>
<td>Install and remove temporary pump</td>
<td>LS</td>
<td>1</td>
<td>$2,500.00</td>
<td>$2,500.00</td>
</tr>
<tr>
<td>16</td>
<td>Install and maintain water conveyance and discharge</td>
<td>LS</td>
<td>1</td>
<td>$3,500.00</td>
<td>$3,500.00</td>
</tr>
<tr>
<td>17</td>
<td>Conduct stepped discharge test</td>
<td>HR</td>
<td>8</td>
<td>$175.00</td>
<td>$1,400.00</td>
</tr>
<tr>
<td>18</td>
<td>Conduct constant rate discharge test</td>
<td>HR</td>
<td>96</td>
<td>$175.00</td>
<td>$16,800.00</td>
</tr>
<tr>
<td>19</td>
<td>Well Disinfection</td>
<td>LS</td>
<td>1</td>
<td>$500.00</td>
<td>$500.00</td>
</tr>
<tr>
<td>20</td>
<td>Stand-By Time</td>
<td>HR</td>
<td>8</td>
<td>$350.00</td>
<td>$2,800.00</td>
</tr>
<tr>
<td>21</td>
<td>Drilling Site Restoration</td>
<td>EA</td>
<td>1</td>
<td>$1,500.00</td>
<td>$1,500.00</td>
</tr>
</tbody>
</table>

**Sub-Total Phase 2 - Production Well** $130,590.00

### Phase 3 - Connect Well to District Tanks

<table>
<thead>
<tr>
<th>Bid Item</th>
<th>Description</th>
<th>Unit</th>
<th>Quantity</th>
<th>Unit Price</th>
<th>Item Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>Pipeline, installed (assume 1000 feet)</td>
<td>LF</td>
<td>1000</td>
<td>$75.00</td>
<td>$75,000.00</td>
</tr>
<tr>
<td>23</td>
<td>Pump Control System</td>
<td>LS</td>
<td>1</td>
<td>$7,500.00</td>
<td>$7,500.00</td>
</tr>
<tr>
<td>24</td>
<td>Control wires, well to tanks</td>
<td>LF</td>
<td>2000</td>
<td>$2.00</td>
<td>$4,000.00</td>
</tr>
<tr>
<td>25</td>
<td>Upgrade SCADA</td>
<td>LS</td>
<td>1</td>
<td>$15,000.00</td>
<td>$15,000.00</td>
</tr>
<tr>
<td>26</td>
<td>Appurtenances</td>
<td>LS</td>
<td>1</td>
<td>$15,000.00</td>
<td>$15,000.00</td>
</tr>
</tbody>
</table>

**Sub-Total Phase 3 Connect to System** $116,500.00

### Total Component Costs (sub #2)

- Prepare Final Designs/Specifications: $23,624.25
- Permitting and Mitigation: $5,000.00
- Legal Fees: $2,500.00
- Easement: $10,000.00
- Access and ROW: $2,000.00

**Pre-Construction Costs (sub #1)**

- Construction Engineering Cost: $31,499.00
- Components and Engineering (sub #3): $346,489.00
- Contingency (Sub #3 x 15%): $51,973.35
- Construction Cost Total (sub #4): $398,462.35

**Total Project Cost** $441,586.60

USE FOR ANALYSIS $450,000.00
14. Cost Estimate - Connect to Jackson Water System

<table>
<thead>
<tr>
<th>Bid Item</th>
<th>Description</th>
<th>Unit</th>
<th>Bid Quantity</th>
<th>Unit Price</th>
<th>Item Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pipeline to Game Creek Wells</td>
<td>LF</td>
<td>32,675</td>
<td>$85.00</td>
<td>$2,777,375.00</td>
</tr>
<tr>
<td>2</td>
<td>Pressure Reducing Stations</td>
<td>LS</td>
<td>4</td>
<td>$50,000.00</td>
<td>$200,000.00</td>
</tr>
<tr>
<td>3</td>
<td>Pipeline Appurtenances (15%)</td>
<td>LS</td>
<td>1</td>
<td>$450,000.00</td>
<td>$450,000.00</td>
</tr>
<tr>
<td>4</td>
<td>Pipeline Easement Reclamation</td>
<td>LF</td>
<td>32,675</td>
<td>$5.00</td>
<td>$163,375.00</td>
</tr>
<tr>
<td>5</td>
<td>Upgrade SCADA</td>
<td>LS</td>
<td>1</td>
<td>$15,000.00</td>
<td>$15,000.00</td>
</tr>
</tbody>
</table>

**Total Component Cost (sub #2)** $3,605,750.00

- Prepare Final Designs/Specifications $270,431.25
- Permitting and Mitigation $15,000.00
- Legal Fees $15,000.00
- Easement $10,000.00
- Access and ROW $20,000.00

**Pre-Construction Costs (sub #1)** $330,431.25

- Construction Engineering Cost $360,575.00
- Components and Engineering (sub #3) $3,966,325.00
- Contingency (Sub #3 x 15%) $594,948.75

**Construction Cost Total (sub #4)** $4,561,273.75

**Total Project Cost** $4,891,705.00

USE FOR ANALYSIS $5,000,000.00

Assumes pipeline in WYDOT and USFS ROW
### 15. Cost Estimate - Connect Rafter J Water System

<table>
<thead>
<tr>
<th>Bid Item</th>
<th>Description</th>
<th>Unit</th>
<th>Bid Quantity</th>
<th>Unit Price</th>
<th>Item Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pipeline to Game Creek Wells</td>
<td>LF</td>
<td>23,300</td>
<td>$75.00</td>
<td>$1,747,500.00</td>
</tr>
<tr>
<td>2</td>
<td>Pressure Reducing Stations</td>
<td>LS</td>
<td>2</td>
<td>$50,000.00</td>
<td>$100,000.00</td>
</tr>
<tr>
<td>3</td>
<td>Pipeline Appurtenances (15%)</td>
<td>LS</td>
<td>1</td>
<td>$262,125.00</td>
<td>$262,125.00</td>
</tr>
<tr>
<td>4</td>
<td>Pipeline Easement Reclamation</td>
<td>LF</td>
<td>23,300</td>
<td>$5.00</td>
<td>$116,500.00</td>
</tr>
<tr>
<td>5</td>
<td>Upgrade SCADA</td>
<td>LS</td>
<td>1</td>
<td>$15,000.00</td>
<td>$15,000.00</td>
</tr>
</tbody>
</table>

**Total Component Cost (sub #2)** $2,241,125.00

- Prepare Final Designs/Specifications $168,084.38
- Permitting and Mitigation $12,000.00
- Legal Fees $12,000.00
- Easement $-
- Access and ROW $-

**Pre-Construction Costs (sub #1)** $192,084.38

- Construction Engineering Cost $224,112.50
- Components and Engineering (sub #3) $2,465,237.50
- Contingency (Sub #3 x 15%) $369,785.63

**Construction Cost Total (sub #4)** $2,835,023.13

**Total Project Cost** $3,027,107.50

*USE FOR ANALYSIS* $3,050,000.00

Assumes pipeline in WYDOT and USFS ROW
## 16. Cost Estimate - Purchase and Connect Teton County #1

<table>
<thead>
<tr>
<th>Bid Item</th>
<th>Description</th>
<th>Unit</th>
<th>Bid Quantity</th>
<th>Unit Price</th>
<th>Item Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pipeline to Game Creek Wells</td>
<td>LF</td>
<td>6,300</td>
<td>$85.00</td>
<td>$535,500.00</td>
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<tr>
<td>2</td>
<td>Pump Control System</td>
<td>LS</td>
<td>1</td>
<td>$7,500.00</td>
<td>$7,500.00</td>
</tr>
<tr>
<td>3</td>
<td>Control Floats at Tanks</td>
<td>LS</td>
<td>1</td>
<td>$12,500.00</td>
<td>$12,500.00</td>
</tr>
<tr>
<td>4</td>
<td>Control Wire, District Pump to Well</td>
<td>LF</td>
<td>10,400</td>
<td>$2.00</td>
<td>$20,800.00</td>
</tr>
<tr>
<td>5</td>
<td>Upgrade SCADA</td>
<td>LS</td>
<td>1</td>
<td>$15,000.00</td>
<td>$15,000.00</td>
</tr>
<tr>
<td>6</td>
<td>Pipeline and Pump Appurtenances</td>
<td>LS</td>
<td>1</td>
<td>$15,000.00</td>
<td>$15,000.00</td>
</tr>
<tr>
<td>7</td>
<td>Pump House Retrofit, District</td>
<td>LS</td>
<td>1</td>
<td>$4,500.00</td>
<td>$4,500.00</td>
</tr>
<tr>
<td>8</td>
<td>Blow-off Hydrant Assembly</td>
<td>LS</td>
<td>1</td>
<td>$3,500.00</td>
<td>$3,500.00</td>
</tr>
<tr>
<td>10</td>
<td>Access Road Improvements</td>
<td>LF</td>
<td>500</td>
<td>$25.00</td>
<td>$12,500.00</td>
</tr>
<tr>
<td>11</td>
<td>Pipeline Easement Reclamation</td>
<td>LF</td>
<td>5,200</td>
<td>$5.00</td>
<td>$26,000.00</td>
</tr>
</tbody>
</table>

**Total Component Cost (sub #2)** $652,800.00

- Prepare Final Designs/Specifications $48,960.00
- Permitting and Mitigation $5,000.00
- Legal Fees $5,000.00
- Easement $10,000.00
- Access and ROW $2,000.00

**Pre-Construction Costs (sub #1)** $70,960.00

- Construction Engineering Cost $65,280.00
- Components and Engineering (sub #3) $718,080.00
- Contingency (Sub #3 x 15%) $107,712.00
- Construction Cost Total (sub #4) $825,792.00

**Total Project Cost** $896,752.00

(Purchase Price Not Confirmed)
- Purchase Well $350,000.00
- $1,246,752.00

**USE FOR ANALYSIS** $1,250,000.00
## 17. Cost Estimate - Drill and Test New Well Adjacent to Teton County #1

### Bid Item Description

<table>
<thead>
<tr>
<th>Bid</th>
<th>Description</th>
<th>Unit</th>
<th>Quantity</th>
<th>Unit Price</th>
<th>Item Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mobilization</td>
<td>LS</td>
<td>1</td>
<td>$20,000.00</td>
<td>$20,000.00</td>
</tr>
<tr>
<td>2</td>
<td>Drill two 6-1/4&quot; diameter pilot hole</td>
<td>LF</td>
<td>1,200</td>
<td>$25.00</td>
<td>$30,000.00</td>
</tr>
<tr>
<td>3</td>
<td>Air Lifting of Pilot Holes</td>
<td>EA</td>
<td>8</td>
<td>$700.00</td>
<td>$5,600.00</td>
</tr>
<tr>
<td>4</td>
<td>Geophysical logging</td>
<td>LF</td>
<td>1,200</td>
<td>$6.50</td>
<td>$7,800.00</td>
</tr>
<tr>
<td>5</td>
<td>Abandon Pilot Hole</td>
<td>LF</td>
<td>600</td>
<td>$5.00</td>
<td>$3,000.00</td>
</tr>
<tr>
<td>6</td>
<td>Reclaim Site</td>
<td>EA</td>
<td>1</td>
<td>$2,500.00</td>
<td>$2,500.00</td>
</tr>
</tbody>
</table>

Sub-Total Pilot Hole and Exploration Drilling $68,900.00

### Phase 2 - Production Well

<table>
<thead>
<tr>
<th>Bid</th>
<th>Description</th>
<th>Unit</th>
<th>Quantity</th>
<th>Unit Price</th>
<th>Item Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Ream Pilot Hole to 12-1/2&quot; borehole</td>
<td>LF</td>
<td>550</td>
<td>$70.00</td>
<td>$38,500.00</td>
</tr>
<tr>
<td>8</td>
<td>Furnish and Install 8&quot; ID - 0.322&quot; Wall Steel Well Casing</td>
<td>LF</td>
<td>440</td>
<td>$45.00</td>
<td>$19,800.00</td>
</tr>
<tr>
<td>9</td>
<td>Furnish and Install 8&quot; 0.030 slot stainless steel well screen</td>
<td>LF</td>
<td>100</td>
<td>$165.00</td>
<td>$16,500.00</td>
</tr>
<tr>
<td>10</td>
<td>Furnish and Install Sand Pack</td>
<td>LF</td>
<td>250</td>
<td>$25.00</td>
<td>$6,250.00</td>
</tr>
<tr>
<td>11</td>
<td>Furnish and Install Bentonite Seal around casing</td>
<td>LF</td>
<td>20</td>
<td>$17.00</td>
<td>$340.00</td>
</tr>
<tr>
<td>12</td>
<td>Furnish and install neat cement grout around casing</td>
<td>LF</td>
<td>300</td>
<td>$25.00</td>
<td>$7,500.00</td>
</tr>
<tr>
<td>13</td>
<td>Develop Well by surging, jetting, and air lifting</td>
<td>HR</td>
<td>12</td>
<td>$350.00</td>
<td>$4,200.00</td>
</tr>
<tr>
<td>14</td>
<td>Install and remove temporary pump</td>
<td>LS</td>
<td>1</td>
<td>$2,500.00</td>
<td>$2,500.00</td>
</tr>
<tr>
<td>15</td>
<td>Install and maintain water conveyance and discharge</td>
<td>LS</td>
<td>1</td>
<td>$3,500.00</td>
<td>$3,500.00</td>
</tr>
<tr>
<td>16</td>
<td>Conduct stepped discharge test</td>
<td>HR</td>
<td>8</td>
<td>$175.00</td>
<td>$1,400.00</td>
</tr>
<tr>
<td>17</td>
<td>Conduct constant rate discharge test</td>
<td>HR</td>
<td>96</td>
<td>$175.00</td>
<td>$16,800.00</td>
</tr>
<tr>
<td>18</td>
<td>Well Disinfection</td>
<td>LS</td>
<td>1</td>
<td>$500.00</td>
<td>$500.00</td>
</tr>
<tr>
<td>19</td>
<td>Stand-By Time</td>
<td>HR</td>
<td>8</td>
<td>$350.00</td>
<td>$2,800.00</td>
</tr>
<tr>
<td>20</td>
<td>Drilling Site Restoration</td>
<td>EA</td>
<td>1</td>
<td>$1,500.00</td>
<td>$1,500.00</td>
</tr>
</tbody>
</table>

Sub-Total Phase 2 - Production Well $123,090.00

### Total Component Costs (sub #2)

- Prepare Final Designs/Specifications $14,399.25
- Permitting and Mitigation $5,000.00
- Legal Fees $2,500.00
- Easement $10,000.00
- Access and ROW $2,000.00

**Pre-Construction Costs (sub #1)** $33,899.25

- Construction Engineering Cost $19,199.00
- Components and Engineering (sub #3) $211,189.00
- Contingency (Sub #3 x 15%) $31,678.35
- Construction Cost Total (sub #4) $242,867.35

**Total Project Cost** $276,766.60

Highlight indicates Level III Costs to District

Cost to District $118,890.00
## 18. Cost Estimate of Pipeline and Appurtenances, New Well

<table>
<thead>
<tr>
<th>Bid Item</th>
<th>Description</th>
<th>Unit</th>
<th>Quantity</th>
<th>Unit Price</th>
<th>Item Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIPELINE/ACCESS ROAD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Furnish and Install 4&quot; DR 18 C-900 PVC Water Line</td>
<td>LF</td>
<td>6300</td>
<td>$60.00</td>
<td>$378,000.00</td>
</tr>
<tr>
<td>2</td>
<td>Pipeline ells, thrust blocks, appurtenances</td>
<td>LS</td>
<td>15% line cost</td>
<td>$56,700.00</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Furnish and Install PRV(s)</td>
<td>EA</td>
<td>0</td>
<td>$25,000.00</td>
<td>$0.00</td>
</tr>
<tr>
<td>4</td>
<td>Furnish and Install Air Relief Valve(s)</td>
<td>EA</td>
<td>8</td>
<td>$2,000.00</td>
<td>$16,000.00</td>
</tr>
<tr>
<td>5</td>
<td>Improve/construct access road to well site</td>
<td>LF</td>
<td>2000</td>
<td>$10.00</td>
<td>$20,000.00</td>
</tr>
<tr>
<td>6</td>
<td>Reclaim/Reseed to USFS standards</td>
<td>LF</td>
<td>6300</td>
<td>$5.00</td>
<td>$31,500.00</td>
</tr>
<tr>
<td>BOOSTER PUMP STATION/STORAGE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Furnish and Install 7.5 HP Water Pump</td>
<td>EA</td>
<td>1</td>
<td>$7,500.00</td>
<td>$7,500.00</td>
</tr>
<tr>
<td>2</td>
<td>Furnish and Install 3000 gallons Clearwell/Storage</td>
<td>LS</td>
<td>1</td>
<td>$7,500.00</td>
<td>$7,500.00</td>
</tr>
<tr>
<td>3</td>
<td>Furnish and Install gages, meters, valves</td>
<td>LS</td>
<td>1</td>
<td>$15,000.00</td>
<td>$15,000.00</td>
</tr>
<tr>
<td>4</td>
<td>Furnish and Install SCADA, Connect to Existing</td>
<td>LS</td>
<td>1</td>
<td>$75,000.00</td>
<td>$75,000.00</td>
</tr>
</tbody>
</table>

Sub-Total $607,200.00

Total Component Costs (sub #2) $607,200.00

- Prepare Final Designs/Specifications $45,540.00
- Permitting and Mitigation $15,000.00
- Legal Fees $2,500.00
- Easement $10,000.00
- Access and ROW $5,000.00

Pre-Construction Costs (sub #1) $78,040.00

Construction Engineering Cost $60,720.00
Components and Engineering (sub #3) $667,920.00
Contingency (Sub #3 x 15%) $100,188.00
Construction Cost Total (sub #4) $768,108.00

Total Project Cost $846,148.00

Use for Analysis $850,000.00
Table 13.1  Summary of Costs for Supply Alternatives and System Upgrade Options

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Component Cost</th>
<th>Pre-Construction Costs</th>
<th>Components &amp; Engineering</th>
<th>Contingency</th>
<th>Well Purchase (Estimate)</th>
<th>Total Project Cost (Use)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Flat Creek Well, SPWHMA</td>
<td>$625,200.00</td>
<td>$68,890.00</td>
<td>$687,720.00</td>
<td>$103,158.00</td>
<td>$0.00</td>
<td>$865,000.00</td>
</tr>
<tr>
<td>2 Convert Test Well No.3 to Production</td>
<td>$388,000.00</td>
<td>$46,100.00</td>
<td>$426,800.00</td>
<td>$64,020.00</td>
<td>$0.00</td>
<td>$540,000.00</td>
</tr>
<tr>
<td>3 Purchase/Connect Mackenzie Well</td>
<td>$346,600.00</td>
<td>$41,995.00</td>
<td>$381,260.00</td>
<td>$57,189.00</td>
<td>$0.00</td>
<td>$1,150,000.00</td>
</tr>
<tr>
<td>4 Drill Well at Old West Cabins</td>
<td>$726,000.00</td>
<td>$94,450.00</td>
<td>$786,300.00</td>
<td>$119,790.00</td>
<td>$0.00</td>
<td>$1,025,000.00</td>
</tr>
<tr>
<td>5 Snake River Alluvial Well</td>
<td>$832,000.00</td>
<td>$112,400.00</td>
<td>$915,200.00</td>
<td>$137,280.00</td>
<td>$0.00</td>
<td>$1,175,000.00</td>
</tr>
<tr>
<td>6 Flat Creek Alluvial Well East</td>
<td>$569,600.00</td>
<td>$77,320.00</td>
<td>$626,700.00</td>
<td>$93,984.00</td>
<td>$0.00</td>
<td>$800,000.00</td>
</tr>
<tr>
<td>7 15,000 Gallon Fiberglass Tank</td>
<td>$71,700.00</td>
<td>$11,377.00</td>
<td>$78,870.00</td>
<td>$11,830.50</td>
<td>$0.00</td>
<td>$105,000.00</td>
</tr>
<tr>
<td>8 Replace Pumps, Upgrade SCADA</td>
<td>$104,500.00</td>
<td>$9,337.00</td>
<td>$113,837.00</td>
<td>$137,280.00</td>
<td>$0.00</td>
<td>$145,000.00</td>
</tr>
<tr>
<td>9 Replace Game Creek Well Pumps</td>
<td>$52,500.00</td>
<td>$7,000.00</td>
<td>$57,750.00</td>
<td>$8,662.50</td>
<td>$0.00</td>
<td>$75,000.00</td>
</tr>
<tr>
<td>10 Rehab Game Creek Wells</td>
<td>$62,200.00</td>
<td>$12,180.00</td>
<td>$68,250.00</td>
<td>$10,263.00</td>
<td>$0.00</td>
<td>$100,000.00</td>
</tr>
<tr>
<td>11 Replace Spring Booster Pump</td>
<td>$21,500.00</td>
<td>$2,150.00</td>
<td>$23,650.00</td>
<td>$3,547.50</td>
<td>$0.00</td>
<td>$30,000.00</td>
</tr>
<tr>
<td>12 Drill/Test Nugget Well (w/pipeline)</td>
<td>$424,950.00</td>
<td>$51,371.25</td>
<td>$467,600.00</td>
<td>$70,116.75</td>
<td>$0.00</td>
<td>$600,000.00</td>
</tr>
<tr>
<td>13 Drill/Test Camp Davis Well (w/pipeline)</td>
<td>$314,990.00</td>
<td>$43,124.25</td>
<td>$358,110.00</td>
<td>$51,973.35</td>
<td>$0.00</td>
<td>$450,000.00</td>
</tr>
<tr>
<td>14 Connect to Town of Jackson System</td>
<td>$3,605,750.00</td>
<td>$330,431.25</td>
<td>$3,936,181.25</td>
<td>$594,948.75</td>
<td>$0.00</td>
<td>$5,000,000.00</td>
</tr>
<tr>
<td>15 Connect to Rafter J System</td>
<td>$2,241,125.00</td>
<td>$192,084.38</td>
<td>$2,433,209.38</td>
<td>$389,875.63</td>
<td>$0.00</td>
<td>$3,010,000.00</td>
</tr>
<tr>
<td>16 Purchase/connect Teton County No. 1</td>
<td>$652,800.00</td>
<td>$70,960.00</td>
<td>$723,760.00</td>
<td>$107,712.00</td>
<td>$350,000.00</td>
<td>$1,250,000.00</td>
</tr>
<tr>
<td>17 Drill/Test New Well at Teton County No. 1</td>
<td>$191,990.00</td>
<td>$33,899.25</td>
<td>$225,889.25</td>
<td>$31,678.35</td>
<td>$0.00</td>
<td>$276,766.00</td>
</tr>
<tr>
<td>18 Pipeline/appurtenances, New Well</td>
<td>$607,200.00</td>
<td>$78,040.00</td>
<td>$667,900.00</td>
<td>$100,188.00</td>
<td>$0.00</td>
<td>$850,000.00</td>
</tr>
</tbody>
</table>


INTRODUCTION

An environmental report will be required if the District proceeds with any option:

- Involving a disturbance of land managed by the Forest Service. If the recommendation to extend the Level II study and drill a test well adjacent to Teton County No. 1 on the Bridger Teton National Forest, an environmental analysis will be prepared by Forest Service staff. This report will be developed in conjunction with the District’s application for a temporary easement to construct the well. If the well is successful, the Forest Service staff will prepare the environmental analysis for a permanent easement including the pipeline and access road. There may be an option to expedite the environmental review if the work is done by a contractor approved by the Forest Service. AVI will address that possibility during the next phase of the project.

- Involving funding from state or federal sources that require an environmental report. Any funding agency receiving money from the federal government, with the exception of the Abandoned Mine Land Program, requires such a report as part of the application package. The Rural Utilities Service, Safe Drinking Water State Revolving Fund, and the Community Development Block Grants administered by the Wyoming Business Council require environmental reports.
Draft and final reports were prepared in the format specified by the project contract and delivered on the schedule approved by the WWDO project manager.

A separate addendum report was developed following the pump test of Teton County No. 1 well. This document was distributed to WWDO, members of the District, to the Teton County Engineer, and to the Bridger Teton National Forest. The Forest was given the report as part of supporting materials accompanying the District’s request for Special Use Permits for a temporary easement to construct a test well and if the well is successful, a permanent easement for the access road and pipeline to the District system.

The pump test report is incorporated into Section 12, Identification of Alternatives and Prioritization of Recommendations.
APPENDIX A

SPRING AND WELL PERMITS
STATE OF WYOMING
OFFICE OF THE STATE ENGINEER

APPLICATION FOR PERMIT TO APPROPRIATE SURFACE WATER

THIS SECTION IS NOT TO BE FILLED IN BY APPLICANT

Filing/Priority Date
THE STATE OF WYOMING, SS.
STATE ENGINEER'S OFFICE

This instrument was received and filed for record on the 29th day of December, A.D.
1982 at 12:30 o'clock A.M.

Jayland Anderson, Assistant State Engineer

Recorded in Book 112 of Ditch Permits, on Page 21

Fee Paid $25.00 Map Filed

WATER DIVISION NO. 4
DISTRICT NO. 16

PERMIT NO. 27641

NAME OF FACILITY Squaw Creek Water District Pipeline

1. The name(s) and complete mailing address(es) of the applicant(s) are
Squaw Creek Water District PO Box 1493, Jackson, WY 83001

2. Name & address of agent to receive correspondence and notices
Peter M. Jorgensen, PO Box 1142
Jackson, Wyoming 83001 Attn: Robert Ablonid

3. (a) The use to which the water is to be applied is Miscellaneous - See Remarks
(b) If more than one beneficial use of water is applied for, the location and ownership of the point of use must be shown in item 10 of the application and the details of the facilities used to divert and convey the appropriation must be shown on the map in sufficient detail to allow the State Engineer to establish the amount of appropriation. In multiple use applications, stock and domestic purposes are limited to 8,096 cubic feet per second.

4. The source of the proposed appropriation is Squaw Creek, trib. of Snake River.

5. The point of diversion of the proposed works is located SW 1/4 S31 T40 R116 W11111/2.

6. Are any of the lands crossed by the proposed facility owned by the State or Federal Government? If so, describe lands and indicate whether State or Federally owned.

7. The carrying capacity of the ditch, canal, pipeline or other facility at the point of diversion is 0.111 cubic feet per second.

8. The accompanying map is prepared in accordance with the State Engineer's Manual of Regulations and Instructions for filing applications and is hereby declared a part of this application. The State Engineer may require the filing of detailed construction plans.

9. The estimated time required for the commencement of work is immediately, for completion of construction is one month, and to complete the application of water to the beneficial users named in this application is one month.

Permit No. 27641
10. The land to be irrigated under this permit is described in the following tabulation: (Give irrigable acreage in each 40-acre subdivision. Designate ownership of land, Federal, State or private. If private, list names of owners and land owned separately.) If application is for stock, domestic, or for purposes other than irrigation, indicate point of use by 40-acre subdivision and owner.

<table>
<thead>
<tr>
<th>Township</th>
<th>Range</th>
<th>Sec.</th>
<th>NE%</th>
<th>NW%</th>
<th>SW%</th>
<th>SE%</th>
<th>TOTALS</th>
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</thead>
<tbody>
<tr>
<td>40</td>
<td>116</td>
<td>35</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>(area of use)</td>
</tr>
</tbody>
</table>

[JEUSEUSE USE]

Water will be used only at the locations described above for drinking, sanitary, and stock watering purposes on each of the 67 lots within the Squaw Creek Water District Boundary. These uses are limited to: (1) one single family residence; (2) one guest house; (3) stock water for one horse barn Not to exceed 0.111 cfs.

The District consists of the following Subdivisions:

- Badger Heights ---- 8 lots Western Tanager ---- 9 lots
- C-R Ranch ---- 6 lots SE%SW% of Sec 35 ---- 7 lots
- LaBonte Ranches ---- 10 lots SW%NW% of Sec 35 ---- 5 lots
- Porcupine Ridge ---- 7 lots NW%SW% of Sec 35 ---- 3 lots
- Squaw Creek Draw ---- 6 lots NE%NW% of Sec 35 ---- 2 lots
- Squaw Creek Ranch ---- 4 lots

Total number of lots in District ---- 67

REMARKS

The miscellaneous use of water under this application is for drinking and sanitary purposes for single-family residences, including one guest house and to supply stock water at one barn solely for the purpose of maintaining horses, at each lot.

Squaw Creek is a live stream flowing year around, originating naturally at a spring area located approximately at the pump house, as shown on the application map. Typical flow from the spring is in the order of 30 g.p.d. Squaw Creek located north of the spring area is intermittent flow, mainly occurring during spring run-off.

Present property owners and their mailing addresses are as follows:

- William J. Scott 856 Harrington Rd., Glendale, California 91207
- Tommy Neil Thompson, PO Box 2632, Jackson, Wyoming 83001
- Earnest J. Carlson, PO Box 1506, Jackson, Wyoming 83001
- William P. Hicks, C/O F.J. Purcell, 6181 Glennwood R., Huntington Beach, Ca. 92647
- Donald H. Reid, 8103 West Point Dr., Springfield, Va.
- Richard M. Purswell, 3688 Ridgecrest, Casper, Wyoming 82601
- Donald W. Saul, 8112 North Pancho (Catalina), Tucson, Arizona 85702
- Banten Family Trust, C/O Stephen Banten (trustee), Tucson, Arizona 85702
- George R. Hunter, PO Box 3137, Jackson, Wyoming 83001
- Theodore F. Major, PO Box 1111, Jackson, Wyoming 83001

Under penalties of perjury, I declare that I have examined this application and to the best of my knowledge and belief it is true, correct and complete.

[Signature of Applicant or Agent]

[Signature]

May 10, 1962
THIS IS TO CERTIFY that I have examined the foregoing application and do hereby grant the same subject to the following limitations and conditions:

This permit grants only the right to use the water available in the stream after all prior rights are satisfied.

The amount of appropriation shall be limited to the amount beneficially for miscellaneous (drinking and sanitary purposes for a single-family residence, accompanying guest house, and stock water for a horse barn on each lot with District boundary) purposes on or before December 31, 1987, not to exceed 0.111 cubic feet of water per second of time. Water will be used at Lots within the District Boundary.

Notice of Commencement of construction is hereby waived, since pumping facilities were installed and completed under Permit No. U.W. 31701, prior to October 27, 1976, for a single family dwelling. This ground water permit was subsequently cancelled to allow this filing for Miscellaneous use from the same area to serve the 67 lots.

The time for completion of construction work shall terminate on _______.

The time for completing the work shall terminate on December 31, 1987. The time for completing the application of water to beneficial use shall terminate on December 31, 1987. Proof of appropriation shall be made within 5 years thereafter.

Witness my hand this 26th day of May, A.D. 1982.

George L. Christofulos,
State Engineer

George L. Christofulos

Permit No. 27641
REMARKS CONTINUATION, Page 1 of 2.

Ray H. Weeks, PO Box 1109, Jackson, Wyoming 83001
Charles C. Brown, 1220 N 1870 W., Oak Harbor, Wa.
Paul Vaughn, PO Box 1492, Jackson, Wyoming 83001
Herbert Wall, PO Box 1052, Jackson, Wyoming 83001
Leo Zmijewski, Sr., 13305 Bathaway Rd., Garfield Hts, Ohio 44125
Roy E. Morabbaugh, PO Box 359, Jackson, Wyoming 83001
Farry A. Watkins, PO Box 2801, Jackson, Wyoming 83001
Robert B. Brodie, PO Box 2824, Jackson, Wyoming 83001
Rodney Taucher, PO Box 1152, Jackson, Wyoming 83001
Michael McClary & Lynda Keadle, 28244 48th Ave. S., Auburn, Wa. 98002
Steven L. Robinson, PO Box 3334, Jackson, Wyoming 83001
Reginald T. Perez, PO Box 2822, Jackson, Wyoming 83001
Michael A. McKibbon, St Rt Box 11-C, Jackson, Wyoming 83001
Steven A. Jurakovich, PO Box 2482, Jackson, Wyoming 83001
William A. Read, PO Box 56, Moose, Wyoming 83012
Robert M. Echols Jr., Jackson, Wyoming 83001
Robert J. Dallas, PO Box 1811, Jackson, Wyoming 83001
O.V. Mangis, Rt. #1, Creston, Wa. 99117
Gary D. Mangis, PO Box 2546, Jackson, Wyoming 83001
Stephen P. Shibuya, 560 Via Almar, Palos Verdes Estates, Ca. 90274
Dick Shuptrine, PO Box 1954, Jackson, Wyoming 83001
Bar O. Sullivan, 325 Ridge Ave., Winnetka, Ill. 60093
Connie Dambrowsky, PO Box 390, Jackson, Wyoming 83001
Victor Gardin, PO Box 803, Jackson, Wyoming 83001
Joel Bard, St Rt Box 11F, Jackson, Wyoming 83001
Seth Moger, PO Box 133, Somerset, Ca. 95684
Larry Cioetta, J. William, Dallas, Texas
Paul Hohlt, 4915 145th SE, Bellevue, Wa. 98006
Sterling Multi-Products, 326 West 5th Ave., Prophetstown, Ill. 61277
George Anderson, PO Box 113, Jackson, Wyoming 83001
Ray Martin, Bedford, Wyoming 83112
Robert L. Stevenson, PO Box 2271, Jackson, Wyoming 83001
Terry Heardon, PO Box 1803, Jackson, Wyoming 83001
Stanley Bruhn, PO Box 1532, Jackson, Wyoming 83001
Tim Day, PO Box 2842, Jackson, Wyoming 83001
Eugene Ferrin, PO Box 1990, Jackson, Wyoming 83001
Dave Thorsen, PO Box 2050, Jackson, Wyoming 83001
REMARKS CONTINUATION, Page 2 of 2

Existing List of Current Property Owners and Property Descriptions (5-13-82)

William J. Scott, Lot 1 LaBonte Ranches S/D

Terry Neil Thompson, Lot 2 LaBonte Ranches S/D

Lenard N. Carlson, Lot 3 LaBonte Ranches S/D

William P. Hicks, Lot 4 LaBonte Ranches S/D

Donald H. Reid, Lot 5 LaBonte Ranches S/D

Richard M. Pursewell, Lot 6 LaBonte Ranches S/D

Donald W. Saul, Lot 7 LaBonte Ranches S/D

Hanten Family Trust, Lot 8 LaBonte Ranches S/D

George K. Hunter, Lot 9 LaBonte Ranches S/D

Theodore F. Major, Lot 10 LaBonte Ranches S/D

Ray H. Weeks, Lot 1 C-B Ranch S/D

Ray H. Weeks, Lots 2, 4, 5 C-B Ranch S/D

Charles G. Brown, Lot 5 C-B Ranch S/D

Paul Vaughn, Lots 1 through 6 Badger Heights S/D

Herbert Wall, Lot 2 Squaw Creek Ranch S/D

Leo Zimjeski, Sr., Part of Lot 3 Squaw Creek Ranch S/D

Roy E. Morabough, Part of Lot 3 Squaw Creek Ranch S/D

Parry A. Watkins, Lot 4 Squaw Creek Ranch S/D

Robert B. Brodie, Lot 6 Squaw Creek Ranch S/D

Rodney Teuscher, Lot 1 Squaw Creek Draw S/D

Michael McClary, Lot 2 Squaw Creek Draw S/D

Steven L. Robinson, Lot 3 Squaw Creek Draw S/D

Reginald T. Perez, Lot 4 Squaw Creek Draw S/D

Michael A. McKibben, Lot 5 Squaw Creek Draw S/D

Steven A. Jurkovich, Lot 6 Squaw Creek Draw S/D

William A. Neal, Lots 162 Porcupine Ridge S/D

Robert M. Ichols, Jr., Lot 1 Porcupine Ridge S/D

Robert J. Dallas, Lot 2 Porcupine Ridge S/D

O.V. Mangis, Lot 3 Porcupine Ridge S/D

Gary D. Mangis, Lot 5 Porcupine Ridge S/D

Stephan P. Shibuya, Lot 7 Porcupine Ridge S/D

Dick Antzprine, 85S80W45'

Bert O. Sullivan, 85S80W45'

Connie Dambrowsky, 85S80W45'

Victor Gerdin, 85S80W45'

Joel Bard, 85S80W45'

Seth Moger, Part of 85S80W45'

Larry Cilotta, Part of 85S80W45'

Paul Kohl, Part of 85S80W45'

Sterling Multi-Products, Part of 85S80W45'

George Anderson, Part of 85S80W45'

Ray Martin, 85S80W45'

Robert L. Stevenson, 85S80W45'

Terry Keardon, 85S80W45'

Stanley Baun, 85S80W45'

Tim Day, 85S80W45'

Eugene Ferrin, 85S80W45'

Dave Thorsen, 85S80W45'

- Squaw Creek Ranch contains four lots- 2, 3a, 3b, and 4.

NOTE: All properties described above are located within Section 35 Township 40N Range 16W

PERMIT NO. 27641
THE STATE OF WYOMING
Certificate of Appropriation of Water

WHEREAS, Squaw Creek Water District, in accordance with the provisions of this Act, has, by an order duly made on April 29, 2002, determined and established the priority and amount of such appropriation as follows:

Name and Address of Appropriator: Squaw Creek Water District, P.O. Box 7009, Jackson, WY 83002

Date of Appropriation (Priority): December 29, 1987

Amount of Appropriation: 511 cu. ft. per sec.

Description of land for which this appropriation is determined and established:

IN TESTIMONY WHEREOF, I, Gordon W. Fredrick, President of the State Board of Control, have hereunto set my hand this 29th day of April, A.D. 2002, and caused the seal of said Board to be hereunto affixed.

Attest: Alene Cameron, Ex-officio Secretary

President.

TABULATION OF ADJUDICATED LANDS

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<tr>
<th>TWP</th>
<th>RANGE</th>
<th>SEC</th>
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<th>NW 1/4</th>
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</tr>
</tbody>
</table>

The right to water hereby confirmed and established is limited to incidental use hereof: and the use is restricted to the place where acquired and to the purpose for which acquired.

Certificate Record No. 82, Page 153
Order Record No. 15, Page 153
Record No. 3200, Proclamation 320011
### General Info

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<thead>
<tr>
<th>Type Of Diversion:</th>
<th>Stream, Pipeline at the Point of Diversion</th>
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<tr>
<th>Prefix</th>
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### Appropriator(s)

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<tr>
<th>Appropriator</th>
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<th>First Name</th>
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<tr>
<td>Agent</td>
<td>Jorgensen</td>
<td>Peter M.</td>
<td></td>
<td>Jackson</td>
<td>Wyoming</td>
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<tr>
<td>Applicant</td>
<td>Squaw Creek Water District</td>
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<td>Jackson</td>
<td>Wyoming</td>
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### Beneficial Uses

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### Water Right POD

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https://seoweb.wyo.gov/e-Permit/Transactions/WaterRightSummary.aspx?print=1

10/2/2012
Wyoming State Engineer's Office

Principal Meridian | Township | Range | Section | Quarter | Qr-Qr | Survey Type | Number | Primary POD
---|---|---|---|---|---|---|---|---
06 | 040N | 116W | 35 | SW | NESW | | | Y

Stream Source

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<th>Tributary Of</th>
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<th>WR Number</th>
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<tr>
<td>Squaw Creek</td>
<td>Snake River</td>
<td></td>
<td></td>
<td>P</td>
<td>27641</td>
</tr>
</tbody>
</table>

Water Right POU

| Principal Meridian | Township | Range | Section | Quarter | Q-Q | WR Status | Acres | Use | Sub Use | Supply Type |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 06 | 040N | 116W | 35 | NE | NWNE | UNADJUDICATED | 0.000 | | | ORIGINAL |
| 06 | 040N | 116W | 35 | NE | SENE | UNADJUDICATED | 0.000 | | | ORIGINAL |
| 06 | 040N | 116W | 35 | NE | SWNE | UNADJUDICATED | 0.000 | | | ORIGINAL |
| 06 | 040N | 116W | 35 | NW | NENW | UNADJUDICATED | 0.000 | | | ORIGINAL |
| 06 | 040N | 116W | 35 | NW | NWNW | UNADJUDICATED | 0.000 | | | ORIGINAL |
| 06 | 040N | 116W | 35 | NW | SENW | UNADJUDICATED | 0.000 | | | ORIGINAL |
| 06 | 040N | 116W | 35 | NW | SWNW | UNADJUDICATED | 0.000 | | | ORIGINAL |
| 06 | 040N | 116W | 35 | SE | NESE | UNADJUDICATED | 0.000 | | | ORIGINAL |
| 06 | 040N | 116W | 35 | SE | NWSE | UNADJUDICATED | 0.000 | | | ORIGINAL |
| 06 | 040N | 116W | 35 | SE | SESE | UNADJUDICATED | 0.000 | | | ORIGINAL |

Total acres irrigated: 0.000

Comments

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<th>Created Date</th>
<th>Comment Details</th>
<th>Created by</th>
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</thead>
<tbody>
<tr>
<td>1/1/1800 12:00:00 AM</td>
<td>ORIGINAL APPLICATION FILED IN MISCELLANEOUS NOTICES. THE AMOUNT OF APPROPRIATION SHALL BE LIMITED TO THE AMOUNT BENEFICIALLY USED FOR MISCELLANEOUS (DRINKING AND SANITARY PURPOSES FOR A SINGLE-FAMILY RESIDENCE, ACCOMPANYING GUEST HOUSE, AND STOCK WATER FOR A HORSE BARN ON EACH LOT WITHIN THE DISTRICT BOUNDARY) PURPOSES ON OR BEFORE DECEMBER 31, 1984, NOT TO EXCEED .111 CUBIC FEET OF WATER PER SECOND OF TIME. WATER WILL BE USED AT 67 LOTS WITHIN THE DISTRICT BOUNDARY. NOTICE OF COMMENCEMENT OF CONSTRUCTION IS HEREBY WAIVED, SINCE PUMPING STATION FACILITIES WERE INSTALLED AND COMPLETED UNDER P31701W, SQUAW CREEK #1 WELL, PRIOR TO OCTOBER 27, 1976, FOR A SINGLE FAMILY DWELLING. THIS GROUND WATER PERMIT WAS SUBSEQUENTLY CANCELLED TO ALLOW THIS FILING FOR MISCELLANEOUS USE FROM THE SPRING TO SERVE THE 67 LOTS. SQUAW CREEK IS A LIVE STREAM FLOWING YEAR AROUND, ORIGINATING NATURALLY AT A SPRING AREA LOCATED APPROXIMATELY AT THE PUMP HOUSE. EXTENSION REQUEST RECEIVED AND GRANTED. LETTER FILED IN MISCELLANEOUS NOTICES. EXTENSION GRANTED 11/10/1993 FOR COMPLETION OF BENEFICIAL USE TO 12/31/1998. ON 1/1/1994 IN ACCORDANCE WITH THE FINAL PLAT OF THE PORCUPINE RIDGE SUBDIVISION SECOND FILING ACCEPTED ON 2/16/1993, LOTS 4 AND 5 ARE HEREBY VACATED, BEING RECONFIGURED AS LOTS 8 AND 9. THE PLAT ACCEPTED AS PORCUPINE RIDGE SUBDIVISION AMENDED IS TO BE AMENDED.</td>
<td>MIGRATED</td>
</tr>
<tr>
<td>1/1/1800 12:00:00 AM</td>
<td>Endorsement Type of [NOTICE] to [REC] for [BU] on [Jul 31 1998 12:00AM].</td>
<td>MIGRATED</td>
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<tr>
<td>1/1/1800 12:00:00 AM</td>
<td>Remuna AprAmt,AprUnit,Use :0CFSMIS</td>
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Documents

### Remarks

#### Appropriation Amount

<table>
<thead>
<tr>
<th>Permitted Amount:</th>
<th>Total Flow (CFS) = 0.110</th>
<th>Total Capacity (AF/Yr) = 0</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Diversion capacity at the headgate (CFS) = 0.111</td>
<td></td>
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#### Related Transactions

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<th>Instrument Type</th>
<th>Instrument Name</th>
<th>Instrument Code</th>
<th>WR Number Type</th>
<th>WR Number</th>
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</thead>
</table>

[Top](https://seoweb.wyo.gov/e-Permit/Transactions/WaterRightSummary.aspx?print=1)
APPLICATION FOR PERMIT TO APPROPRIATE GROUND WATER

APPLICATION FOR WELLS AND SPRINGS

Note: Only springs flowing 25 gallons per minute or less, where the proposed use is domestic and/or stock watering, will be considered as ground water appropriations.

FOR OFFICE USE ONLY

PERMIT NO. U.W. 102953
WATER DIVISION NO. 4 DISTRICT 16
U.W. DISTRICT Teton

NAME AND NUMBER OF WELL OR SPRING Squaw No. 1

1. Name of applicant(s) Squaw Creek Water District Phone: (307)733-3189

2. Address of applicant(s) P.O. Box 603, Jackson, WY 83001

3. Name & address of agent to receive correspondence and notices Squaw Creek Water District, P.O. Box 603, Jackson WY, 83001 Phone: (307)733-3189

4. Use to which the water will be applied:

☐ Domestic: Use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totaling one acre or less. Number of houses served? .

☐ Stock Watering: Normal livestock use at four tanks or less within one mile of well or spring. Stockwatering pipelines and commercial feedlots are a miscellaneous use. Number of stock tanks? .

☐ Irrigation: Watering of commercially grown crops (large-scale lawn watering of golf courses, cemeteries, recreation areas, etc., is miscellaneous use).

☐ Municipal: Use of water in incorporated Towns and Cities (use of water in unincorporated towns, subdivisions, improvement districts, mobile home parks, etc. are classified as miscellaneous use).

☐ Industrial: Long term use of water for the manufacture of a product or production of oil/gas or other minerals (oil field water flood operations, power plant water supply, etc.). (Describe in REMARKS)

☐ Miscellaneous: Any use of water not defined under previous definitions such as stockwater pipelines, subdivisions, mine dewatering, mineral / oil exploration drilling, reclamation purposes, potable and sanitary supplies in offices or light manufacturing, animal waste management, etc. Describe miscellaneous use:

☐ Monitor, Observation or ☐ Test Well: (Describe in REMARKS)

5. Location of the well or spring: (NOTE: Quarter-quarter (40 acre subdivision) MUST be shown. EXAMPLE: SE 1/4 NW 1/4 of Sec. 12, Township 14 North, Range 68 West.) Teton County, SE 1/4 SW 1/4 of Sec. 26, T. 40 N., R.116 W. of the 6th P.M. (or W.R.M.), Wyoming. If located in a platted subdivision, also provide Lot ____ Block ____ of the Subdivision (or Add'n) of ___________. Resurvey Location: Tract ____ , (or Lot) ____.

6. Estimated depth of the well or spring is ___ feet.

7. (a) MAXIMUM instantaneous flow of water to be developed and beneficially used: ___ gallons per minute.

NOTE: If for domestic and / or stock use, this application will be processed for a maximum of 25 gallons per minute. For a spring, after approval of this application, some type of artificial diversion or improvement must be constructed to qualify for a water right.

(b) MAXIMUM volumetric quantity of water to be developed and beneficially used per calendar year:

Circle appropriate units: (Gallons) (Acre Feet) A four person family utilizes approximately one (1) acre-foot of water per year or 325,000 gallons.

8. Mark the point(s) or area(s) of use in the tabulation box below.

TABULATION BOX

<table>
<thead>
<tr>
<th>TWP</th>
<th>RNG</th>
<th>SEC</th>
<th>NE 1/4</th>
<th>NW 1/4</th>
<th>SW 1/4</th>
<th>SE 1/4</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>116</td>
<td>35</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

The water from this well will be conveyed within the water from Squaw Creek, a tributary of Snake River, in the Squaw Creek Water District to serve 75 homes in the Squaw Creek Water District.

9. If for irrigation use:

a. Describe MAXIMUM acreage to be irrigated in each 40 acre subdivision in the tabulation box above.

b. ☐ Land will be irrigated from this well only.

c. ☐ Land is irrigated from existing water right(s) with water from this well to be additional supply. Describe existing water right(s) under REMARKS.

10. If for irrigation use, describe method of irrigation, i.e. center pivot sprinkler, flood, etc.:
11. The well or spring is to be constructed on lands owned by U.S. Department of Agriculture - Forest Service.
(The granting of a permit does not constitute the granting of right-of-way. If any easement or right-of-way is necessary in connection with this application, it should be understood that the responsibility is the applicant's. A copy of the agreement should accompany this application, if the land is privately owned and the owner is not the co-applicant.)

12. The water is to be used on lands owned by ________________________________.
(If the landowner is not the applicant, a copy of the agreement relating to the use of appropriated water on the land should be submitted to this office. If the landowner is included as co-applicant on the application, this procedure need not be followed.)

REMARKS: The water will be used within the Squaw Creek Water District System, and will be conformed with water from existing permit #27641. Details are contained on a Water District Survey Area Map accompanying this permit for the Squaw Creek District T. & P. Line, Permit No. 27641.

Under penalties of perjury, I declare that I have examined this application and to the best of my knowledge and belief it is true, correct and complete.

Signature of Applicant or Authorized Agent

Date

THE LEGALLY REQUIRED FILING FEE MUST ACCOMPANY THIS APPLICATION

DOMESTIC AND/OR STOCK WATERING USES $25.00
(Domestic use is defined as use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totaling one acre or less.)

IRRIGATION, MUNICIPAL, INDUSTRIAL, MISCELLANEOUS $50.00
(Monitor (For water level measurements or chemical quality sampling) or Test Well NO FEE

IF WELL WILL SERVE MULTIPLE USES, SUBMIT ONLY ONE (THE HIGHER) FILING FEE.

THE STATE OF WYOMING
STATE ENGINEER'S OFFICE
Permit No. U.W. _______________

102953

THIS IS TO CERTIFY that I have examined the foregoing application and do hereby grant the same subject to the following limitations and conditions:

Approval of this application may be considered as authorization to proceed with construction of the proposed well or spring. A Statement of Completion will be filed within thirty (30) days of completion of construction, including pump installation.

Special attention is called to paragraph one (1) of these conditions and limitations as outlined above relating to the interconnection of ground and surface water sources. For additional conditions and limitations see attached status sheet.
**FORM UW: C&L, C1**  
**Rev: 5-10-93**

---

**PERMIT NO.** 102953  
**T.F. No.** 24-3-409  
**PERMIT STATUS**

---

**Priority Date** July 5, 1996  
**Approval Date** July 19, 1996

---

**ADDITIONAL CONDITIONS AND LIMITATIONS:**

1. A meter acceptable to the State Engineer is required to accurately measure the total quantity of water produced from this well.

2. An annual report shall be submitted to the State Engineer no later than February 15 of each year stating the total amount of water produced from this well each month during the previous January 1 to December 31, twelve (12) month period.

3. The report shall identify the well by name, location, permit number and shall identify the type of meter used for the measurement.

4. The report shall contain at least two (2) semi-annual measurements of the static water level in the well as measured twenty-four (24) consecutive hours after pumping has ceased. The dates the measurements were obtained and the period of time the well was "shut-in" prior to obtaining the measurements must be specified.

5. The State Engineer may, upon written request, waive all or any portion of these conditions and limitations.

---

**July 19, 1996**  
**DATE OF APPROVAL**  
Gordon W. Fassett, State Engineer

---

May 12, 1997 – Statement of Completion on May 02, 1997 received.  
December 22, 1997 – Proof of Beneficial use on May 02, 1997 received.

---

**SEP 30 '97** - NOTICE OF EXPIRATION OF TIME FOR COMPLETION AND COMPLETION OF BENEFICIAL USE

---

**MICRO FILMED**

---

**FEB 04 1998**  
**MICRO FILMED**  
**AUG 08 1997**  
**MICRO FILMED**
STATEMENT OF COMPLETION AND DESCRIPTION OF WELL OR SPRING

PERMIT NO. U.W. 102953

1. NAME OF OWNER SQUAW CREEK WATER DISTRICT

2. ADDRESS P.O. Box 603
   City Jackson State Wyoming Zip Code 83001 Phone No. (307) 733-3189

3. USE OF WATER: Domestic [] Stock Watering [] Irrigation [] Municipal [] Industrial [] Miscellaneous []
   Explain proposed use (Example: One single family dwelling) Water will be used in an unincorporate subdivision as a community water supply.

4. LOCATION OF WELL (SPRING): SE ¼ SW ¼ of Section 26, T. 40 N., R. 116 W., of the 6th P.M. (or W.R.M.),
   Subdivision Name SQUAW CREEK Lot Block
   If surveyed, bearing, distance and reference point: N/A

5. TYPE OF CONSTRUCTION: Drilled [] Mud rotary & casing hammer [] Dug [] Driven [] Other []
   Describe: Drill & Drive, Complete & Retract Casing

6. CONSTRUCTION: Total Depth of Well/Spring 37 ft. Depth to Static Water Level 8 ft.
   a. Diameter of borehole (Bit size) 17 5/8 inches. (Below land surface)
   b. Casing Schedule New [] Used []
      12" diameter from 0 ft. to 13 ft. Material Steel Gage Std wt 1/4
      12" diameter from 28 ft. to 37 ft. Material Steel Gage Std wt 1/4
   c. Was casing cemented: Yes [] No []
      Cemented interval, From 0 feet to 8' 3" feet.
   d. Number of sacks of cement used 7 bags type of cement Portland
   e. Perforations: Type of perforator used N/A
      Size of perforations inches by inches.
      Number of perforations and depths where perforated:
      __________ perforations from ______ ft. to ______ feet.
      __________ perforations from ______ ft. to ______ feet.
   f. Was well screen installed? Yes [] No []
      Diameter: 12" slot size: 0.050 set from 13 feet to 28 ft
diameter: 12" slot size: 0.050 set from ______ feet to ______
   g. Was well gravel packed? Yes [] No []
      Size of gravel 6/9 & 10/20
   h. Was surface casing used: Yes [] No []
      Was it cemented in place? Yes [] No []

7. NAME & ADDRESS OF DRILLING COMPANY Thomas Brothers Drilling, Afton WY 83110

8. DATE OF COMPLETION OF WELL (including pump installation) OR SPRING (first used) May 2, 1997

9. PUMP INFORMATION: Manufacturer Aermotor Type A-plus stainless steel superal
   Source of power Electric Horsepower Depth of Pump Setting or intake 28.0 ft
   Amount of Water Being Pumped 40 Gallons Per Minute. (For Springs or flowing wells, see item 10.)
   Total Volumetric Gallons Used Per Calendar Year. 64 acre feet per year

10. FLOWING WELL (Owner is responsible for control of flowing well).
    If well yields artesian flow, yield is ______ gal./min. Surface pressure is ______ lb./sq. inch, or ______ feet of water.
    The flow is controlled by: valve [] cap [] plug []
    Does well leak around casing? Yes [] No []
11. If spring, how was it constructed? (Some method of artificial diversion, i.e., spring box, cribbing, etc., is necessary to qualify for a water right.) _N/A_

12. PUMP TEST: Was a pump test made? Yes [X] No [☐]
   If so, by whom _Lidstone & Anderson_ Address _760 Whalers Way, B-200 Fort Collins_ 805
   Yield: 38 gal/min. with 9.8 foot drawdown after 29 hours.
   Yield: 30 gal/min. with 7.0 foot drawdown after 39 hours.

13. LOG OF WELL: Total depth drilled 44 feet.
   Depth of completed well 37 feet. Diameter of well 12 inches.
   Depth to first water bearing formation 17 feet.
   Depth to principal water bearing formation: Top 17 feet to Bottom 20 feet.
   Ground Elevation, if known 620 ft

DRILL CUTTINGS DESCRIPTION:

<table>
<thead>
<tr>
<th>From Feet</th>
<th>To Feet</th>
<th>Material Type, Texture Color</th>
<th>Remarks (Cementing, Shutoff)</th>
<th>Indicate Water Bearing Formation &amp; Name</th>
<th>Indicate Perforated Casing Location</th>
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<tbody>
<tr>
<td>0</td>
<td>3</td>
<td>Fine silty loam</td>
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<td></td>
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<tr>
<td>3</td>
<td>7</td>
<td>Silty loam w/ variegated med</td>
<td>gravel</td>
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<tr>
<td>7</td>
<td>12</td>
<td>Med/fine variegated gravel w/heavy clay</td>
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<td></td>
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<tr>
<td>12</td>
<td>17</td>
<td>Well cunted variegated gravel &amp; clay</td>
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<tr>
<td>17</td>
<td>20</td>
<td>Fine/med variegated water bearing zone</td>
<td>Sorted gravels</td>
<td></td>
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</tr>
<tr>
<td>20</td>
<td>25</td>
<td>Monolithic gray bedrock 20'</td>
<td>limestone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>45</td>
<td>Monolithic gray limestone</td>
<td></td>
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</table>

14. QUALITY OF WATER INFORMATION:
   Does a chemical and/or bacteriological water quality analysis accompany this form? Yes [X] No [☐]
   It is recommended that chemical and bacteriologic water quality analyses be performed and that the report(s) be filed with the records of this well. (Contact Department of Agriculture, Analytical Lab Services, Laramie, 742-2984.)
   If not, do you consider the water as: Good [X] Acceptable [☐] Poor [☐] Unusable [☐]

REMARKS:
____________________________________________________________________________________

Under penalties of perjury, I declare that I have examined this form and to the best of my knowledge and belief it is true, correct and complete.

Signature of Owner or Authorized Agent

Date 7/5/97

FOR STATE ENGINEER'S USE ONLY

Date of Receipt 2/12/1997
Date of Priority 2/19/97
Date of Approval 2/22/1997
STATE OF WYOMING
OFFICE OF THE STATE ENGINEER

PROOF OF APPROPRIATION AND BENEFICIAL USE OF GROUND WATER

The owner is responsible for submitting Parts I and II of this form. Part III will be prepared by a State Engineer Representative at time of inspection.

PART I

WATER DIVISION 4 (16)
STATEMENT OF CLAIM
PERMIT NO. U.W. 102953
WELL REGISTRATION
NAME OF WELL: SQUAW #1

1. Name of Claimant(s): SQUAW CREEK WATER DISTRICT

2. Address: P.O. BOX 7672, JACKSON, WY Zip Code: 83002

3. For What Purpose(s) is Water Used? Use: COMMUNITY WATER SUPPLY Date First Used: MAY 2, 1997

Use: Date First Used: , 19
Use: Date First Used: , 19

If use is for irrigation, give date irrigation was completed on all lands under this Permit:

PART II

For Irrigation, Industrial, Municipal and Miscellaneous Wells

A plat which has been certified by a licensed professional engineer or land surveyor shall be submitted to accompany this form. The plat shall be in accordance with Sec. 33-29-111 Wyoming Statutes 1977 or see Chapter V and VI, Manual of Regulations and Instructions issued by the State Engineer's Office. (Minimum scale shall be \( \frac{1}{2^\circ} = 1 \text{ mile} \).) The map shall be prepared with waterproof black ink on tracing linen or an acceptable equivalent and shall show on a suitable scale the legal subdivisions, the accurate location of the well or wells, storage facilities, if any, main canals, streams, highways and other important cultural features. Land ownership will be shown, if there is more than one owner under the permit.

IRRIGATION WELLS

Acreage irrigated under terms of this permit will be clearly shown with a distinctive pattern and a distinction clearly made between lands having an original supply and those provided a supplemental supply. Where use is for supplemental supply for lands with a right from another source, indicate the priority or permit number of the source, the source of supply and the name of the ditch, pipe line or other well. Conveyance system will be shown and described. Indicate method of irrigation being used.

INDUSTRIAL WELLS

In addition to the information outlined above, industrial users will locate and describe conveyance facilities to the point(s) of use, giving as accurately as possible the location of points of use. Permits for other sources of water must be identified.

MUNICIPAL WELLS

The plat will show the area of use and show and describe the means of conveyance of the water from the well to the connection with the distribution system for a municipal water system.

MISCELLANEOUS WELLS

1. The lining plat for wells where the use is described as miscellaneous and where the yield of the well exceeds twenty-five (25) gallons per minute must show the area of use and describe and show the means of conveyance from the well to the distribution system and/or points of use.

2. The plat for wells where the use is described as miscellaneous and where the yield or flow is twenty-five (25) gallons per minute or less may be a 7½ minute United States Geological Survey Quadrangle map in lieu of a linen tracing provided the U.S. Geological Survey Quadrangle map is in compliance with the following conditions:

(a) The entire United State Geological Survey quadrangle map must be submitted to the State Engineer's Office.

(b) The scale on said quadrangle map must be one to twenty-four thousand.

(c) An identified section corner or quarter corner must be shown on said quadrangle map along with Section, Township and Range.

(d) The section in which the well is located and the section(s) where the area(s) or point(s) of use are located must be subdivided into forty (40) acre tracts and the well location and area(s) or point(s) of use clearly labeled and described.

(e) Said quadrangle map showing the well location and area(s) or point(s) of use must be certified by a professional engineer or land surveyor licensed to practice within the State of Wyoming.
A "CERTIFICATE OF OWNERSHIP" FROM THE COUNTY CLERK'S OFFICE SHOWING OWNERSHIP OR CONTROL OF LAND(S) INVOLVED MUST ACCOMPANY THIS FORM.

Under penalties of perjury, I declare that I have examined this form and to the best of my knowledge and belief it is true, correct and complete.

Signature of Owner or Authorized Agent: Robert W. Scott

Date of Receipt: DEC 22 1997
**PERMIT SUMMARY**

**Instrument:** WELLS AND SPRINGS

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<th>Facility Name:</th>
<th>SQUAW #1</th>
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<td>Status:</td>
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<td>Date Accepted</td>
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**General Info**

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<td>Original Supply</td>
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<td>Special Cases:</td>
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<td>Appropriation Amount:</td>
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**Appropriator(s)**

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<tr>
<th>Appropriator</th>
<th>Last Name</th>
<th>First Name</th>
<th>Company</th>
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<th>State</th>
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<tr>
<td>Applicant</td>
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<td>SQUAW CREEK</td>
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<td>JACKSON</td>
<td>Wyoming</td>
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**Beneficial Uses**

| Beneficial Uses: | Miscellaneous-- Ground Water |

**Water Right POD**

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<th>Principal Meridian</th>
<th>Township</th>
<th>Range</th>
<th>Section</th>
<th>Quarter</th>
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https://seoweb.wyo.gov/e-Permit/Transactions/WaterRightSummary.aspx?print=1

10/2/2012
## Water Right POU

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<th>Range</th>
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<td>NW</td>
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### Construction

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<th>Contraction Type</th>
<th>Construction Description</th>
<th>Total Depth (feet)</th>
<th>Casing Height (feet)</th>
<th>static water level</th>
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### Well Log/Water Quality

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<th>Total Depth (feet)</th>
<th>Well Diameter (inches)</th>
<th>WaterBearing Formation (feet)</th>
<th>WaterBearing Formation Top (feet)</th>
<th>WaterBearing Formation Bottom (feet)</th>
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<td>17.00</td>
<td>20.00</td>
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<td></td>
</tr>
</tbody>
</table>

### Comments

- **1/1/1800 12:00:00 AM**
  
  The water from this well will be commingled with the water from Squaw Creek in the Squaw Creek District Pipeline, P27641D and Squaw #2, P102954W to serve 75 homes in the Squaw Creek Water District. A meter acceptable to the State Engineer is required to accurately measure the total quantity of water produced from this well. An annual report shall be submitted to the State Engineer no later than February 15 of each year stating the total amount of water produced from this well each month during the previous January 1 to December 31, twelve (12) month period. The report shall identify the well by name, location, permit number, and shall identify the type of meter used for the measurement. The report shall contain at least two (2) semi-annual measurements of the static water level in the well as measured twenty-four (24) consecutive hours after pumping has ceased. The dates the measurements were obtained and the period of time the well was "Shut-In" prior to obtaining the measurements must be specified. The State Engineer may, upon written request, waive all or any portion of these conditions and limitations.

### Documents

### Appropriation for Ground Water

| Appropriation Amount (GPM) | 40.00 |

### Related Transactions

<table>
<thead>
<tr>
<th>Instrument Type</th>
<th>Instrument Name</th>
<th>Instrument Code</th>
<th>WR Number Type</th>
<th>WR Number</th>
</tr>
</thead>
</table>

Top

APPLICATION FOR PERMIT TO APPROPRIATE GROUND WATER

Note: Only springs flowing 25 gallons per minute or less, where the proposed use is domestic and/or stock watering, will be considered as ground water appropriations.

FOR OFFICE USE ONLY

Temporary Filing No. U.W. 024.4.09

ALL ITEMS MUST BE COMPLETED BEFORE APPLICATION IS ACCEPTABLE

NAME AND NUMBER OF WELL OR SPRING: Squaw No. 2

1. Name of applicant(s): Squaw Creek Water District
   Phone: (307) 733-3189

2. Address of applicant(s): P.O. Box 603, Jackson, WY 83001
   (MAILING ADDRESS) (CITY) (STATE) (ZIP)

3. Name & address of agent to receive correspondence and notices: Squaw Creek Water District,
   P.O. Box 603, Jackson, WY 83001
   Phone: (307) 733-3189
   (MAILING ADDRESS) (CITY) (STATE) (ZIP)

4. Use to which the water will be applied:

   [ ] Domestic:
   Use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totaling one acre or less. Number of houses served? _____

   [ ] Stock Watering:
   Normal livestock use at four tanks or less within one mile of well or spring. Stockwatering pipelines and commercial feedlots are a miscellaneous use. Number of stock tanks? _____

   [ ] Irrigation:
   Watering of commercially grown crops (large-scale lawn watering of golf courses, cemeteries, recreation areas, etc., is miscellaneous use).

   [ ] Municipal:
   Use of water in incorporated Towns and Cities (use of water in unincorporated towns, subdivisions, improvement districts, mobile home parks, etc. are classified as miscellaneous use).

   [ ] Industrial:
   Long term use of water for the manufacture of a product or production of oil/gas or other minerals (oil field water flood operations, power plant water supply, etc.). (Describe in REMARKS)

   [ ] Miscellaneous:
   Any use of water not defined under previous definitions such as stockwater pipelines, subdivisions, mine dewatering, mineral/oil exploration drilling, reclamation purposes, potable and sanitary supplies in offices or light manufacturing, animal waste management, etc. Describe miscellaneous use completely. Water will be used in an unincorporated subdivision.

5. Location of the well or spring: (NOTE: Quarter-quarter (40 acre subdivision) MUST be shown. EXAMPLE: SE 1/4 NW 1/4 of Sec. 12, Township 14 North, Range 68 West.)
   Teton County, SE 1/4 SW 1/4 of Sec. 26, T. 40 N., R. 116 W. of the 6th P.M. (or W.R.M.), Wyoming. If located in a platted subdivision, also provide Lot _____ Block _____ of the Subdivision (or Addn) of _______________.
   Resurvey Location: Tract _____, (or Lot) __________, feet.

6. Estimated depth of the well or spring is _______ feet.

7. (a) MAXIMUM instantaneous flow of water to be developed and beneficially used: ___50___ gallons per minute.
   NOTE: If for domestic and / or stock use, this application will be processed for a maximum of 25 gallons per minute. For a spring, after approval of this application, some type of artificial diversion or improvement must be constructed to qualify for a water right.

   (b) MAXIMUM volumetric quantity of water to be developed and beneficially used per calendar year:
   Circle appropriate units: (Gallons) (Acre Feet) A four person family utilizes approximately one (1) acre-foot of water per year or 325,000 gallons.

8. Mark the point(s) or area(s) of use in the tabulation box below.

9. If for irrigation use:
   a. Describe MAXIMUM acreage to be irrigated in each 40 acre subdivision in the tabulation box above.
   b. [ ] Land will be irrigated from this well only.
   c. [ ] Land is irrigated from existing water right(s) with water from this well to be additional supply. Describe existing water right(s) under REMARKS.

10. If for irrigation use, describe method of irrigation, i.e. center pivot sprinkler, flood, etc.:
11. The well or spring is to be constructed on lands owned by the U.S. Department of Agriculture - Forest Service. (The granting of a permit does not constitute the granting of right-of-way. If any easement or right-of-way is necessary in connection with this application, it should be understood that the responsibility is the applicant's. A copy of the agreement should accompany this application, if the land is privately owned and the owner is not the co-applicant.)

12. The water is to be used on lands owned by residents of the Squaw Creek Water District. (If the landowner is not the applicant, a copy of the agreement relating to the usage of appropriated water on the land should be submitted to this office. If the landowner is included as co-applicant of the application, this procedure need not be followed.)

NOTE: Water rights attach to the area(s) and/or point(s) of use.

REMARKS: The Water will be used within the Squaw Creek Water District System, and will be concomited with water from existing permit #27641, details are contained on a Water District Survey Area Map accompanying that permit for the Squaw Creek District, Permit No. 27641.

Under penalties of perjury, I declare that I have examined this application and to the best of my knowledge and belief it is true, correct and complete.

Signature of Applicant or Authorized Agent

Date

THE LEGALLY REQUIRED FILING FEE MUST ACCOMPANY THIS APPLICATION

DOMESTIC AND/OR STOCK WATERING USES

(Domestic use is defined as use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totaling one acre or less.)

IRRIGATION, MUNICIPAL, INDUSTRIAL, MISCELLANEOUS

$50.00

MONITOR (For water level measurements or chemical quality sampling) or TEST WELL

NO FEE

IF WELL WILL SERVE MULTIPLE USES, SUBMIT ONLY ONE (THE HIGHER) FILING FEE.

THE STATE OF WYOMING )
) ss.
STATE ENGINEER'S OFFICE )

This instrument was received and filed for record on the 5th day of July, 1996, at 9:30 o'clock A.M.

Permit No. U.W. 102954

for State Engineer

THIS IS TO CERTIFY that I have examined the foregoing application and do hereby grant the same subject to the following limitations and conditions:

This application is approved subject to the condition that the proposed use shall not interfere with any existing rights to ground water from the same source of supply and is subject to regulation and correlation with surface water rights, if the ground and surface waters are interconnected. The use of water hereunder is subject to the further provisions of Chapter 169, Session Laws of Wyoming, 1957, and any subsequent amendments thereunto.

Granting of a permit does not guarantee the right to have the water level or artesian pressure in the well maintained at any specific level. The well should be constructed to a depth adequate to allow for the maximum development and beneficial use of ground water in the source of supply.

If the well is a flowing artesian well, it shall be so constructed and equipped that the flow may be shut off when not in use without loss of water into sub-surface formations or at the land surface.

Special attention is called to paragraph one (1) of these conditions and limitations as outlined above relating to the interconnection of ground and surface water sources. FOR ADDITIONAL CONDITIONS AND LIMITATIONS SEE ATTACHED STATUS SHEET.

Approval of this application may be considered as authorization to proceed with construction of the proposed well or spring. A Statement of Completion will be filed within thirty (30) days of completion of construction, including pump installation.

Completion of construction and completion of the beneficial use of water for the purposes specified in Item 4 of this application will be made by December 31, 1996.

The amount of appropriation shall be limited to the quantity to which permittee is entitled as determined at time of proof of application of water to beneficial use.

Witness my hand this 19th day of July, 1996.

Gordon W. Fassett, State Engineer
PERMIT NO. 102954
T.F. No. 24-4-409
PERMIT STATUS

Priority Date July 5, 1996 Approval Date July 19, 1996

ADDITIONAL CONDITIONS AND LIMITATIONS:

1. A meter acceptable to the State Engineer is required to accurately measure the total quantity of water produced from this well.

2. An annual report shall be submitted to the State Engineer no later than February 15 of each year stating the total amount of water produced from this well each month during the previous January 1 to December 31, twelve (12) month period.

3. The report shall identify the well by name, location, permit number and shall identify the type of meter used for the measurement.

4. The report shall contain at least two (2) semi-annual measurements of the static water level in the well as measured twenty-four (24) consecutive hours after pumping has ceased. The dates the measurements were obtained and the period of time the well was "shut-in" prior to obtaining the measurements must be specified.

5. The State Engineer may, upon written request, waive all or any portion of these conditions and limitations.

DATE OF APPROVAL

Gordon W. Fassett, State Engineer

May 12, 1997 - Statement of Completion on May 02, 1997 received.

SEP 30'97 NOTICE OF EXPIRATION OF TIME FOR COMPLETION AND COMPLETION OF BENEFICIAL USE MAILED

December 22, 1997 - Proof of Beneficial use on May 02, 1997 received.
STATE OF WYOMING
OFFICE OF THE STATE ENGINEER
HERSCHLIER BUILDING
CHEYENNE, WYOMING 82002
(307) 777-5999

STATEMENT OF COMPLETION AND DESCRIPTION OF WELL OR SPRING

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.

PERMIT NO. U.W. 102954 NAME OF WELL (SPRING) SQUAW #2

1. NAME OF OWNER SQUAW CREEK WATER DISTRICT

2. ADDRESS P.O. Box 603 Please check if address has changed from that shown on permit: ☐
   City Jackson State WY Zip Code 83001 Phone No. (307) 733-3189

3. USE OF WATER: Domestic ☐ Stock Watering ☐ Irrigation ☐ Municipal ☐ Industrial ☐ Miscellaneous ☒
   Explain proposed use (Example: One single family dwelling) Water will be used in an unincorporated
   subdivision as a community water supply

4. LOCATION OF WELL (SPRING): SE 1/4 SW 1/4 of Section 26, T. 40 N., R. 116 W., of the 6th P.M. (or W.R.M.),
   Subdivision Name SQUAW CREEK Lot Block
   If surveyed, bearing, distance and reference point: N/A

5. TYPE OF CONSTRUCTION: Drilled ☒ Mud Rotary & Casing Hammer ☐ Dug ☐ Driven ☐ Other ☐
   (Type of Rig)
   Describe: Drill & Drive, Complete & Retract Casing

6. CONSTRUCTION: Total Depth of Well/Spring 42 ft. Depth to Static Water Level 18.1 ft.
   a. Diameter of borehole (Bit size) 17 5/8 inches.
   b. Casing Schedule New ☐ Used ☒
      12" diameter from 0 ft. to 17 ft. Material Steel Gage 1/4" Std w
      12" diameter from 32 ft. to 42 ft. Material Steel Gage 1/4" Std w
   c. Was casing cemented: Yes ☒ No ☐
      Cemented Interval, From 0 feet to 10 feet.
   d. Number of sacks of cement used 6 type of cement Portland
   e. Perforations: Type of perforator used N/A
      Size of perforations inches by inches.
      Number of perforations and depths where perforated:
      __________ perforations from _______ ft. to _______ feet.
      __________ perforations from _______ ft. to _______ feet.
   f. Was well screen installed? Yes ☒ No ☐
      Diameter: 12" slot size: 0.050 set from 17.0 feet to 32.0
      Diameter: _________ slot size: _________ set from _________ feet to _________
   g. Was well gravel packed? Yes ☒ No ☐ Size of gravel 6/9 & 10/20
   h. Was surface casing used: Yes ☐ No ☐ Was it cemented in place? Yes ☐ No ☐

7. NAME & ADDRESS OF DRILLING COMPANY Thomas Brothers Drilling, Afton, WY 83110

8. DATE OF COMPLETION OF WELL (including pump installation) OR SPRING (first used) May 2, 1997

9. PUMP INFORMATION: Manufacturer Aermotor Type A-Plus stainless steel super su
   Source of power Electric Horsepower Depth of Pump Setting or intake 33.0 ft
   Amount of Water Being Pumped 35 Gallons Per Minute. (For Springs or flowing wells, see item 10.)
   Total Volumetric Gallons Used Per Calendar Year. 56 Acre feet per year

10. FLOWING WELL (Owner is responsible for control of flowing well),
    If well yields artesian flow, yield is _______ gal/min. Surface pressure is _______ lb./sq. inch, or _______ feet of water.
    The flow is controlled by: valve ☐ cap ☐ plug ☐
    Does well leak around casing? Yes ☐ No ☐

Permit No. U.W. 102954 Book No. 792 Page No. 105
11. If spring, how was it constructed? (Some method of artificial diversion, i.e., spring box, cribbing, etc., is necessary to qualify for a water right.)  

N/A

12. PUMP TEST: Was a pump test made? Yes ☑ No ☐  
If so, by whom: Lids tone & Anderson, Inc.  
Address: 760 Whalers Way, B-200, Ft. Collins, CO 80525  
Yield: 23 gal/min. with 6 foot drawdown after 40 hours.  
Yield: 45 gal/min. with 12.0 foot drawdown after 1 hour.

13. LOG OF WELL: Total depth drilled 45 feet.  
Depth of completed well 42 feet. Diameter of well 12 inches.  
Depth to first water bearing formation 18 feet.  
Depth to principal water bearing formation: Top 28 feet to Bottom 30 feet.  
Ground Elevation, if known 6150 ft.

DRILL CUTTINGS DESCRIPTION:

<table>
<thead>
<tr>
<th>From Feet</th>
<th>To Feet</th>
<th>Material Type, Texture Color</th>
<th>Remarks</th>
<th>Indicate Water Bearing Formation &amp; Name</th>
<th>Indicate Perforated Casing Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>5</td>
<td>Loam, dk brn, no aggregate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>10</td>
<td>Clay, rd/brn, no aggregate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>18</td>
<td>Fine/med alluvial gravel</td>
<td>Variegated moderate clay</td>
<td>1st Water Contact 18'</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>20</td>
<td>Fine/Med alluvial gravel</td>
<td>Variegated slight clay</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>24</td>
<td>Fine/med alluvial gravel</td>
<td>Variegated, slight clay</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>26</td>
<td>Fine/med alluvial gravel</td>
<td>Variegated, moderate clay</td>
<td></td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>30</td>
<td>Med alluvial gravels</td>
<td>Variegated</td>
<td>Main water bearing</td>
<td>Formation 28'-30'</td>
</tr>
<tr>
<td>30</td>
<td>42</td>
<td>Monolithic red siltstone</td>
<td>Bed Rock CNTT, siltstone</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

14. QUALITY OF WATER INFORMATION:  
Does a chemical and/or bacteriological water quality analysis accompany this form? Yes ☑ No ☐  
It is recommended that chemical and bacteriologic water quality analyses be performed and that the report(s) be filed with the records of this well. (Contact Department of Agriculture, Analytical Lab Services, Laramie, 742-2984.)  
If not, do you consider the water as:  
Good ☑ Acceptable ☐ Poor ☐ Unusable ☐

REMARKS:  

Under penalties of perjury, I declare that I have examined this form and to the best of my knowledge and belief it is true, correct and complete.

Signature of Owner or Authorized Agent: ____________________________  
Date: MAY 7, 1997

FOR STATE ENGINEER'S USE ONLY

Date of Receipt: JUL 5, 1996  
Date of Approval: MAY 2, 1997

Date of Priority: JUL 5, 1996
STATE OF WYOMING  
OFFICE OF THE STATE ENGINEER  

PROOF OF APPROPRIATION AND BENEFICIAL USE OF GROUND WATER

The owner is responsible for submitting Parts I and II of this form. Part III will be prepared by a State Engineer Representative at time of inspection.

**PART I**

**WATER DIVISION 4 (16)**

<table>
<thead>
<tr>
<th>STATEMENT OF CLAIM</th>
<th>PERMIT NO. U.W.</th>
<th>WELL REGISTRATION</th>
<th>NAME OF WELL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>102954</td>
<td></td>
<td>SQUAW #2</td>
</tr>
</tbody>
</table>

1. Name of Claimant(s): SQUAW CREEK WATER DISTRICT

2. Address: P.O. BOX 7672, JACKSON, WY  

Zip Code: 83002

3. For What Purpose(s) is Water Used? Use: COMMUNITY WATER SUPPLY  

Date First Used: MAY 2, 1977

If use is for irrigation, give date irrigation was completed on all lands under this Permit: N/A

**DATE OF PRIORITY:** JULY 5, 1996

**LOCATION:** SE ¼ SW ¼ of Section 26

**TETON COUNTY**

**U.W. DISTRICT:**

**NOTE:** Do not fold this form. Use typewriter or print neatly with black ink.

**PART II**

For Irrigation, Industrial, Municipal and Miscellaneous Wells

A plat which has been certified by a licensed professional engineer or land surveyor shall be submitted to accompany this form. The plat shall be in accordance with Sec. 33-29-111 Wyoming Statutes 1977 or see Chapter V and VI, Manual of Regulations and Instructions issued by the State Engineer's Office. (Minimum scale shall be 2" = 1 mile.) The map shall be prepared with waterproof black ink on tracing linen or an acceptable equivalent and shall show on a suitable scale the legal subdivisions, the accurate location of the well or wells, storage facilities, if any, main canals, streams, highways and other important cultural features. Land ownership will be shown, if there is more than one owner under the permit.

**IRRIGATION WELLS**

Acreage irrigated under terms of this permit will be clearly shown with a distinctive pattern and a distinction clearly made between lands having an original supply and those provided a supplemental supply. Where use is for supplemental supply for lands with a right from another source, indicate the priority or permit number of the source, the source of supply and the name of the ditch, pipe line or other well. Conveyance system will be shown and described. Indicate method of irrigation being used.

**INDUSTRIAL WELLS**

In addition to the information outlined above, industrial users will locate and describe conveyance facilities to the point(s) of use, giving as accurately as possible the location of points of use. Permits for other sources of water must be identified.

**MUNICIPAL WELLS**

The plat will show the area of use and show and describe the means of conveyance of the water from the well to the connection with the distribution system for a municipal water system.

**MISCELLANEOUS WELLS**

1. The linen plat for wells where the use is described as miscellaneous and where the yield flow of the well exceeds twenty-five (25) gallons per minute must show the area of use and describe and show the means of conveyance of water from the well to the distribution system and/or points of use.

2. The plat for wells where the use is described as miscellaneous and where the yield or flow is twenty-five (25) gallons per minute or less may be a 7½ minute United States Geological Survey Quadrangle map in lieu of a linen tracing provided the U.S. Geological Survey Quadrangle map is in compliance with the following conditions:

   (a) The entire United State Geological Survey quadrangle map must be submitted to the State Engineer's Office.

   (b) The scale on said quadrangle map must be one to twenty-four thousand.

   (c) An identified section corner or quarter corner must be shown on said quadrangle map along with Section, Township and Range.

   (d) The section in which the well is located and the section(s) where the area(s) or point(s) of use are located must be subdivided into forty (40) acre tracts and the well location and area(s) or point(s) of use clearly labeled and described.

   (e) Said quadrangle map showing the well location and area(s) or point(s) of use must be certified by a professional engineer or land surveyor licensed to practice within the State of Wyoming.
A "CERTIFICATE OF OWNERSHIP" FROM THE COUNTY CLERK'S OFFICE SHOWING OWNERSHIP OR CONTROL OF LAND(S) INVOLVED MUST ACCOMPANY THIS FORM.

Under penalties of perjury, I declare that I have examined this form and to the best of my knowledge and belief it is true, correct and complete.

Signature of Owner or Authorized Agent

Date

Robert W. Scott

DECEMBER 19 1997

President, Squaw Creek Water District

Date of Receipt: DEC 22 1997

, 19
## PERMIT SUMMARY

**Instrument**: WELLS AND SPRINGS

<table>
<thead>
<tr>
<th>Facility Name:</th>
<th>SQUAW #2</th>
<th>Water Right Status:</th>
<th>INCOMPLETE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Number:</td>
<td></td>
<td>Date Accepted for:</td>
<td></td>
</tr>
<tr>
<td>Temporary File Number:</td>
<td>24-4-409W</td>
<td>Priority Date:</td>
<td>07/05/1996</td>
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<tr>
<td>Permit Number:</td>
<td>P102954.0W</td>
<td>Division:</td>
<td>4</td>
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<td>Proof Number:</td>
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<td>District:</td>
<td>16</td>
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<td>Docket Number:</td>
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<tr>
<td>Order Number:</td>
<td></td>
<td>SC Original Expiration Date:</td>
<td>12/31/1997</td>
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<tr>
<td>Certificate Record Number:</td>
<td></td>
<td>SC Actual Expiration Date:</td>
<td>05/02/1997</td>
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<td>Auto Cancellation Date:</td>
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<td>BU Original Expiration Date:</td>
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<tr>
<td>Extended Auto Cancellation Date:</td>
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<td>BU Actual Expiration Date:</td>
<td>05/02/1997</td>
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<tr>
<td>Last Modified By:</td>
<td></td>
<td>Last Modified Date:</td>
<td>01/01/1800</td>
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<tr>
<td>Created By:</td>
<td></td>
<td></td>
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</tbody>
</table>

### General Info

- **Type Of Diversion**: Well
- **Supply Type**: Original Supply
- **Special Cases**: 
- **Appropriation Amount**: 35,000 GPM

### Appropriator(s)

<table>
<thead>
<tr>
<th>Appropriator</th>
<th>Last Name</th>
<th>First Name</th>
<th>Company</th>
<th>City</th>
<th>State</th>
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<tbody>
<tr>
<td>Applicant</td>
<td>WATER DIST</td>
<td>SQUAW CREEK</td>
<td></td>
<td>JACKSON</td>
<td>Wyoming</td>
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### Beneficial Uses

- **Beneficial Uses**: Miscellaneous-- Ground Water

### Water Right POD

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<tr>
<th>Principal Meridian</th>
<th>Township</th>
<th>Range</th>
<th>Section</th>
<th>Quarter</th>
<th>Qtr-Qtr</th>
<th>Survey Type</th>
<th>Number</th>
<th>Primary POD</th>
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## Water Right POU

<table>
<thead>
<tr>
<th>Principal Meridian</th>
<th>Township</th>
<th>Range</th>
<th>Section</th>
<th>Quarter</th>
<th>Q-Q</th>
<th>WR Status</th>
<th>Acres</th>
<th>Use</th>
<th>Sub Use</th>
<th>Supply Type</th>
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<tbody>
<tr>
<td>06</td>
<td>040N</td>
<td>116W</td>
<td>35</td>
<td>NE</td>
<td>NW</td>
<td>ORIGINAL</td>
<td>0.000</td>
<td></td>
<td></td>
<td>ORIGINAL</td>
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<tr>
<td>06</td>
<td>040N</td>
<td>116W</td>
<td>35</td>
<td>NE</td>
<td>SW</td>
<td>ORIGINAL</td>
<td>0.000</td>
<td></td>
<td></td>
<td>ORIGINAL</td>
</tr>
<tr>
<td>06</td>
<td>040N</td>
<td>116W</td>
<td>35</td>
<td>NW</td>
<td>NW</td>
<td>ORIGINAL</td>
<td>0.000</td>
<td></td>
<td></td>
<td>ORIGINAL</td>
</tr>
<tr>
<td>06</td>
<td>040N</td>
<td>116W</td>
<td>35</td>
<td>SE</td>
<td>SE</td>
<td>ORIGINAL</td>
<td>0.000</td>
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<td></td>
<td>ORIGINAL</td>
</tr>
</tbody>
</table>

Supply Type | Acres
---|---
Original | 0.000

Total acres irrigated: 10.000

## Construction

<table>
<thead>
<tr>
<th>Diversion Type</th>
<th>Construction Type</th>
<th>Construction Description</th>
<th>Total Depth (feet)</th>
<th>Casing Height (feet)</th>
<th>static water level (feet)</th>
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</thead>
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<tr>
<td></td>
<td></td>
<td></td>
<td>42.00</td>
<td>18.10</td>
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## Well Log/Water Quality

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<thead>
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<th>Total Depth (feet)</th>
<th>Well Diameter (inches)</th>
<th>WaterBearing Formation (feet)</th>
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<th>WaterBearing Formation Bottom (feet)</th>
<th>Water Quality</th>
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<td></td>
<td></td>
<td>18.00</td>
<td>28.00</td>
<td>30.00</td>
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## Comments

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<tr>
<th>Created Date</th>
<th>Comment Details</th>
<th>Created by</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/1/1800 12:00:00 AM</td>
<td>THE WATER FROM THIS WELL WILL BE COMMINGLED WITH THE WATER FROM SQUAW CREEK IN THE SQUAW CREEK DISTRICT PIPELINE, P27641D AND SQUAW #2, P102953W TO SERVE 75 HOMES IN THE SQUAW CREEK WATER DISTRICT. A METER ACCEPTABLE TO THE STATE ENGINEER IS REQUIRED TO ACCURATELY MEASURE THE TOTAL QUANTITY OF WATER PRODUCED FROM THIS WELL. AN ANNUAL REPORT SHALL BE SUBMITTED TO THE STATE ENGINEER NO LATER THAN FEBRUARY 15 OF EACH YEAR STATING THE TOTAL AMOUNT OF WATER PRODUCED FROM THIS WELL EACH MONTH DURING THE PREVIOUS JANUARY 1 TO DECEMBER 31, TWELVE (12) MONTH PERIOD. THE REPORT SHALL IDENTIFY THE WELL BY NAME, LOCATION, PERMIT NUMBER, AND SHALL IDENTIFY THE TYPE OF METER USED FOR THE MEASUREMENT. THE REPORT SHALL CONTAIN AT LEAST TWO (2) SEMI-ANNUAL MEASUREMENTS OF THE STATIC WATER LEVEL IN THE WELL AS MEASURED TWENTY-FOUR (24) CONSECUTIVE HOURS AFTER PUMPING HAS CEASED. THE DATES THE MEASUREMENTS WERE OBTAINED AND THE PERIOD OF TIME THE WELL WAS &quot;SHUT-IN&quot; PRIOR TO OBTAINING THE MEASUREMENTS MUST BE SPECIFIED. THE STATE ENGINEER MAY, UPON WRITTEN REQUEST, WAIVE ALL OR ANY PORTION OF THESE CONDITIONS AND LIMITATIONS.</td>
<td>MIGRATED</td>
</tr>
</tbody>
</table>

## Documents

https://seoweb.wyo.gov/e-Permit/Transactions/WaterRightSummary.aspx?print=1

10/2/2012
### Appropriation for Ground Water

| Appropriation Amount (GPM) | 35.00 |

### Related Transactions

<table>
<thead>
<tr>
<th>Instrument Type</th>
<th>Instrument Name</th>
<th>Instrument Code</th>
<th>WR Number Type</th>
<th>WR Number</th>
</tr>
</thead>
</table>

https://seoweb.wyo.gov/e-Permit/Transactions/WaterRightSummary.aspx?print=1

10/2/2012
STATE OF WYOMING
OFFICE OF THE STATE ENGINEER

PROOF OF APPROPRIATION AND BENEFICIAL USE OF GROUND WATER

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PART I

WATER DIVISION ____________________________

U.W. DISTRICT ____________________________

PERMIT NO. U.W. 194150 ____________________________

DATE OF PRIORITY 7/30/2010 ____________________________

NAME OF WELL SQUAW CREEK WELL NO. 3 ____________________________

LOCATION ¼ ¼ of Section ____________________________

T. _____ N. R. _____ W. ____________________________

1. Name of Claimant(s) 1) SQUAW CREEK WATER DISTRICT 2) USFS ____________________________

2. Address ____________________________________________ Zip Code ____________________________

3. For What Purpose(s) is Water Used? Use: ____________________________ Date First Used: ____________________________

Use: ____________________________ Date First Used: ____________________________

Use: ____________________________ Date First Used: ____________________________

If use is for irrigation, give date irrigation was completed on all lands under this Permit:

PART II

For Irrigation, Industrial, Municipal and Miscellaneous Wells

A plat which has been certified by a licensed professional engineer or land surveyor shall be submitted to accompany this form. The plat shall be in accordance with W.S. § 33-29-139 or Chapter V and VI, State Engineers Office Regulations and Instructions (Minimum scale shall be 2" = 1 mile). The map shall be prepared with waterproof black ink on tracing linen or an acceptable equivalent and shall show on a suitable scale the legal subdivisions, the accurate location of the well or wells, storage facilities, main canals, streams, highways, and other important cultural features. Land ownership will be shown, if there is more than one owner under the permit.

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SEE REVERSE SIDE
A "CERTIFICATE OF OWNERSHIP" FROM THE COUNTY CLERKS OFFICE SHOWING OWNERSHIP OR CONTROL OF LAND INVOLVED MUST ACCOMPANY THIS FORM.

Under penalties of perjury, I declare that I have examined this form and to best of my knowledge and belief it is true, correct, and complete.

__________________________________________  ____________________________
Signature of Owner or Authorized Agent  Date

Date of Receipt: ________________________________
STATE OF WYOMING
OFFICE OF THE STATE ENGINEER
HERSCHLER BLDG., 4-E
CHEYENNE, WYOMING 82002
(307) 777-6163

STATEMENT OF COMPLETION AND DESCRIPTION OF WELL OR SPRING

NOTE: Do not fold the form. Use typewriter or print neatly with black ink.

PERMIT NO. U.W. 194150 NAME OF WELL/SPRING SQUAW CREEK WELL NO. 3

1. NAME OF OWNER 1)SQUAW CREEK WATER DISTRICT 2)USFS

2. ADDRESS
   - Please check if address has changed from that shown on permit.
   - City ___________________ State ________________ Zip Code _____________ Phone No. ____________________

3. USE OF WATER
   - Domestic ☐ Stock Watering ☐ Irrigation ☐ Municipal ☐ Industrial ☐ Miscellaneous
   - ☐ Monitor or Test ☐ Coal Bed Methane ☐ Explain proposed use (Example: One single family dwelling)

4. LOCATION OF WELL/SPRING 1/4 1/4 of Section ___, T. ___ N., R. ___ W., of the 6th P.M. (or W.R.M.)
Subdivision Name __________________________ Lot _______ Block _______ Property lines:____________________
   - Resurvey Location Tract _______ or Lot _______ Datum ☐ NAD27 ☐ NAD83
   - Geographic Coordinates: Latitude _______ N Longitude _______ W (degrees, minutes, seconds)
   - UTM: Zone _______ Northing _______ Northing _______ Datum _______ Easting _______ Easting _______ (meters)
   - Land surface elevation (ft. above mean sea level) Datum ☐ NAVD29 ☐ NAVD88
   - Source ☐ GPS ☐ Map ☐ Survey ☐ Unknown ☐ Other ☐ Altimeter (for elevation only)
   - Source: __________________________

5. TYPE OF CONSTRUCTION
   - Drilled ☐ Dug ☐ Driven ☐ Other (of any) ________________
   - Describe ________________________________
   - Amount of grout used ___________ (example: 10 sacks)
   - Amount of cement used ___________ (example: bentonite pellets)

   - Diameter of borehole (bit size) inches ___________
   - Diameter of jointed pipe from ft. to ft. ___________ inches ___________
   - Diameter of open hole ft. to ft. ___________
   - Diameter of cemented grouted interval, from ft. to ft. ___________
   - Size of cemented interval ___________

   - Diameter of finished interval ___________
   - Size of filter pack ___________
   - Size of gravel ___________

   - Size of perforations ___________
   - Size of perforations ___________

   - Size of open interval ___________
   - Size of open interval ___________

   - Amount of filter gravel used ___________
   - Amount of cement used ___________

   - Type of completion ☐ Customized perforations ☐ Open hole ☐ Factory screen

6. CONSTRUCTION
   - Total depth of well/spring ________________ ft.
   - Depth to static water level ________________ ft. (below land surface)
   - Casing height ________________ ft. above ground
   - Diameter of borehole (bit size) inches ___________
   - Diameter of jointed pipe from ft. to ft. ___________ inches ___________
   - Diameter of open hole ft. to ft. ___________
   - Diameter of cemented grouted interval, from ft. to ft. ___________
   - Amount of grout used ___________ (example: 10 sacks)
   - Type of completion ☐ Customized perforations ☐ Open hole ☐ Factory screen

7. DATE OF COMPLETION OF WELL (including pump installation) OR SPRING (first used)

8. PUMP INFORMATION
   - Manufacturer __________________________ Type ________________
   - Source of power _________________________ Horsepower ________________
   - Depth of pump setting or intake ________________ ft.
   - Amount of water being pumped ________________ gal./min.* (For springs or flowing wells, see item 10)
   - Total volumetric quantity used per calendar year.* ________________

9. FLOWING WELL OR SPRING (Owner is responsible for control of flowing well)
   - If well yields artesian flow or if spring, yield is ___________ gal./min.*
   - Surface pressure is ___________ lb./sq.inch, or ___________ feet of water
   - The flow is controlled by ☐ Valve ☐ Cap ☐ Plug
   - Does well leak around casing? ☐ Yes ☐ No
   - If these amounts exceed permitted amount an enlargement is required.

   - Surface casing installed from ___________ ft. to ___________ ft.
   - Filter pack/gravel installed from ___________ ft. to ___________ ft.

   - Well screen details:
   - Diameter slot size ___________ inches set from ft. to ft.
   - Diameter slot size ___________ inches set from ft. to ft.
   - Diameter slot size ___________ inches set from ft. to ft.

   - Diameter slot size ___________ inches set from ft. to ft.

   - Well development method ________________

   - How long was well developed? ________________

   - Was a filter/gravel pack installed? ☐ Yes ☐ No
   - Size of sand/gravel ________________

   - Filter pack/gravel installed from ___________ ft. to ___________ ft.
   - Surface casing installed from ___________ ft. to ___________ ft.

10. Supplying water to: __________________________

11. SOURCE OF WATER
   - Domestic ☐ Stock Watering ☐ Irrigation ☐ Municipal ☐ Industrial ☐ Miscellaneous

12. USE OF WATER
   - ☐ Monitor or Test ☐ Coal Bed Methane ☐ Explain proposed use (Example: One single family dwelling)

Permit No. U.W. 194150 ___________ Book No. 1399 ___________ Page No. 150

SEE REVERSE SIDE
11. IF SPRING, HOW WAS IT CONSTRUCTED? (Some method of artificial diversion, i.e., springbox, cribbing, etc., is necessary to qualify for a water right)

12. PUMP TEST Was a pump test conducted?  □ Yes  □ No
   If so, by whom
   Yield ___________________ gal./min. with ____________ ft. drawdown after ____________ hours
   Yield ___________________ gal./min. with ____________ ft. drawdown after ____________ hours

13. LOG OF WELL  Total depth drilled __________________ ft.
   Depth of completed well __________________ ft. Diameter of well ________________ inches.
   Depth to first water bearing formation __________________ ft.
   Depth to principal water bearing formation Top __________________ ft. to bottom ______________ ft.

DRILL CUTTINGS DESCRIPTION:

<table>
<thead>
<tr>
<th>From Feet</th>
<th>To Feet</th>
<th>Rock Type Or Description</th>
<th>Formation</th>
<th>Water Bearing? (Yes or no)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface</td>
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14. DOES A GEOPHYSICAL LOG ACCOMPANY THIS FORM?  □ Yes  □ No

15. QUALITY OF WATER INFORMATION
   Does a chemical and/or bacteriological water quality analysis accompany this form?  □ Yes  □ No
   It is recommended that chemical and bacteriologic water quality analyses be performed and that the report(s) be filed with the records of this well. (Contact Department of Agriculture, Analytical Lab Services, Laramie, 742-2984.)
   If not, do you consider the quality of water as  □ Good  □ Acceptable  □ Poor  □ Unusable

REMARKS

Under penalties of perjury, I declare that I have examined this form and to the best of my knowledge and belief it is true, correct, and complete.

_____________________________ ______________________
Signature of Owner or Authorized Agent Date

FOR STATE ENGINEER'S USE ONLY

Permit No. U.W. 194150
Date of Receipt ____________________
Date of Priority 7/30/2010

Date of Approval ____________________ 20
for State Engineer
STATE OF WYOMING  
OFFICE OF THE STATE ENGINEER  
HERSCHLER BLDG., 4-E  
CHEYENNE, WYOMING 82002  
(307) 777-6163

APPLICATION FOR PERMIT TO APPROPRIATE GROUND WATER  
APPLICATION FOR WELLS AND SPRINGS

Note: Only springs flowing 25 gallons per minute or less, where the proposed use is Domestic and/or Stock Watering, will be considered as ground water appropriations.

For Office Use Only

<table>
<thead>
<tr>
<th>Permit No. U.W.</th>
<th>194150</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Division No.</td>
<td>Teton County</td>
</tr>
</tbody>
</table>

**NAME AND NUMBER OF WELL or SPRING**

1. Name of applicant(s)  
   Squaw Creek Well No. 3 (Backfill)
   Name: Russell Dehyle
   Address: 2411 Central Ave. (Mailing Address)
   City: Cheyenne
   State: WY
   Zip: 82001
   Phone: (307) 634-3582

2. Address of applicant(s)  
   Mailing Address: 2411 Central Ave.
   City: Cheyenne
   State: WY
   Zip: 82001
   Phone: (307) 634-3582

3. Name & address of agent to receive correspondence and notices  
   Name: Russell Dehyle
   Address: 2411 Central Ave.
   City: Cheyenne
   State: WY
   Zip: 82001
   Phone: (307) 634-3582

4. Use to which the water will be applied  
   - Domestic
   - Stock Watering
   - Irrigation
   - Municipal
   - Industrial
   - Miscellaneous
   - Coalbed Methane

5. Location of the well or spring:  
   - County: Teton
   - Section: 1/4 NE 1/4 of Sec. 16, Township 14 North, Range 68 West
   - Subdivision (or Add'n) of: NE 1/4 NW 1/4
   - Resurvey Location: Tract 1, Block 1
   - Instantaneous flow of water to be developed and beneficially used: 80 gallons per minute
   - Estimated production interval: 6 months
   - Maximum instantaneous flow of water to be developed and beneficially used per calendar year: 1000

6. Estimated depth of the well or spring: 200 ft. Estimated production interval is 196 ft. to 330 ft.

7. (a) Maximum instantaneous flow of water to be developed and beneficially used: 80 gallons per minute

8. Mark the point(s) or area(s) of use in the tabulation box below. Note: Upper row refers to the quarter of the section. Next row refers to the quarter of the quarter section.

**TABULATION BOX**

<table>
<thead>
<tr>
<th>TWP</th>
<th>RNG</th>
<th>SEC</th>
<th>NE</th>
<th>NW</th>
<th>SW</th>
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</tr>
</tbody>
</table>

Temporary Filing No. U.W. 42-10-154

All items must be completed before application is acceptable.

Note: Do not fold this form. Use typewriter or print neatly with black ink.
9. If for irrigation use:
   a. Describe MAXIMUM acreage to be irrigated in each 40 acre subdivision in the tabulation box above.
   b. ☐ Land will be irrigated from this well only.
   c. ☐ Land is irrigated from existing water right(s) with water from this well to be additional supply. Describe existing water right(s) under REMARKS.

10. If for irrigation use, describe method of irrigation, i.e. center pivot sprinkler, flood, etc.: ☐

11. The well or spring is to be constructed on lands owned by:
   ☐ US Forest Service
   ☐ LWSC
   ☐ Coal Bed Methane
   ☐ Irrigation, Municipal, Industrial, and Miscellaneous Uses
   ☐ Monitor (For water level measurements or chemical quality sampling) or Test Well Uses
   ☐ Other

   REMARKS:
   ☐ Water will serve residential subdivision with 50 lots. ☐ A Forest Service special use permit for Test Well No. 194150 has been granted. Later will be commended with permits 102982 & 102984. For more call with agent 8-24-2010. The well has been drilled, however, no pump is installed. G3D.

Under penalties of perjury, I declare that I have examined this application and to the best of my knowledge and belief it is true, correct and complete.

[Signature]
Date

THE LEGALLY REQUIRED FILING FEE MUST ACCOMPANY THIS APPLICATION

DOMESTIC AND/OR STOCK WATERING USES
(Domestic use is defined as use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less.)

Coal Bed Methane Use

Irrigation, Municipal, Industrial, and Miscellaneous Uses

Monitor (For water level measurements or chemical quality sampling) or Test Well Uses

IF WELL WILL SERVE MULTIPLE USES, SUBMIT ONLY ONE (THE HIGHER) FILING FEE.

THIS SECTION IS NOT TO BE FILLED IN BY APPLICANT

THE STATE OF WYOMING )
) ss.
STATE ENGINEER'S OFFICE )
This instrument was received and filed for record on the 30th day of July, A.D. 2010, at 4:57 o'clock P.M.

Permit No. U.W. 194150

[Signature] George Moser
for State Engineer

THIS IS TO CERTIFY that I have examined the foregoing application and do hereby grant the same subject to the following limitations and conditions:

This application is approved subject to the condition that the proposed use shall not interfere with any existing rights to ground water from the same source of supply and is subject to regulation and correlation with surface water rights, if the ground and surface waters are interconnected. The use of water hereunder is subject to the further provisions of Chapter 169, Session Laws of Wyoming, 1957, and any subsequent amendments thereto.

Granting of a permit does not guarantee the right to have the water level or artesian pressure in the well maintained at any specific level. The well should be constructed to a depth adequate to allow for the maximum development and beneficial use of ground water in the source of supply.

If the well is a flowing artesian well, it shall be so constructed and equipped that the flow may be shut off when not in use without loss of water into sub-surface formations or at the land surface.

Coal Bed Methane wells have Additional Conditions and Limitations on attachment sheet.

FOR ADDITIONAL CONDITIONS AND LIMITATIONS SEE ATTACHED STATUS SHEET.

Approval of this application may be considered as authorization to proceed with construction of the proposed well or spring. A Statement of Completion must be filed within thirty (30) days of completion of construction, including pump installation.

Completion of construction and completion of the beneficial use of water for the purposes specified in Item 4 of this application will be made by December 31, 20_.

The amount of appropriation shall be limited to the quantity to which permittee is entitled as determined at time of proof of application of water to beneficial use.

Witness my hand this 24th day of Nov., A.D. 20___.

[Signature] PATRICK T. TYRRELL, State Engineer
PERMIT NO. U.W. ____________
T.F. No. 42-10-154

PERMIT STATUS

Priority Date ___ July 30, 2010 ___ Approval Date ___ NOV. 2 < 2010 ___

Following the procedural requirements of the Memorandum of Understanding that was entered into between the United States Department of Agriculture, Forest Service (USDA, Forest Service) and the Wyoming State Engineer’s Office (WSEO), the USDA, Forest Service was notified of this application by letter on September 22, 2010. Having heard no objection at the conclusion of the 30 day review period, the WSEO proceeded with the processing of this permit application.

ADDITIONAL CONDITIONS AND LIMITATIONS:

1. A meter acceptable to the State Engineer is required to accurately measure the total quantity of water produced from this well.

2. An annual report shall be submitted to the State Engineer no later than February 15 of each year stating the total amount of water produced from this well each month during the previous January 1 to December 31, twelve (12) month period.

3. The report shall identify the well by name, location, permit number and shall identify the type of meter used for the measurement.

4. The report shall contain at least two (2) semi-annual measurements of the static water level in the well as measured twenty-four (24) consecutive hours after pumping has ceased. The dates the measurements were obtained and the period of time the well was “shut-in” prior to obtaining the measurements must be specified.

5. The State Engineer reserves the right, upon written request, to modify or waive all or any portion of these conditions and limitations.

Date of Approval ___ /1/2010 ___

PATRICK T. TYRRELL, State Engineer
APPLICATION FOR PERMIT TO APPROPRIATE GROUND WATER

FOR OFFICE USE ONLY

Temporary Filing No. U.W. 19-8-401

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.

ALL ITEMS MUST BE COMPLETED BEFORE APPLICATION IS ACCEPTABLE.

NAME AND NUMBER OF WELL

TETON COUNTY NO. 1 WELL

1. Name of applicant(s): J. Teton County, WY (Lessee)
   2. U.S.D.I. Bureau of Land Management (Lessee)
   Address of applicant(s): Box 1727, Jackson, WY 83001

3. Name & address of agent to receive correspondence and notices: Frank J. Grimes & Nelson Engineering

4. Use to which the water will be applied: Domestic [ ] Stock Watering [ ] Irrigation [ ] Municipal [ ] Industrial [ ] Miscellaneous [X] (Describe completely and accurately). The water is to be used in a solid waste transfer station for potable use, building washdown, site irrigation and fire suppression.

5. Location of the well: (NOTE: Quarter-quarter (40-acre subdivision) MUST be shown. EXAMPLE: SE 1/4 NW 1/4 of Sec. 12, Township 14 North, Range 68 West.)
   Teton County, NE ¼ SW ¼ of Sec. 27
   Range 166 N., R. 166 W. of the 6th P.M. (or W.R.M.), Wyoming. If located in a platted subdivision, also provide Lot _______ Block _______ of the __________ Subdivision (or Add’n) of ________.

6. Mark the well location on the section grid to the right. LOCATION SHOWN IN ITEM 5 MUST AGREE WITH GRID. If the proposed well is for irrigation use, sketch and label all irrigation ditches and canals, stream, reservoirs and other wells. Indicate the point of use or lands to be irrigated from other sources.

7. Estimated depth of the well is _______ feet.

8. MAXIMUM quantity of water to be developed and beneficially used: 75 gallons per minute. NOTE: If for domestic or stock use, this application will be processed for a maximum of 25 gallons per minute. SPRINGS: Only springs flowing 25 gallons per minute or less, where the proposed use is domestic or stockwatering, will be considered as ground water appropriations. After approval of this application, some type of artificial diversion must be constructed to qualify for a water right.

9. If use is not irrigation, mark the point(s) or area(s) of use in the tabulation below.

10. If for irrigation use:
   a. Describe MAXIMUM acreage to be irrigated in each 40-acre subdivision in the tabulation below.
   b. [ ] Land will be irrigated from this well only.
   c. [ ] Land is irrigated from existing water right(s) with water from this well to be additional supply. Describe existing water right(s) under REMARKS.

<table>
<thead>
<tr>
<th>Township</th>
<th>Range</th>
<th>Sec.</th>
<th>NE ¼</th>
<th>NW ¼</th>
<th>SW ¼</th>
<th>SE ¼</th>
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<td></td>
<td></td>
<td>NE ¼</td>
<td>NW ¼</td>
<td>SW ¼</td>
<td>SE ¼</td>
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<td>116W</td>
<td>27</td>
<td>X</td>
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</table>

11. If for irrigation use, describe method of irrigation, i.e. center pivot sprinkler, flood, etc.

Permit No. U.W. 76440

SEE REVERSE SIDE

Book No. 545 Page No. 41
12. The well is to be constructed on lands owned by Bridger-Teton National Forest.
(The granting of a permit does not constitute the granting of right of way. If any easement or right of way is necessary in connection with this application, it should be understood that the responsibility is the applicant's. A copy of the agreement should accompany this application, if the land is privately owned and the owner is not a co-applicant.)

13. The water is to be used on lands owned by United States Bureau of Land Management.
(If landowner is not the applicant, a copy of the agreement relating to usage of appropriated water on the land should be submitted to this office. If the landowner is included as a co-applicant on the application, this procedure need not be followed.)

REMARKS. The well will be operated under a Special Use Permit from Bridger-Teton National Forest. The transfer station is on land currently leased from the BLM with sale pending. A copy of the latter lease is enclosed.

Under penalties of perjury, I declare that I have examined this application and to the best of my knowledge and belief it is true, correct and complete.

[Signature of Applicant or Authorized Agent]

Date 5/7/88, 1988

THE LEGALLY REQUIRED FILING FEE MUST ACCOMPANY THIS APPLICATION

DOMESTIC AND/OR STOCK WATERING USES $10.00
(Domestic use is defined as a single-family dwelling and the watering of lawns and gardens not exceeding one (1) acre)

IRRIGATION, MUNICIPAL, INDUSTRIAL, MISCELLANEOUS $25.00
(Monitor (For water level measurements or chemical quality sampling) NO FEE

IF WELL WILL SERVE MULTIPLE USES, SUBMIT ONLY ONE (THE HIGHER) FILING FEE.

THIS SECTION IS NOT TO BE FILLED IN BY APPLICANT

THE STATE OF WYOMING
STATE ENGINEER'S OFFICE

This instrument was received and filed for record on the 9th day of March, 1988, at 9:30 o'clock A.M.

Permit No. U.W. 76440

[Signature of State Engineer]

THIS IS TO CERTIFY that I have examined the foregoing application and do hereby grant the same subject to the following limitations and conditions:

This application is approved subject to the condition that the proposed use shall not interfere with any existing rights to ground water from the same source of supply and is subject to regulation and correlation with surface water rights, if the ground and surface waters are interconnected. The use of water hereunder is subject to the further provisions of Chapter 169, Session Laws of Wyoming, 1957, and any subsequent amendments thereto.

Granting of a permit does not guarantee the right to have the water level or artesian pressure in the well maintained at any specific level. The well should be constructed to a depth adequate to allow for the maximum development and beneficial use of ground water in the source of supply.

If the well is a flowing artesian well, it shall be so constructed and equipped that the flow may be shut off when not in use, without loss of water into surface formations or at the surface.

Approval of this application may be considered as authorization to proceed with construction of the proposed well.

Construction of well will begin within one (1) year from date of approval. A Statement of Completion will be filed within thirty (30) days of completion of construction, including pump installation.

Completion of construction and completion of the beneficial use of water for the purposes specified in Item 4 of this application will be made by December 31, 1988.

The amount of appropriation shall be limited to the quantity to which permittee is entitled as determined at time of proof of application of water to beneficial use.

Witness my hand this 15th day of March, 1988...

[Signature of State Engineer]

NOTICE OF COMMENCEMENT WAIVED - Statement of Completion received prior to expiration date for commencement.


SEE: PERMIT STATUS SHEET.
PERMIT NO. U.W. 76640

PERMIT STATUS

Priority Date March 9, 1988 Approval Date March 15, 1988


February 16, 1989 - Linen Map received. (TM 2335-D)

PROOF PREPARED, AUJUDICATION IN PROGRESS

CERT. REC. U.W. 6, P. 297
PROOF NO. U.W. 2976, AC. 0
G.P.A. 75 IRR. STK. DOM. MISC.
MAP NO. 293-D
STATE OF WYOMING

OFFICE OF THE STATE ENGINEER

PERMIT NO. U.W. 76440

NAME OF WELL Teton County No 1

1. NAME OF OWNER

1. TETON COUNTY WYOMING (Lessee)

2. ADDRESS: Box 1727, Jackson, WY 83001

ZIP Code 83000

2. F. O. Box 1820, Cheyenne, Wyo. 82002

3. USE OF WATER: Domestic □ Stock Watering □ Irrigation □ Municipal □ Industrial □ Miscellaneous □

Potable, washdown, lawn watering, and fire suppression at solid waste transfer station.

LOCATION OF WELL: NE 1/4 NW 1/4 of Section 27, T. 40 N., R. 116 W., of the 6th P.M. (or W.R.M.), Wyoming, being specifically S 39-21-58 E 907' (Bearing and Distance)

or________ ft. North and________ ft. East from the NW 1/16 corner of Section 27, T. 40 N., R. 116 W. (Strike out words not needed).

5. TYPE OF CONSTRUCTION: Drilled ☑ Cable Tool Dug □ Driven □ Jetted □

Other

6. CONSTRUCTION: Total Depth of Well 295 ft. Depth to Static Water Level 176 ft.

a. Casing Schedule New ☑ Used □

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<thead>
<tr>
<th>Diameter</th>
<th>Material</th>
<th>Gage</th>
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</tbody>
</table>

b. Perforations: Type of perforator used Mills

Size of perforations 3/8 inches by 1 7/8 inches.

Number of perforations and depths where perforated:

6 perforations from 0 ft. to 184 ft.

66 perforations from 220 ft. to 231 ft.

72 perforations from 247 ft. to 259 ft.

c. Was well screen installed? Yes ☑ No □

Diameter: _____ slot size: _____ set from ______ ft. to ______ ft.

Diameter: _____ slot size: _____ set from ______ ft. to ______ ft.

d. Was well gravel packed? Yes ☑ No □

Size of gravel

e. Was surface casing used? Yes ☑ No □

Was it cemented in place? Yes ☑ No □

* see remarks

7. NAME & ADDRESS OF DRILLER

Weber Drilling, 1240 Gregory Lane, Jackson, WY 83001

8. DATE OF COMPLETION OF WELL (including pump installation) August 20, 1988

9. PUMP INFORMATION: Manufacturer Goulds Type Submersible Turbine

Source of power LVP&L (REA) Horsepower 7 1/2 Depth of Pump Setting 220

Amount of Water Being Pumped 75 Gallons Per Minute. (For springs or flowing wells, see Item 11.)

Permit No. U.W. 76440

Book No. 54 Page No. 41
10. PUMP TEST: Was a pump test made? Yes ☑ No ☐

If so, by whom: Weber Drilling Address: 1240 Gregory Lane, Jackson, WY

Yield: 102 gal/min. with 14 1/2 feet drawdown after 5 1/2 hours.

Yield: 190 gal/min. with 16 feet drawdown after 24 hours.

11. FLOWING WELL (Owner is responsible for control of flowing well).

If well yields artesian flow, yield is _______ gal/min. Surface pressure is _______ lb./sq. inch, or _______ feet of water.

The flow is controlled by: valve ☐ cap ☐ plug ☐

Does well leak around casing? Yes ☐ No ☐

12. LOG OF WELL: Total depth drilled _______ feet.

Depth of completed well _______ feet. Diameter of well _______ inches.

Depth to first water bearing formation _______ feet.

Depth to principal water bearing formation. Top _______ feet to Bottom _______ feet.

Ground Elevation, if known _______ feet.

<table>
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<tr>
<th>From Feet</th>
<th>To Feet</th>
<th>Material Type, Texture, Color</th>
<th>REMARKS (Cementing, Shutoff, Packing, etc.)</th>
<th>Indicate Water Bearing Formation</th>
<th>Indicate Perforated Casing Location</th>
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</thead>
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<tr>
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<td>Brn. Clay, Sm. Gravel, Caving</td>
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<td>184</td>
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<td>35</td>
<td>62</td>
<td>Brn. Clay, Sand &amp; Gravel to 6'</td>
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<td>97</td>
<td>105</td>
<td>Dark Sand</td>
<td>2-3 gpm</td>
<td></td>
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<tr>
<td>105</td>
<td>113</td>
<td>Tan Clay w/sand &amp; gravel</td>
<td>Water 6 holes/foot</td>
<td></td>
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</tr>
<tr>
<td>113</td>
<td>126</td>
<td>Brn. to Gray Clay</td>
<td></td>
<td></td>
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<tr>
<td>126</td>
<td>135</td>
<td>Brn. Clay Limst. Grav., Sand</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>135</td>
<td>184</td>
<td>Clay Sands &amp; Chips Lrg. rock @ 150-156</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>184</td>
<td>214</td>
<td>Gr. Clay (40-50%) Limest. &amp; Sandst. Chip</td>
<td>6 holes</td>
<td>184</td>
<td>184</td>
</tr>
<tr>
<td>214</td>
<td>220</td>
<td>Granite to 3&quot; Siltstone to Limest. &amp; Sandst. Clay pockets</td>
<td>2-3 gpm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>220</td>
<td>231</td>
<td>Limest., Sandst., Sand &amp; Gravel to 3&quot;, caving</td>
<td>Water 6 holes/foot</td>
<td></td>
<td></td>
</tr>
<tr>
<td>231</td>
<td>245</td>
<td>Limest., Sandst., Granite big boulder @ Gravel to 5&quot; 234</td>
<td>241</td>
<td>6 holes/ft.</td>
<td></td>
</tr>
<tr>
<td>245</td>
<td>270</td>
<td>Caving Sand &amp; Gravel to 10&quot; 241</td>
<td>Water 246 - 247 -259</td>
<td></td>
<td></td>
</tr>
<tr>
<td>270</td>
<td>295</td>
<td>Red Clay &amp; Gravel 264</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

QUALITY OF WATER INFORMATION:

Was a chemical analysis made? Yes ☑ No ☐

If so, please include a copy of the analysis with this form.

If not, do you consider the water as: Good ☐ Acceptable ☐ Poor ☐ Unusable ☐
13. TABULATION

a. If for irrigation, the land proposed to be irrigated should be described in the following tabulation. Describe in the "Remarks" section, under Item 14, the means of conveying the water to the lands and the method of irrigation.

(Give irrigable acreage in each legal subdivision. If proposed use is for additional supply for lands with a right from another source, indicate in the tabulation the priority or permit number, the source of supply and the name of the ditch or other well.)

b. If not used for irrigation, show the area and point(s) of use and location of well in the tabulation below. Also describe the method of conveyance in the "Remarks" section under Item 14.

<table>
<thead>
<tr>
<th>Town Ship</th>
<th>Range</th>
<th>Sec.</th>
<th>NE¼</th>
<th>NW¼</th>
<th>SW¼</th>
<th>SE¼</th>
<th>NE¼</th>
<th>NW¼</th>
<th>SW¼</th>
<th>SE¼</th>
<th>TOTALS</th>
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</thead>
<tbody>
<tr>
<td>40N 116W 27</td>
<td>X</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>X</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Well location</td>
</tr>
<tr>
<td>40N 116W 27</td>
<td>X</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>X</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Point of Use</td>
</tr>
</tbody>
</table>

TOTAL NUMBER OF ACRES TO BE IRRIGATED

Original Supply ______________ acres
Additional Supply ______________ acres

14. PLAT

a. If the well is to be used for irrigation, industrial, miscellaneous or municipal use, show the location of the well on the plat below. For such uses, a plat certified by a licensed engineer or land surveyor is required to be submitted at the time the Proof of Appropriation and Beneficial Use of Ground Water is submitted.

b. For other uses, accurately show the well location, point of use or uses and describe method of conveyance of water to points of use on plat and in "Remarks" section below. Make certain location on plat agrees with written description.

c. A separate map may be submitted if the information required cannot be shown on this plat.

Scale: 2" = 1 Mile

REMARKS: Production Casing was grouted in to an estimated depth of 35' to provide a surface seal.
15. IF WELL IS TO BE ABANDONED, complete Items 1 through 8, Item 12 (Log of Well) and state reason for abandonment and details of the plugging below.

It is the responsibility of the owner to properly plug or fill in the well in order to prevent contamination of ground water and to cover or cap the well at ground level.

Under penalties of perjury, I declare that I have examined this form and to the best of my knowledge and belief it is true, correct and complete.

[N. M. Nelson, Eng. Inc. by ___________________________]

[Signature of Owner or Authorized Agent] [Date] 9/28/88

Date of Receipt [SEP 28 1988] 19

Date of Priority [MAR 9 1988] 19

Date of Approval [JANUARY 30, 1989]

[Signature of State Engineer]
STATE OF WYOMING
OFFICE OF THE STATE ENGINEER

PROOF OF APPROPRIATION AND BENEFICIAL USE OF GROUND WATER

The owner is responsible for submitting Parts I and II of this form. Part III will be prepared by a State Engineer Representative at time of inspection.

PART I

WATER DIVISION: 4 (16)

U.W. DISTRICT: JA Teton Co.

STATEMENT OF CLAIM

PERMIT NO. U.W. 76440

WELL REGISTRATION

NAME OF WELL: TETON COUNTY NO. 1 WELL

1. Name of Claimant(s) 1: TETON COUNTY, WY

2. Address 2: P.O. BOX 1727 JACkSON, WY

Zip Code 83001

3. For What Purpose(s) is Water Used? Use: MISCELLANEOUS

Date First Used: DECEMBER 22, 1988

Use: Date First Used: 19

If use is for irrigation, give date irrigation was completed on all lands under this Permit:

PART II

For Irrigation, Industrial, Municipal and Miscellaneous Wells

A plot which has been certified by a licensed professional engineer or land surveyor shall be submitted to accompany this form. The plot shall be in accordance with Sec. 53-25-111. Wyoming Statute 1977 or see Chapter V and VI, Manual of Regulations and Instructions issued by the State Engineer’s Office. (Minimum scale shall be 2” = 1 mile.) The map shall be prepared with waterproof black ink or tracing paper or an acceptable equivalent and shall show on a suitable scale the legal subdivisions, the accurate location of the well or wells, storage facilities, if any, main canals, streams, highways and other important cultural features. Land ownership will be shown, if there is more than one owner under the permit.

IRRIGATION WELLS

Accurate irrigated under terms of this permit will be clearly shown with a distinctive pattern and a distinction clearly made between lands having an original supply and those provided a supplemental supply. Where use is for supplemental supply for lands with a right from another source, indicate the priority or permit number of the source, the source of supply and the name of the ditch, pipe line or other well. Conveyance system will be shown and described. Indicate method of irrigation being used.

INDUSTRIAL WELLS

In addition to the information outlined above, industrial users will locate and describe conveyance facilities to the point(s) of use, giving as accurately as possible the location of points of use. Permits for other sources of water must be identified.

MUNICIPAL WELLS

The plot will show the area of use and show and describe the means of conveyance of the water from the well to the connection with the distribution system for a municipal water system.

MISCELLANEOUS WELLS

(1) The location plat for wells where the use is described as miscellaneous and where the yield of the well exceeds twenty-five (25) gallons per minute must show the area of use and describe and show the means of conveyance from the well to the distribution system and/or points of use.

(2) The plot for wells where the use is described as miscellaneous and where the yield or flow is twenty-five (25) gallons per minute or less may be a 7½ minute United States Geological Survey Quadrangle map in lieu of a linear tracing provided the U.S. Geological Survey Quadrangle map is in compliance with the following conditions:

(a) The entire United State Geological Survey quadrangle map must be submitted to the State Engineer’s Office.

(b) The scale on said quadrangle must be one to twenty-four thousand.

(c) An identified section corner or quarter corner must be shown on said quadrangle map along with Section, Township and Range.

(d) The section in which the well is located and the section(s) where the area(s) or point(s) of use are located must be subdivided into forty (40) acre tracts and the well location and area(s) or point(s) of use clearly labeled and described.

(e) Said quadrangle map showing the well location and area(s) or point(s) of use must be certified by a professional engineer or land surveyor licensed to practice within the State of Wyoming.
A "CERTIFICATE OF OWNERSHIP" FROM THE COUNTY CLERK'S OFFICE SHOWING OWNERSHIP OR CONTROL OF LAND(S) INVOLVED MUST ACCOMPANY THIS FORM.

Under penalties of perjury, I declare that I have examined this form and to the best of my knowledge and belief it is true, correct and complete.

[Signature of Owner or Authorized Agent]  
Date: 2/10/1989

Date of Receipt: FEB 16 1989
## PERMIT SUMMARY

**Instrument:** WELLS AND SPRINGS

<table>
<thead>
<tr>
<th>Facility Name</th>
<th>Water Right Status</th>
<th>Application Number</th>
<th>Accepted Date</th>
<th>Processing Date</th>
<th>Priority Date</th>
<th>Application Date</th>
<th>Temporary File Number</th>
<th>Permit Number</th>
<th>Proof Number</th>
<th>SC Original Expiration Date</th>
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<th>District</th>
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<tr>
<td>TETON COUNTY #1</td>
<td>FULLY ADJUDICATED</td>
<td>1</td>
<td></td>
<td></td>
<td>03/09/1988</td>
<td></td>
<td></td>
<td>P76440.0W</td>
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<th>BU Original Expiration Date</th>
<th>BU Actual Date</th>
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<tr>
<td></td>
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<td></td>
<td>12/22/1988</td>
<td>01/01/1800</td>
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### General Info

- **Type Of Diversion:** Well
- **Supply Type:** Original Supply
- **Special Cases:**
- **Appropriation Amount:** 75.000 GPM

### Appropriator(s)

<table>
<thead>
<tr>
<th>Appropriator</th>
<th>Last Name</th>
<th>First Name</th>
<th>Company</th>
<th>City</th>
<th>State</th>
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<tr>
<td>Applicant</td>
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<td></td>
<td>TETON COUNTY</td>
<td>JACKSON</td>
<td>Wyoming</td>
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<tr>
<td>Applicant</td>
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<td></td>
<td>USDI - BLM</td>
<td>Cheyenne</td>
<td>Wyoming</td>
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</table>

### Beneficial Uses

- **Beneficial Uses:** Miscellaneous-- Ground Water

---

https://seoweb.wyo.gov/e-Permit/Transactions/WaterRightSummary.aspx?print=1  
10/2/2012
### Water Right POD

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<td>SW</td>
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### Water Right POU

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<th>Qtr-Qtr</th>
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<tr>
<th>Supply Type</th>
<th>Acres</th>
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<tbody>
<tr>
<td>Original</td>
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Total acres irrigated: 0.000
```

### Construction

<table>
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<tr>
<th>Diversion Type</th>
<th>Construction Type</th>
<th>Construction Description</th>
<th>Total Depth (feet)</th>
<th>Casing Height (feet)</th>
<th>static water level (feet)</th>
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<td>176.00</td>
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### Well Log/Water Quality

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<th>Well Diameter (inches)</th>
<th>WaterBearing Formation (feet)</th>
<th>WaterBearing Formation Top (feet)</th>
<th>WaterBearing Formation Bottom (feet)</th>
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<td>220.00</td>
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### Comments

**Created Date**: 1/1/1800 12:00:00 AM  
**Comment Details**: MISCELLANEOUS USE IS FOR A SOLID WASTE TRANSFER STATION FOR POTABLE USE, BUILDING WASHDOWN, SITE IRRIGATION AND FIRE PROTECTION AT TETON COUNTY WASTE TRANSER STATION. T40N, R116W, SECTION 27, HAS BEEN DEPENDENTLY RESURVEYED. NOTICE OF COMMENCEMENT WAIVED.  
**Created by**: MIGRATED

### Documents

### Remarks

### Appropriation for Ground Water

**Appropriation Amount (GPM)**: 75.00

### Related Transactions

<table>
<thead>
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<th>Instrument Type</th>
<th>Instrument Name</th>
<th>Instrument Code</th>
<th>WR Number Type</th>
<th>WR Number</th>
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</table>

https://seoweb.wyo.gov/e-Permit/Transactions/WaterRightSummary.aspx?print=1  
10/2/2012
APPENDIX B

SANITARY SURVEY
Mr. Dick Schuptrine, Chairman
Squaw Creek Water District
P. O. Box 7692
Jackson, WY 83001

Dear Mr. Schuptrine:

Enclosed is your copy of a report prepared for the U. S. Environmental Protection Agency (EPA) following a sanitary survey of your public water system on July 22, 2009. Please note the recommendations listed on the first page of the report. These recommendations should be implemented as soon as possible to ensure that public health is protected at your public water system. In summary, the recommendations for your water system includes the following:

1. To prevent contamination of Well #1 and Well #2 a concrete slab approximately 4' X 4' square should be installed around the casing. Before installation of the slab, the area immediately around the well should be mounded so that surface water or other liquids drain away from the well head.

2. The well cap on well #2 is loose and needs to be secured. Quality, sealed and vented well caps are necessary for proper operation and to keep well supplies sanitary. Seals should be inspected at least annually and replaced as necessary.

3. The rubber gasket on Well #2 needs to be replaced. It is currently hanging loosely by the side of the well head. Seals should be inspected at least annually and replaced as necessary.

4. The vertical casing used as a springbox is not watertight. A watertight properly sealed lid or cover is necessary to avoid contamination of the water source.

5. A chlorine residual was undetectable at POE and only a trace residual was detectable within the system. A minimum residual level of 0.2 mg/l should be maintained at all times. A more reliable chlorine residual might be measured at POE if the injection point and sampling point were reversed. Currently chlorine residual at POE is measured before the injection point.
6. The spring overflow line was inaccessible due to a large amount of brush. The area should be thinned out so that inspection and repairs can be made if necessary.

7. The overflow/drain line for the tanks should be downward facing and a minimum of 3 pipe diameters above the ground.

8. A written operation and maintenance manual should be provided so that all operators follow the same procedures. Written procedures should cover items such as daily operations/inspections (checklist), start-up and shutdown procedures, repair and maintenance schedules and response to equipment failure and other emergency conditions (contingency plans). Manuals may also contain any other information that is pertinent to the PWS. This would enable the operator to have all the PWS information in a single reference source.

9. A source water assessment and protection plan should be developed. Information can be found at the website deq.state.wy.us.

We would like to thank you for your cooperation during the sanitary survey of your public water system on July 22, 2009. If you have any questions regarding the sanitary survey, please call John Soderquist at 1-800-227-8917, ext. 312-6024. If you have any questions on specific regulations, please refer to the brochure enclosed with this letter. The names and phone numbers for all of the rule managers are included in the brochure.

Sincerely,

John N. Gillis, Ph.D.
Team Liaison, Wyoming PWSS DI

Enclosures (2)
Date of Survey: 7/22/09

Classification: Community Groundwater

Name of PWS: Squaw Creek Water District

Mailing address: Box 7692, Jackson, WY 83001

County: Teton

Physical location and directions: From Jackson, south on U.S. Highway 191 to Game Creek Road then east 3 miles.

Name of surveyor: Jeff Wilson

Prior Surveyor and date: Mike Sposit; 10/19/2004

Date of GWUDISW assessment & score: 7/22/09

Score: Well #1 - 15
Well #2 - 15
Spring - 25

SECTION 1: RECOMMENDATIONS

1. To prevent contamination of Well #1 and Well #2 a concrete slab approximately 4' X 4' square should be installed around the casing. Before installation of the slab, the area immediately around the well should be mounded so that surface water or other liquids drain away from the well head.

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9. A source water assessment and protection plan should be developed. Information can be found at the website deq.state.wy.us.

SECTION 2: SUMMARY

The Squaw Creek Water District PWS is classified as a community groundwater system and serves a year-round population of 160 through 64 connections.

A sanitary survey was conducted on July 22, 2009 by Jeff Wilson. Dave Stickel, a contract operator, was interviewed and conducted a tour of the facilities.

Source water for the PWS is from two wells located on Forest Service land and a spring which is located beside the Pump House. The spring consists of several collection lines of perforated 6" PVC-pipe, totaling about 270 lateral feet at least 6' deep. Water from the spring is then collected in a vertical steel casing and pumped to the pump house using a submersible pump. Water from the two wells is also pumped to the pump house. All three water sources are comingled at the pump house where the water is chlorinated using sodium hypochlorite. The water is then pumped, using a booster pump, to four 15,000 gallon underground tanks.

The following abbreviations will be used throughout this document:
NI = no information; NA = not applicable; NR = not requested
Sanitary Survey
Date: 7/22/09

PWS Name: Squaw Creek Water District
PWS ID#: 5600737

SECTION 3: CONTACT NAMES AND PHONE NUMBERS/E-MAIL ADDRESSES

Municipal Legal Representative; Mayor or City Manager:
Dick Schuptrine, Chairman, 307-733-6371

Person contacted for survey: Dave Stickel, Contract Operator; 307-880-0427;
stickel@silverstar.com

County and/or CHS Sanitarian: Wayne Cook, CHS; 307-279-3536;
wcook@state.wy.us
Mike Dart, Sanitarian; 307-733-8499
mdart@tetonwyo.org

DEQ District Engineer: James Brough, 307-335-6961,
jbrough@state.wy.us

Person contacted for survey:
Dick Schuptrine, Chairman, 307-733-6371

Dave Stickel, Contract Operator; 307-880-0427;
stickel@silverstar.com

Wayne Cook, CHS; 307-279-3536;
wcook@state.wy.us
Mike Dart, Sanitarian; 307-733-8499
mdart@tetonwyo.org

DEQ District Engineer: James Brough, 307-335-6961,
jbrough@state.wy.us

Operator(s), Certification types(s), and Expiration dates(s):

<table>
<thead>
<tr>
<th>LAST UPDATED</th>
<th>OPERATOR NAME</th>
<th>DESIGNATION AREA</th>
<th>CHIEF or BACKUP</th>
<th>DESIGNATION DATE</th>
<th>ADEQUATELY CERTIFIED?</th>
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<tbody>
<tr>
<td>8/9/2007</td>
<td>CHUCK McCLEARY</td>
<td>D</td>
<td>Backup</td>
<td>8/7/2007</td>
<td>Yes</td>
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</table>

SECTION 4: SERVICE DATA

Service Area(s): Residential
Owner type: Private

Is this PWS part of a concessionaire operation on state/fed land? No

Population: 160

Period of operation: Year-round

Metered? Yes, but not read

Water usage: 20,000 gpd
Per person: 125 gpd
Water lost gal/day: NI

- Is the current water source adequate in quantity? Yes
- Is the water source yield sufficient to meet future demands? Yes

Have there been any interruptions in service in the last 5 years? No

Have there been reports of water borne disease? No

Does system have a current operations and maintenance manual which describes all procedures, equipment, sampling schedules, and inspection data? No

Does the system have security measures in place (fencing; locks; lighting; alarms; etc.)? Yes

Does the system have an emergency response plan? No

Are all personnel familiar with emergency procedures? NA

Water sold to: (Names and PWS ID#s of consecutive systems, population of each consecutive system, and number of days per year sold to each consecutive system): None sold
Sanitary Survey
Date: 7/22/09

PWS Name: Squaw Creek Water District
PWS ID#: 5600737

SECTION 6: SOURCE DATA
POTENTIAL POLLUTION SOURCES

Abandoned wells: None reported or observed
Septic systems: All septic systems are > 100’ from the water sources
Above ground fuel or chemical storage tanks: None reported or observed
Underground fuel or chemical storage tanks: None reported or observed
Agricultural activities: (e.g. stock pens, crops, irrigation): None reported or observed
Chemical storage and mixing facilities: None reported or observed
Industrial activities: (e.g. auto repair, dry cleaning shops): None reported or observed

SECTION 7: SOURCE DATA
CURRENT AND ABANDONED WELLS

Name and/or Number of Well(s): Well #1
DEQ Permit #: 
SEO Permit #: UW102953
Is the well drawing from a confined or unconfined aquifer? Unconfined
Has the recharge area been mapped? No
Is the well in a flood plain? No
Does surface water runoff drain toward or away from the wellhead? Away
Well house, well pit, pitless adapter, or combination? Pitless adapter
Date drilled: 1996 Total well depth (ft.): 37’ Total casing depth (ft.): 37’
Casing diameter (in.): 12”
Casing perforations (type, size, range of depth(s), and/or total #): Slot wire-wrapped screen
(0.05” slots) depth 13’ to 28’
Depth of grouting: NI Pump depth: 29.5’
Type of pump/brand name: Submersible Actual yield (gpm): 30 gpm
Does wellhead have a sanitary seal around the casing? Yes, but there is not a 4’x4’ concrete pad around the casing and the well cap is loose
Does well casing terminate at least 18 in. above the floor or ground surface? Yes
Is the vent at least 18 in. above the floor or ground surface? Yes
Is the vent facing downward, and is it screened? Yes
Is there a working sample tap at the well (before treatment)? Yes
Is emergency power available? No
Has the local utility been made aware of any generators at the facility? NA
Does the owner have a copy of the well log? Yes
SECTION 7: SOURCE DATA
CURRENT AND ABANDONED WELLS - cont.

Name and/or Number of Well(s): Well #2
DEQ Permit #: SEQ Permit #: UW102954

Is the well drawing from a confined or unconfined aquifer? Unconfined
Has the recharge area been mapped? No
Is the well in a flood plain? No

Does surface water runoff drain toward or away from the wellhead? Away
Well house, well pit, pitless adapter, or combination? Pitless adapter

Date drilled: 1996 Total well depth (ft.): 42' Total casing depth (ft.): 42'
Casing diameter (in.): 12"

Casing perforations (type, size, range of depth(s), and/or total #): Slot wire-wrapped screen (0.05" slots) depth 17' to 28'
Depth of grouting: NI

Pump depth: 35' Type of pump/brand name: Submersible
Actual yield (gpm): 20 gpm

Does wellhead have a sanitary seal around the casing? Yes, but there is not a 4'x4' concrete pad around the casing and the rubber gasket is hang loose beside the well.

Does well casing terminate at least 18 in. above the floor or ground surface? Yes
Is the vent at least 18 in. above the floor or ground surface? Yes
Is the vent facing downward, and is it screened? Yes
Is there a working sample tap at the well (before treatment)? Yes
Is emergency power available? No

Has the local utility been made aware of any generators at the facility? NA

Does the owner have a copy of the well log? Yes
SECTION 8: SOURCE DATA
SPRINGS

Name/number: Spring
SEO permit #: NI
Description of supply intake: The spring consists of several collection lines of perforated 6" PVC-pipe, totaling about 270 lateral feet at least 6’ deep. Water from the spring is then collected in a vertical steel casing

Average actual yield (gpm): NI Seasonal variation: NI
Is ponding of water observed around the spring? (how much and where) No
Is there extensive vegetation around the spring collection box? (describe extent/type) High grass and shrubs where within the fenced perimeter of the spring area.
Are there any bubbling sounds in or around the spring collection box? No
Is the area around the spring collection box fenced? Yes
Is there a diversion channel capable of diverting surface water away from the collection area? Yes
Are there seasonal or other conditions (e.g. animal activity) that could affect water quality? NI
Does the spring collection box have the following features? (describe condition of each)
- Proper shoe box lid No
- Gasket on the lid No
- Adequate air vents with #24 mesh corrosion-resistant screen No
- Locked and raised access entry No
- Screened overflow drain with a free fall of at least 12 inches Unable to inspect due to a large amount of brush.

SECTION 12: SOURCE DATA
BACKUP WATER SOURCES

Describe any backup water sources possibly available to the PWS: Each water source can be used independently of the other two sources.

Does the system have interconnections with neighboring systems or a contingency plan for water outages? No
Sanitary Survey
Date: 7/22/09

PWS Name: Squaw Creek Water District
PWS ID#: 5600737

SECTION 13: TRANSMISSION LINE DATA

Name or designation: Squaw Creek
Does it carry raw or treated water? Treated
Point of origin: Pump house
Point of termination: Tanks
Date put into service: 1996
Length: NI Diameter: 4" Material: PVC
Pressure range: Up to 180 psi Flow rate (gpm): 85 gpm
Description of controls and/or pressure regulating valves: None
Air relief valves: None
Has the line ever broken because of material defect or freezing? No
Is the line properly disinfected after repairs are made? Yes
Are there any service connections to the transmission line? No
What does each service connection serve? NA

SECTION 14: PUMP STATIONS

How many, what type, and what is the purpose of each? There is one pump house that has one 10 hp US Electric motor and a Peerless pump. The pump is used to pump the water from the pump house to the 4 underground storage tanks. There is also a filter unit on the discharge line but it is not in use.
Is the pump station subject to flooding? No
Is the actual capacity of the pumping facility adequate to meet demand? Yes
Is there redundancy to allow for maintenance? No
How is pump capacity determined? NI
What is condition of equipment? (all units operable; no excessive noise/vibration/heat; leaks?) All equipment is in good operating condition
Is there an established preventative maintenance program? No
Is the frequency and amount of lubricant adequate? Are the correct types used? NA
Are pumping systems equipped with:
- check valves? Yes
- pressure gauges? Yes
- isolation valves? Yes
- flow meter? Yes
Is there a contingency plan for emergencies? No
What type of emergency power is available? None
Has the local utility been informed about all generators on the premises? NA
SECTION 15: STORAGE FACILITIES AND PRESSURE TANKS

Name or designation: Squaw Creek

Date put into service: 1993 and 1998

Raw or treated water? Treated

Location and type of material (ground level, underground, tower; concrete, steel):

There are two steel and two fiberglass underground storage tanks. All tanks are at the same location

Is the storage properly covered or enclosed? Yes

Type of storage (gravity or pressure tank): Gravity

Volume (gal.): Total 60,000 gallons. 15,000 gallons in each tank

Total days supply when full: 3

- Is the storage capacity adequate for current needs? Yes
- Is the storage capacity over-designed to meet future needs? Yes

Is the water level indicator accurate (gravity tanks)? NA

Is the site subject to flooding? No

Is the unit structurally sound and properly maintained? Yes

Are overflow lines: Same as drain lines

Turned downward?

- Covered or screened with #24 mesh corrosion-resistant screen?
- Terminated at least 12-24 inches above ground?

Are air vents:

- Turned downward? Yes
- Covered or screened with #24 mesh corrosion-resistant screen? Yes

Are drain and clean-out lines:

- Turned downward? No

- Screened or equipped with a gravity-closed flapper valve? Yes

- Is this protection devise well-maintained? Yes

- Terminated at least 3 diameters above ground? No

Can tank be isolated from the system? Yes

Do the inflow and outflow lines have check valves? No

When and how was the tank last cleaned? 2000

How is the tank disinfected after repair or cleaning? No
SECTION 16: WATER TREATMENT DATA

Plant/Office Location and directions (if different from main address on first page): The Pump House is located adjacent the spring area. Water treatment for the groundwater sources consists of filtration (not currently used) and disinfection. Sodium hypochlorite is used for disinfection.

Date plant put on line: 1996

Modifications since the last survey? (if yes, describe) None

Describe water sources treated by this plant: Two ground water wells and a spring

Plant output (gal/day): Design NI Average 20,000 gpd Maximum NI

Is the facility subject to flooding? No

Method – Chemical disinfection: Sodium Hypochlorite
  Type/dosage: 0.2 mg/l
  Point of application: Before storage

Where does the PWS measure disinfectant residual for compliance with the SWTR requirement of ≥ 0.2 mg/L at the POE? Is this before the 1st user of the water? NA

How is residual measured (continuous; grab; equipment manufacturer/model #)? Grab and measured using a Hach Pocket Colorimeter

Free chlorine residual at POE as measured by PWS during survey (mg/L): NI

Free chlorine residual at POE as measured by surveyor (mg/L): No measurable reading

Is residual detectable at taps at the end of the distribution system? Trace

Is there redundant disinfection equipment? No

Is there emergency power for the disinfection equipment? No

SECTION 17: DISTRIBUTION DATA

Lines: Simple source to use system. Distribution lines are 6” PVC.

Location and estimated linear feet of asbestos-cement pipe: There is none

Have lines broken due to frost or traffic load? No

Does PWS have access to proper main line bedding material? Yes

Is proper bedding material used for mainline replacement and repair? Yes

Pressure zones: There are two pressure zones within the system. One at 35-140 psi and the other at 40-114 psi

Is there at least 35 psi pressure in the distribution system at peak normal flow? Yes

Is there 20 psi at all points in the system during fire fighting flow? NI

Location, length, number, and flushing frequency for dead ends in the system: Dead ends are flushed yearly
Is there an existing or potential interconnection with another system? No
Are prints of the distribution system maintained; e.g. revised to show replacement or repair? No
Number of metered services: 64
Number of unmetered services: 0

SECTION 18: CROSS CONNECTION CONTROL

Per Chapter 12 of the Wyoming Water Quality Rules and Regulations, the following questions will determine whether the PWS has an adequate and compliant cross-connection program.

Have all high-hazard connections to the water system been identified? (high risk facilities include hospitals; high school labs; clinics; chemical suppliers; weed and pesticide district shops; water fill points; wastewater treatment plants; mortuaries; taxidermies; slaughter houses; and any service connection with an auxiliary source of supply) There are no high hazard connections within the system.

Does each high hazard connection have the appropriate backflow device or method installed? NA

Has the PWS required the appropriate BFPs to be installed at all service connections completed after March 12, 2003? (This includes service connections for existing buildings to replacement water distribution mains constructed after March 12, 2003.) Yes, all service connections have BFPs.

Does the water supplier have a record keeping program and management procedures to ensure:
- the installation and certification by test or inspection of all backflow preventers (BFPs) at new service connections? Yes
- the annual passing test certification by a certified tester of all high-hazard BFPs at service connections? NA

Can each high-hazard facility be matched in the PWS records with a high-hazard BFP that has been properly tested within the past year? NA

Are there any taps or service connections on transmission lines from remote water sources to the water storage and distribution system? No

Are stock watering tank connections protected from back-siphonage by at least a double check backflow device at the tap on the transmission line? Na
PERSONNEL SAFETY

Is there a safety program defining measures to be taken if someone is injured? **No**
Are all personnel trained in proper handling of all utilized chemicals and materials? **Yes**
Are adequate masks, protective clothing, and safety equipments provided? **Yes**
Does the operator understand relevant Occupational Safety and Health Administration (OSHA) regulations (e.g., confined space, hazard communication, trenching/shoring, lock out/tag out)? **Yes**

CHEMICAL SAFETY

Are oxidizers, corrosives, and flammables stored in separate areas and in closed, marked containers? **Yes**
Are flammables stored in appropriate containers and cabinets away from combustion sources? **NA**
Is there adequate ventilation in the areas where solvents, aerosols, and chemical feeders are in use? **Yes**
Are bulk storage areas physically isolated from treatment areas to prevent spills from entering treated or untreated water? **NA**
Is the fire department familiar with the facilities and their contents? **NA**

SECTION 20: MANAGEMENT DATA

Are there rules governing new hookups? **Yes, district by-laws**
Is there a water main extension policy? **No**
Are DEQ construction specifications followed? **Yes**
Are there policies or rules describing customer rights and responsibilities? **Yes, district by-laws**
Is there a schedule for routine preventative maintenance for all facilities and equipment? **No**
Does the PWS have contracts in place to assure prompt supply and repair service? **Yes**
Sanitary Survey  
Date: 7/22/09

PWS Name: Squaw Creek Water District  
PWS ID#: 5600737

SECTION 21: MONITORING AND RECORDS

Does the operator know how to collect samples for total coliform analysis? Yes  
(Review operator sampling procedure at time of survey to confirm)

Does the operator know what to do in the event of a total coliform “unsafe” result? Yes

Are extra bottles available in case of need for repeat total coliform sampling? Yes

Are test kits, reagents, and instruments, as appropriate, available for monitoring? Yes

For systems that disinfect:

- If the PWS chlorinates, is test equipment available for measuring chlorine residual? Yes;  
  **Hach Pocket Colorimeter**  
  (Describe equipment)

(For community and NTNC systems):

- Is there a DBPR Monitoring Plan on-site available for the surveyor’s review? No
  - Is it up-to-date reflecting the current distribution system? NA
  - What types of MRDLs are measured (free, total, combined, or chlorine dioxide)? **Free**

Does the operator know the location of each entry point to the distribution system? Yes

Does the operator know how to properly label samples taken from the entry points? Yes

Has the PWS completed the monitoring that is specified in the EPA-provided monitoring schedule so far for this calendar year? Yes

Are copies of all monitoring results filed and readily accessible? Yes
ASSESSMENT OF Ground Water Under The Direct Influence Of Surface Water (GWUDISW)
(GWUDISW is subject to the Surface Water Treatment Rule)

Public Water System Name: Squaw Creek Water District
Well/Spring/Infiltration Gallery Name: Well #1
State Engineer's Office Ground Water Permit #: UW102593
Department of Environmental Quality Construction Permit #: NI
Date of Assessment: 7/22/09

A. TYPE OF SUBSURFACE WATER SOURCE (Circle One)

<table>
<thead>
<tr>
<th>Source Description</th>
<th>Index Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well, equal to or greater than 50 ft. deep (*)</td>
<td>0</td>
</tr>
<tr>
<td>Well, less than 50 ft. deep (*)</td>
<td>5</td>
</tr>
<tr>
<td>Spring</td>
<td>10</td>
</tr>
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<td>Infiltration Gallery, more than 2 ft deep</td>
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<tr>
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(*) depth to first screen or perforation for groundwater entry

B. HISTORICAL MICROBIOLOGICAL CONTAMINATION (Circle )

<table>
<thead>
<tr>
<th>Description</th>
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<td>History or suspected outbreak of Giardia or other pathogenic organisms associated with surface water with current system configuration</td>
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</tr>
<tr>
<td>Regulatory agency verifies complaints about turbidity or suspected waterborne disease</td>
<td>10</td>
</tr>
</tbody>
</table>

Analyst: Jeff Wilson

PWS#: 5600737
County: Teton
C. HYDROGEOLOGICAL FEATURES (Circle)
Distance between a surface water source and the groundwater collector
(vertical well, spring box or infiltration gallery)
- Over 200 ft. 0
- 100 - 200 ft. 5
- Less than 100 ft. 10

Well, spring, or infiltration gallery located on floodplain at approximate altitude of stream. 20

Surface runoff drains toward well, spring, or infiltration gallery. 15

Exposed aquifer that is coarse alluvium, cavernous, or fractured 15

D. STRUCTURAL FEATURES (Circle the information pertaining to either the well OR the spring collection box- not both.)

WELLS (includes wells collecting water from infiltration galleries)

Uncased well 40

Casing not properly sealed (such as no concrete slab extending 2 - 4 feet around and sloping away from casing, or seal is loose or missing bolts holding it in place, or annular space around casing is not grouted to 20 ft.) 15

No watertight sanitary seal on well casing cap 15

Well height not properly terminated (well, including the pitless adapter units, does not terminate a minimum of 18 inches above ground level, 12 inches above the pump house floor, or 3 feet above the highest known flood elevation, whichever is higher – measurements should be taken from the pump house floor, not the bottom of a pit which may be located within the pump house) 15

SPRING COLLECTION BOX (includes collection vaults collecting water from infiltration galleries)

Deep-rooted vegetation (e.g. trees, shrubs) around springbox, providing conduit for surface water into spring water. 15

Springbox is not watertight, with watertight overlapping lid or cover 15

Overflows or drains open to atmosphere or allow entrance of animals (unscreened) 15

Marshy (standing water) around spring collection area 30

TOTAL SCORE (**):

(**) total score of ≥ 40 indicates further assessment is needed

COMMENTS: There is no 4'x4' concrete pad around casing. The sanitary seal is loose.
Public Water System Name: Squaw Creek Water District  
Well/Spring/Infiltration Gallery Name: Well #2  
State Engineer's Office Ground Water Permit #: UW102954  
Department of Environmental Quality Construction Permit #: NI  
Date of Assessment: 7/22/09  

**A. TYPE OF SUBSURFACE WATER SOURCE (Circle One)**

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(*) depth to first screen or perforation for groundwater entry

**B. HISTORICAL MICROBIOLOGICAL CONTAMINATION (Circle )**

History or suspected outbreak of Giardia or other pathogenic organisms associated with surface water with current system configuration  
Record of total coliform acute MCL violations over last 3 years  
Record of total coliform monthly MCL violations over last 3 years

<table>
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Regulatory agency verifies complaints about turbidity or suspected waterborne disease  

Analyst: Jeff Wilson  
PWS#: 5600737  
County: Teton
C. HYDROGEOLOGICAL FEATURES (Circle)

Distance between a surface water source and the groundwater collector (vertical well, spring box or infiltration gallery)
- Over 200 ft: 0
- 100 - 200 ft: 5
- Less than 100 ft: 10

Well, spring, or infiltration gallery located on floodplain at approximate altitude of stream: 20
Surface runoff drains toward well, spring, or infiltration gallery: 15
Exposed aquifer that is coarse alluvium, cavernous, or fractured: 15

D. STRUCTURAL FEATURES (Circle the information pertaining to either the well OR the spring collection box- not both.)

WELLS (includes wells collecting water from infiltration galleries)
- Uncased well: 40
- Casing not properly sealed (such as no concrete slab extending 2 - 4 feet around and sloping away from casing, or seal is loose or missing bolts holding it in place, or annular space around casing is not grouted to 20 ft): 15
- No watertight sanitary seal on well casing cap: 15
- Well height not properly terminated (well, including the pitless adapter units, does not terminate a minimum of 18 inches above ground level, 12 inches above the pump house floor, or 3 feet above the highest known flood elevation, whichever is higher – measurements should be taken from the pump house floor, not the bottom of a pit which may be located within the pump house): 15

SPRING COLLECTION BOX (includes collection vaults collecting water from infiltration galleries)
- Deep-rooted vegetation (e.g. trees, shrubs) around springbox, providing conduit for surface water into spring water: 15
- Springbox is not watertight, with watertight overlapping lid or cover: 15
- Overflows or drains open to atmosphere or allow entrance of animals (unscreened): 15
- Marshy (standing water) around spring collection area: 30

TOTAL SCORE (\(^\star\)):

\(^\star\) total score of \(\geq 40\) indicates further assessment is needed

COMMENTS: There is no 4’x4’ concrete pad around casing. The rubber gasket from the sanitary seal needs to be replaced as it was hanging loose around the sides.
Public Water System Name: Squaw Creek Water District  
Well/Spring/Infiltration Gallery Name: Spring  
State Engineer's Office Ground Water Permit #: NI  
Department of Environmental Quality Construction Permit #: NI  
Date of Assessment: 7/22/09  
Analyst: Jeff Wilson

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PWS ID#: 5600737

Date: 7/22/09

C. HYDROGEOLOGICAL FEATURES (Circle)

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- Over 200 ft. 0
- 100 - 200 ft. 5
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SPRING COLLECTION BOX (includes collection vaults collecting water from infiltration galleries)

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Springbox is not watertight, with watertight overlapping lid or cover 15

Overflows or drains open to atmosphere or allow entrance of animals (unscreened) 15

Marshy (standing water) around spring collection area 30

TOTAL SCORE (**): 25

(**) total score of ≥ 40 indicates further assessment is needed

COMMENTS:
EPA Official Photograph

Subject: Well #1
PWS #: 5600737
System: Squaw Creek Water District
County: Teton
Date: 7/22/09      Time: 11:45
Photographer: Jeff Wilson, Rates
Box 944, Red Lodge, MT 59068

EPA Official Photograph

Subject: Well #2
PWS #: 5600737
System: Squaw Creek Water District
County: Teton
Date: 7/22/09      Time: 11:52
Photographer: Jeff Wilson, Rates
Box 944, Red Lodge, MT 59068

Rubber Gasket
EPA Official Photograph

Subject: Spring Collection Box
PWS #: 5600737
System: Squaw Creek Water District
County: Teton
Date: 7/22/09   Time: 12:22
Photographer: Jeff Wilson, Rates
Box 944, Red Lodge, MT 59068

EPA Official Photograph

Subject: Spring Overflow Area
PWS #: 5600737
System: Squaw Creek Water District
County: Teton
Date: 7/22/09   Time: 12:22
Photographer: Jeff Wilson, Rates
Box 944, Red Lodge, MT 59068
EPA Official Photograph

Subject: Booster Pump  
PWS #: 5600737  
System: Squaw Creek Water District  
County: Teton  
Date: 7/22/09  
Time: 12:08  
Photographer: Jeff Wilson, Rates  
Box 944, Red Lodge, MT 59068

EPA Official Photograph

Subject: Chlorine Tank And Pump  
PWS #: 5600737  
System: Squaw Creek Water District  
County: Teton  
Date: 7/22/09  
Time: 12:15  
Photographer: Jeff Wilson, Rates  
Box 944, Red Lodge, MT 59068
EPA Official Photograph

Subject: Tank #1
PWS #: 5600737
System: Squaw Creek Water District
County: Teton
Date: 7/22/09 Time: 12:40
Photographer: Jeff Wilson, Rates
Box 944, Red Lodge, MT 59068

EPA Official Photograph

Subject: Tank #1 Vent
PWS #: 5600737
System: Squaw Creek Water District
County: Teton
Date: 7/22/09 Time: 12:39
Photographer: Jeff Wilson, Rates
Box 944, Red Lodge, MT 59068
EPA Official Photograph

Subject: Tank #2
PWS #: 5600737
System: Squaw Creek Water District
County: Teton
Date: 7/22/09    Time: 12:40
Photographer: Jeff Wilson, Rates
Box 944, Red Lodge, MT 59068

EPA Official Photograph

Subject: Tank #2 Vent
PWS #: 5600737
System: Squaw Creek Water District
County: Teton
Date: 7/22/09    Time: 12:39
Photographer: Jeff Wilson, Rates
Box 944, Red Lodge, MT 59068
EPA Official Photograph

Subject: Tanks #3 and #4  
PWS #: 5600737  
System: Squaw Creek Water District  
County: Teton  
Date: 7/22/09  Time: 12:40  
Photographer: Jeff Wilson, Rates  
Box 944, Red Lodge, MT 59068

EPA Official Photograph

Subject: Tank #3 Vent  
PWS #: 5600737  
System: Squaw Creek Water District  
County: Teton  
Date: 7/22/09  Time: 12:40  
Photographer: Jeff Wilson, Rates  
Box 944, Red Lodge, MT 59068
APPENDIX C

WATER QUALITY DATA
We’re very pleased to provide you with this year’s Annual Water Quality Report. We want to keep you informed about the water and services we have delivered to you over the past year. Our goal is to provide you a safe and dependable supply of drinking water.

Our water source is ground water from two wells and one spring. This report shows our water quality and what it means. If you have any questions concerning this report or your water quality, please contact:

Dave Stickel at (307) 880-0427

We want our valued customers to be informed about their water utility. Squaw Creek Water District routinely monitors for constituents in your drinking water according to federal and state laws. This table shows the results of our monitoring for the period of January 1st to December 31st, 2008. As water travels over the land or underground, it can pick up substances or contaminants such as microbes, inorganic and organic chemicals, and radioactive substances. All drinking water, including bottled drinking water, may be reasonably expected to contain at least small amounts of some constituents. It’s important to remember that the presence of these constituents does not necessarily pose a health risk.

In the following table you will find many terms and abbreviations you might not be familiar with. To help you better understand these terms we’ve provided the following definitions:

Non-Detects (ND)- laboratory analysis indicates that the constituent is not present.

Parts per million (ppm) or Milligrams per liter (mg/l)- one part per million

Parts per billion (ppb) or Micrograms per liter- one part per billion

Parts per trillion (ppt) or nanograms per liter- one part per trillion

Parts per quadrillion (ppq) or Picograms per liter - one part per quadrillion

Picocuries per liter (pCi/L) - picocuries per liter is a measure of the radioactivity in water

Millirems per year (mrem/yr.) - measure of radiation absorbed by the body.
Million fibers per liter (MFL) - million fibers per liter is a measure of the presence of Asbestos fibers that are longer than 10 micrometers.

Nephelometric turbidity unit (NTU) - nephelometric turbidity unit is a measure of the Clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

Action level - the concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

Treatment technique (TT) - (mandatory language) a treatment technique is a required process intended to reduce the level of a contaminant in drinking water.

Maximum contaminant level (MCL) - (mandatory language) the “maximum allowed” is the highest level of a contaminant that is allowed in drinking water. MCL’s are set as close to the MCLG’s as feasible using the best available treatment technology.

Maximum contaminant level goal- (MCLG) - (mandatory language) the “goal” is the level of a contaminant in drinking water below which there is no known or expected risk to Health. MCLG’s allow for a margin of safety.

<table>
<thead>
<tr>
<th>contaminant</th>
<th>VIOLATION</th>
<th>LEVEL DETECTED</th>
<th>UNIT MEASUREMENT</th>
<th>MCLG</th>
<th>MCL</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Y = yes</td>
<td>n = no</td>
<td>DETECTED</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NA = not applicable</td>
<td></td>
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<td></td>
<td></td>
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</tr>
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<td><strong>Microbiological Contaminants</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Total coliform bacteria</td>
<td>N</td>
<td>ND</td>
<td></td>
<td></td>
<td>0</td>
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<tr>
<td>Fecal coliform and E-coli</td>
<td>N</td>
<td>ND</td>
<td></td>
<td></td>
<td>0</td>
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<tr>
<td>Turbidity</td>
<td>N/A</td>
<td>ND</td>
<td></td>
<td></td>
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<td><strong>RADIOACTIVE CONTAMINANTS</strong></td>
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<tr>
<td>Beta/photon emitters</td>
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<td>Mrem/yr</td>
<td></td>
<td>0</td>
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<tr>
<td>Alpha emitters</td>
<td>12-30-02</td>
<td>ND</td>
<td>PCi/l</td>
<td>0</td>
<td>15</td>
</tr>
<tr>
<td>Combined radium</td>
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<td>PCi/l</td>
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<td>0</td>
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### Inorganic Contaminants

<table>
<thead>
<tr>
<th>Contaminant</th>
<th>DATE</th>
<th>Level Detected</th>
<th>Unit Measurement</th>
<th>MCLG</th>
<th>MCL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antimony</td>
<td>12-17-07</td>
<td>ND</td>
<td>ppb</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Arsenic</td>
<td>12-17-07</td>
<td>ND</td>
<td>ppb</td>
<td>n/a</td>
<td>50</td>
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<tr>
<td>Asbestos</td>
<td>N/A</td>
<td>N/A</td>
<td>MFL</td>
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<td>7</td>
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<td>Barium</td>
<td>12-17-07</td>
<td>0.2</td>
<td>ppm</td>
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<tr>
<td>Beryllium</td>
<td>12-17-07</td>
<td>ND</td>
<td>ppb</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Cadmium</td>
<td>12-17-07</td>
<td>ND</td>
<td>ppb</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Chromium</td>
<td>12-17-07</td>
<td>ND</td>
<td>ppb</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Copper</td>
<td>9-30-08</td>
<td>0.074</td>
<td>ppm</td>
<td>1.3</td>
<td>AL = 1.3</td>
</tr>
<tr>
<td>Cyanide</td>
<td>12-17-07</td>
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<td>ppb</td>
<td>200</td>
<td>200</td>
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<td>Fluoride</td>
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<td>0.2</td>
<td>ppm</td>
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<tr>
<td>Lead</td>
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<td>ppm</td>
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<td>Nitrite</td>
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<td>1</td>
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<td>Thallium</td>
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<td>ND</td>
<td>ppb</td>
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</table>

### Synthetic Organic Contaminants Including Pesticides and Herbicides

<table>
<thead>
<tr>
<th>Compound</th>
<th>DATE</th>
<th>Level Detected</th>
<th>Unit Measurement</th>
<th>MCLG</th>
<th>MCL</th>
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</thead>
<tbody>
<tr>
<td>2,4-D</td>
<td>12-17-07</td>
<td>ND</td>
<td>ppb</td>
<td>70</td>
<td>70</td>
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<tr>
<td>2,4,5-TP(silvex)</td>
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<td>ppb</td>
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<td>50</td>
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<tr>
<td>Acrylamide</td>
<td>N/A</td>
<td>N/A</td>
<td>ppm</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Alachlor</td>
<td>12-17-07</td>
<td>ND</td>
<td>PPB</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Atrazine</td>
<td>12-17-07</td>
<td>ND</td>
<td>PPB</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Benzo(a)pyrene (PAH)</td>
<td>12-17-07</td>
<td>ND</td>
<td>Nanograms/l</td>
<td>0</td>
<td>200</td>
</tr>
<tr>
<td>Carbofuran</td>
<td>12-17-07</td>
<td>ND</td>
<td>PPB</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Chlordane</td>
<td>12-17-07</td>
<td>ND</td>
<td>PPB</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Dalapon</td>
<td>12-17-07</td>
<td>ND</td>
<td>PPB</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td>Di (2-Ethylhexyl)adipate</td>
<td>12-17-07</td>
<td>ND</td>
<td>PPB</td>
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<td>400</td>
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<tr>
<td>Di (2-ethylhexyl)phthalate</td>
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<td>PPB</td>
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<td>6</td>
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<tr>
<td>Dibromochloropropene</td>
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<td>ND</td>
<td>Nanograms/l</td>
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<td>contaminant</td>
<td>Y= yes</td>
<td>N= no</td>
<td>Level detected</td>
<td>Unit measurement</td>
<td>MCLG</td>
</tr>
<tr>
<td>---------------------</td>
<td>--------</td>
<td>-------</td>
<td>----------------</td>
<td>------------------</td>
<td>------</td>
</tr>
<tr>
<td>dinoseb</td>
<td></td>
<td></td>
<td>12-17-07</td>
<td>ND</td>
<td>ppb</td>
</tr>
<tr>
<td>digust</td>
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<td></td>
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<td>ppb</td>
<td>20</td>
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<tr>
<td>Dioxin (2,3,7,8-TCDD)</td>
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<td>Pico</td>
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<tr>
<td>endothall</td>
<td>N/A</td>
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<td>12-17-07</td>
<td>ND</td>
<td>ppb</td>
</tr>
<tr>
<td>endrin</td>
<td></td>
<td></td>
<td>12-17-07</td>
<td>ND</td>
<td>ppb</td>
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<tr>
<td>epichlorohydrin</td>
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<td>N/A</td>
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<td>Ethylene dibromide</td>
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<td>12-17-07</td>
<td>ND</td>
<td>Nanogram/ll</td>
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<tr>
<td>glyphosate</td>
<td>N/A</td>
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<td>12-17-07</td>
<td>ND</td>
<td>ppb</td>
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<td>heptachlor</td>
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<td>Nanogram/ll</td>
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<tr>
<td>Heptachlor epoxide</td>
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<td>12-17-07</td>
<td>ND</td>
<td>Nanogram/ll</td>
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<tr>
<td>hexachlorobenzene</td>
<td>12-17-07</td>
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<td>ppb</td>
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<td>hexachlorocyclopentadiene</td>
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<td>12-17-07</td>
<td>ND</td>
<td>ppb</td>
</tr>
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<td>lindane</td>
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<td>ND</td>
<td>12-17-07</td>
<td>ND</td>
<td>Nanogram/ll</td>
</tr>
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<td>methoxychlor</td>
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<td>ND</td>
<td>12-17-07</td>
<td>ND</td>
<td>ppb</td>
</tr>
<tr>
<td>oxamyl (vydate)</td>
<td>12-17-07</td>
<td>ND</td>
<td>12-17-07</td>
<td>ND</td>
<td>ppb</td>
</tr>
<tr>
<td>PCB's (polychlorinated)</td>
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<td>ND</td>
<td>12-17-07</td>
<td>ND</td>
<td>Nanogram/ll</td>
</tr>
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<td>pentachlorophenol</td>
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<td>ND</td>
<td>12-17-07</td>
<td>ND</td>
<td>ppb</td>
</tr>
<tr>
<td>picloram</td>
<td>12-17-07</td>
<td>ND</td>
<td>12-17-07</td>
<td>ND</td>
<td>ppb</td>
</tr>
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<td>simazine</td>
<td>12-17-07</td>
<td>ND</td>
<td>12-17-07</td>
<td>ND</td>
<td>ppb</td>
</tr>
<tr>
<td>toxaphene</td>
<td>12-17-07</td>
<td>ND</td>
<td>12-17-07</td>
<td>ND</td>
<td>ppb</td>
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### VOLATILE ORGANIC CONTAMINANTS

<table>
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<tr>
<th>contaminant</th>
<th>DATE</th>
<th>Level detected</th>
<th>Unit measurement</th>
<th>MCLG</th>
<th>MCL</th>
</tr>
</thead>
<tbody>
<tr>
<td>benzene</td>
<td>12-17-07</td>
<td>ND</td>
<td>ppb</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Carbon tetrachloride</td>
<td>12-17-07</td>
<td>ND</td>
<td>ppb</td>
<td>0</td>
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</tr>
<tr>
<td>chlorobenzene</td>
<td>12-17-07</td>
<td>ND</td>
<td>ppb</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>o-dichlorobenzene</td>
<td>12-17-07</td>
<td>ND</td>
<td>ppb</td>
<td>600</td>
<td>600</td>
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<tr>
<td>p-dichlorobenzene</td>
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<td>ND</td>
<td>ppb</td>
<td>75</td>
<td>75</td>
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<tr>
<td>1,2-dichloroethane</td>
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<td>ppb</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>1,1-dichloroethylene</td>
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<td>ND</td>
<td>ppb</td>
<td>7</td>
<td>7</td>
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<tr>
<td>Cis-1,2-dichloroethylene</td>
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<td>ppb</td>
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<tr>
<td>Trans-1,2-dichloroethylene</td>
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<td>ND</td>
<td>ppb</td>
<td>100</td>
<td>100</td>
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<tr>
<td>dichloromethane</td>
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<td>ppb</td>
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<td>1,2-dichloropropane</td>
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<td>ND</td>
<td>ppb</td>
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<td>ppb</td>
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<td>ppb</td>
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<tr>
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<td>ppb</td>
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</tr>
<tr>
<td>1,2,4-trichlorobenzene</td>
<td>12-17-07</td>
<td>ND</td>
<td>ppb</td>
<td>70</td>
<td>70</td>
</tr>
<tr>
<td>1,1,1-trichloroethane</td>
<td>12-17-07</td>
<td>ND</td>
<td>ppb</td>
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<td>200</td>
</tr>
<tr>
<td>1,1,2-trichloroethane</td>
<td>12-17-07</td>
<td>ND</td>
<td>ppb</td>
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<td>5</td>
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<tr>
<td>trichloroethylene</td>
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<td>TTHM</td>
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<td>Vinyl chloride</td>
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<td>xylenes</td>
<td>12-17-07</td>
<td>ND</td>
<td>ppm</td>
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</tbody>
</table>

Infants and young children are typically more vulnerable to lead in drinking water than the general public. It is possible that lead levels at your home may be higher than at other homes due to the materials used in your home plumbing. If you are concerned about elevated lead levels in your home, you may wish to have your water tested and flush your tap for 30 seconds before using tap water.

Additional information is available from the safe drinking water hotline (1-800-426-4791).

Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development.
ANNUAL DRINKING WATER QUALITY REPORT
FOR: SQUAW CREEK WATER DISTRICT, 2009 CONSUMER CONFIDENCE REPORT
PWS# 5600737 C
DATE: 6-21-10

We’re very pleased to provide you with this year’s Annual Water Quality Report. We want to keep you informed about the water and services we have delivered to you over the past year. Our goal is to provide you a safe and dependable supply of drinking water.

Our water source is ground water from two wells and one spring. This report shows our water quality and what it means. If you have any questions concerning this report or your water quality, please contact: Dave Stickel at (307) 880-0427

We want our valued customers to be informed about their water utility. Squaw Creek Water District routinely monitors for constituents in your drinking water According to federal and state laws. This table shows the results of our monitoring for the Period of January 1st to December 31st, 2009. As water travels over the land or under-ground, it can pick up substances or contaminants such as microbes, inorganic and organic Chemicals, and radioactive substances. All drinking water, including bottled drinking water, May be reasonably expected to contain at least small amounts of some constituents. It’s Important to remember that the presence of these constituents does not necessarily pose a Health risk.

In the following table you will find many terms and abbreviations you might not be familiar With. To help you better understand these terms we’ve provided the following definitions:

Non-Detects (ND)- laboratory analysis indicates that the constituent is not present.

Parts per million (ppm) or Milligrams per liter (mg/l)- one part per million

Parts per billion (ppb) or Micrograms per liter- one part per billion

Parts per trillion (ppt) or nanograms per liter- one part per trillion

Parts per quadrillion (ppq) or Picograms per liter - one part per quadrillion

Picocuries per liter (pCi/L) - picocuries per liter is a measure of the radioactivity in water

Millirems per year (mrem/yr.) - measure of radiation absorbed by the body.
### INORGANIC CONTAMINANTS

<table>
<thead>
<tr>
<th>Contaminant</th>
<th>Violation</th>
<th>Level Detected</th>
<th>Unit Measurement</th>
<th>MCLG</th>
<th>MCL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antimony</td>
<td>12-17-07</td>
<td>ND</td>
<td>ppb</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Arsenic</td>
<td>12-17-07</td>
<td>ND</td>
<td>ppb</td>
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<td>50</td>
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<td>Asbestos</td>
<td>N/A</td>
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<tr>
<td>Barium</td>
<td>12-17-07</td>
<td>.2</td>
<td>ppm</td>
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<td>2</td>
</tr>
<tr>
<td>Beryllium</td>
<td>12-17-07</td>
<td>ND</td>
<td>ppb</td>
<td>4</td>
<td>4</td>
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<td>Cadmium</td>
<td>12-17-07</td>
<td>ND</td>
<td>ppb</td>
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</tr>
<tr>
<td>Chromium</td>
<td>12-17-07</td>
<td>ND</td>
<td>ppb</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Copper</td>
<td>9-30-08</td>
<td>.074</td>
<td>ppm</td>
<td>1.3</td>
<td>AL=1.3</td>
</tr>
<tr>
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<td>12-17-07</td>
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### SYNTHETIC ORGANIC CONTAMINANTS INCLUDING PESTICIDES AND HERBICIDES

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<th>Unit Measurement</th>
<th>MCLG</th>
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<td>2,4,5-TP(silvex)</td>
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**Units:**
- ppb: parts per billion
- ppm: parts per million
- ppb: parts per billion
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<th>N = no</th>
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</table>

Infants and young children are typically more vulnerable to lead in drinking water than the general public. It is possible that lead levels at your home may be higher than at other homes due to the materials used in your home plumbing. If you are concerned about elevated lead levels in your home, you may wish to have your water tested and flush your tap for 30 seconds before using tap water.

Additional information is available from the safe drinking water hotline (1-800-426-4791).

Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development.
September 15, 2010

Squaw Creek Water District
PO Box 7692
Jackson, WY 83001

Workorder No.: C10090144
Project Name: Not Indicated

Energy Laboratories, Inc. received the following 2 samples for Squaw Creek Water District on 9/3/2010 for analysis.

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Client Sample ID</th>
<th>Collect Date</th>
<th>Receive Date</th>
<th>Matrix</th>
<th>Test</th>
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<td>08/31/10 15:00</td>
<td>09/03/10</td>
<td>Drinking Water Field Parameters Haloacetic Acids E524.2 SDWA THMs</td>
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<td>C10090144-002</td>
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<td>08/31/10 15:00</td>
<td>09/03/10</td>
<td>Aqueous</td>
<td>E524.2 SDWA THMs</td>
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</table>

This report was prepared by Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

The results as reported relate only to the item(s) submitted for testing.

If you have any questions regarding these test results, please call.

Report Approved By: Stephanie D. Waldrop
Reporting Supervisor
BRANCH LABORATORY SUBCONTRACT ANALYSIS
Tests associated with analyst identified as ELI-B were subcontracted to Energy Laboratories, 1120 S. 27th St., Billings, MT, EPA Number MT00005.
LABORATORY ANALYTICAL REPORT

Client: Squaw Creek Water District
Project: WY5600737
Lab ID: C10090144-001
Client Sample ID: Squaw Creek Water Dist.

Report Date: 09/15/10
Collection Date: 08/31/10 15:00
Date Received: 09/03/10
Matrix: Drinking Water

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<th>Result</th>
<th>Units</th>
<th>Qualifiers</th>
<th>RL</th>
<th>MCL/QCL</th>
<th>Method</th>
<th>Analysis Date / By</th>
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<td>Bromoform</td>
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*** Performed by Sampler

Report Definitions:
- RL - Analyte reporting limit.
- QCL - Quality control limit.
- MCL - Maximum contaminant level.
- ND - Not detected at the reporting limit.
LABORATORY ANALYTICAL REPORT

Client: Squaw Creek Water District
Project: WY5600737
Lab ID: C10090144-002
Client Sample ID: Trip Blank

<table>
<thead>
<tr>
<th>Analyses</th>
<th>Result</th>
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<th>Qualifiers</th>
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Report Definitions:
- RL: Analyte reporting limit.
- CQL: Quality control limit.
- MCL: Maximum contaminant level.
- ND: Not detected at the reporting limit.
# QA/QC Summary Report

**Client:** Squaw Creek Water District  
**Project:** Not Indicated  
**Report Date:** 09/15/10  
**Work Order:** C10090144

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**Qualifiers:**
- RL - Actual reporting limit
- ND - Not detected at the reporting limit
# QA/QC Summary Report

**Client:** Squaw Creek Water District  
**Project:** Not Indicated  
**Report Date:** 09/15/10  
**Work Order:** C10090144

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**Surr:** 2,3-Dibromopropionic acid

| Sample ID: LCS-48963                          | 7     | Laboratory Control Sample | ug/L | 0.25 | 119   | 70  | 130 |
| Dibromoacetic acid                            | 4.76  | 0.25 | 119 | 70  | 130 |
| Dichloroacetic acid                           | 14.7  | 0.75 | 122 | 70  | 130 |
| Monobromoacetic acid                          | 8.30  | 0.50 | 104 | 70  | 130 |
| Monochloroacetic acid                         | 11.2  | 0.75 | 93  | 70  | 130 |
| Trichloroacetic acid                          | 4.97  | 0.50 | 124 | 70  | 130 |
| Bromochloroacetic acid                        | 10.1  | 0.50 | 128 | 70  | 130 |
| Surr: 2,3-Dibromopropionic acid               | 1.2   | 102  | 70  | 130 |

| Sample ID: B10090634-001BMS                   | 7     | Sample Matrix Spike       | ug/L | 0.25 | 134   | 70  | 130 |
| Dibromoacetic acid                            | 6.70  | 0.25 | 134 | 70  | 130 |
| Dichloroacetic acid                           | 15.0  | 0.75 | 125 | 70  | 130 |
| Monobromoacetic acid                          | 8.58  | 0.50 | 107 | 70  | 130 |
| Monochloroacetic acid                         | 12.3  | 0.75 | 103 | 70  | 130 |
| Trichloroacetic acid                          | 4.97  | 0.50 | 124 | 70  | 130 |
| Bromochloroacetic acid                        | 11.0  | 0.50 | 123 | 70  | 130 |
| Surr: 2,3-Dibromopropionic acid               | 1.2   | 106  | 70  | 130 |

| Sample ID: B10090650-001BDP                   | 8     | Sample Duplicate          | ug/L | 0.25 | 98    | 70  | 130 |
| Dibromoacetic acid                            | ND    | 0.25 | 98  | 70  | 130 |
| Dichloroacetic acid                           | ND    | 0.75 | 98  | 70  | 130 |
| Monobromoacetic acid                          | ND    | 0.50 | 98  | 70  | 130 |
| Monochloroacetic acid                         | ND    | 0.75 | 98  | 70  | 130 |
| Trichloroacetic acid                          | ND    | 0.50 | 98  | 70  | 130 |
| Bromochloroacetic acid                        | ND    | 0.50 | 98  | 70  | 130 |
| Total Regulated Haloacetic Acids              | ND    | 0.25 | 98  | 70  | 130 |
| Surr: 2,3-Dibromopropionic acid               | 1.2   | 98   | 70  | 130 |

**Qualifiers:**

RL - Analyte reporting limit
S - Spike recovery outside of advisory limits
ND - Not detected at the reporting limit
**Workorder Receipt Checklist**

**Squaw Creek Water District**

Login completed by: Tabitha Edwards  
Reviewed by: BL2000\swaldrop  
Reviewed Date: 9/15/2010

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<tr>
<td>Water - VOA vials have zero headspace?</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water - pH acceptable upon receipt?</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Contact and Corrective Action Comments

None
In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.

Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.
APPENDIX D

TECHNICAL ATTACHMENTS TO TETON COUNTY NO. 1 AQUIFER TEST REPORT
ANALYSIS OF COUNTY WELL
Teton County No. 1 Well Analysis, Permit No. UW 76440

The following presents a review prepared by Dahlgren Consulting of the Statement of Completion for the well, the pump tests, and the video of the well.

Well Permit and Statement of Completion

The well was completed on August 20, 1988 to a depth of 295 feet. 8” steel casing and 8” mill slot screen was installed. The bottom of the casing is at 295 feet. The well permit is adjudicated for 75 gpm (Certificate of Record U.W. 6, P. 297). The point of use of the well is only for the Transfer Station. There is the following statement on the permit “The high yield applied for is for firefighting at this transfer station, as per call 3/10/88.” Dahlgren Consulting (DC) questions if the use at the shooting range and residence is actually allowed under the permit.

An enlargement permit for the expanded service area and annual yield will need to filed and approved to use water from the well within the Squaw Creek Water District (SCWD). Without good information and data concerning the historical use of the well, it will not be possible to move or transfer the well water rights. Therefore, DC believes that a permit to enlarge the well will be required. The priority date for the use at the SCWD will be date of the enlargement application. DC does not believe that the adjudicated flow rate will be allowed to be transferred to the SCWD, because the well has not been pumped at this flow rate; the amount of water that is needed by the SCWD has not been used; and the original right is attached to the Transfer Station point of use.

Key Information from the Statement of Completion

Static Water Level at 176 feet (assumed to be measured on 8-20-88).

Principal water bearing formation – 220-231 feet and 246-264 feet. First Water at 184 feet (minor); minor water at 214 feet-220 feet; and minor water at 241 feet.

Perforations - Six perforations at 184 feet, 66 perforations from 220 feet-231 feet, and 72 perforations from 247 feet-259 feet. The Statement of Completion indicates six perforations or slots per foot. The screen is mill slots and the slots are 3/8” wide by 1-7/8” long.

Pump Test Data from the Statement of Completion:

102 gpm with 14.5 feet of drawdown. = Specific Capacity = 7.0 gpm/feet of drawdown after 5.5 hours.
190 gpm with 16 feet of drawdown. = Specific Capacity = 11.9 gpm/feet of drawdown after 24 hours.

Since the driller only set 1 row of perforations at 184 feet (the reported first water) it suggests that the zone was a minor water producer. Even though the first water was reported at 184 feet, by the end of well completion, the water level was reported to have risen to 176 feet. The current water level (as measured in June 2012) is about 191 feet, which is 15 feet lower than originally measured. Although this is a significant drop, it does not appear to have reduced the short-term yield of the well or the specific capacity based on the June 4 – 6, 2012 pump tests.

**Pump Test Data**

The pump tests of the Teton County Well No. 1 took place on June 5 and June 6, 2012. Three short step tests were run on June 5th at flow rates of approximately 37, 66, and 105 gpm. The constant rate test was run from June 5 to 6 at an average flow rate of approximately 90 gpm.

Evan Green with AVI, Kevin Boyce with WWDO, Ted Van Holland with Rendezvous Engineering, supervised the pump tests. Treasure Valley Drilling (TVD) was the contractor who removed the existing pump, installed and removed the test pump, videoed the well, and re-installed the existing pump. All four parties provided data to us concerning the pump tests. We have assumed that all of the water level measurements were taken from the same reference point (such as top of casing). Some notes/data are silent, some say top of casing and some say below ground surface.

Also, the pump test flow rates were measured and recorded using a bucket and stop watch. Apparently, the flow meter and totalizer provided by TVD during the pump test was not working properly and the digital flow meter data provided by TVD is in obvious error and cannot be used.

- Step 1 – 37.1 gpm x 30 minutes ~ 1.113 gals
- Step 2 – 66.4 gpm x 30 minutes ~ 1.992 gals
- Step 3 – 104.1 gpm x 3 minutes

**Pre-test data.** Prior to starting the pump test, a data logger and probe was placed in the well to record water levels. This instrument recorded water levels in the well from 5-31-12 at 12:39 hours and was removed on 6-04-12 at 07:30. DC understand that the clock on this probe was
still set on standard time, which means that the clock is one hour ahead of local time measurements, which are on day light savings time. The pre-test data was gathered to provide data on water level fluctuations while the well was in use and prior to the pump test.

The depth that the probe was installed is unknown. However, Ted Van Holland’s measured the water level in the well with a sounder on June 4, 2012 after the probe was removed and the depth to water was measured at 191.35 feet deep (from top of casing or ground surface, is unknown). Using the data collected by the probe showing the depth of water over the probe, we were able to calculate the depth to water. The data indicates the fluctuations in the water level during the pre-test time period averaged about 1.5 feet. This fluctuation reflects the “normal” use of the well by Teton County. Refer to the graph that accompanies this memo.

**Step Tests** – Three pump step tests were performed on the well. The data for these tests were recorded on a different instrument, the WWDC Hermit 3000. The Hermit probe (In-Situ 250 psi) was installed in the well at a depth of 232 feet during the step and constant rate tests. The data contained on the spread sheets (and associated graphs) did not match the field notes concerning the water levels. Specifically it appears that the pump had started prior to starting the data logger during some of the step tests so that water levels at the start of pumping could not be determined directly off the data logger. Using both sets of data, a ‘best fit’ was used to analyze and summarize the data. Refer to the attached graph showing the water levels observed during the step tests.

There was a check valve on the drop pipe of the test pump. Since the pump was turned off between each step test and the length of time between stopping the pump and starting the next step test was relatively short.

**Step Test #1** – Performed on 6-05-12 from 10:30:31 to 11:00:01 (29.5 minutes). Starting water level = 191.8 feet (per notes). Ending water level = 192.5. Flow rate = 37.1 gpm measured with a tub and stop watch. Drawdown of 0.7 feet. Specific Capacity = 53 gpm/ft. of drawdown. Recovery period from 11:00:01 to 11:07:21 (data logger) with the water level at 191.5 feet after 7 minutes and 20 seconds.

**Step Test #2** – Performed on 6-05-12 from 11:11:26 to 11:41:26 (30 minutes). Starting water level = 191.7 feet (per data logger). Ending water level = 194.2 feet. The pump was apparently turned on about the same time as the data logger. Flow rate = 66.4 gpm measured with a tub and stop watch. Drawdown = 2.5 feet. Specific Capacity = 26.5 gpm/ft. of
drawdown. Recovery period from 11:41:26 to 11:47:26 (per data logger) with the water level at 192 feet after 6 minutes.

**Step Test #3** – Performed on 6-05-12 from 11:50:30 to 12:20:20 (29 minutes and 50 seconds). Starting water level = 192.3 feet (per field notes), but the data logger shows that the starting water level is 194.6 feet. The pump was apparently turned on before the data logger. Reported flow rate (per the field notes) was variable and not constant. Values reported are 104.1 gpm, 94.4 gpm, 106.2 gpm, and 111.9 gpm) measured with a tub and stop watch. Drawdown of 4.9 feet. Specific Capacity = 19.24 to 22.81 gpm/ft. of drawdown. Recovery period from 12:20:20 to 12:27:30 with the water level at 192.7 feet after 7 minutes and 10 seconds and then the data logger was stopped.

The well was allowed to recover for 55 minutes and 10 seconds until 13:15:30 when the constant rate pump test was started. The water level was at 192.4 feet at the start of the constant rate pump test.

**Constant Rate Pump Test** – Both the Hermit probe and the Troll probe were set in the well during this test. The Troll probe was set at approximately 225, about 7 feet above the Hermit Probe. We compared several water levels from the two instruments and determined that the drop in water levels during the same time period for the two probes was very consistent, and matched to a reasonable level of accuracy. Therefore, the Hermit probe data was used for the analysis of the constant rate pump test. Refer to the graph of the water levels observed during the constant rate test and the recovery period.

The constant rate test was run from June 5, 2012 at 13:15:44 (pump on) to June 6, 2012 at 21:13:20 (31.96 hours). Starting water level = 192.5 feet (per notes). The data logger was apparently turned on before the pump. Reported yield (per the field notes and drillers measurements) was variable and not constant. Values reported range from 100 gpm at the start to 90 gpm at the end, apparently measured with a tub and stop watch (the flow meter data provided by TVD was not useable). Drawdown of 13.2 feet. Specific Capacity = 6.9 to 7.6 gpm/feet of drawdown.

The water level recovery was recorded by the data logger until 7:30 a.m. on June 7th. The water level had recovered to 198.1’ at this point, which was 10 hours after the pump had been shut off. Two additional sounder measurements were made by Ted Van Holland. On June 8, 2012 11:56 a.m. (39 hours, 43 minutes after end of test), the water level was at 195.0 feet. On June 10, 2012 7:00 a.m. (82 hours, 47 minutes after end of test), the water level was at 193.8 feet. The
measurement on June 10th is about 2.5 feet lower than at the water level measured by him on June 4, 2012, prior to pump testing. Although the County facilities had been operating after the pump tests and using the well, the fact that the water level in the well was approximately 2.5 feet lower than the initial water level indicates that the well had still not fully recovered after more than 3 days.

**Video of the Well**

The well was videoed on June 8, 2012. See summary of video on attached sheet.

Only 46 slots (perforations) were observed on the video, 41 of them were below the current water level. The Statement of Completion indicates a total of 144 slots were constructed. The camera was rotating as it was lowered into the well. Therefore, not all of the reported slots were observed, or all the slots reported in the Statement of Completion were not constructed. All of the slots that were observed in the video showed significant scaling (precipitation of minerals such as calcium carbonate), that reduced the size of the slots. No perforations were observed that were 100% open, and many were completely filled in and closed. Of the 41 slots observed, it is estimated that only about 25% of the original openings remain open. Isolated ‘pods’ of mineral scaling were also observed at numerous locations on the inside of the well casing. This scaling has occurred over about 24 years, so the future life expectancy of the well is questionable.

The video was stopped at about 269.5 feet due to turbidity when the camera stirred up sediment/suspended solids at this depth. It appears that there is about 25 feet of sediment and/or suspended solids or biological matter in the bottom of the well. The bottom of the casing is reported to be at 295 feet, but the video only went to 270 feet +/- due to the sediment present at this depth. This raises questions about the nature/composition of these materials and their potential negative impact on water quality in the well. Depending on the nature of these materials, it is quite possible that the well might not be able to be ‘cleaned up’ to meet public water quality standards for the District’s use.
<table>
<thead>
<tr>
<th>Depth</th>
<th>Condition</th>
<th>Water Level</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>193.2'</td>
<td>VERTICAL SLOTS</td>
<td>Open 40%, 0%, 30% 20%, 10%</td>
<td>Project: TETON COUNTY Drill</td>
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<tr>
<td>196.4'</td>
<td>WATER LEVEL</td>
<td>197.3 - ?? 202.3 ??</td>
<td>Project No.:</td>
</tr>
<tr>
<td>219.5'</td>
<td>VERTICAL SLOTS</td>
<td>Open 70%, 50%, 0%, 50%, 20%</td>
<td>By: GWH - VIDEO</td>
</tr>
<tr>
<td>219.6'</td>
<td>Possible ½&quot; Ø hole remaining</td>
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<td>Checked:</td>
</tr>
<tr>
<td>220.1'</td>
<td>POSSIBLE VERTICAL SLOTS ALL PLUGGED/SCREW</td>
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<td>Date: JUNE 8, 2012 PM</td>
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<tr>
<td>221.4'</td>
<td>VERTICAL SLOTS</td>
<td>Open 15%, 5%, 20%, 10%</td>
<td>Sheet of</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 of</td>
</tr>
<tr>
<td>222.5'</td>
<td>VERTICAL SLOTS</td>
<td>Open 75% in ground behind wall, 55%, 0%, 5%, 55% with</td>
<td>Project: TETON COUNTY Drill</td>
</tr>
<tr>
<td>230.0'</td>
<td>VERTICAL SLOTS</td>
<td>Open 5%, 0%, 30%, 0%</td>
<td></td>
</tr>
<tr>
<td>230.1'</td>
<td>VERTICAL SLOTS</td>
<td>10%, 5%, 0%, 5%, 5%</td>
<td></td>
</tr>
<tr>
<td>243.8'</td>
<td>VERTICAL SLOTS</td>
<td>20%, 10%, 10%</td>
<td></td>
</tr>
<tr>
<td>251.3'</td>
<td>VERTICAL SLOTS</td>
<td>85%, 50%, 0%, 0%, 10%</td>
<td></td>
</tr>
<tr>
<td>252.6'</td>
<td>VERTICAL SLOTS</td>
<td>0%, 30%, 60%</td>
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</tr>
<tr>
<td>263.5'</td>
<td>VERTICAL SLOTS</td>
<td>50%, 0%, 20%</td>
<td></td>
</tr>
<tr>
<td>263.5'</td>
<td>Much Turbulence END OF VIDEO @ 269.9</td>
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</tr>
</tbody>
</table>

**Statement of Completion**
- Parts: Mills 3/8" WIDE X 1/8" 6 parts @ 184'
- (Hours) 68 (Total 66) 220 - 221'
- (Weight) 68 (Total 72) 241 - 259'
- 138 slots below water level.

**TOTAL SLOTS OBSERVED AT TOTAL OUT OF 138 BELOW WATER LEVEL = 38%**

$$\frac{3}{8} \times \frac{1}{8} = 0.375 \times 1.875 = 0.70 \text{ sq in}$$

**If square x 80% = 0.56 sq in / bullet shaped slot**
PUMP TEST
and
RECOVERY GRAPHS
Teton County Well No. 1
Pre-Test Water Levels
May 31 to June 4, 2012

Water Level Fluxuations
Approximately 1.5' during
Friday morning June 1, 2012

Install Data Logger 12:40 PM
Thursday May 31, 2012
Water Level = 191.35' +/-

Water Level Fluxuations
due to use at the Shooting Range. Note
the slow water level increase and
recovery from Saturday afternoon June
2nd through Monday June 4th.
Teton County Well No. 1
Step Test
June 5, 2012

Time (mins)

Depth to water (ft)

Step 1 Q = 37 gpm
Pump on 10:30 AM.
Pump off 11:00 AM.
Starting WL = 191.8'
Ending WL = 192.5'

Step 2 Q = 66 gpm
Pump on 11:11 AM.
Pump off 11:39 AM.
Starting WL = 191.7'
Ending WL = 194.2'

Step 3 Q = 105 +/- gpm
Pump on 11:50 AM.
Pump off 12:21 PM.
Starting WL = 194.6'
Ending WL = 196.9'

Step 1 Specific Capacity = 53 gpm/ft
Step 2 Specific Capacity = 26.4 gpm/ft
Step 3 Specific Capacity = 45.6 gpm/ft,
but datalogger not started with pump.
Teton County Well No. 1
Constant Rate Test
June 5 - 6, 2012

- Teton County Well No. 1
- Constant Rate Test Ave Flow = 90 gpm
- Pump on June 5, 2012 at 1:15 PM
- Pump off June 6, 2012 at 9:13 PM
- Starting Water Level = 192.1'
- Ending Water Level = 205.3'

- Recovery from June 6 to June 8, 2012
- Water Level on June 8, 2012 at 12:56 PM = 194.95'
Teton County Well No. 1
Constant Rate Test
June 5 - 6, 2012

Teton County Well No. 1
Constant Rate Test
Pump on June 5, 2012 at 1:15 PM
Pump off June 6, 2012 at 9:13 PM
Starting Water Level = 192.1'
Ending Water Level = 205.3'
COST ESTIMATE – NEW WELL
### Construction of Pipeline and Appurtenances

<table>
<thead>
<tr>
<th>Bid Item</th>
<th>Description</th>
<th>Unit</th>
<th>Quantity</th>
<th>Unit Price</th>
<th>Item Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>PIPELINE/ACCESS ROAD</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Furnish and Install 4” DR 18 C-900 PVC Water Line</td>
<td>LF</td>
<td>6300</td>
<td>$60.00</td>
<td>$378,000.00</td>
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<tr>
<td>2</td>
<td>Pipeline ells, thrust blocks, appurtenances</td>
<td>LS</td>
<td>15% line cost</td>
<td>$25,000.00</td>
<td>$56,700.00</td>
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<tr>
<td>3</td>
<td>Furnish and Install PRV(s)</td>
<td>EA</td>
<td>0</td>
<td>$2,000.00</td>
<td>$0.00</td>
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<tr>
<td>4</td>
<td>Furnish and Install Air Relief Valve(s)</td>
<td>EA</td>
<td>8</td>
<td>$10.00</td>
<td>$80.00</td>
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<tr>
<td>5</td>
<td>Improve/construct access road to well site</td>
<td>LF</td>
<td>2000</td>
<td>$10.00</td>
<td>$20,000.00</td>
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<tr>
<td>6</td>
<td>Reclaim/Reseed to USFS standards</td>
<td>LF</td>
<td>6300</td>
<td>$5.00</td>
<td>$31,500.00</td>
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<tr>
<td></td>
<td><strong>BOOSTER PUMP STATION/STORAGE</strong></td>
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<tr>
<td>1</td>
<td>Furnish and Install 7.5 HP Water Pump</td>
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<td>$7.50</td>
<td>$7.50</td>
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<td>2</td>
<td>Furnish and Install 3000 gallons Clearwell/Storage</td>
<td>LS</td>
<td>1</td>
<td>$7.50</td>
<td>$7.50</td>
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<tr>
<td>3</td>
<td>Furnish and Install gages, meters, valves</td>
<td>LS</td>
<td>1</td>
<td>$15.00</td>
<td>$15.00</td>
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<td>4</td>
<td>Furnish and Install SCADA, Connect to Existing</td>
<td>LS</td>
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<td>$75.00</td>
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<td></td>
<td><strong>Sub-Total</strong></td>
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<td>$607,200.00</td>
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</tbody>
</table>

#### Total Component Costs (sub #2) $607,200.00

- Prepare Final Designs/Specifications $45,540.00
- Permitting and Mitigation $15,000.00
- Legal Fees $2,500.00
- Easement $10,000.00
- Access and ROW $5,000.00

**Pre-Construction Costs (sub #1) $78,040.00**

- Construction Engineering Cost $60,720.00
- Components and Engineering (sub #3) $667,920.00
- Contingency (Sub #3 x 15%) $100,188.00
- Construction Cost Total (sub #4) $768,108.00

**Total Project Cost $846,148.00**
COST ESTIMATE – PIPELINE
## Cost Estimate for Squaw Creek Well Offset from Teton County #1 Well

### Phase 1 - Drilling and Geophysically logging of two Pilot Holes

<table>
<thead>
<tr>
<th>Bid Item</th>
<th>Description</th>
<th>Unit</th>
<th>Quantity</th>
<th>Unit Price</th>
<th>Item Total</th>
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<td>1</td>
<td>Mobilization</td>
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<td>1</td>
<td>$20,000.00</td>
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<td>2</td>
<td>Drill two 6-1/4&quot; diameter pilot hole</td>
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<td>3</td>
<td>Air Lifting of Pilot Holes</td>
<td>EA</td>
<td>8</td>
<td>$700.00</td>
<td>$5,600.00</td>
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<td>4</td>
<td>Geophysical logging</td>
<td>LF</td>
<td>1,200</td>
<td>$6.50</td>
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<td>5</td>
<td>Abandon Pilot Hole</td>
<td>LF</td>
<td>600</td>
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<td>6</td>
<td>Reclaim Site</td>
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<td>$2,500.00</td>
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Sub-Total Pilot Hole and Exploration Drilling $68,900.00

### Phase 2 - Production Well

<table>
<thead>
<tr>
<th>Bid Item</th>
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<th>Quantity</th>
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<th>Item Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Ream Pilot Hole to 12-1/2&quot; borehole</td>
<td>LF</td>
<td>550</td>
<td>70.00</td>
<td>38,500.00</td>
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<td>8</td>
<td>Furnish and Install 8&quot; ID - 0.322&quot; Wall Steel Well Casing</td>
<td>LF</td>
<td>440</td>
<td>45.00</td>
<td>19,800.00</td>
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<td>9</td>
<td>Furnish and Install 8&quot; 0.030 slot stainless steel well screen</td>
<td>LF</td>
<td>100</td>
<td>165.00</td>
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<td>10</td>
<td>Furnish and Install Sand Pack</td>
<td>LF</td>
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<td>25.00</td>
<td>6,250.00</td>
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<td>11</td>
<td>Furnish and Install Bentonite Seal around casing</td>
<td>LF</td>
<td>20</td>
<td>17.00</td>
<td>340.00</td>
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<tr>
<td>12</td>
<td>Furnish and install neat cement grout around casing</td>
<td>LF</td>
<td>300</td>
<td>25.00</td>
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<tr>
<td>13</td>
<td>Develop Well by surging, jetting, and air lifting</td>
<td>HR</td>
<td>12</td>
<td>350.00</td>
<td>4,200.00</td>
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<td>14</td>
<td>Install and remove temporary pump</td>
<td>LS</td>
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<td>2,500.00</td>
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<tr>
<td>15</td>
<td>Install and maintain water conveyance and discharge</td>
<td>LS</td>
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<td>3,500.00</td>
<td>3,500.00</td>
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<td>16</td>
<td>Conduct stepped discharge test</td>
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<td>Conduct constant rate discharge test</td>
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<td>Well Disinfection</td>
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<td>Stand-By Time</td>
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</tbody>
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Sub-Total Phase 2 - Production Well $123,090.00

### Total Component Costs (sub #2) $191,990.00

- Prepare Final Designs/Specifications $14,399.25
- Permitting and Mitigation $5,000.00
- Legal Fees $2,500.00
- Easement $10,000.00
- Access and ROW $2,000.00

### Pre-Construction Costs (sub #1) $33,899.25

- Construction Engineering Cost $19,199.00
- Components and Engineering (sub #3) $211,189.00
- Contingency (Sub #3 x 15%) $31,678.35
- Construction Cost Total (sub #4) $242,867.35

### Total Project Cost $276,766.60

Highlight indicates Level III Costs to District

Cost to District $118,890.00
# Cost Estimate, Convert Test Well to Production Well

## New Squaw Creek Well Pump Costs

<table>
<thead>
<tr>
<th>Bid Item</th>
<th>Description</th>
<th>Unit</th>
<th>Quantity</th>
<th>Unit Price</th>
<th>Item Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Well Cap and Pitless Adapter for 8&quot; Casing</td>
<td>LS</td>
<td>1</td>
<td>$7,500.00</td>
<td>$7,500.00</td>
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<td>1</td>
<td>10 HP 240 - single phase pump and motor</td>
<td>LF</td>
<td>1</td>
<td>$13,500.00</td>
<td>$13,500.00</td>
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<td>2</td>
<td>VFD and pump controls</td>
<td>LS</td>
<td>1</td>
<td>$5,000.00</td>
<td>$5,000.00</td>
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</tbody>
</table>

Total for pitless, pump and controls $26,000.00

## Total Component Costs (sub #2) $26,000.00

- Prepare Final Designs/Specifications $5,000.00
- Permitting and Mitigation
  - Legal Fees
  - Easement
  - Access and ROW

## Pre-Construction Costs (sub #1) $5,000.00

- Construction Engineering Cost $2,600.00
- Components and Engineering (sub #3) $28,600.00
- Contingency (Sub #3 x 15%) $4,290.00
- Construction Cost Total (sub #4) $32,890.00

Total Conversion Cost $37,890.00

- Power to Site $12,500.00

Total Project Cost $50,390.00
PIPELINE ROUTE AND PROFILE
PROJECT FINANCING OPTIONS
## SQUAW CREEK TABLE 22.1 NO FUNDING ASSISTANCE AVAILABLE, COSTS PAID IN ONE YEAR

<table>
<thead>
<tr>
<th>System Option</th>
<th>Estimated Cost</th>
<th>Base Rate, Fixed Costs</th>
<th>Rate to Fund Emergency</th>
<th>Rate Increase to Fund Option</th>
<th>Total Rate, All Costs</th>
<th>Assessment in Lieu of Rate Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. New Well, District Cost Eligible</td>
<td>$120,000.00</td>
<td>$76.57</td>
<td>$16.53</td>
<td>$0.92</td>
<td>$133.33</td>
<td>$227.35</td>
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<tr>
<td>B. Construct Pipeline from New Well</td>
<td>$850,000.00</td>
<td>$76.57</td>
<td>$16.53</td>
<td>$0.92</td>
<td>$944.44</td>
<td>$1,038.46</td>
</tr>
<tr>
<td>C. Convert to Production Well</td>
<td>$52,000.00</td>
<td>$76.57</td>
<td>$16.53</td>
<td>$0.92</td>
<td>$57.78</td>
<td>$151.80</td>
</tr>
</tbody>
</table>

Options require up front construction funding. A private loan would increase total costs (interest), but would spread payments loan term. District assesses homeowners twice a year to offset expenses. Funding may be a combination of rates and assessments.

Cost estimate for a new well includes only the Level II eligible purchase items
Cost estimates used $60 per foot for installation of 4” PVC from the County well to the District System
Pipeline cost estimates include appurtenances (storage/clearwell and booster station) at the junction of new pipeline and District system

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**SQUAW CREEK TABLE 22.1**

NO FUNDING ASSISTANCE AVAILABLE

COSTS PAID IN ONE YEAR
### SQUAW CREEK TABLE 22.2  ASSUME WWDO LOAN/GRA NTD PACKAGE - 67% GRANT 33% LOAN AT 4% FOR 30 YEARS

<table>
<thead>
<tr>
<th>System Option</th>
<th>Estimated Cost</th>
<th>WWDC Loan Amount</th>
<th>WWDC Loan Payment</th>
<th>Rate Increase to Repay New Loan</th>
<th>Base Rate, Fixed Costs</th>
<th>Rate for Emergency</th>
<th>Rate to Fund Major Repairs</th>
<th>Total Rate All Costs</th>
<th>2.5%/12 of Teton AMHI</th>
<th>Assessment in Lieu (WWDC Loan Only)</th>
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</thead>
<tbody>
<tr>
<td>A. New Well, District Cost Eligible</td>
<td>$120,000.00</td>
<td>$39,600.00</td>
<td>$2,291.00</td>
<td>$2.55</td>
<td>$76.57</td>
<td>$0.92</td>
<td>$16.53</td>
<td>$96.57</td>
<td>$110.42</td>
<td>$30.55</td>
</tr>
<tr>
<td>B. Construct Pipeline from New Well</td>
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<td>$280,500.00</td>
<td>$16,222.00</td>
<td>$18.02</td>
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<td>$0.92</td>
<td>$16.53</td>
<td>$112.04</td>
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<td>$216.29</td>
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<tr>
<td>C. Convert to Production Well</td>
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<td>$17,160.00</td>
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<td>$76.57</td>
<td>$0.92</td>
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<td>$95.12</td>
<td>$110.42</td>
<td>$13.24</td>
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<td><strong>Total</strong></td>
<td><strong>$1,022,000.00</strong></td>
<td><strong>$337,260.00</strong></td>
<td><strong>$19,506.00</strong></td>
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<td><strong>$303.73</strong></td>
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<td><strong>$260.98</strong></td>
<td><strong>$260.98</strong></td>
<td><strong>$260.98</strong></td>
<td><strong>$260.98</strong></td>
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GEOLOGY
IN
SQUAW CREEK AREA
Geology in Vicinity of Squaw Creek Water District

This section of the report will briefly discuss the geology in the vicinity of the Squaw Creek Water District (SCWD) with emphasis on the aquifers and groundwater resources. Also, this discussion will focus on the Quaternary age deposits and the Tertiary aged Camp Davis Formation, which are appear to be the most viable targets for a new well for the SCWD. The stratigraphy and complex structure in the area is not discussed, except when there is a direct bearing on the existing or potential groundwater resources for the District.

The alluvium deposited in the area is the source of water for wells in the area. Alluvium is present along the Snake River, Flat Creek and along most of the creeks that are tributary to these major streams. Where there is sufficient saturated thickness, the alluvium is likely the most consistent and reliable aquifer in the vicinity of the SCWD.

The SCWD’s Game Creek Wells and the Old West Cabin Well produce water from the alluvium. In addition, there are approximately 30 other wells in the area that are obtaining water, at least partially from alluvial deposits.

The alluvium along Flat Creek was the initial target of this project for a new well for the SCWD. However, a well could not be drilled in this area, primarily because it was not possible to obtain landowner consent. There are other concerns with this site, including; the depth of the alluvium, the potential that a well constructed in the alluvium would be “under the influence of surface water”, that the well would be located in a flood plain, that it would not be possible to construct a well that meet standards for a public water supply well, and that future work on the highway would impact the well and pipeline to the SCWD. Based on the logs obtained from the Wyoming Department of Transportation, the alluvium is estimated to be 12 – 14’ thick at the US Highway 26 Flat Creek Bridge. If the alluvium only this thick, it would be difficult to complete a well that would not be interconnected to surface water and that would meet construction standards for a public water supply well. There may be thicker alluvium along Flat Creek that would allow completion of a well; however, the presence and location of the thicker alluvium would need to be confirmed with a test-drilling program. Such a drilling program does not seem possible, if the landowners continue to deny permission.

The SCWD is familiar with the uncertainties associated with alluvial wells. The existing Game Creek wells can only produce a limited amount of water because they are completed in only relatively thin coarse-grained saturated alluvial material. The Squaw Creek Test Wells No. 1 and No. 2 located near the junction of Game Creek Road and Highway 89 did not encounter sufficient coarse-grained alluvial materials to warrant completion of the wells.
Other Quaternary aged deposits are present in the area of the District, including in order from youngest to oldest:

- Loess, which is wind-blown and deposited silt.
- Alluvial Fan deposits, which are generally unconsolidated deposits radiating out from the mouths of canyons.
- Talus Deposits, which are coarse angular rock fragments that are deposited at the base of slopes and toe of cliffs.
- Landslide debris, which are chaotic deposits from large movement of material from upslope areas.
- Glacial deposits of at least three different ages. These deposits consist of large boulders, cobbles, gravel, sand, silt, and clay, which are poorly sorted.
- White lacustrine deposits, which consist of fine silt and clay, which is interbedded with sand and gravel.

The aquifer characteristics and the ability to complete a well that would supply enough water for the District’s needs in the Quaternary deposits described in the previous paragraph are unknown. The thickness of the Quaternary deposits is unknown and thickness will likely be variable. The deposits will be heterogeneous, lenticular, or disturbed meaning that the nature of the material will vary from location to location. Because the Quaternary deposits are located on a plateau above the Snake River and Flat Creek flood plain with rather steep drainages flowing through the plateau, it is likely that much of the Quaternary deposits will not be saturated except those that contribute or transmit flows to local springs.

The aquifer characteristics of the Quaternary deposits will not be consistent. The viability of a well with the Quaternary deposits as its primary target aquifer can only be confirmed by drilling a well and completing a pump test. We believe that the chances for a poor well that is constructed in the alluvium are just as great, if not more likely, than completing a well with a satisfactory long-term yield.

Beneath the Quaternary materials, the Tertiary aged Camp Davis Formation is present. The Camp Davis Formation is nearly 4000 to 5000’ thick and consists of an upper conglomerate member, a middle member consisting of limestone and volcanic tuff and ash, and a lower member consisting of conglomerate. The upper member includes individual clasts as large as 5’ in diameter and also includes gravity slide blocks of older Mesozoic rocks. These blocks apparently slid off the rising face of the Hoback Fault, which is present just to the east of the site and slid by gravity downhill into the Camp Davis basin, which was located to the west. The slide blocks were then deposited within the generally more conglomeratic facies of the upper member of the Camp Davis Formation.
The upper member was deposited by a series of alluvial fans or debris flows that flowed from the rising Hoback and Gros Ventre Ranges to the east. Paleo-current data indicates that the source area during the deposition of the upper member of the Camp Davis was to the northeast. The middle member was deposited in a shallow water lake that allowed deposition of the limestone. The lower member of the Camp Davis formation was deposited by a braided stream that flowed generally south to southwest.

In the immediate vicinity of the SCWD, 1000’ of conglomerate described as part of the upper member of the Camp Davis is present. Below this conglomerate, approximately 1000’ of red claystone, sandstone, siltstone and red conglomerate is present. These deposits are also likely part of the upper member of the Camp Davis. Approximately 200’ of white limestone, volcanic tuff and gray soft claystone, likely comprising the middle member are described. Below the middle member, approximately 250 – 300’ of gray cliff forming conglomerate are described.

The aquifer characteristics of the Camp Davis are variable, but generally appear to be poor based on the results of wells drilled into this formation in the area of the SCWD. The coarse grains or clasts in the conglomerate in the upper member are generally supported by a matrix of red claystone and siltstone. This material is not very permeable or capable of transmitting much water to wells. Only where there has been some re-working of these deposits by stream action or deposition of steam or fluvial deposits in the “muddy conglomerate” would there be enough “cleaner” deposits to support a well. Secondary permeability due to fractures or joints could also be a conduit for water, but the presence of these features is unknown.

The limestone, claystone and volcanic tuff deposits in the middle member also are not favorable aquifer materials. Only in areas with fractures and or solution cavities, would there be sufficient permeability for a high yielding well. The lower member may be more permeable, but specific data on wells in the vicinity of the SCWD that produce from it is lacking.

The difficulties and uncertainties with completing a well in the Camp Davis Formation is highlighted by the recent experience the SCWD and WWDC have had with the Squaw Creek Exploration Wells No. 3 and No. 4. These wells were drilled into the Camp Davis Formation just south of the SCWD boundary. Pump testing of Well No. 3 initially indicated good production, but then encountered a “boundary” that caused the pumping rate to be reduced. Exploration Well No. 4 was not completed, because it produced less than 1.5 gpm. This well encountered gravel to cobble sized material contained in a clay dominated matrix. Well No. 4 was abandoned without installation of casing. Another well was attempted by the adjacent landowner and this well also was abandoned, because it did not yield enough water.
Isolated zones of cleaner or clay free deposits are present in the Camp Davis Formation. The Mackenzie No. 1 Well and the Teton County No. 1 Well are two examples where the wells penetrated cleaner zones within the Camp Davis and these wells have significant production.

The rather complex depositional conditions of the Quaternary materials and Camp Davis Formation are not the only geologic conditions that complicate the well siting investigations and analyses in the Squaw Creek area. At least two major faults are present in the immediate area of the District. These faults are the Hoback normal fault that is uplifted to the east and downthrown to the west and the Game Creek thrust fault that displaced Mesozoic and Paleozoic rocks from the west to the east. Two other thrust faults are inferred. The Camp Davis Formation is dipping approximately 45 degrees to the northwest along the Game Creek Road northwest of the SCWD. The veneer of the Quaternary deposits, specifically the loess, landslide and glacial deposits that are present on the surface cover the bedrock deposits, folds, and faults. This makes well siting difficult because the underlying geology is effectively concealed.
AREA WATER RIGHTS
# Wells in Sections 33 - 36

**T40N R116W**

<table>
<thead>
<tr>
<th>WR Number</th>
<th>Priority Date</th>
<th>Summary WR Status</th>
<th>First Name &amp; Last Name</th>
<th>Facility Name</th>
<th>Uses</th>
<th>Twn</th>
<th>Rng</th>
<th>Sec</th>
<th>Qtr-Qtr</th>
<th>Total Flow (CFS)</th>
<th>Total Appropriation (GPM)</th>
<th>Static Water Level (Ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P137338.0W</td>
<td>08/01/2001</td>
<td>Complete</td>
<td>LYLE I. &amp; JEANETTE L. O'BLENNES</td>
<td>SWETT-MCALLISTER</td>
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<td>040N</td>
<td>116W</td>
<td>33</td>
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<td>116W</td>
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<td>EVANS SPRINKLER</td>
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<td>33</td>
<td>SW1/4SE1/4</td>
<td>25</td>
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<td>P34252.0W</td>
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<td>LARRY J. JANSEN</td>
<td>JANSENS SQUAW  CREEK #1</td>
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<td>5</td>
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<td>P45971.0W</td>
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</table>
Wells in Sections 33 - 36
T40N R116W

<table>
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<tr>
<th>WR Number</th>
<th>Priority Date</th>
<th>Status</th>
<th>First Name</th>
<th>Last Name</th>
<th>Facility Name</th>
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<th>Rng</th>
<th>Sec</th>
<th>Qtr-Qtr</th>
<th>Total Flow(CFS)/ Appropriation (GPM)</th>
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