PUBLIC WATER SYSTEM WELL ENGINEERING REPORT, WELL SITE EVALUATION, AND WELL SPECIFICATION SUBMITTAL

MAYFIELD SPRINGS WELLS NO. 1 AND NO. 2

Prepared for

The Westpark Company
P.O. Box 344
Meridian, ID 83660

Prepared by

SPF Water Engineering, LLC
300 East Mallard Drive
Suite 350
Boise, ID 83706

MAY 3, 2011

SPF WATER ENGINEERING

REGISTERED PROFESSIONAL GEOLOGIST
KEVIN G. BOGGS
NO. 1085
5/3/11
STATE OF IDAHO

Table of Contents

List of Figures

1. INTRODUCTION

1.1. Project Description

The proposed Mayfield Springs Planned Community is situated on approximately 762 acres located in Elmore County, Idaho, northeast of Interstate-84 and directly adjacent to the Ada County/Elmore County line. The planned community envisions a variety of land uses including up to 4,232 residential units covering 526 acres, 56 acres of mixed-use commercial, a 10 acre school site, 94 acres of developed open space and 77 acres of undeveloped "natural" open space.

The water demands at Mayfield Springs are expected to be met using groundwater sources. A Public Water System Facility Plan detailing the conceptual design of the proposed water system has been prepared by SPF Water Engineering and is being submitted (under separate cover) concurrently with this report. This Well Engineering Report, Well Site Evaluation, and Well Specification Submittal identifies and describes the first two proposed well sites, hereinafter referred to as Wells No. 1 and No. 2. A map showing the conceptual design of the on-site water system is included in Appendix A.

1.2. Project Location

The Mayfield Springs wells will be located on the northeast side of Interstate 84, approximately 20 miles southeast of Boise, Idaho. The Mayfield Springs area lies in a high desert environment at an elevation of approximately 3,400 feet. Indian Creek, which drains a higher-elevation basin to the northeast of the property, bisects the property upstream of Indian Creek Reservoir. Indian Creek Reservoir is about one mile west of the proposed community. A vicinity map is included in Figure 1.

2. WELL SITE EVALUATION

2.1. Site Suitability

2.1.1. Site Location and Ownership

The proposed site for Well No. 1 is located in the northeast quarter of the northwest quarter of Section 33, Township 1 North, Range 4 East. The proposed site for Well No. 2 is located in the southeast quarter of the southeast quarter of Section 28,

Township 1 North, Range 4 East. The latitude and longitude for each well is as follows:

Well 1: 43° 23’7.41” N 115° 59’8.22” W

Well 2: 43° 23’10.49” N 115° 58’45.46” W

The developer of Mayfield Springs owns the property on which both proposed well sites are located and he will establish designated well lots for each well encompassing a minimum 50-foot radius around each proposed well location.

A United States Geological Survey (USGS) topographic map showing the locations of the proposed well sites is included in Figure 2. Maps detailing the proposed well sites are included in Appendix B. Photographs of the well site are included in Appendix C.

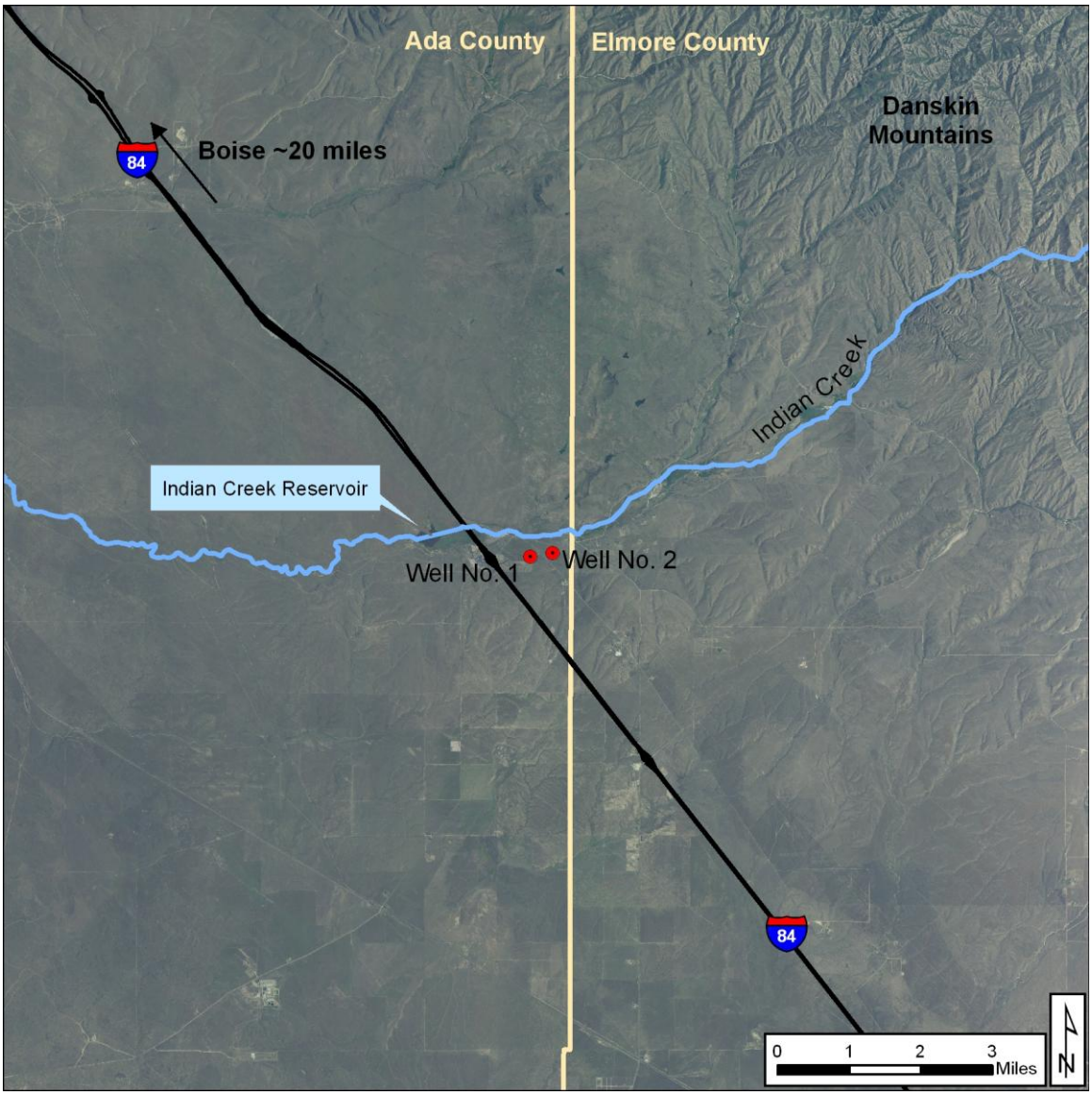


Figure 1. Map of Proposed Well Site and Vicinity

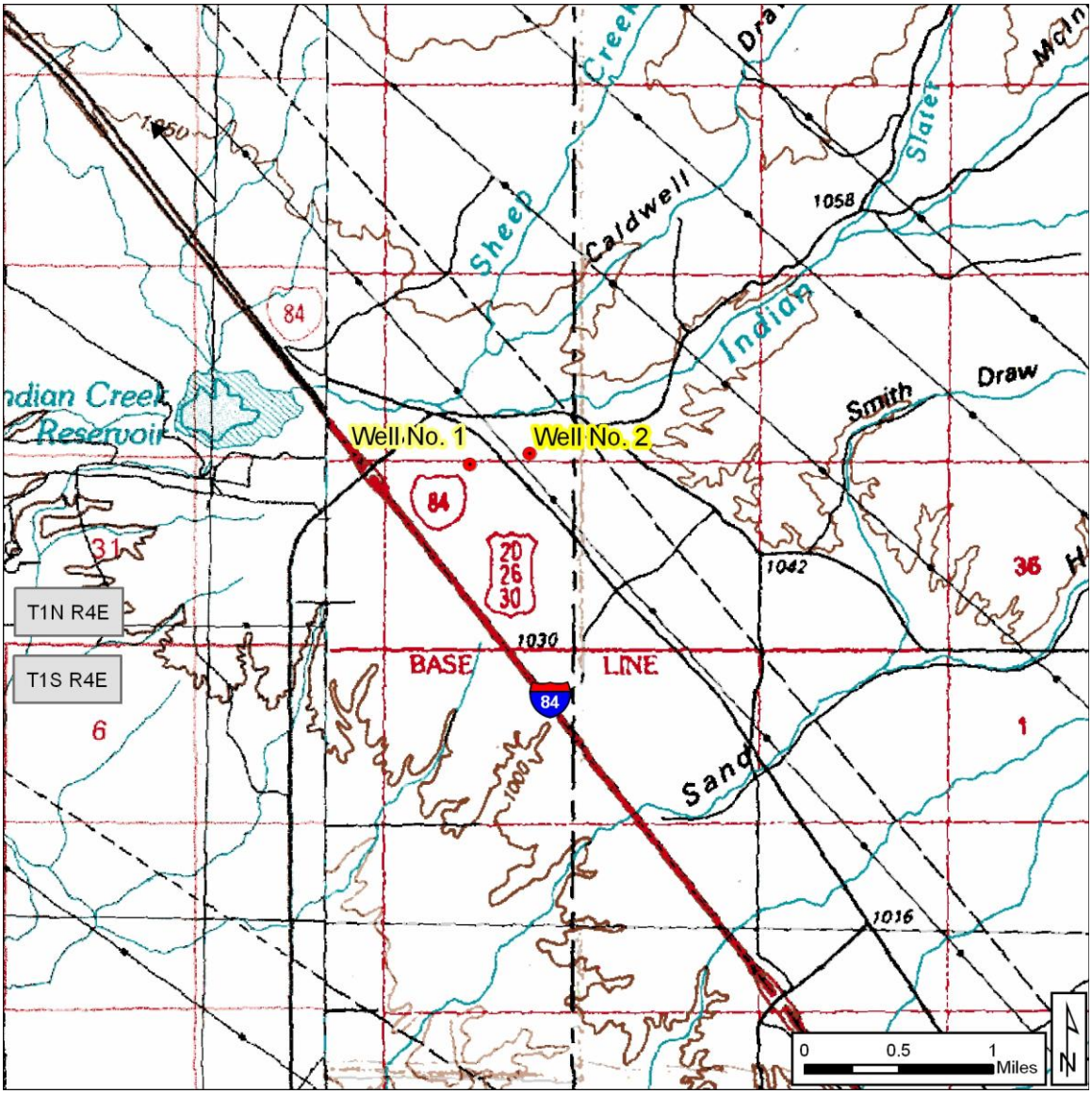


Figure 2. Topographic Map of Proposed Well Site and Vicinity

2.1.2. Terrain and Access

The Mayfield Springs property is generally flat with interspersed low hills. Access to the property is from the Mayfield-Orchard exit on Interstate-84. No existing roads reach the proposed well sites at this time. However, due to the flat topography and lack of trees or thick vegetation, overland access to both sites is available for a drilling rig.

2.1.3. Floodways and Floodplains

A Flood Insurance Rate Map from the Federal Emergency Management Agency shows that the proposed well sites are not situated in a floodplain. The Flood Insurance Rate Map for the proposed well sites is included in Figure 3.

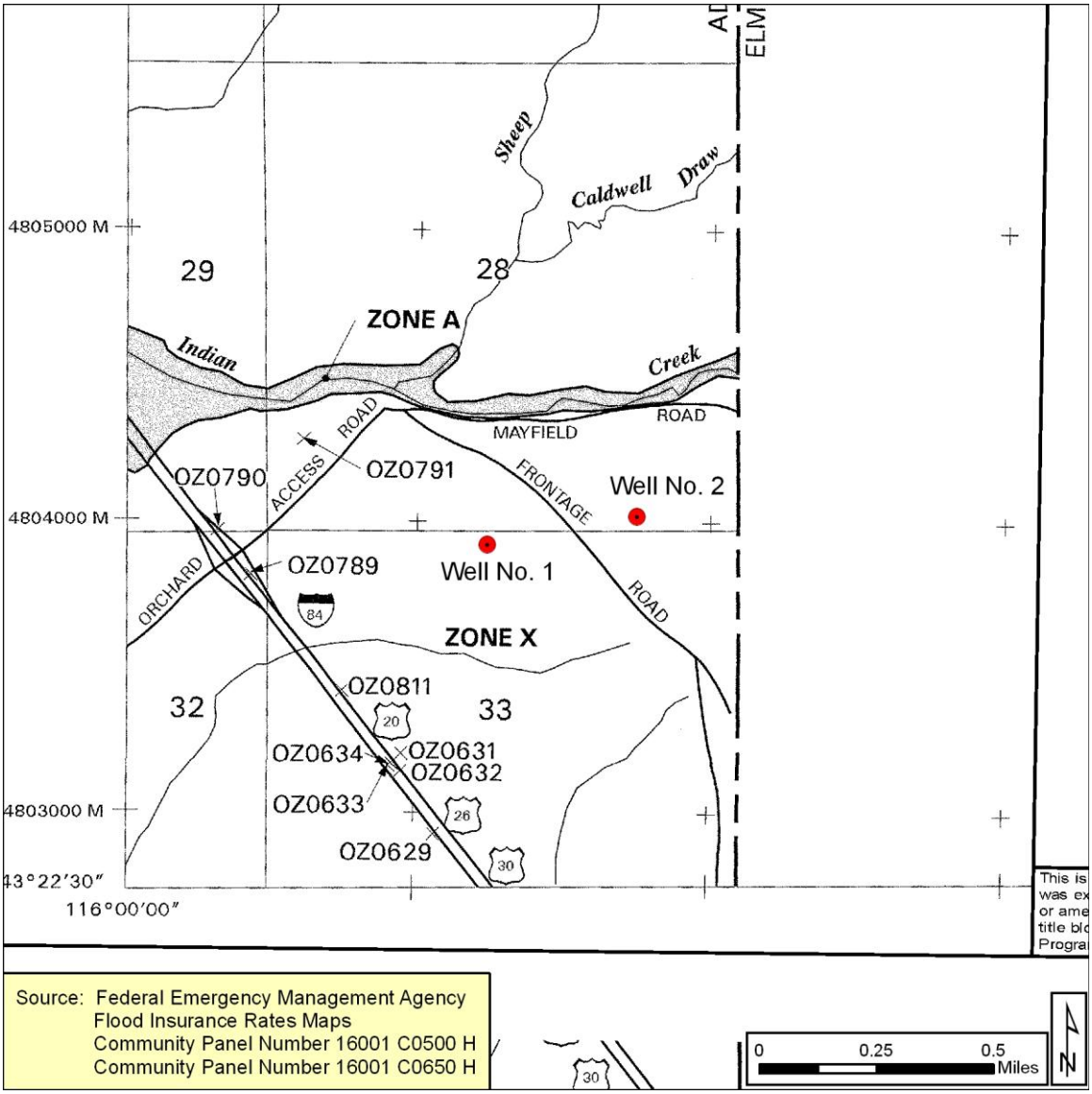


Figure 3. Flood Insurance Rate Map of Proposed Well Site and Vicinity

2.1.4. Surrounding Land Use

The land surrounding the Mayfield Springs property is largely undeveloped at this time. A truck stop is located just across Interstate-84 to the West of Mayfield Springs. There are also a few residences on large lots located to the East of the property. Aerial photographs and a site visit to the area showed no other significant development within at least 5 miles of the Mayfield Springs property.

2.1.5. Anticipated Production Rate

Phase 1 Water Demands

The first phase of development anticipates 403 residential units to be located on 41 acres, 10.2 acres of Mixed-Use Town Center development and a 5 acre School Site. Combined, these land uses are assumed to equal 443 Equivalent Dwelling Units (EDU's). In addition, 23 acres of developed parks requiring irrigation will be constructed in this phase. Based on these land uses, water system demands and required reservoir storage volumes for the first development phase have been calculated and are summarized in Tables 1 and 2. Supporting calculations are provided in Appendix J.

Table 1- Water System Demands at Phase 1 Build-out

Projected Use	Maximum Day Demand (gpm)	Peak Hour Demand (gpm)
Residential, Mixed-Use Town Center , and School – 56.2 AC	443 gpm	972 gpm
Developed Park Irrigation – 18.4 AC (80% of 23 AC)	92 gpm	212 gpm
Total Demand without Fire Flow	535 gpm	1,184 gpm
Fire Protection	N/A	1,500 for 2 hours (single-family residential) 2,500 for 2 hours (multi-family and large non-residential buildings)

Assumptions:

1. Residential, Mixed-Use Town Center, and School use based on DEQ demand equations
2. Developed Park irrigation based on Max day demand of 5 gpm per irrigated acre.
3. Peak hour irrigation based on peaking factor of 2.3 x maximum day demand.
4. Park Irrigated Acres assumes 80% of gross area.

Table 2-Required reservoir sizing at Phase 1 Build-out

Storage Type	Description	Required Storage Volume (Gallons)
Equalization Storage	0.225 x 535 gpm x 1,440 minutes/day	~173,340
Fire Suppression Storage	2,500 gpm for 2 hours	300,000
Operational Storage	5% of Equalization and Fire Storage	~23,670
Dead Storage	2.5% of Equalization and Fire Storage	~11,830
Standby Storage	Not required with stand-by power	0
Total Required Storage Volume		~508,840

Notes:

1. Equalization Storage assumed to be 22.5% of MDD per IDEQ Design File Note.
2. No contribution from well pumps assumed to meet fire flow demands. Excess well pump capacity would decrease fire storage requirements.

In addition to the two supply wells, a 500,000 gallon reservoir is proposed to be constructed with the initial development phase. Assuming that each well will produce 1,250 gallons per minute, there is firm pumping capacity to supply 1) Maximum Day Demand of 535 gpm; and 2) Peak Hour Demand of 1,184 gpm. With the proposed 500,000 gallon reservoir and one well pump in service, the system will be able to provide 3,750 gallons per minute (2,500 + 1,250). This exceeds the combined maximum day demand and fire flow requirements of 3,035 gpm.

Production Well Capacity

Based on data from existing wells in the area, each of the proposed wells is expected to produce approximately 1000 to 1500 gpm. Production data from several nearby wells is presented in more detail in Sections 2.3 and 2.4 of Attachment A, "Water Supply Assessment for the Mayfield Springs Planned Community." Two other relatively deep wells have been installed in the area since the report Attachment A was produced, including:

1. **McCallum Irrigation Well 1** – this well is located in the southwest quarter of the southwest quarter of Section 24, Township 1 North, Range 4 East, approximately 3 miles northeast of the proposed wells for Mayfield Springs. The well was completed to a total depth of 627 feet below ground surface, with screen at various intervals ranging from 432 feet to 622 feet. The driller's log for the well is provided in Attachment B. In February 2008, the static water level in the well

was 229 feet below ground surface. Test pumping performed immediately following well construction demonstrated the well was capable of producing 1800 gpm with approximately 130 feet of drawdown (specific capacity of approximately 14 gpm/ft).

2. **McCallum Irrigation Well 2** – this well is located in the southwest quarter of the northeast quarter of Section 24, Township 1 North, Range 4 East, approximately 3 miles northeast of the proposed wells for Mayfield Springs. The well was completed to a total depth of 795 feet below ground surface, with screen at various intervals ranging from 602 feet to 792 feet. The driller's log for the well is provided in Attachment B. In June 2008, the static water level in the well was 270 feet below ground surface. Test pumping performed immediately following well construction demonstrated the well was capable of producing 2000 gpm with approximately 130 feet of drawdown (specific capacity of approximately 15 gpm/ft).

3. **Elk Creek Canyon Test Well** – this well is located in the northwest corner of the southeast quarter of Section 11, Township 1 South, Range 4 east, approximately 2 miles southeast of the proposed wells for Mayfield Springs. The borehole for this test well was advanced to a total depth of 1000 feet. The well was completed to a total depth of 538 feet (screen from 418 to 538 feet). The well was test pumped at approximately 60 gpm by the driller using a submersible pump, producing approximately 17 feet of drawdown (specific capacity of approximately 4 gpm/ft). The driller's report indicates permeable and likely productive sediments extending to a depth of at least 1,000 feet.

2.1.6. Soils and Lithology

The soil types in the Mayfield Springs area are shown in Figure 4. Well No. 1 is located in Lankbush-Brent sandy loams. This soil type is characterized by slopes of 30 to 65 percent. The permeability is slow to very slow and the root zone extends to a depth of 60 inches or more. This soil type is typically found on alluvial fans and alluvial terraces of the Boise Front. Well No. 2 is located in Chilcott-Sebree silt loams. This soil type is characterized by slopes of 2 to 4 percent. The permeability is slow to very slow and the root zone extends to a depth of 20 to 40 inches. This soil type is typically found on high alluvial terraces.

The geology of the Mayfield Springs area is shown in Figure 5. The surficial geology consists of Cretaceous-age granitic rocks (primarily granodiorite) associated with the Idaho batholith (Kii), Middle Pleistocene-age basalt (Qpmb), Pleistocene-age unconsolidated alluvium (Qpg), Pleistocene-age alluvium (Qpa), and Quaternary alluvium (Qa) (Bond and Wood, 1978). Sediments in this area appear to be mostly alluvial fan sediments that are interfingered with basalt flows from the Kuna-Mountain Home basalt field (Wood, 1996). It is anticipated that the wells will be located in the alluvium. Both wells will tap water-bearing sand and gravel deposits at depths below 500 feet.

Normal faulting has been inferred along the base of the foothills in the Mayfield Springs area (Wood, 1996) based on offsets observed in sedimentary section. Wood notes that the youngest depositional and volcanic units do not appear to be faulted.

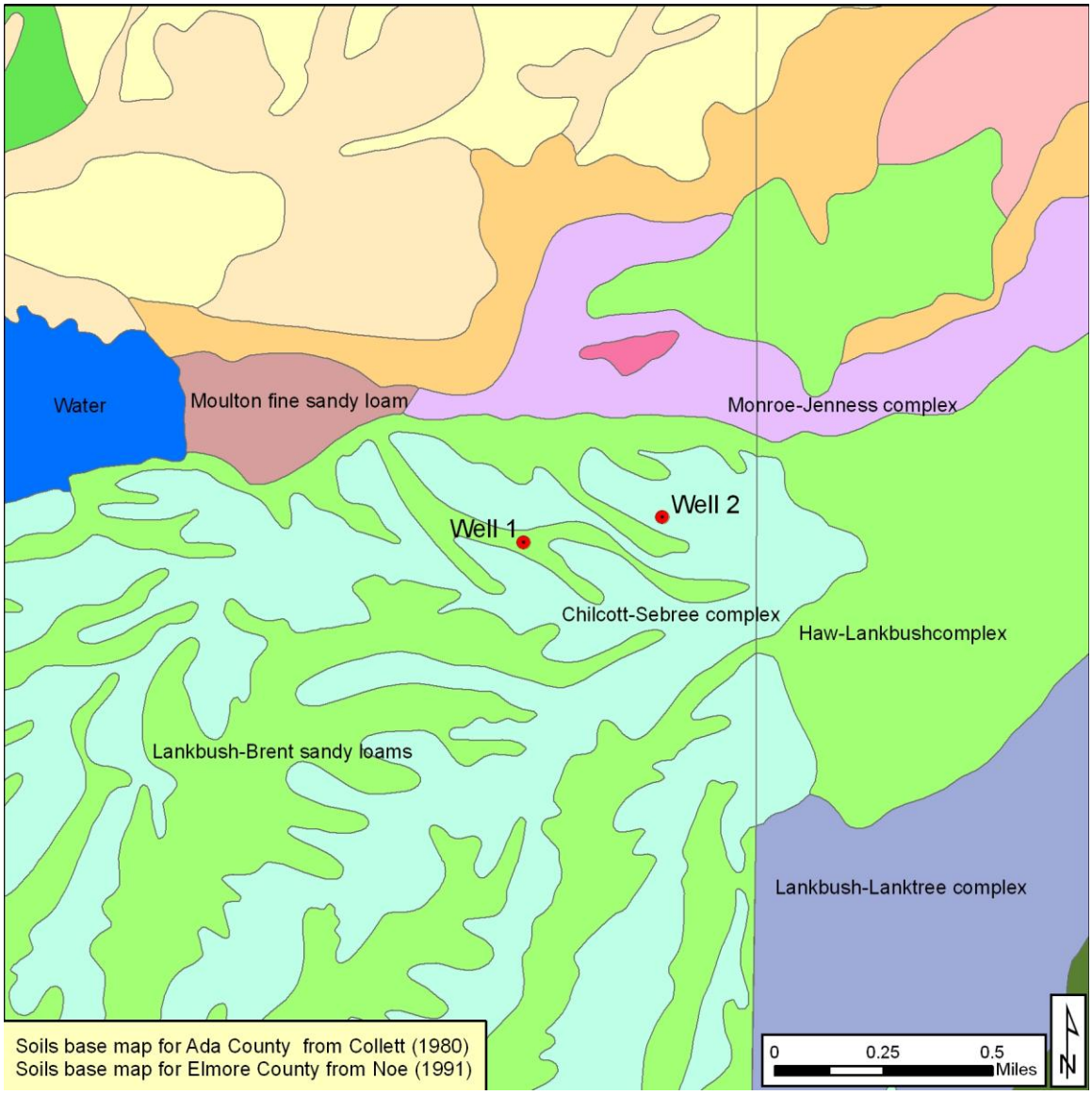


Figure 4. Soils Map of the Proposed Well and Vicinity

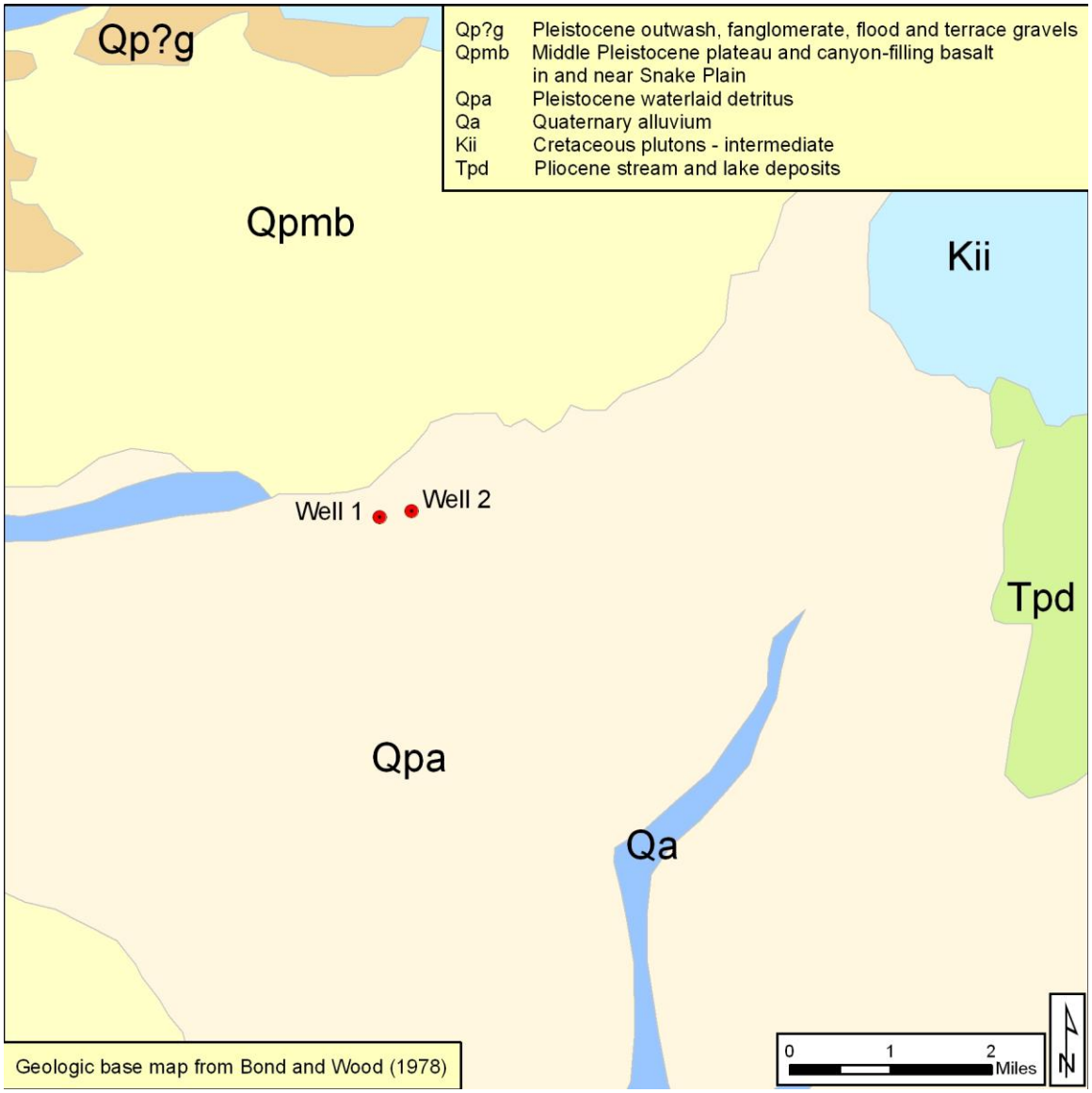


Figure 5. Geologic Map of the Proposed Well Site and Vicinity

2.1.7. Anticipated Well Construction

It is anticipated that both wells will be constructed with 16-inch diameter casing to a depth of approximately 600 feet followed by 10-inch diameter casing to a depth of up to 1000 feet. The static water level is expected to be approximately 400 feet below the ground surface. Zone testing and geophysical logging will be conducted to determine final screen placement. Conceptual well construction and zone testing schematics are included in Appendix D.

If distinct multiple water bearing zones are encountered, it is anticipated that the casing and annular seal in each well will be extended to the depth of the confining

layer above the production zone. In any case, the annular seal will be installed to a depth of more than 58 feet in accordance with IDAPA 58.01.08.510.03.b, and the annular seal will have a thickness of at least 2 inches.

2.1.8. Groundwater Quality

Water quality data for the Mayfield Springs area are limited, but available data suggest that ground water quality is good. Arsenic and fluoride concentrations in nearby wells are less than current Maximum Contaminant Levels (MCLs). More details on water quality can be found in Section 2.8 of Attachment A, "Water Supply Assessment for the Mayfield Springs Planned Community."

2.1.9. Nearby Water Supply Wells

A search for drillers' reports for the Mayfield Springs area wells was conducted using the Idaho Department of Water Resources' (IDWR) online well construction database. The search area consisted of a 3-mile radius around the Mayfield Springs property. A summary of the findings is included in Section 2.2 of Attachment A "Water Supply Assessment for the Mayfield Springs Planned Community." In addition to these wells, several other wells have been constructed (see summary in Section 2.1.5). Copies of the drillers' reports for all of the wells found in this search are also included in Attachment A.

2.1.10. Nearby Aquifer Recharge or Injection Wells

There are no aquifer recharge or injection wells located within 3 miles of the Mayfield Springs property.

2.1.11. Well Head Protection

Designated well lots are being established to encompass a minimum 50-foot radius around each of the proposed well locations. Each well site will also be graded to prevent standing water within 50 feet of the proposed well location. If geologic conditions permit, it is anticipated that the well will have an annular seal placed to the depth of an adequate confining layer. If feasible, the annular seal will be extended to a depth of 600 feet or more. The annular seal will be at least 58 feet deep to comply with 58.01.08.510.03.b.

2.1.12. Groundwater Under the Direct Influence of Surface Water

Well site maps for both well sites can be found in Appendix B. The maps show that there are no surface water bodies located within 500 feet of either well site. In addition, both wells are expected to be at least 600 feet deep with one or more confining layers above the screens. Local site grading will also be completed to drain water away from the well heads during periods of snowmelt or heavy rainfall.

Therefore, none of the proposed wells are expected to be under the influence of surface water.

More details on groundwater levels and groundwater flow direction can be found in Attachment A.

2.1.13. Other Potential Well Sites

Two additional well sites on Mayfield Springs property are being considered for future development as needed. Separate well site evaluations will be submitted for these future wells at that time.

2.2. Proximity to Potential Sources of Contamination

SPF Water Engineering contacted DEQ staff member Tom Neace on November 14, 2006 regarding regional water quality issues. Sean Coyle at DEQ identified possible sources of contamination within the area near the proposed well sites (see Appendix E). SPF Water Engineering also contacted Lisa Rowles on March 2, 2011 to ask Lisa to query DEQ's database again for any updates to the map provided in Appendix E. Lisa confirmed the map in Appendix E is accurate (that is, there are no additional potential sources of contamination in the vicinity of the proposed wells). The only potential source of contamination identified by DEQ is an underground storage tank (UST) at the Stagestop truck stop. However, this UST is located one-half to one mile to the southwest or west of both proposed well sites. Ground water flow in the area is to the southwest. Therefore, the UST is downgradient from both well sites. In addition, the wells are expected to be more than 600 feet deep beneath one or more confining layers above the screens. Therefore, the UST is not expected to influence water quality at either of the proposed well sites.

2.3. Professional Opinion

The proposed well sites are acceptable locations for public water supply wells. Both sites were selected to produce high quality water and meet all design and setback requirements per the Idaho Rules for Public Drinking Water Systems.

3. WELL SPECIFICATIONS

The specifications contemplate construction of two 16-inch wells. The well specifications are included in Appendix F. The General Checklist, Well Site Evaluation Checklist, and Well Construction Design Checklist are included in Appendix G. An inspection contract is provided as Appendix H.

4. PERMITS

A water right permit (Permit No. 63-32225) for Mayfield Springs was issued by IDWR in February 2007 to Intermountain Sewer and Water Corporation, who is owned by the developer of Mayfield Springs. The priority date on the permit is September 16, 2005. The water right permit allows a total maximum diversion rate of 10 cubic feet per second from five wells, including the two wells discussed in this well site evaluation. A copy of the permit is included in Appendix I.

5. REFERENCES

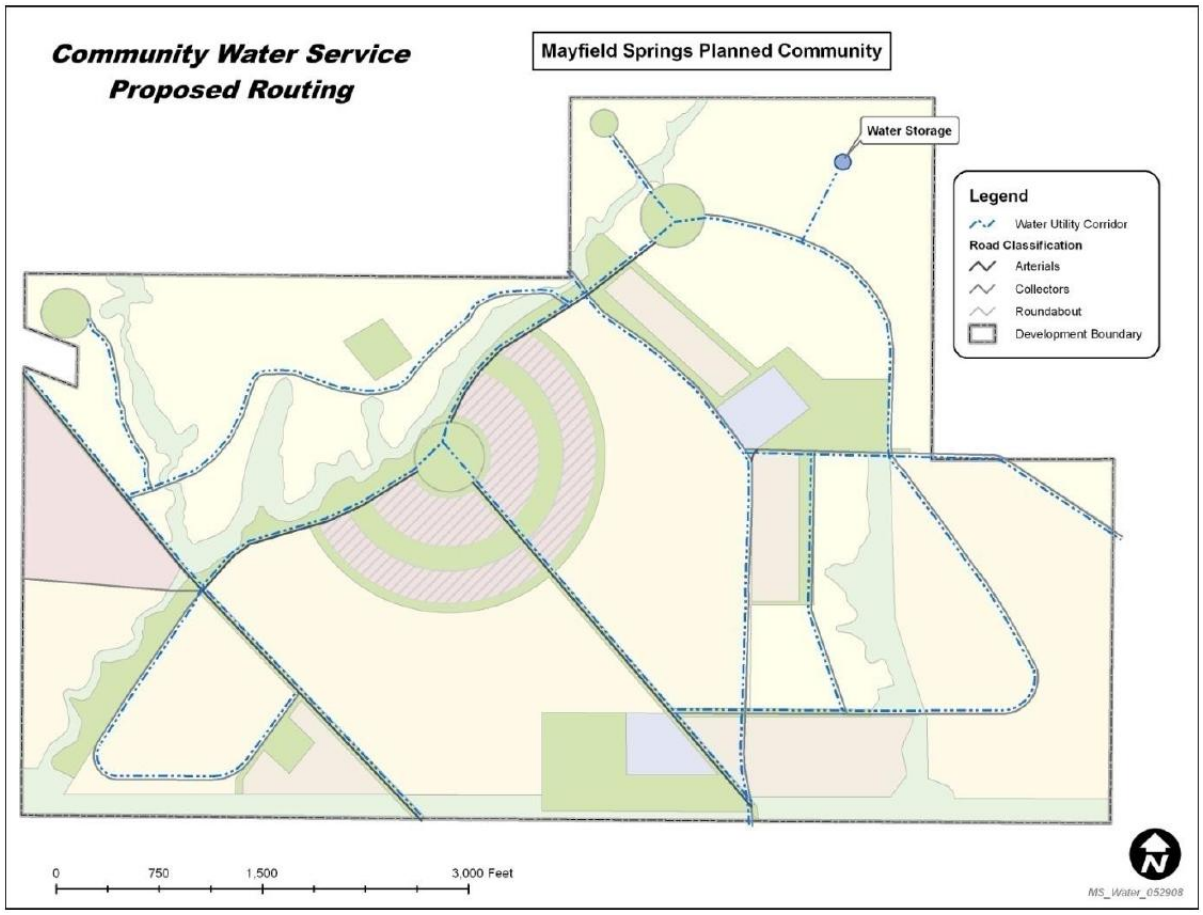
Bond, J.G. and Wood, C.H., 1978. Geologic map of Idaho. Idaho Department of Lands, Bureau of Mines and Geology, 1:500,000 scale.

Collett, R.A. 1980. Soil Survey of Ada County Area Idaho. Soil Conservation Service.

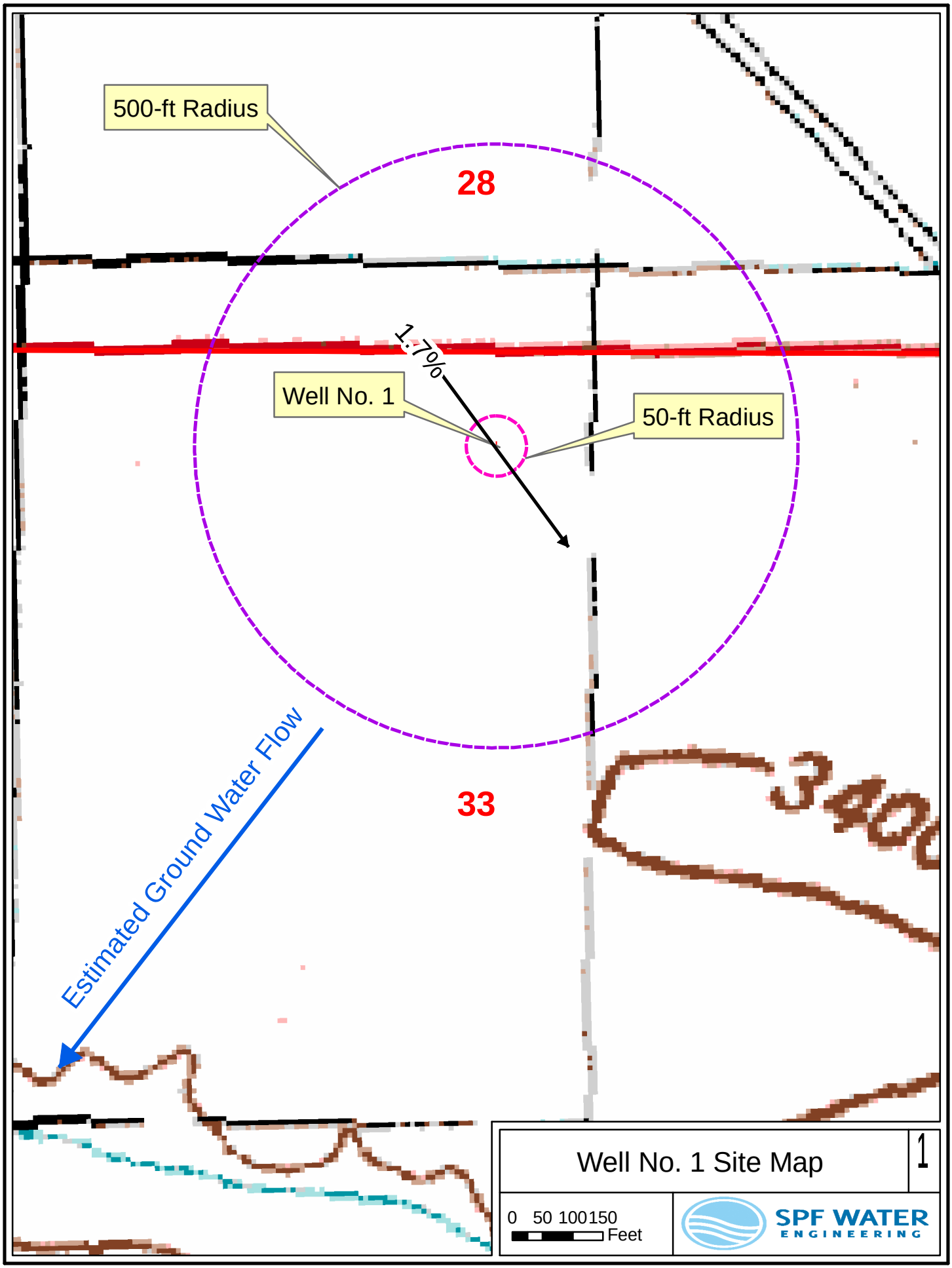
Noe, H.R. 1981. Soil Survey of Elmore Count Area, Idaho, Parts of Elmore, Owyhee, and Ada Counties. Soil Conservation Service.

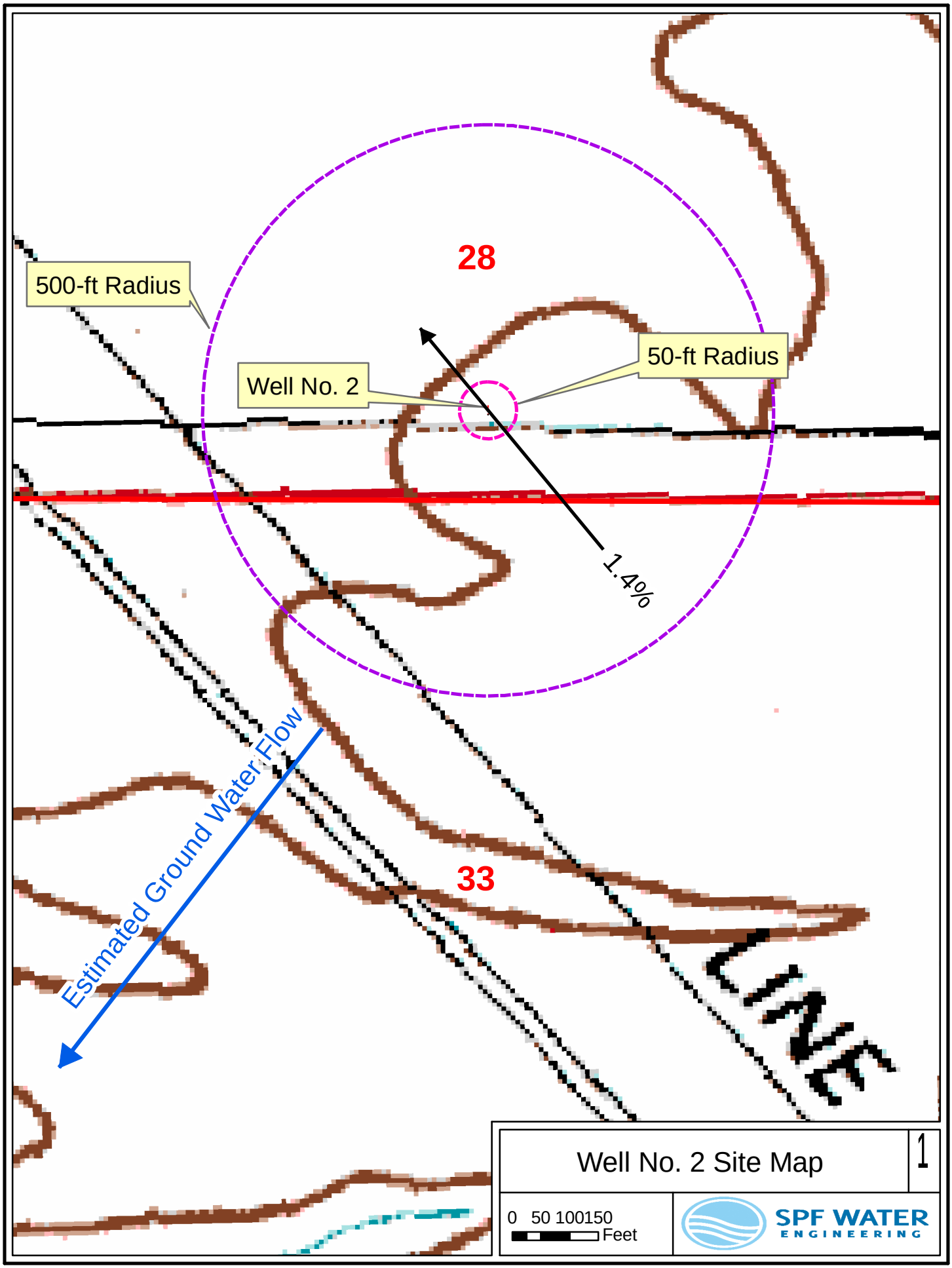
Wood, S.H., 1996. Cross Sections of the Southeast Boundary of the Treasure Valley Groundwater Study Area: Notes on the Geology of the Mayfield-Orchard Area, Ada and Elmore County, Idaho, Boise State University Geosciences, prepared for the Treasure Valley Hydrologic Project.

APPENDIX A
WATER SYSTEM CONCEPTUAL DESIGN


Community Water Service
Proposed Routing
Mayfield Springs Planned Community
Water Storage
Legend
Water Utility Corridor
Road Classification
Arterials
Collectors
Roundabout
Development Boundary
0
750
1,500
3,000 Feet
MS_Water_052908

APPENDIX B
WELL SITE MAPS


500-ft Radius
28
1-7%
Well No. 1
50-ft Radius
33
Estimated Ground Water Flow
Well No. 1 Site Map
1
0 50 100150
Feet
SPF WATER
ENGINEERING


28
500-ft Radius
50-ft Radius
Well No. 2
1.4%
Estimated Ground Water Flow
33
LINE
Well No. 2 Site Map
1
0 50 100150
Feet
SPF WATER
ENGINEERING

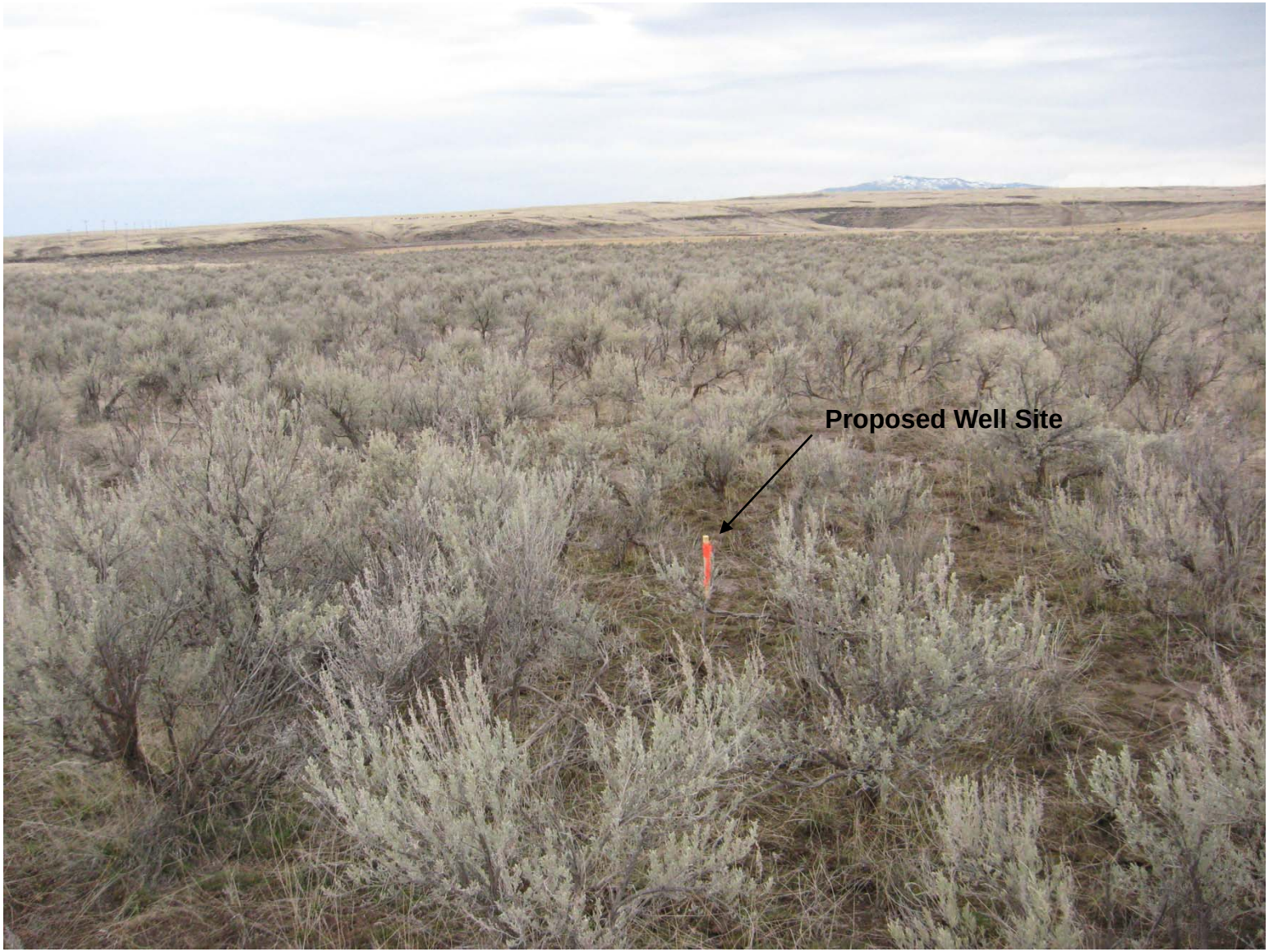
APPENDIX C
WELL SITE PHOTOGRAPHS

Well 1 looking north

Well 1 looking south

Well 1 looking east

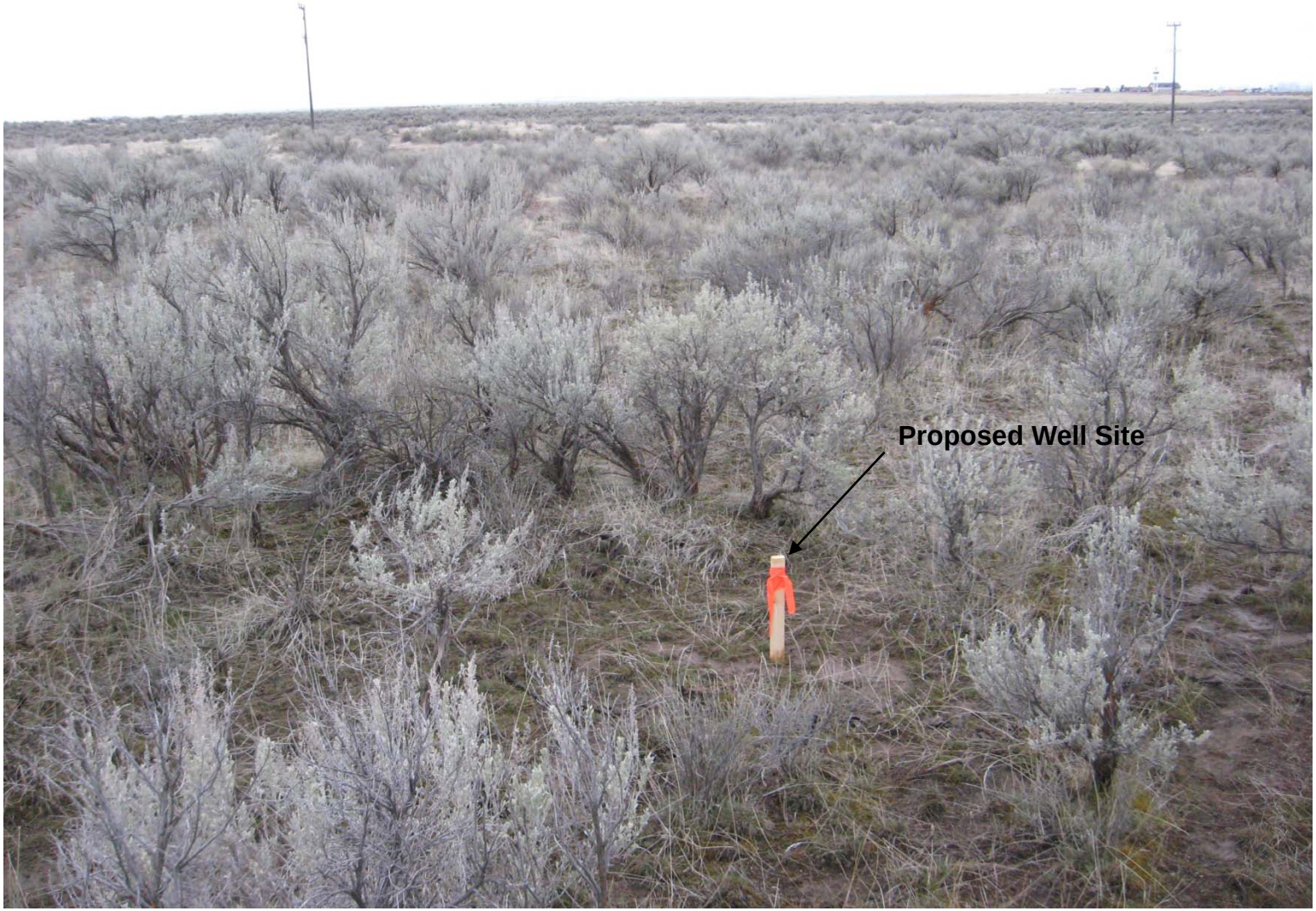
Well 1 looking west



Well 2 looking north

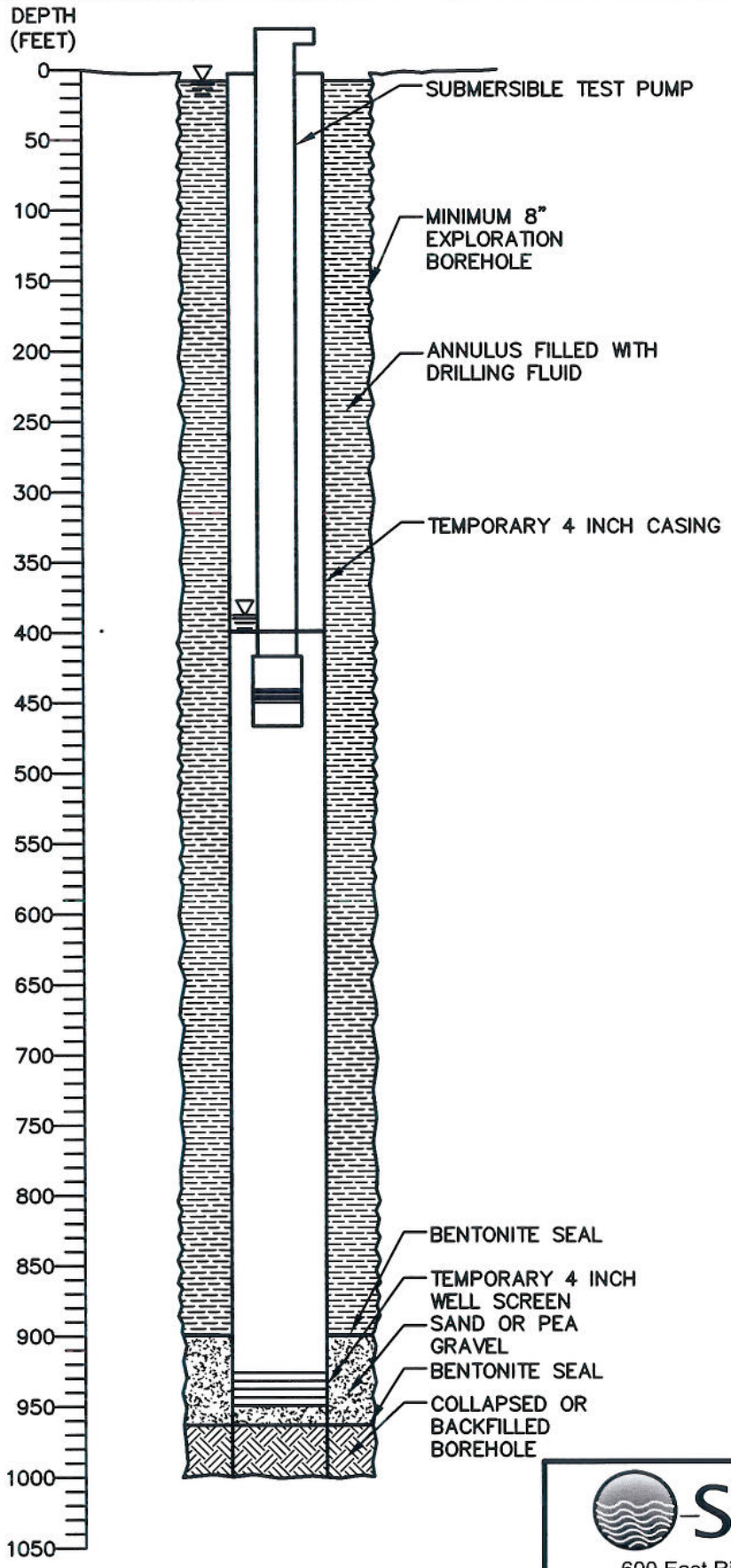
Well 2 looking south

Well 2 looking east



Well 2 looking west

APPENDIX D
CONCEPTUAL DESIGN OF WELL

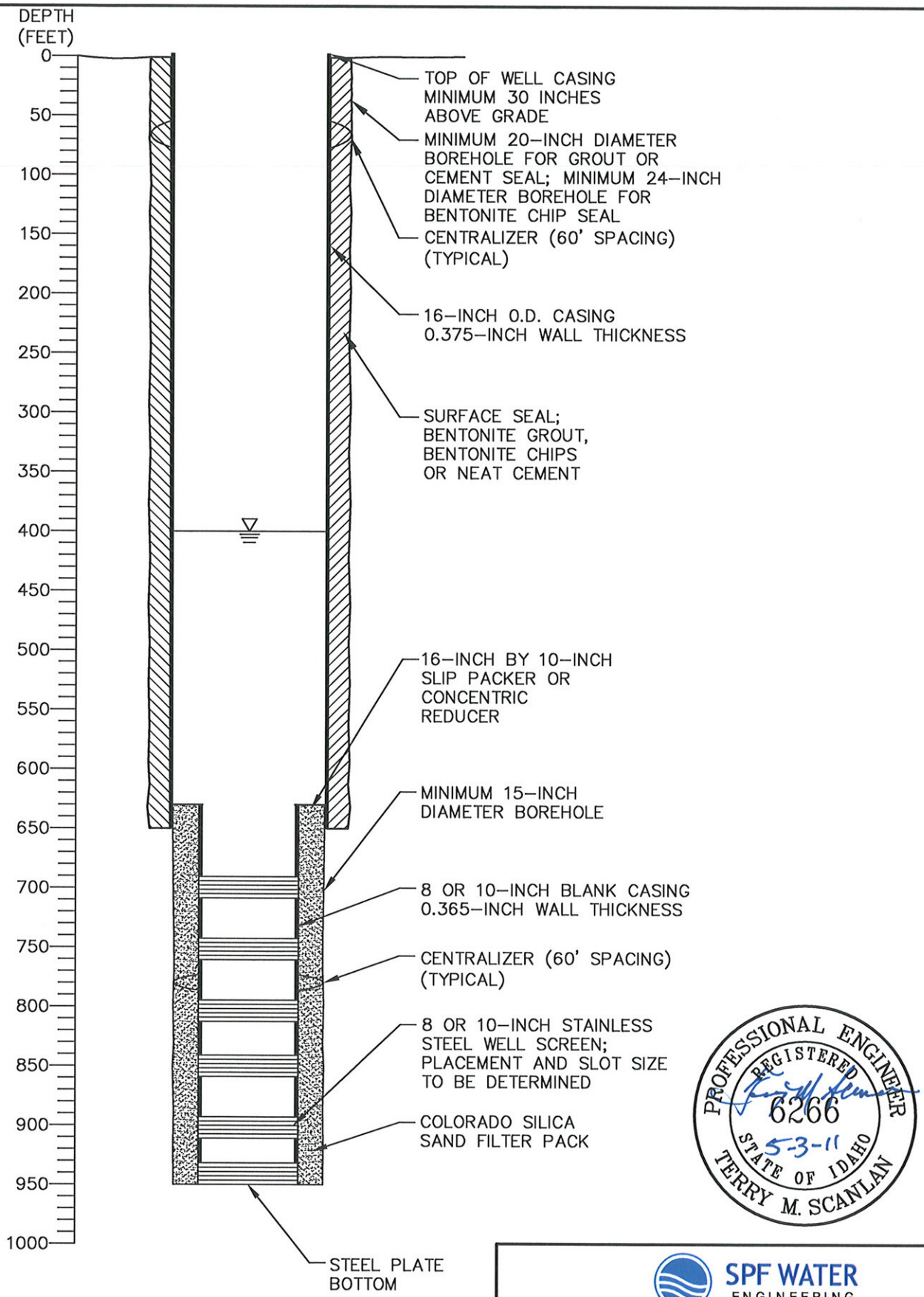


PROFESSIONAL ENGINEER
REGISTERED
6266
STATE OF IDAHO
TERRY M. SCANLAN

SPF Water Engineering, LLC
water resource consultants
600 East River Park Lane, Suite 105, Boise, Idaho 83706
Tel (208) 383-4140 Fax (208) 383-4156

MAYFIELD SPRINGS WELLS
BORING AND ZONE TEST CONCEPT

SCALE: NTS	FIGURE 1	PROJ. #329.0050
DRAWN BY: SDC		

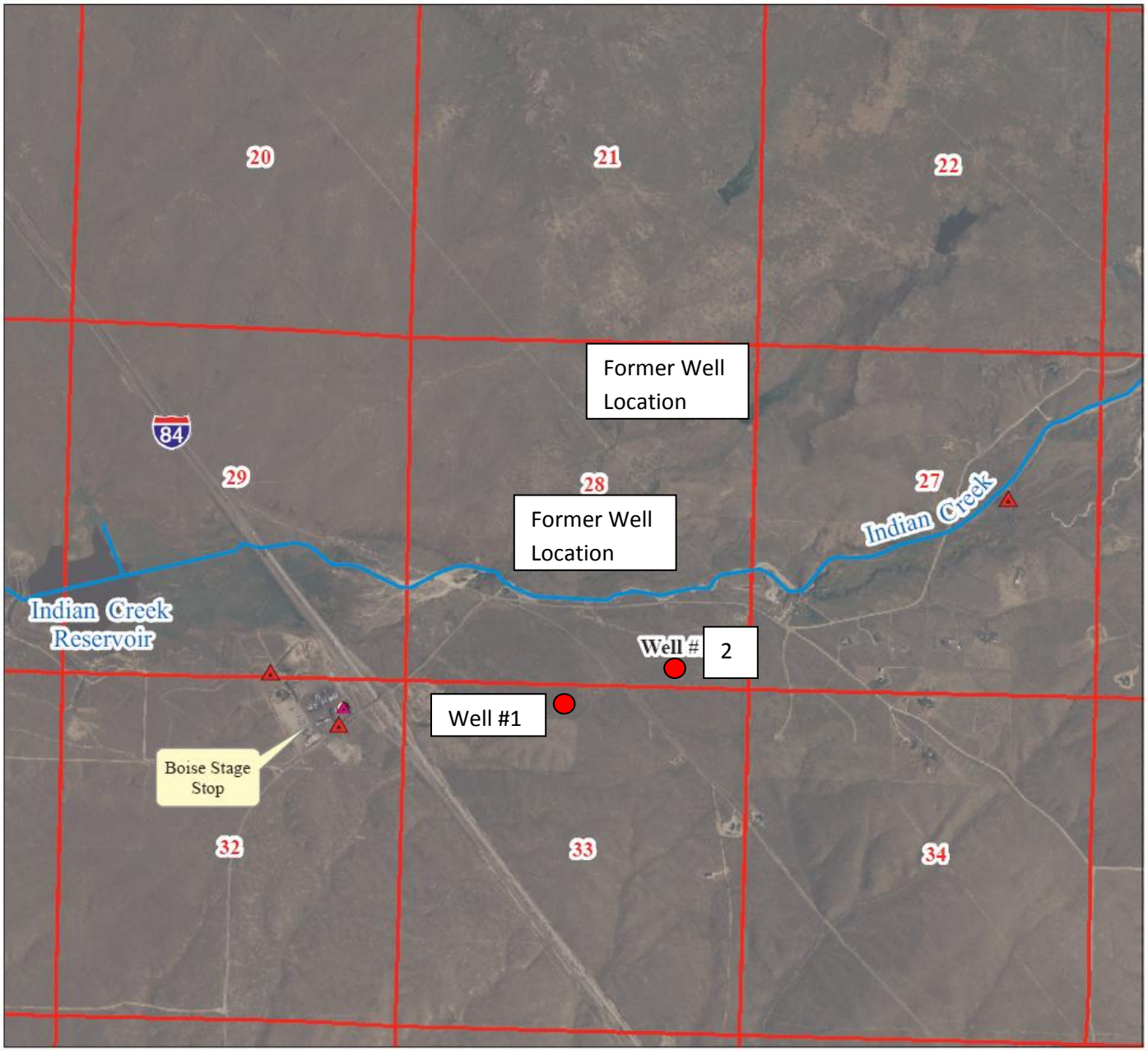


SPF WATER
ENGINEERING
300 East Mallard Drive, Suite 350
Boise, Idaho 83706
Tel (208) 383-4140 Fax (208) 383-4156

MAYFIELD SPRINGS WELLS
CONCEPTUAL DESIGN

SCALE: NTS	FIGURE 2	PROJ. #329.0050
DRAWN BY: SCB		

APPENDIX E
POTENTIAL SOURCES OF CONTAMINATION



Proposed Well Locations

Legend

- Public Land Survey
- Wellheads
- Toxics Release Inventory
- CERCLA SITES
- RCRA Sites
- Business Mailing List
- Active Dairy Site
- Proposed Dairy Site
- SARA Title III Sites
- Closed UST Site
- Open UST Site
- LUST Sites
- NPDES Locations
- Mine Locations
- Recharge Points
- Deep Injection Wells
- AST Locations
- Group 1 Sites
- Cyanide Sites
- Landfills
- Waste Water Land App
- Nitrate Priority Areas

N

0 1,500 3,000 Feet

APPENDIX F
WELL SPECIFICATIONS

TECHNICAL SPECIFICATIONS
PUBLIC WATER SYSTEM WELL
MAYFIELD SPRINGS

PART 1 -- GENERAL

1.1 THE REQUIREMENT

A. The Contractor shall furnish all materials, labor, plant, equipment, tools, supplies, transportation, and appurtenances for drilling, casing, developing, completing, and testing of one water well in Ada County, Idaho for Intermountain Sewer and Water Corporation (the Owner) as specified herein and in accordance with the requirements of the Contract Documents. These specifications contemplate construction of one well. As many as two wells may ultimately be constructed at the Owner's discretion.

B. Approximate depths of drilling and lengths of well casings and liners are to be used for the purpose of price estimation only. Exact depths and lengths may be adjusted by the Owner depending on subsurface conditions.

C. Work requirements for each well are summarized below. Each item is discussed in subsequent sections of the Specifications.

Monitoring Well

1. Mobilize to and demobilize from the work site.
2. Drill a minimum 10-inch diameter borehole to approximately 40 feet
3. Drill a minimum 8-inch diameter borehole to approximately 550 feet
4. Drill a minimum 8-inch diameter borehole to approximately 1,000 feet
5. Conduct geophysical logging
6. Abandon/grout to a depth of 550 feet
7. Furnish and install 5-inch I.D. PVC well casing
8. Furnish and install 5-inch I.D. PVC well screen
9. Furnish and install Colorado silica sand filter pack
10. Furnish and install annular well seal
11. Develop the well by swabbing and bailing.

Production Well

1. Drill borehole to minimum 20-inch diameter for 16-inch casing (24-inch minimum diameter if Contractor chooses to use bentonite chips for the seal as opposed to grout or cement).

2. Install 16-inch casing

3. Drill nominal 15-inch borehole below the 16-inch casing

4. Conduct geophysical logging

5. Perform zone pumping tests (alternate bid item)

6. Furnish and install 8-inch or 10-inch I.D. blank mild steel casing

7. Install 8-inch or 10-inch well screen and blank casing assembly

8. Install sand filter pack

9. Develop the well by swabbing and bailing.

10. Install slip packer or reducer

11. Furnish, install, and operate test pump.

12. Disinfect the well with chlorine solution.

13. Demobilize.

D. All well construction work not specifically addressed in these specifications shall conform to IDAPA 58.01.08 Idaho Rules for Public Drinking Water Systems (Idaho Department of Environmental Quality), IDAPA 37.03.09 Minimum Well Construction Standards (Idaho Department of Water Resources), appropriate sections of "Recommended Standards for Water Works", and AWWA A100 - Standards for Water Wells.

E. All materials used for well construction**,** including drilling fluids, shall be NFS Standard 60, NSF standard 61 or equivalent.

1.2 BEGINNING AND COMPLETION OF WORK

A. The work shall begin within 45 calendar days of receipt of notice to proceed from the owner. All work shall be completed within 90 calendar days of receipt of notice to proceed.

1.3 SERVICES FURNISHED BY THE OWNER

A. The Owner will provide land and rights-of-way for the Work specified in this contract. Provisions for access to the Work site will be provided by the Owner. The Contractor shall not enter on or occupy with laborers, tools, equipment, or material any ground outside the property and rights-of-way provided by the Owner unless stated otherwise by the Owner. Other Contractors, employees, or agents of the Owner may enter the work site and premises used by the Contractor for business purposes.

B. The Engineer (as the Owner's Representative) will participate in well testing, evaluation of drilling characteristics, sample examination, and geologic log interpretation, and will advise the Contractor on the final design placement of well casing, surface seal, gravel pack and well screen. The Engineer shall be present during placement of well seals and for test pumping.

C. The Owner will obtain the drilling permit.

1.4 WORK SITE

A. The well sites are owned by Greg Johnson. Well site No. 1 is located in the NE ¼ of the NW ¼ of Section 33, Township 1 North, Range 4 East in Ada County, Idaho. Well site No. 2 is located in the SE ¼ of the SE ¼ of Section 28, Township 1 North, Range 4 East in Ada County, Idaho. The well sites are reached from I-84 by traveling east on Indian Creek Road, then traveling overland across the Mayfield Springs property. The well site will be staked by the Engineer prior to Contractor mobilization.

1.5 DRILLING CONDITIONS

A. It is anticipated that drilling will be in clay, silt, sand, and gravel. Static groundwater level is anticipated to be approximately 400 feet below ground surface. It is the Contractor's responsibility to make his own determination of subsurface conditions.

B. The Contractor shall be responsible for providing notification to utility owners prior to beginning Work, by requesting a facility locate through Dig Line, Inc. at 1-800-342-1585.

C. It is the Contractor’s responsibility to become informed about local conditions affecting this Work. Neither the information contained in these specifications, nor gleaned from the Owner, or their agents, shall act to relieve the Contractor from any responsibility set forth in the contract.

1.6 CONTRACTOR QUALIFICATION AND EQUIPMENT

A. The Contractor shall have at least five years of well drilling experience.

B. The Contractor shall submit a list of equipment to be used on the project. The list shall include: (1) manufacturer; (2) load capacities; (3) year of manufacture; and (4) year of purchase by current owner. The Contractor is responsible for providing equipment capable of performing the Work specified.

C. Damages to the well or surrounding property by the Contractor’s equipment, leased or otherwise, shall be repaired or replaced at the Contractor’s expense.

1.7 CONTRACT DOCUMENTS

A. The form and detail of the various features of the Work are illustrated on the following drawings accompanying and made part of the Contract Documents:

- Figure 1 – Mayfield Springs Wells Vicinity Map
- Figure 2 – Mayfield Springs Wells Boring and Zone Test Concept
- Figure 3 – Mayfield Springs Wells Conceptual Design

1.8 WATER, POWER, AND SITE IMPROVEMENTS

A. Water required for drilling purposes may be obtained from locations designated by the Owner. If the Contractor wishes to obtain water from other sources, he shall obtain prior approval from the Owner and must provide for the quantity and quality of water required at his own expense.

Costs for pumps, water conveyance facilities, or transportation to the Work site shall be borne by the Contractor including all necessary pumps, piping and components. All water used for well construction purposes shall be of potable quality and adequately disinfected to prevent the spread of bacteria.

B. The Contractor shall provide, at his own expense, all necessary piping and components to transfer the discharged well water from the drill site to a suitable disposal site. A plan for water disposal must be provided by the Contractor and approved by the Owner prior to commencing drilling.

C. The Contractor shall provide, at his own expense, all power required for his operations under the contract.

D. Preparation of the drill site and excavation or backfilling of mud pits, ditches, or settling ponds shall be the responsibility of the Contractor. The Contractor shall be responsible for protecting life and property from excavated mud pits and settling ponds and shall backfill pits as soon as drilling and testing operations are complete. Holes, pits, equipment, and chemicals shall be safely stored and fenced per OSHA standards. All materials shall be stored where safe from damage or contamination.

1.9 WORKING HOURS

A. The Contractor shall work on this project in a steady and diligent manner. The Contractor shall, during all work periods, provide an adequate crew of suitably qualified personnel to prevent unnecessary delays in project completion. The Contractor may be required to provide 24-hour per day maintenance of pumping and monitoring equipment during test pumping.

1.10 FINAL CLEANUP

A. The Contractor shall thoroughly clean the site after completion of the drilling, well construction, and test pumping operations. All excess drilling fluids, debris, and other materials used during these operations shall be removed and properly disposed of by the Contractor. Backfilled mud pits shall be compacted to 90 percent maximum dry density as determined by Standard Proctor Test (ASTM 698-00).

B. The Contractor shall promptly remove his equipment, temporary facilities, and materials, and leave the site in a condition approved by the Owner. The Contractor shall repair any damage to the property or facilities caused by his operations prior to final acceptance of the Work by the Owner.

PART 2 -- PRODUCTS

2.1 CASING

A. **Temporary Surface Casing:** Temporary surface casing may be used at the Contractor's option. If utilized, temporary surface casing shall be removed during installation of the surface seal.

B. **Well Casing:** The completed well shall be cased with nominal 16-inch O.D. casing from 2.5 feet above natural ground surface to a depth designated by the Engineer. The casing shall be

new steel ASTM A-53 or equal with a minimum wall thickness of 0.375 inches. The casing shall be equipped with centralizers at a spacing of no more than 60 feet.

C. **Blank Casing:** The completed well shall be equipped with nominal 8-inch or 10-inch I.D. casing within the well screen assembly. The casing shall be new steel ASTM A-53 or equal with a minimum wall thickness of 0.375 inches. The casing shall be equipped with centralizers at a spacing of no more than 60 feet.

2.2 WELL SCREEN

A. Well screen shall be of the V-slot continuous wire-wound type in 304 stainless steel of 8-inch or 10-inch pipe size. The top of the well screen shall be equipped with welding ring. The bottom of the well screen shall be equipped with a stainless steel plate bottom or a welding ring for connection to tail pipe. In order to provide adequate collapse, column, and tensile strengths, the screen construction shall include sufficient wire and rod sizes to be compatible with the depth and pressures of the installation, as recommended by the screen manufacturer.

B. Screen slot size, length, and placement depths will be determined by the Engineer after completion of the pilot borehole and receipt of driller's logs, drill cuttings, geophysical logs, and laboratory analytical data from samples collected during zone testing. To the extent practical, the screen length shall be adequate to provide an average entrance velocity of less than 0.1 feet per second.

2.3 SAND FILTER PACK

A. A sand filter pack shall be placed around the well screen assembly. The filter pack shall be installed opposite the entire length of the screen assembly, and shall extend above the top screen a minimum of 20 feet (unless otherwise directed by the Owner). The pack shall consist of clean, well-rounded siliceous material with a uniformity coefficient of 2.5 or less, manufactured by Colorado Silica Sand, Inc., Colorado Springs, CO (or approved equal), and conforming to one of the following gradation specifications to be determined following analysis of drill cuttings.

10-20 Filter Sand	8-12 Filter Sand
90-100% passing No.10 sieve	90-100% passing No. 8 sieve
90-100% retained on No. 20 sieve	90-100% retained on No. 12 sieve

6-9 Filter Sand

90-100% passing No.6 sieve

90-100% retained on No. 9 sieve

2.4 SLIP PACKER OR REDUCER

A. The 8-inch or 10-inch screen and blank casing assembly shall be connected to the 16-inch casing using a slip packer assembly or a reducer. If a packer is used, there shall be a 20-foot overlap between the 16-inch and 8-inch or 10-inch casings. A schematic diagram for the slip packer shall be provided for approval prior to installation.

B. If the Contractor elects to install the casing and well screen assembly as single string, the screen assembly shall be connected to the casing using a welded 16-inch x 8-inch or 10-inch reducer or 16-inch x 8-inch or 10-inch neoprene packer.

2.5 WELL SEAL

A. The annulus outside the 16-inch well casing will be sealed with neat cement, bentonite chips, or an approved bentonite grout. A 50 percent excess volume of seal material shall be available on site if neat cement or bentonite grout is used as seal material.

B. Where cement grout is used, additives may be utilized to control fluid losses and shrinkage. Mix water quality and quantity shall follow manufacturer specifications paying close attention to cement grind and water ratios, eliminating free water. The use of bentonite to reduce hydraulic conductivity shall not exceed 4 percent and bentonite shall be pre-hydrated prior to mixing with the neat cement. Silica flour or 200-mesh silica sand may be used in a ratio of 30 to 50 percent to reduce permeability and increase the stability of the grout. Sodium chloride may be used to reduce fluid loss and shrinkage, but retarding and acceleration properties shall be taken into account with mixing ratios.

C. If an annular seal of bentonite grout is to be utilized, a high (greater than 30 percent) solids bentonite shall be pumped from the bottom up to the land surface. The bentonite shall contain no chemical polymers which effect long-term stability of the seal and are often found in drilling fluid grade bentonites, but rather shall be specifically recommended by the manufacturer for use as a seal material in water wells.

D. Bentonite chips used for the annular seal shall be specifically recommended by the manufacturer for use as a seal material in water wells. Bentonite chips may be used below the water table if there is an annular space of 4 inches or more.

PART 3 -- EXECUTION

3.1 MOBILIZATION AND DEMOBILIZATION

A. Upon receiving the Notice to Proceed, the Contractor shall move in all tools, equipment, and supplies necessary for the Work, and upon completion of the Work, shall remove all such items from the premises promptly and leave the site in a clean and orderly fashion.

3.2 CONSTRUCTION SEQUENCE

A. The sequence of construction for this project shall consist of the following:

Monitoring Well

1. Mobilize to and demobilize from the work site.

2. Drill a minimum 10-inch diameter borehole to approximately 40 feet

3. Drill a minimum 8-inch diameter borehole to approximately 550 feet

4. Drill a minimum 8-inch diameter borehole to approximately 1,000 feet

5. Conduct geophysical logging

6. Abandon/grout to a depth of 550 feet

7. Furnish and install 5-inch I.D. PVC well casing

8. Furnish and install 5-inch I.D. PVC well screen

9. Furnish and install Colorado silica sand filter pack

10. Furnish and install annular well seal

11. Develop the well by swabbing and bailing.

Production Well

12. Drill borehole to minimum 20-inch diameter for 16-inch casing (24-inch minimum diameter if Contractor chooses to use bentonite chips for the seal as opposed to grout or cement).

13. Install 16-inch casing

14. Drill nominal 15-inch borehole below the 16-inch casing

15. Conduct geophysical logging

16. Perform zone pumping tests (alternate bid item)

17. Furnish and install 8-inch or 10-inch I.D. blank mild steel casing

18. Install 8-inch or 10-inch well screen and blank casing assembly

19. Install sand filter pack

20. Develop the well by swabbing and bailing.

21. Install slip packer or reducer

22. Furnish, install, and operate test pump.

23. Disinfect the well with chlorine solution.

24. Demobilize.

3.3 DRILLING

A. The drilling method below the surface casing shall be reverse rotary or mud-rotary. The borehole shall be of sufficient diameter to meet Idaho Well Construction Standards.

B. Drilling fluid properties shall be maintained in such a manner to ensure the structural integrity of the borehole and to circulate drill cuttings representative of the strata penetrated to the ground surface. Drilling fluid additives shall be NSF Standard 60 approved.

C. The Contractor shall sample the drill cuttings at 5-foot intervals and at pronounced changes in geologic formation. These samples shall be saved and maintained on the job site in a clean dry area. All samples are to be submitted to the Owner. The samples shall be of at least one-pint size, shall be kept in cloth sample bags or zip-lock style plastic bags, to be provided by the Contractor, and shall be clearly labeled to show the depth and well from which collected.

D. The Contractor shall maintain a daily drilling log of the well. Information that shall be listed on the drilling log includes: (1) drilling fluids and additives, including quantity of materials used; (2) depths and estimated volume of any drilling fluid losses to the borehole (3) drilling fluid properties, including weight and viscosity (if applicable); (4) type and diameter of bits used for drilling and total footage for each bit; and (5) any remarks or comments concerning the drilling characteristics of the borehole, including locations of any lost circulation zones. The forms shall be kept on-site for inspection by the Owner.

E. All drilling fluids shall be disposed of in accordance with State and Federal regulations. Method and place of drilling fluid disposal shall be approved by the Owner. Costs incurred in connection with the disposal of drilling fluids and developed water shall be borne by the Contractor.

F. Logs and records shall be kept by the Contractor's drillers on forms suitable to the Owner, which shall indicate each shift worked; the general character, thickness, and type of material penetrated; and the type of all other Work performed, including the exact time spent on each item of Work. The logs and records shall be maintained at the time the Work is done. Copies of the logs shall be available for inspection by the Owner at all times. Copies of all logs shall be furnished to the Owner following completion of all operations. The Contractor shall submit a Well Driller's Report to the Idaho Department of Water Resources.

3.4 GEOPHYSICAL LOGGING

A. Geophysical logging shall be conducted upon completion of exploration borehole drilling. The Engineer shall be given at least 24 hours notice of the time when the survey will be run in order to witness the performance of the survey. The logs run shall include resistivity, natural gamma radiation, and temperature.

3.5 ZONE TESTING

A. If requested by the Owner or Engineer, zone tests will be conducted to obtain data on water quality and hydraulic characteristics of potential aquifer zones.

B. Each test will involve setting temporary 4-inch (or larger) steel casing and well screen or perforated pipe (20 feet minimum length) with gravel or sand filter pack. A bentonite seal shall be placed above and below the filter pack. Following placement of the screen, filter pack, and bentonite seal, the temporary well will be developed by surging with a test pump or air-lift pumping.

C. Following development, the zone will be test pumped for a minimum of 6 hours. Pumping equipment will consist of a submersible pump rated to produce a minimum of 25 gpm from a pumping level of 500 feet. The pump shall be set at an approximate depth of 550 feet. Flows shall be measured using a flow meter or 5-gallon bucket. A water level sounding tube or air-line shall be provided for water level measurement. The Engineer shall be responsible for collecting water samples prior to the end of the test and for measuring water-level recovery for approximately one hour.

D. At the end of test, the casing and screen shall be pulled up to the next higher aquifer zone and steps B. and C., above, will be repeated.

E. It is anticipated that up to three (3) zone tests will be conducted.

3.6 PLUMBNESS AND ALIGNMENT

A. The Contractor shall construct the well sufficiently straight and plumb to permit free installation and removal of a nominal 14-inch test or production pump. The hole shall be drilled to the depth designated by the Owner with a total deviation of the casing not to exceed one degree per 100 feet of the well. The alignment will be considered satisfactory if the casing will permit the free lowering and raising of a dummy between land surface and the bottom of the 16-inch casing section. The dummy shall be constructed of a 40-foot length of standard 14-inch O.D. pipe. It shall be the responsibility of the Contractor to see that the well is being constructed straight and plumb within these limits at all times. Any indications of inadequate plumbness or alignment during drilling, casing, or pump setting operation shall be cause to require measurement of plumbness or alignment by a method approved the Owner. No payment shall be made for tests of alignment; any such tests shall be considered subsidiary to other items in this contract.

B. If the well has unacceptable plumbness or alignment, the Contractor shall undertake remedial measures. Any alignment work required by the Contractor in re-drilling or straightening the well shall be at his sole expense. If a well is deemed unacceptable following remedial measures, then as much casing as can be removed from the well shall be salvaged by the Contractor. Salvaged casing will be the property of the Contractor. The well shall be abandoned in accordance with Idaho State regulations at the Contractor's expense. All payments associated with construction of the abandoned well shall be credited to construction of a replacement well.

3.7 INSTALLATION OF WELL CASINGS, SCREEN, CENTRALIZERS, AND FILTER PACK

A. **Welding:** Individual lengths of steel casing shall be joined by welding. Welding shall be performed by properly qualified operators following the manufacturer's recommendations and in accordance with AWWA C206. Welds shall penetrate the full thickness of the casing wall.

1. The standards of the American Welding Society, Structural Welding Code (AWS D1.1) shall apply for all welded joint casing and accessories. All welds shall conform to the latest revision of ANSI B31.1.

2. There shall be a minimum of three (3) weld passes on pipe sizes 6-inches and greater.

B. **Weld Reinforcement:** Weld reinforcement shall be as specified by the AWS code. Upon completion of welding, all weld splatter, flux, slag, and burrs left by attachments shall be removed. Welds shall be repaired to produce a workmanlike appearance, with uniform weld contours and dimensions.

C. When complete, the well casing shall extend a minimum of 18 inches above finished grade. Finished grade shall be at least 12 inches above natural ground level to provide slope away from the well in all directions. The top of well casing shall be equipped with a welded steel plate, sanitary well seal, or vented well cap, as approved by the Engineer.

D. Centralizers shall be installed at intervals of no more than 60 feet. Centralizer groups in well casing will be placed as follows:

1. One group at the bottom end of the casing.

2. One group across the first joint.

3. One group every 60 feet

4. One group within 30 feet of the surface

5. All centralizer groups shall be vertically aligned, one above the other in order to permit the passage of tremie pipes alongside the casing to the bottom of the borehole.

E. Gravel pack or sand filter pack shall be installed by pouring from the surface. The pack shall be disinfected with chlorine prior to installation. The level of the pack shall be tagged at frequent intervals to confirm that it is not bridging. Following installation, the pack shall be settled by swabbing or other means.

3.8 WELL SEAL

A. The annular seal shall extend from the bottom of the 16-inch well casing to ground surface.

B. If bentonite chips are used as a seal material, the top of the seal shall be tagged at nominal 10-foot intervals during placement to determine if the seal is reaching its intended position. Pour rates shall not exceed manufacturer's recommended rates. Seal level shall be checked by tagging with a sinker bar or other means.

C. Volumes of seal material placed shall be carefully monitored and checked against calculated volume requirements.

D. The Engineer shall be notified a minimum of 24-hours prior to seal placement, and shall be present during seal placement. The Contractor shall be responsible for notifying IDWR prior to seal installation.

E. Cement grouts shall cure for a minimum of 48-hours before work is resumed on the well.

F. Seals shall be installed in a slow and continuous manner, and temporary casing shall be withdrawn as the seal is placed.

G. Bentonite grouts shall not be used above the water table.

3.9 DEVELOPMENT

A. The well shall be developed after installation of the casing, screen, and filter pack by swabbing and bailing, or by other methods approved by the Engineer.

B. If the well is developed by air-lifting, the Contractor shall have a compressor, tubing and eductor pipe to air-lift a minimum of 500 gpm average flow from 500 feet depth. Sufficient tubing or drill stem shall be available to reach the total depth of the well. It is anticipated that air development will take place in a staged manner throughout the lower portion of the well, and thus may include considerable addition and subtraction of pipe.

C. Development shall be completed by pumping with the test pump prior to beginning the pump test. Development pumping shall continue until discharged water is clear and sand free (less than 5 ppm sand), as measured by the Engineer.

D. Upon completion of the development, all material shall be thoroughly cleaned from the inside of the casing and screen.

3.10 TEST PUMPING

A. Following completion of development operations, the well shall be allowed to recover for 24 hours, or less if approved by the Owner, prior to starting the pumping tests. Anticipated methods of aquifer testing include: (1) a step-test lasting approximately 3 hours, which will consist of pumping the well at various rates from approximately 200 gallons per minute (gpm) to the maximum capability of the pump or well; and (2) a constant-rate pumping test lasting a minimum of 24 hours. The constant rate test may be extended if needed to verify sustainable well yield. Standby time will not be paid for the recovery periods between tests or at the conclusion of test pumping. The Engineer shall be present at the start of test pumping.

B. The test pump shall be capable of delivering 1,500 gallons per minute from a pumping level of 600 feet. The Contractor shall furnish and install all necessary equipment for testing, including a discharge valve or throttle to control flow rate, orifices or flow meter for accurately measuring the discharge from the well, a nominal 1-inch pipe to the top of the pump to facilitate the installation and removal of electric-line water-level probes, and an air-line gage and compressed air source. The Contractor shall measure and record water level, pumping rate, and elapsed time as directed by the Engineer. The engineer shall be responsible for collecting any additional test data required by DEQ and providing all test data and reports, including a profile of water level recovery, test pump capacity and head characteristics, depth at which the test pump was positioned in the well, sand production data, and drawdown and recovery analysis, to DEQ and IDWR.

C. Fifteen (15) minutes after the start of the test pumping (at or above the design production rate), the sand content of the new well shall be measured using a Rossum Sand Tester manufactured by Roscoe Moss Company, or equivalent centrifugal sand separating meter to measure the rate of sand production during test pumping.

D. The Engineer shall be responsible for collecting water quality samples during the pumping test. The Engineer shall be responsible for determining whether (1) the well productivity is adequate to meet the project requirements and (2) water quality meets DEQ requirements.

E. The Contractor shall be responsible for providing power for the test pump. The Contractor shall provide a means for safe refueling during operations to prevent even brief shutdowns during the testing. Shutdowns before the end of the testing procedure in excess of ten (10) percent of the total time anticipated for this testing procedure may require the Contractor to allow the water level to recover to pre-pumping conditions and re-start the test, as determined by the Engineer.

3.11 PROTECTION OF WATER QUALITY

A. All water used for drilling and development operations shall be of potable quality.

B. The Contractor shall take all necessary precautions to prevent contamination of the water in the well by the introduction of any foreign substance, including contaminated water, gasoline, oil,

etc., and shall conform to all laws or regulations applicable to the protection of water quality. Facilities, equipment, and materials for disposing of the water produced during the development and testing of the well shall be provided by the Contractor. It is anticipated that clear water can be disposed of in the vicinity of the well site. Water leaving the well site shall be free of chemicals and seal materials. Water shall not be discharged to streams, ponds, or lakes without proper regulatory authorization.

C. All downhole materials (i.e., casing, pipe, pumps, sand filter pack, drilling tools, etc.) shall be disinfected with 500 ppm chlorine solution.

D. Upon completion of all well construction activities and removal of test pumping equipment, the Contractor shall disinfect the well using calcium hypochlorite. Sufficient calcium hypochlorite shall be added to give an average dose of 50 mg/l to the entire volume of water in the well, per ANSI/AWWA C654-03. All interior surfaces of the well above the static water level shall be wetted with calcium hypochlorite solution. The well shall be capped with a vented well cap or sanitary well seal following disinfection.

3.12 FINAL CLEANUP

A. After completion of all Work associated with this contract, the Contractor shall clean up the Work site and any property used by his operations to the satisfaction of the Owner. The Contractor shall remove and dispose of all excess materials resulting from his work, and shall repair, replace, or restore all property of any type or nature which has been moved, damaged, or altered in any way by his operations, to the satisfaction of the Owner. The Contractor shall return all landscape, roadway, and adjoining surfaces to their original condition and appearance as soon as reasonably feasible.

PART 4 -- MEASUREMENT AND PAYMENT

4.1 SCOPE

A. The quantities of work or material stated in unit price items of the Bid are supplied only to give an indication of the general scope of the Work; the Owner does not expressly or by implication agree that the actual amount of work or material will correspond therewith, and reserves the right after award to increase or decrease the quantity of any unit price item of the Work without a change in the unit price, and shall include the right to delete any Bid item in its entirety. Payment for materials and labor will be based on actual quantities furnished, installed, or constructed in accordance with the prices bid for unit price items.

B. The Owner may terminate Work on the project at any point if, in the Owner's judgment, the Owner's best interests are not served by continuation. Conditions which may lead to project termination include, but are not limited to, indications of low groundwater development potential as determined during drilling, geophysical logging, and testing. In such an event, the Contractor shall be paid for the value of Work completed at that time on the basis of the unit price and lump sum items listed on the Bid Schedule. In addition, if well construction is terminated by decision of the Owner, the Contractor may be required to properly abandon the well. Well abandonment procedures in excess of those explicitly required in these specifications must comply with current Idaho State regulations. Materials used in abandonment shall be paid at invoice cost plus 10 percent to cover handling. Payment for rig time shall be at the bid unit price.

C. No payment shall be made for tests of borehole plumbness and alignment; it shall be the responsibility of the Contractor to ensure that the hole remains within plumbness and alignment specifications.

D. No payment shall be made for drilling fluid materials used during normal drilling operations. All such costs shall be considered to be included in the unit prices listed on the Bid Schedule.

E. No payment shall be made for time or expenses incurred in the recovery or replacement of tools or equipment lost during the drilling phase or any other phase of the Work.

F. No payment shall be made for time, materials, or labor costs incurred during remedial measures or operations in the event the well is of unacceptable plumbness or alignment.

G. No payment shall be made for time, materials, or labor costs incurred in abandoning the well in the event the well is of unacceptable plumbness or alignment following remedial measures, or if lost tools or equipment cannot be recovered from the borehole. The costs incurred for construction of the abandoned well shall be applied to construction of a replacement well.

Monitoring Well

4.2 MOBILIZATION/DEMOBILIZATION (ITEM 1; LUMP SUM ITEM)

Measurement for payment for mobilization/demobilization to and from the work site will be based upon completion of the Work as a lump sum unit. The lump sum price listed on the Bid Schedule shall be full compensation for the moving in of rigs, pumps, equipment, power, labor, fuel, tools, and incidentals necessary to do the Work, and moving out of all such equipment, materials, tools, and incidentals, and well disinfection and final site cleanup upon completion of the Work. For purposes of partial payment, the mobilization portion of this bid item shall be considered as 60% of the total lump sum.

4.3 DRILL MINIMUM 10-INCH DIAMETER BOREHOLE (ITEM 2; PRICES BASED ON LINEAR MEASUREMENT)

Measurement and payment for drilling the borehole will be based upon the number of vertical linear footage drilled below ground surface in accordance with these Contract Documents. Payment for exploration drilling shall constitute full compensation for labor, fuel, bits, pipe, drive shoes, welding, drilling fluids, equipment, and incidentals necessary to drill the exploration borehole.

4.4 DRILL MINIMUM 8-INCH DIAMETER BOREHOLE (ITEM 3; PRICES BASED ON LINEAR MEASUREMENT)

Measurement and payment for drilling the borehole will be based upon the number of vertical linear footage drilled below ground surface in accordance with these Contract Documents. Payment for exploration drilling shall constitute full compensation for labor, fuel, bits, pipe, drive shoes, welding, drilling fluids, equipment, and incidentals necessary to drill the exploration borehole.

4.5 DRILL MINIMUM 6-INCH DIAMETER BOREHOLE (ITEM 4; PRICES BASED ON LINEAR MEASUREMENT)

Measurement and payment for drilling the borehole will be based upon the number of vertical linear footage drilled below ground surface in accordance with these Contract Documents. Payment for exploration drilling shall constitute full compensation for labor, fuel, bits, pipe, drive shoes, welding, drilling fluids, equipment, and incidentals necessary to drill the exploration borehole.

4.6 GEOPHYSICAL LOGGING (ITEM 5; LUMP SUM ITEM)

A. Measurement for payment for geophysical logging will be based upon completion of the entire work as a lump sum unit, in accordance with these contract documents. Payment for geophysical logging shall constitute full compensation for labor, equipment, and incidentals necessary to perform the logging.

B. No rig or standby time will be paid to the Contractor during the time that a logging service is being brought to the site, or during the time that the logs are being run, or during a 24-hour period following completion of logging during which an exact determination of the final well design will be made by the Engineer.

4.7 ABANDON/GROUT (ITEM 6; PRICES BASED ON LINEAR MEASUREMENT)

Measurement for abandonment/grouting will be based upon the number of vertical linear footage actually abandoned, in accordance with these Contract Documents. Payment for abandonment/grouting shall constitute full compensation for labor, equipment, cement, bentonite, rental of any equipment and incidentals necessary to perform the task.

4.8 FURNISH AND INSTALL 5-INCH PVC WELL CASING (ITEM 7; PRICES BASED ON LINEAR MEASUREMENT)

Measurement for payment for the 5-inch PVC well casing will be based upon the number of linear feet of such pipe actually installed in the borehole in accordance with these Contract Documents. Payment for the 5-inch casing shall constitute full compensation for materials, transportation, labor, fuel, equipment, centralizers, welding materials, and incidentals necessary to furnish and install the well casing.

4.9 FURNISH AND INSTALL 5-INCH PVC WELL SCREEN (ITEM 8; PRICES BASED ON LINEAR MEASUREMENT)

Measurement for payment for the 5-inch PVC well screen will be based upon the number of linear feet of such screen actually installed in the borehole in accordance with these Contract Documents. Payment for the 5-inch screen shall constitute full compensation for materials, transportation, labor, fuel, equipment, centralizers, welding materials, and incidentals necessary to furnish and install the well screen.

4.10 FURNISH AND INSTALL SAND FILTER PACK (ITEM 9; PRICES BASED ON 100-LB BAG MEASUREMENT)

Measurement and payment for furnishing and installing the sand filter pack will be based on the number of equivalent 100-lb bags of filter pack actually installed in the well in accordance with

these Contract Documents. Payment for filter pack shall constitute full compensations for materials, transportation, labor, equipment, and incidentals necessary to furnish and install the filter pack.

4.11 FURNISH AND INSTALL ANNULAR WELL SEAL (ITEM 10; PRICES BASED ON LINEAR MEASUREMENT)

Measurement and payment for furnishing and installing the well seal will be based upon linear feet of well seal installed in the borehole. Payment for the well seal shall constitute full compensation for bentonite, cement, materials, transportation, labor, equipment, and incidentals necessary to furnish and install the seal.

4.12 WELL DEVELOPMENT (ITEM 11; PRICES BASED UPON TIME, HOURS)

A. Measurement for payment for well development will be based on the actual number of hours of development operations. Payment will be made at the unit price listed in the Bid Schedule.

B. No payment shall be made for equipment acquisition, set-up, or installation, or for recovery periods required by the Owner to ensure thorough well development.

C. Payment for chemicals as may be required by the Owner to ensure thorough well development shall be reimbursed for the cost of the chemicals actually used at invoice cost plus 10 percent for handling.

4.13 RIG TIME (ITEM 12; PRICES BASED UPON TIME, HOURS)

A. Measurement and payment for rig time will be based on the unit price listed on the Bid Schedule. Payment for rig time for additional work specifically directed by the Owner not otherwise covered in these Contract Documents will be based on the actual number of hours of work done and shall be full compensation for rig, fuel, labor, equipment, and materials normally associated with Contractor's drilling activities. Additional materials, which may be required by the Owner, shall be paid at the Contractor's invoice cost plus 10 percent for handling.

Alternate Bid Schedule (Monitoring Well)

4.14 FURNISH AND INSTALL 8-INCH STEEL SURFACE CASING (ITEM 13; PRICES BASED ON LINEAR MEASUREMENT)

Measurement for payment for the 8-inch steel surface casing will be based upon the number of linear feet of such pipe actually installed in the borehole in accordance with these Contract Documents. Payment for the 8-inch casing shall constitute full compensation for materials, transportation, labor, fuel, equipment, centralizers, welding materials, and incidentals necessary to furnish and install the well casing.

4.15 FURNISH AND INSTALL 8-INCH DRIVE SHOE (ITEM 14; LUMP SUM ITEM)

Measurement for payment for the 8-inch drive shoe will be based upon completion of the entire work as a lump sum unit, in accordance with these contract documents. Payment for the drive shoe shall constitute full compensation for labor, equipment, and incidentals necessary to perform the task.

4.16 DRILL MINIMUM 8-INCH DIAMETER BOREHOLE; ROCK DRILLING (ITEM 15; PRICES BASED ON HOURLY RATE)

Measurement and payment for drilling an 8-inch borehole in hard rock will be based upon the number of vertical linear footage drilled in accordance with these Contract Documents. Payment for rock drilling shall constitute full compensation for labor, fuel, bits, pipe, drive shoes, welding, drilling fluids, equipment, and incidentals necessary to drill the borehole.

Production Well

4.17 MOBILIZATION/DEMOBILIZATION (ITEM 1; LUMP SUM ITEM)

Measurement for payment for mobilization/demobilization to and from the work site will be based upon completion of the Work as a lump sum unit. The lump sum price listed on the Bid Schedule shall be full compensation for the moving in of rigs, pumps, equipment, power, labor, fuel, tools, and incidentals necessary to do the Work, and moving out of all such equipment, materials, tools, and incidentals, and well disinfection and final site cleanup upon completion of the Work. For purposes of partial payment, the mobilization portion of this bid item shall be considered as 60% of the total lump sum.

4.18 DRILL MINIMUM 20-INCH DIAMETER BOREHOLE FOR 16-INCH CASING (ITEM 2; PRICES BASED ON LINEAR MEASUREMENT)

Measurement and payment for drilling the borehole will be based upon the number of vertical linear footage drilled below ground surface in accordance with these Contract Documents. Payment for drilling shall constitute full compensation for labor, fuel, bits, pipe, drive shoes, welding, drilling fluids, equipment, and incidentals necessary to drill the exploration borehole.

4.19 FURNISH AND INSTALL 16-INCH WELL CASING (ITEM 3; PRICES BASED ON LINEAR MEASUREMENT)

Measurement for payment for the nominal 16-inch steel well casing will be based upon the number of linear feet of such pipe actually installed in the borehole in accordance with these Contract Documents. Payment for the 16-inch casing shall constitute full compensation for materials, transportation, labor, fuel, equipment, centralizers, welding materials, and incidentals necessary to furnish and install the well casing.

4.20 FURNISH AND INSTALL ANNULAR WELL SEAL (ITEM 4; PRICES BASED ON LINEAR MEASUREMENT)

Measurement and payment for furnishing and installing the well seal will be based upon linear feet of well seal installed in the borehole. Payment for the well seal shall constitute full compensation for bentonite, cement, materials, transportation, labor, equipment, and incidentals necessary to furnish and install the seal.

4.21 DRILL 15-INCH NOMINAL DIAMETER BOREHOLE (ITEM 5; PRICES BASED ON LINEAR MEASUREMENT)

Measurement and payment for drilling the borehole will be based upon the number of vertical linear footage drilled below ground surface in accordance with these Contract Documents.

Payment for drilling shall constitute full compensation for labor, fuel, bits, pipe, drive shoes, welding, drilling fluids, equipment, and incidentals necessary to drill the exploration borehole.

4.22 GEOPHYSICAL LOGGING (ITEM 6; LUMP SUM ITEM)

A. Measurement for payment for geophysical logging will be based upon completion of the entire work as a lump sum unit, in accordance with these contract documents. Payment for geophysical logging shall constitute full compensation for labor, equipment, and incidentals necessary to perform the logging.

B. No rig or standby time will be paid to the Contractor during the time that a logging service is being brought to the site, or during the time that the logs are being run, or during a 24-hour period following completion of logging during which an exact determination of the final well design will be made by the Engineer.

4.23 FURNISH AND INSTALL 8-INCH STEEL WELL CASING (ITEM 7; PRICES BASED ON LINEAR MEASUREMENT)

Measurement for payment for the 8-inch steel well casing will be based upon the number of linear feet of such pipe actually installed in the borehole in accordance with these Contract Documents. Payment for the 8-inch casing shall constitute full compensation for materials, transportation, labor, fuel, equipment, centralizers, welding materials, and incidentals necessary to furnish and install the well casing.

4.24 FURNISH AND INSTALL 8-INCH STAINLESS STEEL WELL SCREEN (ITEM 8; PRICES BASED ON LINEAR MEASUREMENT)

Measurement for payment for the 8-inch stainless steel well screen will be based upon the number of linear feet of such screen actually installed in the borehole in accordance with these Contract Documents. Payment for the 8-inch screen shall constitute full compensation for materials, transportation, labor, fuel, equipment, centralizers, welding materials, and incidentals necessary to furnish and install the well screen.

4.25 FURNISH AND INSTALL SAND FILTER PACK (ITEM 9; PRICES BASED ON 100-LB BAG MEASUREMENT)

Measurement and payment for furnishing and installing the sand filter pack will be based on the number of equivalent 100-lb bags of filter pack actually installed in the well in accordance with these Contract Documents. Payment for filter pack shall constitute full compensations for materials, transportation, labor, equipment, and incidentals necessary to furnish and install the filter pack.

4.26 FURNISH AND INSTALL SLIP PACKER OR REDUCER (ITEM 10; PRICE BASED ON LUMP SUM)

Measurement and payment for furnishing and installing the slip packer between the 16-inch and 8-inch or 10-inch casing strings shall be based upon completion of the entire Work as a lump sum unit, all in accordance with the requirements of these Contract Documents. Payment for the slip packer shall constitute full compensation for materials, transportation, labor, equipment, and incidentals necessary to furnish and install the packer.

4.27 WELL DEVELOPMENT (ITEM 11; PRICES BASED UPON TIME, HOURS)

A. Measurement for payment for well development will be based on the actual number of hours of development operations. Payment will be made at the unit price listed in the Bid Schedule.

B. No payment shall be made for equipment acquisition, set-up, or installation, or for recovery periods required by the Owner to ensure thorough well development.

C. Payment for chemicals as may be required by the Owner to ensure thorough well development shall be reimbursed for the cost of the chemicals actually used at invoice cost plus 10 percent for handling.

4.28 FURNISH, INSTALL, AND REMOVE TEST PUMP AND RELATED EQUIPMENT (ITEM 12; LUMP SUM ITEM)

Measurement for payment for test pump installation will be based on upon completion of the entire work as a lump sum unit, in accordance with these contract documents. Payment for test pump installation and removal shall constitute full compensation for labor, equipment, and incidentals necessary to perform the task.

4.29 TEST PUMPING (ITEM 13; PRICES BASED UPON TIME, HOURS)

Measurement and payment for test pumping will be based on the actual number of hours of pumping operations. Payment for test pumping will be made at the unit price listed in the Bid Schedule, and shall constitute full compensation for all labor, fuel, equipment, and materials

4.30 RIG TIME (ITEM 12; PRICES BASED UPON TIME, HOURS)

Measurement and payment for rig time will be based on the unit price listed on the Bid Schedule. Payment for rig time for additional work specifically directed by the Owner not otherwise covered in these Contract Documents will be based on the actual number of hours of work done and shall be full compensation for rig, fuel, labor, equipment, and materials normally associated with Contractor's drilling activities. Additional materials, which may be required by the Owner, shall be paid at the Contractor's invoice cost plus 10 percent for handling.

Alternate Bid Schedule (Production Well)

4.31 FURNISH AND INSTALL 20-INCH WELL CASING (ITEM 15; PRICES BASED ON LINEAR MEASUREMENT)

Measurement for payment for the 20-inch steel well casing will be based upon the number of linear feet of such pipe actually installed in the borehole in accordance with these Contract Documents. Payment for the 20-inch casing shall constitute full compensation for materials, transportation, labor, fuel, equipment, centralizers, welding materials, and incidentals necessary to furnish and install the well casing.

4.32 ZONE PUMPING TESTS (ITEM 16; EACH)

A. Measurement for payment for zone tests shall be based upon completion of each test as a lump sum unit, in accordance with these contract documents. Payment for zone tests shall constitute

full compensation for labor, equipment, sand, bentonite, rental of casing and well screen, test pump installation/removal, and incidentals necessary to perform a zone test.

B. No rig or standby time will paid to the Contractor during the time that zone tests are being set up or run, or during a 72-hour period following completion of the last zone test when laboratory tests are being run and an exact determination of final well design will be made by the Engineer. The 72-hour period shall not include weekends, holidays, or any other days that are non-business days for the analytical laboratory.

4.33 FURNISH AND INSTALL 10-INCH STEEL WELL CASING (ITEM 17; PRICES BASED ON LINEAR MEASUREMENT)

Measurement for payment for the 10-inch steel well casing will be based upon the number of linear feet of such pipe actually installed in the borehole in accordance with these Contract Documents. Payment for the 10-inch casing shall constitute full compensation for materials, transportation, labor, fuel, equipment, centralizers, welding materials, and incidentals necessary to furnish and install the well casing.

4.34 FURNISH AND INSTALL 10-INCH STAINLESS STEEL WELL SCREEN (ITEM 18; PRICES BASED ON LINEAR MEASUREMENT)

Measurement for payment for the 10-inch stainless steel well screen will be based upon the number of linear feet of such screen actually installed in the borehole in accordance with these Contract Documents. Payment for the 10-inch screen shall constitute full compensation for materials, transportation, labor, fuel, equipment, centralizers, welding materials, and incidentals necessary to furnish and install the well screen.

- END OF WELL SPEC -

BID SCHEDULE OF ITEMS AND PRICES
MAYFIELD SPRINGS MONITORING WELL

The Bidder proposes the following schedule of prices for drilling, construction, development, and testing of one monitoring well for Mayfield Springs in accordance with the well specifications. The quantities of work or material stated in unit price items of the bid are supplied only to give an indication of the general scope of the work. Payment for materials and labor will be based on actual quantities furnished, installed, or constructed in accordance with the prices bid for unit price items. The bidder is solely responsible for completing all spaces below. The bidder is responsible for the inclusion of all overhead and profit costs within each item submitted.

Base Bid Items

Item	Description	Estimated Quantity	Unit	Unit Price	Total Amount
1	Mobilization and demobilization	1	lump sum	$_____	$_____
2	Drill minimum 10-inch diameter borehole	40	linear foot	$_____	$_____
3	Drill minimum 8-inch diameter borehole	510	linear foot	$_____	$_____
4	Drill minimum 6-inch diameter borehole	450	linear foot	$_____	$_____
5	Conduct borehole geophysics	1	Lump sum	$_____	$_____
6	Abandon/grout to a depth of 550 feet	450	Linear foot	$_____	$_____
7	Furnish and install 5-inch I.D. PVC well casing	510	linear foot	$_____	$_____
8	Furnish and install 5-inch I.D. PVC well screen	40	linear foot	$_____	$_____
9	Furnish and install Colorado silica sand filter pack	70	100-lb Bag	$_____	$_____
10	Furnish and install annular well seal	480	linear foot	$_____	$_____

11	Well development	8	hours	$_____	$_____
12	Rig time	2	hours	$_____	$_____

Base Bid Total **$**_____

Alternate Bid Items

13	Furnish, install and seal 8-inch surface casing	250	linear foot	$_____	$_____
14	Furnish and install 8-inch drive shoe	250	lump sum	$_____	$_____
15	8-inch rock drilling	50	hours	$_____	$_____

Alternate Bid Total **$**_____

Submitted by: _____
Signature

_____
Title

_____
Company

_____
Address

_____ _____
Idaho Well Contractors License Telephone Number

BID SCHEDULE OF ITEMS AND PRICES
PUBLIC WATER SUPPLY WELL
MAYFIELD SPRINGS WELL

The Bidder proposes the following schedule of prices for drilling, construction, development, and testing of one public water system well for Mayfield Springs in accordance with the well specifications. The quantities of work or material stated in unit price items of the bid are supplied only to give an indication of the general scope of the work. Payment for materials and labor will be based on actual quantities furnished, installed, or constructed in accordance with the prices bid for unit price items. The bidder is solely responsible for completing all spaces below. The bidder is responsible for the inclusion of all overhead and profit costs within each item submitted.

Base Bid Schedule

Item	Description	Estimated Quantity	Unit	Unit Price	Total Amount
1	Mobilization and demobilization	1	lump sum	$_____	$_____
2	Drill for 16-inch O.D. well casing	650	linear foot	$_____	$_____
3	Furnish and install 16-inch O.D. well casing	650	linear foot	$_____	$_____
4	Furnish and install annular well seal	650	linear foot	$_____	$_____
5	Drill below 16-inch well casing	300	linear foot	$_____	$_____
6	Geophysical Logging	1	lump sum	$_____	$_____
7	Furnish and install 8-inch I.D. blank mild steel casing	100	linear foot	$_____	$_____
8	Furnish and install 8-inch I.D. well screen	200	linear foot	$_____	$_____
9	Furnish and install sand filter pack	300	100-lb sack	$_____	$_____
10	Furnish and install slip packer or reducer	1	lump sum	$_____	$_____

11	Well development	8	hours	$_____	$_____
12	Furnish, install, and remove test pump and related equipment	1	lump sum	$_____	$_____
13	Test pumping	27	hours	$_____	$_____
14	Rig time	2	hours	$_____	$_____
	Total				**$**_____

Alternate Bid Schedule

15	Drill for, furnish, and install 20-inch surface casing	250	linear foot	$_____	$_____
16	Zone Pumping Tests	3	Per test	$_____	$_____
17	Furnish and install 10-inch I.D. blank mild steel casing	100	linear foot	$_____	$_____
18	Furnish and install 10-inch I.D. well screen	200	linear foot	$_____	$_____

Submitted by: _____
Signature

_____
Title

_____
Company

_____
Address

_____ _____
Idaho Well Contractors License Telephone Number

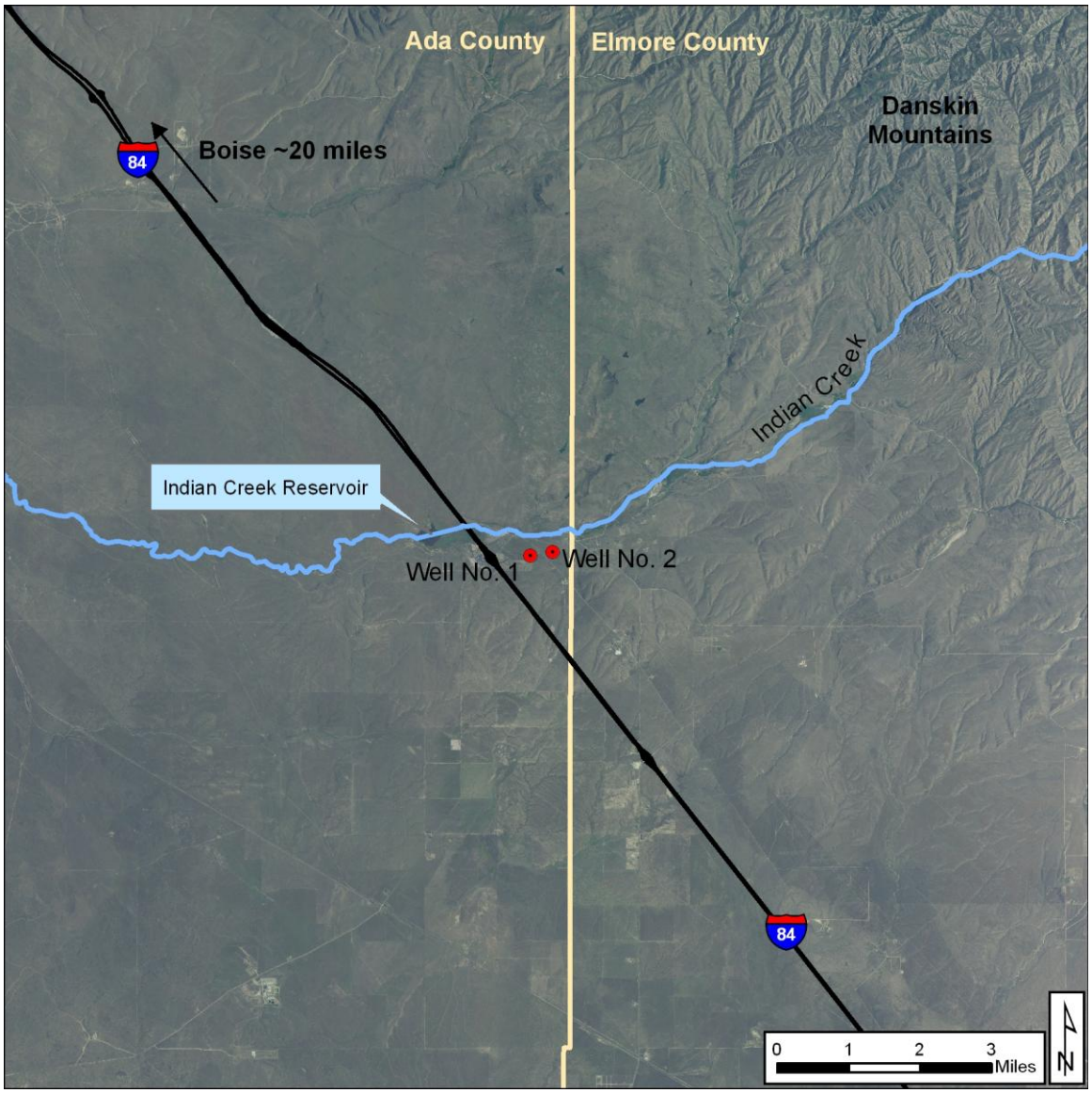
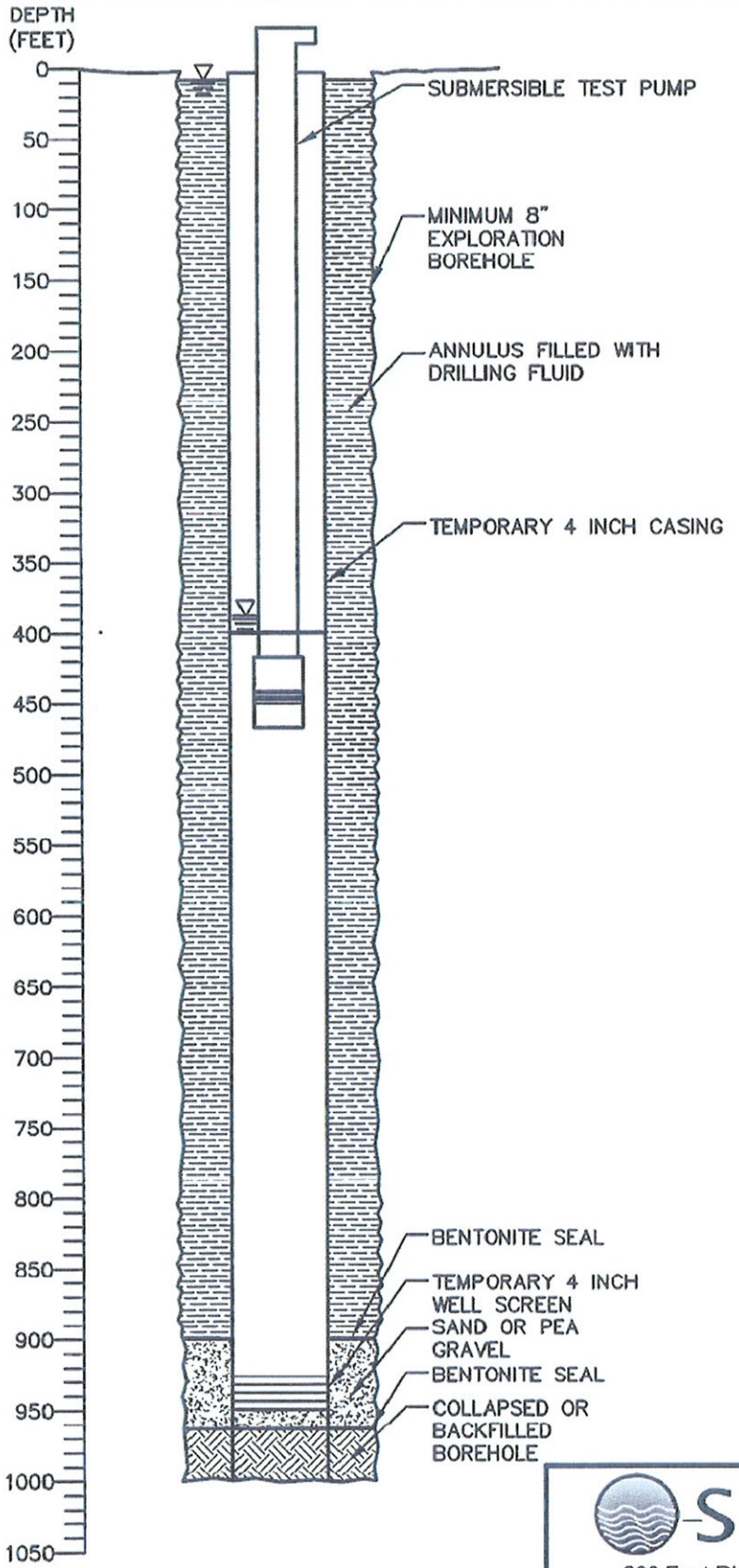


Figure 1. Map of Proposed Well Site and Vicinity

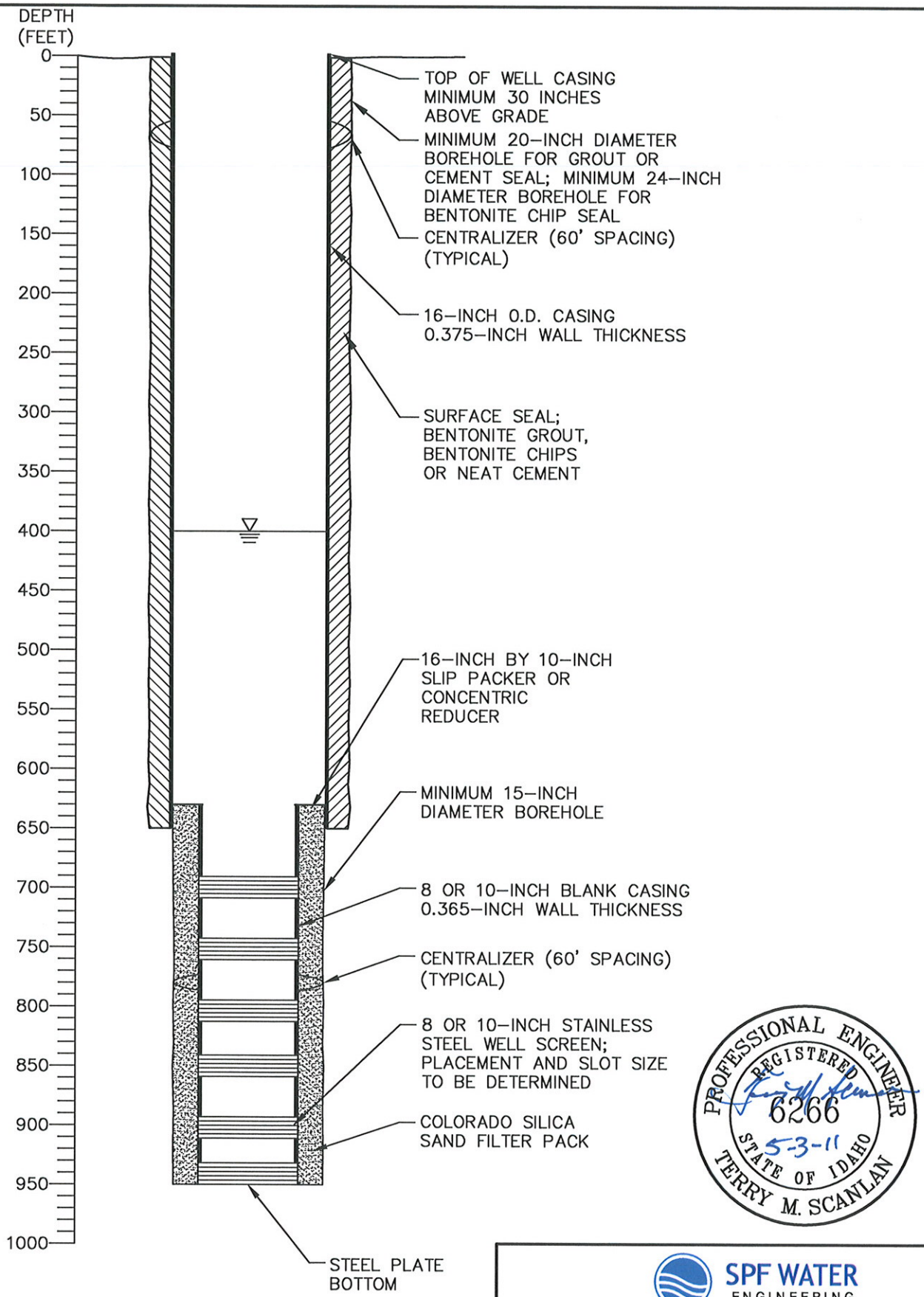


PROFESSIONAL ENGINEER
REGISTERED
6266
3-10-11
STATE OF IDAHO
TERRY M. SCANLAN

SPF Water Engineering, LLC
water resource consultants
600 East River Park Lane, Suite 105, Boise, Idaho 83706
Tel (208) 383-4140 Fax (208) 383-4156

MAYFIELD SPRINGS WELLS
BORING AND ZONE TEST CONCEPT

SCALE: NTS	FIGURE 1	PROJ. #329.0050
DRAWN BY: SDC		



SPF WATER
ENGINEERING
300 East Mallard Drive, Suite 350
Boise, Idaho 83706
Tel (208) 383-4140 Fax (208) 383-4156

MAYFIELD SPRINGS WELLS
CONCEPTUAL DESIGN

SCALE: NTS	FIGURE 2	PROJ. #329.0050
DRAWN BY: SCB		

APPENDIX G
DEQ CHECKLISTS

GENERAL PLAN AND SPECIFICATION REVIEW CHECKLIST

I. GENERAL INFORMATION

Requirement for Plan and Specification Review

Idaho Code § 39-118 requires that public drinking water supplies as defined in Idaho Code § 39-103, public drinking water systems as defined in IDAPA 58.01.08.003, and public wastewater systems as defined in and IDAPA 58.01.16.010 must be designed to Department of Environmental Quality (DEQ) facility and design standards and must be approved by DEQ.

About this checklist

This checklist is offered as assistance for both designers and reviewers. Using it is voluntary. Many designers use checklists to ensure important but non-routine considerations are not overlooked and the application package is complete. For reviewers, completed checklists often expedite plan and specification review.

This and other design checklists are available at any DEQ regional office or online at http://www.deq.idaho.gov/water/assist_business/engineers/checklists.cfm.
All of the other specialized checklists should be accompanied by this GENERAL PLAN AND SPECIFICATION REVIEW CHECKLIST, because the general checklist provides complete information about the project that is not provided on the specialized checklists.

Where to add justification/rationale

These are some options for where to provide justification/rationale:

- ***In a cover letter –strongly preferred.***
- Typed into the checklist electronic form. (Each checklist item includes a form field that expands as you type and will make **your text** bold.) This is preferred over handwriting.
- On a separate sheet. This is preferred over handwriting in the row or in the margin.

Number of sets to submit

- For the first submittal and early review stages, one complete set of stamped plans and specifications is sufficient.
- For final review stages, submit one set for DEQ files plus any additional sets for which DEQ stamped approval is required by the developer, designer, municipality, etc.

II. GENERAL PROJECT INFORMATION

1. Project Name: MAYFIELD SPRINGS WELLS NO. 1 AND NO. 2

2. Former Name (if any):

3. Location — Major Cross Roads: Interstate 84 (on Ada/Elmore County line)

4. PLS — Section: 28 Township: 1N Range: 4E

5. City: Mountain Home County: Ada

6. Brief Project Description: Planned Community situated on approximately 762 acres

7. Project includes modifications to, or plans for a new:

   a. Public Drinking Water System ☒

   b. Public Sewer System ☐

8. Design Engineer: Kevin Boggs PE # 1085

   Firm: SPF Water Engineering

   Address: 300 East Mallard Drive, Suite 350

   City: Boise State ID ZIP 83706

   Phone: 208-383-4140 Fax:

   E-mail Address: TScanlan@spfwater.com

9. Project Owner or Developer: (legal name of owner or authorized representative)

   Name: Greg Johnson

   Firm: West Park Company, Inc.

   Address: P.O. Box 344

   City: Meridian State: ID ZIP: 83680

   E-mail Address: marilea@westparkco.com Phone (208) 888-9946

10. Name of responsible charge or subcontractor who will operate and maintain completed systems: TBD once actual water system is developed (a new submitted will be provided to DEQ at that time) License #

    Name:

    Firm:

    Address:

    City: State: ZIP:

E-mail Address _____

III. SUBMITTALS AND CERTIFICATIONS

Project review time may be extended if the suggested submittals and certifications have not been included.

11. Submittals:

a. All pertinent DEQ checklists included? ☒

b. City Council or County approval attached? ☐

c. If a project will be platted, the submittal must include either the preliminary plat or, if available, the preliminary version of the final plat ☐

d. If the project will be part of an existing water or sewer system, certifications that the existing systems will not be overloaded are provided: (check all that apply)

☐ Calculations from a registered professional engineer

☐ Letter(s) of certification from the owner(s)

e. Engineering inspection and as-built certification contract is attached. (This contract must cover pressurized irrigation systems if part of the project.) ☒

Inspector's name and firm if different from design engineering firm

Name Kevin Boggs Firm SPF Water Engineering

12. Certifications:

a. The attached plans represent the final, approved set from the utility ☐

b. The Dig-Line telephone number has been provided to owners and contractors ☒

c. If the project will generate dewatering or other construction where wastewater discharges to surface waters, a short term activity exemption or equivalent has been obtained as per IDAPA 58.01.02.080.02 ☐

i. DEQ representative issuing exemption:

d. If the project contains both water and sewer mains and those services are provided by different utilities, contact DEQ ☐

i. Water and sewer are either illustrated on the same plans or prior approval was received from DEQ: Prior Approval ☐ Same Plans ☐

e. All other easements, permits, and rights-of-way have been obtained ☒

IV. PLANS & SPECIFICATIONS

13. Plans should have:

a.	Cover sheet with Table of Contents for plan set	☐
b.	Clear vicinity map or written directions to location of project	☐
c.	North arrows	☐
d.	Bound and numbered pages	☐
e.	Index sheet showing overall layout of plan and profile sheets	☐
f.	Plans (all sheets) and first page of specifications must be Signed ☒ Dated ☒ Stamped ☒	

14. Tables of contents are included for engineering reports and bound specifications (CEP*): ☒

15. Identify the standard specifications used for this project (may be more than one) (CEP*):

☒	*Idaho Standards for Public Works Construction*	Publication date	2008
☐	Municipality _____	Publication date	_____
☐	Utility _____	Publication date	_____
☐	Other _____	Publication date	_____

* (CEP) Common engineering practice

V. PRESSURIZED IRRIGATION

This section contains required items for projects that include pressurized irrigation and is used to verify separation distances from drinking water distribution systems and for cross connection control.

16. Plans for pressurized irrigation systems are provided ☐

17. If the potable water system supplies a pressure irrigation system, specify a reduced pressure back-flow prevention device that is on the *Drinking Water List of Approved Back-flow Prevention Devices* ☐

18. Record drawings/as-built certification will show location of pressurized irrigation system ☐

VI. NOTE ON RULES AND STANDARDS

This checklist addresses the majority of common items from the Idaho Rules for Public Drinking Water Systems and Wastewater Rules. However, this checklist is not all-inclusive and additional project-specific checklists are usually submitted along with this General Plan and Specification Review Checklist. The DEQ offices may have additional written information that will assist in the design/approval process.

This checklist is not intended to address requirements of other regulating entities such as the Public Utility Commission or the Idaho Division of Building Safety, Plumbing Bureau.

VII. Geologist's DESIGN ENGINEER'S CERTIFICATION

All of the items indicated on the above checklist are accurately reflected in the attached Plans and Specifications.

Design ~~Engineer~~ Geologist's Signature, Seal, and Date:

DRINKING WATER WELL CONSTRUCTION DESIGN CHECKLIST

Current Project Name: MAYFIELD SPRINGS WELLS NO. 1 AND NO. 2

Former Project Name (if any):

I. GENERAL INFORMATION

Requirement for Plan and Specification Review

Idaho Code § 39-118 requires that public drinking water supplies as defined in Idaho Code § 39-103 and public drinking water systems as defined in IDAPA 58.01.08.003 must be designed to Department of Environmental Quality (DEQ) facility and design standards and must be approved by DEQ.

About this checklist

This checklist is offered as assistance for both designers and reviewers. Using it is voluntary. Many designers use checklists to ensure important but non-routine considerations are not overlooked and the application package is complete. For reviewers, completed checklists often expedite plan and specification review.

This and other drinking water design checklists are available at any DEQ regional office or online at http://www.deq.idaho.gov/water/assist_business/engineers/checklists.cfm . All of the checklists should be accompanied by a GENERAL PLAN AND SPECIFICATION REVIEW CHECKLIST, because the general checklist provides complete information about the project not provided on the specialized checklists.

For each item required by rule, relevant rule citations are provided. Numbers in parentheses with "DW Rules" refer to applicable sections of the current Idaho Rules for Public Drinking Water Systems, IDAPA 58.01.08, http://adm.idaho.gov/adminrules/rules/idapa58/0108.pdf. For any required items checked No or NA, please provide justification/rationale – this helps the reviewer to quickly understand your entire submittal.

For each item *not* required by rule, the row is gray-shaded. Most of these are based on either common engineering practice (CEP) or *Recommended Standards for Water Works* (RSWW – also known as "Ten States Standards"). Providing justification/rationale if any of these items are checked No or NA also helps the review process.

This is a checklist of major items only. Full compliance with the Idaho Rules for Public Drinking Water Systems, IDAPA 58.01.08, is required.

Where to add justification/rationale

These are some options for where to provide justification/rationale:

- ***In a cover letter –strongly preferred.***
- Typed into the checklist electronic form. (Each checklist item includes a form field that expands as you type and will make **your text** bold.) This is preferred over handwriting.
- On a separate sheet. This is preferred over handwriting in the row or in the margin.

Number of sets to submit

- For the first submittal and early review stages, one complete set of stamped plans and specifications is sufficient.
- For final review stages, submit one set for DEQ files plus any additional sets for which DEQ stamped approval is required by the developer, designer, municipality, etc.

II. ITEMS TO INCLUDE IN A COMPLETE SUBMITTAL

Checklist Item	Yes	No	NA
1. A general checklist – the **GENERAL PLAN AND SPECIFICATION REVIEW CHECKLIST** – is also being submitted.	☒	☐	☐

III. ADMINISTRATIVE REQUIREMENTS

Checklist Item	Yes	No	NA
2. A preliminary engineering report has been submitted to and approved by DEQ. Some DEQ regional offices may allow well construction plans and specifications to be submitted concurrently with the preliminary engineering report. Contact the regional office in your area. (DW Rules 503.01) Submitting concurrently	☐	☐	☐
3. Prior to drilling, the well site must be approved in writing by DEQ. A well site evaluation shall be submitted with the preliminary engineering report. (DW Rules 510.01)	☒	☐	☐
4. Minimum separation distances from property lines, non-potable water systems, surface waters, and other sources of contamination are provided. (DW Rules 510.02 and 900.01)	☒	☐	☐
5. Provisions have been made to have required inspections made by an Idaho licensed professional engineer or Idaho licensed professional geologist to the extent required to confirm material compliance with the approved plans. (A copy of a signed inspection contract is preferred.) (DW Rules 504.12, 503.02)	☒	☐	☐
6. Provision has been made to ensure compliance with IDWR drilling permit requirements. (DW Rules 510.03)	☒	☐	☐

IV. MATERIAL AND EQUIPMENT

Checklist Item	Yes	No	NA
7. Equipment and materials, including drilling fluids, used in well construction conform to applicable American Water Works Association (AWWA) standards and are certified by an accredited ANSI certification body to meet applicable ANSI/NSF standards. (DW Rules 501.01)	☒	☐	☐
8. Specifications for material transportation, handling, storage, and protection are included. (CEP)	☐	☒	☐

V. GEOLOGIC SAMPLING

Checklist Item	Yes	No	NA
9. Geological data shall be collected at each pronounced change in formation and recorded in the driller's log. (DW Rules 510.03.d)	☒	☐	☐
10. Geophysical logs are recorded and maintained (resistivity, gamma, sonic, etc.) (CEP)	☒	☐	☐

VI. DRILLING

Checklist Item	Yes	No	NA
11. ANSI/NSF 60 certified drilling fluid or compound product name(s) or specifications is provided. (DW Rules 501.01)	☒	☐	☐
12. The submittal provides a separate specification section for each type of acceptable drilling method. (CEP)	☐	☒	☐
13. Locations and approximate volume of drilling mud losses should be recorded. (CEP)	☒	☐	☐

NOTE: The Idaho Department of Water Resources (IDWR) requires that all tools, bits, pipe, and other materials to be inserted in the borehole and completed wells be disinfected with chlorine compounds or other methods. (IDAPA 37.03.09.025)

VII. CASING

NOTE: To ensure structural stability, the engineer or geologist should be present during placement of the casing and any required packing material.

Checklist Item	Yes	No	NA
14. Thickness and weight for steel pipe meets well casing standards (i.e., 8-inch casing must be at least 0.322 inches thick). (DW Rules 900.02)	☒	☐	☐
15. Plastic well casing must be certified per ANSI/NSF Standard 61 and ASTM F480-02 and be approved for site specific use by DEQ. (DW Rules 510.03.a)	☐	☐	☒
16. Plumbness and alignment test methods and allowable tolerance are clearly stated in the specifications. (DW Rules 510.03.c)	☒	☐	☐
17. Casings extend a minimum of 18 inches above the final ground surface and, if the well is located within a pump house, 12 inches above the pump house floor. Casing is provided with a sanitary cap. (DW Rules 511.06.a,b)	☒	☐	☐

18. The well is vented, unless it is demonstrated that the drawdown under maximum pumping conditions will not exceed 10 feet, with the open end of the vent screened and terminated downward at least 18 inches above the final ground surface. (DW Rules 511.05) Will be submitted with the pump system submittal at a future date.	☐	☐	☒
19. For steel casing, welding procedures and specifications should be included. (CEP)	☒	☐	☐
20. Instructions for removal of temporary casing to prevent separation during extraction should be included. (CEP)	☐	☐	☒
21. Depth of penetration of the well casing into identified confining layer is clearly shown in the plans and specifications (CEP)	☐	☐	☒
22. If drive shoes are used to seal casing, a description of the method for testing the shoe seal should be included. (CEP)	☐	☐	☒

NOTE: For steel casing, IDWR requires that welds penetrate the full thickness of the casing wall. (IDAPA 37.03.09.025)

VIII. SEALS

Checklist Item	Yes	No	NA
23. Minimum requirements for annular seal depth and thickness are specified (DW Rules 510.03.b and g)	☒	☐	☐
24. Specifications for cement, grout, bentonite, or concrete installation are included as required (DW Rules 510.03.g)	☒	☐	☐
25. Testing method for well seal should be specified (regular tagging of top seal, volume calculations, bail down/fill up, other). (CEP)	☒	☐	☐
26. Arrangements made for the consultant to be present and IDWR contacted prior to seal placement. (contact IDWR)	☒	☐	☐
27. Seal to be poured ☐ or pumped☒. (check one that applies)	☒	☐	☐
28. Placement of seal should be slow and continuous. (CEP)	☒	☐	☐
29. Volume and type of material should be recorded and checked against engineering specifications every 5 to 10 feet. (CEP)	☒	☐	☐
30. Minimum 50% excess seal material should be on site. (CEP)	☒	☐	☐
31. Temporary casing and/or tremie should be withdrawn as the seal is placed. (CEP)	☒	☐	☐

32. Intermediate seals should be installed to separate aquifers that are or may be contaminated or that yield undesirable water. (RSWW 3.2.5.2.b)	☐	☒	☐
33. Casing should be provided with sufficient guides welded to the casing to permit unobstructed flow and uniform thickness of grout. (RSWW 3.2.5.9.e) Placing guides at least every 60 feet is recommended. (CEP)	☒	☐	☐
34. Specifications state that after cement grouting is applied, work on the well should be discontinued until the cement or concrete grout has properly set. (RSWW 3.2.5.9.e.6)	☒	☐	☐

NOTE: For additional IDWR requirements please see IDAPA 37.03.09, Well Construction Standards Rules.

IX. SCREENS AND PERFORATED CASINGS

Checklist Item	Yes	No	NA
35. Intake screens are constructed with materials resistant to damage by chemical action of groundwater or cleaning operations as approved by the Department, such as 304, 304L, 306, or 306L ANSI/NSF Standard 61 certified stainless steel, or other materials. (DW Rules 510.03.f.i)	☒	☐	☐
36. Intake screens have sufficient length and diameter to limit entrance velocities to 0.3 fps, and openings are based on sieve analysis of formation or gravel pack materials. (DW Rules 510.03.f.ii,iii)	☒	☐	☐
37. Intake screens are installed so that the pumping water level remains above the screen under all operating conditions. (DW Rules 510.03.f.iv)	☒	☐	☐
38. The specifications should describe minimum construction requirements, acceptable brands, or both. (CEP)	☒	☐	☐
39. The screen should be centered in the annular space. (CEP)	☒	☐	☐

X. FILTER PACK (Note: All screens and perforated sections should be filter packed)

Checklist Item	Yes	No	NA
40. Filter pack should be designed from aquifer formation sieve analysis evaluated by engineer or geologist. (CEP)	☒	☐	☐
41. For gravel pack wells, material description and physical properties and disinfection requirements should be specified in accordance with RSWW 3.2.6.2.a.	☒	☐	☐

42. Make & model of screen seal or packer (to protect against leakage of grout into the gravel pack or screen) should be shown on the plans and described in the specifications. (RSWW 3.2.6.2.e)	☒	☒	☐
43. Details of filter pack placement requirements should be specified in accordance with RSWW 3.2.6.2.	☒	☐	☐
44. Details of filter pack including tagging, volume checks, and extension above and below screen (typically 3 feet) are specified. (CEP)	☒	☐	☐

XI. WELL DEVELOPMENT

Checklist Item	Yes	No	NA
45. Development method, equipment, and duration should be specified in accordance with RSWW 3.2.5.11.	☒	☐	☐
46. Maximum specific capacity criteria should be specified in accordance with RSWW 3.2.5.11.	☐	☒	☐
47. The specifications recommend final cleaning of sump. (CEP)	☐	☐	☒
48. A preliminary production test is recommended, especially for air-rotary rigs. (CEP)	☐	☐	☒

XII. FINAL PRODUCTION TESTS (Note: The final production tests cannot be submitted until after the well is completed.)

Checklist Item	Yes	No	NA
49. Determination of when the drawdown trend has stabilized must be made by the supervising engineer or geologist. (DW Rules 510.06.a)	☒	☐	☐
50. The well will be test pumped at the design capacity for at least 24 consecutive hours after drawdown has stabilized or the well will be test pumped at 150% of the design capacity for at least six consecutive hours after drawdown has stabilized. If the pump test fails, or if the drawdown does not stabilize, contact DEQ. (DW Rules 510.06.a)	☒	☐	☐
51. The specifications call for pumping data to be recorded and provided to DEQ. (DW Rules 510.05.b)	☒	☐	☐
52. If the well is located in a low yield aquifer, an additional site specific test may be required - contact DEQ. (DW Rules 510.06.e)	☐	☐	☒

53. Bacterial and chemical water quality testing for new sources is conducted. Contact DEQ for the specific monitoring requirements for different types of public water systems. (DW Rules 503.03.k)	☒	☐	☐
54. Specifications for sand content testing (must be < 5 ppm) are included. (DW Rules 510.06.b)	☒	☐	☐
55. Final disinfection and flushing to remove all chlorine should be specified in accordance with AWWA C654 and IDAPA 37.03.09.025. (Also see Item 60)	☐	☒	☐
56. TV inspection should be specified. (Recommended for all wells, particularly with large wells or where problems are anticipated). (CEP)	☐	☒	☐

XIII. PITLESS ADAPTERS

Checklist Item	Yes	No	NA
57. Pitless adapters and units are approved by NSF, Water Systems Council, or equivalent. Adaptor/unit make and model are shown in the plans and specifications and the adaptor/unit meets all requirements of section 511.08. (DW Rules 511.08)	☐	☐	☒
58. Pitless adapters are field tested for leaks. (DW Rules 511.08.c)	☐	☐	☒
59. Replacement of upper casing annular seal to the original specifications. (CEP)	☐	☐	☒

XIV. SITE CONTROL

Checklist Item	Yes	No	NA
60. Water leaving the site does not contain drilling fluid additives, drill foam, chlorine solutions, or sealant material. (CEP)	☒	☐	☐
61. Dust and noise control are recommended. (CEP)	☐	☒	☐
62. Holes, pits, equipment, and chemicals are safely stored and fenced per OSHA standards. (CEP)	☐	☒	☐

XV. PROJECT COMPLETION (Note: The well completion report cannot be submitted until after the well is completed.)

Checklist Item	Yes	No	NA
63. A well completion report including test pumping data, initial source monitoring, and record plans and specifications will be submitted to DEQ. (DW Rules 510.05 and 510.06.c)	☒	☐	☐

NOTE: IDWR requires the well casing to be covered as required before removing drilling equipment from the site. (IDAPA 37.03.09.025)

XVI. NOTE ON RULES AND STANDARDS

This checklist addresses the majority of common items from the Idaho Rules for Public Drinking Water Systems (IDAPA 58.01.08), the Recommended Standards for Water Works (RSWW) 2007 Edition, and common engineering practices. However, this checklist is not all-inclusive, and users are expected to fully understand the rules and standards, apply them where necessary, and request interpretations from DEQ if there are any questions. DEQ offices may have additional written information that will assist in the design/approval process.

XVII. DESIGN ENGINEER'S/GEOLOGIST'S CERTIFICATION

All responses indicated on the checklist are accurately reflected in the attached Plans and Specifications. The following checked statement indicates the extent to which the attached Plans and Specifications meet the requirements of Idaho Rules for Public Drinking Water Systems, IDAPA 58.01.08.

Checklist Item	Yes	No
64. The attached Plans and Specifications **meet or exceed** all applicable requirements of IDAPA 58.01.08, Idaho Rules for Public Drinking Water Systems, and a waiver of any part or portion of the rules **is not** requested at this time.	☒	☐
65. The attached Plans and Specifications **do not meet or exceed** all applicable requirements of IDAPA 58.01.08, Idaho Rules for Public Drinking Water Systems, and a waiver of the following part or portion of the rules **is** requested at this time. (List applicable rule or section for which a waiver is requested) Attach supporting documentation as required.	☐	☐

Design Engineer's/Geologist's Signature, Seal, and Date:

Checklist References:

1. *Idaho Rules for Public Drinking Water Systems* (IRPDWS), IDAPA 58.01. 08
2. *Well Construction Standards Rules*, IDAPA 37.03.09
3. *Idaho Standards for Public Works Construction* (ISPWC)
4. *Recommended Standards for Water Works* (also known as Ten States Standards), 2007 Edition
5. *Recommended Standards for Wastewater Facilities* (also known as Ten States Standards), 2004 Edition

DRINKING WATER WELL SITE /SPRING SOURCE EVALUATION CHECKLIST

Current Project Name: MAYFIELD SPRINGS WELLS NO. 1 AND NO. 2

Former Project Name (if any):

I. GENERAL INFORMATION

Requirement for Plan and Specification Review

Idaho Code § 39-118 requires that public drinking water supplies as defined in Idaho Code § 39-103 and public drinking water systems as defined in IDAPA 58.01.08.003 must be designed to Department of Environmental Quality (DEQ) facility and design standards and must be approved by DEQ.

About this checklist

This checklist is offered as assistance for both designers and reviewers. Using it is voluntary. Many designers use checklists to ensure important but non-routine considerations are not overlooked and the application package is complete. For reviewers, completed checklists often expedite plan and specification review.

This and other drinking water design checklists are available at any DEQ regional office or online at http://www.deq.idaho.gov/water/assist_business/engineers/checklists.cfm . All of the checklists should be accompanied by a GENERAL PLAN AND SPECIFICATION REVIEW CHECKLIST, because the general checklist provides complete information about the project not provided on the specialized checklists.

For each item required by rule, relevant rule citations are provided. Numbers in parentheses with "DW Rules" refer to applicable sections of the current Idaho Rules for Public Drinking Water Systems, IDAPA 58.01.08, http://adm.idaho.gov/adminrules/rules/idapa58/0108.pdf. For any required items checked No or NA, please provide justification/rationale – this helps the reviewer to quickly understand your entire submittal.

For each item *not* required by rule, the row is gray-shaded. Most of these are based on either common engineering practice (CEP) or *Recommended Standards for Water Works* (RSWW – also known as "Ten States Standards"). Providing justification/rationale if any of these items are checked No or NA also helps the review process.

This is a checklist of major items only. Full compliance with the Idaho Rules for Public Drinking Water Systems, IDAPA 58.01.08, is required.

Where to add justification/rationale

These are some options for where to provide justification/rationale:

- In a cover letter –strongly preferred.
- Typed into the checklist electronic form. (Each checklist item includes a form field that expands as you type and will make **your text** bold.) This is preferred over handwriting.
- On a separate sheet. This is preferred over handwriting in the row or in the margin.

Number of sets to submit

- For the first submittal and early review stages, one complete set of stamped plans and specifications is sufficient.

- For final review stages, submit one set for DEQ files plus any additional sets for which DEQ stamped approval is required by the developer, designer, municipality, etc.

II. PROCEDURE

A. Because some locations are known to be vulnerable to contamination and may therefore be subject to additional evaluation requirements (DW Rules 510.02), we recommend that you consult with DEQ before beginning a thorough evaluation of a specific site.

B. Determine if there is known groundwater contamination in the general area. Possible sources of information regarding contamination may be obtained from the U.S Geological Survey, Idaho State Department of Agriculture, and Idaho Department of Water Resources as well as the DEQ state and regional offices.

C. A registered professional engineer or a licensed professional geologist must prepare a thorough site evaluation, including the items in this checklist.

D. Submit the site evaluation to DEQ and schedule a field inspection. The exact location of the well must be staked by the engineer or geologist prior to DEQ inspection.

E. If the well site is acceptable, DEQ will issue a written approval.

F. Plans and specifications for the well and pump house must be approved by DEQ prior to construction (checklists are available for well construction and well house design).

III. INFORMATION (commonly provided in narrative or equivalent form)

Checklist Item		Yes	No	NA
1.	Description and evaluation of potential sources of contamination within 500 feet of the well site, including injection wells, aquifer recharge projects, and land use (residential, commercial, industrial, open space, etc.). Locations of these sources are commonly provided on a site map (Next Section). (DW Rules 503.03.l and 510.01.f)	☒	☐	☐
2.	Floodways and floodplains are identified (DW Rules 503.03.m, 504.07.b.iv, 511.06.a)	☒	☐	☐
3.	Description of aquifers and the extent of each aquifer and underground geological data is provided (provide well logs from nearby wells). (DW Rules 503.03.o.iii, 510.01.b,c)	☒	☐	☐
4.	Anticipated casing depth (to well screen) and grouting depth (annular seal) is provided. (DW Rules 504.07.b.v)	☒	☐	☐
5.	Discussion of groundwater quality and any known groundwater contamination in the general area is provided. (DW Rules 510.01.a)	☒	☐	☐
6.	Prediction of the sources of water to be extracted by the well and the drawdown of existing wells, springs, and surface water bodies that may be caused by pumping the proposed well is provided. (DW Rules 510.01.d)	☒	☐	☐
7.	Terrain and access are acceptable for drilling rig and equipment. (CEP)	☒	☐	☐

8.	Information is provided on how the well will be protected against sources of pollution, or how the site conforms to the local wellhead protection plan. (RSWW 3.2.3.3) (Contact the DEQ regional office for implemented plans).	☐	☐	☒
9.	Professional opinion that the site is suitable for a public water supply well. (DW Rules 510.02)	☒	☐	☐
10.	Seal and date the evaluation. (DW 502.03, 503.02, 504.06)	☒	☐	☐

IV. LOCATION (items commonly provided on a site map)

Checklist Item	Yes	No	NA
11. Well location is specified (include vicinity map with directions to the well site). (DW Rules 510.02)	☒	☐	☐
12. Distance from well to property line (50 feet minimum) is specified. (DW Rules 510.02)	☒	☐	☐
13. Direction of ground water flow and other hydrologic and geological properties are identified. (DW Rules 510.01.c)	☒	☐	☐
14. Topography and arrangement of planned wells or structures are specified. (DW Rules 504.07.b.iii)	☒	☐	☐
15. Surface water sources, including lakes, rivers, canals, ditches, etc. (50 feet minimum separation) are identified. (DW Rules 510.02, 900.01)	☒	☐	☐
16. An evaluation is included to determine if the source is under the direct influence of surface water. (Please work with your regional office). (DW Rules 503.03.o.vi.)	☒	☐	☐
17. Septic tanks and drainfields are identified and meet separation requirements. (DW Rules 510.02, 900.01)	☒	☐	☐
18. Sewer, storms drains, irrigation, and other non-potable mains or service lines are identified (50 feet minimum separation is required). (DW Rules 510.02, 900.01)	☒	☐	☐
19. Subsurface stormwater disposal facilities or storm water ponds are identified (50 feet minimum separation is required). (DW Rules 510.02, 900.01)	☒	☐	☐
20. Livestock areas are identified (50 feet minimum separation is required). (DW Rules 510.02, 900.01)	☒	☐	☐
21. Fuel tanks and other tanks containing non-potable substances are identified (50 feet minimum separation is required unless containment is provided as specified). (DW Rules 510.02, 900.01)	☒	☐	☐

22. Buildings, roads, and parking areas are identified. (50 feet separation is required.) (DW Rules 510.02, 512.02)	☒	☐	☐
23. Other potential sources of contamination (chemical storage, etc.) are identified (50 feet separation is required.) (DW Rules 504.03.b.vi., 510.02, 512.02)	☒	☐	☐
24. Other buried utilities are identified. (CEP)	☐	☒	☐

V. NOTE ON RULES AND STANDARDS

This checklist addresses the majority of common items from the Idaho Rules for Public Drinking Water Systems (IDAPA 58.01.08), the Recommended Standards for Water Works (RSWW) 2007 Edition, and common engineering practices. However, this checklist is not all-inclusive, and users are expected to fully understand the rules and standards, apply them where necessary, and request interpretations from DEQ if there are any questions. DEQ offices may have additional written information that will assist in the design/approval process.

VI. DESIGN ENGINEER'S/GEOLOGIST'S CERTIFICATION

All responses indicated on the checklist are accurately reflected in the attached Plans and Specifications. The following checked statement indicates the extent to which the attached Plans and Specifications meet the requirements of Idaho Rules for Public Drinking Water Systems, IDAPA 58.01.08.

Checklist Item	Yes	No
25. The attached Plans and Specifications **meet or exceed** all applicable requirements of IDAPA 58.01.08, Idaho Rules for Public Drinking Water Systems, and a waiver of any part or portion of the rules **is not** requested at this time.	☒	☐
26. The attached Plans and Specifications **do not meet or exceed** all applicable requirements of IDAPA 58.01.08, Idaho Rules for Public Drinking Water Systems, and a waiver of the following part or portion of the rules **is** requested at this time. (List applicable rule or section for which a waiver is requested) Attach supporting documentation as required.	☐	☐

Design Engineer's/Geologist's Signature, Seal, and Date:

Checklist References:

1. *Idaho Rules for Public Drinking Water Systems* (IRPDWS), IDAPA 58.01.08
2. *Idaho Standards for Public Works Construction* (ISPWC)
3. *Recommended Standards for Water Works* (also known as Ten States Standards), 2007 Edition
4. *Recommended Standards for Wastewater Facilities* (also known as Ten States Standards), 2004 Edition

APPENDIX H
INSPECTION CONTRACT

SPF WATER ENGINEERING

September 21, 2010

Mr. Greg Johnson
West Park Company, Inc.
P.O. Box 344
Meridian, ID 83680

Subject: Proposal for Engineering Services for Permitting, Design, Bidding, and Construction Oversight for Two Public Water System Wells for Mayfield Springs

Dear Greg,

SPF Water Engineering LLC (SPF) would be pleased to provide engineering services for the permitting, design, and construction oversight for two municipal water supply wells to serve the Mayfield Springs development.

We understand that Mayfield Springs has obtained water right 63-32225 and needs to begin development of the water right. The proposed two municipal water supply wells will serve this purpose. SPF has previously obtained Idaho Department of Environmental Quality (IDEQ) approval for drilling of three municipal supply wells for Mayfield Springs. The currently proposed wells will be located on different sites than those previously approved. This proposal provides for the required documentation and permitting with IDEQ for the new well sites, and moving forward with bidding and construction oversight of the proposed well(s).

Task 1 - Permitting and Design of Public Water System Wells

SPF will revise and update the previously completed document "Public Water System Well Engineering Report, Well Site Evaluation, and Well Specification Submittal" (November 30, 2006). The updated document will include the sites for the two proposed wells. The document will be submitted to IDEQ and will include the following components.

Water System Facility Plan. SPF will prepare an up-to-date Water System Facility Plan for Mayfield Springs. The proposed service area will be described and calculated water demands will be presented. The engineering report will describe the anticipated water system, including wells, storage, and other required facilities. (Facility Plans are required by the Boise Regional IDEQ office prior to permitting and construction of individual water system facilities.) SPF will need current conceptual layouts of the proposed development plans in order to prepare the water system facility plan.

Well Engineering Report. IDEQ requires engineering reports as individual components of a water system are permitted and constructed. The Well Engineering Report will reference the Facility Plan and describe in additional detail the proposed wells to be constructed – including proposed well design, estimated depths to target aquifers, total well depth, casing, screen, and borehole diameters, surface seal depths, target well yields, and anticipated water quality.

Well Site Evaluation. IDEQ requires a Well Site Evaluation for all new public water system wells. SPF will prepare the well site evaluation for the two new well sites, which will include a description of local hydrogeology and water quality, evaluation of potential contaminant sources, and a certification from the engineer or geologist that the site meets Public Water System requirements. An on-site meeting with IDEQ may be required.

Well Design and Construction Specifications. SPF will prepare plans and specifications for the proposed wells.

DEQ Submittal. SPF will provide a plan review submittal to IDEQ. The submittal will include the Facility Plan, Well Engineering Report, Well Site Evaluation, Well Plans and Specifications, and applicable IDEQ Checklists for the two proposed wells. IDEQ review and approval is typically a 30 to 90-day process.

Estimated Task 1 Cost: $10,000 to $12,000

Task 2 – Bidding and Construction of Public Water System Wells

At this point, we understand that Mayfield Springs may choose to go ahead with construction of either one or two wells.

Well Bidding. SPF will solicit bids for well construction from one or more qualified drilling contractors and will assist you in evaluating bids and selecting a contractor.

Well Construction Inspection. SPF will provide inspection of well construction activities as needed. Based on the drill log, geophysical log, and sand gradation analysis, SPF will prepare a final design for the well screen, sand filter pack, and surface seal. IDEQ requires that the engineer or geologist of record be present during important phases of construction, including surface seal placement and test pumping.

Test Pumping Supervision. SPF will supervise test pumping operations and collect water samples for laboratory analysis. Samples for primary and secondary IOCs, VOCs, SOCs, radionuclides, and bacteria are required for new public water system sources. Samples will be submitted to an independent testing laboratory for analysis. Temperature, pH, and specific conductance will be measured in the field during testing. A test pumping report will be prepared documenting the results of the test and providing recommendations for final pump selection. Note that the full suite of required laboratory tests typically costs $2,500 to $3,000 per well. We anticipate that

West Park will pay laboratory costs directly; they have not been included in the engineering costs presented here.

Well Completion Report. Upon completion of well construction, SPF will prepare a well completion report. The report will include a driller's report, as-built well drawing(s), test pumping results, and water quality reports. This report will be submitted to IDEQ for review and approval.

Estimated Task 2 Cost: $10,000 to $13,000

Estimated Engineering Costs

SPF proposes to perform this work on a time and materials basis. The anticipated engineering cost ranges from $20,000 to $25,000. A current hourly rate schedule is provided as Table 1. Direct costs (laboratory, mileage, postage, etc.) are billed at actual cost plus 15%. Hourly rates are adjusted on an annual basis to reflect salary increases.

Project Schedule

SPF is prepared to begin this work pending your approval. We anticipate having submittals to IDEQ within 4 to 6 weeks of receiving the conceptual development plans. The schedule for bidding and construction of the wells will be dependent on IDEQ's review timeline, driller schedules, and other factors.

Contract

If this proposal meets with your approval, it may serve as the basis for agreement by affixing a signature in the space provided below. This signature will be considered as a notice to proceed with a budget upper limit of $25,000.

Please return one signed original to my office. We look forward to working with you on this project.

Respectfully Submitted,

SPF WATER ENGINEERING LLC

Cathy Cooper

Cathy Cooper, P.E., Manager

9/21/10

Dated

Accepted by,

WEST PARK COMPANY, INC.

Greg Johnson

Greg Johnson, President

11/4/10

Dated

APPENDIX I
WATER RIGHTS

State of Idaho
Department of Water Resources

Permit to Appropriate Water

NO. 63-32225

Priority: September 16, 2005

Maximum Diversion Rate: 10.00 CFS
Maximum Diversion Volume: 1,815.0 AF

This is to certify, that INTERMOUNTAIN SEWER & WATER CORP
660 E FRANKLIN RD
MERIDIAN ID 83642

has applied for a permit to appropriate water from:

Source: GROUND WATER

and a permit is APPROVED for development of water as follows:

BENEFICIAL USE	PERIOD OF USE	RATE OF DIVERSION	ANNUAL VOLUME
MUNICIPAL	01/01 to 12/31	10.00 CFS	1,815.0 AF

LOCATION OF POINTS OF DIVERSION:

GROUND WATER	NE¼ NE¼ Sec. 28, Twp 01N, Rge 04E, B.M.	ADA County
GROUND WATER	SE¼ NW¼ Sec. 28, Twp 01N, Rge 04E, B.M.	ADA County
GROUND WATER	NW¼ SE¼ Sec. 28, Twp 01N, Rge 04E, B.M.	ADA County
GROUND WATER	SE¼ SE¼ Sec. 28, Twp 01N, Rge 04E, B.M.	ADA County
GROUND WATER	NE¼ NW¼ Sec. 33, Twp 01N, Rge 04E, B.M.	ADA County

CONDITIONS OF APPROVAL

1. Proof of application of water to beneficial use shall be submitted on or before **February 01, 2012.**
2. Subject to all prior water rights.
3. Right holder shall comply with the drilling permit requirements of Section 42-235, Idaho Code and applicable Well Construction Rules of the Department.
4. Water bearing zone to be appropriated is from 300 to 1000 feet.
5. The Director retains jurisdiction to require the right holder to provide purchased or leased natural flow or stored water to offset depletion of Lower Snake River flows if needed for salmon migration purposes. The amount of water required to be released into the Snake River or a tributary, if needed for this purpose, will be determined by the Director based upon the reduction in flow caused by the use of water pursuant to this permit.
6. Prior to the diversion of water in connection with this right, the right holder shall provide the department with a plan for monitoring ground water levels in the vicinity of the place of use for this water right. The monitoring should occur in parallel with development and production and should include indentification of non-productions wells and timelines for measuring and reporting. The right holder shall not divert water in connection with this right until the monitoring plan is approved by the Department. Failure to comply with the monitoring plan once it is accepted shall be cause for the Department to cancel or revoke this right.
7. Prior to or in connection with the proof of beneficial use statement to be submitted for municipal water use under this right, the right holder shall provide the department with documentation showing that the water supply system is being regulated by the Idaho Department of Environmental Quality as a public water supply and that it has been issued a public water supply number.

State of Idaho
Department of Water Resources

Permit to Appropriate Water

NO. 63-32225

8. After specific notification by the Department, the right holder shall install a suitable measuring device or shall enter into an agreement with the Department to determine the amount of water diverted from power records and shall annually report the information to the Department.
9. Place of use is within the area served by the public water supply system of Intermountain Sewer & Water, Corp. The place of use is generally located within Township 1N, Range 4E, Sections 28, 29, 32 and 33.
10. Common areas, parks, school grounds, golf courses, and any other large parcels may only be irrigated under this water right with wastewater that has been previously beneficially used for potable or culinary purposes, has been treated in a wastewater treatment plant, and is delivered from the wastewater treatment plant to the parcel to be irrigated.
11. Water diverted under this right may be used for direct irrigation of up to 1/2 acre per residential lot upon which a home has been constructed.
12. A map depicting the place of use boundary for this water right at the time of this approval is attached to this document for illustration purposes.
13. Project construction shall commence within one year from the date of permit issuance and shall proceed diligently to completion unless it can be shown to the satisfaction of the Director of the Department of Water Resources that delays were due to circumstances over which the permit holder had no control.

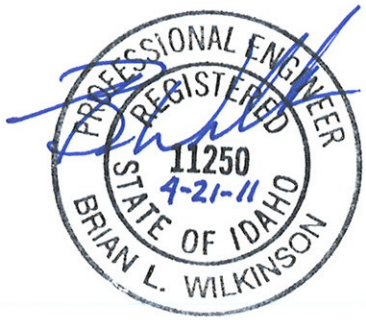
This permit is issued pursuant to the provisions of Section 42-204, Idaho Code. Witness the signature of the Director, affixed at Boise, this 16 day of February, 2007.

For DAVID R. TUTHILL, JR., Interim Director

APPENDIX J
WATER DEMAND CALCULATIONS

SPF WATER ENGINEERING

MEMORANDUM



DATE: April 21, 2011

TO: Dennis Meier, P.E.
Idaho Dept. of Environmental Quality

FROM: Brian Wilkinson, P.E.

CC: File 329.0052

RE: Mayfield Springs P.C. Facility Plan- Phase 1 Demand Estimates

---

Dennis, thank you for your April 20, 2011 email comments on the Mayfield Springs Planned Community Facility Plan. The purpose of this memo is to address your request that we confirm the ability of the system to provide max day demand and fire flow with the first phase of development. The following calculations and supporting data demonstrate that max day demand and fire flow will be met. The assumptions used for the first phase of development are consistent with those used for full build-out of the community. They are summarized below:

1. Two wells are planned, each with an assumed pumping capacity of 1,250 gpm;
2. A 500,000 gallon reservoir will be installed with the initial development phase;
3. Demands for residential, Mixed-Use and School land uses are calculated based on EDU's using DEQ demand equations;
4. The EDU's from non-residential uses including the Mixed-Use Town Center and School Site are assumed to equal 10% of the residential demand;
5. Irrigation max day demand for developed parks is assumed to be 5gpm per irrigated acre based on guidance provided in Utah Administrative Code R309-510-7-3;
6. Park irrigated acres are assumed to be 80% of the gross park area.
7. The first development phase will include 403 residential units based on information provided by the developer;
8. A density of 7.883 EDU's per acre was calculated based on 443 EDU's to be located on 56.2 acres (41 acres of residential, 10.2 acres of Mixed-Use Town Center and 5 acres of School);
9. Developed Parks will total 23 gross acres in the first phase.

Based on these assumptions, water system demands and required reservoir sizing are summarized in Tables 1 and 2.

300 E. Mallard Drive, Suite 350, Boise, Idaho 83706 Tel: 208-383-4140 Fax: 208-383-4156

Table 1- Water System Demands at Phase 1 Build-out

Projected Use	Maximum Day Demand (gpm)	Peak Hour Demand (gpm)
Residential, Mixed-Use Town Center , and School – 56.2 AC	443 gpm	972 gpm
Developed Park Irrigation – 18.4 AC (80% of 23 AC)	92 gpm	212 gpm
Total Demand without Fire Flow	535 gpm	1,184 gpm
Fire Protection	N/A	1,500 for 2 hours (single-family residential) 2,500 for 2 hours (multi-family and large non-residential buildings)

Assumptions:

1. Residential, Mixed-Use Town Center, and School use based on DEQ demand equations
2. Developed Park irrigation based on Max day demand of 5 gpm per irrigated acre.
3. Peak hour irrigation based on peaking factor of 2.3 x maximum day demand.
4. Park Irrigated Acres assumes 80% of gross area.

Table 2-Required reservoir sizing at Phase 1 Build-out

Storage Type	Description	Required Storage Volume (Gallons)
Equalization Storage	0.225 x 535 gpm x 1,440 minutes/day	~173,340
Fire Suppression Storage	2,500 gpm for 2 hours	300,000
Operational Storage	5% of Equalization and Fire Storage	~23,670
Dead Storage	2.5% of Equalization and Fire Storage	~11,830
Standby Storage	Not required with stand-by power	0
Total Required Storage Volume		~508,840

Notes:

1. Equalization Storage assumed to be 22.5% of MDD per IDEQ Design File Note.
2. No contribution from well pumps assumed to meet fire flow demands. Excess well pump capacity would decrease fire storage requirements.

Assuming that each well will produce 1,250 gallons per minute there is firm pumping capacity to supply 1) Maximum Day Demand of 535 gpm; and 2) Peak Hour Demand of 1,184 gpm. With the proposed 500,000 gallon reservoir and one well pump in service the system will be able to provide 3,750 gallons per minute (2,500 + 1,250). This exceeds the combined max day demand and fire flow requirements of 3,035 gpm.

Dennis, as always please feel free to forward any additional questions you may have. Supporting information and calculations are attached for your use.

MAYFIELD SPRINGS P.C., PHASE 1 DEMAND CALCS

Note This Spread Sheet is to be used in Conjunction with the *Design Flows - Public Water Systems* - Design File Note. If you do not have this DFN Please contact The Idaho Department of Environmental Quality, Boise Regional Office.

INCLUDES RESIDENTIAL, MIXED-USE TOWNCENTER AND SCHOOL (443 EDU/56.2 AC)

$Qmxdy = [800 + (0.6)(c)(L_s)(E_{pot}) + 2\ \sigma mxdy]\ a$

Where

2 σmxdy = Variability in the magnitude of factors and number of dwellings.

$\sigma^2 mxdy = \sigma_1^2 + \sigma_2^2$ ***=14,049.86 therefore SQRT=118.53***

$\sigma_1^2 = 1090 + 166{,}000\ L_s^2$ ***=1,679.66***

$\sigma_2^2 = (5.48 * 10^6)/a$ ***=12,370.2***

$Qpkhr = [334 + 2.02\ [800 + (0.6)(c)(L_s)(E_{pot})] + 2\ \sigma pkhr]\ a$

Qpkhr = Peak use for an expected one hour duration in gallons/day

$\sigma^2 pkhr = \sigma_3^2 + \sigma_4^2$ ***=34,618.25 therefore SQRT=186.06***

$\sigma_3^2 = 4.08\ (\sigma_1)^2$ ***=6,853.01***

$\sigma_4^2 = (12.3 * 10^6)/a$ ***=27,765.24***

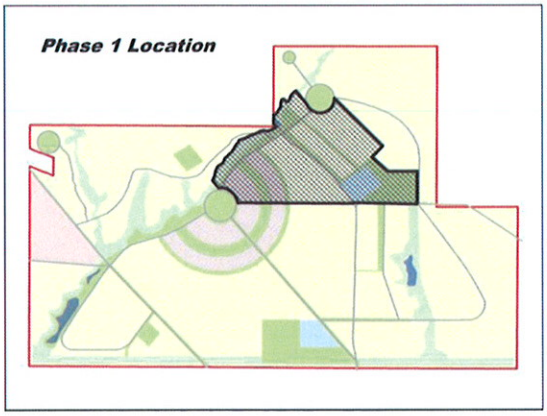
443.00	a - Number of homes ***EDU'S (403 Residential + 10%)***
0.0596	L_s - size of irrigated area in acres if unknown use 0.803 $W^{-1.26}$
7.883	W - Houses per acre ***(Excludes Parks and Nat. Open Space)***
0.28	E_{pot} - Evaporation Potential (see DFN)
27,200.00	c (gal/acre-inch of water)
1	Unmetered system No=1 Yes=2 (at a minimum)
1.10	safety factor to account for leakage (1.1-1.2 typical)

Qmxdy	638,076.66	GPD	
	443.11	GPM	***AT PHASE 1 BUILDOUT***

Qpkhr	1,399,653.69	GPD	
	971.98	GPM	***AT PHASE 1 BUILDOUT***

Development Phase 1

Phase One Key Map



Phase Specifications	
Land Use Types Proposed	**Total (Acres Proposed)**
High Density	7.0
Medium Density	18.0
Low Density	16.0
Mixed Use	0.0
Mixed-Use Town Center	10.2
Open Space	6.0
Parks	23.0
School Site	5.0

Detailed Map of Phase One

Table F-8_T4

Development Phase 1 Phasing Summary

Phase 1 will begin in the Wilderness Neighborhood and eventually spread into the Indian Creek and Town Center Neighborhoods. This phase will provide a variety of housing and commercial opportunities as well as a school site.

Phase 1 Total Developable Land by District and Lots Proposed

Land Use District	Acres	Min/Max Lot Size Sq. Ft.	Average Lot Size Sq. Ft.	Lots Proposed
High Density	7.0	> 1,500	1,650	182
Medium Density	18.0	3,500 – 7,500	6,050	132
Low Density	16.0	4,500 – 10,000	7,700	89
		Grand Total Lots Proposed		403

Table F-8_T5

Phase 1 Residential Lot Development by Year and Sub-Phase

Phase Year	Sub-Phase Number	Development Phase Year	Residential Units Proposed	Cumulative Residential Units Proposed
6	1.1	Phase Year 6	45	45
7	1.2	Phase Year 7	50	95
8	1.3	Phase Year 8	80	175
9	1.4	Phase Year 9	100	275
10	1.5	Phase Year 10	125	400
11	1.6	**Part of Phase Year 11**	3	403

Table F-8_T6

ATTACHMENT A
Water Supply Assessment for the Mayfield Springs Planned Community

WATER SUPPLY ASSESSMENT
FOR THE
MAYFIELD SPRINGS PLANNED COMMUNITY

Prepared for

Intermountain Sewer and Water Corporation
P.O. Box 344
Meridian, ID 83660

Prepared by

SPF Water Engineering, LLC
600 East River Park Lane
Boise, ID 83706

March 20, 2006

SPF Water Engineering, LLC
water resource consultants

EXECUTIVE SUMMARY

The proposed Mayfield Springs Planned Community (Mayfield Springs) is located about 20 miles southeast of Boise in eastern Ada County. Once constructed, the development will require approximately 1,800 acre-feet of water per year, or an average pumping rate of approximately 1,130 gallons per minute (gpm), for domestic, commercial, and industrial purposes. Five wells will likely extend to depths ranging from about 600 feet to over 800 feet, with static water levels ranging from approximately 300 to 600 feet below ground surface.

SPF Water Engineering, LLC (SPF) conducted an assessment of potential ground water availability to meet the needs of the proposed community. The primary conclusions from this assessment are that there is likely sufficient water available for the proposed uses and that substantial impacts to nearby, existing water rights are unlikely. Specific conclusions include the following:

Aquifer Characteristics

1. Aquifers underlying the Mayfield Springs area are present in layers of unconsolidated sediments and volcanic materials.
2. Primary water-bearing zones are found in coarser-grained sedimentary zones (such as sand and gravel layers) or in fractured basalt or cinder zones.
3. Coarse-grained sediments in the Mayfield Springs area originated in nearby highlands and are consistent with alluvial fan deposits.
4. Clay layers or unfractured basalt may form partial aquitards in the Mayfield Springs area. However, it is unlikely that these aquitards are areally extensive because of varying geologic materials and proximity to basin margins.
5. All of the shallower existing wells (e.g., less than 300 feet deep) are within about one mile of Indian Creek or Indian Creek Reservoir. Some of these wells are likely completed in perched aquifer zones.
6. All of the wells further than about one mile from Indian Creek are at least 400 feet in depth (the deepest well extends 811 feet below ground surface).

Aquifer Recharge and Discharge

7. Recharge to shallow zones occurs through areal infiltration and seepage from surface water bodies (e.g., Indian Creek, tributaries to Indian Creek, and Indian Creek Reservoir).

8. Recharge to deeper zones occurs as downward flow from overlying shallow aquifers and infiltration at geologic contact zones.
9. Total aquifer recharge in an average year likely ranges from approximately 7,000 to 28,000 acre feet.

Depth to Water

10. Static water levels in existing wells range from less than 100 feet to over 600 feet.
11. All wells with static water levels less than 200 feet are located within approximately one mile of Indian Creek or Indian Creek Reservoir. These wells are likely completed in perched aquifer zones.

Existing Well Yields

12. Well yields listed on drillers' reports range from zero to 200 gpm. Some of these yields may have been limited by testing method (airlift) and/or well construction.
13. One well (the Ken Agenbroad Well) was tested at a rate of 550 gpm for 6 hours and 795 gpm for 1 hour. The aquifer transmissivity in this area was estimated to be approximately 7,300 gpd/ft (based on an aggregate screened thickness of 130 feet), indicating moderate aquifer productivity. It is likely that overall aquifer transmissivity is greater based on experience with other alluvial-fan aquifers and because the effective aquifer thickness is greater than that penetrated by the Agenbroad well.
14. All of the wells listing an initial yield greater than 50 gpm are located within approximately one mile of Indian Creek or Indian Creek Reservoir.

Water Levels

15. Water levels in the Mayfield Springs area are generally stable.
16. Ground water flow directions (based on contours drawn from available water-level data) are generally from the northeast to southwest.

Water Quality

17. Water quality data for the area are limited, but available data suggest that ground water quality is good. Arsenic and fluoride concentrations were less than current Maximum Contaminant Levels (MCLs).

New Well Construction

18. Wells for the new development will likely extend to depths ranging from 600 to over 800 feet, with static water levels ranging from approximately 300 to 600 feet below ground surface.
19. Wells should be constructed so as to minimize the potential for downward movement of ground water from perched aquifers to lower zones.

Water Availability

20. There is likely a sufficient amount of water available for the proposed uses. The amount of estimated recharge in this area (7,000 to 28,000 acre feet) is substantially greater than the anticipated amount required for new uses (1,815 acre feet for the proposed planned community) and existing uses (700 acre feet) in the Mayfield Springs area.

21. Currently stable (or slightly increasing) water levels indicate that water is available for additional appropriation.

Potential Impacts to Existing Water Rights

22. Impacts on existing water rights are unlikely because estimated recharge in the Mayfield Springs area substantially exceeds the amount of existing and new water demands.

Potential Impacts to Water Levels in the Mountain Home GWMA

23. It is unlikely that new withdrawals for the Mayfield Springs Community will have a significant impact on water levels or water rights within the Mountain Home Ground Water Management Area (GWMA), for several reasons:

    a. New wells are not being proposed within the Mountain Home GWMA.

    b. Current ground water levels within the GWMA in the Mayfield Springs area are stable (or rising slightly).

    c. The primary recharge source in the Mayfield Springs area is seepage from Indian Creek, tributaries to Indian Creek, and Indian Creek Reservoir, which are outside of the GWMA.

    d. Ground water flow is generally parallel to the northwest boundary of the Mountain Home GWMA – new uses will likely not reduce underflow into the Mountain Home GWMA.

24. The Mountain Home GWMA boundary appears to be based on the drainage divide between the Indian Creek watershed and Sand Hollow, which also is the boundary between administrative basins 61 and 63. Ground water withdrawals in the Mayfield Springs area will not have a hydrologic impact on this administrative GWMA boundary.

Ground Water Monitoring Recommendations

25. Water level monitoring should be conducted in the area prior to and following the construction of new public water system wells. Monitoring should occur on a periodic basis (e.g., quarterly initially, semi-annually thereafter) for an extended period of time (e.g., 5 to 10 years) during and following construction.

Table of Contents

Appendices

Appendix A: Drillers reports for wells within 3 miles of Mayfield Springs
Appendix B: Results of pump test of the Neil Helmick Well
Appendix C: Water levels (hydrographs) for wells near Mayfield Springs
Appendix D: Drillers' reports for additional wells used in determining ground water flow directions
Appendix E: General water quality data
Appendix F: Water rights summary

List of Figures

1. INTRODUCTION

1.1. Background

The Mayfield Springs Planned Community (Mayfield Springs) is proposed for a location about 20 miles southeast of Boise in eastern Ada County (see Figure 1) near the Boise Stage Stop. The proposed community will include approximately 2,000 homes and commercial and industrial facilities. Five general well sites have been proposed for the Mayfield Springs property (Figure 2).

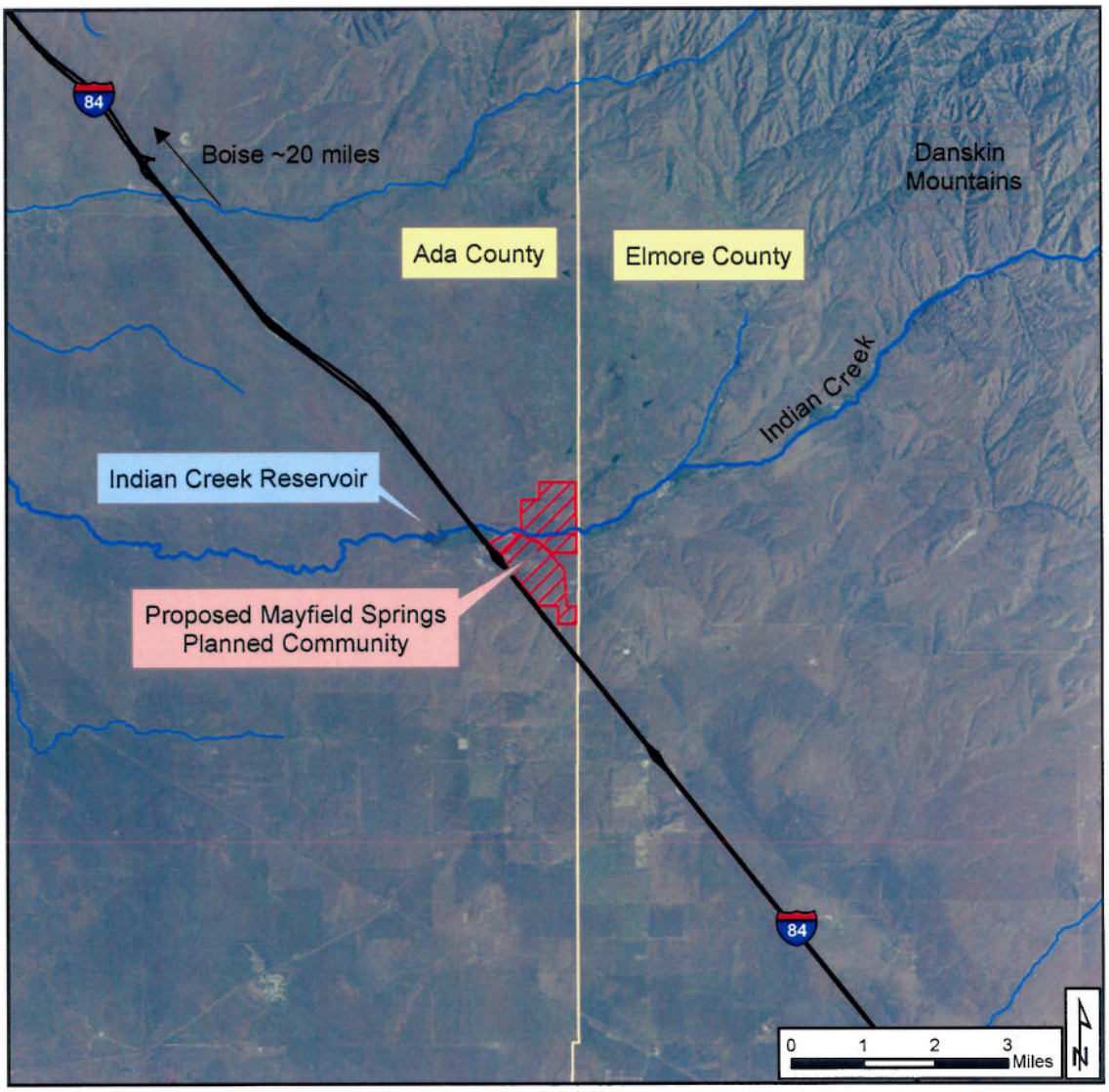


Figure 1. Proposed Mayfield Springs Planned Community location map.

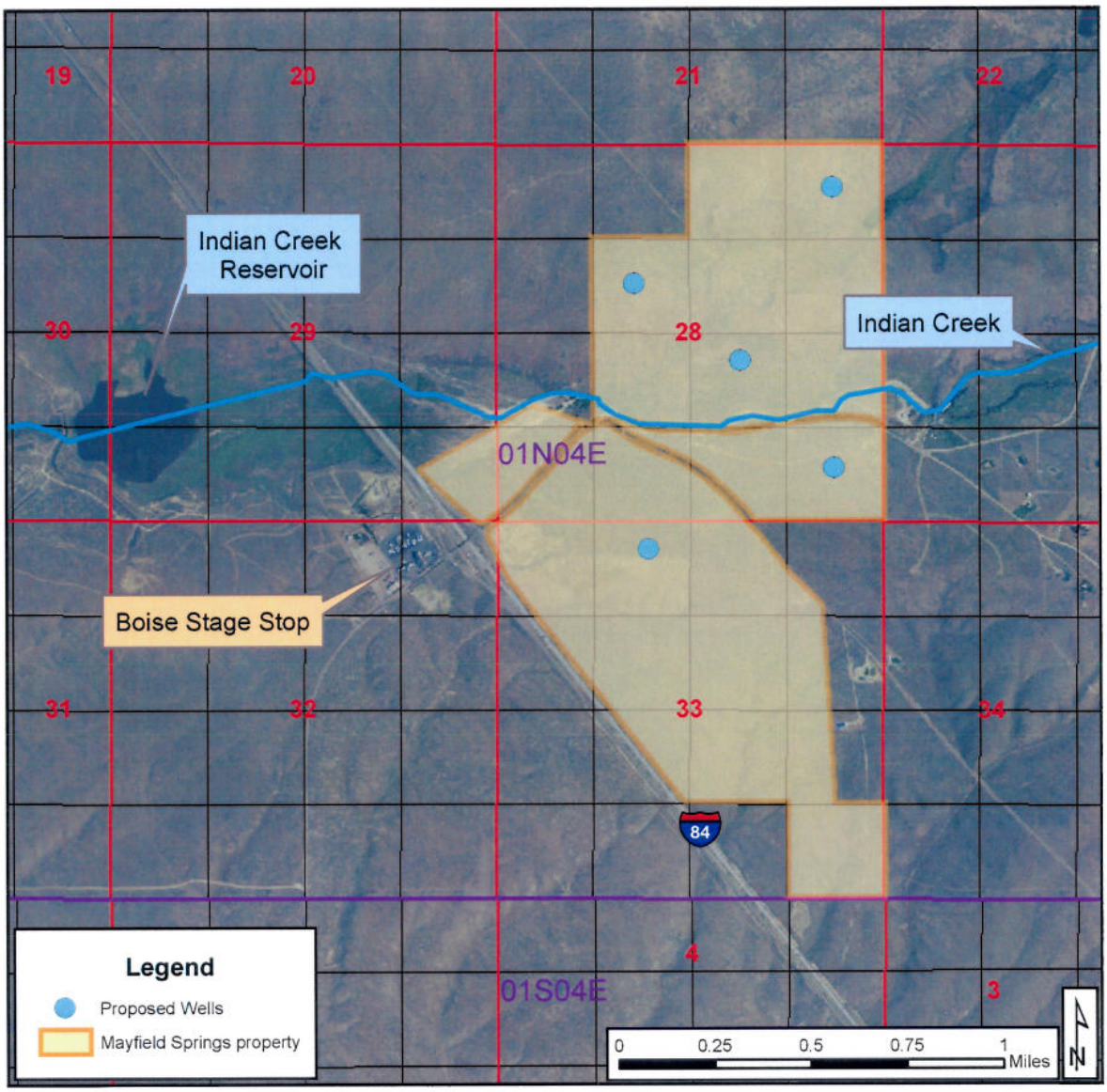


Figure 2. Proposed Mayfield Springs property with general proposed well sites.

The Mayfield Springs area lies in a high desert environment at an elevation of approximately 3,400 feet. Indian Creek, which drains a higher-elevation basin to the northeast of the property, bisects the property upstream of Indian Creek Reservoir. Indian Creek Reservoir is about one mile west of the proposed community.

1.2. Purpose and Objectives

The purpose of this assessment was to evaluate potential water availability in aquifers underlying the Mayfield Springs site. Specific objectives of the assessment included the following:

1. Review local geology based on existing reports and information
2. Obtain and review drillers' reports for local wells
3. Obtain and evaluate available water level data
4. Obtain and review available water quality data
5. Assess water availability based on general aquifer characteristics and estimated aquifer recharge and discharge.
6. Evaluate potential impacts on existing water rights
7. Evaluate potential impacts to water levels in the Mountain Home Ground Water Management Area (GWMA).

1.3. Water Demand

A new ground water-based public water system is proposed for the Mayfield Springs Planned Community. Ground water for the water system will be drawn from up to five wells located within the Mayfield Springs area.

The anticipated peak water demand for this development is 10.0 cfs (Table 1). This amount includes 2.5 cfs for domestic use in 2,000 homes (based on IDEQ requirements of 800 gallons per day per unit), 6.0 cfs for landscape irrigation of 300 acres (0.02 cfs per acre), 0.50 cfs for commercial uses, 0.5 cfs for industrial uses, and 0.5 cfs for miscellaneous uses. Fire protection flows will be provided with storage reservoirs.

The average annual ground water requirement for residential, commercial, industrial, and miscellaneous purposes was estimated to be approximately 1,815 acre feet (Table 1). This estimate includes an average annual demand of approximately 1,460 acre feet for residential domestic and irrigation uses and 350 acre feet for commercial, industrial, and other miscellaneous uses. The residential average-use estimates were based on the following assumptions:

1. Average daily demand of 250 gallons per residential unit for domestic purposes. This estimate is likely high; the Surprise Valley subdivision in southeast Boise uses approximately 225 gallons per residential unit per day for domestic purposes.
2. Approximately 0.15 irrigated acres per home with an application rate of 4.5 feet of water per acre annually.
3. Wastewater is recovered and applied for irrigation. It was assumed that 80 percent of the total domestic consumption will be re-used.

Category	Per residential unit			Total Residential			Commercial, Industrial, and Misc.			Total		
	(cfs)	(gpm)	(afa)	(cfs)	(gpm)	(afa)	(cfs)	(gpm)	(afa)	(cfs)	(gpm)	(afa)
Peak water demand												
Peak rate for residential domestic uses	0.0012	0.56		2.5	1,111					2.5	1111	
Peak demand for residential irrigation	0.0030	1.35		6.0	2,693					6.0	2693	
Peak demand for commercial, industrial, and miscellaneous uses							1.5	673		1.5	673	
Peak water demand				**8.5 cfs**	**3,804 gpm**		**1.5 cfs**	**673 gpm**		**10.0 cfs**	**4,477 gpm**	
Average residential water demand												
Daily demand for domestic uses (annual average)	0.0004	0.17	0.28	0.77	347	560				0.77	347	560
Demand for residential irrigation				1.9	837	1350						
Wastewater re-use for residential irrigation (assume 80% of domestic water)				(0.6)	(278)	(448)						
Net annual residential irrigation demand				1.2	559	902				1.2	559	902
Average daily commercial, industrial, and miscellaneous demand							0.5	224	353	0.5	224	353
Total annual average water demand				**2.0 cfs**	**906 gpm**	**1,462 afa**	**0.5 cfs**	**224 gpm**	**353 afa**	**2.5 cfs**	**1,131 gpm**	**1,815 afa**

Assumptions:

Number of residential units:	2,000	
Peak daily demand for residential domestic uses:	800	gallons
Average daily demand for residential domestic uses:	250	gallons
Average irrigated area per unit:	0.15	acres
Wastewater re-use rate:	80	percent
Total irrigated area:	300	acres
Residential irrigation per season:	4.5	acre-feet/acre

Table 1: Estimated water demand for Mayfield Springs Planned Community.

2. HYDROLOGIC CONDITIONS IN VICINITY OF MAYFIELD SPRINGS

2.1. General Geology

Surficial geology (Figure 3) in the vicinity of Mayfield Springs area consists of Cretaceous-age granitic rocks (primarily granodiorite) associated with the Idaho batholith (Kii), Middle Pleistocene-age basalt (Qpmb), Pleistocene-age unconsolidated alluvium (Qpg), Pleistocene-age alluvium (Qpa), and Quaternary alluvium (Qa) (Bond and Wood, 1978). Sediments in this area appear to be mostly alluvial fan sediments that are interfingered with basalt flows from the Kuna-Mountain Home basalt field (Wood, 1996).

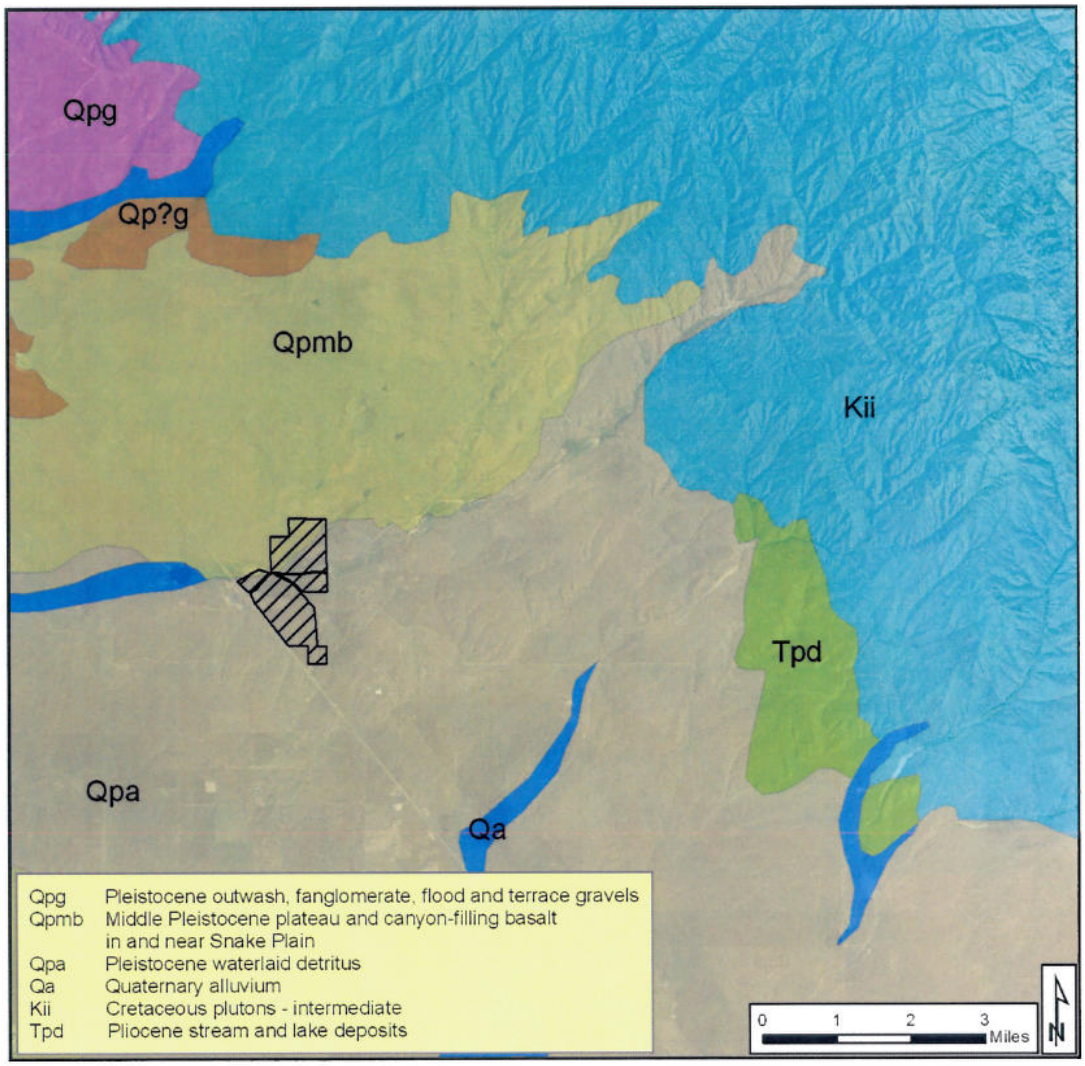


Figure 3: Geology in the vicinity of Mayfield Springs.

Normal faulting has been inferred along the base of the foothills in the Mayfield area (Wood, 1996) based on offsets observed in sedimentary section. Wood notes that the youngest depositional and volcanic units do not appear to be faulted.

2.2. Drillers' Report Review

A search for drillers' reports for the Mayfield Springs area wells was conducted using the Idaho Department of Water Resources' (IDWR) online well construction database. The search area consisted of a 3-mile radius around the Mayfield Springs property.

The IDWR well construction database contained drillers' reports for 37 wells in this area (Figure 4 and Table 2). Copies of drillers' reports for these wells are provided in Appendix A. Of the 37 wells, 27 wells are used for domestic purposes, five are used for irrigation, and two are used for commercial purposes. One driller's report lists an industrial use, one lists a stockwater use, and one well is for cathodic protection.

The depths of these wells range from 66 to 811 feet. Well depths fall into two general categories (Figure 5, page 9): shallow wells with depths ranging from 66 to 260 feet and deeper wells ranging from 390 to 811 feet. Wells located in the vicinity of Indian Creek are generally shallower that those that are located further away.

Wells in the Indian Creek area (wells 2-13 in Figure 4) and wells to the south and southeast of the Mayfield Springs property (wells 22-30 and 32) penetrated brown and blue clay with interbedded sand, silt, and occasional gravel layers. Several drillers' reports note a transition from brown to white and/or blue clay at depths of approximately 460 to 600 feet. Coarse-grained sediments (e.g., sand or gravel), if saturated, were listed as water-producing zones.

Wells 14-17 and 18-21, located west of the Mayfield Springs property, encountered basalt and cinders from as shallow as 45 feet to as deep as about 100 feet. Several of these wells extend through the volcanic materials to clay, sand, or gravel sediments. Water-producing zones were noted in cinder zones within the basalt and/or coarse-grained sediments underlying the volcanics.

Further to the southeast, drillers' reports for wells 31, 33, 34, and 38 encountered basalt and volcanic materials at depths from about 250 to over 675 feet. Water-bearing zones in these wells were noted at various depths in or interbedded with volcanic layers. The driller's report for Well 37 (the southernmost well in Figure 4) recorded only sedimentary materials, with several thin water-bearing zones between 350 and 545 feet.

Two wells located to the southwest of the Mayfield Springs area (wells 35 and 36) encountered basalt and cinders at depths from approximately 75 to 300 feet. No water-producing zones are noted in the 500-foot deep Well 35; several water-producing zones are noted in sand layers between 570 and 695 feet in Well 36.

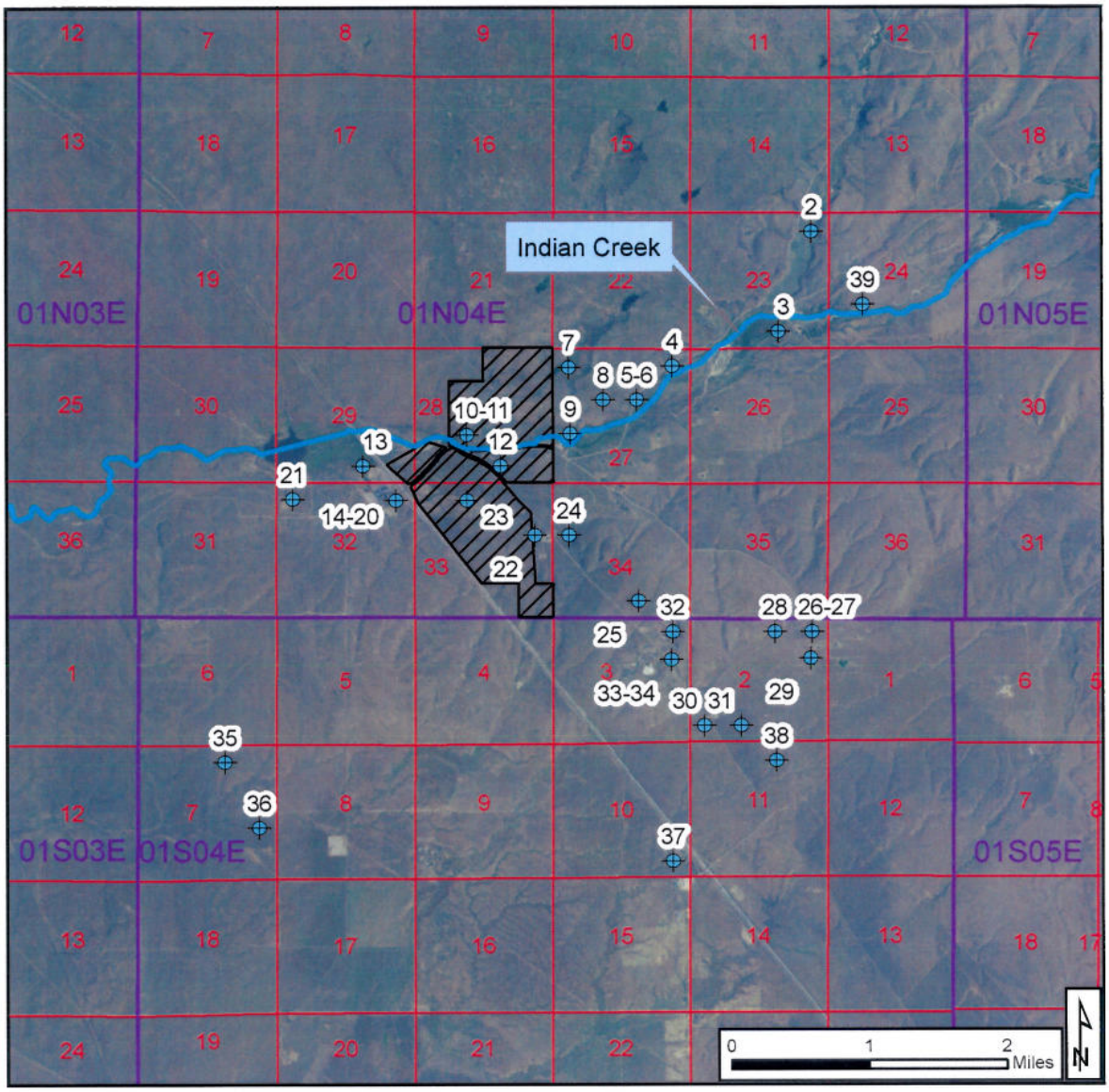


Figure 4. Wells with drillers' reports within 3 miles of Mayfield Springs.

Well 39 (the Owings Well) was drilled to a depth of approximately 1,200 feet in the SW quarter of Section 24. A driller's report is unavailable, but a cuttings log (described by BSU geology student Jim Braendle in 1980) is provided in Appendix A. The inferred normal faulting in this area (Wood, 1996) is based on the depth of sediments observed in the Owings Well, which is within 2 miles of the granite-basin contact. A water temperature of 110°F was noted at the bottom of the Owings well.

Well ID	Contact	Use	TWP	RNG	SEC	Tract	Gallons Per Minute	Static Water Level	Total Depth	Casing Depth	CSG. DIA.	Construction Date	Permit Number	Tag Number
1	Allen, David	Domestic	Incorrect location on driller's report					342	523			1/10/79	783385	
2	Farnsworth, Larry	Domestic	01N	04E	23	NENE	60	69	147	147	6	5/21/04	815531	D0031310
3	Ambrose, Ronald D	Domestic	01N	04E	23	SWSE	40	205	256	255	8	3/13/92	725434	
4	Underwood, Darla, Underwood, James	Domestic	01N	04E	27	NWNENE	8.7	343	568	515	5	5/7/91	724581	
5	Danskin Properties Ltd	Domestic	01N	04E	27	SWNE			480	480	12	10/20/93	726607	
6	Underwood, James	Domestic	01N	04E	27	SWNE	55	15	75	68	8	10/13/93	727552	
7	Underwood, James	Domestic	01N	04E	27	NWNW	60	338	485	459	6	5/17/85	722191	
8	Agenbroad, Carl	Irrigation	01N	04E	27	SENW	200	6	200			10/8/74	831274	
9	Helmick, Neil	Domestic	01N	04E	27	NWSW	20	340	510	404	6	8/7/92	721450	
10	Agenbroad, Ken D	Irrigation	01N	04E	28	NESW		390	763			9/4/79	776260	
11	Agenbroad, Ken D	Irrigation	01N	04E	28	NESW			85			4/28/79	820312	
12	Van Beek, Guy		01N	04E	28	SWSE		160	375			5/17/78	776251	
13	Winje, George	Domestic	01N	04E	29	SWSE			202	46	6	6/10/94	728344	
14	Boise Stage Stop	Domestic	01N	04E	32	NENE	3	115	130	57	8	10/1/96	721744	
15	Boise Stage Stop	Domestic	01N	04E	32	NENE		115	180	56	8	10/2/96	721745	
16	Boise Stage Stop	Domestic	01N	04E	32	NENE	15	80	140	120	8	10/8/96	721748	
17	Boise Stage Stop	Domestic	01N	04E	32	NENE	20	40	66	54	8	5/17/99	721925	D0009418
18	Kings Men	Domestic	01N	04E	32	NENE	20	636	811	810	6	5/7/82	721990	
19	Boise Stage Stop	Industrial	01N	04E	32	NENE	20	58	130	130	6	5/31/02	776954	D0019974
20	Boise Stage Stop	Domestic	01N	04E	32	NENE	20	34	92			11/14/86	818250	
21	Bravo, Robert	Domestic	01N	04E	32	NWNW	2	24	160	160	6	11/10/01	770361	D0020068
22	Anderson, Tim	Domestic	01N	04E	33	SENE	20	528	665	660	6	11/9/00	767235	D0015796
23	Phagan, Jim	Domestic	01N	04E	33	NENW	17	481	569	560	6	11/17/01	772052	D0019379
24	Stewart, Blackie	Irrigation	01N	04E	34	SWNW	80	89	260			5/10/76	817181	
25	Miller, Ronald L, Pamela K	Domestic	01N	04E	34	SWSE		450	620	596	5	9/23/99	721957	D0012097
26	Botts, Mary	Domestic	01S	04E	2	NENE	20	310	540	158	8	6/2/99	721929	D0009421
27	Meeks, Dale	Domestic	01S	04E	2	NENE	30	331	434	428	6	11/1/02	788349	D0025803
28	Cornell, Rich	Domestic	01S	04E	2	NWNE	20	300	390	383	6	11/28/02	789257	D0025928
29	Buchanan, Jack	Domestic	01S	04E	2	SENE	50	331	476	469	6	5/5/03	799883	D0029374
30	Jorgensen, Glen, Jorgensen, Janet	Domestic	01S	04E	2	SWSW	20	388	633	608	6	11/17/00	767572	D0015631
31	Big View Builders	Domestic	01S	04E	2	SESW	15	365	504	491	6	2/15/04	810178	D0030779
32	Morton, Jerry	Domestic	01S	04E	3	NENE	25	460	586	584	6	11/11/89	721253	
33	Castle, Rosanna K, Castle, Ronald B	Commercial	01S	04E	3	SENE	30	338	535	490	8	7/28/93	721499	
34	Castle, Ronald B, Castle, Rosanna K	Commercial	01S	04E	3	SENE	40	435	678	550	6	4/25/96	721699	
35	William Pipeline West	Cathodic Protection	01S	04E	7	NWNE			500	500	10	1/23/03	789255	D0025927
36	Weimer, Johnny	Stockwater	01S	04E	7	NESE	25	540	695			6/8/73	792733	
37	Hisel, Jim	Domestic	01S	04E	10	SESE	10	350	545	541	6	9/23/98	721877	D0007514
38	Dienes, Ed	Domestic	01S	04E	11	NWNE	27	440	543			6/27/79	781273	

Table 2. Wells with drillers' reports within 3 miles of Mayfield Springs.

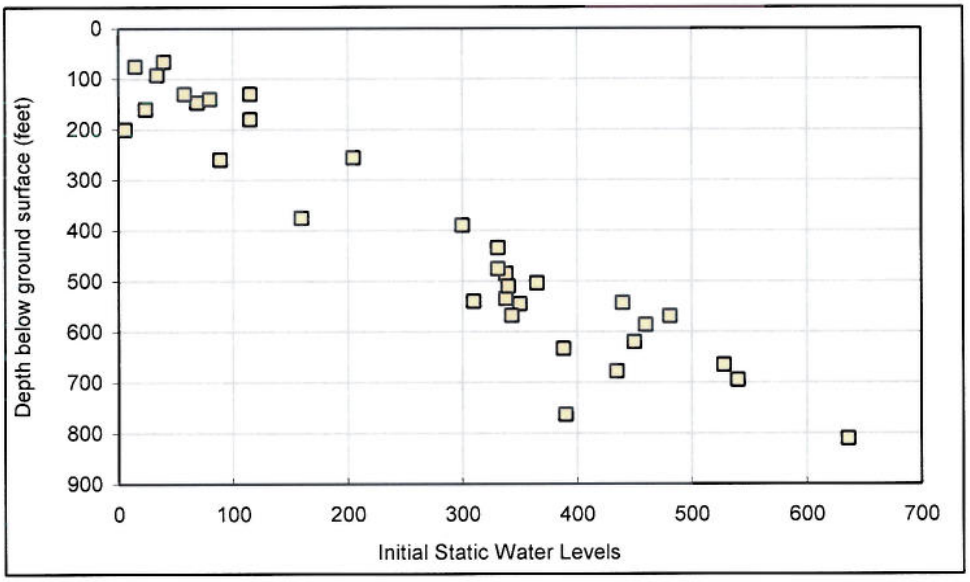


Figure 5: Static water levels recorded on drillers' reports for wells in the Mayfield Springs area.

Most of the shallower existing wells (e.g., less than 300 feet) are within about one mile of Indian Creek or Indian Creek Reservoir. All of the wells further than about one mile from Indian Creek are at least 400 feet in depth (the deepest well extends 811 feet below ground surface).

Initial static water levels recorded on the drillers' reports range from 6 to 636 feet below ground surface. For obvious reasons, static water levels generally correspond with well depth (Figure 5). All wells with static water levels less than 200 feet are located within approximately one mile of Indian Creek or Indian Creek Reservoir.

According to IDWR records, there are currently four wells located on the Mayfield Springs property (wells 10, 11, 12, and 23). These wells have depths ranging from 85 to 763 feet. Static water levels range from 160 to 481 feet below ground surface. Only one of these wells was tested at the time of completion (Well 23, which is 569 feet deep), and this well produced 17 gpm. The 763-foot Helmick Well (well 10 on Figure 4) was subsequently tested at higher rates (see Section 2.4).

Perched water was encountered to the west of Mayfield Springs at shallow depths (30 to 65 feet) in gravel or volcanics (e.g., cinder zones). To the northeast of Mayfield Springs along the Danskin Mountain foothills, water was encountered at depths ranging from 18 to 475 feet in clay and sand or sand and gravel. Indian Creek appears to have a strong influence on the presence of ground water in the vicinity of the creek. Southeast of the proposed development, water-bearing zones were encountered at depths ranging between 118 and 619 feet in sand and gravel, clay and sand, or occasionally cinders.

2.3. Reported Well Yields

Well yields recorded on the drillers' reports, which generally are based on short duration airlift pumping, ranged from 2 to 200 gallons per minute (gpm), although most wells produced less then 50 gpm. Four of the 6 wells rated at more than 50 gpm were less than 260 feet deep; the remaining two wells producing 50 gpm or more were less than 500 feet deep. The production rate in some of the deeper wells may have been limited by the pumping method (airlift). All of the wells listing an initial yield greater than 50 feet are located within approximately one mile of Indian Creek or Indian Creek Reservoir.

2.4. Well Test

A 7-hour well test was conducted in the 763-foot deep Neil Helmick Well on May 20, 1999 (this well is listed as the Ken Agenbroad Well in the driller's report and is shown as well 10 on Figure 4). The results of this well test are included as Appendix B. The well was pumped at 550 gpm for 6 hours, resulting in 73 feet of drawdown. An additional hour of pumping at 795 gpm resulted in a total drawdown of 92 feet. The well test data yielded an aquifer transmissivity estimate of approximately 7,300 gpd/ft, indicating moderate aquifer productivity. The conclusion from this well test was that wells of moderate productivity (400 to 800 gpm) could likely be developed in this area.

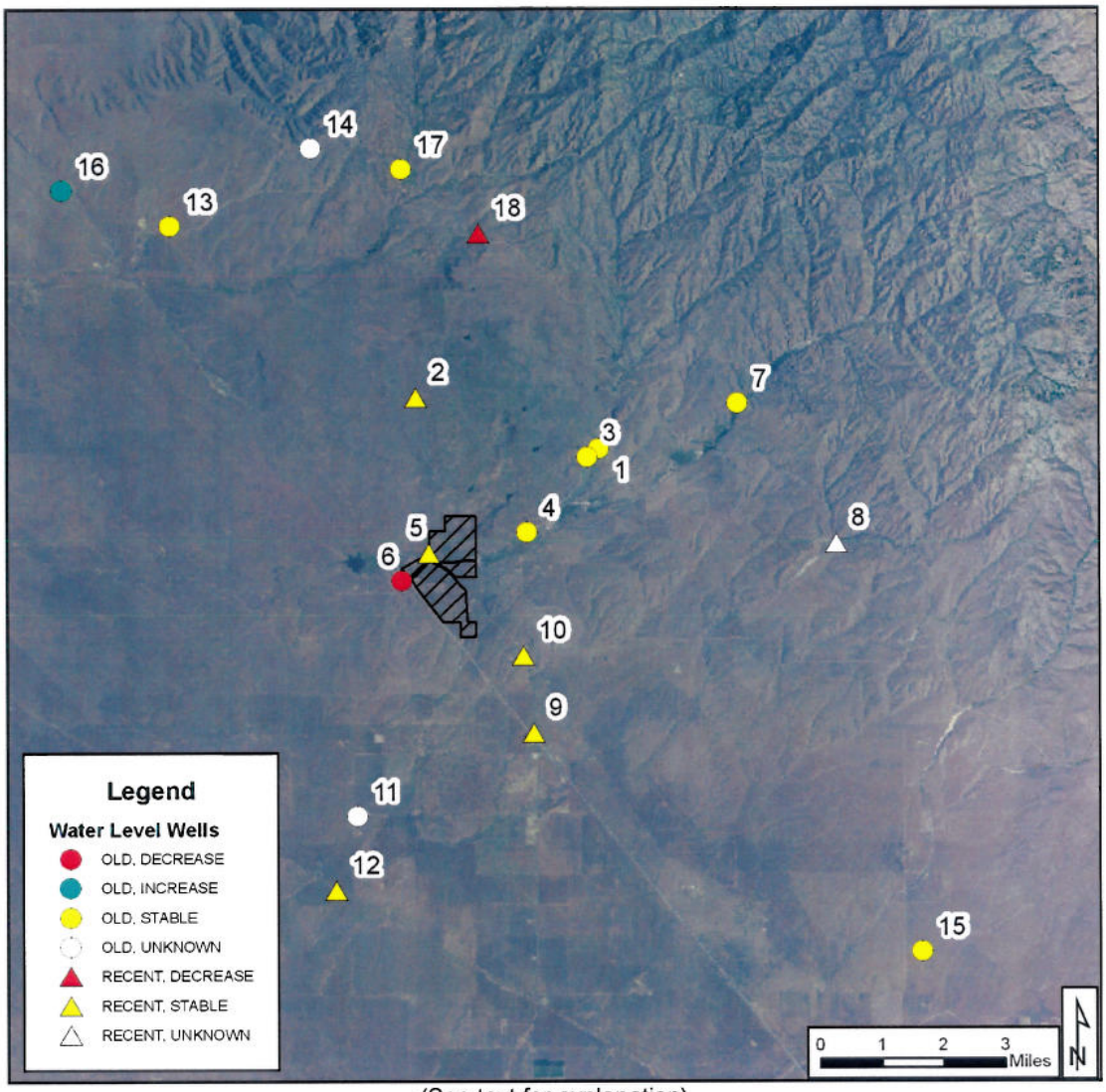
2.5. Water Levels

The IDWR "Well_Log" database has water level data for 18 wells within 10 miles of Mayfield Springs. One of these wells is located on the Mayfield Springs property. Hydrographs for the 18 wells are provided in Appendix C.

Figure 6 provides a summary of local water level trends. Wells that include water level data collected in the last 5 years are labeled as "recent" and are indicated with a "Δ" in Figure 6. Wells for which all water level data are at least 5 years old are labeled as "old" and are indicated with a "O" in Figure 6. Water level trends were characterized (Figure 6) as increasing, decreasing, stable, or "unknown" (in which there were too few data points to describe a water level trend). Water levels were defined as increasing if measurements increased by at least 10 feet during the last 10 years of the sampling record (based on at least three measurements). Water levels are defined as decreasing if at least three measurements resulted in a decrease of at least 10 feet. Water levels were defined as stable if water level changes during the last 10 years of the sampling record were less than 10 feet.

With these criteria, seven wells with older measurement data had stable water levels, one well experienced decreasing water levels, one well had increasing water levels, and one well was classified as unknown (i.e., there were insufficient water level data to determine a water level trend). Of the recently monitored wells, five had stable water levels, one well experienced decreasing water levels, and one well had insufficient data for determining a trend. In total, 12 of the 17 wells had stable water levels, two wells had

decreasing water levels, one well had increasing water levels, and three of the hydrographs could not be classified.



(See text for explanation)

Figure 6. Wells with water level measurements near Mayfield Springs.

Based on these observations, there have been no widespread ground water level declines Mayfield Springs area over the last 30 years. In most of these wells, water levels have remained steady over the data period, with some short-interval variations associated with seasonal ground water usage. At two of the wells with the longest sampling record (wells 9 and 12 on Figure 6), water levels have increased over time, but that increase has been less than 10 feet. There are two wells (wells 6 and 18) where water levels declined by more than 10 feet, but these local declines do not appear to be representative of general ground water conditions in the area.

2.6. Ground Water Flow Direction

Because of the paucity of wells in this area, ground water contours (Figure 7) in the Mayfield Springs area were drawn using water levels from two sources: (1) selected data from recently-measured IDWR monitoring wells and (2) initial static water levels listed on drillers' reports. Measurement points used for contours are highlighted in the Appendix C hydrographs. Wells for which static water levels from drillers' reports were used are indicated in Figure 7; drillers' reports for these wells are provided in Appendix D. Ground surface elevations are taken at the centroid of the quarter-quarter in which the well is located (unless more precise location data were available). Potential errors in these contours may include incorrect well locations, incorrect ground surface elevations, and/or incorrect measurements.

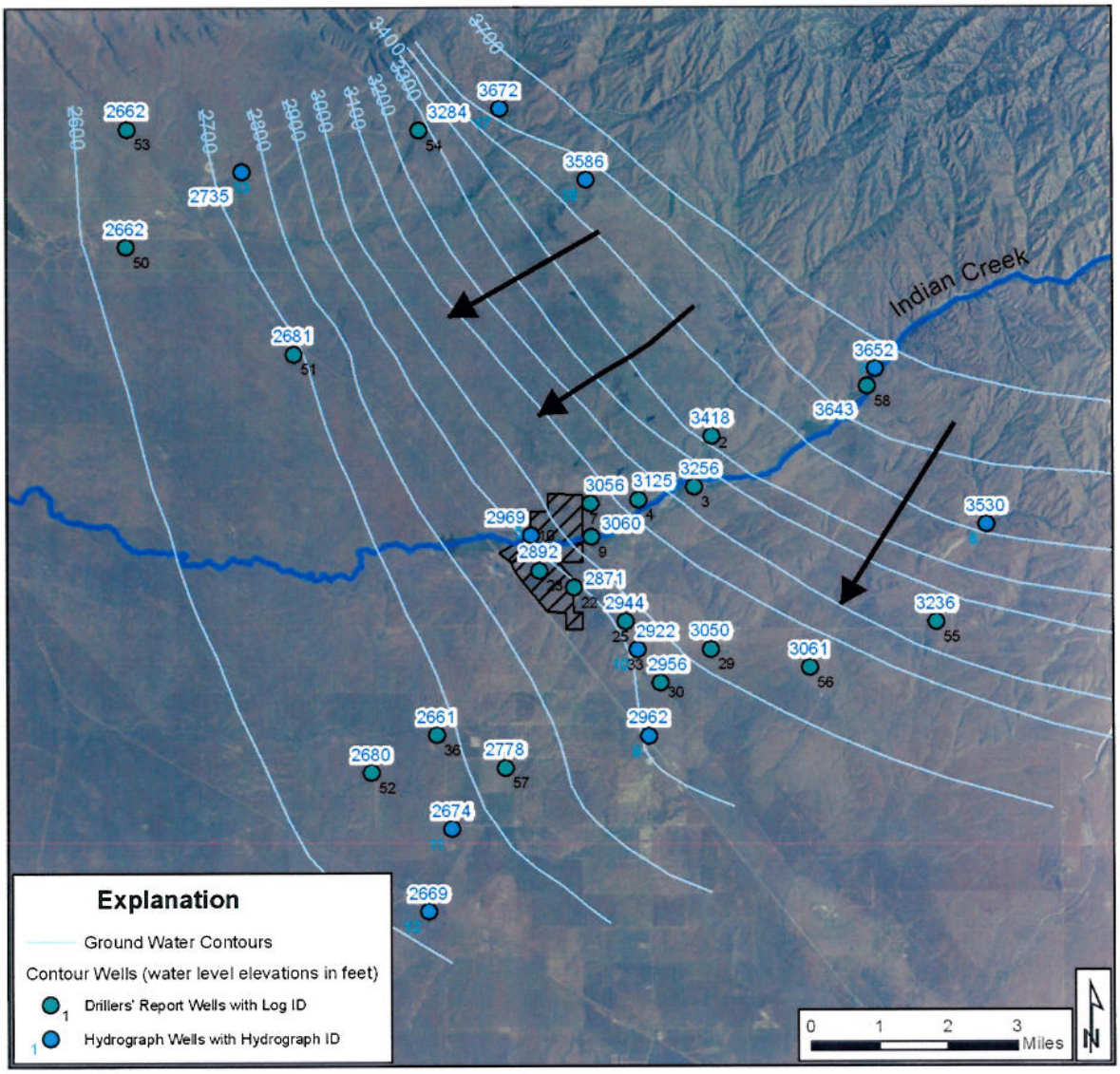


Figure 7. Ground water flow directions in Mayfield Springs area.

In general, ground water flows from high elevation to lower elevation (northeast to southwest). This general ground water flow direction is consistent with conclusions based on USGS measurements in 1980 (Newton, 1991).

2.7. Recharge and Discharge

Recharge to aquifers in the Mayfield Springs area occurs as (1) seepage from surface channels (primarily Indian Creek, tributaries to Indian Creek, and Indian Creek Reservoir), (2) infiltration from precipitation in the immediate Mayfield Springs area, and (3) underflow from the Danskin Mountains northeast of the site. Seepage from surface channels recharges shallow aquifers; shallow aquifers leak to lower, deeper aquifers. Underflow from northeast of the Mayfield Springs area originates as infiltration in highland areas; surface runoff from these highlands is the primary source of water for Indian Creek.

There is very little (if any) natural ground water discharge to Indian Creek in the Mayfield Springs area because regional aquifer water levels (especially in deeper zones) are far below the creek elevation. The ultimate discharge point for aquifers in the Mayfield Springs area is the Snake River. The primary local aquifer discharge is to existing wells in this area.

2.8. Water Quality

There are seven wells within five miles of Mayfield Springs that have been monitored for water quality since 1991 (Figure 8). Sampling results for selected analytes are included in Appendix E. Other than the presence of coliform bacteria in isolated wells (which generally indicates site-specific contamination and is not indicative of regional ground water quality) water quality from these monitoring wells appears to be very good.

The average concentration of arsenic at these monitoring wells was generally around 2 µg/l, below the Maximum Concentration Limit (MCL) of 10 µg/l. One water sample taken from station 01N 04E 23DDC1 in 1991 had an arsenic concentration of 9.0 µg/l, very close to the MCL. The maximum fluoride concentration in these wells was less than 1.0 mg/l (the MCL for fluoride is 4.0 mg/l). The maximum concentration of nitrate at these stations was 4.6 mg/l, below the MCL of 10.0 mg/l. The maximum gross alpha concentration was less than 3.0 pCi/l, well below the MCL of 15.0 pCi/l. The secondary standards for iron, manganese, and total dissolved solids were not exceeded at any of these wells.

Total dissolved solids concentrations (TDS) were available for four wells, with values ranging from 134 to 182 mg/L. In the lower Boise River Basin TDS values less than about 200 mg/L are typically associated with infiltration from drainages in granitic areas (Petrich and Urban, 2004); ground water with low TDS values has generally experienced little chemical interaction with aquifer minerals.

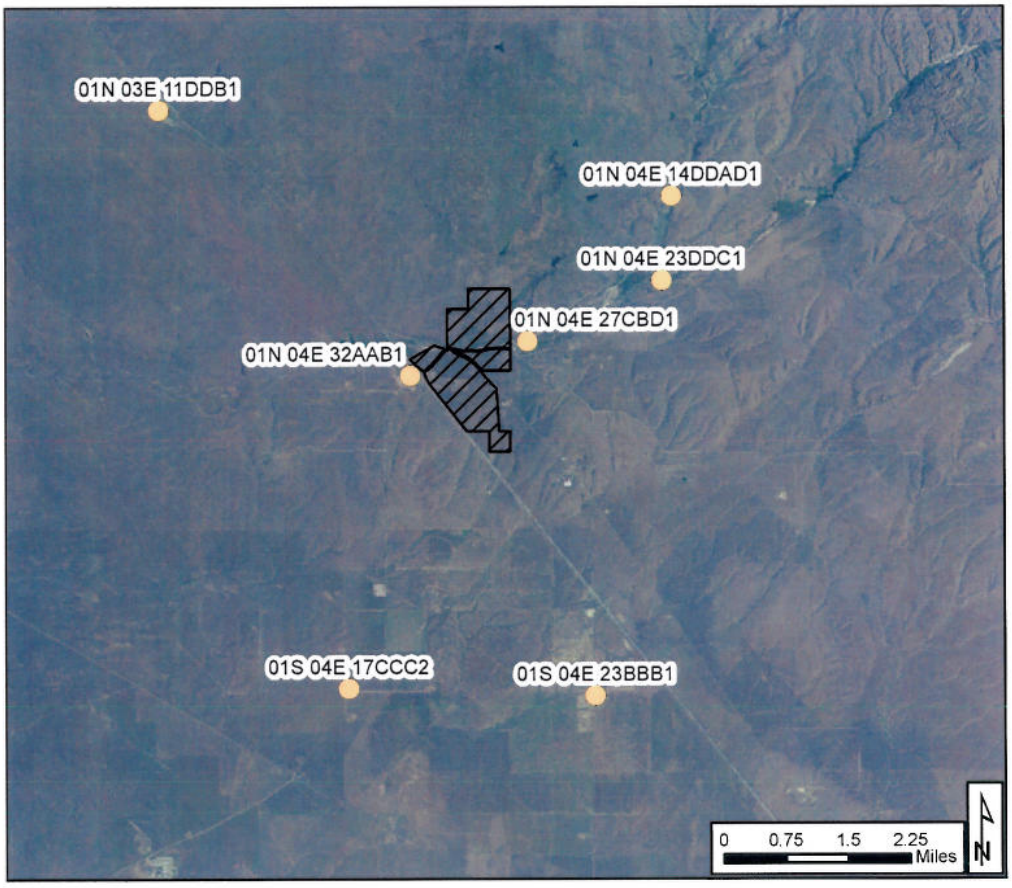


Figure 8. Wells with water quality data near Mayfield Springs.

Water from the Neil Helmick Well (i.e., Ken Agenbroad Well or well 10 on Figure 4) was analyzed in 1999. Results are presented in Appendix B. Water quality in samples from this well was excellent, with no parameters exceeding primary or secondary water quality standards.

2.9. Mountain Home Ground Water Management Area

The Mayfield Springs property is located at the northwestern edge of the Mountain Home GWMA. The Mountain Home GWMA was designated on November 9, 1982 because of declining ground water levels. A GWMA is designated by the IDWR when a ground water basin may be approaching the point of having insufficient ground water supplies for existing users. New ground water applications may be approved by the Director only after it is determined that sufficient ground water supply is available and the new appropriation will not negatively impact other senior water rights.

The Mayfield Springs area is also located about 5 miles northwest of the Cinder Cone Butte Critical Ground Water Area (CGWA). The Cinder Cone Butte CGWA was designated on May 7, 1981 because of declining ground water levels (Harrington and Bendixsen, 1999). A CGWA is designated by the IDWR when evidence suggests

insufficient ground water supplies for users at current or projected rates of withdrawal. The IDWR Director can deny new ground water applications if the proposed point of diversion lies within a CGWA.

Ground water level contours (Section 2.6) indicate a ground water flow direction that is roughly parallel to the Ground Water Management Area Boundary. Four of the 5 wells within the Mountain Home GWMA near the Mayfield Springs property have either stable or rising ground water levels (Appendix C). There are too few data points for a meaningful hydrograph in the fifth well (Well # 11).

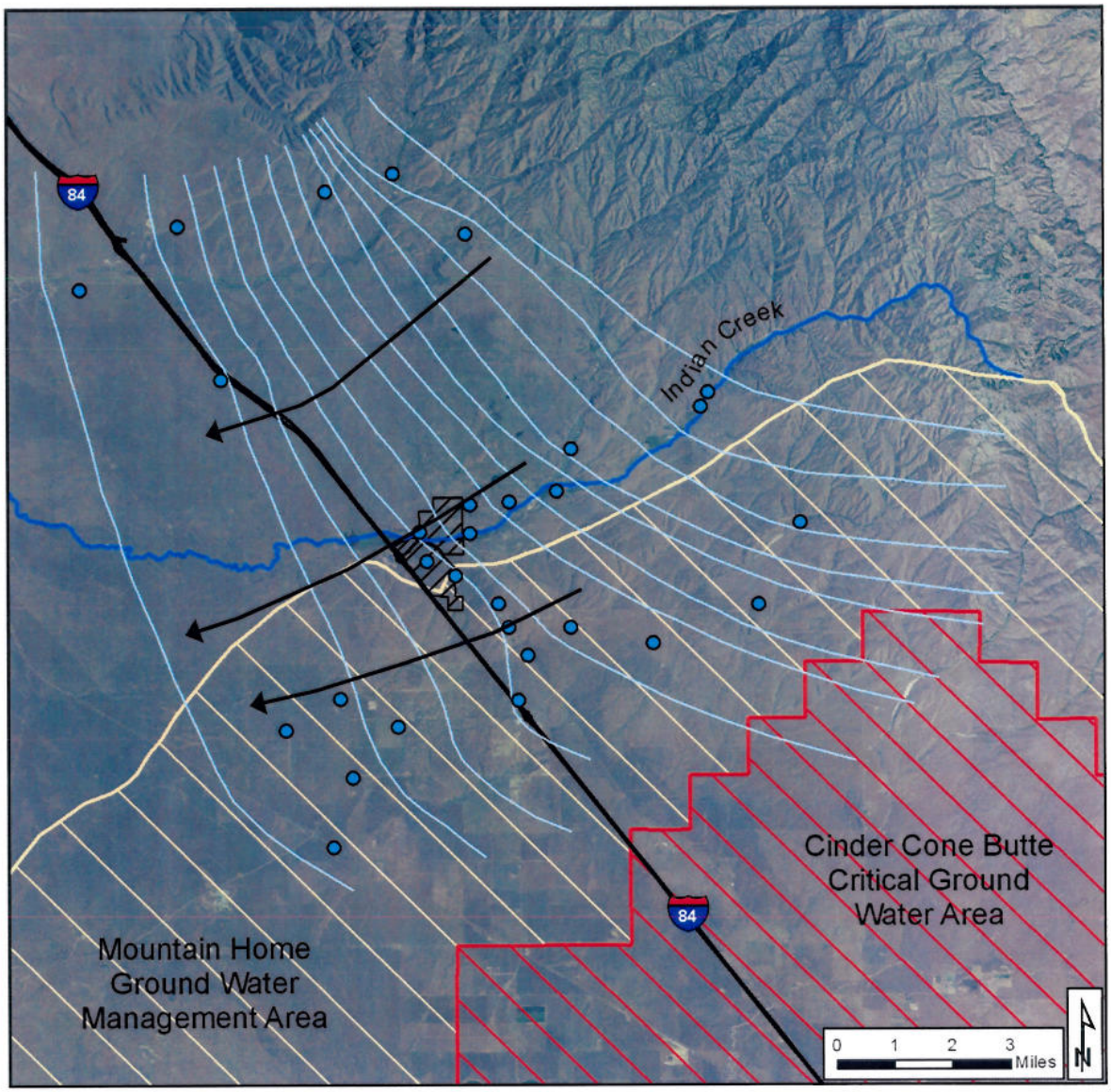


Figure 9: Mountain Home Ground Water Management Area boundary (with ground water contours and general ground water flow directions – see also Figure 7).

3. WATER RIGHTS

A preliminary water rights search was conducted in the vicinity of the Mayfield Springs property. The purpose of the search was to identify ground water rights with points of diversion in the immediate vicinity of proposed Mayfield Springs wells. Water rights were identified based on a (1) map search using IDWR spatial data (current as of February 28, 2006) and (2) text-based search using the IDWR online water rights database.

A summary of water rights with points of diversion within or near 0.5 miles of the proposed Mayfield Springs wells is provided in Table 3. Points of diversion for Snake River Basin Adjudication (SRBA) claims within or near 0.5 miles of proposed new wells are shown in Figure 10 (page 18). Not all existing rights were claimed in the SRBA; water rights based on statutory claims, decrees, and/or licenses having points of diversion within or near 0.5 miles of the proposed Mayfield Springs wells are shown in Figure 11. A list of Snake River Basin Adjudication (SRBA) claims, active permits, SRBA recommendations, and statutory claims, decrees, and/or licenses in the vicinity of the Mayfield Springs development is provided in Appendix F. Of these, water rights 63-8051 and 63-3070 have places of use within the Mayfield Springs community.

One of these rights (61-2328 in Figure 11, page 19) appears to have the incorrect point of diversion location listed in the IDWR database. The Elmore County location and the basin number (61) do not correspond with the point of diversion location (NESE of Section 21 in T1N R4E). This right is likely not within 0.5 miles of proposed Mayfield Springs pumping wells.

Location	No.	Basis	Priority Date	Div. Rate (cfs)	Source List	Water Uses	Owner
Applications							
T1N R4E 28, 29, 32NE, 33	63-32225		9/16/2005	10	GROUND WATER	MUNICIPAL	INTERMOUNTAIN SEWER & WATER CORP (Current)
SRBA Claims							
T1N R4E 28	63-3070	License	12/13/1955	0.02	GROUND WATER	DOMESTIC, IRRIGATION, STOCKWATER	AGENBROAD, CARL S (Current); AGENBROAD, JUDITH A (Current)
T1N R4E 29, 32NE	63-7571	License	3/21/1972	0.09	GROUND WATER	COMMERCIAL	FRENCH, ROBERT L (Current)
T1N R4E 27SW, 28	63-8051	License	10/17/1974	2.44	GROUND WATER	IRRIGATION	GABLE A RANCH (Current)
T1N R4E 27SW	63-21088	Beneficial Use	1/1/1949	0.14	GROUND WATER	DOMESTIC, IRRIGATION, STOCKWATER	AGENBROAD, CARL S (Current); AGENBROAD, JUDITH A (Current)
SRBA Recommendations							
T1N R4E 29, 32NE	63-7571	License	3/21/1972	0.09	GROUND WATER	COMMERCIAL	FRENCH, ROBERT L (Current)
T1N R4E 27SW, 28	63-8051	License	10/17/1974	2.44	GROUND WATER	IRRIGATION	GABLE A RANCH (Current)
Statutory Claims, Decrees, and/or Licenses							
T1N R4E 21SE	61-2328	License	9/22/1958		UNNAMED STREAM	STOCKWATER STORAGE	UNITED STATES OF AMERICA ACTING THROUGH (Current)
T1N R4E 34NW	61-10432	Decreed	5/20/1977	0.04	GROUND WATER	DOMESTIC	ARNOLD, MAMIE L (Current)
T1N R4E 34NW	61-10433	Decreed	10/10/1985	0.04	GROUND WATER	DOMESTIC	WALKER, LELA S (Current)
T1N R4E 34NWNE	61-10525	Decreed	4/29/1980	0.06	GROUND WATER	DOMESTIC, STOCKWATER	BRUBAKER, CARL (Current); BRUBAKER, NANNETTE W (Current)
T1N R4E 28	63-3070	License	12/13/1955	0.02	GROUND WATER	DOMESTIC, IRRIGATION, STOCKWATER	HANSEN, JESS T (Current)
T1N R4E 21SE	63-3662	Decreed	5/5/1953		SHEEP CREEK	STOCKWATER FROM STORAGE, STOCKWATER STORAGE	UNITED STATES OF AMERICA ACTING THROUGH (Current)
T1N R4E 32NE	63-7571	License	3/21/1972	0.09	GROUND WATER	COMMERCIAL	PECON SHOPPE OF BOISE (Current); STUCKEYS (Current)
T1N R4E 27SW, 28	63-8051	License	10/17/1974	2.44	GROUND WATER	IRRIGATION	GABLE A RANCH (Current)
T1N R4E 29, 32NE	63-10372	License	7/28/1986	0.2	GROUND WATER	COMMERCIAL, DOMESTIC, FIRE PROTECTION, IRRIGATION	FRENCH, ROBERT L (Current)
T1N R4E 34NWNE	61-10110	Decreed	4/29/1980	0.06	GROUND WATER	DOMESTIC, STOCKWATER	MILLER, PAMELA K (Current); MILLER, RONALD L (Current)

Table 3: Water rights within 0.5 miles of proposed pumping wells.

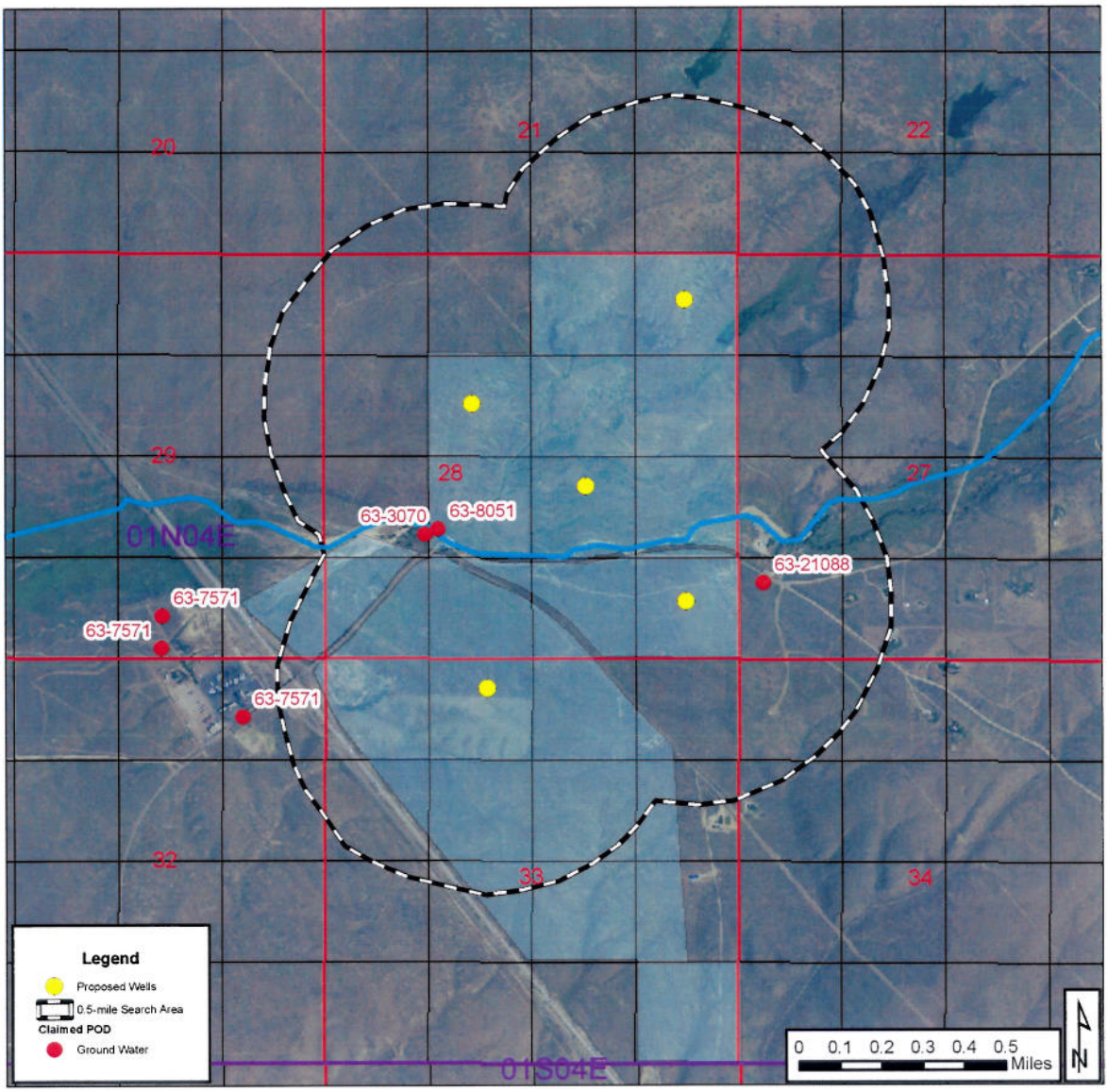


Figure 10: SRBA claims in the Mayfield Springs area.

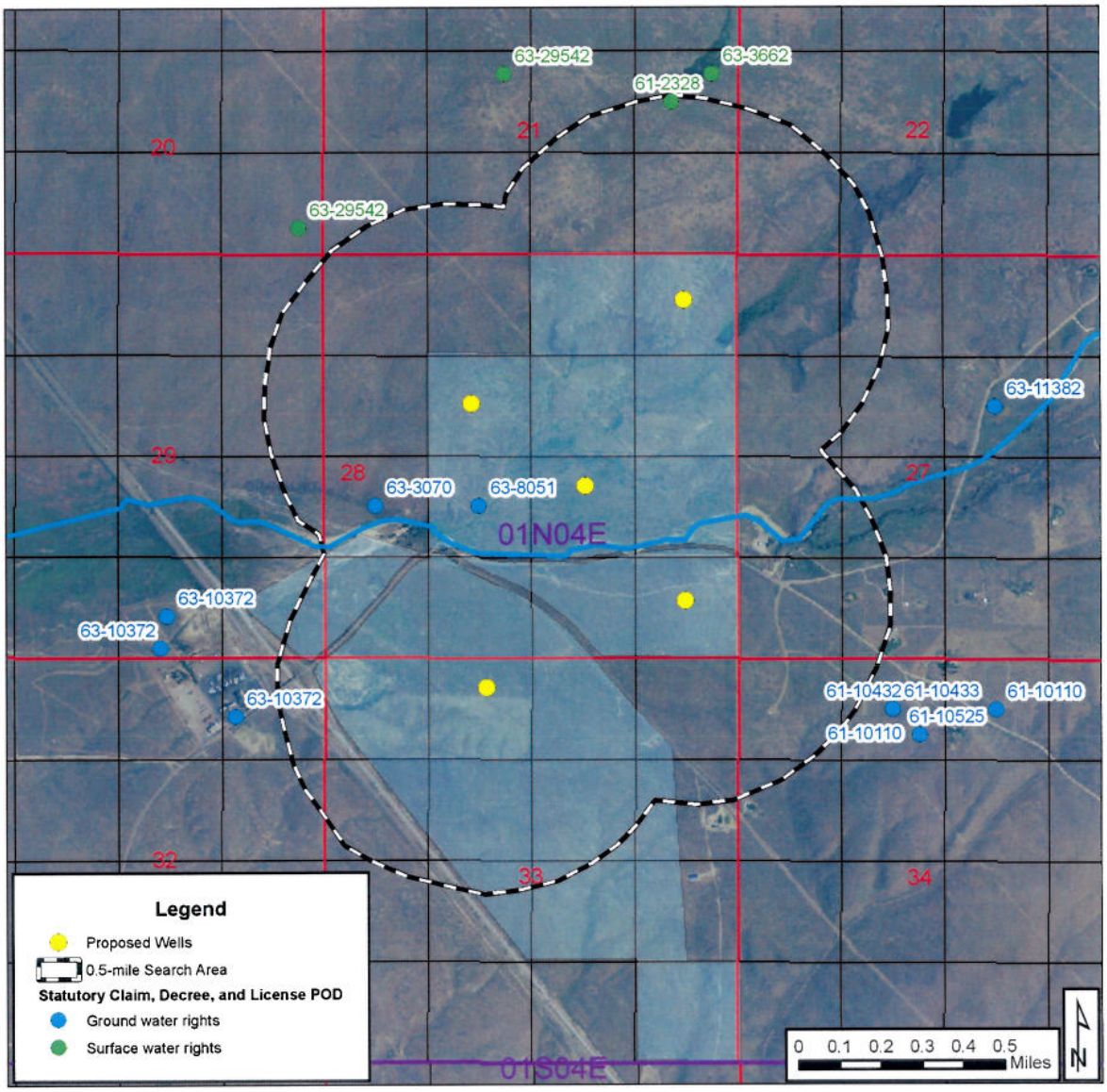


Figure 11: Water rights (based on statutory claims, licenses, and/or decrees) with points of diversion within 0.5 miles of the proposed Mayfield Springs wells.

4. WATER SUPPLY ASSESSMENT

4.1. Water Budget

A general basin water budget was prepared to estimate recharge rates to aquifers in the Mayfield Springs area. Surface water budget components included precipitation and losses to areal infiltration, surface water runoff, evapotranspiration, and seepage from surface channels. Aquifer recharge components included areal infiltration and stream seepage. Aquifer discharge was estimated based on assumed well withdrawals. These water budget components are described in the following sections and summarized in Section 4.1.5.

4.1.1. Contributing Basin

The upper Indian Creek watershed area, which defines surface-water flow in and upgradient of the Mayfield Springs property, is shown in Figure 12. However, this surface water drainage does not necessarily define subsurface flow divides. Aquifers in the Mayfield Springs area extend beyond, and can be influenced by, recharge and discharge from areas beyond the upper Indian Creek watershed area. For this analysis it was assumed that the contributing basin for aquifers in the Mayfield Springs area, and the area of well withdrawals near the Mayfield Springs property, is the (1) area within approximately 3 miles of the Mayfield Springs property and (2) basins upgradient to this 3-mile area (Figure 12). Surface and ground water tributary to this radial area originates primarily from the upper Indian Creek watershed. This assumed water budget area covers approximately 49,000 acres.

4.1.2. Precipitation

Average annual precipitation estimates, based on data obtained from the IDWR, range from approximately 12 to 14 inches per year in lower elevations of the water budget area. The highest elevations receive 24 to 28 inches of precipitation in an average year (see Figure 13, page 22). The average precipitation volume over the water budget area is approximately 72,165 acre feet. This estimate is based on an average of 13 inches per year over 9,709 acres, 15 inches per year over 11,377 acres, 17 inches per year over 7,505 acres, 19 inches per year over 5,459 acres, 22 inches per year over 14,816 acres, and 26 inches per year over 456 acres.

4.1.3. Aquifer Inflows

4.1.3.1. Areal Infiltration

Only a small portion of precipitation infiltrates through the soil; the remainder is lost to evaporation, transpiration by plants, or is collected as surface runoff. Estimates of areal infiltration rates might range from about 2 to 8 percent. An average infiltration rate of 5

percent of precipitation was assumed for this analysis. Factors supporting this assumption include (1) abundant sandy areas and/or fractured basalt in low-lying areas, (2) the presence of decomposed granitic soils, granitic fractures, and alluvial sediments in upland areas, and (3) higher rates of precipitation during months of lowest evapotranspiration (i.e., winter). The estimated average areal infiltration, based on the assumption that 5 percent of precipitation becomes deep infiltration, is about 3,600 acre feet.

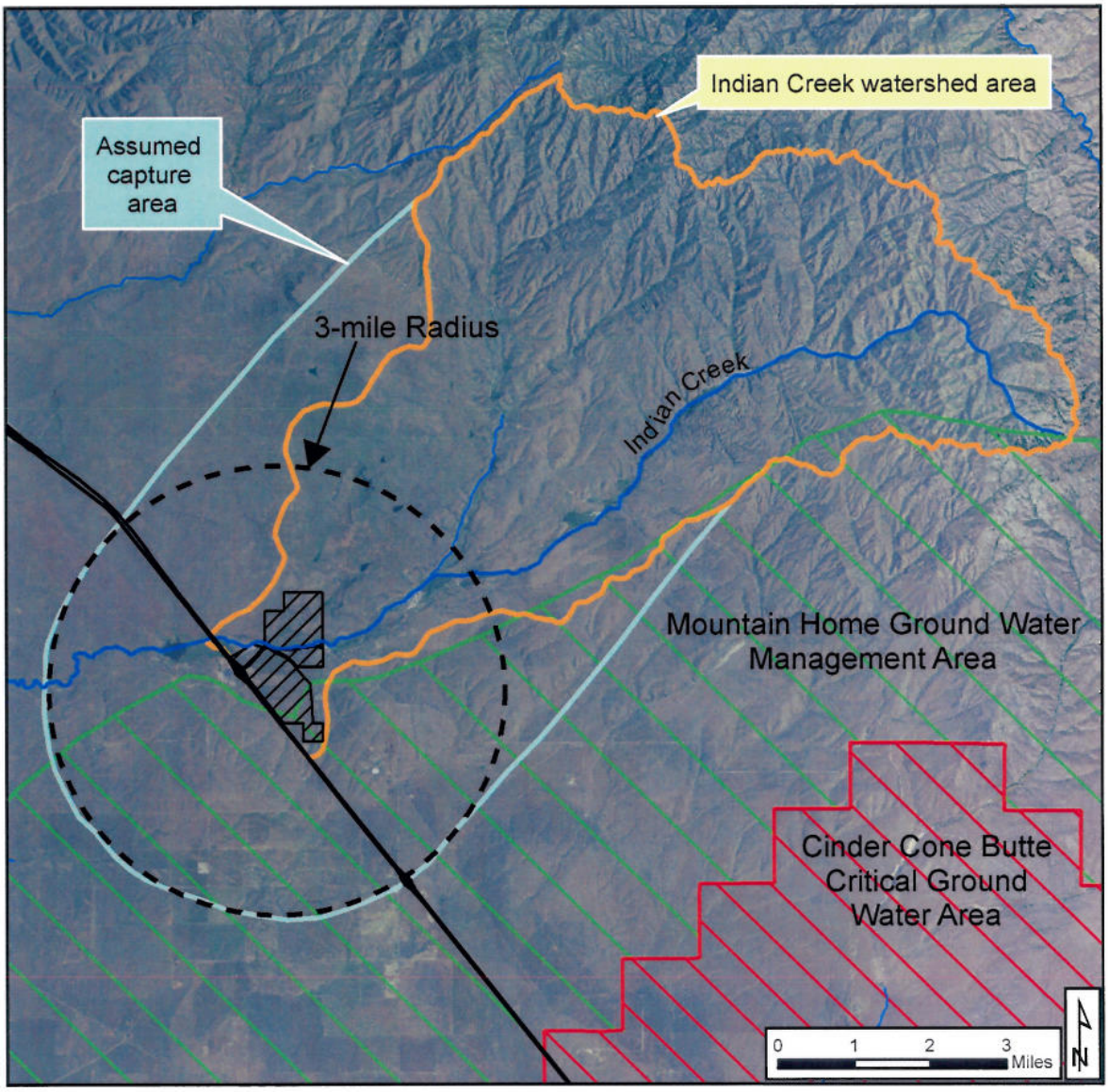


Figure 12. Ground water capture area in the vicinity of Mayfield Springs.

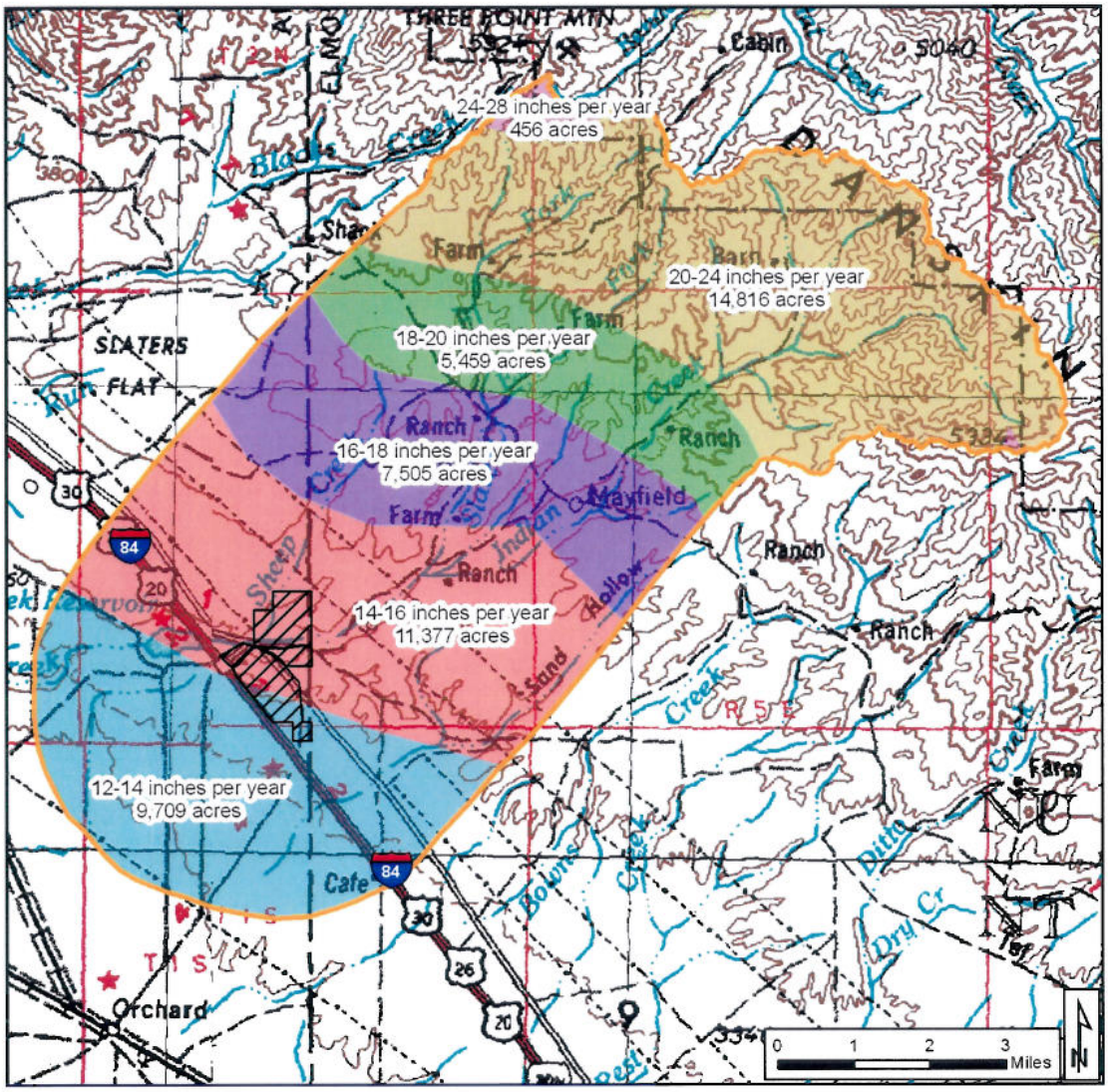


Figure 13. Annual precipitation rates in the Mayfield Springs area.

4.1.3.2. Surface Water Runoff

The primary surface water drainage in the area is Indian Creek, which channels water into Indian Creek Reservoir. Two flow measurements were made by the USGS in Indian Creek approximately 2,000 feet northeast of Mayfield (Section 17, T1N, R5E – Site 13211100). Flow rates of 0.6 cfs 1.66 cfs were measured on February 2, 1954 and June 26, 1954, respectively. The actual flow in Indian Creek is variable. Channel morphology suggests possible flood flows 100 cfs or greater.

Approximately 8-10 cfs was observed flowing in Indian Creek at the Mayfield Bridge (Figure 15, page 24) during a reconnaissance visit on March 13, 2006. The Indian Creek channel downstream of the Mayfield Springs property was dry. All of the water entering the Indian Creek Valley at Mayfield had seeped into the subsurface before reaching the Indian Creek Reservoir.

Anecdotal information suggests that this is a common pattern. Neil Helmick (a local resident) suggests that flow from Indian Creek into the Indian Creek Reservoir is rare. The Indian Creek channel has generally not carried water through the Mayfield Springs property in the last 10 years. Mr. Helmick indicates that a large portion Indian Creek Reservoir water comes from Sheep and Caldwell Creeks.

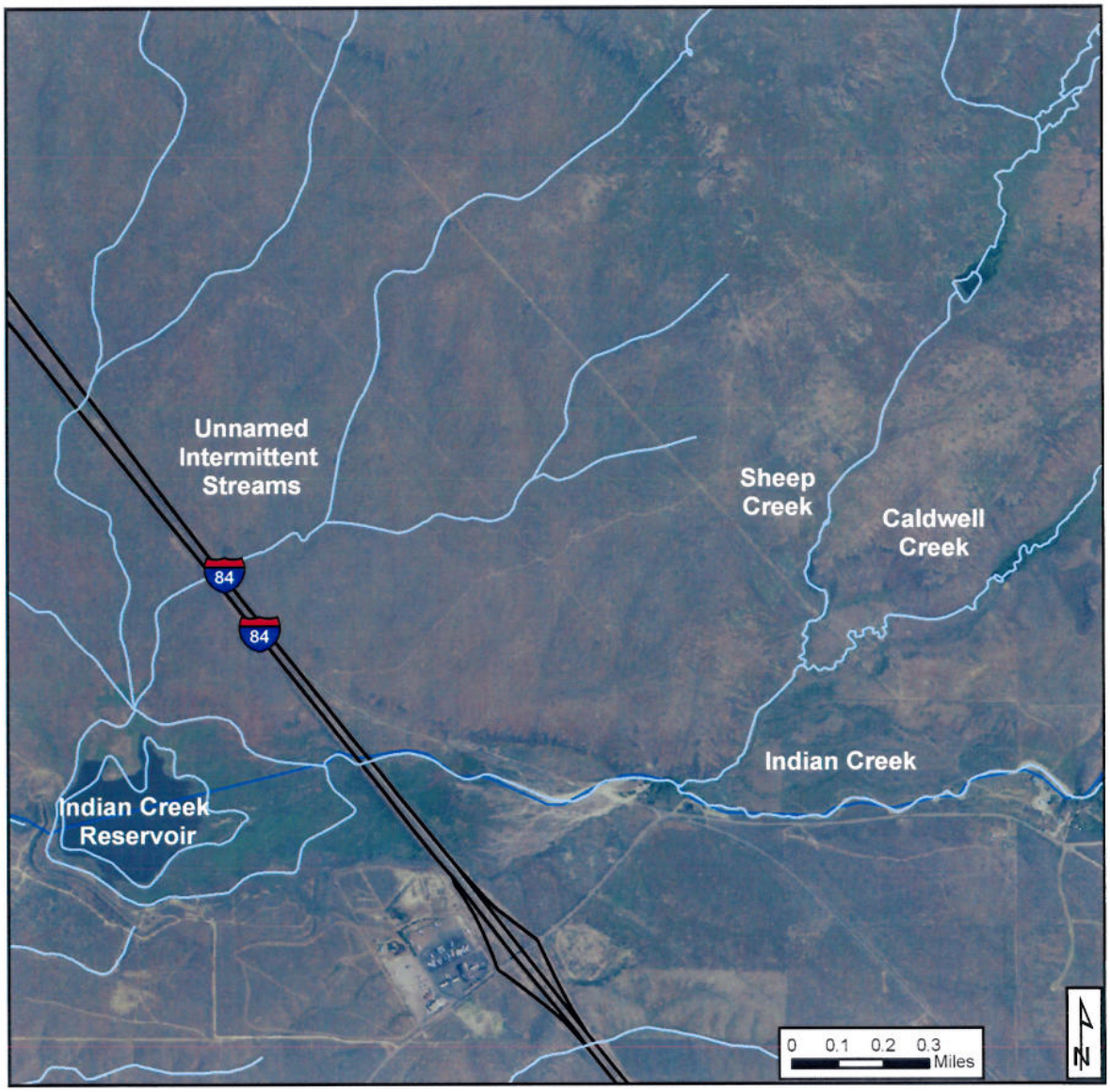


Figure 14: Indian Creek Reservoir and vicinity.

4.1.3.3. Indian Creek Reservoir

Indian Creek flows (primarily during high-water events) into Indian Creek Reservoir. Other sources of flow into the Indian Creek Reservoir include Sheep and Caldwell

Creeks and several unnamed streams (Figure 14). Discharge from Indian Creek Reservoir is to the lower Boise River.

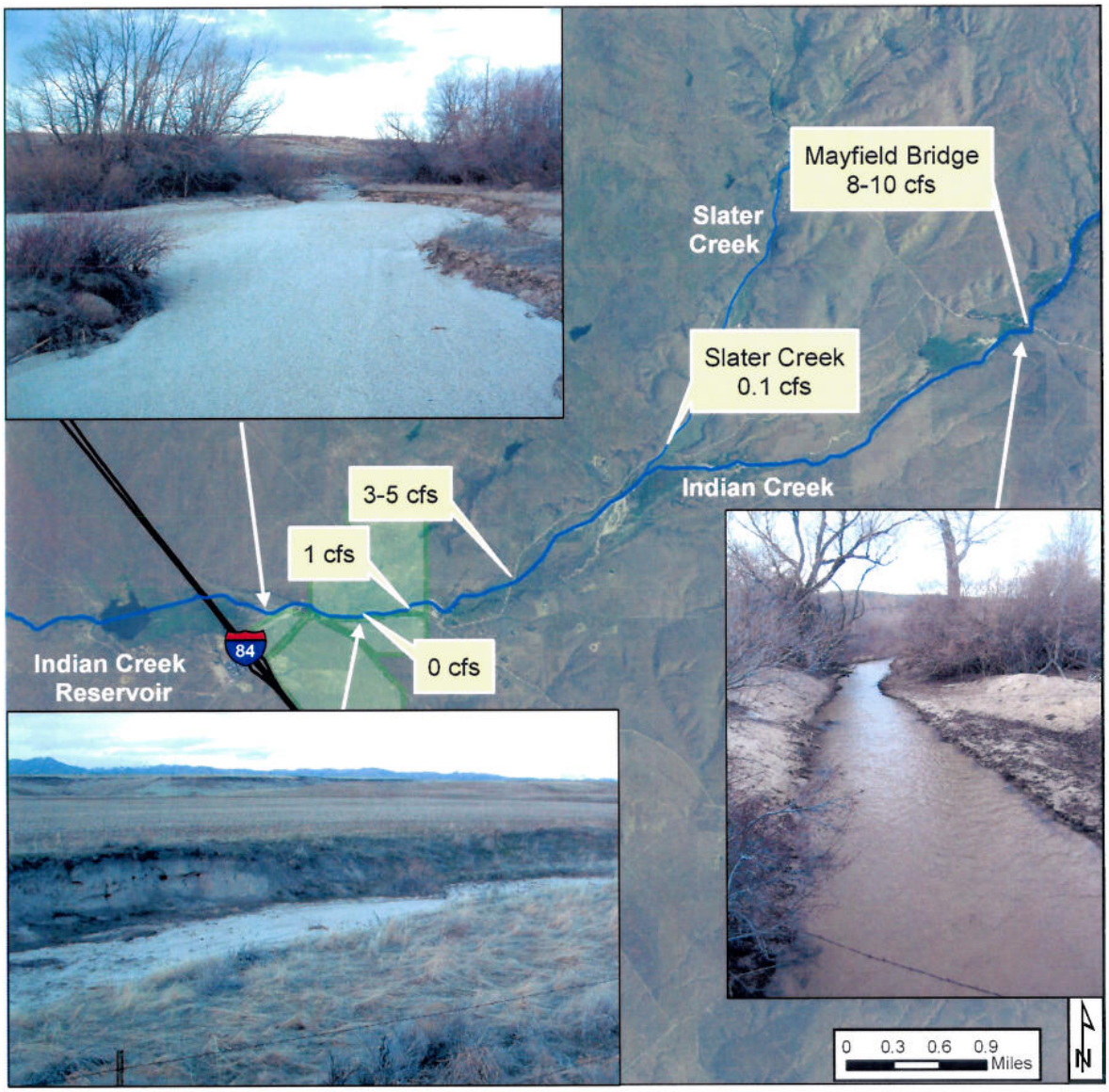


Figure 15: Approximate Indian Creek flows on March 13, 2006.

The Idaho Department of Fish and Game has water right claims (63-4679 and 63-4338) pending for the use of water in Indian Creek for wildlife storage, recreation storage, and fish propagation. The claims lists a diversion rate of 100 cfs and volume limit of 3,000 acre-feet. The IDWR dam safety database lists the storage volume of Indian Creek Reservoir as 2,035 acre feet. However, there is insufficient water to fill the reservoir in many years.

Based on general observations and anecdotal information, it was assumed that there was zero discharge from Indian Creek Reservoir during normal years. Thus, it was assumed that any water entering Indian Creek Reservoir is lost to evaporation or infiltrates into the subsurface. The reservoir, based on the image in Figure 14, is approximately 41 acres in size. This size varies according to season. Assuming an annual evaporation loss of 3.5 feet per acre and an average 80-acre reservoir/riparian area size, the total evaporative losses in an average year from the reservoir area might be approximately 280 acre feet.

4.1.3.4. Evapotranspiration

A preliminary 2002 SEBAL[1] estimate for seasonal rangeland evapotranspiration in the lower Boise River basin was 9.5 inches (Morse et al., 2003). Assuming that this rough approximation applies to the Indian Creek watershed, the annual volume of evapotranspiration could be approximately 39,000 acre feet.

4.1.3.5. Stream Seepage

The areal infiltration, evapotranspiration, and Indian Creek Reservoir evaporation estimates (approximately 3,600 acre feet, 39,000, and 280 acre feet, respectively) account for only a portion of the estimated average precipitation (72,000 acre feet). This leaves a difference of approximately 29,000 acre feet. A substantial portion of this water seeps into the subsurface from the Indian Creek channel, tributary channels, and from Indian Creek Reservoir. Evidence for substantial seepage includes observed channel losses, the presence of shallow coarse-grained alluvial sediments (which enable seepage to the subsurface), substantial wetland and riparian areas in the Mayfield area, shallow (likely perched) aquifers in the vicinity of Indian Creek, and low TDS values reflecting infiltration of surface runoff from a granitic area.

All of the water in upper Indian Creek on March 13, 2006 was lost to the subsurface by the time the channel exited the Mayfield Springs property. The observed flow on this day (8-10 cfs) was likely less than typical for March because of cool basin temperatures. A typical spring flow in Indian Creek at Mayfield could be higher than 10 cfs, especially in good water years. An average flow of 20 cfs (combined Indian Creek flow and shallow subsurface flow into the Mayfield area) over a 3-month period would result in an aquifer gain of approximately 3,600 acre feet (assuming that all of this water is lost to channel seepage). In addition, temporary higher flows would also contribute to seepage losses from either the channel or Indian Creek Reservoir. A temporary, 3-day flow of 100 cfs (resulting from a possible rain-on-snow event during the winter) could result in a seepage loss of about 600 acre feet.

These combined seepage losses (4,200 acre feet) are substantially less than the 29,000 acre feet difference between precipitation and other estimated surface water losses. Reasons for the discrepancy could include (1) lower than estimated precipitation, (2)

---

[1] "Surface Energy Balance Algorithm for Land"

higher than estimated evapotranspiration, (3) higher than estimated areal infiltration rates, (4) higher than estimated stream seepage rates, or (5) surface irrigation.

A text-based search of the IDWR water rights database for water rights in sections 18, 19, 23, 24, 27, and 28 revealed one decreed surface-water irrigation right (63-2143) listing diversions from Big Draw Creek , Dry Hollow Creek , Indian Creek , Slater Creek for the irrigation of 53 acres. All other irrigation water rights list ground water sources. Diversions under water right 63-2143 would not cause the discrepancy in water budget estimates listed above.

In summary, seepage from Indian Creek and Indian Creek Reservoir are likely higher than the 4,200 acre feet listed above but less than the 29,000 acre-foot difference between precipitation and other estimated losses.

4.1.4. Aquifer Outflows

Most of the subsurface flow from aquifers in this area is (1) withdrawals by wells and (2) underflow to toward the Snake River. There are 73 wells listed in the IDWR well construction database as located within the basin boundary (as defined in Figure 12). Of these 73 wells, 57 are for domestic uses, four are for irrigation, two are for industrial (Boise Stage Stop), two are for cathodic protection, four are for commercial purposes, one is for stockwater, one is a test well, and two have unknown uses. The amount of land irrigated by ground water in this basin appears to be small, likely less than 150 acres. Assuming 150 acres of irrigation (at 4.5 acre feet per year per acre for delivery and consumptive purposes), domestic use for 57 homes (at 0.3 acre feet per year per household), commercial/industrial from six wells (at 1.0 acre feet per year per well), and stockwater use for 100 cattle (1.4 acre feet per year), the annual average consumption of ground water might be approximately 700 acre feet per year. This is likely a high estimate of total withdrawals because an irrigation application rate of 4.5 feet per acre implies some inefficiency which would result in returns (recharge) to the shallow subsurface.

4.1.5. Water Budget Summary

A summary of estimated basin and aquifer inflows and outflows is provided in Table 4. Based on the estimates described above, there is likely a total recharge rate ranging from about 8,600 to 32,600 acre feet available from aquifers in the Mayfield Springs area in an average year.

A 3-mile area had been assumed for estimating areal recharge. This radius is likely greater than the actual zone influenced by proposed pumping. However, the areal assumption used for estimating water budget components is likely of small consequence because most recharge to local aquifers appears to occur not from areal infiltration in the 3-mile radial area but from seepage from Indian Creek, tributaries to Indian Creek, and Indian Creek Reservoir.

Component	Inflow to Basin (afa)	Surface Outflow from Surface Basin (afa)	Estimated Aquifer Recharge (afa)	Current ground water diversions (afa)	Available for Appropriation (afa)
Precipitation	72,000				
Estimated areal infiltration		-3,600	3600		
Evapotranpiration		-39,000			
Reservoir evaporation (based on water rights63-4338 and 63-4679)		-280			
Surface discharge from Indian Creek Reservoir		0			
Maximum surface channel seepage		-29,120			
Likely infiltration from surface channels and Indian Creek Reservoir			5,000 to 29,000		
Discharge to wells				-700	
Total	72000	-72,000	8,600 to 32,600	-700	7,900 to 31,900

Table 4: Water budget summary.

4.2. Ground Water Availability for Appropriation

The amount of water required for domestic and commercial/industrial uses at Mayfield Springs was estimated to be approximately 1,815 acre feet per year (see Section 1.3). The total amount of water available for appropriation from aquifers in the Mayfield Springs area likely ranges from approximately 7,900 acre feet to 31,900 acre feet per year (Table 4). This quantity exceeds the combined existing and proposed withdrawals.

A second indication of ground water availability is that of local ground water levels. Most water levels in this area are steady or rising slightly (see Section 2.5 and Appendix C). Stable water levels suggest that water is available for appropriation.

4.3. Potential Impact on Existing Water Rights

Little or no impact on existing water rights and water users are anticipated as a result of proposed new diversions for the Mayfield Springs Planned Community. The preceding water budget analysis suggests that there is an ample water supply for existing and proposed uses.

4.4. Potential Impacts on Mountain Home GWMA

The Mountain Home GWMA boundary crosses a portion of the Mayfield Springs property in Section 33 of T1N R4E. The boundary appears to be based on a local surface water divide in this area. Based on hydrographs for three wells, ground water levels within the Mountain Home GWMA near the Mayfield Springs property have been stable or rising since the 1960s (see Section 2.5, Figure 6, Figure 16 through Figure 18, and Appendix C). Ground water level declines seen in other parts of the GWMA or in the Cinder Cone Butte Critical Groundwater Area are not apparent in these wells. Stable (or rising) ground water levels in the Mayfield Springs area suggest the availability of water for appropriation.

New ground water pumping in the Mayfield Springs area may cause a local depression in ground water levels. Some depression is required for water to move toward new pumping wells. This pumping will not affect the GWMA boundary because the boundary is based on surface topography.

However, it is unlikely that new pumping in the Mayfield Springs will substantially impact ground water conditions in the Mountain Home GWMA. The water budget for the Mayfield Springs area suggests that there is ample water available for the new proposed uses (Section 4.1.5). It is unlikely that withdrawals in the Mayfield Springs will draw a significant amount water from the Mountain Home GWMA.

The predominant ground water flow direction in the Mayfield Springs area is to the southwest (Figure 7). General ground water flow in the Mayfield Springs area is parallel to the northwestern Mountain Home GWMA boundary – new uses will not reduce underflow into the Mountain Home GWMA.

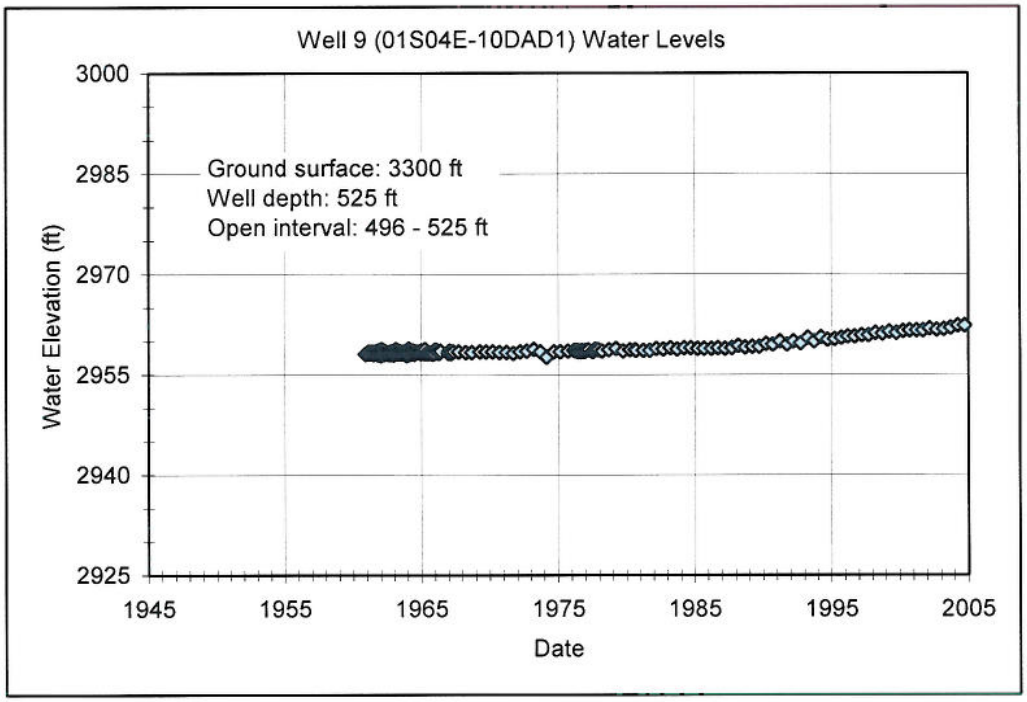


Figure 16: Hydrograph for Well 01S04E-10DAD1 (Well 9 in Figure 6).

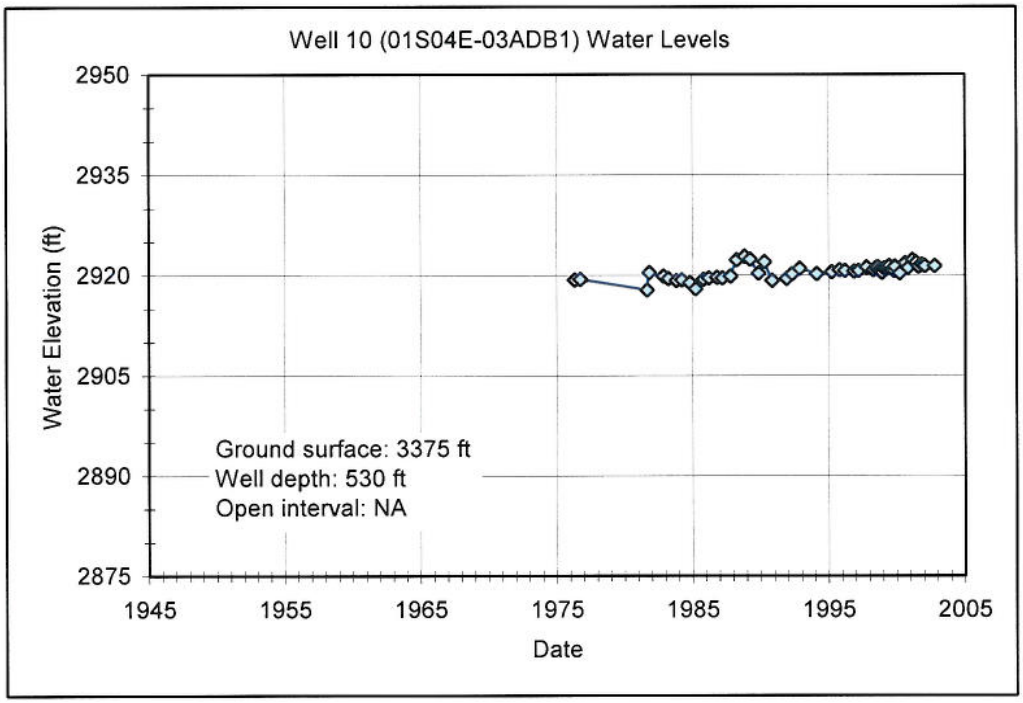


Figure 17: Hydrograph for Well 01S04E-03ADB1 (Well 10 in Figure 6).

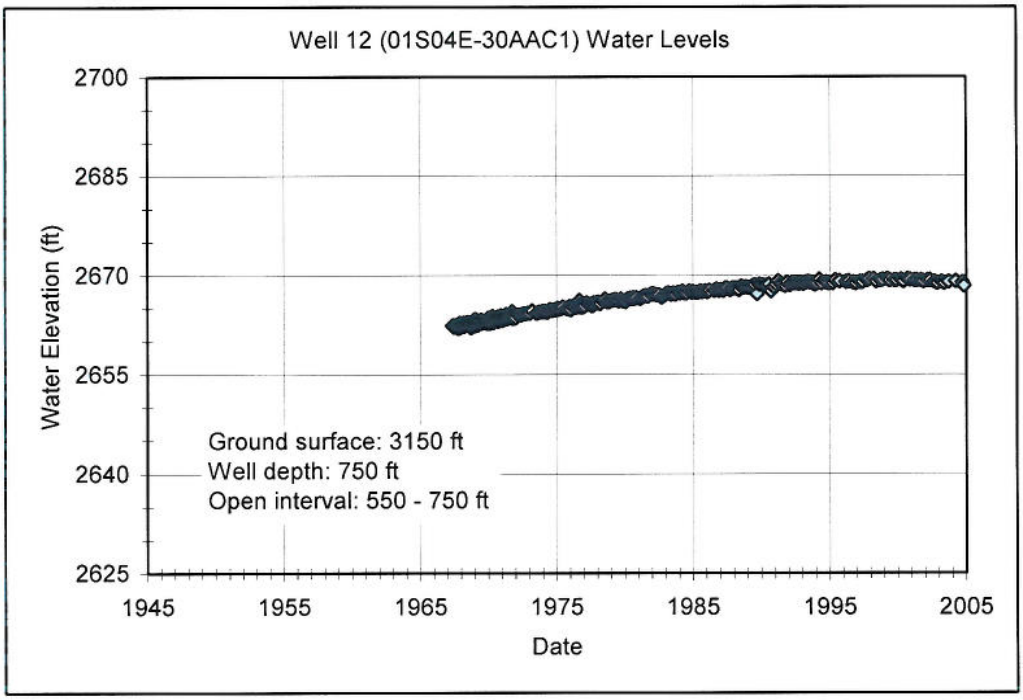


Figure 18: Hydrograph for Well 01S04E-30AAC1 (Well 12 in Figure 6).

5. REFERENCES

Bond, J.G. and Wood, C.H., 1978. Geologic map of Idaho. Idaho Department of Lands, Bureau of Mines and Geology, 1:500,000 scale.

Harrington, H. and Bendixsen, S., 1999. Ground Water Management Areas in Idaho - Overview as of 1998, Idaho Department of Water Resources, Boise, ID.

Morse, A., Allen, R.G., Tasumi, M., Kramber, W.J. and Trezza, R., 2003. Application of SEBAL Methodology for Estimating Evapotranspiration and consumptive Use of Water Through Remote Sensing, Idaho Department of Water Resources and the University of Idaho (Department of Biological and Agricultural Engineering), submitted to the Ratheon Systems Company, Earth Observation System Data and Information System Project.

Newton, G.D., 1991. Geohydrology of the regional aquifer system, Western Snake River Plain, Southwestern Idaho. U.S. Geological Survey Professional Paper 1408-G.

Petrich, C. and Urban, S., 2004. Characterization of Ground Water Flow in the Lower Boise River Basin, Idaho Water Resources Research Institute and the Idaho Department of Water Resources, Research Report IWRRI-2004-01.

Wood, S.H., 1996. Cross Sections of the Southeast Boundary of the Treasure Valley Groundwater Study Area: Notes on the Geology of the Mayfield-Orchard Area, Ada and Elmore County, Idaho, Boise State University Geosciences, prepared for the Treasure Valley Hydrologic Project.

Document Info:

SPF Job Number: 329.0050
Filename: MayfieldWaterSupplyAssessment(DRAFT).doc
File Size: 46066688 bytes
Last edited: 3/20/2006
Pages: 39

Appendix A: Drillers' Reports

Form 238-7
1/78

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

USE TYPEWRITER OR BALLPOINT PEN

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

1. WELL OWNER

Name Davis Allen

Address Rte 4 Nampa

Owner's Permit No. _____

2. NATURE OF WORK

☒ New well ☐ Deepened ☐ Replacement
☐ Abandoned (describe method of abandoning) _____

3. PROPOSED USE

☒ Domestic ☐ Irrigation ☐ Test ☐ Municipal
☐ Industrial ☐ Stock ☐ Waste Disposal or Injection
☐ Other _____ (specify type)

4. METHOD DRILLED

☒ Rotary ☐ Air ☐ Hydraulic ☐ Reverse rotary
☐ Cable ☐ Dug ☐ Other _____

5. WELL CONSTRUCTION

Casing schedule: ☒ Steel ☐ Concrete ☐ Other _____

Thickness	Diameter	From	To
.250 inches	6 inches	+ 1 1/2 feet	364 1/2 feet
_____ inches	_____ inches	_____ feet	_____ feet
_____ inches	_____ inches	_____ feet	_____ feet
_____ inches	_____ inches	_____ feet	_____ feet

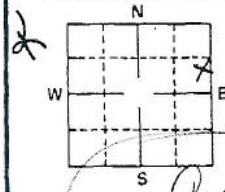
Was casing drive shoe used? ☒ Yes ☐ No
Was a packer or seal used? ☐ Yes ☒ No
Perforated? ☐ Yes ☒ No
How perforated? ☐ Factory ☐ Knife ☐ Torch
Size of perforation _____ inches by _____ inches

Number	From	To
_____ perforations	_____ feet	_____ feet
_____ perforations	_____ feet	_____ feet
_____ perforations	_____ feet	_____ feet

Well screen installed? ☐ Yes ☒ No
Manufacturer's name _____
Type _____ Model No. _____
Diameter ___ Slot size ___ Set from _____ feet to _____ feet
Diameter ___ Slot size ___ Set from _____ feet to _____ feet
Gravel packed? ☐ Yes ☒ No ☐ Size of gravel _____
Placed from _____ feet to _____ feet
Surface seal depth 20 Material used in seal: ☐ Cement grout ☒ Puddling clay ☐ Well cuttings
Sealing procedure used: ☐ Slurry pit ☒ Temp. surface casing ☒ Overbore to seal depth
Method of joining casing: ☐ Threaded ☒ Welded ☐ Solvent Weld
☐ Cemented between strata
Describe access port _____

6. LOCATION OF WELL

Sketch map location must agree with written location.



Subdivision Name None
Lot No. _____ Block No. _____
County Canyon
SE ¼ NE ¼ Sec. 36, T. 1 N/S, R. 3 E/W.

7. WATER LEVEL

Static water level 342 feet below land surface.
Flowing? ☐ Yes ☒ No G.P.M. flow _____
Artesian pressure _____ p.s.i.
Controlled by: ☐ Valve ☐ Cap ☐ Plug
Temperature _____ °F. Quality _____

8. WELL TEST DATA

☐ Pump ☐ Bailer ☐ Air ☐ Other _____

Discharge G.P.M.	Pumping Level	Hours Pumped

9. LITHOLOGIC LOG

Hole Diam.	Depth From	Depth To	Material	Water Yes	Water No
	0	3	Topsoil & driveway fill		X
	3	9	Sand & Gravel		X
	9	118	Sandy Clay		X
	118	135	Fine Sand		X
	135	180	Sandy clay		X
	180	240	Yellow clay		X
	240	300	Yellow shale & sand		X
	300	360	Yellow clay		X
	360	400	Blue clay		X
	400	420	Blue shale	X	
	420	425	Blue sand & shale	X	
	425	516	Blue shale		X
	516	523	Blue sand & shale	X	

051875

RECEIVED
JUN 19 1979
Department of Water Resources
Western Regional Office

10. Work started 12/15/78 finished 1/10/79

11. DRILLERS CERTIFICATION

I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name Davis Well Drilling Firm No. 101
Address 4158 D. Rutt Lane Date 3/15/79
Signed by (Firm Official) Charles Davis
and
(Operator) _____

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT

(1)

815531

Form 238-7
3/95-C96

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Office Use Only
Inspected by _____
Twp _____ Rge _____ Sec _____
_____ 1/4 _____ 1/4 _____ 1/4
Lat: : : Long: : :

1. DRILLING PERMIT NO. __ - __ - __ - ____ - ____
Other IDWR No. D0031310

2. OWNER:
Name Larry Farnsworth
Address 1020 N. Breezy Lane
City Mayfield State ID Zip 83716

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location

N / W / E / S

Twp. 1 North ☒ or South ☐
Rge. 4 East ☒ or West ☐
Sec. 23 1/4 (10 acres) NE 1/4 (40 acres) NE 1/4 (160 acres)
Gov't lot _____ County Elmore
Lat: : : Long: : :
Address of Well Site 1 Mile North on Slater Creek
City Mayfield
(Give at least name of road + Distance to Road or Landmark)
Lt. _____ Blk. _____ Sub. Name _____

4. USE:
☒ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other _____

5. TYPE OF WORK check all that apply (Replacement etc.)
☒ New Well ☐ Modify ☐ Abandonment ☐ Other _____

6. DRILL METHOD
☒ Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other _____

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
Bentonite	0	18	600 Lbs	overbore

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) _____
Was drive shoe seal tested? ☐ Y ☒ N How? _____

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
6.625	+2	147	250	Steel	☒	☐	☒	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Length of Headpipe _____ Length of Tailpipe _____

9. PERFORATIONS/SCREENS
☐ Perforations Method _____
☐ Screens Screen Type _____

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
						☐	☐
						☐	☐
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
69 ft. below ground Artesian Pressure ___ lb
Depth flow encountered ___ ft. Describe access port or control devices: _____

11. WELL TESTS:
☐ Pump ☐ Bailer ☒ Air ☐ Flowing Artesian

Yield gal/min.	Drawdown	Pumping Level	Time
60			1 Hr

Water Temp. _____ Bottom hole temp. _____
Water Quality test or comments: _____
Depth first Water Encountered 138'

12. LITHOLOGIC LOG: (Describe repair or abandonment)

Bore Dia	From	To	Remarks: Lithology, Water Quality & Temp.	Water Y	Water N
10	0	1	Topsoil		☒
10	1	8	Sandy clay, tan		☒
10	8	10	Tan clay		☒
10	10	12	Tan sand & clay		☒
10	12	18	Sandy clay, tan		☒
6	18	30	Sandy clay, tan		☒
6	30	38	Clay, cream		☒
6	38	58	Sandy clay, cream		☒
6	58	65	Tan sand		☒
6	65	88	Clay		☒
6	88	98	Sandy clay, tan		☒
6	98	118	Sandy clay		☒
6	118	135	Sandy clay		☒
6	135	138	Clay, wet	☒	
6	138	147	Sand, white	☒	

(2)

RECEIVED
JUN 28 2004
WATER RESOURCES
WESTERN REGION

Completed Depth: 147 (Measurable)
Date: Started 05/20/04 Completed 05/21/04

13. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name Hiddleston & Son Inc-Boise Firm No. 35
Firm Official [signature] Date 6-18-04
Supervisor or Operator [signature] Date 6-18-04
(Sign once if Firm Official & Operator)

Date: 6/11/2004 Time: 12:36 PM

Form 238-7
8/90

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

USE TYPEWRITER OR BALLPOINT PEN

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

R-2

1. WELL OWNER

Name Ron Ambrose

Address 2295 E. 3100 South, Wendell, ID 83355

Drilling Permit No. 63-92-W-119

Water Right Permit No. _____

2. NATURE OF WORK

☒ New well ☐ Deepened ☐ Replacement
☐ Well diameter increase
☐ Abandoned (describe abandonment procedures such as materials, plug depths, etc. in lithologic log)

3. PROPOSED USE

☒ Domestic ☐ Irrigation ☐ Test ☐ Municipal
☐ Industrial ☐ Stock ☐ Waste Disposal or Injection
☐ Other _____ (specify type)

4. METHOD DRILLED

☒ Rotary ☒ Air ☐ Hydraulic ☐ Reverse rotary
☐ Cable ☐ Dug ☐ Other _____

5. WELL CONSTRUCTION

Casing schedule: ☒ Steel ☐ Concrete ☐ Other _____

Thickness	Diameter	From	To
.250 inches	8 5/8 inches	+ 2 feet	255 feet
_____ inches	_____ inches	_____ feet	_____ feet
_____ inches	_____ inches	_____ feet	_____ feet
_____ inches	_____ inches	_____ feet	_____ feet

Was casing drive shoe used? ☒ Yes ☐ No
Was a packer or seal used? ☐ Yes ☒ No
Perforated? ☐ Yes ☒ No
How perforated? ☐ Factory ☐ Knife ☐ Torch ☐ Gun
Size of perforation _____ inches by _____ inches

Number	From	To
_____ perforations	_____ feet	_____ feet
_____ perforations	_____ feet	_____ feet
_____ perforations	_____ feet	_____ feet

Well screen installed? ☐ Yes ☒ No
Manufacturer's name _____
Type _____ Model No. _____
Diameter ___ Slot size ___ Set from _____ feet to _____ feet
Diameter ___ Slot size ___ Set from _____ feet to _____ feet
Gravel packed? ☐ Yes ☒ No ☐ Size of gravel _____
Placed from _____ feet to _____ feet
Surface seal depth 98 Material used in seal: ☐ Cement grout ☒ Bentonite ☐ Puddling clay ☐ _____
Sealing procedure used: ☐ Slurry pit ☐ Temp. surface casing ☒ Overbore to seal depth
Method of joining casing: ☐ Threaded ☒ Welded ☐ Solvent Weld ☐ Cemented between strata
Describe access port _____

6. LOCATION OF WELL

Sketch map location must agree with written location.

N / W / E / S / X

Subdivision Name _____

Lot No. _____ Block No. _____

County Elmore

SW ¼ SE ¼ Sec. 23, T. 1 ☐ N ☒ S R. 4 ☒ E ☐ W

7. WATER LEVEL

Static water level 205 feet below land surface.
Flowing? ☐ Yes ☒ No G.P.M. flow _____
Artesian closed-in pressure _____ p.s.i.
Controlled by: ☐ Valve ☐ Cap ☐ Plug
Temperature _____ °F. Quality _____
Describe artesian or temperature zones below.

8. WELL TEST DATA

☐ Pump ☐ Bailer ☒ Air ☐ Other _____

Discharge G.P.M.	Pumping Level	Hours Pumped
40		3

9. LITHOLOGIC LOG

Bore Diam.	Depth From	Depth To	Material	Water Yes	Water No
10	0	20	Decomposed granite		
"	20	24	Decomp granite and red clay		
"	24	60	Tan clay and sand		
10	60	98	Gravel and sand		
8	98	110	Tan clay		
"	110	160	Tan clay sand		
"	160	180	Sand and ¼ gravel		
"	180	225	Sand		
"	225	250	Tan clay and sand		
"	250	253	Sand	X	
8	253	256	Sand and gravel		

RECEIVED
MAR 3 1 1992
Department of Water Resources

RECEIVED
MAR 24 1992
Department of Water Resources
Western Regional Office

10.

Work started 3/10/92 finished 3/13/92

11. DRILLERS CERTIFICATION

I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name Hiddleston & Son, Inc Firm No. 35
Address Rt. 3, Box 610-D Mtn Home, ID 83647 Date 3/16/92
Signed by (Firm Official) Mark Hiddleston
and
(Operator) John R Smith

RECEIVED
APR 09 1992

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT

3

Form 238.7
6/89

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

USE TYPEWRITER OR BALLPOINT PEN

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

1. WELL OWNER

Name James & Darla Underwood
HC34, Mayfield Stage
Address Boise, ID 83706
Drilling Permit No. 63-9190-127-100
Owner's Permit No. _____

2. NATURE OF WORK

☐ New well ☒ Deepened ☐ Replacement
☐ Well diameter increase
☐ Abandoned (describe abandonment procedures such as materials, plug depths, etc. in lithologic log).

3. PROPOSED USE

☒ Domestic ☐ Irrigation ☐ Test ☐ Municipal
☐ Industrial ☐ Stock ☐ Waste Disposal or Injection
☐ Other _____ (specify type)

4. METHOD DRILLED

☐ Rotary ☐ Air ☐ Hydraulic ☐ Reverse rotary
☒ Cable ☐ Dug ☐ Other _____

5. WELL CONSTRUCTION * = Depth Referenced to Top of 6 Inch Casing.

Casing schedule: ☒ Steel ☐ Concrete ☐ Other _____

Thickness	Diameter	From	To
_____ inches	_____ inches	+ 3 feet	459 feet
(See original	inches	well log)	feet
0.258 inches	5 9/16 inches	443.4* feet	501.3 feet
0.237 inches	4 1/2 inches	475.3* feet	515.9 feet

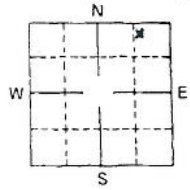
Was casing drive shoe used? ☐ Yes ☒ No - liners bailed,
Was a packer or seal used? ☐ Yes ☒ No top & Bottom
Perforated? ☐ Yes ☒ No
How perforated? ☐ Factory ☐ Knife ☐ Torch ☐ Gun
Size of perforation _____ inches by _____ inches

Number	From	To
_____ perforations	_____ feet	_____ feet
_____ perforations	_____ feet	_____ feet
_____ perforations	_____ feet	_____ feet

Well screen installed? ☐ Yes ☒ No
Manufacturer's name _____
Type _____ Model No. _____
Diameter ___ Slot size ___ Set from _____ feet to _____ feet
Diameter ___ Slot size ___ Set from _____ feet to _____ feet
Gravel packed? ☐ Yes ☒ No ☐ Size of gravel _____
Placed from _____ feet to _____ feet
Surface seal depth _____ Material used in seal: ☐ Cement grout ☐ Bentonite ☐ Puddling clay ☐ _____
Sealing procedure used: ☐ Slurry pit ☐ Temp. surface casing liners ☐ Overbore to seal depth
Method of joining casing: ☐ Threaded ☒ Welded ☐ Solvent Weld ☐ Cemented between strata
Describe access port Remove pitless cap for 6" diam access.

6. LOCATION OF WELL

Sketch map location must agree with written location.



Subdivision Name _____
Lot No. _____ Block No. _____
County Elmore NW¼NE¼NE¼ S27 T1N R4E
NW¼ NE¼ NE¼ Sec. 27 , T. 1N N ☒ S ☐ R. 4E E ☒ W ☐

AUG 28 1991

7. WATER LEVEL * Depth Reference @ top of casing.

Static water level 343.4* feet below ~~land surface~~
Flowing? ☐ Yes ☒ No G.P.M. flow _____
Artesian closed-in pressure _____ p.s.i.
Controlled by: ☐ Valve ☐ Cap ☐ Plug
Temperature 71 °F. Quality Excellent
Describe artesian or temperature zones below.

8. WELL TEST DATA

☒ Pump ☐ Bailer ☐ Air ☐ Other installed.
Caution: Keep sounding device out of well w/pump

Discharge G.P.M.	Pumping Level	Hours Pumped
3.7	less than 372 ft.	65

9. LITHOLOGIC LOG -- * = Depth referenced to top of 6 inch casing.

Bore Diam.	Depth From	Depth To	Material	Water Yes	Water No
		475'	See original log by Bill Dotz Drlg		
5"	475	506*	Dusty, poorly sorted fine sand	x	
			fines on down to silt size		
	506	507	Streak of Clay Brown to grey		x
	507	513	Sand, Fine, Poorly Sorted,		
			lighter colored, w/ Grey cast.	x	
	513	520	Sand & Gravel, Bank Run, Tight	x	
	520	530	Silty Sand	x	
	530	545	Tight Sand & Gravel	x	
	545	549	Rock, Basalt?Sandstone? Cemented		
			Gravel? Boulder?	?	
	549	551	Silt-Clay, Light Grey		x
[redacted]	551	561	Sand	x	
	561	565	Sandstone, Clay binder		x
	565	580*	Sand	x	
			Bridged hard at 551'*,		
			Dove back to 520'* and		
			eventually on back to [redacted]		
			liner at 516'.		

RECEIVED
MAY 8 1991
Department of Water Resources
Western Region Office

10.

Work started March 25, 1991 Finished May 7, 1991

11. DRILLERS CERTIFICATION

I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name Artesian Co. Firm No. 318
7425 W. 36th S.
Address Mountain Home, ID Date May 7, 1991
83647-2413
Signed by (Firm Official) Hugh Harden
and Hugh Harden
(Operator) Hugh Harden

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT

4

S-1

Form 238-7
6/98

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Use Typewriter or Ball Point Pen

1 OF 3 RECEIVED
NOV 03 1993
Department of Water Resources

1. DRILLING PERMIT NO. 63 93 C - 869 - 0
Other IDWR No. 63-11382

2. OWNER:
Name DANSKIN PROPERTIES LTD
Address INDIAN CR. RD. HC 34 MAYFIELD STAGE
City BOISE State ID Zip 83706

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

N / W / E / S

T. 01 N North ☐ or South ☐
R. 04 E East ☐ or West ☐
Sec. 27 ____ 1/4 SW 1/4 NE 1/4
Gov't Lot ____ County ELMORE

Address of Well Site INDIAN CK RD HC34 MAYFIELD STAGE
(Give at least Direction + Distance to Road or Landmark)

Lot No. 19 Block No. 1 Subdivision DANSKIN PROPERTIES

4. PROPOSED USE: DOMESTIC
☐ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other

5. TYPE OF WORK NEW WELL
☐ New Well ☐ Modify or Repair ☐ Replacement ☐ Abandonment

6. DRILL METHOD REVERSE CIRCULATION
☐ Mud Rotary ☐ Air Rotary ☐ Cable ☐ Other

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
BENTONITE	0	126	22,500#	POURED
BENTONITE	360	380	2500#	POURED

Was drive shoe seal tested? YES NO How?

8. CASING/LINER:

Diameter	From	To	Guage	Casting	Liner	Steel	Plastic	Welded	Threaded
12"	+3	420	.250			☒	☐	☒	☐
10"	460	480	.250			☒	☐	☒	☐
						☐	☐	☐	☐
						☐	☐	☐	☐

Final location of shoes
Top Packer or Headpipe Bottom Tailpipe

9. PERFORATIONS/SCREENS
☐ Perforations Method
☒ Screens Type HOUSTON Material STAINLESS STEEL

From	To	Slot Size	Number	Diameter	Tele/Pipe Size	Casting	Liner
420	460	.20		10"		☐	☐
						☐	☐
						☐	☐
						☐	☐

10. WELL TESTS: N/A
☐ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pumping Depth	Time
NA	NA	NA	NA

Temperature of water 65 Was a water analysis done? Yes ☐ No ☒
By whom?
Water Quality (odor, etc.) GOOD
Bottom Hole Temperature 65

11. STATIC WATER LEVEL:
NA ft. below surface Depth artesian flow found
Artesian pressure lb. Describe access port WELL CAP
Describe Controlling Devices:

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	GPM	SWL
26"	0	10	TOPSOIL		N
	10	35	COURSE SAND		Y
	35	55	CLAY & CRSE SAND MIX		Y
	55	65	CRS & FINE SAND SOME CLAY MIX		Y
	65	75	CRS SAND W/BRN CLAY MIX		N
	75	105	CRS SAND W/BRN CLAY & GRAVEL MIX		Y
	105	115	BRN CLAY W/CRS SAND&SMALL ROCK MIX		N
	115	120	BRN CLAY		N
	120	125	FINE TO COURSE SAND, WITH CLAY AND SMALL GRAVEL & LARGE ROCKS MIXED		N
	125	140	CRS SAND, CLAY, SMALL & LARGE GRAVEL MIXED		N
	140	160	FINE TO CRS SAND		N
	160	165	BROWN CLAY		N
	165	195	FINE TO CRS SAND W/CLAY & GRAVEL MIX		N
	195	218	FINE TO CRS SAND & GRAVEL		N
	218	223	FINE TO CRS SAND & CLAY MIX		N
	223	235	FINE TO CRS SAND & GRAVEL		N
	235	245	FINE TO CRS SAND & SMALL GRAVEL		N
	245	255	FINE TO CRS SAND W/ CLAY MIX		N
	255	260	FINE TO CRS SAND		N
	260	265	FINE SAND & CLAY MIX		N
	265	271	FINE TO CRS SAND W/CLAY&GRAVEL MIX		N
	271	275	FINE SAND		Y
	275	285	FINE SAND WITH CLAY MIX		N
	285	295	FINE TO CRS SAND		N
	295	305	CLAY & FINE SAND MIX		N

FEB 28 1994

Date: Started 10-15-93 Completed 10-20-93

13. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name PETE COPE DRILLING Firm No. 213
Firm Official [signature] Date 10/29/93
and
Supervisor or Operator Date 10/29/93
(Sign once if Firm Official & Operator)

FORWARD WHITE COPY TO WATER RESOURCES

5-2

Form 238-7
6/93

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Use Typewriter or Ball Point Pen

2 of 3

108846

1. DRILLING PERMIT NO. 63 93 C - 869 - 0
Other IDWR No.

2. OWNER:
Name DANSKIN PROPERTIES LTD
Address
City State Zip

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

N / W / E / S

T. 1 North ☒ or South ☐
R. 4 East ☒ or West ☐
Sec. 27 , 10 acres 1/4 40 acres SW 1/4 160 acres NE 1/4
Gov't Lot ____ County Elmore

Address of Well Site INDIAN CREEK RD
(Give at least Direction + Distance to Road or Landmark)
Lot No. ____ Block No. ____ Subd. Name

4. PROPOSED USE:
☐ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other

5. TYPE OF WORK
☐ New Well ☐ Modify or Repair ☐ Replacement ☐ Abandonment

6. DRILL METHOD
☐ Mud Rotary ☐ Air Rotary ☐ Cable ☐ Other

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD

Was drive shoe seal tested? Y☐ N☐ How?

8. CASING/LINER:

Diameter	From	To	Guage	Casting	Liner	Steel	Plastic	Welded	Threaded
						☐	☐	☐	☐
						☐	☐	☐	☐
						☐	☐	☐	☐
						☐	☐	☐	☐

Final location of shoes
Top Packer or Headpipe Bottom Tailpipe

9. PERFORATIONS/SCREENS
☐ Perforations Method
☐ Screens Type Material

From	To	Slot Size	Number	Diameter	Tele/Pipe	Casting	Liner
						☐	☐
						☐	☐
						☐	☐
						☐	☐

RECEIVED
FEB 28 1994

10. WELL TESTS:
☐ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pumping Depth	Time

Temperature of water ____ Was a water analysis done? Yes☐ No☐
By whom?
Water Quality (odor, etc.)
Bottom Hole Temperature

11. STATIC WATER LEVEL:
____ ft. below surface Depth artesian flow found ____
Artesian pressure ____ lb. Describe access port
Describe Controlling Devices:

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

56

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	GPM	SWL
	305	315	FINE SAND AND CLAY MIX		N
	315	325	CLAY & FINE SAND MIX		N
	325	335	LIGHT BRN CLAY		N
	335	339	LIGHT BRN CLAY		N
	339	341	FINE TO CRS SAND		N
	341	351	SANDY LIGHT BRN CLAY		N
	351	355	FINE TO CRS SAND & GRAVEL		N
	355	365	FINE SAND W/SMALL AMOUNT CLAY MIX		N
	365	370	FINE SAND		N
	370	372	FINE TO CRS SAND & BOULDERS		N
	372	374	FINE TO CRS SAND W/BOULDERS & BROKEN ROCK		N
	374	376	SAND & CLAY MIXED		N
	376	382	SANDY CLAY LIGHT BROWN COLOR		N
	382	387	SANDY CLAY & SHALE MIXED		N
	387	400	CRS SAND & CLAY MIXED		N
	400	407	FINE TO MED SAND		N
	407	413	SAND & CLAY MIXED		Y
	413	423	FINE TO MED SAND & CLAY MIXED SOME PEA GRAVEL MIXED		Y
	423	429	FINE TO MED SAND & PEA GRAVEL		Y
	429	433	FINE SAND, & SMALL AMOUNT CLAY MIXED		Y
	433	440	FINE MED SAND		Y
	440	443	FINE TO CRS SAND W/GRAVEL&CLAY MIXED		Y
	443	449	FINE TO COURSE SAND		Y
	449	450	BRN CLAY		N
	450	453	SAND, GRAVEL & CLAY MIXED		Y

Date: Started Completed

13. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name Firm No.
Firm Official Date
and
Supervisor or Operator Date
(Sign once if Firm Official & Operator)

FORWARD WHITE COPY TO WATER RESOURCES

5-3

Form 238-7
6/93

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

3 OF 3

Use Typewriter or Ball Point Pen

108847

1. DRILLING PERMIT NO. 63 93 C - 869 - 0
Other IDWR No.

2. OWNER:
Name DANSKIN PROPERTIES LTD
Address
City State Zip

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

N / W / E / S

T. 1 North ☒ or South ☐
R. 4 East ☒ or West ☐
Sec. 27, 10 acres 1/4, 40 acres SW 1/4, 160 acres NE 1/4
Gov't Lot SE County Elmore

Address of Well Site
(Give at least Direction + Distance to Road or Landmark)
Lot No. Block No. Subd. Name

4. PROPOSED USE:
☐ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other

5. TYPE OF WORK
☐ New Well ☐ Modify or Repair ☐ Replacement ☐ Abandonment

6. DRILL METHOD
☐ Mud Rotary ☐ Air Rotary ☐ Cable ☐ Other

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD

Was drive shoe seal tested? YES NO How?

8. CASING/LINER:

Diameter	From	To	Guage	Casting	Liner	Steel	Plastic	Welded	Threaded
						☐	☐	☐	☐
						☐	☐	☐	☐
						☐	☐	☐	☐
						☐	☐	☐	☐

Final location of shoes
Top Packer or Headpipe Bottom Tailpipe

9. PERFORATIONS/SCREENS
☐ Perforations Method
☐ Screens Type Material

From	To	Slot Size	Number of Openings	Diameter	Tele/Pipe Size	Casting	Liner
						☐	☐
						☐	☐
						☐	☐
						☐	☐

FEB 28 1994

10. WELL TESTS:
☐ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pumping Depth	Time

Temperature of water Was a water analysis done? Yes ☐ No ☐
By whom?
Water Quality (odor, etc.)
Bottom Hole Temperature

11. STATIC WATER LEVEL:
ft. below surface Depth artesian flow found
Artesian pressure lb. Describe access port
Describe Controlling Devices:

5

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	GPM	SWL
	453	456	CLAY, SAND, SOME GRAVEL		Y
	456	460	FINE TO COURSE SAND (GREEN COLOR)		Y
	460	463	FINE SAND & BLUISH-GREEN CLAY MIXED		Y
	463	473	LIGHT BLUE CLAY		N
	173	480	VERY FINE BLUE SAND & LIGHT BLUE CLAY		N

Date: Started Completed

13. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name Firm No.
Firm Official Date
and
Supervisor or Operator Date
(Sign once if Firm Official & Operator)

FORWARD WHITE COPY TO WATER RESOURCES

6

238-7

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Use Typewriter or Ball Point Pen

108844

1. DRILLING PERMIT NO. 63 93 W 1045 .000
Other IDWR No.

2. OWNER:
Name JIM UNDERWOOD
Address HC 34 MAYFIELD STAGE
City BOISE State ID Zip 83706

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

N / W / E / S

T. 1N North ☐ or South ☐ 15 L.F. ft. below surface
R. 4E East ☐ or West ☐
Sec 27 SW 1/4 NE 1/4 1/4 1/4
Gov't Lot County ELMORE

Address of Well Site HC 34 INDIAN CREEK RD HC 34 Mayfield Stage Stop
(Give at least Direction + Distance to Road or Landmark)

Lot No. Block No. Subd. Name

4. PROPOSED USE: DOMESTIC
☐ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other

5. TYPE OF WORK NEW WELL
☐ New Well ☐ Modify or Repair ☐ Replacement ☐ Abandonment

6. DRILL METHOD AIR ROTARY
☐ Mud Rotary ☐ Air Rotary ☐ Cable ☐ Other

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
#BENTONITE	0	20	750#	POURED

Was drive shoe seal tested? Y☐ N☒ How?

8. CASING/LINER:

Diameter	From	To	Guage	Casting	Liner	Steel	Plastic	Welded	Threaded
#8"	+1	68	.250			☒	☐	☒	☐
						☐	☐	☐	☐
						☐	☐	☐	☐
						☐	☐	☐	☐

Final location of shoes #68
Top Packer or Headpipe Bottom Tailpipe

9. PERFORATIONS/SCREENS
☒ Perforations Method FACTORY
☐ Screens Type Material

From	To	Slot Size	Number	Diameter	Tele/Pipe Size	Casting	Liner
#28		68 1/8"		8"	PIPE	☒	☐
						☐	☐
						☐	☐
						☐	☐

10. WELL TESTS: PUMP
☐ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pumping Depth	Time
55	40	63	80

Temperature of water 65 Was a water analysis done? Yes ☐ No ☒
By whom?
Water Quality (odor, etc.) GOOD
Bottom Hole Temperature 65

11. STATIC WATER LEVEL:
Depth artesian flow found
Artesian pressure lb. Describe access port WELL CAP
Describe Controlling Devices:

6

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	GPM	SWL
	0	9	TOPSOIL		N
8	9	20	SAND		Y
8	20	23	GRAVEL		Y
	23	27	SAND		Y
	27	29	CLAY		N
	29	48	SAND		Y
	48	49	BROWN CLAY		N
	49	58	SAND		Y
	58	75	BRWON CLAY		N
	75		SAND		Y

RECEIVED
OCT 20 1993
WATER RESOURCES
WESTERN REGION

FEB 28 1994

Date: Started 10/12/93 Completed 10/13/93

13. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name PETE COPE DRILLING Firm No. 213
Firm Official Date 10/19/93
and
Supervisor or Operator Date 10/19/93
(Sign once if Firm Official & Operator)

FORWARD WHITE COPY TO WATER RESOURCES

Form 238-7
9/82

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

USE TYPEWRITER OR BALLPOINT PEN

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

1. WELL OWNER

Name Jim Underwood

Address Mayfield, Idaho

Owner's Permit No. 63-85-C-0001-000

2. NATURE OF WORK

☒ New well ☐ Deepened ☐ Replacement
☐ Abandoned (describe abandonment procedures such as materials, plug depths, etc. in lithologic log)

3. PROPOSED USE

☒ Domestic ☐ Irrigation ☐ Test ☐ Municipal
☐ Industrial ☐ Stock ☐ Waste Disposal or Injection
☐ Other _____ (specify type)

4. METHOD DRILLED

☒ Rotary ☒ Air ☐ Hydraulic ☐ Reverse rotary
☐ Cable ☐ Dug ☐ Other _____

5. WELL CONSTRUCTION

Casing schedule: ☒ Steel ☐ Concrete ☐ Other _____

Thickness	Diameter	From	To
.250 inches	6 inches +	3' feet	459' feet
_____ inches	_____ inches	_____ feet	_____ feet
_____ inches	_____ inches	_____ feet	_____ feet
_____ inches	_____ inches	_____ feet	_____ feet

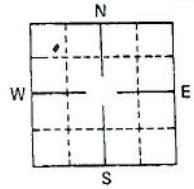
Was casing drive shoe used? ☒ Yes ☐ No
Was a packer or seal used? ☐ Yes ☒ No
Perforated? ☐ Yes ☒ No
How perforated? ☐ Factory ☐ Knife ☐ Torch
Size of perforation _____ inches by _____ inches

Number	From	To
_____ perforations	_____ feet	_____ feet
_____ perforations	_____ feet	_____ feet
_____ perforations	_____ feet	_____ feet

Well screen installed? ☐ Yes ☒ No
Manufacturer's name _____
Type _____ Model No. _____
Diameter ____ Slot size ____ Set from _____ feet to _____ feet
Diameter ____ Slot size ____ Set from _____ feet to _____ feet
Gravel packed? ☐ Yes ☒ No ☐ Size of gravel _____
Placed from _____ feet to _____ feet
Surface seal depth 20' Material used in seal: ☐ Cement grout ☐ Bentonite ☒ Puddling clay ☐ _____
Sealing procedure used: ☐ Slurry pit ☐ Temp. surface casing ☒ Overbore to seal depth
Method of joining casing: ☐ Threaded ☒ Welded ☐ Solvent Weld ☐ Cemented between strata
Describe access port _____

6. LOCATION OF WELL

Sketch map location must agree with written location.



Subdivision Name _____
Lot No. _____ Block No. _____
County ELMORE
¼ NW ¼ Sec. 27, T. 1 N/S, R. 4 E/W.

7. WATER LEVEL

Static water level 338' feet below land surface.
Flowing? ☐ Yes ☒ No G.P.M. flow _____
Artesian closed-in pressure _____ p.s.i.
Controlled by: ☐ Valve ☐ Cap ☐ Plug
Temperature _____ °F. Quality _____
Describe artesian or temperature zones below.

8. WELL TEST DATA

☐ Pump ☐ Bailer ☒ Air ☐ Other _____

Discharge G.P.M.	Pumping Level	Hours Pumped
60		2

70045

9. LITHOLOGIC LOG

Bore Diam.	Depth From	Depth To	Material	Water Yes	Water No
8	0	2	boulders		x
8	2	20	coarse sand		x
6	20	100	brown clay/sand seams		x
6	100	150	sand/clay seams		x
6	150	158	clay/sand seams		x
6	158	185	sand & gravel		x
6	185	240	brown clay/sand seams		x
6	240	410	brown clay/sand seams		x
6	410	450	sand	x	
6	450	465	clay		x
6	465	485	sand	x	

RECEIVED
JUL 5 1985
Department of Water Resources
Western Regional Office

RECEIVED
JUL 8 1985
Department of Water Resources

MICROFILMED

10.

Work started 5-09-85 finished 5-17-85

11. DRILLERS CERTIFICATION

I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name BILL DOTY WELL DRILLING Firm No. 42
Address RT.7 BOX 311 CALDWELL, IDAHO 83605 Date 6-01-85
Signed by (Firm Official) Bill Doty
and
(Operator) Bill Doty

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT

USE TYPEWRITER OR BALL POINT PEN

State of Idaho
Department of Water Administration

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Administration within 30 days after the completion or abandonment of the well.

Rec 10-30-74 D WR

1. WELL OWNER

Name Carl Agenbroad

Address 6 20 13th Ave, So.-Nampa, Idaho 83651

Owner's Permit No. _____

2. NATURE OF WORK

☒ New well ☐ Deepened ☐ Replacement

☐ Abandoned (describe method of abandoning)

_____

3. PROPOSED USE

☐ Domestic ☒ Irrigation ☐ Test ☐ Other (specify type)

☐ Municipal ☐ Industrial ☐ Stock ☐ Waste Disposal or Injection

4. METHOD DRILLED

Reverse

☐ Cable ☒ Rotary ☐ Dug ☐ Other

5. WELL CONSTRUCTION

Diameter of hole 27 inches Total depth 200 feet

Casing schedule: ☐ Steel ☐ Concrete

Thickness	Diameter	From	To
.250 inches	16 inches	+2 feet	18 feet
_____ inches	_____ inches	_____ feet	_____ feet
_____ inches	_____ inches	_____ feet	_____ feet
_____ inches	_____ inches	_____ feet	_____ feet
_____ inches	_____ inches	_____ feet	_____ feet

Was a packer or seal used? ☐ Yes ☐ No

Perforated? ☐ Yes ☐ No

How perforated? ☐ Factory ☐ Knife ☐ Torch

Size of perforation _____ inches by _____ inches

Number	From	To
_____ perforations	18 feet	200 feet
_____ perforations	_____ feet	_____ feet
_____ perforations	_____ feet	_____ feet

Well screen installed? ☐ Yes ☐ No

Manufacturer's name _____

Type Mission Model No Level

Diameter 14" Slot size 36 Set from 18 feet to 200 feet

Diameter ___ Slot size ___ Set from _____ feet to _____ feet

Gravel packed? ☒ Yes ☐ No Size of gravel 3/8 Minus

Placed from 18 feet to 200 feet

Surface seal depth 18 Material used in seal ☐ Cement grout ☒ Puddling clay ☒ Well cuttings

Sealing procedure used ☐ Slurry pit ☐ Temporary surface casing ☒ Overbore to seal depth

6. LOCATION OF WELL

Sketch map location must agree with written location.

63

Subdivision Name _____

Lot No. _____ Block No. _____

County Ada

SE ¼ NW ¼ Sec. 27 T. 1 N/S, R. 4 E/W

7. WATER LEVEL

Static water level 6 feet below land surface

Flowing? ☐ Yes ☐ No G.P.M. flow _____

Temperature _____ ° F. Quality _____

Artesian closed-in pressure _____ p.s.i.

Controlled by ☐ Valve ☐ Cap ☐ Plug

8. WELL TEST DATA

☐ Pump ☐ Bailer ☐ Other

Discharge G.P.M.	Draw Down	Hours Pumped
300	Clear Down	

46767

9. LITHOLOGIC LOG

Hole Diam.	Depth From	Depth To	Material	Water Yes	Water No
	0	10	Top Soil		
	10	47	coarse white & gray sand		
	47	52	brown clay		
	52	64	coarse gray & white sand		
	64	105	brown clay & sand		
	105	118	brown clay		
	118	128	brown, gravel sand		
	125	128	gray clay & white sand		
	128	133	blue clay		
	133	146	brown sand/streaks of clay		
	146	147	brown clay		
	147	150	brown sand		
	150	160	brown sand/clay streaks		
	160	165	brown clay/sand		
	165	180	brown sand/clay streaks		
	180	200	coarse brown sand/pea gravel		

8

10.

Work started Oct 3 finished Oct 8-74

11. DRILLERS CERTIFICATION

USGS

Firm Name Pete Cope Drilling Co., Inc Firm No. 213

Address Box 56 Meridian Date 10-12-74

Signed by (Firm Official) Pete Cope President

and

(Operator) Jack Jones

USE ADDITIONAL SHEETS IF NECESSARY FORWARD THE WHITE COPY TO THE DEPARTMENT

Form 238-7
'73

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

USE TYPEWRITER OR BALLPOINT PEN

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

1. WELL OWNER

Name Ken Agenbroad

Address Mayfield Stage, Boise, Idaho 83706

Owner's Permit No. _____

2. NATURE OF WORK

☒ New well ☐ Deepened ☐ Replacement
☐ Abandoned (describe method of abandoning) _____

3. PROPOSED USE

☐ Domestic ☒ Irrigation ☐ Test ☐ Municipal
☐ Industrial ☐ Stock ☐ Waste Disposal or Injection
☐ Other _____ (specify type)

4. METHOD DRILLED

☐ Rotary ☐ Air ☐ Hydraulic ☒ Reverse rotary
☐ Cable ☐ Dug ☐ Other _____

5. WELL CONSTRUCTION

Casing schedule: ☒ Steel ☐ Concrete ☐ Other _____

Thickness		Diameter		From		To	
.250	inches	16	inches +	2	feet	500	feet
.250	inches	16	inches	510	feet	608	feet
.250	inches	16	inches	688	feet	712	feet
.250	inches	16	inches	752	feet	763	feet
.281	inches	26	inches	0	feet	72	feet

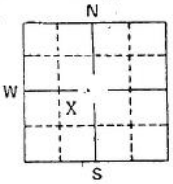
Was casing drive shoe used? ☐ Yes ☒ No
Was a packer or seal used? ☐ Yes ☒ No
Perforated? ☐ Yes ☒ No
How perforated? ☐ Factory ☐ Knife ☐ Torch
Size of perforation _____ inches by _____ inches

Number		From		To	
_____	perforations	_____	feet	_____	feet
_____	perforations	_____	feet	_____	feet
_____	perforations	_____	feet	_____	feet

Well screen installed? ☒ Yes ☐ No
Manufacturer's name Roscoe Moss
Type _____ Model No. _____
Diameter 16 Slot size 80 Set from 500 feet to 510 feet
Diameter 16 Slot size 80 Set from 608 feet to 688 feet
Diameter 16 Slot size 80 Set from 712 feet to 752 feet
Gravel packed? ☒ Yes ☐ No ☐ Size of gravel 3/8 minus
Placed from 6 feet to 763 feet
Surface seal depth 72 Material used in seal: ☒ Cement grout ☐ Puddling clay ☐ Well cuttings
Sealing procedure used: ☐ Slurry pit ☐ Temp. surface casing ☒ Overbore to seal depth
Method of joining casing: ☐ Threaded ☒ Welded ☐ Solvent Weld
☐ Cemented between strata
Describe access port To be determined

6. LOCATION OF WELL

Sketch map location must agree with written location.



Subdivision Name _____
Lot No. _____ Block No. _____
County Ada
NE ¼ SW ¼ Sec. 28, T. 1N N/S, R. 4E E/W.

7. WATER LEVEL

Static water level 390 feet below land surface.
Flowing? ☐ Yes ☐ No G.P.M. flow _____
Artesian closed-in pressure _____ p.s.i.
Controlled by: ☐ Valve ☐ Cap ☐ Plug
Temperature _____ °F. Quality _____

8. WELL TEST DATA

☐ Pump ☐ Bailer ☐ Air ☐ Other _____

Discharge G.P.M.	Pumping Level	Hours Pumped

9. LITHOLOGIC LOG 106020

Hole Diam.	Depth From	Depth To	Material	Water Yes	Water No
28	0	6	Topsoil & Clay		
	6	25	Sand - Crsse. & Sharp		
	25	67	Brn. Sand - Crse w/some Clay		
	67	74	Siltstone & Cinders		
24	74	78	Siltstone & Cinders		
	78	98	Brn. Clay w/some Sand & Gravel		
	98	208	Brn. Clay w/Sand Streaks		
	208	224	Brn. Clay		
	224	268	Brn. Clay w/some Brn. Sand		
	268	272	Cemented Gravel		
	272	278	Sand & Gravel		
18	278	286	Brn. Clay w/some Sand & Gravel		
	286	311	Brn. Sand w/Gravel Streaks		
	311	384	Brn. Clay w/traces of Sand		
	384	390	Brn. Clay		
	390	396	Brn. Sand w/some Clay Streaks		
	396	444	Brn. Clay		
	444	466	Sand & Sm. Gravel w/some Clay		
	466	494	Sand & Clay		
	494	500	Blue Clay		
	500	509	Blue Sand w/some Gravel		
	509	513	Blue Clay w/Sand & Gravel streaks		
	513	530	Brn. Clay w/some Sand		
	530	574	Clay w/traces of Sand		
	574	596	White Clay w/traces of Sand		
	596	607	White & Blue Clay w/some Sand		
	607	621	Blue Clay w/some Sand		
	621	653	Blue Sand w/some Clay Streaks		
	653	660	Blue Clay		
	660	700	Blue Sand		
	700	736	Blue Clay		
	736	740	Green Clay w/Sand Streaks		
	740	744	Blue Clay w/traces of Sand		
	744	752	Green & Blue Sand		
	752	763	Blue Sand w/some Clay & Granite		

10

500 510
608-688
712-752

RECEIVED
SEP 28 1979
Department of Water Resources
Western Regional Office

RECEIVED
OCT 2 1979
Department of Water Resources

10. Work started 9-2-79 Finished 9-4-79

DRILLERS CERTIFICATION

We certify that all minimum well construction standards were complied with during the time the drilling rig was removed.

Firm Name Pete Cope Drilling Co. Inc. Firm No. 213
Address P.O. Box 561 Meridian, ID 83642 Date 9-11-79
Signed by (Firm Official) Pete Cope President
and
(Operator) Jerri E. Jones

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT

highway right #5

Form 238-7
/79

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

USE TYPEWRITER OR BALLPOINT PEN

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

1. WELL OWNER

Name Ken Agenbroad

Address Mayfield Stage, Boise, Idaho 83706

Owner's Permit No. _____

2. NATURE OF WORK

☒ New well ☐ Deepened ☐ Replacement
☐ Abandoned (describe method of abandoning) _____

3. PROPOSED USE

☐ Domestic ☒ Irrigation ☐ Test ☐ Municipal
☐ Industrial ☐ Stock ☐ Waste Disposal or Injection
☐ Other _____ (specify type)

4. METHOD DRILLED

☐ Rotary ☐ Air ☐ Hydraulic ☒ Reverse rotary
☐ Cable ☐ Dug ☐ Other _____

5. WELL CONSTRUCTION

Casing schedule: ☒ Steel ☐ Concrete ☐ Other _____

Thickness	Diameter	From	To
.250 inches	14 inches	+ 2 feet	18 feet
_____ inches	_____ inches	_____ feet	_____ feet
_____ inches	_____ inches	_____ feet	_____ feet
_____ inches	_____ inches	_____ feet	_____ feet

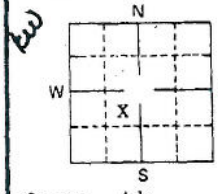
Was casing drive shoe used? ☐ Yes ☒ No
Was a packer or seal used? ☐ Yes ☒ No
Perforated? ☐ Yes ☒ No
How perforated? ☐ Factory ☐ Knife ☐ Torch
Size of perforation _____ inches by _____ inches

Number	From	To
_____ perforations	_____ feet	_____ feet
_____ perforations	_____ feet	_____ feet
_____ perforations	_____ feet	_____ feet

Well screen installed? ☒ Yes ☐ No
Manufacturer's name Roscoe Moss
Type _____ Model No. _____
Diameter 14 Slot size 80 Set from 18 feet to 85 feet
Diameter ____ Slot size ____ Set from _____ feet to _____ feet
Gravel packed? ☒ Yes ☐ No ☐ Size of gravel 3/8 minus
Placed from 18 feet to 85 feet
Surface seal depth 18' Material used in seal: ☐ Cement grout ☒ Puddling clay ☐ Well cuttings
Sealing procedure used: ☐ Slurry pit ☐ Temp. surface casing ☒ Overbore to seal depth
Method of joining casing: ☐ Threaded ☒ Welded ☐ Solvent Weld ☐ Cemented between strata
Describe access port To be determined

6. LOCATION OF WELL

Sketch map location must agree with written location.



Subdivision Name _____
Lot No. _____ Block No. _____
County Ada
NE ¼ SW ¼ Sec. 28, T. 1N N/S, R. 4E E/W.

7. WATER LEVEL

Static water level _____ feet below land surface.
Flowing? ☐ Yes ☐ No G.P.M. flow _____
Artesian closed-in pressure _____ p.s.i.
Controlled by: ☐ Valve ☐ Cap ☐ Plug
Temperature ____ °F. Quality _____

8. WELL TEST DATA

☐ Pump ☐ Bailer ☐ Air ☐ Other _____

Discharge G.P.M.	Pumping Level	Hours Pumped

9. LITHOLOGIC LOG

104110

Hole Diam.	Depth From	Depth To	Material	Water Yes	Water No
28	0	6	Topsoil		
	6	18	Brn. Clay & Sand		
	18	23	White Sand - Fine to Crse.		
	23	31	Brn. Sand & Gravel		
	31	32	Brn. Clay		
	32	39	Sand & Small Gravel		
	39	52	Brn. Clay w/Sand Streaks		
18	52	69	Silt Stone		
	69	85	Brn. Clay & Gravel		

RECEIVED
MAY 11 1979
Department of Water Resources
Western Regional Office

10.

Work started 4-26-79 finished 4-28-79

11. DRILLERS CERTIFICATION

I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name Pete Cope Drilling Co., Inc. Firm No. 213
Address P.O. Box 561 Meridian, Id. 83642 Date 5-3-79
Signed by (Firm Official) Pete Cope
and
(Operator) Jesse Howe

MICROFILMED

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT

USE TYPEWRITER OR BALL POINT PEN

State of Idaho
Department of Water Resources

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

1. WELL OWNER

Name Frank Earl Beck

Address Middleton

Owner's Permit No. 63-8720

2. NATURE OF WORK

☒ New well ☐ Deepened ☐ Replacement

☐ Abandoned (describe method of abandoning)

3. PROPOSED USE

☐ Domestic ☐ Irrigation ☐ Test ☐ Other (specify type)

☐ Municipal ☐ Industrial ☐ Stock ☐ Waste Disposal or Injection

4. METHOD DRILLED

☒ Cable ☐ Rotary ☐ Dug ☐ Other

5. WELL CONSTRUCTION

Diameter of hole 8 inches Total depth 375 feet

Casing schedule: ☐ Steel ☐ Concrete

Thickness	Diameter	From	To
250 inches	8 inches	+ 1 feet	375 feet
____ inches	____ inches	____ feet	____ feet
____ inches	____ inches	____ feet	____ feet
____ inches	____ inches	____ feet	____ feet
____ inches	____ inches	____ feet	____ feet

Was casing drive shoe used? ☒ Yes ☐ No

Was a packer or seal used? ☐ Yes ☒ No

Perforated? ☒ Yes ☐ No

How perforated? ☐ Factory ☒ Knife ☐ Torch

Size of perforation ¼ inches by 2 inches

Number		From		To	
200	perforations	103	feet	200	feet
80	perforations	228	feet	250	feet
____	perforations	____	feet	____	feet

Well screen installed? ☐ Yes ☒ No

Manufacturer's name ____

Type ____ Model No. ____

Diameter ___ Slot size ___ Set from ____ feet to ____ feet

Diameter ___ Slot size ___ Set from ____ feet to ____ feet

Gravel packed? ☐ Yes ☐ No Size of gravel ____

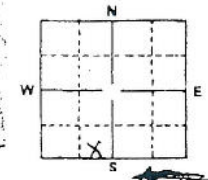
Placed from ____ feet to ____ feet

Surface seal depth 20' Material used in seal ☐ Cement grout ☒ Puddling clay ☐ Well cuttings

Sealing procedure used ☐ Slurry pit ☐ Temporary surface casing ☐ Overbore to seal depth

6. LOCATION OF WELL 63

Sketch map location must agree with written location.



Subdivision Name ____

Lot No. ____ Block No. ____

County Ada

SW ¼ SE ¼ Sec. 28, T. 1 N, R. 4 E

7. WATER LEVEL

Static water level 160 feet below land surface

Flowing? ☐ Yes ☐ No G.P.M. flow ____

Temperature ____ ° F. Quality ____

Artesian closed-in pressure ____ p.s.i.

Controlled by ☐ Valve ☒ Cap ☐ Plug

8. WELL TEST DATA

☐ Pump ☒ Bailer ☐ Other

Discharge G.P.M.	Draw Down	Hours Pumped

106023

9. LITHOLOGIC LOG

Hole Diam.	Depth From	Depth To	Material	Water Yes	Water No
8"	0	3	Top soil		
	3	56	Sand + Clay		
	56	69	Coarse Sand		
	69	103	Lava		
	103	200	Coarse Sand	✓	
	200	228	Sand + Clay Streaks		
	228	245	Coarse Sand	✓	
	245	265	Fine Sand		
	265	305	Sand + Clay		
	305	340	Coarse Sand	✓	
	340	375	Coarse Sand + Clay		

JUL 12 1978

Department of Water Resources
Western Regional Office

10.

Work started 2/14/78 finished 5/17/78

11. DRILLERS CERTIFICATION

Firm Name Middleton Pump Co. Firm No. 260

Address Middleton Id. Date 12/1/78

Signed by (Firm Official) Harold Wheyer

and (Operator) Harold Wheyer

USE ADDITIONAL SHEETS IF NECESSARY FORWARD THE WHITE COPY TO THE DEPARTMENT

12

Form 238-7
1/94

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Use Typewriter
or
Ball Point Pen

1. DRILLING PERMIT NO. 63-94-W-0489 - 000
Other IDWR No.

2. OWNER:
Name GEORGE WINJE
Address HC34/MAYFIELD STG.52
City BOISE State ID Zip 83706

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

N / W / E / S — X

Twp. 1 North ☒ or South ☐
Rge. 4 East ☒ or West ☐
Sec. 29 , 10 acres 1/4 SW 40 acres 1/4 SE 160 acres 1/4
Gov't Lot County ADA

Address of Well Site
ORCHARD/MAYBER EXIT City
(Give at least name of road + Distance to Road or Landmark)

Lt. Blk. Sub. Name

4. PROPOSED USE:
☒ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other

5. TYPE OF WORK
☒ New Well ☐ Modify or Repair ☐ Replacement ☐ Abandonment

6. DRILL METHOD
☐ Mud Rotary ☒ Air Rotary ☐ Cable ☐ Other

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
BENT	0	18	2S	OVERBORE

Was drive shoe used? Y ☒ N ☐
Was drive shoe seal tested? Y ☐ N ☒ How?

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
6"	+1	46	250	STEEL	☒	☐	☒	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Length of Headpipe Length of Tailpipe

9. PERFORATIONS/SCREENS
☐ Perforations Method
☐ Screens Screen Type NIDDORIMER

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
						☐	☐
						☐	☐
						☐	☐

FEB 08 1995

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
NO ft. below ground Artesian pressure lb.
Depth flow encountered ft. Describe access port or control devices:

11. WELL TESTS:
☐ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time
NO		NO	NO

Water Temp. Bottom hole temp.
Water Quality test or comments: 091183

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Water Y	Water N
9"	0	1	TOPSOIL	NO	
9"	1	7	BLACK HARD LAVA	NO	
9"	7	12	YELLOW SOAP STONE	NO	
9"	12	18	BEIGE COARSE SANDSTONE	NO	
6"	18	25	BEIGE COARSE SANDSTONE	NO	
6"	25	30	BRN CLAY	NO	
6"	30	41	GRAY PEA GRAVEL	YES	
6"	41	46	BRN SOFT CLAY	NO	
6"	46	68	BLACK LAVA	NO	
6"	68	72	GRAY PACKED FINE SAND	NO	
6"	72	80	RUSTY BRN CLAY	NO	
6"	80	87	PACKED GRAY SAND COARSE	NO	
6"	87	95	BRN CLAY	NO	
6"	95	110	PACKED BRN COARSE SAND	NO	
6"	110	120	BRN CLAY	NO	
6"	120	130	BRN SANDY CLAY	NO	
6"	130	140	BRN CLAY	NO	
6"	140	150	PACKED BRN SAND	NO	
6"	150	160	BRN SAND	NO	
6"	160	162	BRN CLAY	NO	
6"	162	180	BRN COARSE SAND	NO	
6"	180	185	BRN CLAY	NO	
6"	185	202	BRN COARS SAND	NO	

13

RECEIVED
SEP 15 1994
Department of Water Resources

RECEIVED
JUN 21 1994
WATER RESOURCES
WESTERN REGION

Completed Depth 203' FROM TOP OF CASING (Measurable)
Date: Started 6/8/94 Completed 6/10/94

13. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name S.O.S.WELLDRILLING Firm No. 212
Firm Official Frank Shumia Date 6-14-94
and
Supervisor or Operator Tony Halbett Date 6-14-94
(Sign once if Firm Official & Operator)

FORWARD WHITE COPY TO WATER RESOURCES

721744

Form 238-7
3/95-C96

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Office Use Only
Inspected by _____
Twp _____ Rge _____ Sec _____
_____ 1/4 _____ 1/4 _____ 1/4
Lat: : : Long: : :

1. DRILLING PERMIT NO. 61 -96 -W -0054 -000
Other IDWR No. _____

2. OWNER:
Name Boise Stage Stop
Address I-84 Exit 71
City Boise State ID Zip 83709

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location

N
W [X] E
S

Twp. 1 North X or South ☐
Rge. 4 East X or West ☐
Sec. 29 1/4 (10 acres) SW 1/4 (40 acres) SE 1/4 (160 acres)
Gov't lot _____ County Ada
Lat: : : Long: : :
Address of Well Site I-84 Eixt 71
City Boise
(Give at least name of road + Distance to Road or Landmark)
Lt. _____ Blk. _____ Sub. Name _____

4. USE:
X Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other _____

5. TYPE OF WORK check all that apply (Replacement etc.)
X New Well ☐ Modify ☐ Abandonment ☐ Other _____

6. DRILL METHOD
X Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other _____

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
Bentonite	0	57	900 lbs	Overbore

Was drive shoe used? X Y ☐ N Shoe Depth(s) _____
Was drive shoe seal tested? ☐ Y X N How? _____

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
8.625	3	57	250	Steel	X	☐	X	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Length of Headpipe _____ Length of Tailpipe _____

9. PERFORATIONS/SCREENS
☐ Perforations Method _____
☐ Screens Screen Type _____

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
						☐	☐
						☐	☐
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
115 ft. below ground Artesian Pressure ___ lb
Depth flow encountered ___ ft. Describe access port or control devices: _____

11. WELL TESTS:
☐ Pump ☐ Bailer X Air ☐ Flowing Artesian

Yield gal/min.	Drawdown	Pumping Level	Time
3 gpm			

Water Temp. _____ Bottom hole temp. _____
Water Quality test or comments: _____
Depth first Water Encountered _____

12. LITHOLOGIC LOG: (Describe repair or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temp.	Water Y	Water N
10.75	0	2	Top Soil		X
10.75	2	57	Sand		X
10-8	57	63	Gray Lava		X
8	63	66	Brown Cinder	X	
8	66	75	Gray Lava		X
8	75	80	Brown Cinder & Clay		X
8	80	140	Decomposed Granite		X

14

RECEIVED
JUN 25 2002
WATER RESOURCES
WESTERN REGION

Completed Depth: 130' (Measurable)
Date: Started 10-01-96 Completed 10-01-96

13. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name Hiddleston & Son, Inc. Firm No. 35
Firm Official Kenneth Kool Date 6-18-02
Supervisor or Operator John Smith Date 10-26-96
(Sign once if Firm Official & Operator)

721745

Form 238-7
3/95-C96

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Office Use Only
Inspected by _____
Twp _____ Rge _____ Sec _____
_____ 1/4 _____ 1/4 _____ 1/4
Lat: : : Long: : :

1. DRILLING PERMIT NO. 61 -96 -W -0055 -000
Other IDWR No. _____

2. OWNER:
Name Boise Stage Stop
Address I-84 Exit 71
City Boise State ID Zip 83709

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location

N
W E
S

Twp. 1 North X or South ☐
Rge. 4 East X or West ☐
Sec. 29 1/4 (10 acres) SW 1/4 (40 acres) SE 1/4 (160 acres)

Gov't lot _____ County Ada
Lat: : : Long: : :
Address of Well Site I-84 Eixt 71
City Boise
(Give at least name of road + Distance to Road or Landmark)

Lt. _____ Blk. _____ Sub. Name _____

4. USE:
X Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other _____

5. TYPE OF WORK check all that apply (Replacement etc.)
X New Well ☐ Modify ☐ Abandonment ☐ Other _____

6. DRILL METHOD
X Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other _____

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
Bentonite	0	56	900 lbs	Overbore

Was drive shoe used? X Y ☐ N Shoe Depth(s) _____
Was drive shoe seal tested? ☐ Y X N How? _____

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
8.625	4	56	250	Steel	X	☐	X	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Length of Headpipe _____ Length of Tailpipe _____

9. PERFORATIONS/SCREENS
☐ Perforations Method _____
☐ Screens Screen Type _____

From	To	Slot Size	Number	Diameter	Materia	Casing	Liner
						☐	☐
						☐	☐
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
115 ft. below ground
Artesian Pressure ___ lb
Depth flow encountered ___ ft.
Describe access port or control devices: _____

11. WELL TESTS:
☐ Pump ☐ Bailer Air ☐ Flowing Artesian

Yield gal/min.	Drawdown	Pumping Level	Time
N/A			

Water Temp. _____ Bottom hole temp. _____
Water Quality test or comments: _____
Depth first Water Encountered _____

12. LITHOLOGIC LOG: (Describe repair or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temp.	Y	N
10.75	0	2	Top Soil	X	
10.75	2	18	Sand & Seam Gravels	X	
10.75	18	50	Sand	X	
10.75	50	56	Tan Clay	X	
10.75	56	70	Gray Lava & Black Clay	X	
8	70	75	Brown Clay & Brown Cinders	X	
8	75	85	Gray Lava	X	
8	85	92	Gray Lava & Brown Cinders	X	
8	92	115	Decomposed Granite	X	
8	115	130	Green Sand Stone	X	
8	130	150	Green & Brown Clay	X	
8	150	180	Decomposed Granite & Clay Seams	X	

15

RECEIVED
JUL 12 2002
WATER RESOURCES
WESTERN REGION

RECEIVED
JUN 25 2002
WATER RESOURCES
WESTERN REGION

Completed Depth: 180' (Measurable)
Date: Started 10-02-96 Completed 10-02-96

13. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name Hiddleston & Son, Inc. Firm No. 35
Firm Official Kenneth Kool Date 6-18-02
Supervisor or Operator John Smith Date 10-26-96
(Sign once if Firm Official & Operator)

721748

Form 238-7
3/95-C96

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Office Use Only
Inspected by
Twp Rge Sec
1/4 1/4 1/4
Lat: : : Long: : :

1. DRILLING PERMIT NO. 61 -96 -W -0058 -000
Other IDWR No.

2. OWNER:
Name Boise Stage Stop
Address I-84 Exit 71
City Boise State ID Zip 83709

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location

N / W / E / S — X

Twp. 1 North X or South ☐
Rge. 4 East X or West ☐
Sec. 29 1/4 (10 acres) SW 1/4 (40 acres) SE 1/4 (160 acres)
Gov't lot County Ada
Lat: : : Long: : :
Address of Well Site I-84 Eixt 71
City Boise
(Give at least name of road + Distance to Road or Landmark)
Lt. Blk. Sub. Name

4. USE:
X Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other

5. TYPE OF WORK check all that apply (Replacement etc.)
X New Well ☐ Modify ☐ Abandonment ☐ Other

6. DRILL METHOD
X Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other

7. SEALING PROCEDURES

SEAL/FILTER PACK			AMOUNT	METHOD
Material	From	To	Sacks or Pounds	
Bentonite	0	44.6	650 lbs	Overbore

Was drive shoe used? X Y ☐ N Shoe Depth(s)
Was drive shoe seal tested? ☐ Y X N How?

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
8.625	2	44.6	250	Steel	X	☐	X	☐
4	-10	120	40	PVC	☐	X	☐	X
					☐	☐	☐	☐

Length of Headpipe 110' Length of Tailpipe 2"

9. PERFORATIONS/SCREENS
☐ Perforations Method
X Screens Screen Type Johnson

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
120	140	.020		4"	PVC	☐	X
						☐	☐
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
80 ft. below ground Artesian Pressure lb
Depth flow encountered ft. Describe access port or control devices:

11. WELL TESTS:
☐ Pump ☐ Bailer X Air ☐ Flowing Artesian

Yield gal/min.	Drawdown	Pumping Level	Time
15 gpm			

Water Temp. Bottom hole temp.
Water Quality test or comments:
Depth first Water Encountered

12. LITHOLOGIC LOG: (Describe repair or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temp.	Water Y	Water N
10.75	0	2	Top Soil		X
10.75	2	44.6	Sand		X
10-8	44.6	62	Gray Lava		X
8	62	66	Brown Cinder & Gray Lava		X
8	66	74	Gray Lava		X
8	74	80	Brown Cinder & Clay		X
8	80	160	Decomposed Granite		X

16

RECEIVED
JUN 25 2002
WATER RESOURCES
WESTERN REGION

Completed Depth: 140' (Measurable)
Date: Started 10-07-96 Completed 10-0896

13. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name Hiddleston & Son, Inc. Firm No. 35
Firm Official Kenneth Koch Date 6-18-02
Supervisor or Operator John Smith Date 10-21-96
(Sign once if Firm Official & Operator)

C

Form 238-7
3/95-C96

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT 95988

Office Use Only
Inspected by _____
Twp ____ Rge ____ Sec ____
____1/4 ____1/4 ____1/4
Lat: : : Long: : :

1. DRILLING PERMIT NO. 61-99-W-0024-000
Other IDWR No. D0009418

2. OWNER:
Name Boise Stage Stop
Address I-84 Exit 71
City Boise State ID Zip 83716

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location

N
W [X] E
S

Twp. 1 North X or South ☐
Rge. 4 East X or West ☐
Sec. 32 1/4 (10 acres) NE 1/4 (40 acres) NE 1/4 (160 acres)
Gov't lot ____ County Ada
Lat: : : Long: : :
Address of Well Site ____
City Boise
(Give at least name of road + Distance to Road or Landmark)
Lt. ____ Blk. ____ Sub. Name ____

4. USE:
X Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other ____

5. TYPE OF WORK check all that apply (Replacement etc.)
X New Well ☐ Modify ☐ Abandonment ☐ Other ____

6. DRILL METHOD
X Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other ____

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
Bentonite	0	54	1000 lbs	overbore

Was drive shoe used? X Y ☐ N Shoe Depth(s) ____
Was drive shoe seal tested? ☐ Y X N How? ____

8. CASING/LINER:

Diameter	From	To	Gauge	Materia	Casing	Liner	Welded	Threaded
8 5/8	+2	54	.250	Steel	X	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Length of Headpipe N/A Length of Tailpipe N/A

9. PERFORATIONS/SCREENS
☐ Perforations Method ____
☐ Screens Screen Type ____

From	To	Slot Size	Number	Diameter	Materia	Casing	Liner
						☐	☐
						☐	☐
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
40 ft. below ground Artesian Pressure ____ lb
Depth flow encountered ____ Describe access port or control devices: ____

11. WELL TESTS:
☐ Pump ☐ Bailer X Air ☐ Flowing Artesian

Yield gal/min.	Drawdown	Pumping Level	Time
20+			

Water Temp. ____ Bottom hole temp. ____
Water Quality test or comments: ____
Depth first Water Encountered ____

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia	From	To	Remarks:Lithology, Water Quality & Temp.	Water Y	Water N
12	0	2	Top Soil	☐	X
12	2	16	Sand	☐	X
12	16	22	Tan Clay	☐	X
8	22	54	Decon Granite	☐	X
8	54	65	Gray Lava	☐	X
8	65	66	Gravels	X	☐

RECEIVED
JUN 04 1999
WATER RESOURCES
WESTERN REGION

Completed Depth: 65' (Measurable)
Date: Started 5/17/99 Completed 5/17/99

13. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name Hiddleston & Son, Inc. Firm No. 35
Firm Official Ron Date 6/3/99
Supervisor or Operator John A Smith Date 5/27/99
(Sign once if Firm Official & Operator)

MICROFILMED
AUG 25 1999

17

Form 238-7
1/78

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

USE TYPEWRITER OR BALLPOINT PEN

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

RECEIVED
MAY 20 1982
Department of Water Resources
Western Regional Office

1. WELL OWNER

Name KING'S MEN (STREEPER Realty
Address Mtn Home, Id
Owner's Permit No. _____

2. NATURE OF WORK

☐ New well ☑ Deepened ☐ Replacement
☐ Abandoned (describe method of abandoning) _____

3. PROPOSED USE

☑ Domestic ☐ Irrigation ☐ Test ☐ Municipal
☐ Industrial ☐ Stock ☐ Waste Disposal or Injection
☐ Other _____ (specify type)

4. METHOD DRILLED

☑ Rotary ☑ Air ☐ Hydraulic ☐ Reverse rotary
☐ Cable ☐ Dug ☐ Other _____

5. WELL CONSTRUCTION

Casing schedule: ☑ Steel ☐ Concrete ☐ Other _____

Thickness	Diameter	From	To
.250 inches	6 5/8 inches	+ 1 feet	810 feet
_____ inches	_____ inches	_____ feet	_____ feet
_____ inches	_____ inches	_____ feet	_____ feet
_____ inches	_____ inches	_____ feet	_____ feet

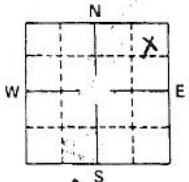
Was casing drive shoe used? ☑ Yes ☐ No
Was a packer or seal used? ☐ Yes ☑ No
Perforated? ☐ Yes ☑ No
How perforated? ☐ Factory ☐ Knife ☐ Torch
Size of perforation _____ inches by _____ inches

Number	From	To
_____ perforations	_____ feet	_____ feet
_____ perforations	_____ feet	_____ feet
_____ perforations	_____ feet	_____ feet

Well screen installed? ☐ Yes ☑ No
Manufacturer's name _____
Type _____ Model No. _____
Diameter ____ Slot size ____ Set from _____ feet to _____ feet
Diameter ____ Slot size ____ Set from _____ feet to _____ feet
Gravel packed? ☐ Yes ☑ No ☐ Size of gravel _____
Placed from _____ feet to _____ feet
Surface seal depth 20 or 24 Material used in seal: ☐ Cement grout ☐ Puddling clay ☐ Well cuttings
Sealing procedure used: ☐ Slurry pit ☐ Temp. surface casing ☐ Overbore to seal depth
Method of joining casing: ☐ Threaded ☑ Welded ☐ Solvent Weld ☐ Cemented between strata
Describe access port _____

6. LOCATION OF WELL

Sketch map location must agree with written location.



Subdivision Name _____
Lot No. _____ Block No. _____
County ADA
NE ¼ NE ¼ Sec. 32, T. 1 N/S, R. 4 E/W.

7. WATER LEVEL

Static water level 636 feet below land surface
Flowing? ☐ Yes ☑ No G.P.M. flow _____
Artesian closed-in pressure _____ p.s.i.
Controlled by: ☐ Valve ☐ Cap ☐ Plug
Temperature _____ °F. Quality _____

8. WELL TEST DATA

☐ Pump ☐ Bailer ☑ Air ☐ Other _____

Discharge G.P.M.	Pumping Level	Hours Pumped
20		2.0

9. LITHOLOGIC LOG

85689

Hole Diam.	Depth From	Depth To	Material	Water Yes	Water No
6	710	740	Clay & FINE SAND (CAVING)	✓	
6	740	805	SAND (COARSE) HEAVING	✓	
6	805	807	COARSE SAND & GRAVEL	✓	
6	807	811	WHITE COARSE SAND & G.	—	

RECEIVED
MAY 17 1982
Department of Water Resources

18

10.

Work started 26 APR 82 finished 7 May 82

11. DRILLERS CERTIFICATION

I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name HIDDLESTON Firm No. 35
Address Mountain Home Date 10 May 82
Signed by (Firm Official) Roy
and
(Operator) R Dock

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT

776954

Form 238-7
3/95-C96

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Office Use Only
Inspected by
Twp Rge Sec
1/4 1/4 1/4
Lat: : : Long: : :

1. DRILLING PERMIT NO. - - - - -
Other IDWR No. **D0019974**

2. OWNER:
Name **Boise Stage Stop – George Winge**
Address **I-84 Exit 71**
City **Boise** State **ID** Zip **83716**

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location

N / W / E / S — X

Twp. **1** North **X** or South ☐
Rge. **4** East **X** or West ☐
Sec. **32** 1/4 (10 acres) NW 1/4 (40 acres) NE 1/4 (160 acres)

Gov't lot ____ County **Emore**
Lat: : : Long: : :
Address of Well Site **I-84 Exit 71**
City **Mtn Home**
(Give at least name of road – Distance to Road or Landmark)

Lt. ____ Blk. ____ Sub. Name ____

4. USE:
☐ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection X Other **Industrial**

5. TYPE OF WORK check all that apply (Replacement etc.)
☐ New Well ☐ Modify ☐ Abandonment X Other **Deepen**

6. DRILL METHOD
X Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other ____

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
Bentonite	1	18		

Was drive shoe used? ☐ Y ☐ N Shoe Depth(s) ____
Was drive shoe seal tested? ☐ Y ☐ N How? ____

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
6.625	+2	69	250	Steel	☐	X	X	☐
4	-10	130	Sch40	PVC	☐	X	☐	X
					☐	☐	☐	☐

Length of Headpipe **60'** Length of Tailpipe **10**

9. PERFORATIONS/SCREENS
☐ Perforations Method ____
☐ Screens Screen Type ____

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
70	120	020		4"	PVC	☐	X
						☐	☐
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
58 ft. below ground Artesian Pressure ____ lb
Depth flow encountered ____ ft. Describe access port or control devices: ____

11. WELL TESTS:
☐ Pump ☐ Bailer X Air ☐ Flowing Artesian

Yield gal/min.	Drawdown	Pumping Level	Time
20			1 hr

Water Temp. ____ Bottom hole temp. ____
Water Quality test or comments: ____
Depth first Water Encountered ____

12. LITHOLOGIC LOG: (Describe repair or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temp.	Y	N
6	67	89	Gravel		X
6	69	90	Gray Lava & Some Clay		X
6	90	104	Red Cinder & Quartz Sand		X
6	104	107	Quartz Sand		X
6	107	130	Quartz Sand & Some Clay		X
6	130		Fine Sand		X

(19)

RECEIVED
JUN 04 2002
WATER RESOURCES
WESTERN REGION

Completed Depth: 130' (Measurable)
Date: Started 5/30/02 Completed 5/31/02

13. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name **Hiddleston & Son, Inc.** Firm No. 35
Firm Official ____ Date ____
Supervisor or Operator ____ Date ____
(Sign once if Firm Official & Operator)

Form 238-7
9/82

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

USE TYPEWRITER OR BALLPOINT PEN

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

90

1. WELL OWNER

Name Boise Stage Stop

Address

Owner's Permit No.

2. NATURE OF WORK

☑ New well ☐ Deepened ☐ Replacement
☐ Abandoned (describe abandonment procedures such as materials, plug depths, etc. in lithologic log)

3. PROPOSED USE

☑ Domestic ☐ Irrigation ☐ Test ☐ Municipal
☐ Industrial ☐ Stock ☐ Waste Disposal or Injection
☐ Other _____ (specify type)

4. METHOD DRILLED

☑ Rotary ☑ Air ☐ Hydraulic ☐ Reverse rotary
☐ Cable ☐ Dug ☐ Other

5. WELL CONSTRUCTION

Casing schedule: ☑ Steel ☐ Concrete ☐ Other

Thickness	Diameter	From	To
250 inches	8⅝ inches	+ 2 feet	53 feet
inches	inches	feet	feet
inches	inches	feet	feet
inches	inches	feet	feet

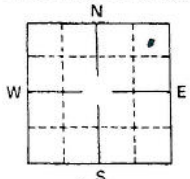
Was casing drive shoe used? ☑ Yes ☐ No
Was a packer or seal used? ☐ Yes ☑ No
Perforated? ☐ Yes ☑ No
How perforated? ☐ Factory ☐ Knife ☐ Torch
Size of perforation _____ inches by _____ inches

Number	From	To
perforations	feet	feet
perforations	feet	feet
perforations	feet	feet

Well screen installed? ☐ Yes ☑ No
Manufacturer's name
Type Model No.
Diameter Slot size Set from feet to feet
Diameter Slot size Set from feet to feet
Gravel packed? ☐ Yes ☑ No ☐ Size of gravel
Placed from feet to feet
Surface seal depth 53 Material used in seal: ☐ Cement grout
☑ Bentonite ☐ Puddling clay ☐
Sealing procedure used: ☐ Slurry pit ☐ Temp. surface casing
☑ Overbore to seal depth
Method of joining casing: ☐ Threaded ☑ Welded ☐ Solvent
Weld
☐ Cemented between strata
Describe access port

6. LOCATION OF WELL

Sketch map location must agree with written location.



Subdivision Name
Lot No. Block No.
County Ada
NE ¼ NE ¼ Sec. 32, T. 1 N/S, R. 4 E/W.

7. WATER LEVEL

Static water level 34 feet below land surface.
Flowing? ☐ Yes ☑ No G.P.M. flow
Artesian closed-in pressure p.s.i.
Controlled by: ☐ Valve ☐ Cap ☐ Plug
Temperature °F. Quality
Describe artesian or temperature zones below.

8. WELL TEST DATA

☐ Pump ☐ Bailer ☑ Air ☐ Other

Discharge G.P.M.	Pumping Level	Hours Pumped
20		2

9. LITHOLOGIC LOG 87169

Bore Diam.	Depth From	Depth To	Material	Water Yes	Water No
10	0	8	Soil + HARD PAN		
	8	35	SAND + GRAVEL		
	35	45	SAND + CLAY		
	45	52	CLAY		
10-8	52	65	GRAY LAVA		
8	65	69	GRAY + BROWN CINDER	X	
	69	72	GRAY LAVA		
	72	74	GRAY LAVA CLAY + CINDER		
	74	82	GRAY LAVA		
	82	83	BROWN CINDER		
	83	84	GRAY LAVA		
	84	88	BROWN CINDER + CLAY		
	88	89	RED CLAY		
	89	92	SAND		

RECEIVED
DEC 8 1986
Department of Water Resources

RECEIVED
MAR 11 1987
Department of Water Resources
Western Regional Office

Department of Water Resources

20

10. Work started 11-7-86 finished 11-14-86

11. DRILLERS CERTIFICATION OL

I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name Middleton Drilling Firm No. 35
Address Mt Home Date 11-24-86
Signed by (Firm Official)
and
(Operator) Ken Rod

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT

Form 238-7
11/97

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

770361

Office Use Only
Inspected by _____
Twp ____ Rge ____ Sec ____
____ 1/4 ____ 1/4 ____ 1/4
Lat: : : Long: : :

1. WELL TAG NO. D 0020068
DRILLING PERMIT NO. ____
Other IDWR No. ____

2. OWNER:
Name Robert Bravo
Address 00000 South Orchard Street
City Boise State ID Zip 83716

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

N / W / E / S

Twp. 1 North [X] or South [ ]
Rge. 4 East [X] or West [ ]
Sec. 32, NW 1/4 (10 acres) NW 1/4 (40 acres) ____ 1/4 (160 acres)
Gov't Lot ____ County Ada
Lat: : : Long: : :
Address of Well Site ¼ mile behind Stage Stop
City Boise
(Give at least name of road + Distance to Road or Landmark)

Lt. ____ Blk. ____ Sub. Name ____

4. USE:
[X] Domestic [ ] Municipal [ ] Monitor [ ] Irrigation
[ ] Thermal [ ] Injection [ ] Other ____

5. TYPE OF WORK check all that apply (Replacement etc.)
[X] New Well [ ] Modify [ ] Abandonment [ ] Other ____

6. DRILL METHOD
[X] Air Rotary [ ] Cable [ ] Mud Rotary [ ] Other ____

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
Bentonite	0	20	15	overbore

Was drive shoe used? [X] Y [ ] N Shoe Depth(s) 20
Was drive shoe seal tested? [X] Y [ ] N How? Air test

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
6"	+1	20	250	steel	[X]	[ ]	[X]	[ ]
4¼	19	160		PVC	[ ]	[X]	[ ]	[ ]
					[ ]	[ ]	[ ]	[ ]

Length of Headpipe ____ Length of Tailpipe ____

9. PERFORATIONS/SCREENS
Perforations Method ____
Screens Screen Type ____

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
19	160	40		4¼	PVC	[ ]	[X]
						[ ]	[ ]
						[ ]	[ ]

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
24 ft. below ground Artesian pressure ____ lb.
Depth flow encountered ____ ft. Describe access port or control devices: Well Cap

11. WELL TESTS:
[ ] Pump [ ] Bailer [X] Air [ ] Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time
2	160		3hrs.

Water Temp. 65 Bottom hole temp. 65
Water Quality test or comments: Good
Depth first Water Encounter 56

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Water Y	Water N
10"	0	3	overburden		X
10"	3	7	hard pan		X
10"	7	16	gravel		X
10"	16	26	clay		X
6"	26	56	lava		X
6"	56	68	cinders	X	
6"	68	100	decomposed granite		X
6"	100	110	red cinders		X
6"	110	123	decomposed granite		X
6"	123	140	clay		X
6"	140	160	granite		X

RECEIVED
AUG 15 2001
Department of Water Resources

RECEIVED
AUG 06 2001
WATER RESOURCES
WESTERN REGION

Completed Depth 160 (Measurable)
Date: Started 11/06/2000 Completed 11/10/2000

13. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Company Name Ed L. Holder Drilling Firm No. 578
Firm Official Ed L Holder Date 11/10/2000
and
Driller or Operator ____ Date ____
(Sign once if Firm Official & Operator)

FORWARD WHITE COPY TO WATER RESOURCES

Form 238-7
3/95-C96

LL 767235

Office Use Only
Inspected by _____
Twp ____ Rge ____ Sec ____
____ 1/4 ____ 1/4 ____ 1/4
Lat: : : Long: : :

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. DRILLING PERMIT NO. __-__-__-____-____
Other IDWR No. D0015796

2. OWNER:
Name Tim Anderson
Address 4450 S. Timridge Way
City Boise State ID Zip 83716

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location

Twp. 1 North X or South ☐
Rge. 4 East X or West ☐
Sec. 33 1/4 (10 acres) SE 1/4 (40 acres) NE 1/4 (160 acres)
Gov't lot _____ County Ada
Lat: : : Long: : :
Address of Well Site 24601 S. Old Hwy 30
City Boise
(Give at least name of road + Distance to Road or Landmark)
Lt. _____ Blk. _____ Sub. Name _____

4. USE:
X Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other _____

5. TYPE OF WORK check all that apply (Replacement etc.)
X New Well ☐ Modify ☐ Abandonment ☐ Other _____

6. DRILL METHOD
X Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other _____

7. SEALING PROCEDURES

SEAL/FILTER PACK			AMOUNT	METHOD
Material	From	To	Sacks or Pounds	
Bentonite	0	18	800lbs	Overbore

Was drive shoe used? X Y ☐ N Shoe Depth(s) _____
Was drive shoe seal tested? ☐ Y X N How? _____

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
6.625	+2	660	250	Steel	X	☐	X	☐
5.563	654	660	188	Steel	☐	X	X	☐
					☐	☐	☐	☐

Length of Headpipe 6' Length of Tailpipe N/A

9. PERFORATIONS/SCREENS
☐ Perforations Method _____
X Screens Screen Type Johnson

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
660	665	020		5.563	SS	☐	X
						☐	☐
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
528ft below ground Artesian Pressure ____ lb
Depth flow encountered ____ Describe access port or control devices: _____

11. WELL TESTS:
☐ Pump ☐ Bailer X Air ☐ Flowing Artesian

Yield gal/min	Drawdown	Pumping Level	Time
20		~650	1hr

Water Temp. _____ Bottom hole temp. _____
Water Quality test or comments: _____
Depth first Water Encountered 583'

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

22

Bore Dia	From	To	Remarks: Lithology, Water Quality & Temp.	Water Y	Water N
10	0	2	Top soil		X
10	2	10	Tan sand		X
10-6	10	120	Sand & Clay seam		X
6	120	260	Sand & small gravels		X
6	260	583	Cemented sand & gravel		X
6	583	620	Fine sand	X	
6	620	630	Tan clay		X
6	630	665	Med. Sand	X	

RECEIVED
DEC 27 2000
Department of Water Res.

RECEIVED
DEC 12 2000
WATER RESOURCES
WESTERN REGION

Completed Depth: 665' (Measurable)
Date: Started 10/27/00 Completed 11/09/00

13. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name Hiddleston & Son, Inc Firm No. 35
Firm Official _____ Date 12-7-00
Supervisor or Operator _____ Date 12-7-00
(Sign once if Firm Official & Operator)

LD

8693665-772053

Form 238-7
3/95-C96

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Office Use Only
Inspected by _____
Twp _____ Rge _____ Sec _____
_____ 1/4 _____ 1/4 _____ 1/4
Lat: : : Long: : :

1. DRILLING PERMIT NO. __-__-__-____-____
Other IDWR No. D0019379

2. OWNER:
Name JIM PHAGAN
Address 4200 PASADENA DR. #30
City BOISE State ID Zip 83705

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location

N / W / E / S

Twp. 1 North ☒ or South ☐
Rge. 4 East ☒ or West ☐
Sec. 33 1/4 (10 acres) NE 1/4 (40 acres) NW 1/4 (160 acres)
Gov't lot _____ County ADA
Lat: : : Long: : :
Address of Well Site 23735 DESERT WIND
City BOISE
(Give at least name of road + Distance to Road or Landmark)
Lt. _____ Blk. _____ Sub. Name REGINA HEIGHTS

4. USE:
☒ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other _____

5. TYPE OF WORK check all that apply (Replacement etc.)
☒ New Well ☐ Modify ☐ Abandonment ☐ Other _____

6. DRILL METHOD
☒ Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other _____

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
BENTONITE	0	18	9 SACKS	OVERBORE

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) _____
Was drive shoe seal tested? ☐ Y ☒ N How? _____

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
6	+2	560	250	ST	☒	☐	☒	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Length of Headpipe 10'8" Length of Tailpipe _____

9. PERFORATIONS/SCREENS
☐ Perforations Method _____
☒ Screens Screen Type telescoping

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
559	569	20		5"	ST ST	☐	☐
						☐	☐
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
481 ft. below ground Artesian Pressure _____ lb
Depth flow encountered _____ ft. Describe access port or control devices: _____

11. WELL TESTS:
☐ Pump ☐ Bailer ☒ Air ☐ Flowing Artesian

Yield gal/min	Drawdown	Pumping Level	Time
17		560	2 HRS

Water Temp. _____ Bottom hole temp. _____
Water Quality test or comments: _____
Depth first Water Encountered 487

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

23

Bore Dia	From	To	Remarks: Lithology, Water Quality & Temp.	Water Y	Water N
10	0	3	BROWN TOPSOIL		☒
10	3	14	BROWN SANDY CLAY		☒
10	14	18	TAN SANDY CLAY		☒
8	18	29	TAN SANDY CLAY		☒
8	29	57	BROWN CLAY, SAND & SMALL		
			GRAVEL		☒
8	57	81	BLACK LAVA		☒
8	81	212	TAN CLAY W/SAND		☒
8	212	244	STICKY TAN CLAY		☒
8	244	309	STICKY TAN CLAY W/STRIPS BROWN		
			SAND		☒
8	309	376	BROWN SAND W/SMALL STRIPS		
			TAN CLAY		☒
8	376	421	CEMENTED BROWN SAND		☒
8	421	480	STRIPS BROWN SAND & TAN CLAY		☒
6	480	487	STRIPS BROWN SAND & TAN CLAY		☒
6	487	511	FINE BROWN & CLEAR QUARTZ SAND	☒	
6	511	539	STICKY TAN CLAY		☒
6	539	541	VERY FINE BROWN & MICA SAND	☒	
6	541	545	DIRTY BROWN SAND & SOFT TAN		
			CLAY		☒
6	545	562	MEDIUM STICKY TAN CLAY		☒
6	562	572	COARSE CLEAR QUARTZ SAND &		
			PEA GRAVEL	☒	

RECEIVED
JAN 03 2002
WATER RESOURCES
WESTERN REGION

Completed Depth: 569 (Measurable)
Date: Started 11/12/01 Completed 11/17/01

13. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name SOS Welldrilling & Pump Co Firm No. 212
Firm Official Frank Skinner Date 12-5-01
Supervisor or Operator [signature] Date 12-28-01
(Sign once if Firm Official & Operator)

Date: 12/5/01 Time: 12:12 PM

USE TYPEWRITER OR BALL POINT PEN

State of Idaho
Department of Water Resources

RECEIVED
JUL 10 1973
Department of Water Resources

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

24

1. WELL OWNER

Name BLACKIE STEWART

Address BOISE, IDAHO

Owner's Permit No. _____

2. NATURE OF WORK

☑ New well ☐ Deepened ☐ Replacement

☐ Abandoned (describe method of abandoning)

3. PROPOSED USE

☐ Domestic ☑ Irrigation ☐ Test ☐ Other (specify type)

☐ Municipal ☐ Industrial ☐ Stock ☐ Waste Disposal or Injection

4. METHOD DRILLED

☐ Cable ☑ Rotary ☐ Dug ☐ Other

5. WELL CONSTRUCTION

Diameter of hole 6 inches Total depth 260 feet

Casing schedule: ☑ Steel ☐ Concrete

Thickness	Diameter	From	To
250 inches	8 5/8 inches	+ 1 feet	16 feet
250 inches	6 5/8 inches	2 feet	165 feet
_____ inches	_____ inches	_____ feet	_____ feet
_____ inches	_____ inches	_____ feet	_____ feet
_____ inches	_____ inches	_____ feet	_____ feet

Was casing drive shoe used? ☑ Yes ☐ No

Was a packer or seal used? ☐ Yes ☑ No

Perforated? ☑ Yes ☐ No

How perforated? ☐ Factory ☑ Knife ☐ Torch

Size of perforation 1/4 inches by 3 inches

Number		From	To
15	perforations	135 feet	145 feet
_____	perforations	_____ feet	_____ feet
_____	perforations	_____ feet	_____ feet

Well screen installed? ☐ Yes ☐ No

Manufacturer's name _____

Type _____ Model No. _____

Diameter ___ Slot size ___ Set from _____ feet to _____ feet

Diameter ___ Slot size ___ Set from _____ feet to _____ feet

Gravel packed? ☐ Yes ☒ No Size of gravel _____

Placed from _____ feet to _____ feet

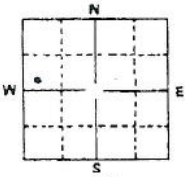
Surface seal depth 72 Material used in seal ☐ Cement grout ☑ Puddling clay ☑ Well cuttings

Sealing procedure used ☐ Slurry pit ☐ Temporary surface casing ☑ Overbore to seal depth

6. LOCATION OF WELL

Sketch map location must agree with written location.

(3)



Subdivision Name _____

Lot No. _____ Block No. _____

County ELMORE

SW ¼ NW ¼ Sec. 34, T. 1 N/S, R. 4 E/W

7. WATER LEVEL

Static water level 89 feet below land surface

Flowing? ☐ Yes ☑ No G.P.M. flow _____

Temperature _____ ° F. Quality _____

Artesian closed-in pressure _____ p.s.i.

Controlled by ☐ Valve ☐ Cap ☐ Plug

8. WELL TEST DATA

☐ Pump ☐ Bailer ☒ Other

Discharge G.P.M.	Draw Down	Hours Pumped
80		2

9. LITHOLOGIC LOG

042808

Hole Diam.	Depth From	Depth To	Material	Water Yes	Water No
8	0	8	SOIL		
8	8	16	DECOMPOSED GRANITE + CLAY		
8	16	42	DECOMPOSED GRANITE & CLAY + BOLDER	✓	
8	42	48	GRANITE BOLDER	✓	
8	48	72	DECOMPOSED GRANIT + BOLDER		
8-5/8	72	91	GRANITE		
8	91	97	DECOMPOSED GRANITE + CLAY		
8	97	168	GRANITE + DECOMPOSED GRANITE		
6	168	260	GRANITE + DECOMPOSED GRANITE	✓	

10.

Work started 4/29/76 finished 5/10/76

11. DRILLERS CERTIFICATION

USGS

Firm Name Hollister Drilling Firm No. 35

Address MT HOME, IDAHO Date 5/12/76

Signed by (Firm Official) _____

and

(Operator) Ken Kala

USE ADDITIONAL SHEETS IF NECESSARY FORWARD THE WHITE COPY TO THE DEPARTMENT

/95-C96

25

Inspected by _____
Twp _____ Rge _____ Sec _____
_____ 1/4 _____ 1/4 _____ 1/4
Lat: : : Long: : :

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. DRILLING PERMIT NO. 61-99-W-0059-000
Other IDWR No. D0012097

2. OWNER:
Name Ronald & Pamela Miller
Address HC 34 Mayfield Stage
City Boise State ID Zip 83716

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location

orm 2387

N

W E

S

Twp. 1 North X or South ☐
Rge. 4 East X or West ☐
Sec. 34 1/4 (10 acres) SW 1/4 (40 acres) SE 1/4 (160 acres)

Gov't lot _____ County Elmore
Lat: : : Long: : :
Address of Well Site Mayfield Road
City Mayfield
(Give at least name of road + Distance to Road or Landmark)
Lt. _____ Blk. _____ Sub. Name _____

4. USE:
X Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other _____

5. TYPE OF WORK check all that apply (Replacement etc.)
X New Well ☐ Modify ☐ Abandonment ☐ Other _____

6. DRILL METHOD
☐ Air Rotary ☐ Cable X Mud Rotary ☐ Other _____

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
Bentonite	0	18	900 lbs	Overbore

Was drive shoe used? ☐ Y X N Shoe Depth(s) _____
Was drive shoe seal tested? ☐ Y X N How? _____

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
5.438	+2	596	288	Steel	X	☐	X	☐
5.563	606	616	288	Steel	X	☐	X	☐
					☐	☐	☐	☐

Length of Headpipe _____ Length of Tailpipe _____

9. PERFORATIONS/SCREENS
☐ Perforations Method _____
☐ Screens Screen Type _____

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
596	606	020		5.563	SS	X	☐
						☐	☐
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
450 ft. below ground Artesian Pressure _____ lb
Depth flow encountered _____ Describe access port or control devices: _____

11. WELL TESTS: 59137
☐ Pump ☐ Bailer X Air ☐ Flowing Artesian

Yield gal/min.	Drawdown	Pumping Level	Time

Water Temp. _____ Bottom hole temp. _____
Water Quality test or comments: _____
Depth first Water Encountered _____

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

25

Bore Dia	From	To	Remarks: Lithology, Water Quality & Temp.	Water Y	Water N
12	0	3	Top Soil		X
12	3	15	Hard Pan		X
12	15	18	Sand & Clay Seams		X
8	18	22	Tan Clay		X
8	22	257	Tan Sand & Clay Seams		X
8	257	260	Tan Clay		X
8	260	320	Brown Silt & Sand		X
8	320	400	Tan Clay & Some Sand		X
8	457	469	White Clay & Large Stone		X
8	469	471	Sand ~ 015		X
8	471	500	Tan Clay & Some Sand		X
8	500	520	White Clay & Some Sand		X
8	520	594	Tan Clay & Some Sand		X
8	594	610	White Clay & Some Sand		X
8	610	615	Medium Sand & White Clay		X
8	615	620	White Clay & Some Stone		X

MICROFILMED NOV 30 1999

RECEIVED OCT 13 1999 WATER RESOURCES WESTERN REGION

Completed Depth: 616 (Measurable)
Date: Started 9-18-99 Completed 9-23-99

13. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name Hiddleston & Son, Inc. Firm No. 35
Firm Official Mark Hiddleston Date 10/11/99
Supervisor or Operator John Hiddleston Date _____
(Sign once if Firm Official & Operator)

Form 238-7
3/95-C96

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT 053590

Office Use Only
Inspected by _____
Twp ____ Rge ____ Sec ____
____ 1/4 ____ 1/4 ____ 1/4
Lat: : : Long: : :

1. DRILLING PERMIT NO. 61-99-W-0028-000
Other IDWR No. D0009421

2. OWNER:
Name Mary Botts
Address 5625 Baseline Rd.
City Boise State ID Zip 83617

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location

N
W E S

Twp. 1 North ☐ or South X
Rge. 4 East X or West ☐
Sec. 2 1/4 (10 acres) NE 1/4 (40 acres) NE 1/4 (160 acres)
Gov't lot ____ County Elmore
Lat: : : Long: : :
Address of Well Site 5625 Baseline Rd. - Tippanuk
City Boise
(Give at least name of road + Distance to Road or Landmark)
Lt. ____ Blk. ____ Sub. Name ____

4. USE:
X Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other ____

5. TYPE OF WORK check all that apply (Replacement etc.)
X New Well ☐ Modify ☐ Abandonment ☐ Other ____

6. DRILL METHOD
X Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other ____

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
Bentonite	0	158	4000 lbs	Overbore

Was drive shoe used? ☐ Y X N Shoe Depth(s) ____
Was drive shoe seal tested? ☐ Y X N How? ____

8. CASING/LINER:

Diameter	From	To	Gauge	Materia	Casing	Liner	Welded	Threaded
8.625	+6"	158'	.250	SS/EL	X	☐	X	☐
8.625	+2	523	.250	SS	X	☐	X	☐
5.625	523	537	.250	STEEL	☒	☐	☒	☐

Length of Headpipe 523' Length of Tailpipe 3'

9. PERFORATIONS/SCREENS
☐ Perforations Method ____
☐ Screens Screen Type ____

From	To	Slot Size	Number	Diameter	Materia	Casing	Liner
523	533	.020		5.563	SS	X	☐
						☐	☐
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
310 ft. below ground — Depth flow encountered
Artesian Pressure ____ lb — Describe access port or control devices: ____

11. WELL TESTS:
☐ Pump ☐ Bailer X Air ☐ Flowing Artesian

Yield gal/min.	Drawdown	Pumping Level	Time
20+			

Water Temp. ____ Bottom hole temp. ____
Water Quality test or comments: ____
Depth first Water Encountered ____

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia	From	To	Remarks: Lithology, Water Quality & Temp.	Water Y	Water N
12"	0	2	Top Soil	☐	X
12"	2	10	Sandy Clay	☐	X
12"	10	138	Tan Sand & Clay Seam	☐	X
12-8	138	175	Brown Sand & Clay Seam	☐	X
8"	175	195	Sand Stone	☐	X
8"	195	210	Brown Clay	☐	X
8"	210	215	Sand & Clay Seam	☐	X
8"	215	290	Tan Clay & Sand Seam	☐	X
8"	290	312	Sand-10/20	☐	X
8"	312	330	Sand & Clay Seam	☐	X
8"	330	350	Coarse Sand	☐	X
8"	350	367	Clay & Sand Seam	☐	X
8"	367	400	Brown Clay & Sand Seam	☐	X
8"	400	462	Tan Clay & Sand Seam	☐	X
8"	462	465	Tan Clay & Some Pea Gravel	☐	X
8"	465	514	Light Tan Clay & Some Stone	☐	X
8"	514	522	Sand Stone	☐	X
8"	522	534	Coarse Sand	X	
8"	534	540	Ash Color	☐	X

MICROFILMED OCT 13 1999

RECEIVED JUL - 1 1999 Department of Water Resources

RECEIVED JUN 22 1999 WATER RESOURCES WESTERN REGION

Completed Depth: 537' (Measurable)
Date: Started 5-18-99 Completed 6-2-99

13. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name Hiddleston & Son, Inc. Firm No. 35
Firm Official ____ Date 6/17/99
Supervisor or Operator John Smith Date 6/17/99

4-1

188349

Form 238-7
3/95-C96

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Office Use Only
Inspected by _____
Twp _____ Rge _____ Sec _____
_____ 1/4 _____ 1/4 _____ 1/4
Lat: : : Long: : :

1. DRILLING PERMIT NO. - - - - -
Other IDWR No. D0025803

2. OWNER:
Name Dale Meeks
Address 977 N. Ethridge Pl
City Boise State ID Zip 83704

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location

N
W [X] E
S

Twp. 1 North ☐ or South X
Rge. 4 East X or West ☐
Sec. 2 1/4 (10 acres) NE 1/4 (40 acres) NE 1/4 (160 acres)
Gov't lot _____ County Elmore
Lat: : : Long: : :
Address of Well Site Prairie Grass Rd. off baseline rd.
City Mtn Home
(Give at least name of road + Distance to Road or Landmark)
Lt. _____ Blk. _____ Sub. Name _____

4. USE:
X Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other _____

5. TYPE OF WORK check all that apply (Replacement etc.)
X New Well ☐ Modify ☐ Abandonment ☐ Other _____

6. DRILL METHOD
X Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other _____

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
Bentonite	0	19	500 lbs	Overbore

Was drive shoe used? X Y ☐ N Shoe Depth(s) _____
Was drive shoe seal tested? ☐ Y X N How? _____

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
6.625	+2	428	.250	Steel	X	☐	X	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Length of Headpipe N/A Length of Tailpipe _____

9. PERFORATIONS/SCREENS
☐ Perforations Method _____
X Screens Screen Type Johnson

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
429	434	.025		5"	SS	☐	☐
						☐	☐
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
331 ft. below ground Artesian Pressure ___ lb
Depth flow encountered ___ ft. Describe access port or control devices: _____

11. WELL TESTS:
☐ Pump ☐ Bailer X Air ☐ Flowing Artesian

Yield gal/min	Drawdown	Pumping Level	Time
30			1

Water Temp. 60 Bottom hole temp. _____
Water Quality test or comments: _____
Depth first Water Encountered 409'

12. LITHOLOGIC LOG: (Describe repair or abandonment)

27

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temp.	Water Y	Water N
10	0	2	Top Soil		X
10	2	5	Cleache		X
10	5	15	Sand & Gravel		X
10	15	18	Tan Clay		X
6	18	22	Tan Clay		X
6	22	78	Tan Coarse Sand		X
6	78	83	Tan Clay		X
6	83	213	Coarse Sand		X
6	213	225	Brown Sandstone		X
6	225	290	Coarse Sand		X
6	290	409	Tan Sandy Clay		X
6	409	414	Coarse Sand	X	
6	414	421	Tan Sand w/ Clay Seams		X
6	421	434	Tan Sand	X	
6	434	435	Tan Clay		X

RECEIVED
NOV 13 2002
WATER RESOURCES
WESTERN REGION

Completed Depth: 434' (Measurable)
Date: Started 10-28-02 Completed 11-01-02

13. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name Hiddleston & Son, Inc. Firm No. 35
Firm Official Kevin Koch Date 11-11-02
Supervisor or Operator Matt Hiddleston Date 11-11-02
(Sign once if Firm Official & Operator)

RECEIVED
JAN 0 2 2003

L 8

10925 1

Form 238-7
3/95-C96

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Office Use Only
Inspected by _____
Twp ____ Rge ____ Sec ____
____ 1/4 ____ 1/4 ____ 1/4
Lat: : : Long: : :

1. DRILLING PERMIT NO. - - - - -
Other IDWR No. D0025928

2. OWNER:
Name Rich Cornell
Address HC 87 Box 700
City Mtn Home State ID Zip 83647

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location

N
W E
S

Twp. 1 North ☐ or South X
Rge. 4 East X or West ☐
Sec. 2 1/4 (10 acres) NW 1/4 (40 acres) NE 1/4 (160 acres)
Gov't lot County Elmore
Lat: : : Long: : :
Address of Well Site ½ mile off baseline rd.
City Mtn Home
(Give at least name of road + Distance to Road or Landmark)
Lt. _____ Blk. _____ Sub. Name _____

4. USE:
X Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other _____

5. TYPE OF WORK check all that apply (Replacement etc.)
X New Well ☐ Modify ☐ Abandonment ☐ Other _____

6. DRILL METHOD
X Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other _____

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
Bentonite	0	19	600 lbs	Overbore

Was drive shoe used? X Y ☐ N Shoe Depth(s) _____
Was drive shoe seal tested? ☐ Y X N How? _____

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
6.625	+2	383	.250	Steel	X	☐	X	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Length of Headpipe 5' Length of Tailpipe N/A

9. PERFORATIONS/SCREENS
☐ Perforations Method _____
X Screens Screen Type Johnson

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
385	390	.030		5"	SS	☐	☐
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
300 ft. below ground Artesian Pressure ____ lb
Depth flow encountered ____ ft. Describe access port or control devices: _____

11. WELL TESTS:
☐ Pump ☐ Bailer X Air ☐ Flowing Artesian

Yield gal/min.	Drawdown	Pumping Level	Time
20			

Water Temp. 62 Bottom hole temp. _____
Water Quality test or comments: _____
Depth first Water Encountered 185

12. LITHOLOGIC LOG: (Describe repair or abandonment)

28

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temp.	Y	N
10	0	2	Top Soil		X
10	2	10	Silty Sand		X
10	10	12	Big Sand & Gravel		X
10	12	19	Coarse Sand & Gravel		X
6	19	21	Tan Clay		X
6	21	88	Coarse Sand & Gravel		X
6	88	92	Brown Clay		X
6	92	165	Sand		X
6	165	185	Sandstone		X
6	185	250	Sand	X	
6	250	255	Tan Clay		X
6	255	380	Sand		X
6	380	382	Tan Clay		X
6	382	390	Coarse Sand	X	

Completed Depth: 390' (Measurable)
Date: Started 11-22-02 Completed 11-28-02

13. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name Hiddleston & Son, Inc. Firm No. 35
Firm Official [signature] Date 12-20-02
Supervisor or Operator Matt Hiddleston Date _____
(Sign once if Firm Official & Operator)

2 1

799883

Office Use Only
Inspected by _____
Twp ____ Rge ____ Sec ____
____ 1/4 ____ 1/4 ____ 1/4
Lat: : : Long: : :

Form 238-7
3/95-C96

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. DRILLING PERMIT NO. - - - - ____
Other IDWR No. D0029374

2. OWNER:
Name Jack Buchanan
Address 731 S. Prairie Grass Rd.
City Boise State ID Zip 83716

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location

N
W [X] E
S

Twp. 15 North ☐ or South X
Rge. 4 East X or West ☐
Sec. 2 1/4 (10 acres) SE 1/4 (40 acres) NE 1/4 (160 acres)
Gov't lot ____ County ~~Ada~~
Lat: : : Long: : :
Address of Well Site 731 S. Prairie Grass Rd.
City Boise
(Give at least name of road + Distance to Road or Landmark)
Lt. ____ Blk. ____ Sub. Name ____

4. USE:
X Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other ____

5. TYPE OF WORK check all that apply (Replacement etc.)
X New Well ☐ Modify ☐ Abandonment ☐ Other ____

6. DRILL METHOD
X Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other ____

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
Bentonite	0	18	700 lbs	Overbore

Was drive shoe used? X Y ☐ N Shoe Depth(s) ____
Was drive shoe seal tested? ☐ Y X N How? ____

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
6.625	+2	469	.250	Steel	X	☐	X	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Length of Headpipe 20' Length of Tailpipe N/A

9. PERFORATIONS/SCREENS
☐ Perforations Method ____
X Screens Screen Type Johnson

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
471	476	.020		5"	SS	☐	☐
451	471	N/A		5"	Steel		X
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
331 ft. below ground Artesian Pressure ____ lb
Depth flow encountered ____ ft. Describe access port or control devices: ____

11. WELL TESTS:
☐ Pump ☐ Bailer X Air ☐ Flowing Artesian

Yield gal/min	Drawdown	Pumping Level	Time
50			1 hr

Water Temp. ____ Bottom hole temp. ____
Water Quality test or comments: ____
Depth first Water Encountered ____

29

12. LITHOLOGIC LOG: (Describe repair or abandonment)

Bore Dia	From	To	Remarks: Lithology, Water Quality & Temp.	Water Y	Water N
10"	0	2	Top Soil		X
10"	2	7	Cleache		X
10"	7	16	Tan Sand W/ Gravel		X
10"	16	18	Tan Clay		X
6"	18	22	Tan Clay		X
6"	22	80	Tan Coarse Sand		X
6"	80	83	Tan Clay		X
6"	83	217	Coarse Sand		X
6"	217	227	Brown SandStone		X
6"	227	460	Tan Sand w/ Clay Seams		X
6"	460	476	Coarse Tan Sand & Gravel	X	

RECEIVED
JUN 0 2 2003
WATER RESOURCES
WESTERN REGION

Completed Depth: 476' (Measurable)
Date: Started 4-28-03 Completed 5-5-03

13. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name Hiddleston & Son, Inc. Firm No. 35
Firm Official [signature] Date 5-27-03
Supervisor or Operator Matt Hiddleston Date ____
(Sign once if Firm Official & Operator)

30

16172

Form 238-7
5/95-C96

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Office Use Only
Inspected by _____
Twp ____ Rge ____ Sec ____
____ 1/4 ____ 1/4 ____ 1/4
Lat: : : Long: : :

1. DRILLING PERMIT NO. ___ - ___ - ___ ____ ____
Other IDWR No. D0015631

2. OWNER:
Name Glen & Janet Jorgensen
Address 1386 N. Little Creek
City Meridian State ID Zip 83642

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location

N
W E
S
X

Twp. 1 North ☐ or South X
Rge. 4 East X or West ☐
Sec. 2 1/4 (10 acres) SW 1/4 (40 acres) SW 1/4 (160 acres)
Gov't lot ____ County Elmore
Lat: : : Long: : :
Address of Well Site Base Line Rd.
City Mtn Home
(Give at least name of road + Distance to Road or Landmark)
Lt. ____ Blk. ____ Sub. Name ____

4. USE:
X Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other ____

5. TYPE OF WORK check all that apply (Replacement etc.)
X New Well ☐ Modify ☐ Abandonment ☐ Other ____

6. DRILL METHOD
X Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other ____

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
Bentonite	0	18	800 lbs	Overbore

Was drive shoe used? X Y ☐ N Shoe Depth(s) ____
Was drive shoe seal tested? ☐ Y X N How? ____

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
6.625	+2	608	250	Steel	X	☐	X	☐
5.563	602	608	.188	Steel	☐	X	X	☐
5.563	618	633	188	Steel	☐	X	X	☐

Length of Headpipe 6' Length of Tailpipe 15'

9. PERFORATIONS/SCREENS
☐ Perforations Method ____
X Screens Screen Type Johnson

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
608	618	.010		5.563	SS	☐	X
						☐	☐
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
388 ft. below ground
Depth flow encountered ft.
Artesian Pressure ____ lb
Describe access port or control

11. WELL TESTS:
☐ Pump ☐ Bailer X Air ☐ Flowing Artesian

Yield gal/min.	Drawdown	Pumping Level	Time
20			

Water Temp. ____ Bottom hole temp. ____
Water Quality test or comments: ____
Depth first Water Encountered 500

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia	From	To	Remarks: Lithology, Water Quality & Temp.	Water Y	Water N
10	0	2	Top Soil		X
10	2	18	Sandy Clay		X
6	18	120	Tan Sand & Clay Seams		X
6	120	175	Brown Sand & Clay		X
6	175	200	Sand Stone		X
6	200	290	Tan Clay & Sand Seam		X
6	290	400	Tan Sand & Clay Seams		X
6	400	465	Tan Clay & Sand Seams		X
6	465	500	Tan Sand & Clay Seam		X
6	500	510	Coarse Sand – Rusty	X	
6	510	540	Tan Clay & Sand Seam		X
6	540	551	Brown Clay		X
6	551	620	Gray Sand	X	
6	620	633	Gray Sand & Hard Clay Seam		X

RECEIVED
DEC 27 2000
Department of Water Resources

RECEIVED
DEC 12 2000
WATER RESOURCES
WESTERN REGION

Completed Depth: 633 (Measurable)
Date: Started 11-09-00 Completed 11-17-00

13. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name Hiddleston & Son, Inc. Firm No. 35
Firm Official _____ Date 12/6/00
Supervisor or Operator _____ Date 12-7-00
(Sign once if Firm Official & Operator)

31

810178

Office Use Only
Inspected by _____
Twp _____ Rge _____ Sec _____
_____ 1/4 _____ 1/4 _____ 1/4
Lat: : : Long: : :

Form 238-7
3/95-C96

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. DRILLING PERMIT NO. __-__-__-____-____
Other IDWR No. D0030779

2. OWNER:
Name Big View Builders
Address 5006 Man O War
City Nampa State ID Zip 83686

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location

N
W E
S

Twp. 1 North ☐ or South ☒
Rge. 4 East ☒ or West ☐
Sec. ___ 1/4 (10 acres) SE 1/4 (40 acres) SW 1/4 (160 acres)
Gov't lot _____ County Elmore
Lat: : : Long: : :
Address of Well Site 1020 Desert Wind Rd
City Mountain Home,
(Give at least name of road + Distance to Road or Landmark)
Lt. _____ Blk. _____ Sub. Name _____

4. USE:
☒ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other _____

5. TYPE OF WORK check all that apply (Replacement etc.)
☒ New Well ☐ Modify ☐ Abandonment ☐ Other _____

6. DRILL METHOD
☒ Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other _____

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
Bentonite	0	20	12	overbore

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) 278
Was drive shoe seal tested? ☐ Y ☒ N How? _____

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
6"	+2	278	250	steel	☒	☐	☒	☐
5"	6ft	491	188	steel	☐	☒	☒	☐
					☐	☐	☐	☐

Length of Headpipe _____ Length of Tailpipe _____

9. PERFORATIONS/SCREENS
☐ Perforations Method _____
☒ Screens Screen Type sand blocker

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
492	504	n/a	n/a	4"	stst	☐	☐
						☐	☐
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
365 ft. below ground Artesian Pressure _____ lb
Depth flow encountered 485 ft. Describe access port or control devices: _____

11. WELL TESTS:
☒ Pump ☐ Bailer ☒ Air ☐ Flowing Artesian

Yield gal/min.	Drawdown	Pumping Level	Time
15	50	415	3 hrs

Water Temp. _____ Bottom hole temp. _____
Water Quality test or comments: _____
Depth first Water Encountered 408

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia	From	To	Remarks: Lithology, Water Quality & Temp.	Water Y	Water N
10'	0	18	Sandy brown clay		☒
8	18	36	Sandy brown clay		☒
8	36	42	Cemented gravel		☒
8	42	185	Brown clay		☒
8	185	243	Brown clay w/ sand strips		☒
8	243	278	Black cinders		☒
8	278	408	Black lava		☒
8	408	485	Brown clay w/ sand strips	☒	
8	485	504	Coarse white sand & some gravel	☒	

RECEIVED
MAR 08 2004
WATER RESOURCES
WESTERN REGION

Completed Depth: 504 (Measurable)
Date: Started 01/12/04 Completed 02/15/04

13. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name Skinner & Son Well Drilling Firm No. 635
Firm Official _____ Date 3-2-04
Supervisor or Operator _____ Date 3-2-04
(Sign once if Firm Official & Operator)

Date: 3/2/04 Time: 3:50 PM

Form 238-7
6/89

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

USE TYPEWRITER OR BALLPOINT PEN

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

32

1. WELL OWNER

Name Jerry Morton

Address Box 48 Mayfield Stage Boise

Owner's Permit No. 61-89-7-026 83707

2. NATURE OF WORK

☒ New well ☐ Deepened ☐ Replacement
☐ Well diameter increase
☐ Abandoned (describe abandonment procedures such as materials, plug depths, etc. in lithologic log)

3. PROPOSED USE

☒ Domestic ☐ Irrigation ☐ Test ☐ Municipal
☐ Industrial ☐ Stock ☐ Waste Disposal or Injection
☐ Other _____ (specify type)

4. METHOD DRILLED

☒ Rotary ☒ Air ☐ Hydraulic ☐ Reverse rotary
☐ Cable ☐ Dug ☐ Other _____

5. WELL CONSTRUCTION

Casing schedule: ☒ Steel ☐ Concrete ☐ Other _____

Thickness	Diameter	From	To
.250 inches	6 5/8 inches	+ 2 feet	584 feet
_____ inches	_____ inches	_____ feet	_____ feet
_____ inches	_____ inches	_____ feet	_____ feet
_____ inches	_____ inches	_____ feet	_____ feet

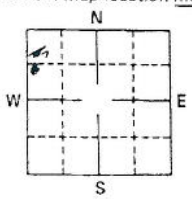
Was casing drive shoe used? ☒ Yes ☐ No
Was a packer or seal used? ☐ Yes ☒ No
Perforated? ☐ Yes ☒ No
How perforated? ☐ Factory ☐ Knife ☐ Torch ☐ Gun
Size of perforation _____ inches by _____ inches

Number	From	To
_____ perforations	_____ feet	_____ feet
_____ perforations	_____ feet	_____ feet
_____ perforations	_____ feet	_____ feet

Well screen installed? ☐ Yes ☒ No
Manufacturer's name _____
Type _____ Model No. _____
Diameter ____ Slot size ____ Set from _____ feet to _____ feet
Diameter ____ Slot size ____ Set from _____ feet to _____ feet
Gravel packed? ☐ Yes ☒ No ☐ Size of gravel _____
Placed from _____ feet to _____ feet
Surface seal depth 50 Material used in seal: ☐ Cement grout
☒ Bentonite ☐ Puddling clay ☐ _____
Sealing procedure used: ☐ Slurry pit ☐ Temp. surface casing
☒ Overbore to seal depth
Method of joining casing: ☒ Threaded ☐ Welded ☐ Solvent Weld
☐ Cemented between strata
Describe access port _____

6. LOCATION OF WELL

Sketch map location must agree with written location.



Subdivision Name _____

Lot No. _____ Block No. _____

County Elmore

SW ¼ NW ¼ Sec. 34, T. 1 ☐ N ☒ S, R. 4 ☒ E ☐ W

7. WATER LEVEL

Static water level 460 feet below land surface.
Flowing? ☐ Yes ☒ No G.P.M. flow _____
Artesian closed-in pressure _____ p.s.i.
Controlled by: ☐ Valve ☐ Cap ☐ Plug
Temperature _____ °F. Quality _____
Describe artesian or temperature zones below.

8. WELL TEST DATA

☐ Pump ☐ Bailer ☒ Air ☐ Other _____

Discharge G.P.M.	Pumping Level	Hours Pumped
25		2

9. LITHOLOGIC LOG

Bore Diam.	Depth From	Depth To	Material	Water Yes	Water No
8"	0	10	Sand		✓
8"	10	28	clay w/some sand		✓
8"-6"	28	260	clay w/ sand		✓
6"	260	510	Cemented sand & Gravel & Clay		✓
6"	510	583	fine sand (gray) w/very little gravel	X	
6"	583	586	sand & gravel	X	

RECEIVED
NOV 15 1989
Department of Water Resources

RECEIVED
DEC 13 1989
Department of Water Resources
Western Regional Office

MICROFILMED
JUN 05 1990

10. Work started 10-24-89 finished 11-11-89

11. DRILLERS CERTIFICATION

OL

I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name Hiddleston & Son, Inc Firm No. 35

Address Mt. Home, Id Date 11-12-89

Signed by (Firm Official) Mark S Hiddleston

and

(Operator) Mark S Hiddleston

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT

Form 238-7
4/92

POOR QUALITY

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

RECEIVED
AUG 0 3 1993
Department of Water Resources

USE TYPEWRITER OR BALLPOINT PEN

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

1. WELL OWNER
Name RONALD & ROSEANNA CASTLE
Address HC 85, BX 237 GRANDVIEW, ID 83624
Drilling Permit No. 61-93-C-0031-000
Water Right Permit No. 61-07683 (upon approval)

2. NATURE OF WORK NEW WELL
☐ New well ☐ Deepened ☐ Replacement
☐ Well diameter increase ☐ Modification
☐ Abandoned (describe abandonment or modification procedures such as liners, screen, materials, plug depths, etc. in lithologic log, section 9.)

3. PROPOSED USE NON-DOMESTIC
☐ Domestic ☐ Irrigation ☐ Monitor
☐ Industrial ☐ Stock ☐ Waste Disposal or Injection
☐ Other _____ (specify type)

4. METHOD DRILLED AIR&MUD ROTARY
☐ Rotary ☐ Air ☐ Auger ☐ Reverse rotary
☐ Cable ☐ Mud ☐ Other _____ (backhoe, hydraulic, etc.)

5. WELL CONSTRUCTION
Casing schedule: ☒ Steel ☐ Concrete ☐ Other _____

Thickness	Diameter	From	To
.25 inches	8 inches	+ 1 feet	490 feet
_____ inches	_____ inches	_____ feet	_____ feet
_____ inches	_____ inches	_____ feet	_____ feet

Was casing drive shoe used? ☐ Yes ☒ No
Was a packer or seal used? ☐ Yes ☒ No
Perforated? ☐ Yes ☒ No
How perforated? ☐ Factory ☐ Knife ☐ Torch ☐ Gun
Size of perforation? _____ inches by _____ inches

Number	From	To
_____ perforations	_____ feet	_____ feet
_____ perforations	_____ feet	_____ feet
_____ perforations	_____ feet	_____ feet

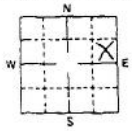
Well screen installed? ☐ Yes ☒ No
Manufacturer _____ Type _____
Top Packer or Headpipe _____
Bottom of Tailpipe _____

Diameter ____ Slot size ____ Set from ____ feet to ____ feet
Diameter ____ Slot size ____ Set from ____ feet to ____ feet
Gravel packed? ☐ Yes ☒ No ☐ Size of gravel _____
Placed from _____ feet to _____ feet

Surface seal depth 270 Material used in seal: ☐ Cement grout
☒ Bentonite ☐ Puddling clay ☐ _____
Sealing procedure used: ☐ Slurry pit
☐ Temp. surface casing ☒ Overbore to seal depth
Method of joining casing: ☐ Threaded ☒ Welded
☐ Solvent Weld ☐ Cemented between strata

Describe access port WELL CAP

6. LOCATION OF WELL
Sketch map location **must** agree with written location.



Subdivision Name _____
Lot No. _____ Block No. _____
County ELMORE
Address of Well Site HC 34 MAYFIELD STAGE BOX 100
(give at least name of road)
T. 01S N ☐ or S ☐
SE ¼ NE ¼ Sec. 3, R. 14E E ☐ or W ☐

7. WATER LEVEL
Static water level 338 feet below land surface.
Flowing? ☐ Yes ☒ No G.P.M. flow _____
Artesian closed-in pressure _____ p.s.i.
Controlled by: ☐ Valve ☐ Cap ☐ Plug
Temperature 65 °F. Quality Good
Describe artesian or temperature zones below.

8. WELL TEST DATA AIR

☐ Pump ☐ Bailer ☐ Air ☐ Other _____

Discharge G.P.M.	Pumping Level	Hours Pumped
90	535	1

33

081538

9. LITHOLOGIC LOG

Bore Diam.	Depth From	Depth To	Material	Water Yes	Water No
10"	0	5	BLEACHEY		X
	5	50	CLAY & DECOMPOSED GRANIT AND SAND mix		X
	50	89	SAND		X
	89	90	CLAY AND SAND MIXED		X
	90	170	BOULDERS & SAND		X
	170	225	CLAY, & SAND MIXED		X
	225	240	HARD GRANIT		X
	240	270	DECOMPOSED GRANIT		X
	270	275	BROWN CLAY		X
	275	330	DECOMPOSED GRANIT		X
	330	485	SAND		X
	485	487	CLAY		X
	487	518	LAVA ROCK	X	
			SWITCHED TO AIR ROTARY		
8"	518	535	BROCKEN LAVA ROCK, & SOME ROUND LAVA	X	

RECEIVED
AUG 0 2 1993
Department of Water Resources
Western Regional Office

FEB 0 9 1994

10. Work started 7/8/93 finished 7/28/93

11. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name PETE CORE DRILL Firm No. 213
Address 6505 W. CHINDEN Date 7/29/93
Signed by Drilling Supervisor Jerry Foster
and
(Operator) _____
(If different than the Drilling Supervisor)

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT

Form 238-7
3/95

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT 093344

Use Typewriter or Ballpoint Pen

Office Use Only
Inspected by _____
Twp____ Rge____ Sec____
____1/4 ____1/4 ____1/4
Lat: : : Long: : :

1. DRILLING PERMIT NO. 61 - 96 - W - 10 - 100
Other IDWR No. 61-07683
Previous permit 61-93-C-0031-000

2. OWNER:
Name RONALD B & ROSANNA K CASTLE
Address HC 34 BOX 34-106
City BOISE State ID Zip 83706

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

N / W / E / S

Twp. 1 S North ☐ or South ☐
Rge. 4 E East ☐ or West ☐
Sec. 3 ____ 1/4 SE 1/4 NE 1/4
(10 acres / 40 acres / 160 acres)
Gov't Lot ____ County ELMORE
Lat: : : Long: : :
Address of Well Site HC 34 MAYFIELD STAGE
BOX 100 City MAYFIELD
(Give at least name of road + Distance to Road or Landmark)

Lt. _____ Blk. _____ Sub. Name _____

4. USE: NON-DOMESTIC MULTIPLY HOME DOMESTIC
☒ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other _____

5. TYPE OF WORK check all that apply DEEPEN (Replacement etc.)
☐ New Well ☐ Modify ☐ Abandonment ☒ Other DEEPEN

6. DRILL METHOD AIR ROTARY
☒ Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other _____

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
REFER TO FIRST WELL LOG				

Was drive shoe used? ☐ Y ☐ N Shoe Depth(s) _____
Was drive shoe seal tested? ☐ Y ☐ N How? _____

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
REFER TO FIRST WELL LOG				0 TO 535	☐	☐	☐	☐
6"	+2	550	.250	STEEL	☒	☐	☒	☐
4.5"	498	678	40	PVC	☐	☒	☐	☒

Length of Headpipe _____ Length of Tailpipe _____

9. PERFORATIONS/SCREENS
☒ Perforations Method SKill SAW
☐ Screens Screen Type _____

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
578	678	1/8"	3 per ft	4.5"	PVC	☐	☒
						☐	☐
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
435 ft. below ground Artesian pressure — lb.
Depth flow encountered — ft. Describe access port or control devices: WELL CAP

11. WELL TESTS:
☐ Pump ☐ Bailer ☒ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time
40 GPM	N/A	616 FT	2 HRS

Water Temp. COLD Bottom hole temp. COLD
Water Quality test or comments: GOOD, CLEAR, NO SMELL
Depth first Water Encountered 629

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Water Y	Water N
		0	TO 535 REFER TO FIRST WELL LOG		X
6"	535	550	CAVING LAVA ROCK		X
	550	565	LAVA & GRANITE		X
	565	570	BROWN CINDERS		X
	570	584	LAVA		X
	584	588	BROWN CINDERS		X
	588	597	LAVA ROCK		X
	597	609	GREEN GRANITE		X
	609	618	WHITE & GREEN GRANITE W/ LAVA		X
	618	619	GRAY GRANITE		X
	619	629	WHITE GRANITE W/ LAVA	X	
	629	638	BROWN CINDERS	X	
	638	670	BRN CINDERS FINE & CRS SND	X	
	670	678	LAVA ROCK & SAND		

RECEIVED
MAY 30 1996
Department of Water Resources
RECEIVED
MAY 22 1996
WATER RESOURCES
WESTERN REGION
AUG 21 1996

Completed Depth 678 FEET (Measurable)
Date: Started [redacted] 4/10/96 Completed [redacted] 4-25-96

13. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name PETE COPE DRILLING CO., INC. Firm No. 213
Firm Official [signature] Date 5/16/96
and
Supervisor or Operator _____ Date _____
(Sign once if Firm Official & Operator)

FORWARD WHITE COPY TO WATER RESOURCES

Form 238-7
3/95-C96

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

& 14811

Office Use Only	
Inspected by	
Twp	Rge Sec
1/4	1/4 1/4
Lat: : :	Long: : :

1. DRILLING PERMIT NO 874817 - 789255
Other IDWR No. D0025927 CPS# 1675

2. OWNER:
Name Williams Pipeline West
Address 5821 Industrial Way
City American Falls State ID Zip 83202

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location

N / W / E / S

Twp. 1 North ☐ or South X
Rge. 4 East X or West ☐
Sec. 7 1/4 (10 acres) NW 1/4 (40 acres) NE 1/4 (160 acres)
Gov't lot ____ County Ada
Lat: : : Long: : :
Address of Well Site Exit 71, ¼ mile from Compressor Station City Boise
(Give at least name of road + Distance to Road or Landmark)
Lt. ____ Blk. ____ Sub. Name ____

4. USE:
☐ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection X Other Cathodic

5. TYPE OF WORK check all that apply (Replacement etc.)
X New Well ☐ Modify ☐ Abandonment ☐ Other ____

6. DRILL METHOD
X Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other ____

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
Bentonite	0	18	1200 lbs	Overbore
Coke	300	500	206	Overbore

Was drive shoe used? ☐ Y X N Shoe Depth(s) ____
Was drive shoe seal tested? ☐ Y X N How? ____

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
10.750	0	74	.365	Steel	X	☐	X	☐
8.625	125	500	.322	Steel	☐	X	X	☐
					☐	☐	☐	☐

Length of Headpipe N/A Length of Tailpipe N/A

9. PERFORATIONS/SCREENS
X Perforations Method Trochs
☐ Screens Screen Type ____

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
300	100	.250	80	4	Steel	☐	☒
						☐	☐
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
-0- ft. below ground Artesian Pressure ____ lb
Depth flow encountered ____ ft. Describe access port or control devices: ____

11. WELL TESTS:
☐ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian

Yield gal/min.	Drawdown	Pumping Level	Time

Water Temp. ____ Bottom hole temp. ____
Water Quality test or comments: ____
Depth first Water Encountered ____

12. LITHOLOGIC LOG: (Describe repair or abandonment)

35

Water Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temp.	Y	N
14"	0	8	Top Soil		X
14"	8	18	Sand		X
10.75	18	74	Sand & Clay Seam		X
10.75	74	300	Gray Lava		X
10.75	300	500	Decomposed Granite		X

RECEIVED
FEB 0 7 2003
WATER RESOURCES
WESTERN REGION

Completed Depth: 500' (Measurable)
Date: Started 11-26-02 Completed 1-23-03

13. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name Hiddleston & Son, Inc. Firm No. 35
Firm Official [signature] Date 2-4-03
Supervisor or Operator [signature] Date 2-4-03
(Sign once if Firm Official & Operator)

USE TYPEWRITER OR BALL POINT PEN

State of Idaho
Department of Administration

WELL DRILLER'S REPORT

State law requires that this report be filed with the State Reclamation Engineer within 30 days after completion or abandonment of the well.

Received 6-27-73 D WD

1. WELL OWNER

Name JOHN WEIMER

Address

Owner's Permit No.

2. NATURE OF WORK

☒ New well ☐ Deepened ☐ Replacement

☐ Abandoned (describe method of abandoning)

3. PROPOSED USE

☐ Domestic ☐ Irrigation ☐ Test

☐ Municipal ☐ Industrial ☒ Stock

4. METHOD DRILLED

☒ Cable ☐ Rotory ☐ Dug ☐ Other

5. WELL CONSTRUCTION

Diameter of hole 8 inches Total depth 695 feet

Casing schedule: ☒ Steel ☐ Concrete

Thickness	Diameter	From	To
[redacted] inches	10" inches	[redacted] feet	290 feet
1/4 inches	8" inches	0 feet	673 feet
1/4 inches	6" inches	665 feet	695 feet
inches	inches	feet	feet
inches	inches	feet	feet

Was a packer or seal used? ☐ Yes ☐ No

Perforated? ☒ Yes ☐ No

How perforated? ☒ Factory ☐ Knife ☐ Torch

Size of perforation inches by inches

Number		From	To
perforations		673 feet	695 feet
perforations		feet	feet
perforations		feet	feet

Well screen installed? ☐ Yes ☒ No

Manufacturer's name

Type Model No.

Diameter Slot size Set from feet to feet

Diameter Slot size Set from feet to feet

Gravel packed? ☐ Yes ☒ No Size of gravel

Placed from feet to feet

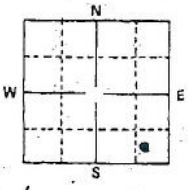
Surface seal? ☒ Yes ☐ No To what depth 290 feet

Material used in seal ☒ Cement grout ☒ Puddling clay

6. LOCATION OF WELL

Sketch map location must agree with written location.

61



County Ada

NE ¼ SE ¼ Sec. 7 T. 1S N/S, R. 4E E/W

7. WATER LEVEL

Static water level 540 feet below land surface

Flowing? ☐ Yes ☒ No G.P.M. flow

Temperature ° F. Quality

Artesian closed-in pressure p.s.i.

Controlled by ☐ Valve ☐ Cap ☐ Plug

8. WELL TEST DATA

☐ Pump ☒ Bailer ☐ Other

Discharge G.P.M.	Draw Down	Hours Pumped
25	12'	15 BAILED

028862

9. LITHOLOGIC LOG

Hole Diam.	Depth From	Depth To	Material	Water Yes	Water No
10"	0	3	TOP SOIL		X
10"	3	51	SANDY CLAY		X
10"	51	80	COURSE SAND GRAVEL		X
10"	80	84	SOFT LAVA		X
10"	84	102	VERY HARD BLK. LAVA		X
10"	102	136	LAVA GRAY NOT SO HARD		X
10"	136	138	RED CLAY		X
10"	138	168	GRAY LAVA HARD		X
10"	168	173	RED AND BLK. CINDERS		X
10"	173	180	HARD GRAY LAVA		X
10"	180	206	RED LAVA		X
10"	206	235	BLK LAVA HARD		X
10"	235	254	RED LAVA		X
10"	254	322	GRAVEL AND BRN. CLAY		X
8"	322	345	SANDY GRAVEL		X
8"	345	400	SANDY CLAY		X
8"	400	502	DRY SAND		X
8"	502	570	SANDY CLAY GRAVEL		X
8"	570	640	SANDY CLAY	X	
8"	[redacted]	[redacted]			
8"	640	665	BLUE CLAY	X	
8"	665	673	FINE SAND	X	
6"	673	695	COURSE SAND GRAVEL	X	

36

10.

Work started 27 APRIL finished JUNE 8th

11. DRILLER'S CERTIFICATION

USGS

This well was drilled under my supervision and this report is true to the best of my knowledge.

Russel Couse
Driller's or Firm's Name Number

Boise
Address

Signed By Date

USE ADDITIONAL SHEETS IF NECESSARY FORWARD THE WHITE, BLUE, AND PINK COPIES TO THE DEPARTMENT

CORRECTED 94796

Form 238-7
3/95-C96

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

61-98-W-0059-000

Office Use Only
Inspected by
Twp Rge Sec
1/4 1/4 1/4
Lat: Long:

1. DRILLING PERMIT NO. - - - - -
Other IDWR No. D0007514

2. OWNER:
Name Jim Hisel
Address Mayfield Stage, HC-34
City Boise State ID Zip 83706

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location

N / W / E / S

Twp. 1 North ☐ or South ☒
Rge. 4 East ☒ or West ☐
Sec. 10 1/4 (10 acres) SE 1/4 (40 acres) SE 1/4 (160 acres)
Gov't lot ____ County Elmore
Lat: - : - : - - Long: : :
Address of Well Site Mayfield Stage, HC-34
City Boise
(Give at least name of road + Distance to Road or Landmark)
Lt. ____ Blk. ____ Sub. Name ____

4. USE:
☒ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other ____

5. TYPE OF WORK check all that apply (Replacement etc.)
☒ New Well ☐ Modify ☐ Abandonment ☐ Other ____

6. DRILL METHOD
☒ Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other ____

7. SEALING PROCEDURES

SEAL/FILTER PACK			AMOUNT	METHOD
Material	From	To	Sacks or Pounds	
Bentonite	2'	40+'	16	Overbore

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) ____
Was drive shoe seal tested? ☐ Y ☒ N How? ____

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
6"	+1'	541	250	Steel	☒	☐	☒	☐
4.5"	532'	542'	Sc40	PVC	☐	☐	☐	☐
					☐	☐	☐	☐

Length of Headpipe ____ Length of Tailpipe ____

9. PERFORATIONS/SCREENS
☒ Perforations Method saw
☐ Screens Screen Type ____

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
539'	542'		80	4.5"	PVC	☐	☐
						☐	☐
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
350ft. below ground Artesian Pressure ____ lb
Depth flow encountered ____ ft. Describe access port or control devices: ____

11. WELL TESTS:
☐ Pump ☐ Bailer ☒ Air ☐ Flowing Artesian

Yield gal/min	Drawdown	Pumping Level	Time
10		400'	1hr
40		520'	1hr
50		540'	1hr

Water Temp. ____ Bottom hole temp. ____
Water Quality test or comments: ____
Depth first Water Encountered 358'

37

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temp.	Water Y	Water N
10"	0'	1'	brown top soil		☒
10"	1'	2'	lt brown hardpan		☒
10"	2'	8'	coarse brown sand		☒
10"	8'	18'	brown sandy clay		☒
10"	18'	20'	coarse brown sand		☒
8"	20'	205'	brown clay/coarse sand strips		☒
8"	205'	225'	browen brown & black granite		☒
8"	225'	307'	brown & white granite		☒
8"	307'	328'	cemented quartz sand		☒
8"	328'	358'	white & clear granite		☒
8"	358'	396'	brown clay w/sand strips	☒	
6"	396'	410'	coarse white & brown sand		☒
6"	410'	422'	brown clay		☒
6"	422'	432'	coarse white sand	☒	
6"	432'	453'	lt brown clay w/small cracks		☒
6"	453'	464'	hard brown clay		☒
6"	464'	467'	coarse brown sand	☒	
6"	467'	484'	lt brown sand w/sm. cracks		☒
6"	484'	501'	dirty brown sand w/clay strips		☒
6"	501'	532'	brown clay w/small cracks		☒
6"	532'	538'	grey clay w/grey sand		☒
6"	538'	542'	grey clay		☒
6"	542'	545'	blue/grey & white sand	☒	

RECEIVED
MAR 26 1999
WATER RESOURCES
WESTERN REGION

RECEIVED
MAR 30 1999
Department of Water Resources

Completed Depth: 542 (Measurable)
Date: Started 09-16-98 Completed 09-23-98

13. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name SOS Welldrilling & Pump Co Firm No. 212
Firm Official ____ Date 3-/24/99
Supervisor or Operator Don Kinney Date 3/24/99
(Sign once if Firm Official & Operator)

Date: 03/24/99 Time: 12:30 PM

MICROFILMED
JUN 08 1999

Form 238-7
1/78

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

USE TYPEWRITER OR BALLPOINT PEN

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

38

1. WELL OWNER

Name ED DIENES

Address MT. HOME

Owner's Permit No. –

2. NATURE OF WORK

☑ New well ☐ Deepened ☐ Replacement
☐ Abandoned (describe method of abandoning) _____

3. PROPOSED USE

☑ Domestic ☐ Irrigation ☐ Test ☐ Municipal
☐ Industrial ☐ Stock ☐ Waste Disposal or Injection
☐ Other _____ (specify type)

4. METHOD DRILLED

☑ Rotary ☑ Air ☐ Hydraulic ☐ Reverse rotary
☐ Cable ☐ Dug ☐ Other _____

5. WELL CONSTRUCTION

Casing schedule: ☑ Steel ☐ Concrete ☐ Other _____

Thickness	Diameter	From	To
.250 inches	8" inches	+ 1 feet	340 feet
.250 inches	6" inches	1 feet	360 feet
_____ inches	_____ inches	_____ feet	_____ feet
_____ inches	_____ inches	_____ feet	_____ feet

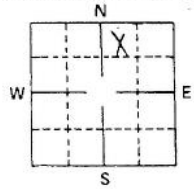
Was casing drive shoe used? ☑ Yes ☐ No
Was a packer or seal used? ☐ Yes ☑ No
Perforated? ☐ Yes ☑ No
How perforated? ☐ Factory ☐ Knife ☐ Torch
Size of perforation _____ inches by _____ inches

Number		From	To
_____	perforations	_____ feet	_____ feet
_____	perforations	_____ feet	_____ feet
_____	perforations	_____ feet	_____ feet

Well screen installed? ☐ Yes ☑ No
Manufacturer's name _____
Type _____ Model No. _____
Diameter ____ Slot size ____ Set from _____ feet to _____ feet
Diameter ____ Slot size ____ Set from _____ feet to _____ feet
Gravel packed? ☐ Yes ☑ No ☐ Size of gravel _____
Placed from _____ feet to _____ feet
Surface seal depth 40 Material used in seal: ☐ Cement grout ☑ Puddling clay ☑ Well cuttings
Sealing procedure used: ☐ Slurry pit ☐ Temp. surface casing ☑ Overbore to seal depth
Method of joining casing: ☐ Threaded ☑ Welded ☐ Solvent Weld ☐ Cemented between strata
Describe access port _____

6. LOCATION OF WELL 61

Sketch map location must agree with written location.



Subdivision Name – _____
Lot No. – Block No. –
County ELMORE
NW ¼ NE ¼ Sec. 11, T. 1 N S R. 4 E W.

7. WATER LEVEL

Static water level 440 feet below land surface.
Flowing? ☐ Yes ☑ No G.P.M. flow _____
Artesian closed-in pressure _____ p.s.i.
Controlled by: ☐ Valve ☑ Cap ☐ Plug
Temperature _____ °F. Quality _____

8. WELL TEST DATA

☐ Pump ☐ Bailer ☑ Air ☐ Other _____

Discharge G.P.M.	Pumping Level	Hours Pumped
27	–	3

9. LITHOLOGIC LOG

Hole Diam.	Depth From	Depth To	Material	Water Yes	Water No
8	0	340	SAND & CLAY		✓
6	340	362	SAND & CLAY		✓
	362	543	LAVA	✓	

RECEIVED
JAN 5 1979
Department of Water Resources
Western Regional Office

10. Work started 6-6-79 finished 6-27-79

11. DRILLERS CERTIFICATION

I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name H2O Well Drilling Firm No. 303
Address 11917 HIGHLAND DR. Date 9-1-79
Signed by (Firm Official) Bruce H Connolly
and
(Operator) Bruce H Connolly

MICROFILMED

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT

KENNY OWINGS WELL, MAYFIELD, ELMORE CO.

Samples washed and described by Jim Braendle, Geology student, BSU
April, 1980

(39 Pg 1)

300' Coarse quartz and feldspar sands, <5% dark rock chips

330' Fine to medium (½mm), quartz, feldspar
3-5% dark rock chips

360' Medium sand, quartz, feldspar, some pale brown clay-sized material

390' Very coarse sand w/rock chips ranging to ~7 mm (siltstone)

403' Fine quartz/feldspar sands w/approx. 15% clumps of dark yellowish brown clay

434' Poorly sorted quartz/feldspar sand mostly medium sand but w/some (chips?) ranging to 7 mm. Traces iron stain on some grains

465' Medium sand qtz and feldspar, traces iron oxide

496' Coarse grained sand, mostly quartz, some feldspar. No dark chips, but some (< 5%) stained w/iron oxides. Plastic and organic matter abundant

525' Medium to coarse qtz/feldspar sands, ~5% grains show stain from iron oxides. 10% clumps of dk. yellowish brown clay

557' Medium grained qtz & feldspar sand, shows considerable (10%) iron staining. Large amount of organic matter found in sample.

586' Coarse grained sand (qtz/feldspars), occasional larger stone (½") Also contains some balls of dusky brown mud ~10%

618' Very small sample mostly organic matter and fine mud. Some medium sand and some rock chips...dark grey (~5%)

648' Medium sand (qtz, feldspar, muscovite), large amount of organic matter.

678' Fine to medium sand primarily qtz. Some feldspar, muscovite, dark chips (1%)

708' Fine to medium qtz and feldspar sand w/occasional chips up to 3/8"

801' Coarse to very coarse sand, qtz & feldspar. small amount (<5%) dusky brown clay in chunks. (Snailshell found in sample) (Some plastic wrap found in sample)

832' Fine qtz/feldspar sand w/occasional grey rock chips

863' Very coarse to coarse sand, primarily quartz, feldspar ~10% of grains stained dark ~5% pieces dusky brown mud

894' Medium qtz. sand, sample contained mostly organic matter Plastic wrap, etc., also large amount light grey clay & mud

960' Medium to fine sand qtz, feldspar, also muscovite. Also very fine light grey mud. Very small sample.

990'
1021' Cuttings available but not washed
Samples not yet logged S.H. Wood 9/80
1052'

39 pg 2

The above descriptions were made by Jim Braendle - not checked, but they look reasonable. S. H. Wood

Cuttings are available at BSU for examination.

Appendix B: Neil Helmick Well Pumping Test Results

September 17, 2005

Greg Johnson
Westpark Company
P.O. Box 344
Meridian, ID 83660

Subject: United Water Data - Neil Helmick Well

Dear Greg:

The data received from United Water Idaho for the Neil Helmick Well (i.e., Ken Agenbroad Well) are enclosed for your files. The data are summarized below.

1. Water quality from the well is excellent, with no parameters exceeding primary or secondary water quality standards. The water has a temperature of 73.5 degrees F, total dissolved solids of 193 mg/L, hardness of 60.4 mg/L (soft), and Langlier index of 0.12 (non-corrosive).

2. The Helmick Well is 763 feet, and is completed with 130 feet of 16-inch diameter steel shutter screens staggered between 500 and 752 feet. The well is gravel packed from 6 feet to 763 feet. A cement grout surface seal extends to 72 feet on the outside of a 20-inch surface.

3. Static water level on May 20, 1999 was 389 feet below ground surface.

4. The well was test pumped at 550 gpm for 6 hours on May 20, 1999 with 73 feet of drawdown, and an additional one hour at 795 gpm with 92 feet of drawdown. Based on projection of the pumping water level trend, the well can probably be operated continuously at a rate of 450 to 500 gpm without dewatering the uppermost well screens. If the uppermost well screen section (from 500 to 510 feet) were dewatered (likely resulting in cascading water), the well could potentially produce a higher yield. By dewatering the uppermost screen, an additional 100 feet of drawdown is possible.

5. The well produced sand during test pumping, but the sand content diminished to a non-detectable level after 150 minutes of continuous pumping.

6. Analysis of the test pumping water-level trend indicates an aquifer transmissivity of approximately 7,300 gpd/ft. This transmissivity value suggests that the aquifer

productivity or permeability is low to moderate. Aquifer transmissivity measured tests of wells in the Boise area is typically in the range of 10,000 to 30,000 gpd/ft.

7. A video survey of the well was conducted on May 10, 1999. My review of the video found that the screen slots appear to be open in most places, and the well casing looks to be in good condition. The video technician's notes suggest that the screens are plugged, but I believe his interpretation was based on the side-view appearance of the shutter screen, rather than the more appropriate downward view.

Review of the data suggests that wells of moderate productivity (400 gpm to 800 gpm) can likely be developed for the Mayfield Springs planned community. Pumping water levels will be 500 feet or more. The water quality is expected to be adequate for public water system use.

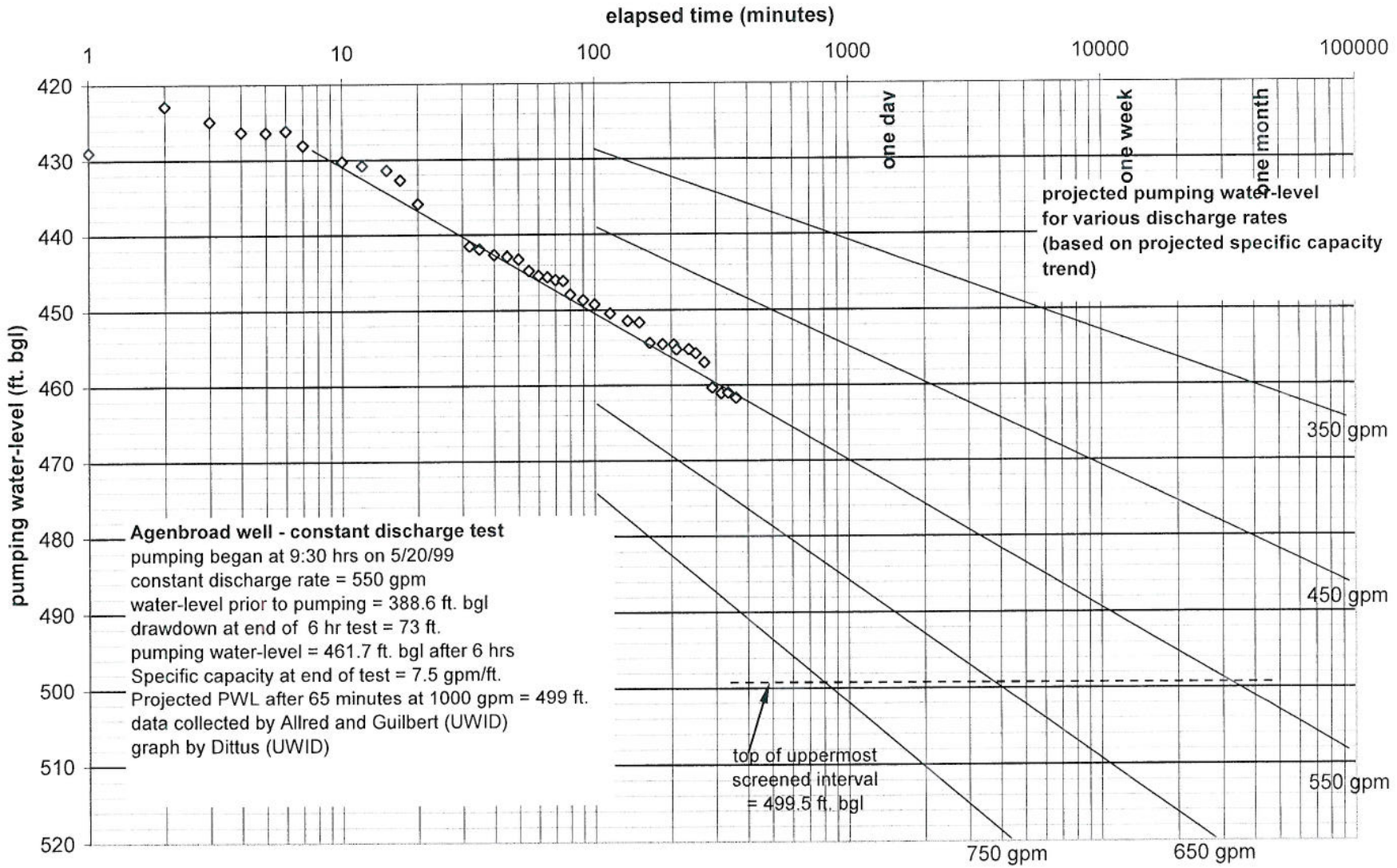
Please contact me with any questions.

Sincerely,

Terry M. Scanlan, P.E., P.G.

File: 329.0050

Agenbroad well - constant discharge test



Appendix D: Neil Helmick Well Water Quality

ALCHEM LABORATORIES

Alchem Laboratories, Inc.
104 West 31st Street
Boise, Idaho 83714
Phone (208) 336-1172
FAX (208) 336-7124

Water, Wastewater and Soil Analysis

LABORATORY REPORT

UNITED WATER
P.O. BOX 7488
BOISE, IDAHO 83707-1488

ATTENTION: ED SQUIRES
SOURCE -: AGENBROAD

DATE COLLECTED - - -05/20/1999
TIME COLLECTED - - -15:30
DATE RECEIVED - - - 05/20/1999
DATE REPORTED - - - 06/10/1999
SUBMITTED :

LAB SAMPLE NUMBER - 64919

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
ANTIMONY by FURNACE	<0.002	06/02/1999	PM
ARSENIC	0.007	06/01/1999	PM
BARIUM	<0.10	06/01/1999	PM
BERYLLIUM	<0.0002	06/01/1999	PM
CADMIUM	<0.0005	06/01/1999	PM
CHROMIUM	<0.002	06/01/1999	PM
CYANIDE, TOTAL	<0.005	06/03/1999	SQ
FLUORIDE	0.51	05/26/1999	CE
MERCURY	<0.0002	06/09/1999	MM
NICKEL	<0.003	06/01/1999	PM
NITRATE as N	<0.10	05/21/1999	HG
NITRITE as N	<0.01	05/20/1999	NH
SELENIUM by GRAPHITE	<0.005	06/09/1999	pm
SODIUM	24.3	06/01/1999	PM
SULFATE	8.26	05/21/1999	HG
THALLIUM GRAPHITE	<0.0006	06/07/1999	PM
CHLORIDE	2.63	05/21/1999	HG
COLOR	<1.0	05/20/1999	HG
IRON	0.19	06/01/1999	PM
IRON (DISS.)	0.14	06/01/1999	PM
SULFIDE	<0.05	05/21/1999	CE
MANGANESE	0.02	06/01/1999	PM
MANGANESE (DISS.)	0.02	06/01/1999	PM
ODOR	1.0	05/20/1999	HG
SURFACTANT	<0.025	05/21/1999	PM
TOTAL DISS. SOLIDS	193.0	05/25/1999	NH
ZINC	0.016	06/01/1999	PM

Continued on next page

Alchem Laboratories, Inc.
104 West 31st Street
Boise, Idaho 83714
Phone (208) 336-1172
FAX (208) 336-7124
Water, Waste Water and Soil Analysis

LABORATORY REPORT

continued

UNITED WATER
P.O. BOX 7488
BOISE, IDAHO 83707-1488

ATTENTION: ED SQUIRES
SOURCE -: AGENBROAD

DATE COLLECTED - - -05/20/1999
TIME COLLECTED - - -15:30
DATE RECEIVED - - - 05/20/1999
DATE REPORTED - - - 06/10/1999
SUBMITTED :

LAB SAMPLE NUMBER - 64919

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
SILVER	<0.02	06/01/1999	PM
ALUMINUM	0.02	06/01/1999	PM
ALKALINITY	142.0	05/28/1999	CE
AMMONIA as N	0.06	06/04/1999	SG
CALCIUM as CaCO3	56.6	06/01/1999	PM
HARDNESS	60.4	06/01/1999	PM
MAGNESIUM	0.91	06/01/1999	PM
POTASSIUM	1.20	05/28/1999	MM
SILICA	17.7	05/25/1999	MM
LEAD GRAPHITE	<0.002	05/25/1999	PM
COPPER	0.18	06/01/1999	PM
CORROSIVITY	0.12	06/02/1999	JD
CONDUCTIVITY (umhos/cm)	225.0	05/20/1999	NH
SUSPENDED SOLIDS	<1.0	05/25/1999	NH
pH (SU)	8.10	05/20/1999	TK

COMMENTS: FIELD pH = 8.23, FIELD COND = 201uS/cm, FIELD TEMP= 73.5 F
CORROSIVITY: THE WATER IS NON-AGGRESSIVE ACCORDING TO THE LANGLIER INDEX.
HARDNESS = 60.4 = 3.6 GRAINS PER GALLON = SOFT

Suzanne Howell, Laboratory Manager

ALCHEM LABORATORIES

Alchem Laboratories, Inc.

104 West 31st Street
Boise, Idaho 83714

Phone (208) 336-1172
FAX (208) 336-7124

Water, Waste Water and Soil Analysis

RECEIVED

JUL 20 1999

UNITED WATER

DRINKING WATER RADIOLOGICAL ANALYSIS REPORT

EPDS	CONTAMINANT	RESULT mg/L	RESULT pCi/L	90 % Confidence Interval (± 1.65σ)	MCL	MDL	METHOD
4002	GROSS ALPHA		0.2		15.0		900.0
4100	GROSS BETA		1.8		50.0		900.0
4XXX	**URANIUM** (measure if gross alpha exceeds 15 pCi/L: activity in pCi/L = 0.68 x concentration in ug/L)						908.1
4000	**ADJUSTED GROSS ALPHA** (subtract uranium activity level from gross alpha)						
4020	**RADIUM 226** [measure if gross alpha plus 90% confidence interval (1.65σ) is greater than 5 pCi/L]				3.0		903.1
4030	**RADIUM 228** (measure if radium 226 exceeds 3 pCi/L)						904.0
4010	**TOTAL MEASURED RADIUM** (sum of Radium 226 & Radium 228)				5.0		
4100	**BETA / PHOTON ACTIVITY** (measure major constituents if activity exceeds 50 pCi/L)				4mREM		

NAME OF WATER SYSTEM : AGENBROAD WELL

COMPOSITE SAMPLE DATES:
1st quarterly sample:
2nd quarterly sample:
3rd quarterly sample:
4th quarterly sample:

COMMENTS:
Analyzed by Idaho Bureau of Labs, Boise, Idaho

Lab Supervisor Signature Date

PWS #	
LAB SAMPLE #	64917
DATE COLLECTED	05/20/99
SAMPLE TYPE	PLANT TAP
DATE RECEIVED	05/20/99
TIME COLLECTED	15:30 HRS
LOCATION TAG #	
COLLECTION LOCATION	INDIAN CREEK
DATE REPORTED	07/09/99
JURISDICTION	
PWS CONTACT PHONE #	362-7332

REPORT RESULTS TO:

UNITED WATER
ATTN: ED SQUIRES
P.O. BOX 7488
BOISE, IDAHO 83707

ALCHEM LABORATORIES

Alchem Laboratories, Inc.

104 West 31st Street
Boise, Idaho 83714

Phone (208) 336-1172
FAX (208) 336-7124

Water, Waste Water and Soil Analysis

PUBLIC DRINKING WATER LABORATORY ANALYSIS REPORT

VOLATILE ORGANIC CONTAMINANTS - METHOD 502.2

FRDS	COMPOUND (MCL) (ug/L)	MDL (ug/L)	RESULT (ug/L)	FRDS	COMPOUND (MCL) (ug/L)	MDL (ug/L)	RESULT (ug/L)
	REGULATED COMPOUNDS						
2990	Benzene (5.0)	0.5	ND	2987	Tetrachloroethylene (5.0)	0.5	ND
2982	Carbon Tetrachloride (5.0)	0.5	ND	2378	1,2,4-Trichlorobenzene (70.0)	0.5	ND
2977	1,1 - Dichloroethylene (7.0)	0.5	ND	2981	1,1,1 - Trichloroethane (200.0)	0.5	ND
2380	cis - 1,2 Dichloroethene (70.0)	0.5	ND	2985	1,1,2 - Trichloroethane (5.0)	0.5	ND
2979	trans-1,2 Dichloroethene (100.0)	0.5	ND	2984	Trichloroethylene (5.0)	0.5	ND
2980	1,2 - Dichloroethane (5.0)	0.5	ND	2991	Toluene (1000.0)	0.5	ND
2983	1,2 - Dichloropropane (5.0)	0.5	ND	2976	Vinyl Chloride (2.0)	0.2	ND
2968	o - Dichlorobenzene (600.0)	0.5	ND	2955	Xylenes - Total (10,000.0)	0.5	ND
2969	p - Dichlorobenzene (75.0)	0.5	ND	2950	Trihalomethanes -Total (100.0)	1.0	ND
2964	Dichloromethane (5.0)	0.5	ND	2943	Bromodichloromethane	0.2	ND
2992	Ethylbenzene (700.0)	0.5	ND	2942	Bromoform	1.0	ND
2989	Monochlorobenzene (100.0)	0.5	ND	2941	Chloroform	0.2	ND
2996	Styrene (100.0)	0.5	ND	2944	Dibromochloromethane	0.5	ND
	UNREGULATED COMPOUNDS						
2993	Bromobenzene	0.5	ND	2416	2,2 - Dichloropropane	0.5	ND
2430	Bromochloromethane	0.5	ND	2410	1,1 - Dichloropropene	0.5	ND
2214	Bromomethane	2.0	ND	2413	cis - 1,3 - Dichloropropene	0.5	ND
2422	n - Butylbenzene	0.5	ND	2413	trans - 1,3 - Dichloropropene	0.5	ND
2428	sec - Butylbenzene	0.5	ND	2246	Hexachlorobutadiene	0.5	ND
2426	tert - Butylbenzene	0.5	ND	2994	Isopropylbenzene	0.5	ND
2216	Chloroethane	1.0	ND	2030	p - Isopropyltoluene	0.5	ND
2210	Chloromethane	0.5	ND	2248	Naphthalene	0.5	ND
2965	o - Chlorotoluene	0.5	ND	2998	n - Propylbenzene	0.5	ND
2966	p - Chlorotoluene	0.5	ND	2986	1,1,1,2 - Tetrachloroethane	0.5	ND
2408	Dibromomethane	4.0	ND	2988	1,1,2,2 - Tetrachloroethane	0.5	ND
2967	1,3 - Dichlorobenzene	0.5	ND	2420	1,2,3 - Trichlorobenzene	0.5	ND
2212	Dichlorodifluoromethane	0.5	ND	2218	Trichlorofluoromethane	0.5	ND
2978	1,1 - Dichloroethane	0.5	ND	2414	1,2,3 - Trichloropropane	0.5	ND
2412	1,3 - Dichloropropane	0.5	ND	2424	1,3,5 - Trimethylbenzene	0.5	ND
2931	1,2 - Dibromo-3-chloropropane	5.0	ND	2418	1,2,4 - Trimethylbenzene	0.5	ND
2946	1,2 - Dibromoethane	1.5	ND				

LAB RESULT REPORTING CODES:

ND = Not detected within sensivity of instrument

- - = No analysis performed for this contaminant

Numerical entry = Detection at level indicated

COMMENTS:

Lab Supervisor Signature

Date 5/26/99

REPORT RESULTS TO:

UNITED WATER
ATTN: ED SQUIRES
P.O. BOX 7488
BOISE, IDAHO 83707

WATER SYSTEM: **AGENBROAD WELL**

PWS #	
Lab Sample #	**64918**
Date Collected	**05/20/99**
Sample Type	**PLANT TAP**
Date Received	**05/20/99**
Time Collected	**15:30**
Sample Location	**INDIAN CREEK**
Location Tag #	
Analyst & Analysis Date	**G. HAGEN - 05/25/99**
Date Reported by Lab	**05/26/99**
Jurisdiction	
PWS Contact Phone	**208-362-7332**

ALCHEM LABORATORIES

Alchem Laboratories, Inc.
104 West 31st Street
Boise, Idaho 83714
Phone (208) 336-1172
FAX (208) 336-7124
Water, Waste Water and Soil Analysis

RECEIVED
JUN 21 1999
UNITED WATER

SYNTHETIC ORGANIC CHEMICAL ANALYSIS REPORT

REGULATED COMPOUNDS

FRDS#	COMPOUND (MCL) (ug/L)	MDL (ug/L)	RESULT (ug/L)	METHOD	FRDS#	COMPOUND (MCL) (ug/L)	MDL (ug/L)	RESULT (ug/L)	METHOD
2946	EDB (0.05)	0.01	ND	504.1	2031	Dalapon (200.0)	2.0	ND	552.1
2931	DBCP (0.2)	0.002	ND	504.1	2041	Dinoseb (7.0)	0.2	ND	515.2
2051	Alachlor (2.0)	0.2	ND	525.2	2326	PCP (1.0)	0.05	ND	515.2
2050	Atrazine (3.0)	0.1	ND	525.2	2040	Picloram (500.0)	0.1	ND	515.2
2037	Simazine (4.0)	0.1	ND	525.2	2105	2,4-D (70.0)	0.1	ND	515.2
2959	Chlordane (2.0)	0.20	ND	508	2110	2,4,5-TP (50.0)	0.2	ND	515.2
2005	Endrin (2.0)	0.02	ND	508	2306	Benzo(a)pyrene (0.2)	0.04	ND	525.2
2065	Heptachlor (0.4)	0.04	ND	508	2035	Di(2-ethylhexyl)adipate (400.0)	0.6	ND	525.2
2067	Heptachlor Epoxide (0.2)	0.04	ND	508	2298	Di(2-ethylhexyl)phthalate (6.0)	0.6	ND	525.2
2274	Hexachlorobenzene (1.0)	0.1	ND	525.2	2046	Carbofuran (40.0)	1.0	ND	531.1
2042	Hexachlorocyclopentadiene (50.0)	0.1	ND	525.2	2036	Oxamyl (200.0)	2.0	ND	531.1
2010	Lindane (0.2)	0.04	ND	508	2034	Glyphosate (700.0)	6.0	ND	547
2015	Methoxychlor (40.0)	0.10	ND	508	2033	Endothall (100.0)	9.0	ND	548.1
2020	Toxaphene (3.0)	1.00	ND	508	2032	Diquat (20.0)	0.4	ND	549.1
2383	PCB's (0.5)	0.10	ND	508					
UNREGULATED COMPOUNDS									
2076	Butachlor	0.1	ND	525.2	2047	Aldicarb	1.0	ND	531.1
2045	Metolachlor	0.1	ND	525.2	2044	Aldicarb Sulfone	0.5	ND	531.1
2595	Metribuzin	0.1	ND	525.2	2043	Aldicarb Sulfoxide	1.0	ND	531.1
2356	Aldrin	0.05	ND	508	2021	Carbaryl	1.0	ND	531.1
2070	Dieldrin	0.05	ND	508	2066	3-Hydroxycarbofuran	1.0	ND	531.1
2077	Propachlor	0.2	ND	525.2	2022	Methomyl	1.0	ND	531.1
2440	Dicamba	0.1	ND	515.2					

ANALYST	DATE	METHOD	ANALYST	DATE	METHOD
S. TANNER	05/22/99	504.1	S. TANNER	05/27/99	508
S. TANNER	06/04/99	515.2	B. BROKER	06/03/99	525.2
D. MYERS	06/15/99	531.1	D. MYERS	06/02/99	547
S. TANNER	05/26/99	548.1	D. MYERS	05/28/99	549.1
S. TANNER	06/09/99	552.1			

Lab result reporting codes:
- ND = Not detected within sensitivity of instrument
- - - - = No analysis performed for this contaminant
- TR = Trace amount detected but so small it was not quantifiable
- Numerical entry = Detection of contaminant at level indicated

Comments:

Lab Supervisor Signature [signature] Date 6/17/99

SAMPLE INFORMATION

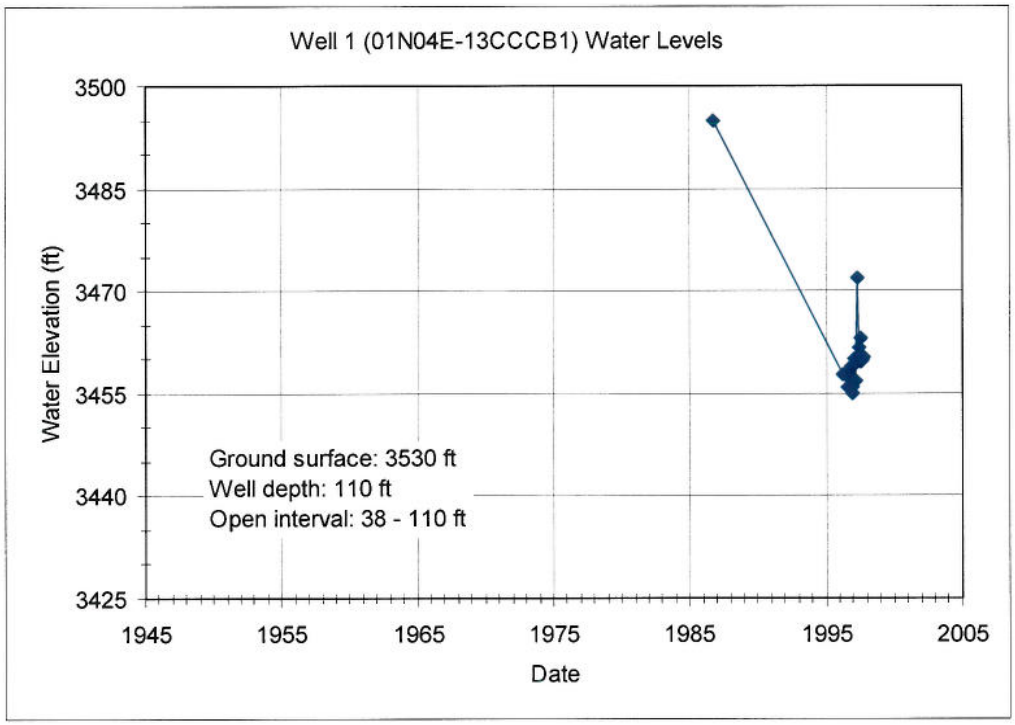
PWS# :	SYSTEM : **AGENBROAD WELL**
LAB SAMPLE # : **64918**	
DATE COLLECTED : **05/20/99**	TIME : **15:30 HRS**
SAMPLE TYPE : **PLANT TAP**	
DATE RECEIVED BY LAB : **05/20/99**	
COLLECTED BY :	
SAMPLE LOCATION : **INDIAN CREEK**	
LOCATION TAG # :	
DATE REPORTED : **06/17/99**	
JURISDICTION :	
PWS CONTACT PHONE (208): **362-7332**	

REPORT RESULTS TO:

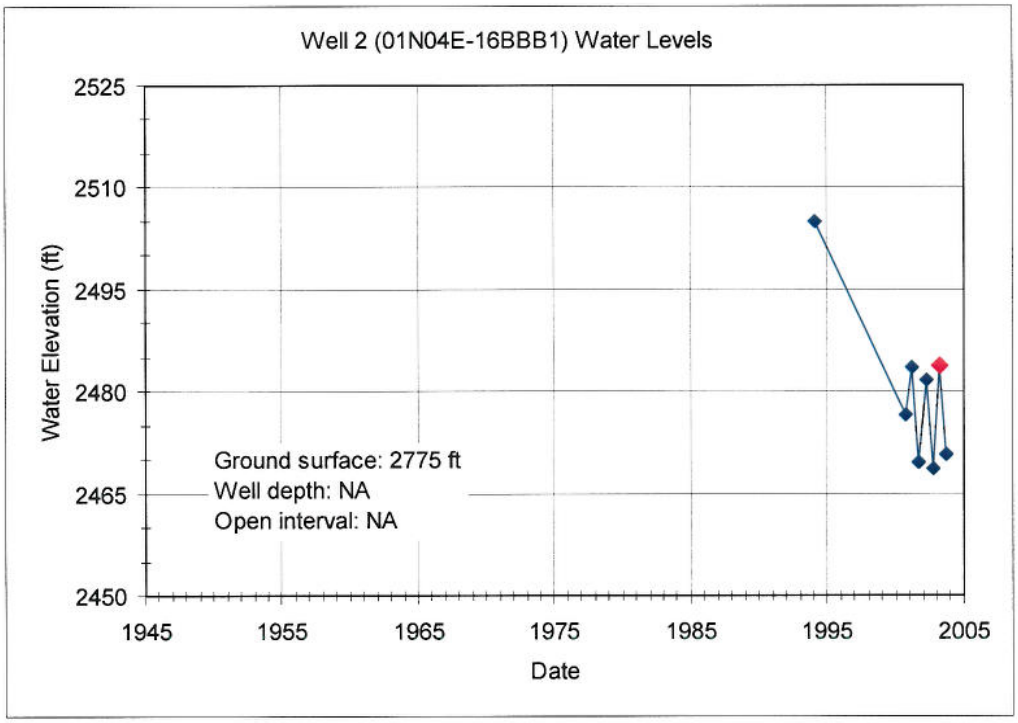
UNITED WATER
ATTN: ED SQUIRES
P.O. BOX 7488
BOISE, IDAHO 83707

Appendix C: Water Levels (Hydrographs) for wells near Mayfield Springs

The following hydrographs are based on data maintained in the Idaho Department of Water Resources' Well_Log database.

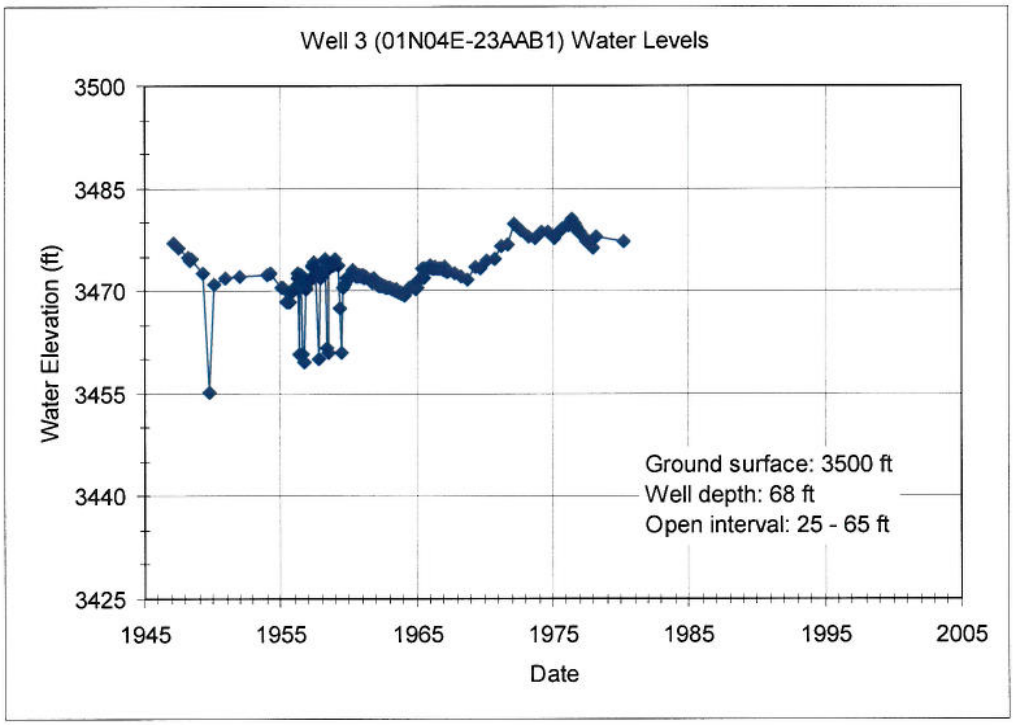


Well 1 (older measurements, stable water levels).

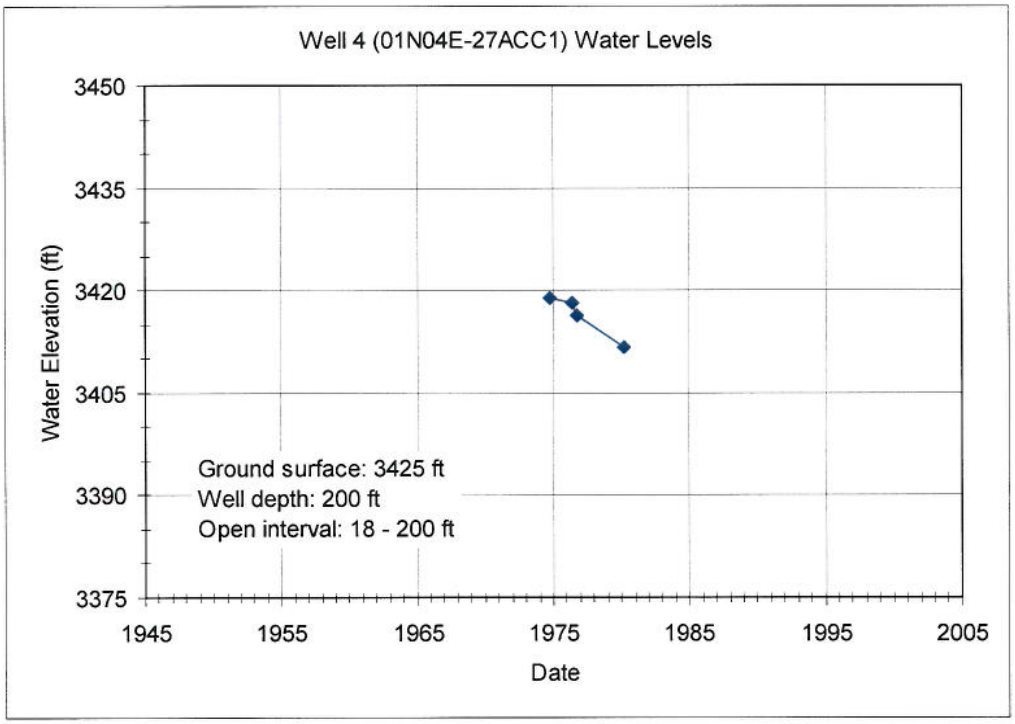


(Ground surface elevation may be incorrectly listed in IDWR database; accurate depth- to-water measurements are assumed).

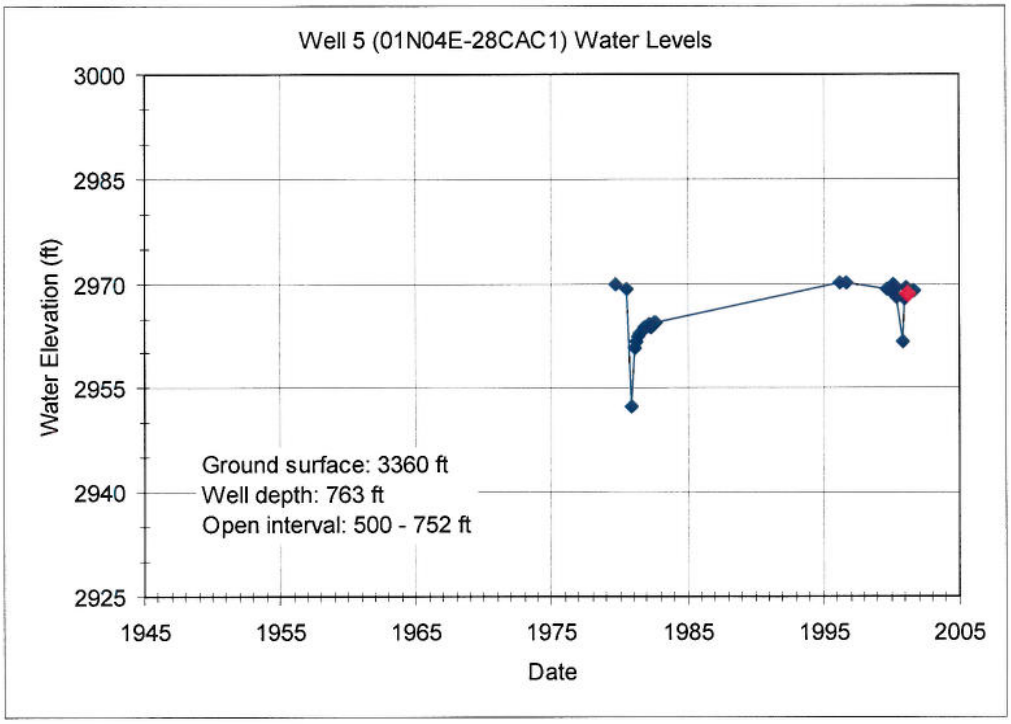
Well 2 (recent measurements, stable water levels).



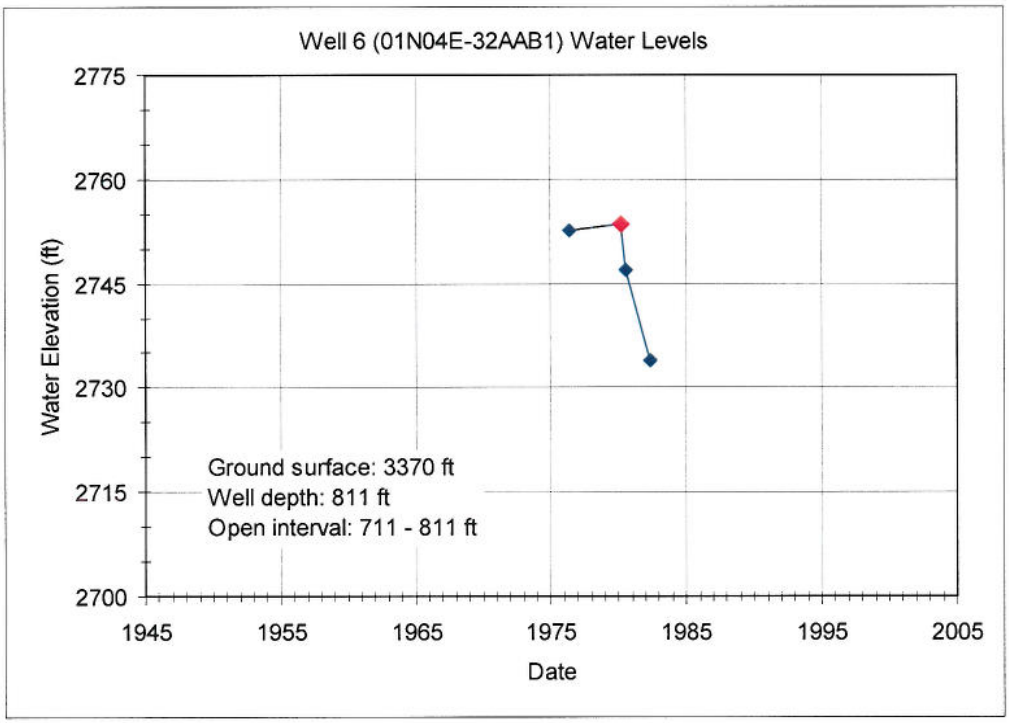
Well 3 (older measurements, stable water levels).



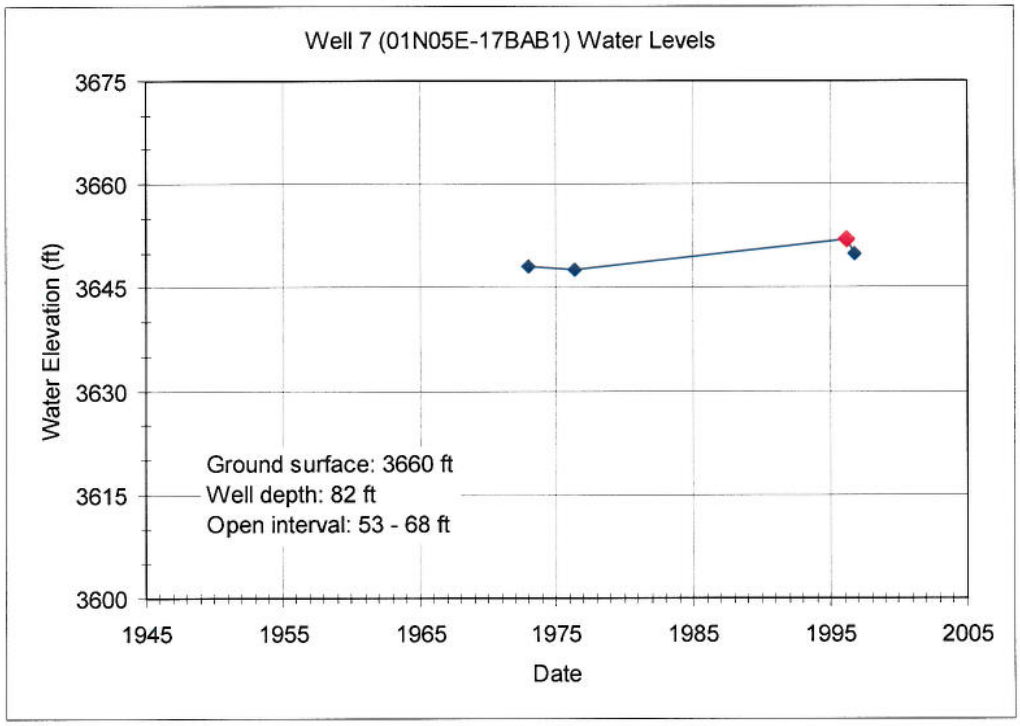
Well 4 (older measurements, stable water levels).



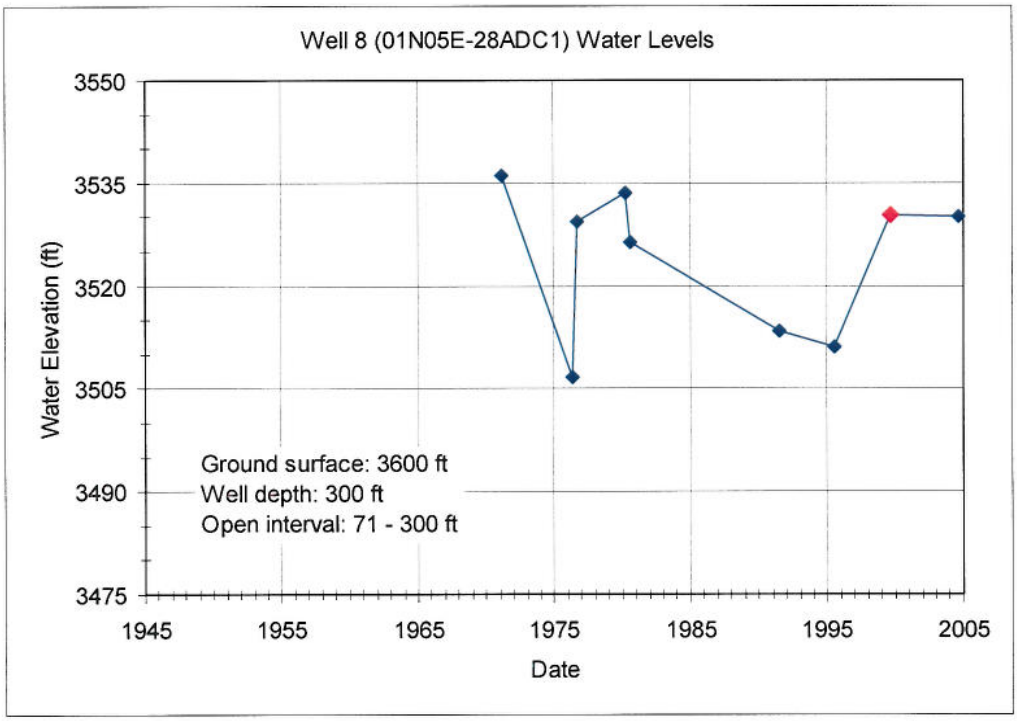
Well 5 (recent measurements, stable water levels).



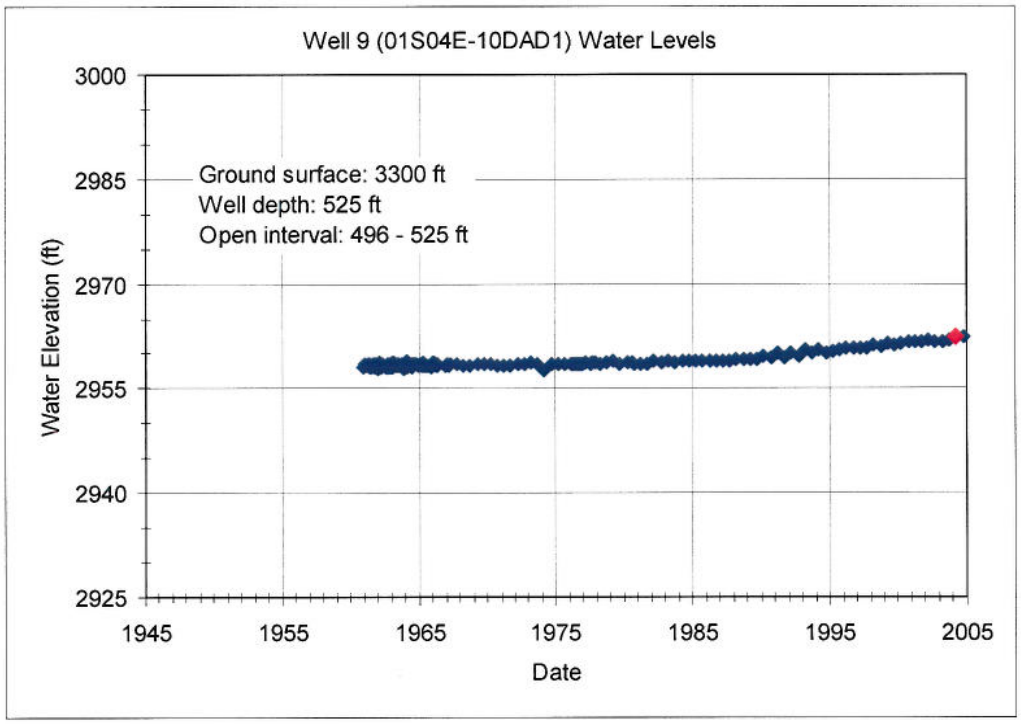
Well 6 (older measurements, decreasing water levels).



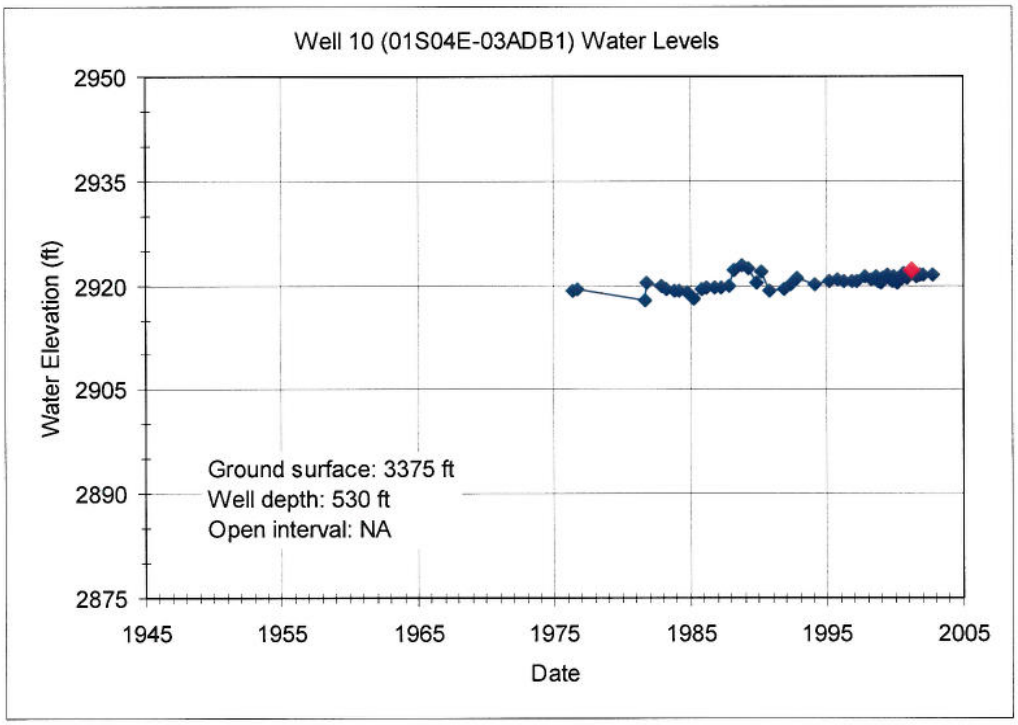
Well 7 (older measurements, stable water levels).



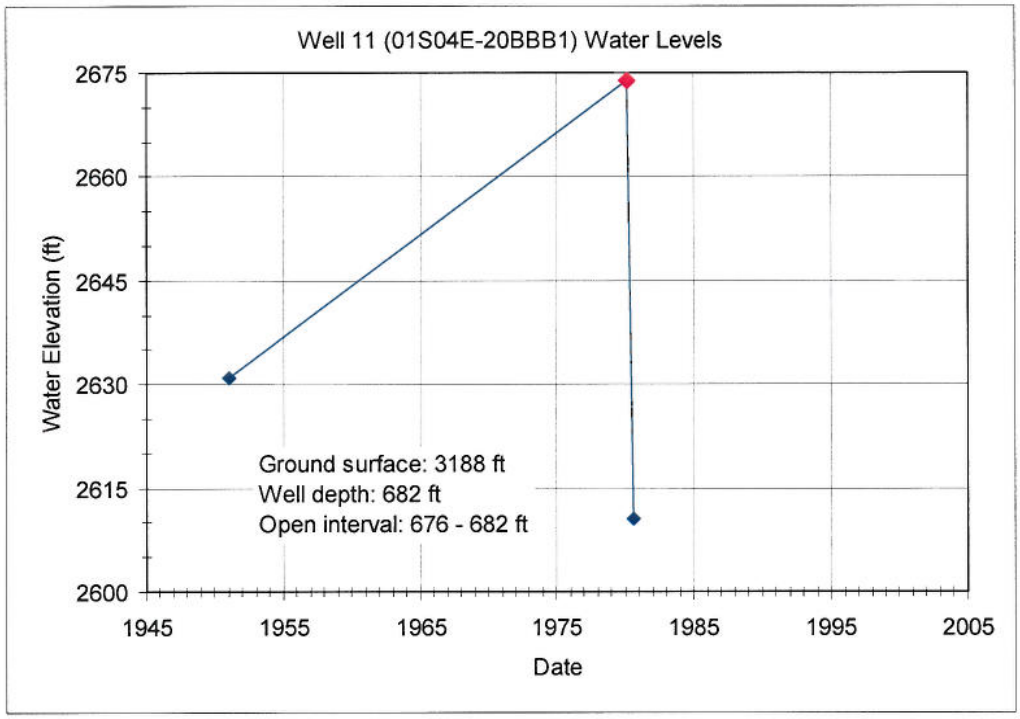
Well 8 (older measurements, unclear water level trend).



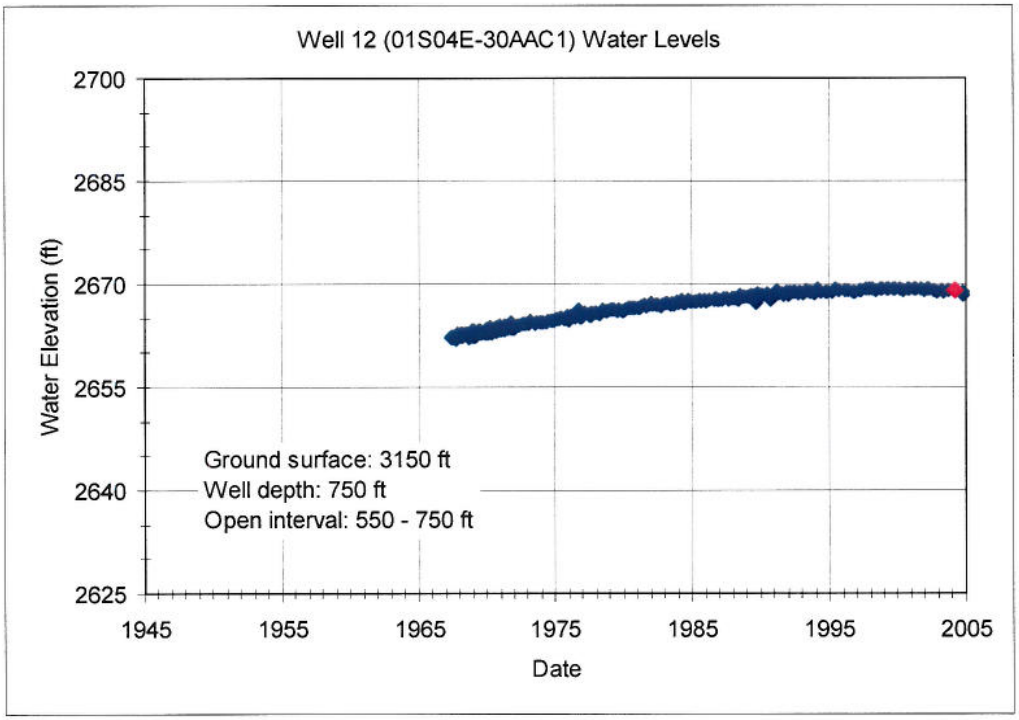
Well 9 (recent measurements, stable water levels).



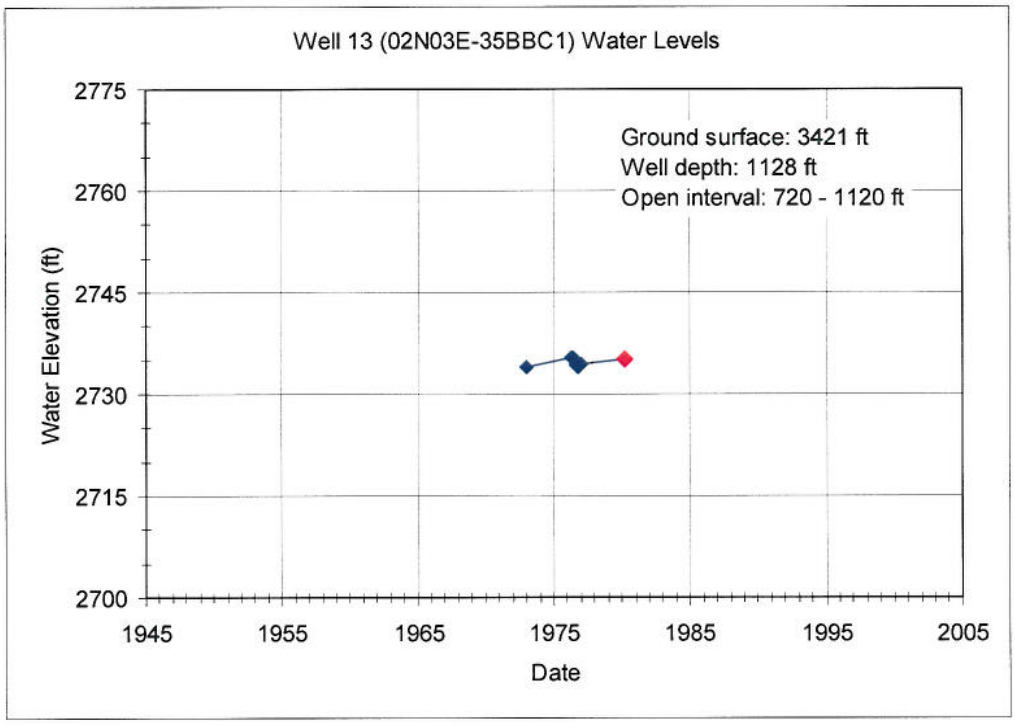
Well 10 (recent measurements, stable water levels).



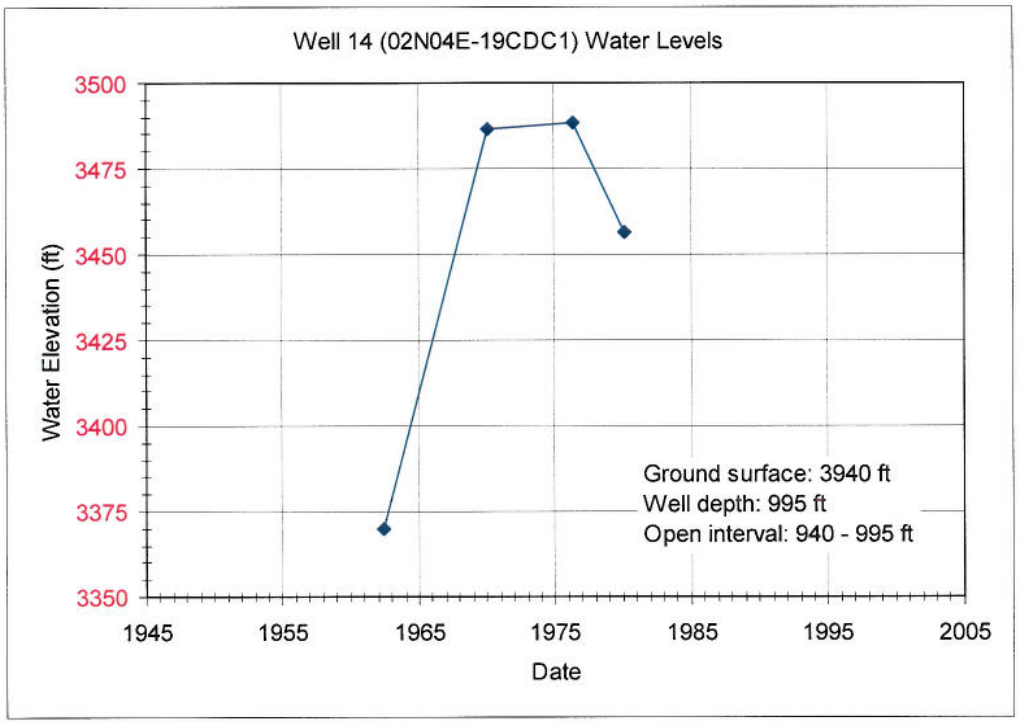
Well 11 (older measurements, unknown water level trend).



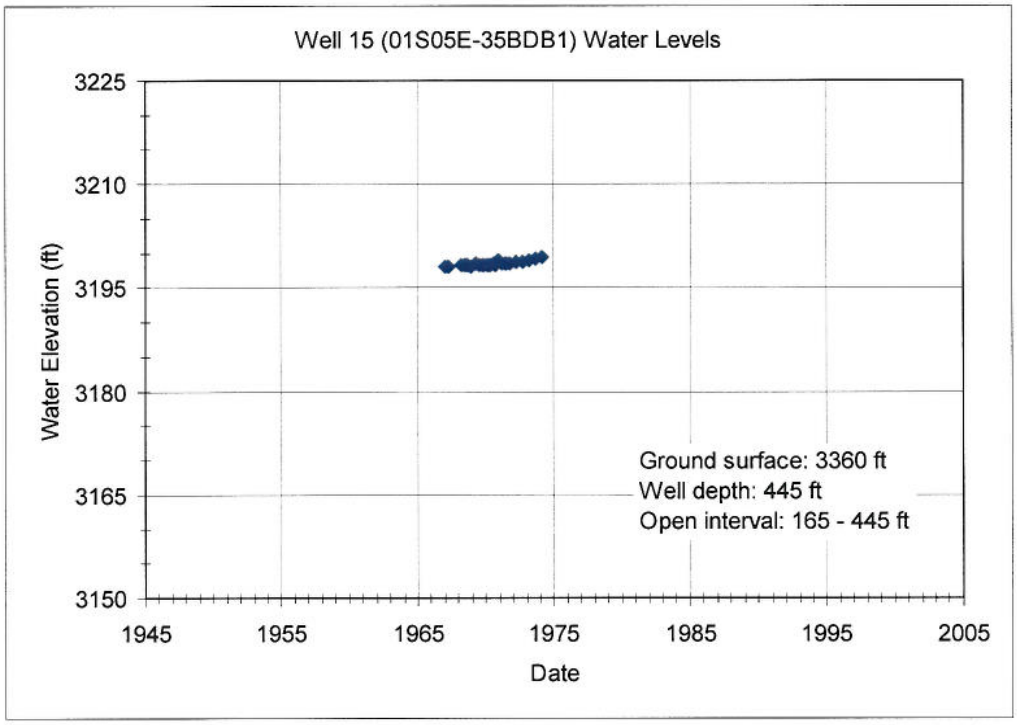
Well 12 (recent measurements, stable water levels).



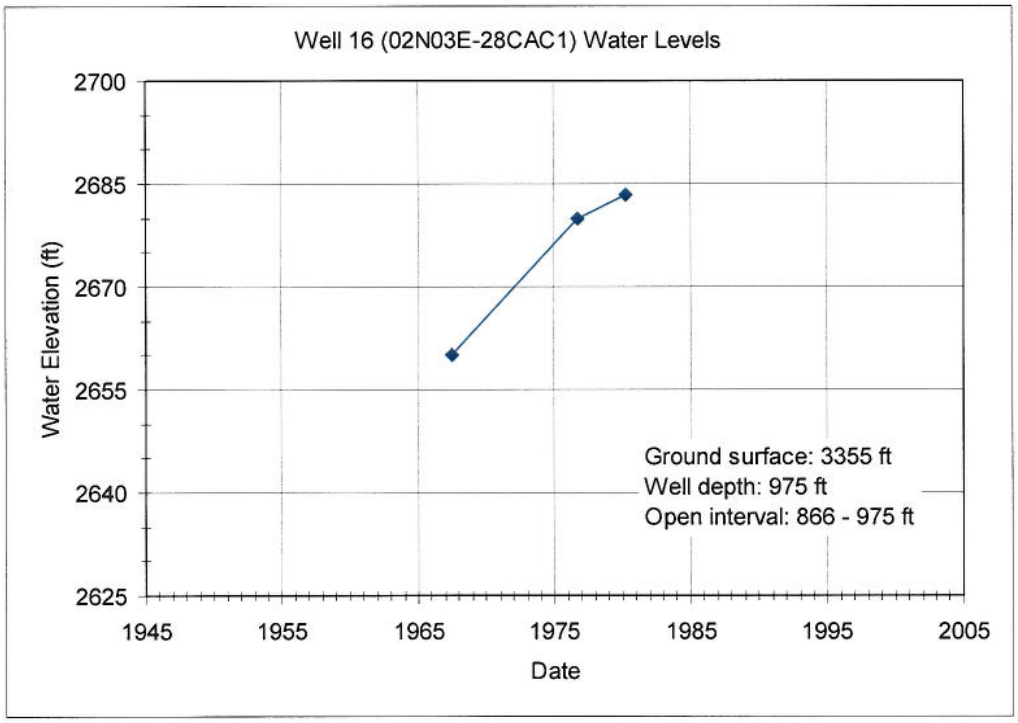
Well 13 (older measurements, stable water levels).



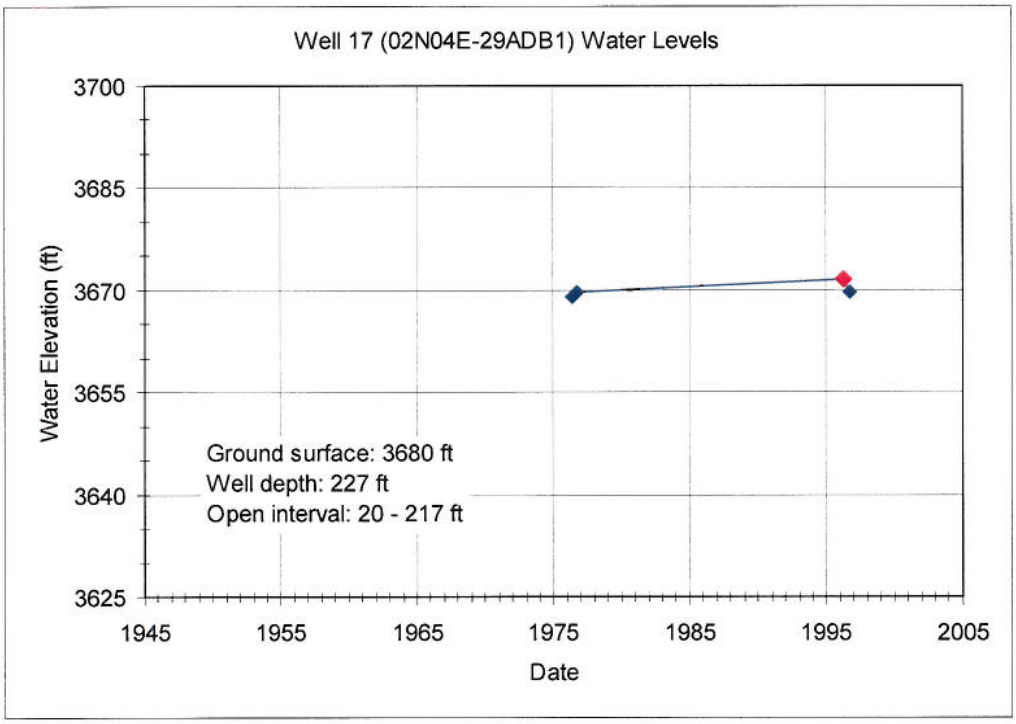
Well 14 (older measurements, unknown water level trend).



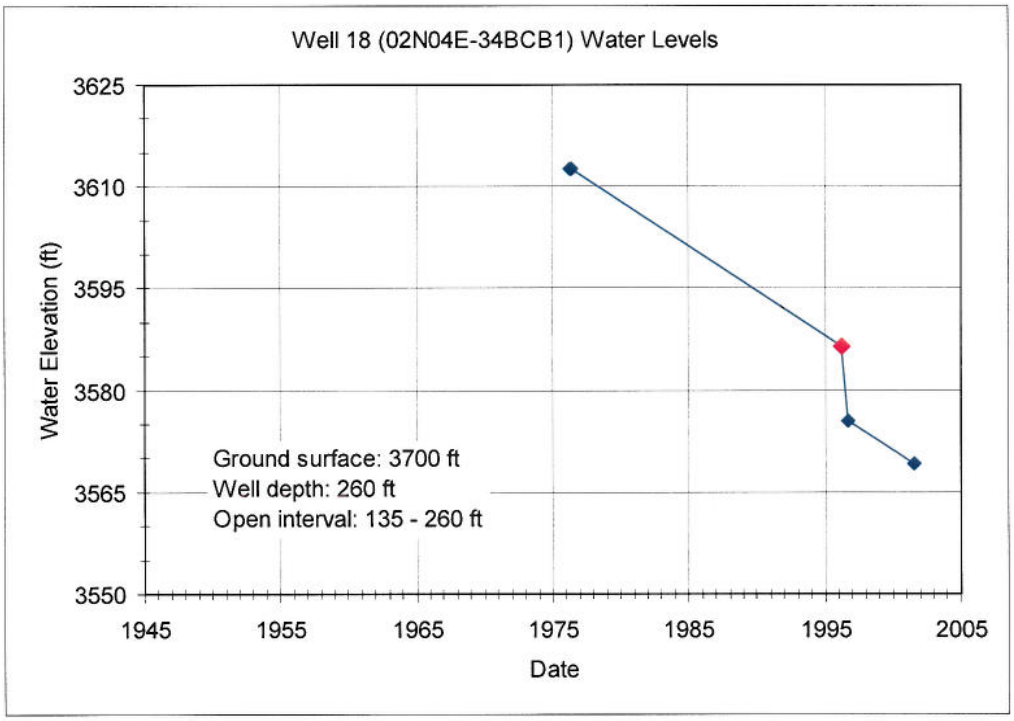
Well 15 (older measurements, stable water levels).



Well 16 (older measurements, increasing water levels).



Well 17 (older measurements, stable water levels).



Well 18 (recent measurements, decreasing water levels).

Appendix D: Drillers' Reports for Additional Wells used in Determining Ground Water Flow Directions

Form 238-7
6/93

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

56232

Use Typewriter or Ball Point Pen

Page 1 of 2

1. DRILLING PERMIT NO. 63 94 W - 371 - 0
Other IDWR No. Abandoned see 63-94-W-0371-300

2. OWNER:
Name BOB & JOAN PRIGGE
Address 10521 LAKE HAZEL RD
City BOISE State ID Zip 83709

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

N / W / E / S

T. 1N North ☐ or South ☐
R. 3E East ☐ or West ☐
Sec. 4 SE 1/4 NW 1/4 1/4
Gov't Lot ____ County ADA

Address of Well Site BLACKS CREEK ROAD
(Give at least Direction + Distance to Road or Landmark)
Lot No. ____ Block No. ____ Subd. Name ____

4. PROPOSED USE: DOMESTIC
☒ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other ____

5. TYPE OF WORK NEW WELL
☒ New Well ☐ Modify or Repair ☐ Replacement ☐ Abandonment

6. DRILL METHOD MUD ROTARY
☒ Mud Rotary ☐ Air Rotary ☐ Cable ☐ Other ____

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
BENTONITE	0	50	2500#	POURED

Was drive shoe seal tested? YES NO How NONE USED

8. CASING/LINER:

Diameter	From	To	Guage	Casing	Liner	Steel	Plastic	Welded	Threaded
6"	+1	627	.250			☒	☐	☒	☐
6"	647	653	.250			☒	☐	☒	☐
6"	663	675	.250			☒	☐	☒	☐
6"	730	735	.250			☒	☐	☒	☐

Final location of shoes NONE USED
Top Packer or Headpipe ____ Bottom Tailpipe ____

9. PERFORATIONS/SCREENS SCREENS
☐ Perforations Method ____
☒ Screens Type WIRE Material STAINLESS STEEL

From	To	Slot Size	Number	Diameter	Tele/Pipe Size	Casing	Liner
627	647	.20	304 STA	6"	PIPE	☐	☐
653	663	.20	304 STA	6"	PIPE	☐	☐
						☐	☐
						☐	☐

10. WELL TESTS: NOT AVAILABLE
☐ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pumping Depth	Time

Temperature of water NA Was a water analysis done? Yes ☐ No ☒
By whom? ____
Water Quality (odor, etc.) GOOD
Bottom Hole Temperature NA

11. STATIC WATER LEVEL:
605 ft. below surface Depth artesian flow found ____
Artesian pressure ____ lb. Describe access port WELL CAP
Describe Controlling Devices: ____

2

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	GPM	SWL
11"	0	2	TOPSOIL		
11"	2	3	CLAY		
	3	25	BOULDERS, GRAVEL, SAND MIX		
	25	27	SAND		
	27	32	BOULDERS		
	32	33	SAND, GRAVEL MIX		
	33	50	BOULDERS		
	50	54	SAND		
	54	68	BOULDERS		
	68	71	SAND, GRAVEL MIX		
	71	73	SAND		
	73	78	SAND & GRAVEL MIX		
	78	92	SAND		
	92	97	BOULDERS		
	97	99	SAND		
	99	125	SAND & GRAVEL MIX		
	125	132	SAND		
	132	135	GRAVEL		
	135	137	SAND		
	137	150	GRAVEL		
	150	197	VERY HARD SAND		
	197	201	GRAVEL		
	201	219	BOULDERS		
	219	245	SAND, SOME GRAVEL, VERY SOLID		
	245	269	GRAVEL, SAND MIX		
	269	272	CLAY		
	272	281	SAND		

RECEIVED
SEP 20 1994
Department of Water Resources

RECEIVED
JUL 01 1994
WATER RESOURCES
WESTERN REGION

MAY 08 1995

Date: Started 6/1/94 Completed 6/23/94

13. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name PETE COPE DRILLING Firm No. 213
Firm Official Joseph [signature] Date 6/23/94
and
Supervisor or Operator [signature] Date 6/23/94
(Sign once if Firm Official & Operator)

FORWARD WHITE COPY TO WATER RESOURCES

Form 238-7
0793

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

56233

Use Typewriter or Ball Point Pen

1. DRILLING PERMIT NO. 63 94 W - 371 - 0
Other IDWR No. _____

2. OWNER:
Name BOB & JOAN PRIGGE
Address 10521 LAKE HAZEL RD
City BOISE State ID Zip 83709

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

N / W / E / S

T. _____ North ☐ or South ☐
R. _____ East ☐ or West ☐
Sec. _____, _____ 1/4 (10 acres) _____ 1/4 (40 acres) _____ 1/4 (160 acres)
Gov't Lot _____ County _____

Address of Well Site _____
(Give at least Direction + Distance to Road or Landmark)
Lot No. _____ Block No. _____ Subd. Name _____

4. PROPOSED USE:
☐ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other _____

5. TYPE OF WORK
☐ New Well ☐ Modify or Repair ☐ Replacement ☐ Abandonment

6. DRILL METHOD
☐ Mud Rotary ☐ Air Rotary ☐ Cable ☐ Other _____

7. SEALING PROCEDURES

SEAL/FILTER PACK			AMOUNT	METHOD
Material	From	To	Sacks or Pounds	

Was drive shoe seal tested? YES NO How? _____

8. CASING/LINER:

Diameter	From	To	Guage	Casting	Liner	Steel	Plastic	Welded	Threaded
						☐	☐	☐	☐
						☐	☐	☐	☐
						☐	☐	☐	☐
						☐	☐	☐	☐

Final location of shoes _____
Top Packer or Headpipe _____ Bottom Tailpipe _____

9. PERFORATIONS/SCREENS PERFORATIONS
☒ Perforations Method TORCH PERFORATED
☐ Screens Type _____ Material _____

From	To	Slot Size	Number	Diameter	Tele/Pipe Size	Casting	Liner
675	680	1/8"	5 PER FT.	6"	PIPE	☐	☐
680	730	1/8"	5 PER FT	6"	PIPE	☐	☐
						☐	☐
						☐	☐

10. WELL TESTS:
☐ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pumping Depth	Time

Temperature of water _____ Was a water analysis done? Yes ☐ No ☐
By whom? _____
Water Quality (odor, etc.) _____
Bottom Hole Temperature _____

11. STATIC WATER LEVEL:
_____ ft. below surface Depth artesian flow found _____
Artesian pressure _____ lb. Describe access port _____
Describe Controlling Devices: _____

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	GPM	SWL
	281	283	CLAY		
	283	285	CEMENTED SAND		
	285	287	CLAY		
	287	326	CEMENTED SAND		
	326	327	CLAY		
	327	335	SAND		
	335	341	CLAY		
	341	342	SAND		
	342	346	GRAVEL		
	346	351	SAND		
	351	355	CLAY		
	355	359	CEMENTED SAND		
	359	370	VERY HARD PEA GRAVEL		
	370	371	CEMENTED SAND		
	371	449	CLAY		
	449	455	LARGE GRAVEL, SOME SAND MIX		
	455	508	SAND, GRAVEL, CLAY MIX		
	508	512	SAND, SOME CLAY MIX		
	512	627	BRN SAND, CLAY MIX		
	627	651	CEMENTED SANDSTONE, SOME CLAY MIX		
	651	657	SAND & CLAY MIX		
	657	686	CEMENTED SANDSTONE & STREAKS OF CLAY		
	686	689	SAND		
	689	719	SAND & BRN CLAY MIX		
	719	721	SAND		
	721	730	SAND & CLAY MIX		
	730	735	CLAY		

735 CLAY
Date Started _____ Completed _____

RECEIVED
JUL 0 1 1994
WATER RESOURCES
WESTERN REGION

RECEIVED
SEP 2 0 1994
Department of Water Resources

MAY 0 8 1995

13. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name PETE COPE DRILLING Firm No. 213
Firm Official _____ Date _____
and
Supervisor or Operator _____ Date _____
(Sign once if Firm Official & Operator)

FORWARD WHITE COPY TO WATER RESOURCES

Form 238-7
9/82

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

USE TYPEWRITER OR BALLPOINT PEN

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

RECEIVED
JUL 26 1988
Department of Water Resources
Western Region

63-10530

1. WELL OWNER

Name State of Idaho-Transportation Dept

Address Statehouse Mail Box 8028

Owner's Permit No. 63-87-Z 077

2. NATURE OF WORK

XX New well ☐ Deepened ☐ Replacement
☐ Abandoned (describe abandonment procedures such as materials, plug depths, etc. in lithologic log)

3. PROPOSED USE

XX Domestic ☐ Irrigation ☐ Test ☐ Municipal
☐ Industrial ☐ Stock ☐ Waste Disposal or Injection
☐ Other _____ (specify type)

4. METHOD DRILLED

☐ Rotary ☐ Air ☐ Hydraulic ☐ Reverse rotary
XX Cable ☐ Dug ☐ Other _____

5. WELL CONSTRUCTION

Casing schedule: XX Steel ☐ Concrete ☐ Other _____

Thickness	Diameter	From	To
.250 inches	8 inches	+ 2 feet	865 feet
.250 inches	6 inches	843'6" feet	863'6" feet
.250 inches	6 inches	894'0" feet	904'0" feet
_____ inches	_____ inches	_____ feet	_____ feet

Was casing drive shoe used? XX Yes ☐ No
Was a packer or seal used? XX Yes ☐ No 6" pipe 21'
Perforated? ☐ Yes XX No 822'6"-843'6"
How perforated? ☐ Factory ☐ Knife ☐ Torch
Size of perforation _____ inches by _____ inches

Number	From	To
_____ perforations	_____ feet	_____ feet
_____ perforations	_____ feet	_____ feet
_____ perforations	_____ feet	_____ feet

Well screen installed? XX Yes ☐ No
Manufacturer's name Johnson
Type stainless steel Model No. 304
Diameter 6 Slot size 30 Set from 863'6" feet to 894'0" feet
Diameter ___ Slot size ___ Set from _____ feet to _____ feet
Gravel packed? XX Yes ☐ No ☐ Size of gravel 8-12 sand
Placed from 843'6" feet to 863'6" feet
Surface seal depth 89 Material used in seal: ☐ Cement grout
XX Bentonite ☐ Puddling clay ☐ _____
Sealing procedure used: XX Slurry pit XX Temp. surface casing
XX Overbore to seal depth
Method of joining casing: ☐ Threaded XX Welded ☐ Solvent Weld
☐ Cemented between strata
Describe access port _____

AUG - 4 1988

6. LOCATION OF WELL

Sketch map location must agree with written location.

Department of Water Resources

N / W / E / S

East Boise POE (along I84)
Subdivision Name _____
IR-84-2(33) 66
Lot No. _____ Block No. _____
County Ada

S/E ¼ S/E ¼ Sec. 11, T. 1 (N) S, R. 3 (E) W.

7. WATER LEVEL

Static water level 687 feet below land surface.
Flowing? ☐ Yes XX No G.P.M. flow _____
Artesian closed-in pressure _____ p.s.i.
Controlled by: ☐ Valve ☐ Cap ☐ Plug
Temperature 78 °F. Quality _____
Describe artesian or temperature zones below.

8. WELL TEST DATA

XX Pump ☐ Bailer ☐ Air ☐ Other _____

Discharge G.P.M.	Pumping Level	Hours Pumped
38	738	2
45	748	2
55	755	4

9. LITHOLOGIC LOG

Bore Diam.	Depth From	Depth To	Material	Water Yes	Water No
12	0	2	clay topsoil		X
	2	4	hardpan & lava boulders		X
	4	55	brown sand, clay & lava bou.		X
	55	60	cemented brown sand & gravel		X
	60	63	loose brown sand & gravel		X
	63	116	cemented sand & gravel & clay streaks		X
	116	126	sand & gravel		X
	126	130	sandy clay & gravel		X
8	130	145	cemented sand & sandy clay		X
	145	148	brown clay		X
	148	175	cemented gravel		X
	175	204	cemented sand		X
	204	225	sandy clay		X
	225	245	cemented sand & streaks clay		X
	245	410	sandy clay & gravel		X
	410	455	sand & fine gravel		X
	455	460	sandy clay		X
	460	500	cemented sand		X
	500	558	sandy clay		X
	558	600	sand & fine gravel		X
	600	628	sandy clay		X
	628	661	sand		X
	661	665	sand & gravel		X
	665	720	sandy brown clay		X
	720	750	dirty sand, clay streaks	X	
	750	775	sandy clay		X
	775	802	brown clay		X
	802	820	sand & clay streaks	X	
	820	870	clay with sand streaks		X
	870	879	cemented sand	X	
	879	893	sand & clay streaks	X	
	893	1000	clay		X

10.

Work started 4/12/88 finished 6/23/88

11. DRILLERS CERTIFICATION

I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name W.E. Stevens & Sons Firm No. 153
Address 3709 Hawthorne Dr Date 6/26/88
Signed by (Firm Official) _____
and
(Operator) _____

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT

Form 238-7
8-93

RECEIVED
JUN 0 8 1999
WATER RESOURCES
WESTERN REGION

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Use Typewriter or Ball Point Pen

PAGE 1 OF 3 PAGES 95106

1. DRILLING PERMIT NO. 61-98-W-0075-000
Other IDWR No. D000 7483

2. OWNER:
Name FRANK [redacted] BONESSA
Address 1979 BORCHERS DRIVE
City SAN JOSE State CA Zip 95124

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

N / W / E / S

T. 1S North ☐ or South ☑
R. 3E East ☑ or West ☐
Sec. 13, SE 1/4 (10 acres) NE 1/4 (40 acres) NE 1/4 (160 acres)
Gov't Lot ____ County ADA

Address of Well Site 1 MILE WEST OF ORCHARD ACCESS RD. ON ORCHARD RANCH LANE; THEN 1 MILE NORTH
(Give at least Direction + Distance to Road or Landmark)
Lot No. ____ Block No. ____ Subd. Name ____

4. PROPOSED USE:
☑ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other ____

5. TYPE OF WORK
☑ New Well ☐ Modify or Repair ☐ Replacement ☐ Abandonment

6. DRILL METHOD
☐ Mud Rotary ☐ Air Rotary ☑ Cable ☐ Other ____

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
NEAT CEMENT [redacted]	124.64	17	17 EA	DISPLACED THROUGH 8"
GROUT	5	115	94 SACKS	CASING
BENTONITE	115	4	16 BAGS	SLURRY PIT
NEAT CEMENT GROUT	0	4'	1 BAG	POURED

Was drive shoe seal tested? Yes ☐ No ☑ How? ____

8. CASING/LINER:

Diameter	From	To	Guage	Casing	Liner	Steel	Plastic	Welded	Threaded
8 5/8	+1.83	124.64	1/4 WALL	✓		☑	☐	☑	☐
6 5/8	1	551	0.28	✓		☐	☑	☑	☐
5 9/16	514	629.7	0.188		✓	☑	☐	☑	☐
4 1/2	560.2	581	0.237		✓	☑	☐	☑	☐

Final location of shoes 8" SHOE at [redacted] 124.64'
Top Packer or Headpipe 514 Bottom Tailpipe 629.7F

9. PERFORATIONS/SCREENS
☑ Perforations Method SAWED IN PVC, TORCH
☑ Screens Type JOHNSON Material CONTINUOUS SLOT WIRE WOUND

From	To	Slot Size	Number	Diameter	Tele/Pipe Size	Casing	Liner
410	550	3/32	1064	6 5/8	PIPE	☑	☐
560.2	570.45	.020	N.A	5 9/16	(6" TELESCOPING)	☐	☑
560.2	581.0	3/32	78	4 1/2	PIPE	☐	☑

10. WELL TESTS:
☑ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pumping Depth	Time
9.7	< 1 FT	500.8	12 HRS

Temperature of water 66°F Was a water analysis done? Yes ☐ No ☑
By whom? ____
Water Quality (odor, etc.) EXCELLENT
Bottom Hole Temperature 66°F

11. STATIC WATER LEVEL:
500 ft. below surface Depth artesian flow found ____
Artesian pressure ____ lb. Describe access port 8" CASING [redacted]: BY REMOVING WELL CAP

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	WATER YES	WATER NO
8	0	551'			
6	551	631			
	0	2	SOIL		
	2	6	SOIL, SUBSOIL, CLAYEY HARDPAN		
	6	8	SANDY CLAY		
	8	16	CLAY		
	16	18	SAND		
	18	34.5	SANDY CLAY		
	34.5	35	ROCK		
	35	63	[redacted] CLAYEY SAND		
	63	64	GRAVEL		
	64	69	CLAYEY SAND		
	69	70	GRAVEL		
	70	96	CLAYEY SAND		
	96	107	GRAVEL		
	107	116	CLAY		
	116	122	GRAVEL		
	122	194	BASALT		
	194	197	RUBBLE & CINDERS		
	197	216	BASALT		
	216	217	BASALT, CREVICED, RED IN SEAMS		
	217	255	BASALT		
	255	257	BOULDERS, HARD, RED MATRIX		
	257	272	BASALT, RED IN SEAMS		
	272	273	RUBBLE & CINDERS		
	273	311	BASALT		
	311	312	RUBBLE & CINDERS		

RECEIVED
JUN 14 1999
Department of Water Resources

Date: Started Nov 30, 1998 Completed SEE PAGE 3

13. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name ARTESIAN CO Firm No. 318
Firm Official HUGH HARDEN Date 7 June 1999
and
Supervisor or Operator Hugh Harden Date 7 June 1999
(Sign once if Firm Official & Operator)

MICROFILMED
AUG 25 1999

FORWARD WHITE COPY TO WATER RESOURCES

Form 238-7
6/93

RECEIVED IDAHO DEPARTMENT OF WATER RESOURCES
JUN 0 8 1999
WATER RESOURCES WATER REGION

RECEIVED
JUN 14 1999
Department of Water Resources

Use Typewriter or Ball Point Pen

WELL DRILLER'S REPORT

PAGE 2 OF 3 PAGES

61-98-W 0075-000

95107

1. DRILLING PERMIT
Other IDWR No. D 000 7483

2. OWNER:
Name FRANK [redacted] BONESSA
Address
City State Zip

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

OFFICE USE ONLY
Inspected by
T. North ☐ or South ☐
R. East ☐ or West ☐
Twp 01S Rge 03E Sec 13
1/4 (640 acres) 1/4 (40 acres) 1/4 (160 acres) 1/4
Gov't Lot Co
SE 1/4 NE 1/4 NE 1/4

Address of Well Site
(Give at least Direction + Distance to Road or Landmark)
Lot No. Block No. Subd. Name

4. PROPOSED USE:
☐ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other

5. TYPE OF WORK
☐ New Well ☐ Modify or Repair ☐ Replacement ☐ Abandonment

6. DRILL METHOD
☐ Mud Rotary ☐ Air Rotary ☐ Cable ☐ Other

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD

Was drive shoe seal tested? YO NO How?

8. CASING/LINER:

Diameter	From	To	Guage	Casting	Liner	Steel	Plastic	Welded	Threaded
						☐	☐	☐	☐
						☐	☐	☐	☐
						☐	☐	☐	☐
						☐	☐	☐	☐

Final location of shoes 6" PVC COUPLING @ 551FT
Top Packer or Headpipe Bottom Tailpipe

9. PERFORATIONS/SCREENS
☐ Perforations Method
☐ Screens Type Material

From	To	Slot Size	Number	Diameter	Tele/Pipe Size	Casting	Liner
						☐	☐
						☐	☐
						☐	☐
						☐	☐

MICROFILMED
AUG 25 1999

10. WELL TESTS:
☐ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pumping Depth	Time

Temperature of water Was a water analysis done? Yes ☐ No ☐
By whom?
Water Quality (odor, etc.)
Bottom Hole Temperature

11. STATIC WATER LEVEL:
ft. below surface Depth artesian flow found
Artesian pressure lb. Describe access port
Describe Controlling Devices:

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	WATER	
	312	317	BASALT SOFTER, BROWN		✓
	317	320	BASALT HARD, GREY		✓
	320	327	BASALT SOFTER, BROWN		✓
	327	330.5	BASALT MED. HARD, GREY		✓
	330.5	334	RUBBLE & CINDERS, BROWN		✓
	334	336	CLAY, BROWN		✓
	336	342	BASALT, HARD, BROWN		✓
	342	379	SANDSTONE, TAN		✓
	379	383	CLAY, TAN		✓
	383	401	SAND, TAN		✓
	401	403	CLAY, TAN		✓
	403	434	CLAYEY SAND, TAN		✓
	434	435	CLAY, TAN		✓
	435	438	SANDY CLAY, TAN		✓
	438	439	CONGLOMERATE, TAN		✓
	439	471	CLAYEY SAND, TAN		✓
	471	472	CONGLOMERATE TAN		✓
	472	479	CLAYEY SAND, TAN		✓
	479	482	CLAY, TAN		✓
	482	484	SAND, TAN		✓
	484	487	CLAYEY SAND, TAN		✓
	487	487.2	SAND TAN		✓
	487.2	500	CLAYEY SAND TAN		✓
	500	500.2	SAND TAN		✓
	500.2	514	CLAYEY SAND & CLAY		✓
	514	514.2	SAND TAN	✓	
	514.2	517	CLAYEY SAND TAN		✓

Date: Started PAGE 1 Completed PAGE 3

13. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name ARTESIAN CO Firm No. 318
Firm Official Hugh Harden Date 7 June 1999
and
Supervisor or Operator Date
(Sign once if Firm Official & Operator)

FORWARD WHITE COPY TO WATER RESOURCES

Form 238-7
6/93

RECEIVED
JUN 0 8 1999
WATER RESOURCES
WESTERN REGION

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Use Typewriter or Ball Point Pen

(PAGE 3) of 3 PAGES 95108

61-98-W-0075-000

1. DRILLING PERMIT NO. _____
Other IDWR No. D 0000 7483

2. OWNER:
Name FRANK [redacted] BONESSA
Address 1979 BORCHERS DRIVE
City SAN JOSE State CA Zip 95124

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

OFFICE USE ONLY
Twp 01 S Rge 03E Sec 13
SE 1/4 NE 1/4 NE 1/4
Govt Lot ____ County ____

North ☐ or South ☐
East ☐ or West ☐
____ 1/4 (10 acres) ____ 1/4 (40 acres) ____ 1/4 (160 acres)

Address of Well Site _____
(Give at least Direction + Distance to Road or Landmark)

Lot No. ____ Block No. ____ Subd. Name _____

4. PROPOSED USE:
☐ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other _____

5. TYPE OF WORK
☐ New Well ☐ Modify or Repair ☐ Replacement ☐ Abandonment

6. DRILL METHOD
☐ Mud Rotary ☐ Air Rotary ☐ Cable ☐ Other _____

7. SEALING PROCEDURES

SEAL/FILTER PACK			AMOUNT	METHOD
Material	From	To	Sacks or Pounds	

Was drive shoe seal tested? Y☐ N☐ How? _____

8. 4½ OD [redacted] **LINER:** HANGER 5" COUPLING CUT OFF, BEVELED TO INSIDE

Diameter	From	To	Guage	Casting	Liner

Steel ☐ Plastic ☐ Welded ☐ Threaded ☐
HARDFACED & GROUND SMOOTH

Final location of shoes – 4" LINER – NO SHOE
Top Packer or Headpipe _____ Bottom Tailpipe _____
BOTTOM END CUT ANGLE = 54.2° FROM PIPE AXIS, CHAMFERED

9. PERFORATIONS/SCREENS
☐ ~~Perforations~~ ~~Method~~ INTERNALLY & GROUND
☐ ~~Screens~~ ~~Type~~ ~~Material~~ _____

From	To	Slot Size	Number	Diameter	Tele/Pipe Size	Casting	Liner
						☐	☐
						☐	☐
						☐	☐
						☐	☐

MICROFILMED
AUG 25 1999

10. WELL TESTS:
☐ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pumping Depth	Time

Temperature of water ____ Was a water analysis done? Yes ☐ No ☐
By whom? _____
Water Quality (odor, etc.) _____
Bottom Hole Temperature _____

11. STATIC WATER LEVEL:
____ ft. below surface Depth artesian flow found _____
Artesian pressure ____ lb. Describe access port _____
Describe Controlling Devices: _____

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	WATER Y	WATER N
	517	518	SAND TAN	✓	
	518	524	CLAYEY SAND, TAN		✓
	524	529.5	SAND, TAN	✓	
	529.5	544	CLAYEY SAND, TAN		✓
	544	546	SAND, TAN	✓	
	546	559	ROCK BASALT? BAILS DRY		✓
	559	562	SAND, TAN		✓
	562	567	SANDY CLAY, TAN		✓
	567	568	SAND, TAN	✓	
	568	572	ROCK CONGLOMERATE? TAN		✓
	572	573	CLAY, TAN		✓
	573	575.5	CONGLOMERATE? TAN		✓
	575.5	578	CLAYEY GRAVEL	✓	✓
	578	581	CLAYEY SAND TAN	✓	✓
	581	601	ALTERNATING LAYERS SAND & CLAY	✓	✓
	601	602	CLAYEY GRAVEL, TAN		✓
	602	609	CLAY, TAN	[redacted]	✓
	609	695	SAND, TAN	✓	
	695	699	ALTERNATING LAYERS SAND & CLAY	✓	✓

RECEIVED
JUN 14 1999
Department of Water Resources

Date: Started SEE PAGE 1 Completed JUNE 1, 1999

13. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name ARTESIAN CO Firm No 318
Firm Official Hugh Harden Date JUNE 7, 1999
and
Supervisor or Operator _____ Date _____
(Sign once if Firm Official & Operator)

FORWARD WHITE COPY TO WATER RESOURCES

81001-53

RECEIVED
JUL 10 1967
Department of Reclamation

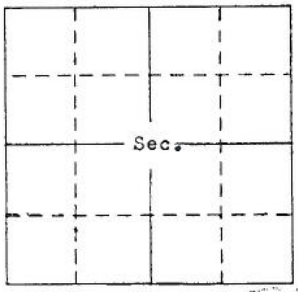
REPORT OF WELL DRILLER
State of Idaho

State law requires that this report shall be filed with the State Reclamation Engineer within 30 days after completion or abandonment of the well.

WELL OWNER:
Name State Highway Dept. (Black Creek Rest Area
Address Boise, Idaho

Owner's Permit No. G-23956
NATURE OF WORK (check): Replacement well ☐
New well [*] Deepened ☐ Abandoned ☐
Water is to be used for: Drinking & Rest Area
METHOD OF CONSTRUCTION: Rotary ☐ Cable [*]
Dug ☐ Other (explain)
CASING SCHEDULE: Threaded ☐ Welded [*]
8 "Diam. from 0 ft. to 904 ft.
"Diam. from ft. to ft.
"Diam. from ft. to ft.
"Diam. from ft. to ft.
Thickness of casing: ¼" wall Material:
Steel [*] concrete ☐ wood ☐ other ☐
(explain)
PERFORATED? Yes [*] No ☐ Type of perforator used: Machine
Size of perforations: 1/8 " by 3 "
perforations from 866 ft. to 890 ft.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.
WAS SCREEN INSTALLED? Yes ☐ No ☐
Manufacturer's name
Type Model No.
Diam. Slot size Set from ft. to ft.
Diam. Slot size Set from ft. to ft.
CONSTRUCTION: Well gravel packed? Yes [*]
No. ☐ size of gravel ⅛" minus Gravel placed from 818 ft. to 975 ft. Surface seal provided? Yes [*] No ☐ To what depth? ft. Material used in seal:
Did any strata contain unusable water? Yes ~~No~~
No. ☐ Type of water:
Depth of strata ft. Method of sealing strata off:
Surface casing used? Yes ☐ No. ☐
Cemented in place? Yes ☐ No ☐

Locate well in section



LOCATION OF WELL: County Ada
NE¼ SW¼ Sec. 25 T. 2 N/S R. 3 E/W

Size of drilled hole: 8" Total depth of well: 975 ft. Standing water level below ground: 695 ft. Temp. Fahr. 71 ° Test delivery: 55-75 gpm or cfs Pump? [*] Bail ☐
Size of pump and motor used to make test: 20 h.p. Sub. pump
Length of time of test: 48 Hrs. Min.
Drawdown: No ft. Artesian pressure: ft. above land surface Give flow cfs or gpm. Shutoff pressure:
Controlled by: Valve ☐ Cap ☐ Plug ☐
No control ☐ Does well leak around casing?
Yes ☐ No [*]

DEPTH FROM FEET	DEPTH TO FEET	MATERIAL 104073	WATER YES OR NO
0	2	Top Soil	
2	8	White hardpan	
8	105	Cemented gravel	
105	120	Gravel & sand-small amount yellow clay	
120	130	Small gravel & reddish clay	
130	165	Light brown clay & small gravel	
165	245	Yellowish sand & clay	
245	280	Yellowish sand & clay (floaters of decomposed granite)	
280	353	Sand & clay	
353	392	Sticky brown clay	
392	435	Brown sand & clay	
435	500	Brown sand & clay (some gravel)	
500	555	Layers of sand & clay	
555	680	Sand, gravel & clay	
680	690	Light brown clay	
690	730	Sand, gravel & clay	
730	845	Clay--small amount of sand	
845	904	Sand & gravel--small layers of clay	
		Casing perforated 866-890 ft.	
904	975	Layers of clay, sand & gravel	
		4" liner installed from 818' to 975' and gravel packed	

Work started: November 23, 1966
Work finished: June 14, 1967
Well Driller's Statement: This well was drilled under my supervision and this report is true to the best of my knowledge.
Name: Wayne E. Stevens
Address: 3709 Hawthorne Drive, Boise, Idaho
Signed by: Wayne E. Stevens
License No. 324 Date: June25, 1967
no helper used

Use other side for additional remarks

USGS

Form 238-7
6/89

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

USE TYPEWRITER OR BALLPOINT PEN

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

1. WELL OWNER

Name RAY MCFALL

Address 5217 MALAD ST BOISE

Owner's Permit No. ~~63-90-Z-055 extensions granted~~

2. NATURE OF WORK

☒ New well ☐ Deepened ☐ Replacement
☐ Well diameter increase
☐ Abandoned (describe abandonment procedures such as materials, plug depths, etc. in lithologic log)

3. PROPOSED USE

☒ Domestic ☐ Irrigation ☐ Test ☐ Municipal
☐ Industrial ☐ Stock ☐ Waste Disposal or Injection
☐ Other _____ (specify type)

4. METHOD DRILLED

☒ Rotary ☐ Air ☐ Hydraulic ☐ Reverse rotary
☐ Cable ☐ Dug ☐ Other _____

5. WELL CONSTRUCTION

Casing schedule ☒ Steel ☐ Concrete ☐ Other _____

	Thickness	Diameter	From	To
.250	6 inches	1 inches +	532 feet	feet
	inches	inches	feet	feet
	inches	inches	feet	feet
	inches	inches	feet	feet

Was casing drive shoe used? ☒ Yes ☐ No
Was a packer or seal used? ☐ Yes ☒ No
Perforated? ☒ Yes ☐ No
How perforated? ☐ Factory ☐ Knife ☒ Torch ☐ Gun
Size of perforation .040 inches by 3 inches

Number		From	To
200	perforations	460 feet	531 feet
	perforations	feet	feet
	perforations	feet	feet

Well screen installed? ☐ Yes ☒ No
Manufacturer's name _____
Type _____ Model No. _____
Diameter ___ Slot size ___ Set from ___ feet to ___ feet
Diameter ___ Slot size ___ Set from ___ feet to ___ feet
Gravel packed? ☒ Yes ☐ No ☐ Size of gravel 3/8 minus
Placed from 80 feet to 532 feet
Surface seal depth 80 Material used in seal: ☐ Cement grout
☒ Bentonite ☐ Puddling clay ☐ _____
Sealing procedure used: ☐ Slurry pit ☒ Temp. surface casing
☒ Overbore to seal depth
Method of joining casing: ☐ Threaded ☒ Welded ☐ Solvent Weld
☐ Cemented between strata
Describe access port _____

6. LOCATION OF WELL

Sketch map location must agree with written location.

Black's Creek Rd

N / W / E / S

Subdivision Name _____
Lot No. _____ Block No. _____

County Ada

N/W¼ S/E ¼ Sec. 30 T. 2 ☒ N ☐ S R. 4 ☒ E ☐ W

7. WATER LEVEL

Static water level 395 feet below land surface.
Flowing? ☐ Yes ☒ No G.P.M. flow _____
Artesian closed-in pressure _____ p.s.i.
Controlled by: ☐ Valve ☐ Cap ☐ Plug
Temperature _____ °F. Quality _____
Describe artesian or temperature zones below.

8. WELL TEST DATA

☐ Pump ☐ Bailer ☒ Air ☐ Other _____

Discharge G.P.M.	Pumping Level	Hours Pumped
6	450	2

9. LITHOLOGIC LOG 075765

Bore Diam.	Depth From	Depth To	Material	Water Yes	Water No
8	0	43	reddish brown sandy clay with gravel & boulders		X
	43	80	sandy reddish brown clay		X
	80	84	loose sand & gravel		X
	84	140	light brown sandy clay		X
	140	460	sandy reddish brown clay with thin streaks of sand & gravel		X
	460	470	brown cemented sand & gravel	X	
	470	509	sandy reddish brown clay		X
	509	511	cemented sand & gravel	X	
	511	535	sandy ~~XXXXX~~ reddish brown clay		X

RECEIVED
MAY - 1 1992
Department of Water Resources
Western Regional Office

10. Work started 4/8/92 finished 4/14/92

11. DRILLERS CERTIFICATION

I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name Stevens & Sons Firm No. 153
Address 3709 Hawthorne Dr Date ~~4/15/92~~
Signed by (Firm Official) Wayne Stevens
and
(Operator) Don Stevens

MICROFILMED
JUL 08 1992

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT

12/1998 >>

Form 238-7
3/95

#9003

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Use Typewriter or Ballpoint Pen

0647767

Office Use Only
Inspected by _____
Twp____ Rge____ Sec____
____1/4 ____1/4 ____1/4
Lat: : : Long: : :

1. DRILLING PERMIT NO. 61-98-W 0078-000
Other IDWR No. _____

2. OWNER:
Name Jim Hutchings
Address 13690 S Cloverdale
City Kuna State ID Zip 83634

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

N / W / E / S

Twp. 1 North ☑ or South ☐
Rge. 5 East ☑ or West ☐
Sec. 33, ____ 1/4 (10 acres) SW 1/4 (40 acres) SW 1/4 (160 acres)
Gov't Lot ____ County Elmore
Lat: : : Long: : :
Address of Well Site Base Line Rd.
City Mountain Home
(Give at least name of road + Distance to Road or Landmark)

Lt. _____ Blk. _____ Sub. Name _____

4. USE:
☑ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other _____

5. TYPE OF WORK check all that apply (Replacement etc.)
☑ New Well ☐ Modify ☐ Abandonment ☐ Other _____

6. DRILL METHOD
☑ Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other _____

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
Bentonite	0	201	600	Pour

Was drive shoe used? ☑ Y ☐ N Shoe Depth(s) 518
Was drive shoe seal tested? ☑ Y ☐ N How? Air

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
6	+2	518	250	Steel	☑	☐	☑	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Length of Headpipe _____ Length of Tailpipe _____

9. PERFORATIONS/SCREENS
☐ Perforations Method _____
☐ Screens Screen Type _____

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
						☐	☐
						☐	☐
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
360 ft. below ground Artesian pressure _____ lb.
Depth flow encountered 525 ft. Describe access port or control devices: CAP

11. WELL TESTS:
☐ Pump ☐ Bailer ☑ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time
50	500	500	4 Hr

Water Temp. 56 Bottom hole temp. 56
Water Quality test or comments: _____
Depth first Water Encountered 260

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Water Y	Water N
8	0	2	TOP Soil		
	2	4	Hard Pan		
	4	18	Brn CLAY		
8	18	190	Brn Sand & CLAY		
	190	222	LAVA		
	222	360	Brn Sand CLAY		
	360	440	CLAY & Sand Layers	✓	
6	440	470	Gravel	✓	
	470	525	CLAY & Shard Sand Layers	✓	
	525	540	Sand & Gravel	✓	

RECEIVED
DEC 21 1998
Department of Water Resources

RECEIVED MICROFILMED
DEC 16 1998 MAR 08 1999
WATER RESOURCES
WESTERN REGION

Completed Depth 525 (Measurable)
Date: Started 12-10-98 Completed 12-11-98

13. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name Cascade Casing Drilling Firm No. 560
Firm Official _____ Date 12-12-98
and
Supervisor or Operator _____ Date _____
(Sign once if Firm Official & Operator)

FORWARD WHITE COPY TO WATER RESOURCES

721802 - 56

C

Form 238-7
3/95-C96

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT 065952

Office Use Only
Inspected by
Twp ____ Rge ____ Sec ____
____ 1/4 ____ 1/4 ____ 1/4
Lat: : : Long: : :

1. DRILLING PERMIT NO. 61 -97 -W -0033 -000
Other IDWR No. _____

2. OWNER:
Name Rick Millington
Address 8011 Ustick Rd.
City Boise State ID Zip 83704

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location

N / W / E / S

Twp. 1 North ☐ or South ☒
Rge. 5 East ☒ or West ☐
Sec. 6 1/4 (10 acres) NE 1/4 (40 acres) SW 1/4 (160 acres)

Gov't lot _____ County Elmore
Lat: : : Long: : :
Address of Well Site Baseline Rd
City Mayfield
(Give at least name of road + Distance to Road or Landmark)

Lt. _____ Blk. _____ Sub. Name _____

4. USE:
☒ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other _____

5. TYPE OF WORK check all that apply (Replacement etc.)
☒ New Well ☐ Modify ☐ Abandonment ☐ Other _____

6. DRILL METHOD
☒ Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other _____

7. SEALING PROCEDURES

SEAL/FILTER PACK			AMOUNT	METHOD
Material	From	To	Sacks or Pounds	
bentonite	2	18	6	overbore

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) _____
Was drive shoe seal tested? ☐ Y ☒ N How? _____

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
6"	+1	575	.250	steel	☒	☐	☒	☐
8"	0	80	.250	steel	☒	☐	☒	☐
					☐	☐	☐	☐

Length of Headpipe _____ Length of Tailpipe _____

9. PERFORATIONS/SCREENS
☐ Perforations Method _____
☐ Screens Screen Type _____

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
						☐	☐
						☐	☐
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
387 ft. below ground Artesian Pressure _____ lb
Depth flow encountered _____ ft. Describe access port or control devices: _____

11. WELL TESTS:
☐ Pump ☐ Bailer ☒ Air ☐ Flowing Artesian

Yield gal/min.	Drawdown	Pumping Level	Time
30		560	2 hrs.

Water Temp. _____ Bottom hole temp. _____
Water Quality test or comments: _____
Depth first Water Encountered 455

12. LITHOLOGIC LOG: (Describe repair or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temp.	Y	N
10"	0	1	brown top soil		☒
10"	1	3	brown clay		☒
10"	3	5	brown hardpan clay		☒
10"	5	20	brown sand		☒
8"	20	24	brown clay		☒
8"	24	60	brown clay & strips brown sand		☒
8"	60	114	white & brown soft granite		☒
8"	114	117	black granite		☒
8"	117	160	white & brown granite		☒
8"	160	175	brown granite chips		☒
8"	175	225	white & brown granite		☒
8"	225	338	brown clay		☒
8"	338	365	clear & white grnt. w/strps brn clay		☒
8"	365	402	brown fine sand		☒
8"	402	440	brn snad w/strips of clay		☒
6"	440	455	brown sandy clay		☒
6"	455	473	brown sand w/small gravel	☒	
6"	473	495	brown clay		☒
6"	495	528	brown sand & small gravel	☒	
6"	528	533	brown sandy clay		☒
6"	533	561	brown & white sand		☒
6"	561	566	light brown clay		☒
6"	566		gray sand	☒	

RECEIVED
SEP 11 1997
Department of Water Resources

RECEIVED
SEP - 4 1997
WATER RESOURCES
WESTERN REGION

Completed Depth: 387 (Measurable)
Date: Started 07-11-97 Completed 07-18-97

13. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name SOS Welldrilling & Pump Co Firm No. 212
Firm Official Brad Sharon Date 9-2-97
Supervisor or Operator Sharon Sloan Date 9-2-97
(Sign once if Firm Official & Operator)

Date: 08/22/97 Time: 4:11 PM

MICROFILMED
JAN 09 1998

USE TYPEWRITER OR BALL POINT PEN

State of Idaho
Department of Water Administration

WELL DRILLER'S REPORT 1150

State law requires that this report be filed with the State Reclamation Engineer within 30 days after completion or abandonment of the well.

1. WELL OWNER

Name El Paso Natural Gas

Address

Owner's Permit No.

2. NATURE OF WORK Anode Bed

☒ New well ☐ Deepened ☐ Replacement

☐ Abandoned (describe method of abandoning)

Not a Water Well

3. PROPOSED USE

☐ Domestic ☐ Irrigation ☐ Test Not a Water Well

☐ Municipal ☐ Industrial ☐ Stock

4. METHOD DRILLED

☒ Cable ☐ Rotory ☐ Dug ☐ Other

5. WELL CONSTRUCTION

Diameter of hole 12 inches Total depth 570 feet

Casing schedule: ☒ Steel ☐ Concrete

Thickness	Diameter	From	To
¼ inches	10¾ inches	+1 feet	508 feet
inches	inches	feet	feet
inches	inches	feet	feet
inches	inches	feet	feet
inches	inches	feet	feet

Was a packer or seal used? ☐ Yes ☒ No

Perforated? ☐ Yes ☒ No

How perforated? ☐ Factory ☐ Knife ☐ Torch

Size of perforation inches by inches

Number	From	To
perforations	feet	feet
perforations	feet	feet
perforations	feet	feet

Well screen installed? ☐ Yes ☒ No

Manufacturer's name

Type Model No.

Diameter Slot size Set from feet to feet

Diameter Slot size Set from feet to feet

Gravel packed? ☐ Yes ☒ No Size of gravel

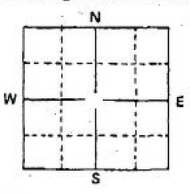
Placed from feet to feet

Surface seal? ☒ Yes ☐ No To what depth 18 feet

Material used in seal ☐ Cement grout ☒ Puddling clay

6. LOCATION OF WELL

Sketch map location must agree with written location.



County Ada

NE ¼ NE ¼ Sec. 17, T. 1 ☐S, R. 4 ☒E

7. WATER LEVEL

Static water level 450 feet below land surface

Flowing? ☐ Yes ☐ No G.P.M. flow

Temperature ° F. Quality

Artesian closed-in pressure p.s.i.

Controlled by ☐ Valve ☐ Cap ☐ Plug

8. WELL TEST DATA

☐ Pump ☐ Bailer ☐ Other

Discharge G.P.M.	Draw Down	Hours Pumped
None		
Was Not Tested		

9. LITHOLOGIC LOG 028863

Hole Diam.	Depth From	Depth To	Material	Water Yes	Water No
12	0	8	Surface		✓
12	8	114	Clay Fine gravel Sand		✓
12	114	118	Gravel		✓
12	118	177	Black Basalt		✓
12	177	187	Red Basalt		✓
12	187		Caving		✓
12	187	197	Red Basalt		✓
12	197	223	Black Basalt		✓
12	223	237	Red BASALT		✓
12	237	277	Fine gravel Sand		✓
			Clay Brown & Grey		✓
12	277	284	Gravel & Sand		✓
			Caving		✓
			Run Casing		✓
10	284	288	gravel & Sand		✓
10	288	360	LOWER Clay & White Sand		✓
	360	450	Sand & Clay		✓
		450	Water Caving	✓	
	430	550	Clay with Layers Sand Could be Water at 350 ?		
			Caving 550-558		
	550	571	Clay		
			Clay Was Sticky		
			Sand White, Grey Glen Ewing Formation		
			Water		
			Not a Well		
			Could not drive Pipe further		

10. Work started 14 Feb 73 finished 30 April 1973

11. DRILLER'S CERTIFICATION

This well was drilled under my supervision and this report is true to the best of my knowledge.

USGS

Fuye New Walker 15
Driller's or Firm's Name Number

624 Pierce St Twin Falls
Address

Eugene N Walker 14 June 1973
Signed By Date

USE ADDITIONAL SHEETS IF NECESSARY FORWARD THE WHITE, BLUE, AND PINK COPIES TO THE DEPARTMENT

USE TYPEWRITER OR BALL POINT PEN

State of Idaho
Department of Water Administration

WELL DRILLER'S REPORT

State law requires that this report be filed with the State Reclamation Engineer within 30 days after completion or abandonment of the well.

Received 1-15-73 WA D

1. WELL OWNER

Name Western Land & Cattle Co.

Address Mayfield, Idaho

Owner's Permit No. _____

2. NATURE OF WORK

☒ New well ☐ Deepened ☐ Replacement

☐ Abandoned (describe method of abandoning)

_____

3. PROPOSED USE

☐ Domestic ☐ Irrigation ☒ Test

☐ Municipal ☐ Industrial ☐ Stock

4. METHOD DRILLED

☒ Cable ☐ Rotory ☐ Dug ☐ Other

5. WELL CONSTRUCTION

Diameter of hole 8 inches Total depth 82 feet

Casing schedule: ☒ Steel ☐ Concrete

Thickness	Diameter	From	To
.322 inches	8 inches	+1 feet	51 feet
.257 inches	5 inches	51 feet	53 feet
.257 inches	5 inches	68 feet	82 feet
_____ inches	_____ inches	_____ feet	_____ feet
_____ inches	_____ inches	_____ feet	_____ feet

Was a packer or seal used? ☒ Yes ☐ No

Perforated? ☐ Yes ☒ No

How perforated? ☐ Factory ☐ Knife ☐ Torch

Size of perforation _____ inches by _____ inches

Number	From	To
_____ perforations	_____ feet	_____ feet
_____ perforations	_____ feet	_____ feet
_____ perforations	_____ feet	_____ feet

Well screen installed? ☒ Yes ☐ No

Manufacturer's name Johnson

Type Stainless Model No. _____

Diameter 6 Slot size 30 Set from 53 feet to 58 feet

Diameter 6 Slot size 35 Set from 58 feet to ~~82~~ 68 feet

Gravel packed? ☐ Yes ☒ No Size of gravel _____

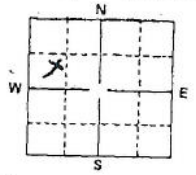
Placed from _____ feet to _____ feet

Surface seal? ☒ Yes ☐ No To what depth 20 feet

Material used in seal ☐ Cement grout ☐ Puddling clay Bentonite

6. LOCATION OF WELL

Sketch map location must agree with written location.



County Elmore

SW¼ NW¼ Sec. 17, T. 1 N., R. 5 E.

7. WATER LEVEL

Static water level 12 feet below land surface

Flowing? ☐ Yes ☐ No G.P.M. flow _____

Temperature _____° F. Quality _____

Artesian closed-in pressure _____ p.s.i.

Controlled by ☐ Valve ☐ Cap ☐ Plug

8. WELL TEST DATA

☒ Pump ☐ Bailer ☐ Other

Discharge G.P.M.	Draw Down	Hours Pumped
25	25 ft.	4

108033

9. LITHOLOGIC LOG

Hole Diam.	Depth From	Depth To	Material	Water Yes	Water No
8	0	25	topsoil		X
	25	40	pea gravel	X	
	40	65	red sand	X	
	65	69	hard gravel	X	
	69	82	white clay		X

10.

Work started Nov. 9-72 finished Dec. 1-72

11. DRILLER'S CERTIFICATION

This well was drilled under my supervision and this report is true to the best of my knowledge.

Engleman Well Drilli 47
Driller or Firm's Name Number

1309 Bond - Boise, Idaho
Address

Signed By Ref Engleman 12-1-72
Date

USE ADDITIONAL SHEETS IF NECESSARY

FORWARD THE WHITE, BLUE, AND PINK COPIES TO THE DEPARTMENT

Appendix E: General water quality data

Station	Analyte	Units	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2002	2003	2004	Maximum
01S 04E 23BBB1	Arsenic	ug/L	3				3				2				2.7	3
	Fecal Coliform	col/100 ml	<1				45				<1				<1	45
	Fluoride	mg/L	0.4				0.4				0.44				0.5	0.5
	Nitrate	mg/L	0.79				0.79				0.765				0.79	0.79
	Alpha, G	pCi/l	0.4				0.6									0.6
	Iron	ug/L	<3				<3				<10				<6	
	Manganese	ug/L	<1				<1				<2.2				<0.8	
	Solids	mg/L	134				163				161				147	163
01S 04E 17CCC2	Arsenic	ug/L	3				2				2				2	3
	Fecal Coliform	col/100 ml	22				<1				<1				<1	22
	Fluoride	mg/L	0.2				0.2				0.23				0.2	0.23
	Nitrate	mg/L	0.64				0.61				0.633				0.6	0.64
	Alpha, G	pCi/l	3				0.7									3
	Iron	ug/L	16				7				5.3				176	176
	Manganese	ug/L	2				<1				<3.0				9.8	9.8
	Solids	mg/L	182				178				181				176	182
01N 04E 32AAB1	Arsenic	ug/L	3				2				2				2.3	3
	Fecal Coliform	col/100 ml	<1				<1				<1				<1	
	Fluoride	mg/L	0.5				0.5				0.41				0.4	0.5
	Nitrate	mg/L	0.11				0.11				0.086				0.09	0.11
	Alpha, G	pCi/l	0.2				2.6									2.6
	Iron	ug/L	6				6				<10				6	6
	Manganese	ug/L	<1				<1				<3.0				<0.8	0
	Solids	mg/L	150				153				151				147	153
01N 04E 27CBD1	Arsenic	ug/L			2				3				3			3
	Fecal Coliform	col/100 ml			<1				<1				<1			
	Fluoride	mg/L			0.3				0.3				0.3			0.3
	Nitrate	mg/L			4.6				2.92				0.45			4.6
	Alpha, G	pCi/l			1.1											1.1
	Iron	ug/L			10				10				42			42
	Manganese	ug/L			2				1.2				1.2			2
	Solids	mg/L			185				185				162			185
01N 04E 23DDC1	Arsenic	ug/L	9													9
	Fecal Coliform	col/100 ml	2													2
	Fluoride	mg/L	0.3													0.3
	Nitrate	mg/L	0.29													0.29
	Alpha, G	pCi/l	0.1													0.1
	Iron	ug/L	6													6
	Manganese	ug/L	<1													
	Solids	mg/L	134													134
01N 04E 14DDAD1	Arsenic	ug/L				2				3				2.12		3
	Fecal Coliform	col/100 ml				<1				<1				<1		
	Fluoride	mg/L				0.3				0.31				0.3		0.31
	Nitrate	mg/L				2.5				3.05				2.7		3.05
	Alpha, G	pCi/l				1.7										1.7
	Iron	ug/L				<3				11				15.5		15.5
	Manganese	ug/L				<1				<4.0				1.2		1.2
	Solids	mg/L				153				160				0.21 (t/af)		160
01N 03E 11DDB1	Arsenic	ug/L		4				4				4.2				4.2
	Fecal Coliform	col/100 ml		<1				<1				<1				
	Fluoride	mg/L		0.3				0.3				0.3				0.3
	Nitrate	mg/L		0.49				0.56				0.459				0.56
	Alpha, G	pCi/l		1.7				1.1								1.7
	Iron	ug/L		<3				<3				<10				
	Manganese	ug/L		1				<1				<2				1
	Solids	mg/L		177				171				176				177

Table 1. Selected water quality results from wells near Mayfield Springs.

Appendix F: Water Rights Summary

Location	Type	Basin	Sequence	Suffix	Version	Basis	Status	Priority Date	Div. Rate (cfs)	Source List	Water Uses	Owner List
Applications												
T1N R4E 28, 29, 32NE, 33	Application	63	32225				Active	9/16/2005	10	GROUND WATER	MUNICIPAL	INTERMOUNTAIN SEWER & WATER CORP (Current)
SRBA Claims												
T1N R4E 28	Claim	63	3070			License	Active	12/13/1955	0.02	GROUND WATER	DOMESTIC, IRRIGATION, STOCKWATER	AGENBROAD, CARL S (Current); AGENBROAD, JUDITH A (Current)
T1N R4E 28, 29	Claim	63	4338			Statutory Claim	Active	1895-06-01		INDIAN CREEK	RECREATION STORAGE, WILDLIFE STORAGE	STATE OF IDAHO (Current)
T1N R4E 28, 29	Claim	63	4679			Statutory Claim	Active	1895-01-01		INDIAN CREEK	FISH PROPAGATION	STATE OF IDAHO (Current)
T1N R4E 29, 32NE	Claim	63	7571			License	Active	3/21/1972	0.09	GROUND WATER	COMMERCIAL	FRENCH, ROBERT L (Current)
T1N R4E 27SW, 28	Claim	63	8051			License	Active	10/17/1974	2.44	GROUND WATER	IRRIGATION	GABLE A RANCH (Current)
T1N R4E 27SW	Claim	63	21088			Beneficial Use	Active	1/1/1949	0.14	GROUND WATER	DOMESTIC, IRRIGATION, STOCKWATER	AGENBROAD, CARL S (Current); AGENBROAD, JUDITH A (Current)
Permits												
T1N R4E 27SW, 34NW	Permit	63	12494				Active	7/8/2004	0.16	GROUND WATER	DOMESTIC	DANSKIN PROPERTIES LTD (Current)
SRBA Recommendations												
T1N R4E 29, 32NE	Recommendation	63	7571		1	License	Active	3/21/1972	0.09	GROUND WATER	COMMERCIAL	FRENCH, ROBERT L (Current)
T1N R4E 27SW, 28	Recommendation	63	8051		1	License	Active	10/17/1974	2.44	GROUND WATER	IRRIGATION	GABLE A RANCH (Current)

Location	Type	Basin	Sequence	Suffix	Version	Basis	Status	Priority Date	Div. Rate (cfs)	Source List	Water Uses	Owner List
Statutory Claims, Decrees, and/or Licences												
T1N R4E 21SE	Statutory Claim, Decree and License	61	2328			License	Active	9/22/1958		UNNAMED STREAM	STOCKWATER STORAGE	UNITED STATES OF AMERICA ACTING THROUGH (Current)
T1N R4E 34NWNE	Statutory Claim, Decree and License	61	10110			Decreed	Active	4/29/1980	0.06	GROUND WATER	DOMESTIC, STOCKWATER	MILLER, PAMELA K (Current); MILLER, RONALD L (Current)
T1N R4E 34NW	Statutory Claim, Decree and License	61	10432			Decreed	Active	5/20/1977	0.04	GROUND WATER	DOMESTIC	ARNOLD, MAMIE L (Current)
T1N R4E 34NW	Statutory Claim, Decree and License	61	10433			Decreed	Active	10/10/1985	0.04	GROUND WATER	DOMESTIC	WALKER, LELA S (Current)
T1N R4E 34NWNE	Statutory Claim, Decree and License	61	10525			Decreed	Active	4/29/1980	0.06	GROUND WATER	DOMESTIC, STOCKWATER	BRUBAKER, CARL (Current); BRUBAKER, NANNETTE W (Current)
T1S R4E 4NW	Statutory Claim, Decree and License	61	11109			Decreed	Active	6/28/1934		UNNAMED STREAM	STOCKWATER FROM STORAGE, STOCKWATER STORAGE	UNITED STATES OF AMERICA ACTING THROUGH (Current)
T1N R4E 33	Statutory Claim, Decree and License	61	11110			Decreed	Active	6/28/1934		UNNAMED STREAM	STOCKWATER FROM STORAGE, STOCKWATER STORAGE	UNITED STATES OF AMERICA ACTING THROUGH (Current)
T1N R4E 28	Statutory Claim, Decree and License	63	3070			License	Active	12/13/1955	0.02	GROUND WATER	DOMESTIC, IRRIGATION, STOCKWATER	HANSEN, JESS T (Current)
T1N R4E 21SE	Statutory Claim, Decree and License	63	3662			Decreed	Active	5/5/1953		SHEEP CREEK	STOCKWATER FROM STORAGE, STOCKWATER STORAGE	UNITED STATES OF AMERICA ACTING THROUGH (Current)
T1N R4E 28, 29	Statutory Claim, Decree and License	63	4338			Statutory Claim	Active	1895-06-01	100	INDIAN CREEK	DIVERSION TO STORAGE, RECREATION STORAGE, WILDLIFE STORAGE	STATE OF IDAHO (Current)
T1N R4E 28, 29	Statutory Claim, Decree and License	63	4679			Statutory Claim	Active	1895-01-01		INDIAN CREEK	RECREATION STORAGE, WILDLIFE STORAGE	STATE OF IDAHO (Current)

Location	Type	Basin	Sequence	Suffix	Version	Basis	Status	Priority Date	Div. Rate (cfs)	Source List	Water Uses	Owner List
T1N R4E 32NE	Statutory Claim, Decree and License	63	7571			License	Active Transferred	3/21/1972	0.09	GROUND WATER	COMMERCIAL	PECON SHOPPE OF BOISE (Current); STUCKEYS (Current)
T1N R4E 27SW, 28	Statutory Claim, Decree and License	63	8051			License	Active	10/17/1974	2.44	GROUND WATER	IRRIGATION	GABLE A RANCH (Current)
T1N R4E 29, 32NE	Statutory Claim, Decree and License	63	10372			License	Active	7/28/1986	0.2	GROUND WATER	COMMERCIAL, DOMESTIC, FIRE PROTECTION, IRRIGATION	FRENCH, ROBERT L (Current)
T1N R4E 27SW	Statutory Claim, Decree and License	63	11382			License	Active	5/15/1990	0.22	GROUND WATER	DOMESTIC, IRRIGATION	DANSKIN PROPERTIES ASSN INC (Current)
T1N R4E 29	Statutory Claim, Decree and License	63	29541			Decreed	Active	6/28/1934	0.02	INDIAN CREEK	STOCKWATER	UNITED STATES OF AMERICA ACTING THROUGH (Current)
T1N R4E 20SE, 21SW, 29	Statutory Claim, Decree and License	63	29542			Decreed	Active	6/28/1934	0.02	UNNAMED STREAM	STOCKWATER	UNITED STATES OF AMERICA ACTING THROUGH (Current)
T1N R4E 29	Statutory Claim, Decree and License	63	29543			Decreed	Active	6/28/1934	0.02	UNNAMED STREAMS	STOCKWATER	UNITED STATES OF AMERICA ACTING THROUGH (Current)

ATTACHMENT B
Driller's Logs for Wells Completed in the Mayfield Springs Area after 2007

McCallum Well 1

Pg #1

843964

Form 238-7 6/02 (63)

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Office Use Only
Well ID No. 414141
Inspected by
Twp ____ Rge ____ Sec ____
____ 1/4 ____ 1/4 ____ 1/4
Lat: : : Long: : :

1. WELL TAG NO. D 0047651
DRILLING PERMIT NO. 897529-843964
Water Right or Injection Well No. 63-12447

2. OWNER:
Name ARK PROPERTIES LLC
Address 11204 N BAR 21 DR
City GLENNS FERRY State ID Zip 83623

3. LOCATION OF WELL by legal description:
You must provide address or Lot, Blk, Sub. or Directions to well.
Twp. 1 North [X] or South [ ]
Rge. 4 East [X] or West [ ]
Sec. 24, ____ 1/4 (10 acres) SW 1/4 (40 acres) SW 1/4 (160 acres)
Gov't Lot ____ County ELMORE
Lat: 43 : 24 : 6 Long: 115 : 56 : 6
Address of Well Site ½ MI EAST, ¼ MI SOUTH OF INDIAN CREEK RD SLATOR CREEK RD INTERSECTION City MAYFIELD
(Give at least name of road + Distance to Road or Landmark)
Lt. ____ Blk. ____ Sub. Name N/A

4. USE:
[ ] Domestic [ ] Municipal [ ] Monitor [X] Irrigation
[ ] Thermal [ ] Injection [ ] Other

5. TYPE OF WORK check all that apply (Replacement etc.)
[X] New Well [ ] Modify [ ] Abandonment [ ] Other

6. DRILL METHOD:
[ ] Air Rotary [ ] Cable [ ] Mud Rotary [X] Other REVERSE

7. SEALING PROCEDURES

Seal Material	From	To	Weight / Volume	Seal Placement Method
1" BENTONITE	0	394	37,000	DRY POUR
1" BENTONITE	630	650	5,000	DRY POUR

Was drive shoe used? [ ] Y [X] N Shoe Depth(s)
Was drive shoe seal tested? [ ] Y [X] N How?

8. CASING/LINER: 16" X 10" REDUCER @ 431'

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
16	+2	431	.375	STEEL	[X]	[ ]	[X]	[ ]
10	462	468	.365	STEEL	[X]	[ ]	[X]	[ ]
10	478	542	.365	STEEL	[X]	[ ]	[X]	[ ]

Length of Headpipe ____ Length of Tailpipe 5'
Packer [ ] Y [X] N Type

9. PERFORATIONS/SCREENS PACKER TYPE
Perforation Method
Screen Type & Method of Installation JOHNSON WIRE WRAP

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
432	462	.030		10	S.S.	[X]	[ ]
468	478	.030		10	S.S.	[X]	[ ]
542	552	.030		10	S.S.	[X]	[ ]

10. FILTER PACK

Filter Material	From	To	Weight / Volume	Placement Method
#6-9 SAND	394	574	27,000	DRY POUR
#8-12 SAND	574	640	12,000	" "

11. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
229 ft. below ground Artesian pressure ____ lb.
Depth flow encountered ____ ft. Describe access port or control devices:
1½" PIPE ON SIDE

12. WELL TESTS:
[X] Pump [ ] Bailer [ ] Air [ ] Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time
1700 gpm	142	371	8 hrs

Water Temp. ____ Bottom hole temp. ____
Water Quality test or comments:
Depth first Water Encounter ____

13. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Water Y	Water N
24	0	3	TOP SOIL		
	3	5	CLECAE		
	5	45	COARSE SAND		
	45	168	DECOMPOSED GRANITE w/sm CLAY LAYERS		
	168	212	FINE - COARSE SAND		
	212	221	BRN CLAY		
	221	223	COARSE SAND		
	223	245	BRN CLAY		
	245	265	FINE-MED SAND		
	265	273	GRANITE		
	273	335	BRN CLAY w/SAND LAYERS		
	335	343	DECOMPOSED GRANITE		
	343	404	CLAY w/SM DECOMPOSE GRANITE LAYER		
	404	410	FINE SAND		
	410	419	BRN CLAY		
	419	440	WHITE CLAY w/COARSE SAND LAYER		
19	440	483	COARSE SAND w/sm CLAY LAYERS		
	483	513	SAND w/SOME CLAY		
	513	541	BRN CLAY, SOME BLUE CLAY		
	541	622	FINE-COARSE SAND w/SM YELLOW CLAY LAYER		
	622	636	CLAY w/SOME FINE SAND		
	636	641	FINE BLUE SAND		
	641	657	CLAY w/sm SAND LAYER		
	657	674	FINE WHITE SAND SOME CLAY		
	674	690	CLAY w/ SAND STONE LAYER		

RECEIVED
FEB 13 2007
WATER RESOURCES
WESTERN REGION

Completed Depth 622 (Measurable)
Date: Started 12-6-06 Completed 1-23-07

14. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Company Name RIVERSIDE INC Firm No. 333
Principal Driller [signature] Date 2-8-07
and
Driller or Operator II [signature] Date 2-8-07
Operator I [signature] Date 2-8-07
Principal Driller and Rig Operator *Required.*
Operator I must have signature of Driller/Operator II.

FORWARD WHITE COPY TO WATER RESOURCES

Pg #2

Form 238-7
6/02

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Office Use Only
Well ID No.
Inspected by
Twp ____ Rge ____ Sec ____
____ 1/4 ____ 1/4 ____ 1/4
Lat: : : Long: : :

1. WELL TAG NO. D 0047651
DRILLING PERMIT NO. 899529-843964
Water Right or Injection Well No. 63-12447

2. OWNER:
Name ARK PROPERTIES LLC
Address 11204 N BAR 21 DR
City GLENNS FERRY State ID Zip 83623

3. LOCATION OF WELL by legal description:
You must provide address or Lot, Blk, Sub. or Directions to well.
Twp. _____ North ☐ or South ☐
Rge. _____ East ☐ or West ☐
Sec. _____, ____ 1/4 (10 acres) ____ 1/4 (40 acres) ____ 1/4 (160 acres)
Gov't Lot _____ County _____
Lat: : : **Long:** : :
Address of Well Site _____
_____ City _____
(Give at least name of road + Distance to Road or Landmark)
Lt. _____ Blk. _____ Sub. Name _____

4. USE:
☐ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other _____

5. TYPE OF WORK check all that apply (Replacement etc.)
☐ New Well ☐ Modify ☐ Abandonment ☐ Other _____

6. DRILL METHOD:
☐ Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other _____

7. SEALING PROCEDURES

Seal Material	From	To	Weight / Volume	Seal Placement Method

Was drive shoe used? ☐Y ☐N Shoe Depth(s) _____
Was drive shoe seal tested? ☐Y ☐N How? _____

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
10	552	562	.365	STEEL	X	☐	X	☐
10	572	577	.365	STEEL	X	☐	X	☐
10	602	612	.365	STEEL	X	☐	X	☐

Length of Headpipe _____ Length of Tailpipe 5'
Packer ☐Y ☐N Type _____

9. PERFORATIONS/SCREENS PACKER TYPE
Perforation Method _____
Screen Type & Method of Installation JOHNSON WIREWRAP

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
562	572	.030		10	S.S.	X	☐
577	602	.030		10	S.S.	X	☐
612	622	.030		10	S.S.	X	☐

10. FILTER PACK

Filter Material	From	To	Weight / Volume	Placement Method

11. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
____ft. below ground Artesian pressure ____lb.
Depth flow encountered ____ft. Describe access port or control devices: _____
_____

12. WELL TESTS:
☐ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time

Water Temp. _____ Bottom hole temp. _____
Water Quality test or comments: _____
_____ Depth first Water Encounter _____

13. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Water Y	Water N

Completed Depth _____ (Measurable)
Date: Started _____ Completed _____

14. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Company Name _____ Firm No. _____
Principal Driller _____ Date _____
and
Driller or Operator II _____ Date _____
Operator I _____ Date _____
Principal Driller and Rig Operator *Required.*
Operator I must have signature of Driller/Operator II.

FORWARD WHITE COPY TO WATER RESOURCES

McCallum Well 2

Page 1 of 2

Form 238-7
6/02

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Office Use Only	
Well ID No.	420886
Inspected by	
Twp ____ Rge ____ Sec ____	
____ 1/4 ____ 1/4 ____ 1/4	
Lat: : : Long: : :	

1. WELL TAG NO. D 0052697
DRILLING PERMIT NO. 904076-851081
Water Right or Injection Well No. 63-12447

2. OWNER:
Name ARK PROPERTIES LLC
Address 11204 N BAR 21 DR
City GLENNS FERRY State ID Zip 83623

3. LOCATION OF WELL by legal description:
You must provide address or Lot, Blk, Sub. or Directions to well.
Twp. 1 North ☒ or South ☐
Rge. 4 East ☒ or West ☐
Sec. 24, NW 1/4 (10 acres) SW 1/4 (40 acres) NE 1/4 (160 acres)
Gov't Lot ____ County ELMORE
Lat: 43 : 24 : 654 **Long:** 115 : 55 : 486
Address of Well Site 1 MILE NE OF INDIAN CREEK Rd SLATOR CREEK Rd INTERSECTION City MAYFIELD
(Give at least name of road + Distance to Road or Landmark)
Lt. ____ Blk. ____ Sub. Name ____

4. USE:
☐ Domestic ☐ Municipal ☐ Monitor ☒ Irrigation
☐ Thermal ☐ Injection ☐ Other ____

5. TYPE OF WORK check all that apply (Replacement etc.)
☒ New Well ☐ Modify ☐ Abandonment ☐ Other ____

6. DRILL METHOD:
☐ Air Rotary ☐ Cable ☐ Mud Rotary ☒ Other REVERSE

7. SEALING PROCEDURES

Seal Material	From	To	Weight / Volume	Seal Placement Method
BENTONITE	0	560	57,500	DRY POUR

Was drive shoe used? ☐ Y ☒ N Shoe Depth(s) ____
Was drive shoe seal tested? ☐ Y ☐ N How? ____

8. CASING/LINER: 16"x10" REDUCER @ 602

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
16	+2	602	.375	STEEL	☒	☐	☒	☐
10	612	638	.365	STEEL	☒	☐	☒	☐
10	678	690	.365	STEEL	☒	☐	☒	☐

Length of Headpipe N/A Length of Tailpipe 3'
Packer ☐ Y ☒ N Type ____

9. PERFORATIONS/SCREENS PACKER TYPE
Perforation Method ____
Screen Type & Method of Installation JOHNSON WIRE WRAP

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
602	612	.030		10"	S.S.	☒	☐
638	678	.030		10	S.S	☒	☐
690	750	.040		10	S.S	☒	☐

10. FILTER PACK

Filter Material	From	To	Weight / Volume	Placement Method
#8-12 SAND	560	685	12,000	DRY POUR
#6-9 SAND	685	809	15,000	DRY POUR

11. STATIC WATER LEVEL OR ARTESIAN PRESSURE: 270 ft. below ground Artesian pressure ____ lb.
Depth flow encountered ____ ft. Describe access port or control devices: 1½" PIPE ON SIDE

RECEIVED
JUN 23 2008
WATER RESOURCES
WESTERN REGION

12. WELL TESTS:
☒ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time
2000	139	399	6 hrs

Water Temp. 75 Bottom hole temp. 75
Water Quality test or comments: ____
Depth first Water Encounter ____

13. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Water Y	Water N
24	0	4	TOP SOIL		X
	4	12	CLEAYEY		X
	12	33	FINE - COARSE SAND		X
	33	34	BRN CLAY		X
	34	98	FINE - COARSE SAND W/SM BRN CLAY LAYERS		X
	98	115	BRN CLAY		X
	115	126	FINE - MED SAND		X
	126	156	BRN CLAY W/SM SAND STREAK		X
	156	209	FINE - MED SAND W/SM BRN CLAY LAYERS		X
	209	217	SANDY LT TAN CLAY		X
	217	222	COARSE SAND W/PEA GRAVEL		X
	222	237	FINE SAND		X
	237	267	BLUE, BROWN CLAY		X
10"	267	274	SANDY TAN CLAY	X	
6	274	294	FINE - COARSE SAND, GRAVEL	X	
	294	305	BRN CLAY		X
TO	305	327	FINE BRN SAND	X	
	327	352	BRN, TAN CLAY		X
	352	363	COARSE SAND W/PEA GRAVEL	X	
	363	365	BRN CLAY		X
	365	445	FINE - COARSE SAND W/SM CLAY LAYERS	X	
	445	481	BRN CLAY W/SAND MIX		X
	481	484	FINE - COARSE SAND	X	
	484	533	FINE - MED SAND SOME CLAY	X	
	533	538	BRN CLAY		X
	538	545	FINE - MED SAND W/ CLAY MIX	X	
	545	550	BRN CLAY		X
	550	586	GREY CLAY W/ FINE - MED SAND LAYER		X
	586	618	FINE - MED SAND W/ CLAY MIX	X	
18"	618	624	BRN CLAY		X
	624	626	SANDY BLUE CLAY	X	
	626	756	FINE - MED SAND W/SM CLAY LAYERS	X	
	756	769	SANDY BRN CLAY		X

Completed Depth 795' (Measurable)
Date: Started 4-24-08 Completed 6-12-08

14. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Company Name RIVERSIDE INC Firm No. 333
Principal Driller ____ Date 6-16-08
and
Driller or Operator II ____ Date 6-16-08
Operator I ____ Date ____

Principal Driller and Rig Operator *Required.*
Operator I must have signature of Driller/Operator II.

FORWARD WHITE COPY TO WATER RESOURCES

Form 238-7
6/02

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Office Use Only
Well ID No. 420886
Inspected by
Twp ____ Rge ____ Sec ____
____ 1/4 ____ 1/4 ____ 1/4
Lat: : : Long: : :

1. WELL TAG NO. D 0052697
DRILLING PERMIT NO. 904076-851081
Water Right or Injection Well No. 63-12447

2. OWNER:
Name ARK PROPERTIES LLC.
Address 11204 N BAR 21 DR
City GLENNS FERRY State ID Zip 83623

3. LOCATION OF WELL by legal description:
You must provide address or Lot, Blk, Sub. or Directions to well.
Twp. 1 North ☒ or South ☐
Rge. 4 East ☒ or West ☐
Sec. 24, ____ 1/4 (10 acres) SW 1/4 (40 acres) NE 1/4 (160 acres)
Gov't Lot ____ County ELMORE
Lat: : : Long: : :
Address of Well Site 1 MILE NE of INDIAN CREEK RD, SLATOR CREEK RD INTERSECTION City MAYFIELD
(Give at least name of road + Distance to Road or Landmark)
Lt. ____ Blk. ____ Sub. Name ____

4. USE:
☐ Domestic ☐ Municipal ☐ Monitor ☒ Irrigation
☐ Thermal ☐ Injection ☐ Other ____

5. TYPE OF WORK check all that apply (Replacement etc.)
☒ New Well ☐ Modify ☐ Abandonment ☐ Other ____

6. DRILL METHOD:
☐ Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other ____

7. SEALING PROCEDURES

Seal Material	From	To	Weight / Volume	Seal Placement Method

Was drive shoe used? ☐ Y ☐ N Shoe Depth(s) ____
Was drive shoe seal tested? ☐ Y ☐ N How? ____

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
10	750	762	.365	STEEL	☒	☐	☒	☐
10	772	782	.365	STEEL	☒	☐	☒	☐
10	792	795	.365	STEEL	☒	☐	☒	☐

Length of Headpipe ____ Length of Tailpipe ____
Packer ☐ Y ☐ N Type ____

9. PERFORATIONS/SCREENS PACKER TYPE
Perforation Method ____
Screen Type & Method of Installation ____

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
762	772	.040		10	S.S.	☒	☐
782	792	.040		10	S.S.	☒	☐
						☐	☐

10. FILTER PACK

Filter Material	From	To	Weight / Volume	Placement Method

11. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
____ ft. below ground Artesian pressure ____ lb.
Depth flow encountered ____ ft. Describe access port or control devices: ____

12. WELL TESTS:
☐ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time

Water Temp. ____ Bottom hole temp. ____
Water Quality test or comments: ____
Depth first Water Encounter ____

13. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Water Y	Water N
18	769	775	COARSE-MED SAND W/PEA GRAVEL	X	
	775	787	GREY CLAY		X
	787	797	MED-COARSE SAND W/PEA GRAVEL	X	
	797	809	BLUE CLAY		X

Completed Depth ____ (Measurable)
Date: Started ____ Completed ____

14. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Company Name ____ Firm No. ____
Principal Driller ____ Date ____
and
Driller or Operator II ____ Date ____
Operator I ____ Date ____
Principal Driller and Rig Operator *Required*.
Operator I must have signature of Driller/Operator II.

FORWARD WHITE COPY TO WATER RESOURCES

Form 238-7
6/07

Elk Creek Canyon Test Well

860070

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. WELL TAG NO. D 0059098
Drilling Permit No. 911425-860070
Water right or injection well #

2. OWNER: Nevid LLC
Name c/o John Erickson
Address 1349 Galleria Drive Suite 200
City Henderson State NV Zip 89014

3.WELL LOCATION:
Twp. 1 North ☐ or South ☒ Rge. 4 East ☒ or West ☐
Sec. 11 10 acres 1/4 N/W 40 acres 1/4 S/E 160 acres 1/4
Gov't Lot County Elmore
Lat. 43 ° 20 . 957 (Deg. and Decimal minutes)
Long. 115 ° 56 . 462 (Deg. and Decimal minutes)
Address of Well Site Desert Wind Rd & Simco Rd
(Give at least name of road + Distance to Road or Landmark) City Mountain Home
Lot. Blk. Sub. Name Elk Creek Village

4. USE:
☐ Domestic ☐ Municipal ☒ Monitor ☐ Irrigation ☐ Thermal ☐ Injection
☐ Other

5. TYPE OF WORK:
☒ New well ☐ Replacement well ☐ Modify existing well
☐ Abandonment ☐ Other

6. DRILL METHOD:
☒ Air Rotary ☒ Mud Rotary ☐ Cable ☐ Other

7. SEALING PROCEDURES:

Seal material	From (ft)	To (ft)	Quantity (lbs or ft³)	Placement method/procedure
bentonite chip	0	211	110 sk	poured
bentonite chip	0	380	65 sk	poured

8. CASING/LINER:

Diameter (nominal)	From (ft)	To (ft)	Gauge/ Schedule	Material	Casing	Liner	Threaded	Welded
8"	+1	210'	.250	steel	☒	☐	☐	☒
5"	+1	418'	SDR17	PVC	☐	☒	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Was drive shoe used? ☐ Y ☐ N Shoe Depth(s) 211'

9. PERFORATIONS/SCREENS:
Perforations ☐ Y ☐ N Method
Manufactured screen ☒ Y ☐ N Type certilock
Method of installation

From (ft)	To (ft)	Slot size	Number/ft	Diameter (nominal)	Material	Gauge or Schedule
418	538	.20		5"	PVC	SDR17

Length of Headpipe Length of Tailpipe
Packer ☐ Y ☒ N Type

10.FILTER PACK:

Filter Material	From (ft)	To (ft)	Quantity (lbs or ft³)	Placement method
8-12	380	540	3000	poured

11. FLOWING ARTESIAN:
Flowing Artesian? ☐ Y ☒ N Artesian Pressure (PSIG)
Describe control device

12. STATIC WATER LEVEL and WELL TESTS:
Depth first water encountered (ft) 354 Static water level (ft) 354'
Water temp. (°F) 66° Bottom hole temp. (°F) 79°F
Describe access port

Well test:

Drawdown (feet)	Discharge or yield (gpm)	Test duration (minutes)
	70	300
17'	60	480

Test method: Pump ☒ Bailer ☐ Air ☐ Flowing artesian ☐

Water quality test or comments:

13. LITHOLOGIC LOG and/or repairs or abandonment:

Bore Dia. (in)	From (ft)	To (ft)	Remarks, lithology or description of repairs or abandonment, water temp.	Water Y	Water N
12"	0	5	dust & clay topsoil		X
	5	18	cemented sand & gravel		X
	18	40	clay		X
	40	160	sandy clay & coarse cemented sand		X
	160	174	brown black sandy cinders		X
8"	174	208	broken lava & cinders		X
	208	230	solid lava		X
	230	248	soft sandstone		X
	248	273	cemented gravel &coarse sand		X
	273	365	cemented gravel, coarse sand & sandy clay streaks		X
	365	411	cemented sand	X	
	411	480	sand	X	
	480	505	cemented sand & silty clay		X
	505	530	sand	X	
	530	550	cemented sand & silty clay		X
6"	550	580	sand	X	
	580	602	cemented sand & silty clay		X
	602	622	sand	X	
	622	631	silty sand		X
	631	641	clay		X
	641	653	sand	X	
	653	725	streaky sand & clay	X	
	725	750	sand	X	
	750	790	clay		X
	790	795	sand	X	
	795	820	streaky	X	
	820	833	clay		X

Completed Depth (Measurable):
Date Started: Date Completed:

14. DRILLER'S CERTIFICATION:
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Company Name Co. No.
*Principal Driller See Pg 2 Date
*Driller Date
*Operator II Date
Operator I Date

*** Signature of Principal Driller and rig operator are required.**

Form 238-7
6/07

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. WELL TAG NO. D 0059098

Drilling Permit No. _____

Water right or injection well # _____

2. OWNER: Nevid LLC

Name _____

Address _____

City _____ State _____ Zip _____

3.WELL LOCATION:

Twp. _____ North ☐ or South ☐ Rge. _____ East ☐ or West ☐

Sec. _____ _____ 1/4 (10 acres) _____ 1/4 (40 acres) _____ 1/4 (160 acres)

Gov't Lot _____ County _____

Lat. _____ ° _____ (Deg. and Decimal minutes)

Long. _____ ° _____ (Deg. and Decimal minutes)

Address of Well Site _____

(Give at least name of road + Distance to Road or Landmark) City _____

Lot. _____ Blk. _____ Sub. Name _____

4. USE:

☐ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation ☐ Thermal ☐ Injection
☐ Other _____

5. TYPE OF WORK:

☐ New well ☐ Replacement well ☐ Modify existing well
☐ Abandonment ☐ Other _____

6. DRILL METHOD:

☐ Air Rotary ☐ Mud Rotary ☐ Cable ☐ Other _____

7. SEALING PROCEDURES:

Seal material	From (ft)	To (ft)	Quantity (lbs or ft³)	Placement method/procedure
Cement	550	1000	65 sacks	Pump

8. CASING/LINER:

Diameter (nominal)	From (ft)	To (ft)	Gauge/ Schedule	Material	Casing	Liner	Threaded	Welded
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Was drive shoe used? ☐ Y ☐ N Shoe Depth(s) _____

9. PERFORATIONS/SCREENS:

Perforations ☐ Y ☐ N Method _____

Manufactured screen ☐ Y ☐ N Type _____

Method of installation _____

From (ft)	To (ft)	Slot size	Number/ft	Diameter (nominal)	Material	Gauge or Schedule

Length of Headpipe _____ Length of Tailpipe _____

Packer ☐ Y ☐ N Type _____

10.FILTER PACK:

Filter Material	From (ft)	To (ft)	Quantity (lbs or ft³)	Placement method

11. FLOWING ARTESIAN:

Flowing Artesian? ☐ Y ☐ N Artesian Pressure (PSIG) _____

Describe control device _____

12. STATIC WATER LEVEL and WELL TESTS:

Depth first water encountered (ft) _____ Static water level (ft) _____

Water temp. (°F) _____ Bottom hole temp. (°F) _____

Describe access port _____

Well test:

Drawdown (feet)	Discharge or yield (gpm)	Test duration (minutes)

Test method: Pump ☐ Bailer ☐ Air ☐ Flowing artesian ☐

Water quality test or comments: _____

13. LITHOLOGIC LOG and/or repairs or abandonment:

Bore Dia. (in)	From (ft)	To (ft)	Remarks, lithology or description of repairs or abandonment, water temp.	Water Y	Water N
6"	833	841	sand	X	
	841	845	clay		X
	845	880	good sand	X	
	880	1000	very good sand	X	

All Clays are Tan no Blues or Grays

RECEIVED
NOV 03 2010
WATER RESOURCES
WESTERN REGION

SCANNED
NOV 24 2010

Completed Depth (Measurable): 538'

Date Started: 10/4/10 Date Completed: 10/23/10

14. DRILLER'S CERTIFICATION:

I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Company Name Stevens & Sons Co. No. 153

*Principal Driller _____ Date 10/23/10

*Driller _____ Date _____

*Operator II Kevin Chastain Date _____

Operator I Kevin Chastain Date 10/23/10

* **Signature of Principal Driller and rig operator are required.**