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Response to SPF's Memorandum Entitled "Response to IDWR Staff Memo Regarding the Sufficiency of Water Supply For Water Right Applications and Transfers Along the I-84 Corridor," November 15, 2012

Prepared for—

Idaho Power Company

Prepared by—

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January 31, 2013

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Mountain Home Corridor Response
January 31, 2013

This report is submitted on behalf of Idaho Power Company (IPCo) to further assist the Idaho Department of Water Resources (IDWR) and its hearing officer in reviewing the six applications for permit to appropriate ground water and two applications for transfer under consideration in the consolidated hearing (IDWR, January 24, 2012). SPF Water Engineering, LLC (SPF) submitted a memorandum (SPF, November 15, 2012) responding to the Idaho Department of Water Resources staff Memorandum (IDWR, May 31, 2012) on behalf of Mayfield Townsite LLC (Application for Permit No. 63-32499), Nevid LLC (Applications for Permit Nos. 61-12095 and 61-12096) and Mayfield Townsite/ARK Properties (Application for Permit No. 63-33344). The opinions and conclusions in SPF's memorandum relate to the three general questions used as the outline in this report.

The size, nature and arid location of the proposed projects provide added incentive to seek sound technical data and exercise appropriate technical methodology to insure that the estimate used to determine the adequacy of the water supply for the proposed projects is within the amount actually available and sustainable from the source of supply. Investors in the projects, purchasers of lots and homes, families that move into the new communities and those that presently rely upon the limited water resources in the area will be at risk if the estimate overstates the actual water supply. After the lots are sold, the houses, shops and other facilities are built and families have moved into the new community is not an acceptable time for determining that the estimate of water availability was too optimistic.

<u>QUESTION NO. 1. Should IDWR's estimate of the volume of ground water available for appropriation in the consolidated hearing study area be increased?</u>

SPF suggests a number of reasons for either increasing IDWR's estimate of the volume of ground water available for appropriation or for at least considering IDWR's estimate as conservatively low. ERO responds to SPF's suggested reasons as follows:

a. Does upwelling geothermal water add to the supply?

SPF requests that IDWR's estimate of the average rate of annual recharge to the consolidated hearing study area be increased by 550 afa to include upwelling geothermal water (Page 2, Item No. 1 and Pages 7 and 8, Items No. 16 and 17).

Response: The basis for this request is a suggestion in a recent report (Welhan, February 2012, Page 2) that elevated temperatures in some wells may be caused by mixing of geothermal water originating outside of the consolidated hearing study area. An earlier study (IDWR, September 1976) found that elevated ground-water temperatures in southern Idaho, including wells in the study and comparison areas, are attributable to the upward movement of heat without always having an associated upwelling of heated ground water from sources of deep circulation.

Welhan references the IDWR report, but concludes that water temperatures observed in shallow wells in the consolidated hearing study area are too high to exist without circulating water (Welhan, February 2012, Page 19). However, the 21-25° F range in temperature increase observed in shallow wells in the area is equal to 12-14° C rather than 38-45° C (final paragraph, Page 19, Welhan, February 2012). A 14° C temperature increase in a 600 feet deep well requires a temperature gradient of 76° C/km. This revised temperature gradient, though high, is consistent with that listed for some wells in and near the consolidated hearing study area in IDWR's earlier report (IDWR, 1976, for example see Pages 90 to 94).

If some or all of the elevated temperature is attributable to regional heat flow through conductivity and not entirely from mixing of upwelling geothermal water , the estimate of the percentage of geothermal water will be lower than Welhan suggested. Given the uncertainty regarding the volume, if any, of upwelling geothermal water, IDWR's recharge estimate is appropriately conservative in not including this factor.

b. Should the estimate of ground water supply be increased if DCMI uses are not fully consumptive?

SPF requests that IDWR's estimate of the average rate of annual recharge to the consolidated hearing study area be increased by 180 afa because not all water diverted for "DCMI" purposes is consumptively used and some of the irrigation assumed by IDWR is on land without water rights (Page 2, Item No. 2 and Page 8, Item No. 18).

Response: IDWR's estimate of water availability should not be increased in reliance upon unconsumed water returning to the aquifer. The timely return to the regional aquifer in the consolidated hearing study area of water diverted but not consumed is not assured because of layers of fine sediment and other low permeability materials overlaying the regional aquifer. Such layers impede the downward movement of water and can encourage lateral movement potentially making the water unavailable for re-diversion by wells in the consolidated hearing study area.

The documents posted by IDWR for this matter include drillers' reports for some wells constructed in and near the area proposed for development (Item 9, Other EAC Logs). Attached are additional drillers' reports downloaded from IDWR's electronic record of drillers' reports for other wells in this area that IDWR did not included in the posted information for this matter. Most of these reports show that wells in the area penetrate a significant thickness of clay and other fine-grained materials above the water-producing zone developed by the well. Typically, the post-construction static water level is reported to be significantly above the level water was first encountered in the well. This confirms that the low permeability materials above the producing zone cover a significant area. Water percolating downward from the surface would have to overcome the hydraulic pressure of the producing zone to re-enter the regional aquifer, but the drillers' reports do not identify the extensive depth of saturated materials needed. Such conditions, described in some but not all drillers' reports in the consolidated hearing study area,

indicate that hydrogeology of the consolidated hearing study area is complex and water once diverted may not have a direct path back to the aquifer. For this reason, water diverted from the regional aquifer should not be considered to be available for further diversion and use without information to accurately estimate the amount, timing and location of unconsumed water reaching the regional aquifer.

Further, IDWR's estimate should not be adjusted because some of the estimated water use occurred on land without valid water rights. Conversely, IDWR's estimate does not include water use on acres authorized to use water under valid existing rights that were not irrigated in 2011. IDWR assumed that long-term annual withdrawals of ground water can be accurately estimated from the use of water observed in the consolidated hearing study area in a single year instead of conservatively recognizing that diversion and use of ground water can occur under all valid water rights. This concept is particularly applicable to the consolidated hearing study area because rights found to be valid in the SRBA are unlikely to have been lost by abandonment or forfeiture in the relatively short time since the partial decrees were issued. In addition, holders of existing rights are motivated to use water to protect their water rights, at least in part, because of the demand created by the projects under consideration in the consolidated hearing. Accordingly, the full volume authorized by existing rights should be recognized when determining whether un-appropriated water is available for new uses.

Assuming all valid rights are fully used and that unconsumed water is not available for re-diversion from the aquifer, the volume of water available for appropriation for new uses is only 3,000 afa if the consolidated hearing study area is indeed a water source separated from the Cinder Cone Butte Critical Ground Water Area (CGWA) comparison area as implied by the separate estimates of water supplies for the two areas in IDWR's staff report (May 31, 2012). However, because information is not available to confirm that the areas are separate, the water supply is over-appropriated by 23,000 afa by existing and permitted uses (ERO, November 14, 2012, Table D).

c. Is the volume of evapotranspiration accurately estimated?

SPF expresses concern that, because the rate of evapotranspiration is the most uncertain parameter in the water budget, an overestimate of this parameter could result in a substantial underestimate of aquifer recharge (Page 2, Item No. 3). SPF does not suggest a more credible estimate for this parameter.

Response: IDWR used the best available data for estimating evapotranspiration in preparing its estimate. It is just as likely that the volume of evapotranspiration is too small, and hence the volume of aquifer recharge is too large in IDWR's estimate.

In the event that there is precipitation that exceeds evapotranspiration at times, reliable information is not available to estimate how much actually reaches the regional aquifer for use within the consolidated hearing study area. Precipitation in excess of evapotranspiration is retained in the soil profile to support vegetative growth during the

growing season when precipitation is limited. This is particularly true for the generally southwest facing slopes of the recharge area that are likely to warm earlier than either Arrowrock or Anderson Ranch weather stations and are thus better able to use the early season moisture to exhibit higher evapotranspiration than at either weather station. All precipitation in excess of that needed for on-going evapotranspiration and to fill the root zone may not accrue as recharge to the regional aquifer because significant layers of sediment, previously discussed in this report, can prevent water from reaching the regional aquifer at a location to allow diversion and use within the consolidated hearing study area.

d. Will failure to develop existing permits free up water for the pending applications?

SPF asserts that the net annual recharge is larger than IDWR's estimate if existing permits are not developed, but does not provide an estimate of the additional volume that will become available if the permits are not fully developed (Page 2, Item No. 5 and Page 9, Item No. 20).

Response: ERO identified only four active permits in the consolidated hearing study area (Table E, Page 37 and 38, ERO November 14, 2012). IDWR has now issued licenses confirming development of essentially the permitted amount for two of the permits (63-12447 Ark Properties/Mayfield Townsite and 63-12494 Danskin Properties). The remaining two permits (61-12090 Nevid and 63-32225 Intermountain Sewer) are associated with developments under consideration in the consolidated hearing. These permits, having priorities earlier in time than the pending applications for the same projects, can be expected to be fully developed before or in conjunction with developing the applications (if the applications are approved). There is no basis for concluding that the existing permits will not be fully developed to justify an increase in IDWR's estimate of net annual recharge.

e. Is recharge greater than estimated in certain parts of the non-recharge area?

SPF suggests that portions of the "non-recharge area" may have greater infiltration rates than recognized in IDWR's recharge estimate (Page 7, Item 15). SPF does not provide an estimate of the land area involved or the increase in volume of recharge water that should be considered.

Response: IDWR describes the separation between the recharge and non-recharge areas as the 3,600-foot land surface contour representing the transition between the foothills and the plateau (IDWR, May 31, 2012, Page 5) and uses this as a boundary between areas of significant recharge potential and areas of limited recharge potential. This arbitrary separation of the recharge area from the non-recharge area makes it is as likely that infiltration rates are over estimated as under estimated.

SPF observes that the beds of streams entering the non-recharge area can have high seepage rates. However, an increase in the estimate of recharge from precipitation falling directly on the non-recharge area is not justified because the portion of the area occupied by stream channels is insignificant compared to the entire non-recharge area. Percolation in stream channels in the non-recharge area of flow originating upstream in the area delineated as the recharge area is already included in the estimate of recharge for that area.

ERO reiterates its contention that the total volume of recharge in the non-recharge area should not be considered as water available for the developments under consideration in the consolidated hearing because most of the area is down gradient from the proposed development. All of the recharge is available only if the draw down resulting from ground water withdrawal for the developments is so severe as to reverse the gradient of the aquifer.

QUESTION NO. 2. Do ground water levels in the consolidated hearing study area behave differently than in the CGWA comparison area?

SPF points to ground water levels in the consolidated hearing study area that are more stable than those in the CGWA as a basis for asserting that ground water is available for the proposed projects and suggests the following as reasons why IDWR should give weight to this phenomenon to justify approval of the pending applications:

a. Are results from recent, more extensive data collection efforts adequate to show that water levels are stable?

SPF notes that the more extensive collection of hydrologic data in the area for recent years indicates "relatively stable groundwater levels" (Page 6, Items 9 and 10).

Response: An abundance of data related to recent conditions during a period of above average precipitation does not substitute for a long-term record.

b. Are ground water level decline problems only associated with a limited area, remote from the proposed development area?

SPF noted that the area of greatest ground water level declines is limited to the southern portion of the CGWA and that the affects of "approximately four decades" of pumping in the CGWA have not propagated into the portion of the consolidated hearing study area in which appropriations are sought (Pages 5 and 6, Item No. 8 and Page 11, Item No. 26).

Response: Existing ground water withdrawals in the CGWA are concentrated in the area noted by SPF, and as would be expected, ground water declines are also greater in this area. However, information and studies are available showing the spread of declines beyond the immediate area of pumping into the consolidated hearing study area. This information suggests that the rate of decline resulting from existing uses in the CGWA is

increasing and that if ground water withdrawals are increased as proposed in the applications under consideration in the consolidated hearing, the rate of decline of ground water levels and the consequent impacts to the flow of Snake River will continue to increase.

IDWR's ground water change maps (IDWR, May 31, 2012 Page 7) show that ground water declines have migrated out of the CGWA into the consolidated hearing study area. These maps show that the area exhibiting the largest decline experienced more than 90 feet of decline in the latest decade compared to about 30 feet in the previous decade. This is because, at least in part, annual ground water pump withdrawals have not been at the maximum authorized rate every year during the four decades since development began (ERO, November 14, 2012 Pages 8 and 16). Figure 9 on Page 19 of IDWR's staff memorandum (IDWR, May 31, 2012) shows that the downward trend in ground water levels in the CGWA continues unabated decades after further development was halted.

The aquifer analysis done by ERO (ERO, November 14, 2012 Pages 18 and 19) shows ground water declines of more than 20 feet in a hypothetical observation well located north of I-84 on the boundary between IDWR's consolidated hearing study area and CGWA comparison area resulting from 20 years of withdrawals under existing rights. Adding the affects of using ground water during the same 20-year period as proposed in the applications under consideration in the consolidated hearing more than doubles the ground water level decline at this location.

The boundaries of the CGWA and the Mountain Home Ground Water Management area were drawn based upon information available to IDWR in the early 1980s. The continuing ground water declines and the spread of the declines beyond the boundaries justify a review to expand the boundaries.

c. Can ground water declines to the extent now occurring in the CGWA be expected to occur in the area proposed for development?

SPF takes exception to IDWR's conclusion that ground water declines similar to those observed in the CGWA will occur in the consolidated hearing study area if the applications are approved. SPF notes that estimated withdrawals in the CGWA are about triple IDWR's estimate of recharge in the CGWA comparison area while the present withdrawals of ground water in the consolidated hearing study area are only a fraction of the estimated recharge to the consolidated hearing study area (Page 3, Item No. 8 and Page 12, Item No. 29). SPF calculated that the annual volume that will be depleted from the aquifer if the proposed projects are all fully developed is an additional 14,200 afa. This amount is double the average recharge estimate for the consolidated hearing study area aquifers (Pages 2 and 3, Item No. 6 and Pages 10 and 11, Item Nos. 23, 24 and 25).

Response: SPF's estimate of water required for the proposed uses is lower than the volumes authorized under the vested rights being transferred and its own volume estimates in reports filed on behalf of the applicants concerning the adequacy of the water

supply for the requested projects. Table A, Page 31, of ERO's first report submitted in this matter indicates that a total of about 19,000 afa is sought by the applications pending in the consolidated hearing (ERO, November 14, 2012). In any case, IDWR is not authorized to issue permits for a quantity of water exceeding the average rate of future natural recharge whether exceeded by "only" twice the amount as asserted by SPF or the 10-fold amount found by IDWR (§42-237ag, Idaho Code).

d. Do IDWR's water level decline maps accurately define the extent of ground water declines in the consolidated hearing study area from pumping in the CGWA?

SPF suggested that the ground water declines "extending west and southwest (i.e., outside) of the CGWA in the consolidated cases study area" are "software interpolations unsupported by actual ground water-level data" (Page 5, Item No. 4). SPF also questioned whether the observed ground water level declines in the southwestern portion of the CGWA are associated with all of the aquifer zones encountered within the open interval of the wells or with only individual aquifer zones (Page 5, Item No. 5).

Response: Relative to IDWR's estimate of ground water declines in the area west and southwest of the CGWA, ground water level data are not available from this area to support or refute the results of IDWR's water level analysis. The program used by IDWR to estimate the location of the contour lines is supportable unless ground water level decline data or technical information is available to show that faults or changes in aquifer properties skew the results.

SPF does not elaborate on how the open aquifer interval issue has significance relative to ground water levels and the ground water supply available in the area. The well SPF references as having an open interval of over 1000 feet is apparently misidentified. Without information to document that some of the aquifer zones encountered have separate water sources, this matter will not alter IDWR's finding that water supplies in the CGWA comparison area are over appropriated by existing water rights.

e. Are ground water level changes in the consolidated hearing study area caused by regional or local conditions?

SPF notes that water levels have risen about 10 feet since 1993 in well 02S4E-09DDD2 (Page 5, Item No. 7). SPF further notes "It is unclear whether this rise reflects regional or local conditions."
Response: IDWR's hydrographs for other wells in the CGWA nearest to well 02S4E-09DDD2 exhibit declines in water level throughout the period of record indicating that the anomalous increase noted for well 02S4E-09DDD2 is related to "local" conditions such as pumping of a nearby well (note the greater yearly fluctuation in water level observed in IDWR's hydrograph for this well since the early 1980s).

QUESTION NO. 3. How will development and use of ground water as proposed in the applications affect flows in Snake River?

SPF found that the depletion of flows to the Snake River will not exceed 9.8 cfs (i.e. IDWR's estimate of average annual natural recharge to the consolidated hearing study area although SPF argues for a higher estimate), that this depletion is insignificant in comparison to flows in this reach of Snake River and will not be realized for decades in the future (Page 3, Item No. 7 and Page 12, Item No. 28).

Response: SPF's estimate understates the likely amount of the depletion of Snake River flows. More importantly, comparing the amount of this depletion in flow to the normal flow in the reach or even to the established minimum flows has little if any relevance to IDWR's responsibility to prevent injury to senior priority water rights, including minimum stream flows, and to reallocate trust water. Said another way, an actual depletion of any amount, even if not measurable, reduces water availability to senior priority water rights whenever flows are not adequate to satisfy all rights calling for water. The following factors should be considered when evaluating whether and under what conditions further depletions to Snake River flows can be allowed:

a. A year-round reduction in flow of 9.8 cfs (the reduction will likely be higher as discussed below) resulting from development of the projects as proposed in the pending applications is a significant share of the 600 cfs of trust water and of the 150 cfs increment of trust water reserved for DCMI purposes. When the Swan Falls Agreement was signed in 1984, these flow rates were expected to be available year-round to support future development in southern Idaho. Decisions on the pending applications must incorporate the criteria set out in Idaho law for appropriating water and for reallocating trust water.

b. The affects of pumping will reach outside of the consolidated hearing study area to tap ground water supplies not included in the estimate (ERO November 14, 2012, Page 19) thereby ultimately further reducing inflow to Snake River. If the projects as applied for are approved and developed from ground water, SPF's estimated depletion of 14,200 afa will ultimately reduce the average rate of flow in Snake River by 19.6 cfs (SPF, November 15, 2012, Page 11, Item No. 25).

c. Flow in the Snake River could be drawn into the aquifer if pumping levels fall below the level of the river. A substantial lowering of ground water levels will be required to induce flow from Snake River into the regional aquifer, but a municipality pressed for adequate water supplies may find that chasing ground water even to these levels is the most feasible way of obtaining water to sustain the community.

d. Larger diversion rates could be sought from Snake River as an alternate source to save the communities created as a result of approval of all or some of the pending applications if ground water supplies are not adequate to complete or sustain the projects. The diversion rate sought from Snake River would likely approximate the

diversion rates applied for in the applications (including those for irrigation) totaling nearly 85 cfs (ERO November 14, 2012, Table A). Other projects (such as those evidenced by withdrawn, rejected and voided applications and lapsed permits, most of which are associated with the individuals and entities that are applicants for the pending applications in the consolidated hearing) can be expected to join in a project to bring water into the area using a Snake River diversion. Potential projects already identified by inactive filings total another 57 cfs (ERO November 14, 2012 Table B) and additional projects could be identified if a pipeline from Snake River is seriously pursued.

Applications filed subsequent to those included in the consolidated hearing are another indication of continuing interest in diverting water for use in the consolidated study area. IDWR's electronic record lists two such applications: Application for Permit No. 61-12271 seeking 1.25 cfs for domestic and fire protection (voided October 1, 2012) and Application for Permit No. 61-12275 seeking 6 cfs to irrigate 320 acres.

e. IDWR is obligated to fully protect the portion of IPCo's water rights not subordinated in the Swan Falls Agreement and the matching minimum stream flow rights held by the IWRB. At this time, nearly three decades after the Agreement, it is beginning to be realized that the minimum stream flow at Murphy Gage may constrain water diversions even for presently existing uses. Thus, the postulated increment of 600 cfs of "firm" trust water estimated at the time of the Agreement may never have been available, may have been reduced by changed conditions, such as droughts and conservation practices, in the Snake River watershed that have reduced base flows in the reach, and/or has been substantially depleted by the additional diversion and use of water developed since the Agreement (in part through permits issued for use of trust water).

   ERO's analysis of Snake River flow (ERO November 14, 2012, Pages 22 to 26) shows that the average daily winter flow of 5600 cfs at Murphy Gage required by the agreement will not be met by 2025 if the rate of decline noted since 1981 continues. Similarly, if the rate of decline continues, the 3900 cfs summertime flow at Murphy Gage required by the agreement will not be met by average daily flow during low flow periods of the year by 2025 or sooner. The affect on water availability represented by the continuing decline in base flows must be considered as IDWR evaluates applications for new consumptive uses that will have the effect of further reducing these flows during the upcoming decades.

f. While routine violations of the minimum stream flows at Murphy Gaging Station are in the near future, short-term violations during critical flow periods are already a concern. The preliminary order issued creating Water District No. 2 in the Milner to Murphy reach of Snake River found that "Snake River flows measured at Murphy Gaging Station have diminished over time and, in recent years, have approached the minimums established as part of the Swan Falls Agreement" (IDWR, May 1, 2012,

Page 1, Finding 2). Responding to exceptions to the preliminary order, IDWR determined that although a water distribution crisis has not yet occurred in the Milner to Murphy reach of Snake River, the "potential for significant water administration is real" (IDWR, July 10, 2012). New consumptive uses depleting flows in this reach, including the projects under consideration in the consolidated hearing, will hasten administration by priority in Water District No. 2 causing curtailment of diversions under existing senior priority water rights that otherwise would have had water available.

g. Permits and licenses issued by IDWR to use trust water are subject to a term condition such as: "This right is for the use of trust water and is subject to review 20 years after issuance of the permit to determine availability of water and to re-evaluate the public interest." Some permits and the license subsequently issued have reached or are approaching the time for such review. IDWR has notified holders of such rights that reviews will be initiated.

   A list prepared by IDWR dated March 28, 2011 identifies 680 permits and licenses that have been issued with a term condition (IDWR Staff Memorandum, March 28, 2011 accessed in IDWR's electronic file for Permit No. 35-8359). The total diversion rate authorized under these permit and licenses is more than 1100 cfs. Of these, 486 have an irrigation component, totaling more than 800 cfs. About 90 percent of these filings have priority dates earlier than July 28, 2006, the earliest date of filing for the applications in the consolidated hearing. The continued availability of water will be a vital consideration as IDWR conducts the term review of these rights. Under the appropriation doctrine during times of scarcity, trust water flows are available for use by senior priority rights, including those subject to term review, in preference to junior priority rights.

   In addition to the permits and licenses already issued for trust water, IDWR's water right records list over 850 pending applications seeking, in total, nearly 2500 cfs of trust water (IDWR electronic data base query). About 90 percent of these filings were made prior to July 28, 2006, the earliest date of filing for the applications in the consolidated hearing. To the extent that these filings and the pending applications in the consolidated hearing seek trust water and/or water sources interconnected with trust water, the additional water depletion if any or all of these earlier applications are ultimately approved must be considered in determining water availability for the applications pending in the consolidated hearing.

LIST OF REFERENCES

ERO, November 14, 2012. Water Supply Evaluation for Proposed Projects Along the I-84 Corridor. David B. Shaw and Norman C. Young, ERO Resources Corp.

IDWR, September 1976. Geothermal Investigations in Idaho, Part 8, Heat Flow in the Snake River Plain Region, Southern Idaho. Charles Brott, David D. Blackwell (Southern Methodist University) and John C. Mitchell, Idaho Department of Water Resources.

IDWR, March 28, 2011. Memorandum in Response to Request for Staff Memorandum (Permit No. 35-8359). Shelley W. Keen, Idaho Department of Water Resources.

IDWR, January 24, 2012. Order Creating Contested Case and Consolidating Protested and Unprotested Applications. Gary Spackman, Interim Director, Idaho Department of Water Resources.

IDWR, May 1, 2012. Preliminary Order in the Matter of the Creation of Water District No. 2, Snake River from Milner Dam to the Murphy Gage Below Swan Falls Dam. Jeff Peppersack, Hearing Officer, Idaho Department of Water Resources.

IDWR, May 31, 2012. Sufficiency of Water Supply for Water Right Applications and Transfers along the I-84 Corridor. Craig Tesch, Hydrology Section, State Office, Idaho Department of Water Resources.

IDWR, July 10, 2012. Final Order in the Matter of the Creation of Water District No. 2, Snake River from Milner Dam to the Murphy Gage Below Swan Falls Dam. Gary Spackman, Interim Director, Idaho Department of Water Resources.

SPF, November 15, 2012. Response to IDWR Staff Memo regarding the sufficiency of water supply for water right applications and transfers along the I-84 corridor. Christian R. Petrich, Ph.D., P.E., P.G., SPF Water Engineering LLC.

Welhan, February 2012. Preliminary Hydrologic Analysis of the Mayfield Area, Ada and Elmore Counties, Idaho. John A. Welhan, Idaho Geological Survey.

Form 238-7
11/97

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. WELL TAG NO. D 0019724
DRILLING PERMIT NO. ____-____-____-____-____
Other IDWR No. _____

2. OWNER:
Name Kenneth W. Lange
Address 15888 E. Monroe Ave. —HC34
City Boise State ID Zip 83716

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

Twp. 1 S. North or South
Rge. 4 E. East or West
Sec. 29 SW 1/4 NW 1/4 SE 1/4
Gov't Lot ____ County Elmore
Lat: : : Long: : :

Address of Well Site 15898 E. Monroe Ave—1 mile SE of Orchard Town Site (NE Side of RR tracks) City Orchard
(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 [X] Cable [ ] Mud Rotary [ ] Other _____

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
Bentonite &	4	168.6	550 lb	Open hole maintained
Native clays	4	168.6	2700 lb	with slurry—overbore—
				~~Casing Run into full hole~~

Was drive shoe used? [X] Y [ ] N Shoe Depth(s) 168.6
Was drive shoe seal tested? [X] Y [ ] N How? Slurry did not leak into well

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
8 5/8	+ 1.4	168.6	0.250	Steel	X			
6 5/8	+ 1.75	563.0	0.250	Steel	X			
~~5 9/16~~	~~537.1~~	~~574.17~~	~~0.188~~	~~Steel Lap pipe~~		X		
5 9/16	574.17	608.28	0.258	Steel		X		

Length of Headpipe 71.18 ft Length of Tailpipe 0.97

9. PERFORATIONS/SCREENS
Perforations Method _____
Screens Screen Type Continuous Slot Wire Wound

From	To	Slot Size	Number	Diameter	Material	Casing	Liner	Assbly
608.28	618.53	0.025 inch		5 9/16	Stainless			X

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
485.0 ft. below ground Artesian pressure ____ lb.
Depth flow encountered ____ ft. Describe access port or control devices: 6" I.D. of casing by removing well cap.

11. WELL TESTS:
[X] Pump [ ] Bailer [ ] Air [ ] Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time
13.0	1.2 ft	486.2	4.5 hours

Water Temp. Excellent Bottom hole temp. _____
Water Quality test or comments: _____
Depth first Water Encounter 526

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia	From	To	Remarks: Lithology, Water Quality & Temperature	Water Y	Water N
10	0	175 ft			N
8	175	426 ft			N
6	426	620 ft		Y	N
	336	357	Sands and Silts, Caving, Tan		N
	357	386	Basalt, Medium Hard, Grey		N
	386	401	Granitic Sand and Clay, Red Brown		N
	401	424	Basalt, Medium Hard, Grey		N
	424	523	Sandy Silts & Silty Sands, Brown-Tan		N
	523	526	Clay, Gravelly & Sandy, Brown		N
	526	532	Sand, Clayey, Brown	Y	
	532	534	Clay, Gravelly, Grey		N
	534	537	Clay, Gravelly, Brown		N
	537	547	Sand, Clayey, Brown	Y	
	547	562.5	Sandy Silts & Silty Sands, Brown	Y	N
	562.5	588	Basalt, Brown		N
	588	597	Cinders, Sand, then Clay, Brown	Y	
	597	609	Clay, Gravelly, Brown		N
	609	619	Sand, Coarse, Poorly Sorted	Y	
	619	619.5	Clay, Brown		N

RECEIVED
OCT 10 2002
WATER RESOURCES
WESTERN REGION

RECEIVED
OCT 18 2002
Department of Water Resources

Completed Depth 619.5 ft (Measurable)
Date: Started March 11, 2002 Completed Sept. 3, 2002

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 Artesian Co. Firm No. 318
Firm Official Hugh Harden Date 10/8/02
and
Driller or Operator Hugh Harden Date October 8, 2002

Form 238-7
1/94

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Use Typewriter
or
Ball Point Pen

56757

1. DRILLING PERMIT NO. 61 - 94 - W - 0027 - 000
Other IDWR No.

2. OWNER:
Name LEONARD EISEMAN
Address 802 East Pennsylvania Ave.
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. 15, ____ 1/4 NE 1/4 NE 1/4 (10 acres / 40 acres / 160 acres)
Gov't Lot ____ County Elmore

Address of Well Site Simco Rd.
City Mountain Home
(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
Bentonite	0	250'	20	overrbore

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
8.625	0	250'	.250	steel	☒	☐	☐	☐
6.625	2'	425'	.250	steel	☒	☐	☐	☐
5.57	436'	448'	.188	steel	☐	☒	☐	☐

Length of Headpipe 7' Length of Tailpipe 5'

9. PERFORATIONS/SCREENS
☐ Perforations Method
☒ Screens Screen Type V-wire

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
453'	448'	.040		5.57	S.S.	☐	☒
436'	431'	.030		5.57	S.S.	☐	☒
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
335 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
35			5hr.

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

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Water Y	Water N
8"	0	2'	Topsoil		
"	2'	11'	Brown Clay		
"	11'	18'	Sand & Gravel		
"	18'	21'	Brown Clay		
"	21'	43'	Sand & Gravel		
"	43'	65'	Clay w/Sand		
"	65'	80'	Coarse Sand		
"	80'	84'	Sandy clay		
"	84'	108'	Sand w/gravel		
"	108'	140'	Sandy clay		
"	140'	150'	Coarse sand		
"	150'	155'	Sand w/gravel		
"	155'	161'	Sandy clay		
"	161'	190'	Coarse sand w/clay		
"	190'	203'	Cemented sand & gravel		
"	203'	228'	Clay w/sand & gravel		
"	228'	240'	Coarse Sand		
"	240'	330'	Sandstone		
"	330'	340'	Coarse sand		
"	340'	356'	Brown clay		
"	356'	365'	Coarse sand		
"	365'	375'	Brown clay		
"	375'	386'	Coarse sand		
"	386'	409'	Clay w/sand seams		
"	409'	415'	Brown clay		
"	415'	428'	Coarse sand	X	
"	428'	430'	Brown clay		
6"	430'	439'	Coarse sand	X	
"	439'	441'	Brown clay		
"	441'	458'	Sand & Gravel	X	
"	458'	467'	Brown clay		

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RECEIVED OCT 17 1994 Department of Water Resources

RECEIVED MAY 08 1995

Completed Depth 458' (Measurable)
Date: Started June 11, 1994 Completed June 26, '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 Hiddleston & Son, Inc. Firm No. 35
Firm Official [signature] Date 7/19/94
and
Supervisor or Operator ____ Date ____
(Sign once if Firm Official & Operator)

FORWARD WHITE COPY TO WATER RESOURCES

61

903350-850338

Form 238-7
6/07
Pg 1 of 2

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. WELL TAG NO. D 0052631
Drilling Permit No. 903350-850338
Water right or Injection well # 63-33036

2. OWNER
Name Pacific West Land, LLC Test Well #1
Address 911 Hildebrand Lane NE #203
City Bainbridge Island State WA Zip 98110

3. WELL LOCATION:
Twp. 1 North ☐ or South ☒ Rge. 4 East ☒ or West ☐
Sec. 8 NW 1/4 (10 acres) SW 1/4 (40 acres) NE 1/4 (160 acres)
Gov't Lot County Ada
Lat. N43 ° 21.237" (Deg. and Decimal minutes)
Long. W116 ° 0.243" (Deg. and Decimal minutes)
Address of Well Site 2.3 mi. S of I84 on S. Orchard Access Rd. & 200 ft. E. of Orchard City Boise
Lot. Blk. Sub. Name

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

5. TYPE OF WORK check all that apply (Replacement etc.)
☒ New Well ☐ Replacement well ☐ Modify existing well
☐ Abandonment ☐ Other Well Design by Hydro Logic, Inc.

6. DRILL METHOD: DIRECT
☐ Air Rotary ☒ Mud Rotary ☐ Cable ☐ Other AR 110' to 310'

7. SEALING PROCEDURES

Seal material	From (ft)	To (ft)	Quantity (lbs or ft³)	Placement method/procedure
3/4" Baroid Chips	0'	19'	11.9 ft.	Poured

8. CASING/LINER:

Diameter (nominal)	From (ft)	To (ft)	Gauge/ Schedule	Material	Casing	Liner	Threaded	Welded
16"	0'	19'	.250	Steel	☒	☐	☐	☒
12"	0'	110	.375	Steel	☒	☐	☐	☒
10"	+2'	295	.250	Steel	☒	☐	☐	☒

Was drive shoe used? ☐ Y ☒ N Shoe Depth(s)

9. PERFORATIONS/SCREENS:
Perforations ☐ Y ☒ N Method
Manufactured screen ☒ Y ☐ N Type 2" PVC Sch80 Slotted
Method of installation

From (ft)	To (ft)	Slot size	Number/ft	Diameter (nominal)	Material	Gauge or Schedule
932'	1052'	.020	Zone1	2"	PVC	Sch80
732'	822'	.020	Zone2	2"	PVC	Sch80
575'	645'	.020	Zone3	2"	PVC	Sch80

Length of Headpipe None Length of Tailpipe None
Packer ☐ Y ☒ N Type

10. FILTER PACK:

Filter Material	From (ft)	To (ft)	Quantity (lbs or ft³)	Placement method
	See	Table	Pg. 2	

11. FLOWING ARTESIAN:
Flowing Artesian? ☐ Y ☒ N Artesian Pressure (PSIG) See Pg. 2
Describe control device Locked Steel Enclosure

12. STATIC WATER LEVEL and WELL TESTS:
Depth first water encountered (ft) 516' Static water level (ft) See Pg. 2
Water temp. (°F) See Pg. 2 Bottom hole temp. (°F) 78.59°F
Describe access port 3 - 2" Tube Wells inside Locked Well Head

Well test:

Drawdown (feet)	Discharge or yield (gpm)	Test duration (minutes)
No Pump	Testing	Other
Than	Air-Lifting	and
Pump	Samples	

Test method: Pump ☐ Bailer ☒ Air ☒ Flowing artesian ☐

Water Quality test or comments: See Table Pg. 2

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
20	0	19	Tan & Brown Sand		X
16	19	26	Tan & Brown Sand		X
16	26	47	Tan Coarse Sand		X
16	47	68	Tan Coarse Sand & Clay		X
16	68	73	Tan Coarse Sand		X
16	73	86	Gravel with Some Sand		X
16	86	105	Sticky Tan Clay		X
16	105	107	Basalt		X
16	107	110	Tan Clay & Dark Brown Cinders		X
12	110	119	Black Basalt & Hard Cinders		X
12	119	154	Black Fractured Basalt		X
12	154	176	Red Basalt Cinders		X
12	176	200	Basalt		X
12	200	208	Sand, Gravel, & Basalt		X
12	208	220	Brwn Clay,Sand&Reddish-Brwn Cinders		X
12	220	300	Coarse Sand & Gravel		X
10	300	338	Coarse Sand & Gravel		X
10	338	396	Tan Clay		X
10	396	432	Coarse Sand & Tan Clay		X
10	432	451	Coarse Sand		X
10	451	527	Dark Tan Clay		X
10	527	568	Small & Coarse Sand	X	
10	568	616	Clayey Tan Sand	X	
10	616	652	White Sand with Tan Clay Beds	X	
10	652	697	Large White Coarse Sand	X	
10	697	708	Small Sand	X	
10	708	732	Gray & Clayey Tan Sand	X	
10	732	748	Medium Gray Sand	X	
10	748	772	Sticky Grayish Sandy Blue Clay	X	
10	772	824	Small Gray Sand	X	
10	824	927	Grayish Sandy Blue Clay	X	
10	824	992	Medium Dark Gray Sand	X	

Completed Depth (Measurable) 1082'
Date: Started 1/7/2008 Completed 3/21/2008

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MAY 22 2008
WATER RESOURCES
WESTERN REGION

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 Treasure Valley Drilling Co. No. 560
*Principal Driller Date 4/2/2008
*Driller Date 4/2/2008
*Operator II Date
Operator I Date
* Signature of Principal Driller and rig operator are required.

Form provided by Forms On-A-Disk · (214) 340-9429 · www.FormsOnADisk.com

Form 238-7
6/07
Pg 2 of 2

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. WELL TAG NO. D 0052631
Drilling Permit No. 903350-850338
Water right or injection well # 63-33036

2. OWNER
Name Pacific West Land, LLC Test Well #1
Address 911 Hildebrand Lane NE #203
City Bainbridge Island State WA Zip 98110

3. WELL LOCATION:
Twp. 1 North ☐ or South ☒ Rge. 4 East ☒ or West ☐
Sec. 8 NW 1/4 (10 acres) SW 1/4 (40 acres) NE 1/4 (160 acres)
Gov't Lot County Ada
Lat. N 43 ° 21.237" (Deg. and Decimal minutes)
Long. W 116 ° 0.243" (Deg. and Decimal minutes)
Address of Well Site 2.3 mi. S of I84 on S. Orchard Access Rd. & 200 ft. E. of Orchard City Boise
(Give street name of road + Distance to Road or Landmark)
Lot. Blk. Sub. Name

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

5. TYPE OF WORK check all that apply (Replacement etc.)
☒ New Well ☐ Replacement well ☐ Modify existing well
☐ Abandonment ☐ Other Well Design by Hydo Logic, Inc.

6. DRILL METHOD: Direct
☐ Air Rotary ☒ Mud Rotary ☐ Cable ☐ Other AR 110' to 310'

7. SEALING PROCEDURES

Seal material	From (ft)	To (ft)	Quantity (lbs or ft³)	Placement method/procedure
3/4" Baroid Chips	0'	19'	11.9 ft.	Poured

8. CASING/LINER:

Diameter (nominal)	From (ft)	To (ft)	Gauge/ Schedule	Material	Casing	Liner	Threaded	Welded
2"	+2'	932	Sch80	PVC	☒	☐	☒	☐
2"	+2'	732	Sch80	PVC	☒	☐	☒	☐
2"	+2'	575	Sch80	PVC	☒	☐	☒	☐

Was drive shoe used? ☐ Y ☒ N Shoe Depth(s)

9. PERFORATIONS/SCREENS:
Perforations ☐ Y ☒ N Method
Manufactured screen ☒ Y ☐ N Type PVC Sch80 Slotted
Method of installation Lowered & Tagged into Place

From (ft)	To (ft)	Slot size	Number/ft	Diameter (nominal)	Material	Gauge or Schedule
932'	1052'	.020	Zone1	2"	PVC	Sch80
732'	822'	.020	Zone2	2"	PVC	Sch80
575'	645'	.020	Zone3	2"	PVC	Sch80

Length of Headpipe None Length of Tailpipe None
Packer ☐ Y ☒ N Type

10. FILTER PACK:

Filter Material	From (ft)	To (ft)	Quantity (lbs or ft³)	Placement method
		See	Table	

11. FLOWING ARTESIAN:
Flowing Artesian? ☐ Y ☒ N Artesian Pressure (PSIG) See Table
Describe control device Locked Steel Enclosure

12. STATIC WATER LEVEL and WELL TESTS:
Depth first water encountered (ft) 516' Static water level (ft) See Below
Water temp. (°F) See Below Bottom hole temp. (°F) 78.59°F
Describe access port 3 - 2" Tube Wells inside Locked Well Head

Well test: Test method:

Drawdown (feet)	Discharge or yield (gpm)	Test duration (minutes)	Pump	Bailer	Air	Flowing artesian
No Pump	Testing	Other	☐	☒	☒	☐
Than	Air-Lifting	and				
Pump	Samples					

Water Quality test or comments: See Table Below

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
10	992	1027	Medium Sand with Some Blue Clay	X	
10	1027	1063	Medium Gray Sand	X	
10	1063	1087	Sticky Blue Clay	X	
			SEALING PROCEDURES:		
0	19	11.9	Ft 3/4" Bentonite Chips Poured		
105	110	1.9	Ft 3/4" Bentonite Chips Poured		
0	105	4.0	CY Cement Grout Pumped		
0	300	3.2	CY Cement Grout Pumped		
895	877	8.3	Ft 30% Bentonite Grout Pumped		
877	862	6.7	Ft Cement Grout Pumped		
862	828	9.9	Ft 30% Bentonite Grout Pumped		
709	689	8.2	Ft 30% Bentonite Grout Pumped		
689	672	6.7	Ft Cement Grout Pumped		
672	645	9.5	Ft 30% Bentonite Grout Pumped		
532	493	9.9	Ft 30% Bentonite Grout Pumped		
0	493	7.2	CY Cement Grout Pumped		
			FILTER PACK:		
1082	895		"Birdseed" #8-#16		
828	729		"Birdseed" #8-#16		
645	532		"Birdseed" #8-#16		
			WATER LEVEL, TEMPERATURE, CHEMISTRY		
Z-1	1052	932	SWL=523.8, 70.0F pH=8.53; 275µS		
Z-2	822	732	SWL=522.6'; 65.0F; pH=8.50; 259µS		
Z-3	645	575	SWL=516.21'; not meas.; not meas;		
			ARTESIAN PRESSURES:		
Z-1		371	Ft. or 161 psig		
Z-2		186	Ft. or 81 psig		
Z-3		16	Ft. or 7 psig		

Completed Depth (Measurable) 1082'
Date: Started 1/7/2008 Completed 3/21/2008

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WATER RESOURCES
WESTERN REGION

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 Treasure Valley Drilling Co. No. 560
*Principal Driller Date 4/2/2008
*Driller Date 4/2/2008
*Operator II Date
Operator I Date
* Signature of Principal Driller and rig operator are required.

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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)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temp.	Y	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	☒	

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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

1. WELL OWNER

Name Neil Helmick

Address HC 34 Mayfield, Boise, ID 83706

Drilling Permit No. 61-92-W-044

Water Right Permit No. _____

2. NATURE OF WORK

☒ 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

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

4. METHOD DRILLED

☒ Rotary ☒ Air ☐ Auger ☐ Reverse rotary
☐ Cable ☐ Mud ☐ Other _____ (backhoe, hydraulic, etc.)

5. WELL CONSTRUCTION

Casing schedule: ☒ Steel ☐ Concrete ☒ Other PVC

Thickness	Diameter	From	To
.250 inches	6 5/8 inches	+ 3 feet	404 feet
Sch 40 inches	4 inches	240 feet	510 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 Johnson Type PVC
Top Packer or Headpipe 240
Bottom of Tailpipe 510

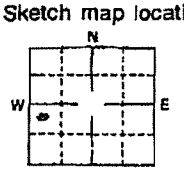
Diameter 4" Slot size .010 Set from 410 feet to 440 feet
Diameter 4" Slot size .020 Set from 440 feet to 510 feet
Gravel packed? ☐ Yes ☐ No ☐ Size of gravel _____
Placed from _____ feet to _____ feet

Surface seal depth 38 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: PVC ☒ Threaded ☒ Welded
☐ Solvent Weld ☐ Cemented between strata

Describe access port Top of 6"

6. LOCATION OF WELL

Sketch map location must agree with written location.



Subdivision Name _____

Lot No. _____ Block No. _____

County Elmore

MICROFILMED
DEC 03 1992

7. WATER LEVEL

Static water level 340 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		5HR

9. LITHOLOGIC LOG

082452

Bore Diam.	Depth From	Depth To	Material	Water Yes	Water No
8	0	2	Top Soil		
"	2	10	Brown Clay		
"	10	11	Coarse Sand		
8-6	11	40	Brown Clay		
8	40	105	Clay & Sand Seams		
"	105	120	Sand & ¼ Gravel		
"	120	143	Cement and Sand		
"	143	162	Clay Tan		
"	162	190	Sand & Gravel		
"	190	200	Tan Clay		
"	200	260	Tan Sand & Gravel		
"	260	268	Tan Clay		
"	268	298	Tan Sand		
"	298	305	Clay		
"	305	336	Tan Sand		
"	336	375	Tan Clay		
"	375	420	Tan Coarse Sand	X	
"	420	510	Clay - Sand Seam	X	

RECEIVED
AUG 17 1992
Department of Water Resources

AUG 13 1992
Department of Water Resources
Western Regional Office

10.

Work started 7-29-92 finished 8-7-92

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 Hiccleston & Son, INC. Firm No. 35
Address Rt 3, Box 610-D Mtn Home, ID 83647 Date 8-10-92

Form 238-7
R-93

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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	16	115	94# BAGS	CASING
BENTONITE	115	4	16 BAGS	SLURRY PIT
NEAT CEMENT GROUT	0	4'	1 BAG	POURED

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

8. CASING/LINER:

Diameter	From	To	Gauge	Casting	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	581.4	0.237		✓	☑	☐	☑	☐

Final location of shoes 8" SHOE @ [redacted] 124.64'
Top Packer or Headpipe 514 Bottom Tailpipe 629.7E

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	Casting	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	☐	☑

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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	634			
	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		

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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)

FORWARD WHITE COPY TO WATER RESOURCES

Form 238-7
8/93

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JUN 0 8 1999

WATER RESOURCES REGION

WELL DRILLER'S REPORT

PAGE 2 OF 3 PAGES

61-98-W 0075-000

RECEIVED JUN 14 1999 Department of Water Resources

95107

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1. DRILLING PERMIT NO.
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 1/4 1/4
Gov't Lot County
SE NE 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 @ 551 FT
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
						☐	☐
						☐	☐
						☐	☐
						☐	☐

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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
	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)

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8/93

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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

1. DRILLING PERMIT NO. 61-98-W-0075-000
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
Inspected by
Twp 01 S Rge 03 E Sec 13
SE 1/4 NE 1/4 Sec 13 NE 1/4
Gov't 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. 4 1/2 OD [redacted]/LINER: HANGER 5" OD COUPLING CUT OFF, BEVELED TO INSIDE HARDFACED, & GROUND SMOOTH

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

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
						☐	☐
						☐	☐
						☐	☐
						☐	☐

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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	524.5	SAND, TAN	✓	
	524.5	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	604	CLAY, TAN	[redacted]	✓
	604	645	SAND, TAN	✓	
	645	633	ALTERNATING LAYERS SAND & CLAY	✓	✓

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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)

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Form 238-7
3/95-C96

Inspected by _____
Twp ____ Rge ____ Sec ____
____ 1/4 ____ 1/4 ____ 1/4
Lat: : : Long: : :

771187

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. DRILLING PERMIT NO. ___ - ___ - ___ - ___ - ___
Other IDWR No. D0018592

2. OWNER:
Name Linda McFain
Address 250 S. Bobwhite Ct., Ste #350
City Boise State ID Zip 83706

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. 20 1/4 (10 acres) SW1/4 (40 acres) NW1/4 (160 acres)
Gov't lot ____ County Ada
Lat: : : Long: : :
Address of Well Site 30000 Orchard Access 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			AMOUNT	METHOD
Material	From	To	Sacks or Pounds	
Bentonite	0	120	40sacks	overbore

Was drive shoe used? X Y ☐ N Shoe Depth(s) ____
Was drive shoe seal tested? X Y ☐ N How? Air

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
8.625	+1	120	332	Steel	X	☐		☐
6.625	+2	736	250	Steel	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:
505ft. 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
50+			1 hr

Water Temp. ____ Bottom hole temp. ____
Water Quality test or comments: ____
Depth first Water Encountered 610'

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia	From	To	Remarks: Lithology, Water Quality & Temp.	Water Y	Water N
10	0	2	Topsoil		X
10	2	60	Sand & gravel		X
10	60	65	Brown clay		X
10	65	89	Sand & gravel		X
10	89	93	Brown clay		X
10	93	120	Sand & gravel		X
10	120	300	Gray lava		X
8	300	320	Red sandstone		X
8	320	340	Coarse sand		X
8	340	400	Fine sand		X
8	400	580	Gray lava		X
6	580	610	Brown clay		X
6	610	680	Fine sand	X	
6	680	684	Brown clay		X
6	684	715	Coarse sand		X
6	715	718	Brown clay		X
6	718	730	Coarse sand		X
6	730	736	Brown clay		X
6	736	745	Sand, coarse	X	

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WATER RESOURCES
WESTERN REGION

Completed Depth: 736' (Measurable)
Date: Started 09/20/01 Completed 10/05/01

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 Hiddleston & Son, Inc – Boise Firm No. 35
Firm Official [signature] Date 11/12/01
Supervisor or Operator [signature] Date
(Sign once if Firm Official & Operator)

870655-775948

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. D0019537

2. OWNER:
Name Bob Wickham
Address 730 S. Prairie Grass Dr.
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 ☐ or South X
Rge. 4 East X or West ☐
Sec. 1 1/4 (10 acres) SW 1/4 (40 acres) NW 1/4 (160 acres)

Gov't lot County Elmore
Lat: : : Long: : :
Address of Well Site 730 S. Prairie Dr.
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			AMOUNT	METHOD
Material	From	To	Sacks or Pounds	
Bentonie	0	20	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	+1	444	.250	Steel	X	☐	X	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Length of Headpipe 6' Length of Tailpipe 3'

9. PERFORATIONS/SCREENS
☐ Perforations Method
X Screens Screen Type Johnson

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
445	450	.030		5"	SS	☐	☐
						☐	☐
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
337 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. 68 Bottom hole temp.
Water Quality test or comments:
Depth first Water Encountered 415'

12. LITHOLOGIC LOG: (Describe repair or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temp.	Y	N
10"	0	2	Top Soil		X
10"	2	7	Cleache		X
10"	7	18	Sand & Gravel		X
6"	18	30	Sand & Gravel		X
6"	30	34	Brown Clay		X
6"	34	225	Sand & Gravel w/ Clay Seams		X
6"	225	236	Brown Clay		X
6"	236	250	Tan Sand Stone		X
6"	260	415	Sand & Gravel w/ Clay Seams		X
6"	415	428	Coarse Sand	X	
6"	428	441	Brown Clay		X
6"	441	455	Coarse Sand	X	
6"	455	460	Brown Clay		X

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WATER RESOURCES
WESTERN REGION

Completed Depth: 455' (Measurable)
Date: Started 1-04-02 Completed 1-11-02

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 04-22-02
Supervisor or Operator Matt Hiddleston Date 4-17-02
(Sign once if Firm Official & Operator)

Form 238-7
6/07

862568

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. WELL TAG NO. D 0060330
Drilling Permit No. 913940-862568
Water right or Injection well #

2. OWNER: Lord Ranch LLP
Name Jeff Lord
Address 1171 Mayfield Road
City Boise State ID. Zip 83716

3. WELL LOCATION:
Twp. 1 North ☒ or South ☐ Rge. 5 East ☒ or West ☐
Sec. 30 ___ 1/4 SW 1/4 SE 1/4 (10 acres, 40 acres, 160 acres)
Gov't Lot ___ County Elmore
Lat. 43 ° 23.35 (Deg. and Decimal minutes)
Long. -115 ° 54.15 (Deg. and Decimal minutes)
Address of Well Site 1.6 miles NE. off Base Line Road
(Give at least name of road + Distance to Road or Landmark) City Mayfield
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
Bentonite #5	0	40'	1350 lbs	Overbore Pour

8. CASING/LINER:

Diameter (nominal)	From (ft)	To (ft)	Gauge/ Schedule	Material	Casing	Liner	Threaded	Welded
6 5/8"	+2'	298'	.250	Steel	☒	☐	☐	☒
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) 298 feet

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) 300 Static water level (ft) 243
Water temp. (°F) 58 Bottom hole temp. (°F)
Describe access port Through top of well seal

Well test:

Drawdown (feet)	Discharge or yield (gpm)	Test duration (minutes)	Test method: Pump	Bailer	Air	Flowing artesian
13	15	60	☐	☐	☒	☐
			☐	☐	☐	☐

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
10"	0	2'	Topsoil		X
10"	2'	5'	Caleche		X
10"	5'	35'	Sand and gravel		X
10"	35'	40'	Brown clay		X
6"	40'	43'	Brown clay		X
6"	43'	136'	Sand and gravel tan		X
6"	136'	138'	Tan clay		X
6"	138'	296'	Sand and gravel		X
6"	296'	299'	Brown clay		X
6"	299'	307'	Tan sand with pea gravel	X	

RECEIVED
JAN 26 2012
WATER RESOURCES
SOUTHERN REGION

Completed Depth (Measurable): 303 Feet
Date Started: 11/17/2011 Date Completed: Dec 30, 2011

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 Hiddleston Drilling Co. No. 35
*Principal Driller [signature] Date 1/11/12
*Driller [signature] Date 1/16/12
*Operator [signature] Date 1/16/12
Operator II Date

* Signature of Principal Driller and rig operator are required.