

STATE OF IDAHO  
DEPARTMENT OF WATER RESOURCES  
BENEFICIAL USE FIELD REPORT

**A. GENERAL INFORMATION**

Permit No: 37-20553  
Exam Date: 6/27/2012

1. Current Owner: BLACK BUTTE HILLS LLC  
C/O GREGORY VIK  
PO BOX 1607  
BELLEVUE WA 98009  
(425) 460-2542

2. Accompanied by: Ron Gonsales.  
Address: 338 S. 600 W, Corral, ID 83322  
Phone No: (208) 764-3904  
Relationship to Permit Holder: Manager.  
Email: [camascreek@hughes.net](mailto:camascreek@hughes.net)

3. **SOURCE**

**TRIBUTARY**

GROUND WATER

**B. OVERLAP REVIEW**

1. **Other water rights with the same place of use:** None. 37-10103 is for a spring for stockwater, but it does not supply water to any of the stockwater storage ponds, or to any of the stockwater tanks.
2. **Other water rights with the same point of diversion:** None. 37-10103 is a spring.

**C. DIVERSION AND DELIVERY SYSTEM**

1. **LOCATION OF POINT(S) OF DIVERSION:**

|              |            |          |          |               |              |
|--------------|------------|----------|----------|---------------|--------------|
| GROUND WATER | NE1/4NW1/4 | Sec. 34, | Twp 01S, | Rge 15E, B.M. | CAMAS County |
| GROUND WATER | NE1/4NW1/4 | Sec. 34, | Twp 01S, | Rge 15E, B.M. | CAMAS County |
| GROUND WATER | SW1/4SW1/4 | Sec. 27, | Twp 01S, | Rge 15E, B.M. | CAMAS County |
| GROUND WATER | SE1/4SW1/4 | Sec. 27, | Twp 01S, | Rge 15E, B.M. | CAMAS County |
| GROUND WATER | SE1/4SW1/4 | Sec. 27, | Twp 01S, | Rge 15E, B.M. | CAMAS County |
| GROUND WATER | SE1/4SW1/4 | Sec. 27, | Twp 01S, | Rge 15E, B.M. | CAMAS County |
| GROUND WATER | NE1/4NW1/4 | Sec. 34, | Twp 01S, | Rge 15E, B.M. | CAMAS County |

**Method of Determination:** Garmin GPS Map 76S, ArcMap 2011 and esri Imagery

2.

| <u>PLACE OF USE:</u> |     |     | STOCKWATER |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           | <u>Totals</u> |
|----------------------|-----|-----|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|---------------|
| Twp                  | Rge | Sec | NE         |           |           |           | NW        |           |           |           | SW        |           |           |           | SE        |           |           |           |               |
|                      |     |     | <u>NE</u>  | <u>NW</u> | <u>SW</u> | <u>SE</u> | <u>NE</u> | <u>NW</u> | <u>SW</u> | <u>SE</u> | <u>NE</u> | <u>NW</u> | <u>SW</u> | <u>SE</u> | <u>NE</u> | <u>NW</u> | <u>SW</u> | <u>SE</u> |               |
| 01S                  | 15E | 27  |            |           |           |           |           |           |           |           | X         |           | X         | X         |           |           |           |           |               |
| 01S                  | 15E | 34  |            |           |           |           | X         |           |           | X         |           |           |           |           |           |           |           |           |               |

\*Some of the POUs are so small that they had to be manually entered onto AdHoc, since updating the shapes did not add them.

| <u>PLACE OF USE:</u> |     |     | STOCKWATER STORAGE |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |               |
|----------------------|-----|-----|--------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|---------------|
| Twp                  | Rge | Sec | NE                 |           |           |           | NW        |           |           |           | SW        |           |           |           | SE        |           |           |           |               |
|                      |     |     | <u>NE</u>          | <u>NW</u> | <u>SW</u> | <u>SE</u> | <u>NE</u> | <u>NW</u> | <u>SW</u> | <u>SE</u> | <u>NE</u> | <u>NW</u> | <u>SW</u> | <u>SE</u> | <u>NE</u> | <u>NW</u> | <u>SW</u> | <u>SE</u> | <u>Totals</u> |
| 01S                  | 15E | 27  |                    |           |           |           |           |           |           |           |           |           | X         | X         |           |           |           |           |               |
| 01S                  | 15E | 34  |                    |           |           |           | X         |           |           |           |           |           |           |           |           |           |           |           |               |

\*Some of the POUs are so small that they had to be manually entered onto AdHoc, since updating the shapes did not add them.

**Method of Determination:** Garmin GPS Map 76S, ArcMap 2011 and esri Imagery

3. ☒ Delivery System Diagram Attached (required). Indicate all major components and distances between components. Indicate weir size/pipe as applicable.
- ☒ Map Attached Showing Location(s) of point(s) of diversion and place(s) of use (required). Scale must be 1:24,000 or greater.
- ☒ Aerial Photo Attached (required for irrigation of 10+ acres).

☐ Photo of Diversion and System Attached (field exam pictures were lost when computer crashed, and were not able to be retrieved; for this reason close ups of ArcMap esri and 2011 imagery and field exam narrative are used).

4.

**Well or Diversion**

| ID No.* | Motor Make | Hp | Motor Serial No. | Pump Make | Pump Serial No. or Discharge Size |
|---------|------------|----|------------------|-----------|-----------------------------------|
|---------|------------|----|------------------|-----------|-----------------------------------|

D0020037 submersible pump in 6 inch casing (well) unknown pump make/model/either 1/2 or 3/4 Hp/size discharge/psi.

Ponds 8, 9, 10, 11, 12 and 13 (as identified on the application by Brockway Engineering), the PODs are designated in the middle of the pond, since the ponds were dug around a shallow groundwater source

\*Code to correspond with No. on map and aerial photo

#### D. FLOW MEASUREMENTS

1.

| Measurement Equipment | Type | Make | Model No. | Serial No. | Size | Calib. Date |
|-----------------------|------|------|-----------|------------|------|-------------|
|-----------------------|------|------|-----------|------------|------|-------------|

None. There was no power source to run the pump at the time of the field examination, and therefore there was no live flow to measure from the well to the stockwater tanks.

#### 3. Measurements:

**Stockwater:**

1 1/2 poly pipe conversion: 0.06 cfs maximum capacity

Drillers log: 25 X 0.00223 = 0.06 cfs

Theoretical (using both 1/2 Hp and 3/4 Hp, since he was not sure which it was):

$$(8.8 \times 0.5 \text{ Hp} \times 0.7 \text{ eff}) / [35 \text{ ft} + (30 \text{ psi standard for small systems} \times 2.31)] = 0.03 \text{ cfs}$$

$$(8.8 \times 0.75 \text{ Hp} \times 0.7 \text{ eff}) / [35 \text{ ft} + (30 \text{ psi} \times 2.31)] = 0.04 \text{ cfs}$$

Average for all of the above measurements: 0.0475 = 0.05 cfs capacity of system (unless they can prove otherwise)

Table 1: Recommended Diversion Rates for Stockwater 901 – 1000 head cattle = 0.23 cfs

#### RECOMMEND:

Stockwater: 100 head cattle, and 0.04 cfs (as permitted)

#### E. FLOW CALCULATIONS

Measured Method:

None. There is no flow for the ponds, since the POD/groundwater source is the center of the stockwater storage ponds. The Ponds were dug from shallow groundwater sources.. Also, at the time of the field examination, there was no power to turn on the well.

#### F. VOLUME CALCULATIONS

##### 1. Volume Calculations for Stockwater Storage ponds:

(0.36 acre total surface area X 3 ft average depth)=1.08 + 0.0 seepage loss + 0.8 evaporation loss =1.9af  
~~Condition #219 allows the permitted amount, and for evaporation, 1.9 annual volume with the condition stating that 1.08 af for the initial fill and 0.8 af for evaporation loss.~~ Rec. 1.08 + .52 evap = 1.6 af as permitted  
See Attached Total Storage, Seepage Calculation and Evaporation Loss Calculation spreadsheets. used cond # 259 SH

##### 2. Volume Calculations for Other Uses:

###### Stockwater:

Vir = (1000 cattle X 12 gpd X 365 days)/325,850 = 13.4 af

Vdr = 0.04 cfs X 365 days X 1.9835 = 28.9 af

V = 13.4 af

Stockwater is limited by the 13,000 gpd condition on the approved permit, therefore no volume should be listed on the license.

#### RECOMMEND:

Stockwater Storage for 0.36 total surface area, condition 219: 2.4 af total annual volume (1.08 af + 0.8 af evaporation loss) 1.60 AF SH (1.08 af + .52 evap = 1.6 af as permitted)

Stockwater for 1000 head cattle: N/A (limited by 13,000 gpd condition on the permit)

#### G. NARRATIVE/REMARKS/COMMENTS

Pictures of the system taken at the time of the field examination, were lost when my computer crashed and had to be rebuilt. Pictures from 6/27/2012 were not retrieved.

Water right 37-20553 is made up of 6 ponds which were dug from shallow groundwater, therefore the 6 PODs for these ponds are designated in the middle of each pond. The average depth of the ponds is 3 ft, with ponds 11, 12 and 13 drying up in late July. The numbering for the ponds was designated by Brockway Engineering when the application for permit was submitted. Ponds #8, 9 and 10 are a little deeper, and usually have water throughout the year. The 7th POD is for a well located in Section 27 NESESW. The well was drilled 10/15/2000 by Camas Well Drillers #275. It has an ID Tag # #0020037, is for a 6 inch casing, 163 ft deep, 25 ft static, with either a 1/2 or 3/4 HP submersible pump (unknown make/model/discharge size), with casing that extends 18 inches above the ground level. The unknown size discharge from the well, discharges to a 1 1/2 inch buried poly pipe running directly to the north that discharges to (3) 500 gallon stock tanks; a 1 1/2 inch buried poly pipe running to the west to (3) 500 gallon stock tanks, and another 1 1/2 inch buried poly pipe that runs directly south to Section 34 SENW to (3) 250 gallon stock tanks. At the time of the field examination, no physical measurement could be taken from the well, since there was no power on to the system. There was evidence that the stock tanks had been filled with water by the markings on the insides of the tanks. There also was evidence that cattle had been in the area. Beneficial Use is for 1000 head range cattle from the stock tanks and drink directly from the stockwater storage ponds. There are two quarter-quarters where there are no stockwater storage ponds: Section 27 NESW and Section 34 SENW. All property where the PODs and POU's are located is owned by Black Butte, except where the (3) 500 gallon stock tanks are located in Section 27 NESW (although looking on ArcMap, the tanks are located on the Black Butte side of the existing fence. Common Name: Rock House/Northeast well.

Have conditions of permit approval been met? ☒ Yes ☐ No

## H. RECOMMENDATIONS

### 1. Recommended Amounts

| <u>BENEFICIAL USE</u> | <u>PERIOD OF USE</u> | <u>DIVERSION RATE</u> | <u>ANNUAL VOLUME</u> |
|-----------------------|----------------------|-----------------------|----------------------|
| STOCKWATER            | 01/01 to 12/31       | 0.040 CFS             |                      |
| STOCKWATER STORAGE    | 01/01 to 12/31       |                       | 1.6 af *             |
|                       |                      |                       | <del>1.90 AF</del>   |
|                       |                      | <u>Totals:</u>        | 0.040 CFS            |

\*Add condition 219: 1.08 af plus ~~0.52~~ for evaporation loss (total annual volume 1.6 af); see attached spreadsheets for : Total Storage, Seepage and Evaporation Loss Calculations. cannot exceed permitted amount of 1.6 af. Set.

### 2. Recommended Amendments

☐ Change P.D. as reflected above ☒ Add P.D. as reflected above\* ☐ None  
☐ Change P.U. as reflected above ☒ Add P.U. as reflected above\*\* ☐ Other

\*The original application for permit pictures showed the same number of ponds and 1 well as found during the field examination. It described in the system narrative that each of the ponds were dug from shallow groundwater sources, and that the POD would be designated in the middle of each pond, but on the permit it only showed the 2 quarter-quarters that the PODs were located, instead of listing each of them individually. For this reason, each POD is being shown individually, since none of the ponds or well are interconnected.

\*\*For the quarter-quarter where the (3) 500 gallon storage tanks are located (Section 27 NESW. The tanks are on the Black Butte's side of the fence, but the QQ line and tax lot information show it to be in a different QQ, and property owned by Phillip Cash.

## I. AUTHENTICATION

Field Examiner's Name

*Judy Hemenway*

Date

*2/13/2014*

## TOTAL STORAGE

|             |             |
|-------------|-------------|
| FILE NUMBER | 37-20553    |
| REVIEWER    | S. Hemenway |
| DATE        | 2/13/2014   |

This spreadsheet has been designed by Idaho Department of Water Resources to estimate the total seepage, evaporation and fill capacity required for a pond

|                                 |      |                                                                                                          |
|---------------------------------|------|----------------------------------------------------------------------------------------------------------|
| Surface Area<br>(in Acres)      | 0.36 | "Surface Area" depicts the actual surface area of the pond measured, determined by ArcMap, or estimated. |
| Average Pond Depth<br>(in feet) | 3    | "Average Pond Depth" depicts the actual depth of the pond either measured or estimated.                  |
| Pond Capacity<br>(in acre feet) | 1.08 | Pond Capacity is calculated by multiplying the Pond Surface Area by the Average Pond Depth.              |

|                                                                                                   |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------------------------------------------------------------------------------------|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Volume Needed Above Initial Fill to Fufill From Storage Needs- "Multiple Fills"<br>(in acre feet) | 0   | The "Volume Needed Above Initial Fill" is the acre-feet of water required to meet a <i>from storage</i> component if the <i>from storage</i> component exceeds a one time fill. This section should not include the amount of water needed to fill the pond initially or the amount of water needed to maintain the pond level due to evaporation or seepage. For example: if a pond has a capacity of 5 acre feet and 2.5 acre feet of seepage and evaporation, but the pond is used for irrigation that requires 10 acre feet of from storage for the irrigation use, then you would insert 5 acre feet into this location (10 acre feet needed - 5 acre feet from the initial fill = 5 acre feet of additional storage needed). PLEASE NOTE: You must have a "From Storage" componet exceeding the intial fill on the permit to include a volume in this space. |
| Estimated Seepage Loss (in acre feet)                                                             | 0.0 | The "Estimated Seepage Loss" is automatically is automatically carried over from the Seepage Loss Sheet                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Estimated Evaporation Loss (in acre feet)                                                         | 0.8 | The "Estimated Evaporation Loss" is automatically is automatically carried over from the Evaporation Loss Sheet                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Total Volume Required (in acre feet)                                                              | 1.9 | "The Total Volume Required" is calculated by adding the Pond Capacity, Multiple Fills, Seepage Loss, and Evaporation Loss amounts to determine the total amount of storage required.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

|                                                                     |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------------------------------------------------------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Flow Rate Into Pond (in cfs)                                        | 0.00 | The "Flow Rate" Into the Pond depicts the actual flow either measured or estimated into the pond.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Highest Daily Evaporation Rate From Evaporation Tab.<br>(in mm/day) | 4.31 | To determine the "Highest Daily Evaporation Rate" go the the Evaporation Loss Sheet and enter in the highest number recorded in the Precipitation Deficit table.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Maximum Required Daily Maintenance Volume (in acre feet per day)    | 0.01 | "Maximum Required Daily Maintenance Volume" is the maximum volume of water needed on any given day during the year, and is caluated by adding the highest daily evaporation loss to the average daily seepage loss in acre feet. The average daily seepage loss is calculated by dividing the "Estimated Seepage Loss" by 365 days. This is acceptable, since the seepage rate shouldn't vary throughout the season unless the pond completely freezes over during the winter months. The highest daily evaporation loss is calculated by multiplying the Highest Daily Evaporation Rate by the 304.8 conversion factor and multiplying this number by the pond surface area to attain a combined daily acre feet requirement. |
| Minimum Maintenance Flow (in cfs)                                   | 0.00 | The "Mininum Maintenance Flow" is the minimum amount of flow required to maintain the level of the pond. This number is determine by dividing the "Daily Required Maintenance Volume" by 1.9835. This flow can be used to determine if the flow rate into the pond is adequate to maintain the pond level.                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Days Required to Fill the Pond                                      | -208 | The "Days Required to Fill the Pond" is calculated by dividing the "Pond Capacity" by the "Flow Rate" minus "Minimum Maintenance Flow" multiplied by 1.9835. This section will assist you in determining if the flow rate being diverted to the pond is adequate to fill the pond while maintaining the pond level. The length of time to fill the pond will help determine if the flow rate is adequate for the size of pond being proposed.                                                                                                                                                                                                                                                                                  |
| Days Required to Fill the Pond at 13,000 gallons per day            | 31   | The "Days Required to Fill the Pond at 13,000 gallons per day" is calculated converting the "Pond Capacity" and the "Maximum Daily Maintenance Volume" to gallons. The "Pond Capacity" is then divided by 13,000 gallons minus the "Maximum Daily Maintenance Volume" in gallons to determine the number of days to fill pond.                                                                                                                                                                                                                                                                                                                                                                                                 |

# Evaporation Loss Calculation

|             |             |
|-------------|-------------|
| FILE NUMBER | 37-20553    |
| REVIEWER    | S. Hemenway |
| DATE        | 2/13/2014   |

This spreadsheet has been designed by Idaho Department of Water Resources to estimate the annual evaporation losses from a pond.

|                                                                              |                       |
|------------------------------------------------------------------------------|-----------------------|
| The acronyms used on the Kimberly Research Center website are defined below: |                       |
| P =                                                                          | Precipitation         |
| ET=                                                                          | Evapotranspiration    |
| P <sub>d</sub> =                                                             | Precipitation deficit |
| P <sub>d</sub> =                                                             | ET-P                  |

## USING THIS SPREADSHEET

To ascertain the evaporation from a pond, you will need to go to the Kimberley Research Center website. The link is found below. This web site provides the Precipitation Deficit for the area where the pond is located. The Precipitation Deficit is the total amount of free pan evaporation minus the precipitation for a given area, which gives the total amount of evaporative losses incurred by the pond. There are several weather sites that are used, and the entire state is pretty much covered. IDWR staff can find the nearest site using ArcMap. The shape file containing the sites can be found at X:/Spatial/Climate/ETIdahostations.shp.

Found at: <http://www.kimberly.uidaho.edu/ETIdaho/online.php>

## Precipitation Deficit

Station: Twin Falls 2 NNE (NWS -- 109294)

| Month     | mm/day <sup>1</sup> | Days per month | mm/Month |
|-----------|---------------------|----------------|----------|
| Jan       | 0.00                | 31             | 0.00     |
| Feb       | 0.00                | 28             | 0.00     |
| March     | 0.42                | 31             | 13.02    |
| April     | 1.82                | 30             | 54.60    |
| May       | 2.92                | 31             | 90.52    |
| June      | 3.63                | 30             | 108.90   |
| July      | 4.31                | 31             | 133.61   |
| August    | 3.73                | 31             | 115.63   |
| September | 2.55                | 30             | 76.50    |
| October   | 1.76                | 31             | 54.56    |
| November  | 0.00                | 30             | 0.00     |
| December  | 0.00                | 31             | 0.00     |

**PLEASE NOTE:** We cannot use the season average, because there are several areas in Northern Idaho with a negative Precipitation Deficit. Therefore, we must enter each monthly deficit, and enter in a zero (0) for each negative month. The reason for this is that precipitation can only offset evaporation to the extent of the evaporation.

Please enter the daily average Precipitation Deficit as shown in the example below.

<sup>1</sup>Negative monthly mean values should be entered in the above table as "0".

Total mm/year = 647.34

$[(\text{mm/yr}) \div (\text{convert to feet})] \times (\text{Surface area of pond, in acres}) = \text{Evaporation Loss in Acre Feet}$

( 647.34 ÷ 304.8 ) X 0.36 = 0.8 AFA

## SEEPAGE CALCULATIONS

This spreadsheet has been designed by Idaho Department of Water Resources to estimate the total annual seepage losses from a pond.

|             |                |
|-------------|----------------|
| FILE NUMBER | 37-20553       |
| REVIEWER    | Sandy Hemenway |
| DATE        | 2/13/2014      |

### INPUTS

|                                                  |
|--------------------------------------------------|
| SQ. FT. Calculator<br>Pond Surface area in acres |
| 0.36                                             |

|                             |       |
|-----------------------------|-------|
| POND SURFACE AREA (SQ. FT.) | 15682 |
|-----------------------------|-------|

|                                 |        |
|---------------------------------|--------|
| SUGGESTED SEEPAGE RATE (FT/DAY) | 0.0003 |
|---------------------------------|--------|

Use the table below to find the "SUGGESTED SEEPAGE RATES".

|                                                                         |
|-------------------------------------------------------------------------|
| FORMULA:<br>(Surface Area X Seepage Rate) / 7.48 = Gallons Per Day loss |
|-------------------------------------------------------------------------|

|                |    |     |
|----------------|----|-----|
| CONVERT TO GPD | 35 | GPD |
|----------------|----|-----|

|                          |     |     |
|--------------------------|-----|-----|
| TOTAL SEEPAGE LOSS (AFA) | 0.0 | AFA |
|--------------------------|-----|-----|

| SUGGESTED SEEPAGE RATES FOR DIFFERENT SOIL TYPES:                                                       |
|---------------------------------------------------------------------------------------------------------|
| <b>SM</b> (silty sand, sand silt mixtures) = 0.20 ft per day                                            |
| <b>ML</b> (inorganic silts - very fine sands, silty, or clayey fine sands) = 0.016 ft per day           |
| <b>SC</b> (clayey sands, sand clay mixtures) = 0.007 ft per day                                         |
| <b>CL</b> (Low to medium plasticity clays) = 0.003 ft per day                                           |
| <b>CH</b> (high plasticity clays) = 0.0003 ft per day                                                   |
| <b>LINED PONDS</b> (liners can be chemical, fabric, or bentonite) = 0 ft per day                        |
| <b>Ponds Intercepting Groundwater</b> (excavated ponds filled with shallow Ground Water) = 0 ft per day |

# ET Idaho 2009: Evapotranspiration and Consumptive Irrigation Water Requirements for Idaho

Please send suggestions for improving this site to [robison@kimberly.uidaho.edu](mailto:robison@kimberly.uidaho.edu) Copyright 2010, University of Idaho.

## Fairfield (NWS --103108 )

Statistics based on thirty

For a different land cover or crop click on the above link.

You can highlight this table and copy via the clipboard to a Microsoft Excel or OpenOffice spreadsheet to plot or otherwise work with this data.

| Open water - shallow systems (ponds, streams)                    |        |       |      |      |      |      |      |      |      |      |       |       |                             |                                 |
|------------------------------------------------------------------|--------|-------|------|------|------|------|------|------|------|------|-------|-------|-----------------------------|---------------------------------|
| Precipitation Deficit ( <a href="#">Click here for a graph</a> ) |        |       |      |      |      |      |      |      |      |      |       |       |                             |                                 |
|                                                                  | Jan    | Feb   | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov   | Dec   | Growing Season <sup>a</sup> | Non Growing Season <sup>b</sup> |
| Mean                                                             | mm/day |       |      |      |      |      |      |      |      |      |       |       | mm                          |                                 |
| Monthly <sup>c</sup>                                             | -1.43  | -0.78 | 0.42 | 1.82 | 2.92 | 3.63 | 4.31 | 3.73 | 2.55 | 1.76 | -0.83 | -1.35 | 515                         | 0                               |
| 15-Day Moving Average <sup>d</sup>                               | -1.61  | -1.10 | 0.39 | 1.90 | 2.85 | 3.64 | 4.41 | 3.64 | 2.43 | 1.73 | -0.89 | -1.39 |                             |                                 |
| 7-Day Moving Average <sup>e</sup>                                | -1.54  | -0.93 | 0.41 | 1.85 | 2.88 | 3.61 | 4.38 | 3.72 | 2.47 | 1.72 | -0.90 | -1.39 |                             |                                 |
| 3-Day Moving Average <sup>f</sup>                                | -1.46  | -0.78 | 0.42 | 1.84 | 2.91 | 3.63 | 4.32 | 3.73 | 2.52 | 1.75 | -0.86 | -1.34 |                             |                                 |
| Standard Deviation                                               | mm/day |       |      |      |      |      |      |      |      |      |       |       | mm                          |                                 |
| Monthly                                                          | 1.92   | 1.19  | 1.17 | 0.86 | 1.50 | 0.97 | 0.97 | 1.42 | 1.13 | 1.13 | 1.37  | 2.22  | 127                         | 0                               |
| 15-Day Moving Average                                            | 2.16   | 1.77  | 1.16 | 1.07 | 1.60 | 1.32 | 0.84 | 1.44 | 1.49 | 1.10 | 1.69  | 2.22  |                             |                                 |
| 7-Day Moving Average                                             | 2.80   | 2.48  | 1.52 | 1.60 | 1.99 | 1.84 | 1.24 | 1.63 | 1.85 | 1.62 | 2.19  | 2.86  |                             |                                 |
| 3-Day Moving Average                                             | 3.66   | 3.05  | 2.14 | 2.23 | 2.51 | 2.40 | 1.89 | 2.04 | 2.38 | 2.06 | 2.97  | 3.58  |                             |                                 |
| 20% Exceedance                                                   | mm/day |       |      |      |      |      |      |      |      |      |       |       | mm                          |                                 |
| Monthly                                                          | -0.37  | 0.22  | 0.83 | 2.47 | 3.55 | 4.42 | 4.87 | 4.43 | 3.47 | 2.44 | 0.08  | -0.36 | 594                         | 0                               |
| 15-Day Moving Average                                            | 0.59   | 0.93  | 1.67 | 3.34 | 4.65 | 5.15 | 5.33 | 4.77 | 4.00 | 2.94 | 1.06  | 0.52  |                             |                                 |
| 7-Day Moving Average                                             | 0.87   | 1.29  | 1.97 | 3.90 | 5.31 | 5.61 | 5.52 | 5.09 | 4.43 | 3.47 | 1.62  | 0.78  |                             |                                 |
| 3-Day Moving Average                                             | 0.97   | 1.50  | 2.47 | 4.77 | 5.76 | 6.05 | 5.82 | 5.36 | 4.68 | 3.94 | 2.03  | 1.04  |                             |                                 |

| 80%<br>Exceedance                                                                         | mm/day |       |       |      |       |      |      |       |      |      |       |       | mm   |      |      |
|-------------------------------------------------------------------------------------------|--------|-------|-------|------|-------|------|------|-------|------|------|-------|-------|------|------|------|
| Monthly                                                                                   | -2.40  | -1.88 | -0.28 | 0.88 | 2.31  | 2.67 | 3.72 | 3.42  | 1.22 | 0.97 | -2.18 | -2.93 | 399  | 0    | 399  |
| 15-Day<br>Moving<br>Average                                                               | -4.62  | -3.77 | -1.45 | 0.40 | 1.55  | 1.10 | 3.02 | 2.28  | 0.11 | 0.39 | -4.01 | -4.57 |      |      |      |
| 7-Day Moving<br>Average                                                                   | -9.10  | -7.95 | -3.51 | 2.43 | -0.22 | 1.36 | 1.37 | 0.75  | 2.21 | 3.19 | -6.50 | -6.87 |      |      |      |
| 3-Day Moving<br>Average                                                                   | 17.29  | 12.45 | -7.66 | 6.53 | -3.78 | 4.86 | 2.29 | -1.91 | 6.30 | 6.15 | 11.23 | 11.05 |      |      |      |
| <b>Ave<br/>Highest<br/>P<sub>def</sub></b>                                                | mm/day |       |       |      |       |      |      |       |      |      |       |       | --   |      |      |
| 15-Day<br>Moving<br>Average <sup>g</sup>                                                  | 0.30   | 0.49  | 1.29  | 2.79 | 3.85  | 4.58 | 4.95 | 4.28  | 3.20 | 2.59 | 0.54  | 0.26  |      |      |      |
| 7-Day Moving<br>Average <sup>h</sup>                                                      | 0.68   | 1.03  | 1.74  | 3.46 | 4.72  | 5.29 | 5.29 | 4.83  | 3.94 | 3.12 | 1.09  | 0.60  |      |      |      |
| 3-Day Moving<br>Average <sup>i</sup>                                                      | 0.86   | 1.33  | 2.18  | 4.10 | 5.31  | 5.78 | 5.64 | 5.12  | 4.40 | 3.54 | 1.64  | 0.82  |      |      |      |
| <b>Ave Lowest<br/>P<sub>def</sub></b>                                                     | mm/day |       |       |      |       |      |      |       |      |      |       |       | --   |      |      |
| 15-Day<br>Moving<br>Average <sup>g</sup>                                                  | -2.90  | -1.98 | -0.48 | 1.02 | 1.95  | 2.70 | 3.74 | 3.03  | 1.55 | 0.92 | -2.00 | -2.74 |      |      |      |
| 7-Day Moving<br>Average <sup>h</sup>                                                      | -5.47  | -4.14 | -1.59 | 0.52 | 0.48  | 1.14 | 2.61 | 2.01  | 0.29 | 0.38 | -3.68 | -4.99 |      |      |      |
| 3-Day Moving<br>Average <sup>i</sup>                                                      | 10.32  | -7.27 | -4.09 | 3.22 | -2.07 | 1.27 | 0.50 | 0.04  | 2.18 | 2.46 | -6.79 | -8.89 |      |      |      |
| <b>Special normal distribution parameters for monthly, seasonal, and annual intervals</b> |        |       |       |      |       |      |      |       |      |      |       |       | --   |      |      |
| Skew                                                                                      | -0.40  | -0.71 | -0.28 | 0.24 | -0.61 | 0.44 | 0.30 | -0.65 | 0.88 | 0.03 | -0.46 | -0.52 | 0.00 | 0.00 | 0.00 |
| Kurtosis                                                                                  | 1.03   | 3.40  | 0.90  | 2.43 | 1.86  | 2.66 | 0.83 | 1.53  | 2.81 | 0.62 | 3.16  | 1.53  | 3.21 | 0.00 | 3.21 |

<sup>a</sup> Growing Season: This is usually the time from green up or planting in the spring to a killing frost or harvest in the fall. It is not applicable for entries without a growing season and will be blank.

<sup>b</sup> Nongrowing Season: This is usually the time from a killing frost or harvest in the fall to the of green up in the spring. It is not applicable for entries without a growing season.

<sup>c</sup> Mean of the average daily value for month

<sup>d</sup> Mean of the fourteen 15-day period averages contained in the month

<sup>e</sup> Mean of the twenty three 7-day period averages contained in the month

<sup>f</sup> Mean of the twenty seven 3-day period averages contained in the month

<sup>g</sup> Mean of the highest/lowest 15-day period average in month

<sup>h</sup> Mean of the highest/lowest 7-day period average in month

<sup>i</sup> Mean of the highest/lowest 3-day period average in month

This work and report were prepared by the University of Idaho Research and Extension Center at Kimberly, Idaho under contract with the Idaho Department of Water Resources. Work was supported by funding from IDWR and the Idaho Agricultural Experiment Station and Idaho Engineering Experiment Station. The authors gratefully acknowledge the long-term evapotranspiration data collection and long-standing advice provided by Dr. James L. Wright, USDA-ARS Kimberly (ret.), the more than two decades of high quality agricultural weather data collection by the U.S. Bureau of Reclamation AgriMet system, and the very long-standing, routine data collection by the hundreds of cooperative weather station volunteers across the state who, for more than one-hundred years, have faithfully observed daily air temperature and precipitation.

The citation for the evapotranspiration data used from this site should be: *Allen, Richard G. and Clarence W. Robison, 2009. Evapotranspiration and Consumptive Irrigation Water Requirements for Idaho: Supplement updating the Time Series through December 2008, Research Technical Completion Report, Kimberly Research and Extension Center, University of Idaho, Moscow, ID.*

Questions regarding the data should be addressed to [Clarence W. Robison](#) or [Richard G. Allen](#), University of Idaho, Kimberly Research and Extension Center, 3793 North 3600 East, Kimberly, ID 83341. Telephone (208)-423-6610

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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: : :

766987

1. WELL TAG NO. D 0020037  
 DRILLING PERMIT NO. \_\_\_\_\_  
 Other IDWR No. \_\_\_\_\_

**2. OWNER:**

Name LONNIE LEAVELL  
Address 1807 CR 1750 S.  
City GOODING State ID Zip 83330

**3. LOCATION OF WELL by legal description:**

Sketch map location must agree with written location.

Twp. 1 North ☐ or South ☒  
 Rge. 15 East ☒ or West ☐  
 Sec. 27 SW  $\frac{1}{4}$  NW  $\frac{1}{4}$  SE  $\frac{1}{4}$   
10 acres 10 acres 10 acres  
 Gov't Lot \_\_\_\_\_ County CATAS  
 Lat: \_\_\_\_\_ Long: \_\_\_\_\_  
 Address of Well Site VANDIVER  
 City FAIRFIELD  
 PLACE \_\_\_\_\_  
 (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        | 0    | 8' | 3 SK            | TREMBLE |
|                  |      |    |                 |         |
|                  |      |    |                 |         |

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"       | +18" | 8' | 12.5  | STEEL    | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
|          |      |    |       |          | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
|          |      |    |       |          | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |

Length of Headpipe \_\_\_\_\_ Length of Tailpipe \_\_\_\_\_

## 9. PERFORATIONS/SCREENS

|              |             |       |
|--------------|-------------|-------|
| Perforations | Method      | _____ |
| Screens      | Screen Type | _____ |

| From | To | Slot Size | Number | Diameter | Material | Casing                   | Liner                    |
|------|----|-----------|--------|----------|----------|--------------------------|--------------------------|
|      |    |           |        |          |          | <input type="checkbox"/> | <input type="checkbox"/> |
|      |    |           |        |          |          | <input type="checkbox"/> | <input type="checkbox"/> |
|      |    |           |        |          |          | <input type="checkbox"/> | <input type="checkbox"/> |

**10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:**

25 ft. below ground      Artesian pressure        lb.  
Depth flow encountered 49 ft. Describe access port or  
control devices:

## 11. WELL TESTS:

☐ Pump    ☐ Bailer    ☒ Air    ☐ Flowing Artesian

| Yield gal./min. | Drawdown | Pumping Level | Time |
|-----------------|----------|---------------|------|
| +25 gpm         |          |               |      |
|                 |          |               |      |
|                 |          |               |      |

Water Temp. 50° F. Bottom hole temp.

Water Quality test or comments:

Depth first Water Encounter 49

12. LITHOLOGIC LOG: (Describe repairs or abandonment) Water

| Bore Dia.                                                               | From    | To  | Remarks: Lithology, Water Quality & Temperature | Y            | N |
|-------------------------------------------------------------------------|---------|-----|-------------------------------------------------|--------------|---|
| 9                                                                       | 0       | 2   | TOP SOIL                                        |              | X |
| 9                                                                       | 2       | 13  | BLACK BASALT                                    |              | X |
| 6                                                                       | 13      | 14  | CINDERS                                         |              | X |
|                                                                         | 14      | 49  | BLACK BASALT                                    |              | X |
|                                                                         | 49      | 53  | CINDERS                                         | X            |   |
|                                                                         | 53      | 74  | BLACK BASALT                                    |              |   |
|                                                                         | 74      | 76  | CINDERS                                         |              |   |
|                                                                         | 76      | 84  | BLACK BASALT                                    |              |   |
|                                                                         | 84      | 88  | CINDER W/ HARD BLUE CLAY                        |              |   |
|                                                                         | 88      | 92  | BASALT                                          |              |   |
|                                                                         | 92      | 94  | CINDERS                                         | X            |   |
|                                                                         | 94      | 98  | BASALT                                          |              |   |
|                                                                         | 98      | 99  | CINDERS                                         | X            |   |
|                                                                         | 99      | 102 | BASALT                                          |              |   |
|                                                                         | 102     | 107 | CINDERS                                         |              |   |
|                                                                         | 107     | 116 | BLACK BASALT                                    |              |   |
|                                                                         | 116     | 126 | CINDERS                                         |              |   |
|                                                                         | 126     | 136 | SOFT BASALT                                     |              |   |
|                                                                         | 136     | 145 | CINDERS                                         |              |   |
| 7                                                                       | 145     | 163 | SOFT BASALT & CINDERS                           | X            |   |
| <p>RECEIVED</p> <p>NOV 09 2000</p> <p>Department of Water Resources</p> |         |     |                                                 |              |   |
| Completed                                                               | Depth   |     | 163'                                            | (Measurable) |   |
| Date: Started                                                           | 10/6/00 |     | Completed                                       | 10/15/00     |   |

### 13. DRILLER'S CERTIFICATION

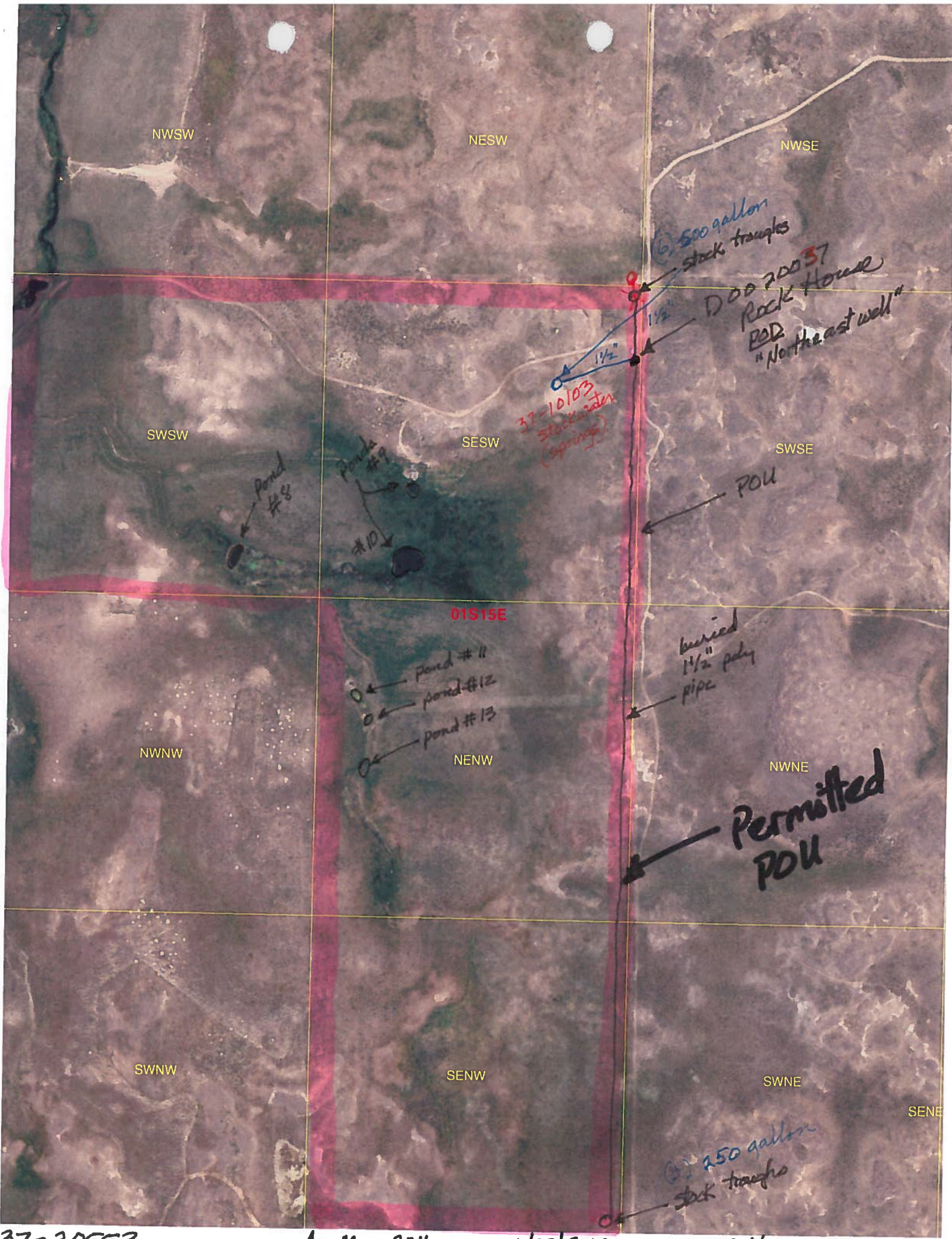
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

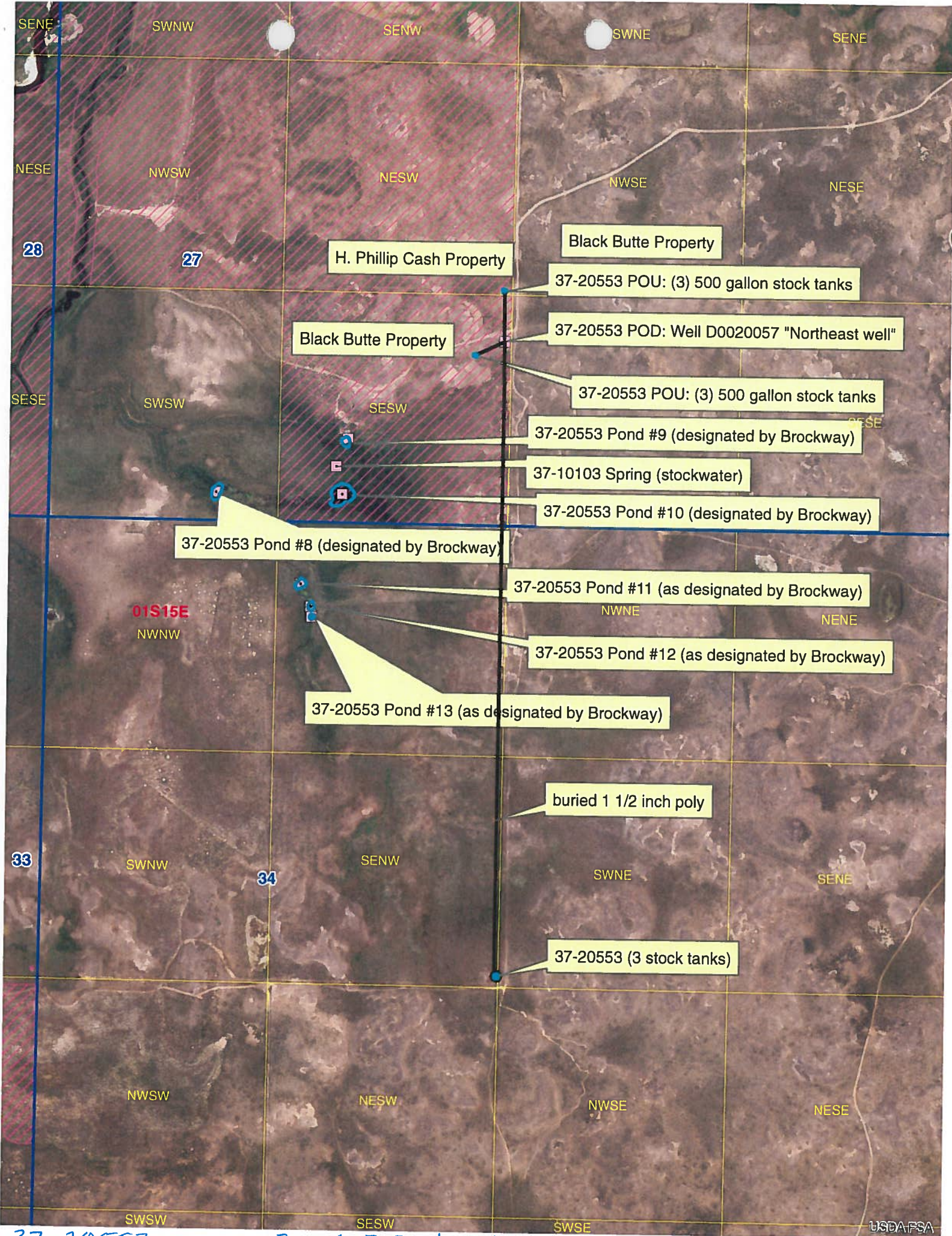
Company Name CAMAS WELL DRILLERS Firm No. 275

Firm Office F. L. Gurner Date 10/29/00

and  
Driller or Operator Date

(Sign once if Firm Official & Operator)





28

27

33

34

37-20553

DOI & POD Locations

< Home

SENW

SWNE

1 1/2 inch buried poly from the Northeast well/Rock House

34

01S15E

37-20553 POU: (3) 250 gallon stock tanks

ArcMap esri Imagery, 1:557

NESW

NWSE



37-20553 Pond #11 (as designated by Brockway)

NENW 34

37-20553 Pond #12 (as designated by Brockway)

01S15E

37-20553 Pond #13 (as designated by Brockway)

ArcMap 2011 Imagery, 1:800

SWSW

SESW

27

37-20553 Pond #9 (designated by Brockway)

01S13E

37-10103 Spring (stockwater)

37-20553 Pond #8 (designated by Brockway)

37-20553 Pond #10 (designated by Brockway)

ArcMap 2011 Imagery 1:1,650

NWNW

NENW

34

37-20553 Pond #11 (as designated by Brockway)

37-20553 Pond #12 (as designated by Brockway)

37-20553 Pond #13 (as designated by Brockway)

NESW

NWSE

H. Phillip Cash Property

Black Butte Property

37-20553 POU: (3) 500 gallon stock tanks

1 1/2 inch buried poly running south  
to the (3) 250 gallon stock tanks

27

01S15E

Black Butte Property

BLM PROPERTY

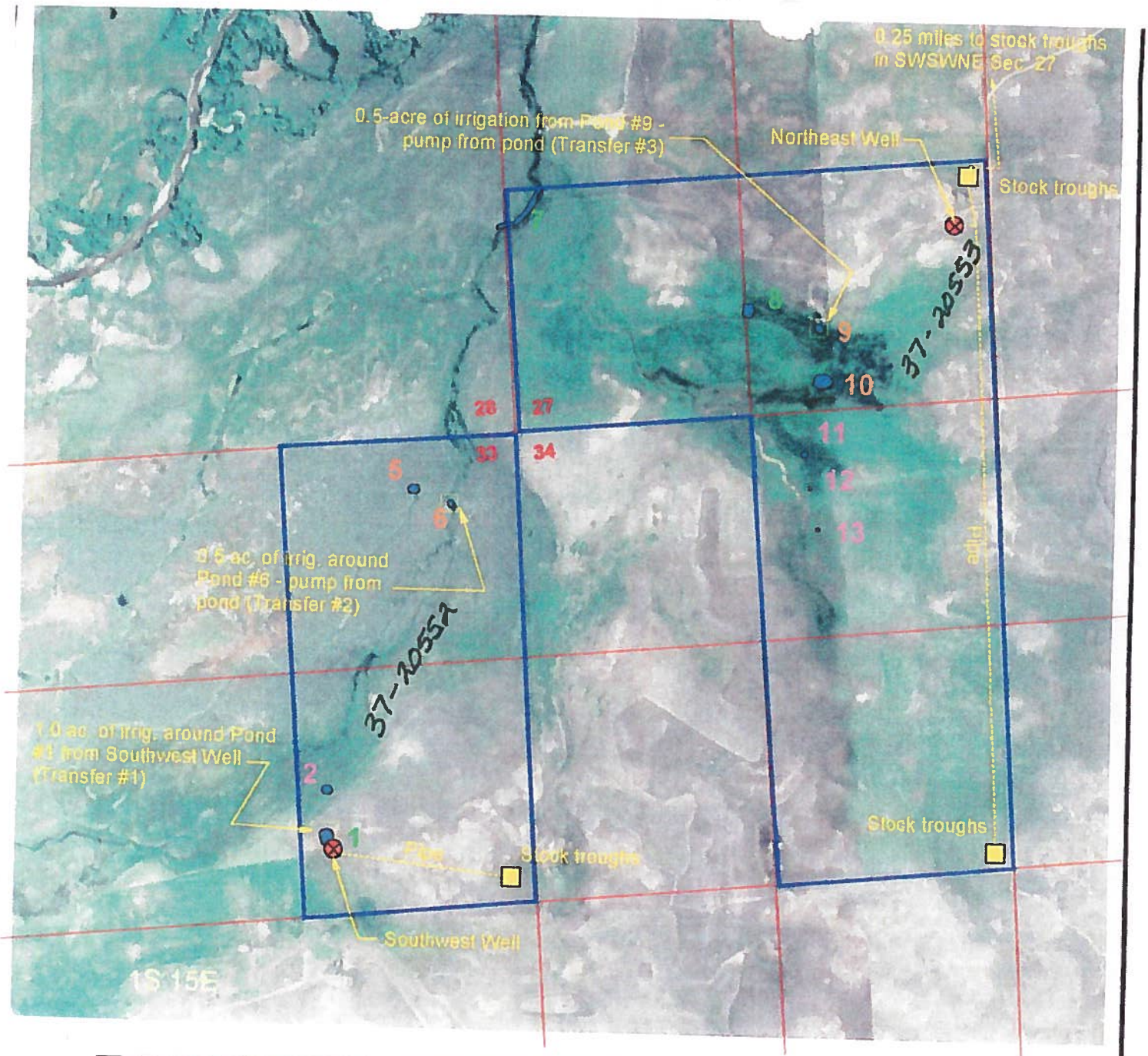
37-20553 POD: Well D0020057 "Northeast well"

SESW

37-20553 POU: (3) 500 gallon stock tanks

SWSE

ArcMap esri Imagery, 1:1,022



#### EXPLANATION

Ponds are color-coded according to their hydrologic status:

New open water Ponds

Wetland to open conversion ponds

Pre-existing ponds dug into groundwater

● Ponds

— Property boundary

⊗ Wells

SCALE: 1" = 800' (approx.)



Photo Date: 1999

Brockway Engineering June 4, 2001

## Permit and Transfer Applications Lonnie Leavell - Rock House Property

## WATER RIGHT APPLICATIONS FOR LONNIE LEAVELL ROCK HOUSE PROPERTY

Brockway Engineering, PLLC  
June 4, 2001

### 1. Permit Applications **37-20552**

**Application #1** is a permit application for 1000 head of stock and associated pond storage of 1.86 acre-feet on the south portion of the Rock House property. The source is groundwater (ponds dug into shallow water) and also one well in the SENE33. See the attached aerial photo map.

The total pond surface area is 0.36 acres, 0.31 of which is wetland-to-open water conversion which does not result in an increase in consumptive use, according to IDWR policy. The remaining 0.05 acres is "new" open water evaporation.

The peak evaporation (July) for 0.05 acres of ponds is 291 gpd, as determined using the Molnau (1992) procedure for monthly free water surface evaporation in Idaho (see attached spreadsheet). Stockwater volume for 1000 head of cattle at 12 gpd is 12,000 gpd, for a total of 12,291 gpd. This is less than the allowable 13,000 gpd under the Part A exemption for stockwater, so no mitigation is required for this permit application.

Points of diversion:

2 ponds in NENE Sec. 33

2 ponds, 1 well in SENE Sec. 33

**37-20553** **Application #2** is a permit application for 1000 head of stock and associated pond storage of 1.61 acre-feet on the south portion of the Rock House property. The source is groundwater (ponds dug into shallow water) and also one well in the SESW27. See the attached aerial photo map.

The total pond surface area is 0.36 acres, 0.25 of which is wetland-to-open water conversion which does not result in an increase in consumptive use, according to IDWR policy. The remaining 0.11 acres is "new" open water evaporation.

The peak evaporation (July) for 0.11 acres of ponds is 641 gpd, as determined using the Molnau (1992) procedure for monthly free water surface evaporation in Idaho (see attached spreadsheet). Stockwater volume for 1000 head of cattle at 12 gpd is 12,000 gpd, for a total of 12,641 gpd. This is less than the allowable 13,000 gpd under the Part A exemption for stockwater, so no mitigation is required for this permit application.

Points of diversion:

3 ponds, 1 well in SESW Sec. 27

3 very small ponds in NENW Sec. 34

ROCK HOUSE, cont'd

**2. Transfers for irrigation usage**

2.0 acres of trees will be irrigated on Rock House as follows:

- 1.0 acre in NENE33 (from pond)
- 0.5 acres in SENE33 (from well)
- 0.5 acres in SESW27 (from pond).

Three transfer applications are being filed to move acres from Magic Ranch (groundwater license 37-07395).

Transfer #1 – southwest well in SENE Sec. 33

Transfer #2 – pond in NENE Sec. 33

Transfer #3 – northeast well in SESW Sec. 27

**3. SRBA claims and decrees for stockwater**

37-10103 is a partial decree for stockwater for 0.02 cfs in SESW27. The decree lists no volume and no cow numbers. This right could cover additional stockwater usage in SESW27.

*overlap*