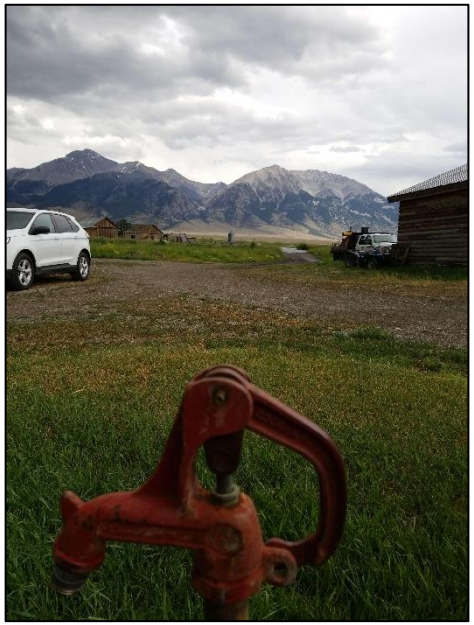
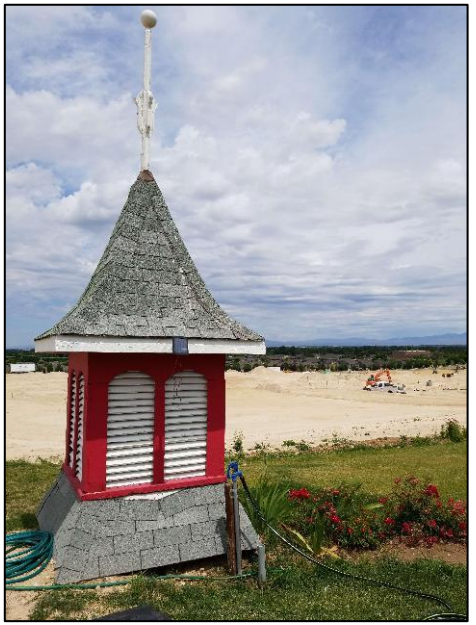
IDAHO Department of Water Resources





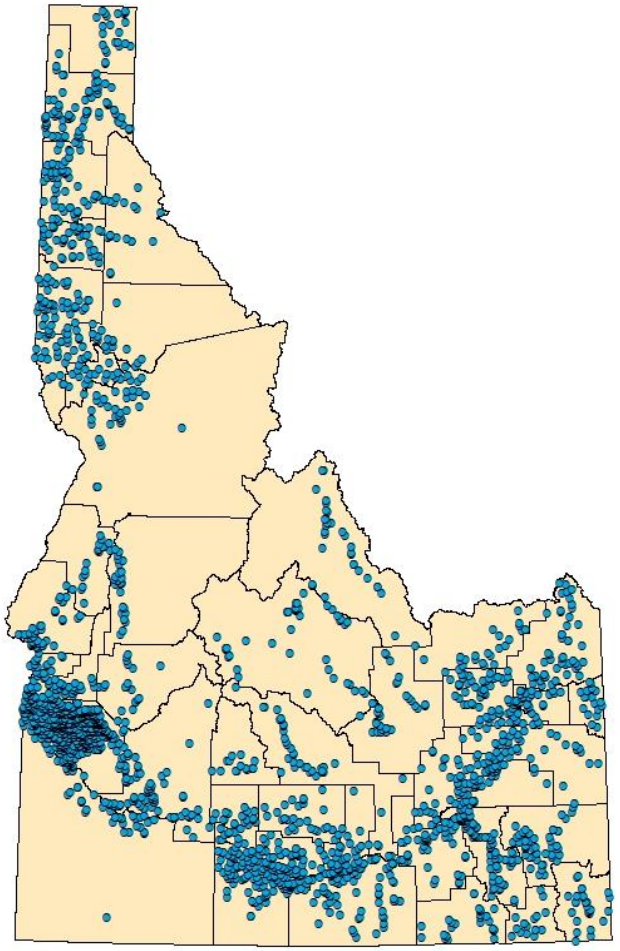
# Statewide Monitoring and Mobile Data Collection

Presented by Amy Steimke

December 12, 2019

# Statewide Ambient Ground Water Quality Monitoring Program

- Statewide Program started up in 1990
- The Program provides valuable information to well owners, other agencies, and the public
- To date, have sampled 2,130 unique wells resulting in over 750,000 results
  - 1,142 active sites
  - 659 inactive sites
  - 329 “problem” sites
- Typically target ~300 wells each year with a 5-year rotation
  - 200-250 wells get sampled



# IDAHO Department of Water Resources


## IDWR Statewide Program: 2018 Constituents

| Field Parameters | Metals | Pesticides |
|---|---|---|
| pH | Arsenic | 2,4-D |
| Conductivity | Cadmium | Alachlor |
| Depth to Water | Calcium | Atrazine |
| Dissolved Oxygen | Copper | Glyphosate |
| Temperature | Iron | Imidacloprid |
| **Common Ions** | Magnesium | Metolachlor |
| Chloride | Manganese | **Emerging Contaminants** |
| Fluoride | Potassium | BPA |
| Sulfate | Selenium | Triclosan |
| | Silica | **Collaborative Sampling** |
| **Nutrients** | Sodium | Methane |
| Ammonia | Uranium | N-15 isotope |
| Nitrate+Nitrite | | |

## IDWR Statewide Program: 2019 Constituents

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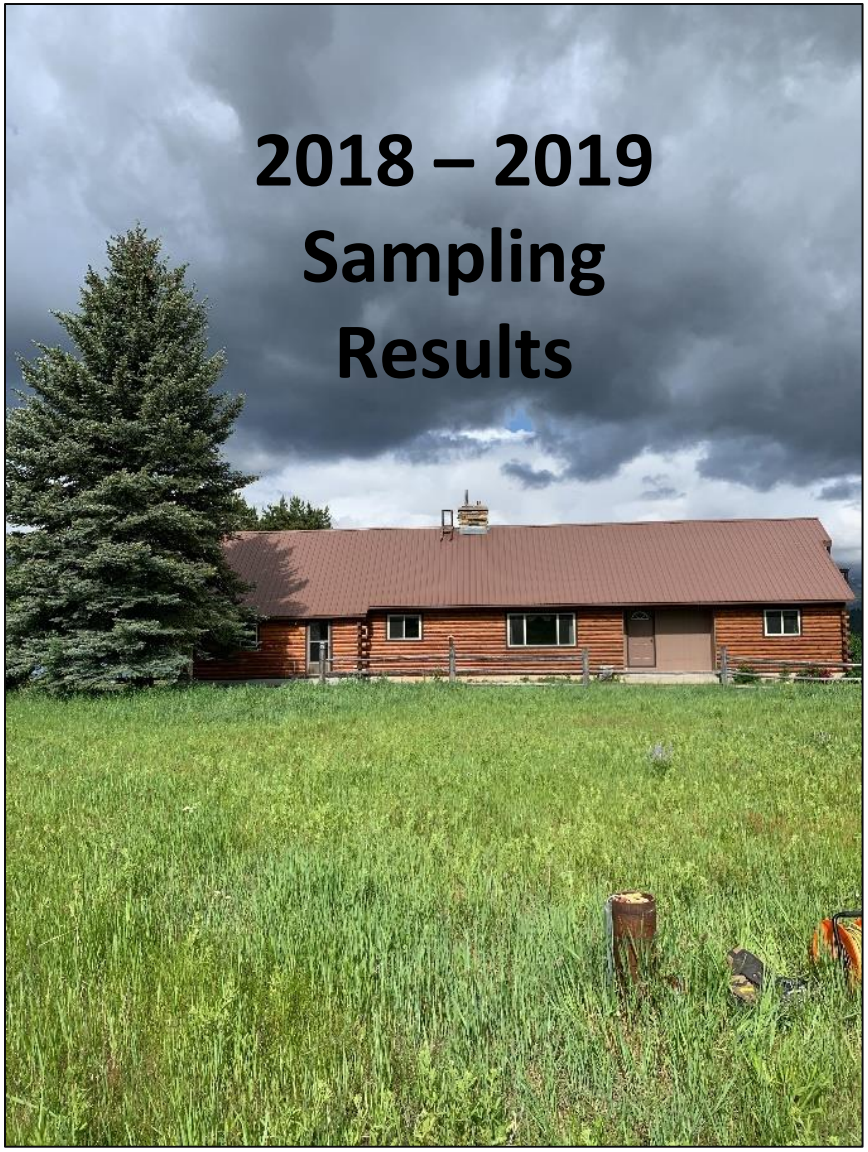
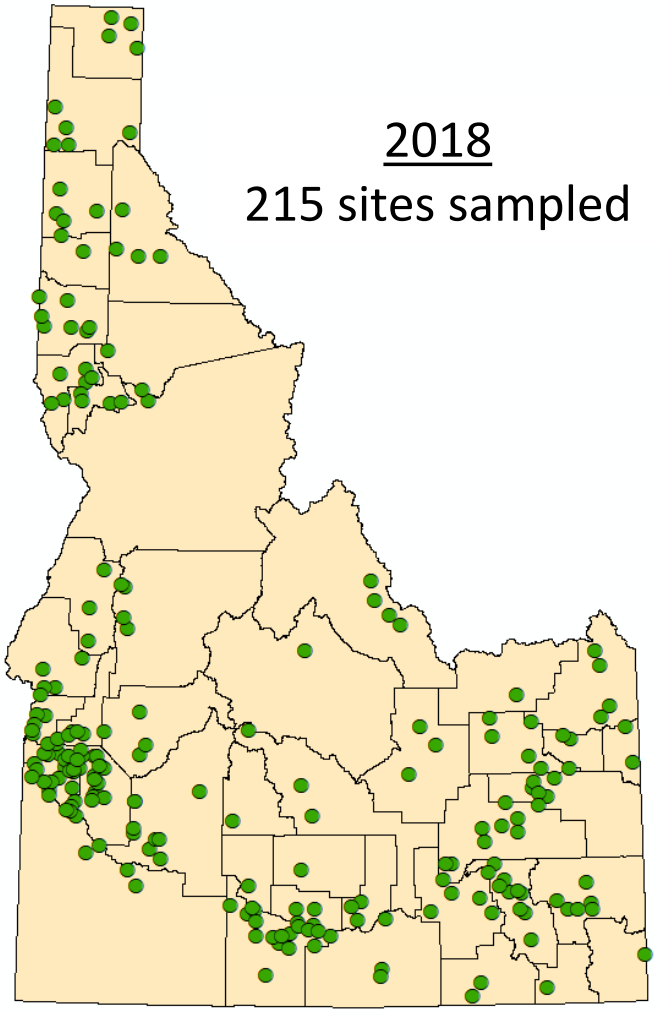
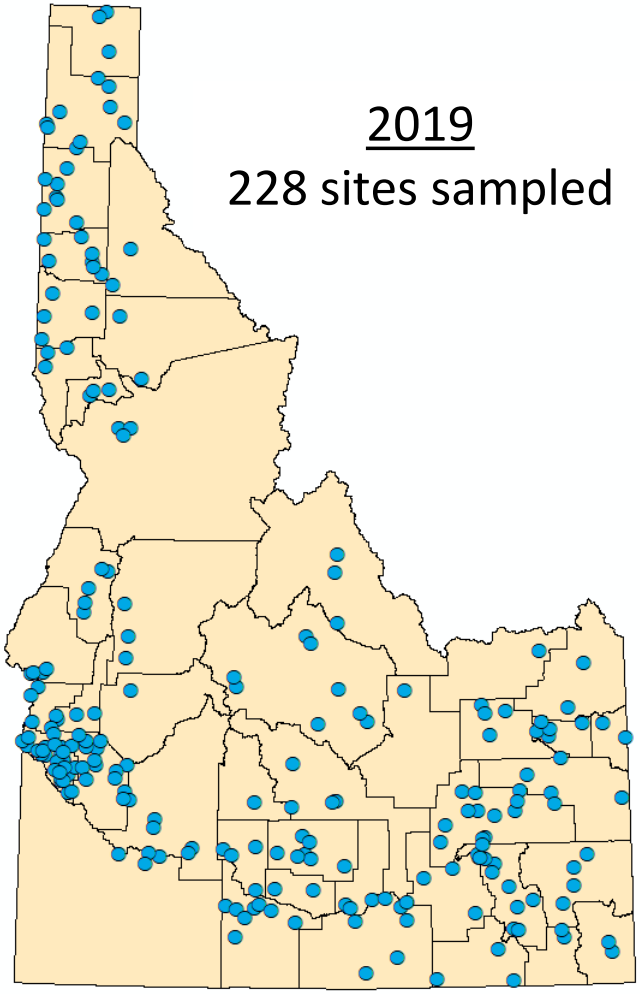
| Ammonia | Uranium | N-15 isotope |
| Nitrate+Nitrite | | |
| Total Phosphorus | | |


2018 – 2019
Sampling
Results

# Sites

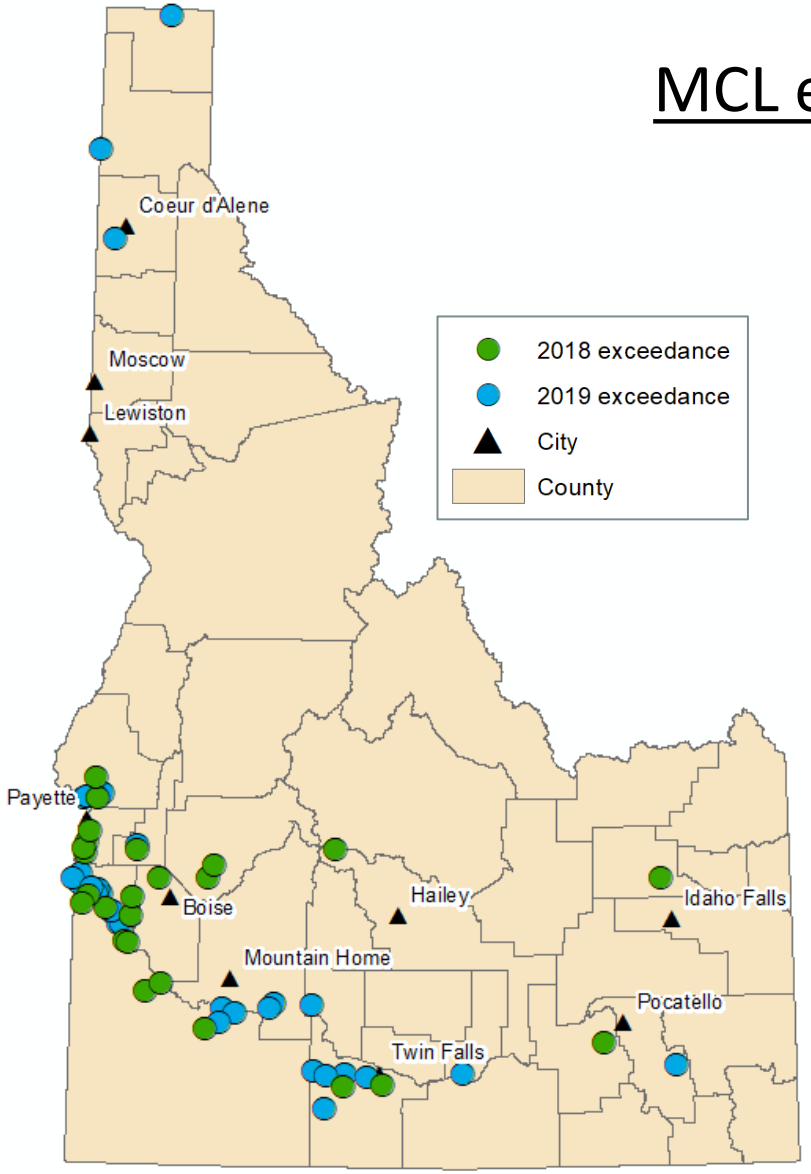


2018
215 sites sampled



2019
228 sites sampled

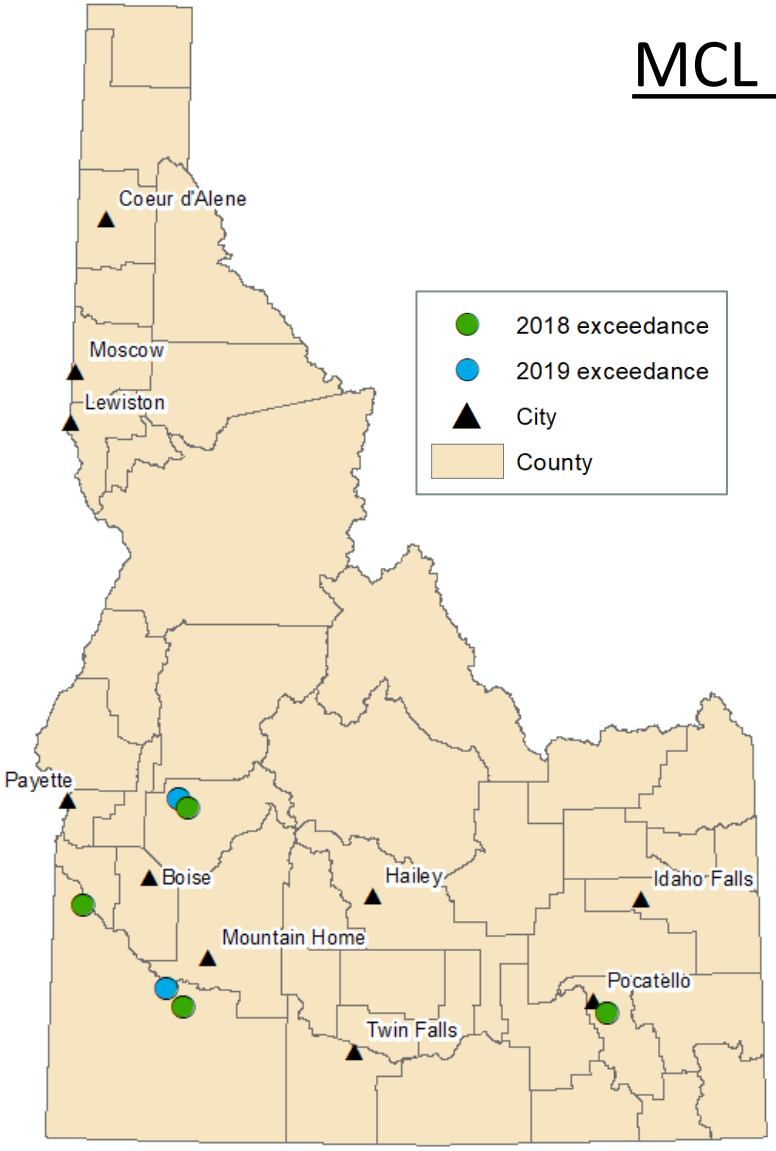
# MCL exceedances - Arsenic




| | 2018 | 2019 |
|---|---|---|
| # wells > MCL | 25 | 31 |
| Max value | 0.77 mg/L | 0.14 mg/L |

Arsenic MCL: 0.01 mg/L

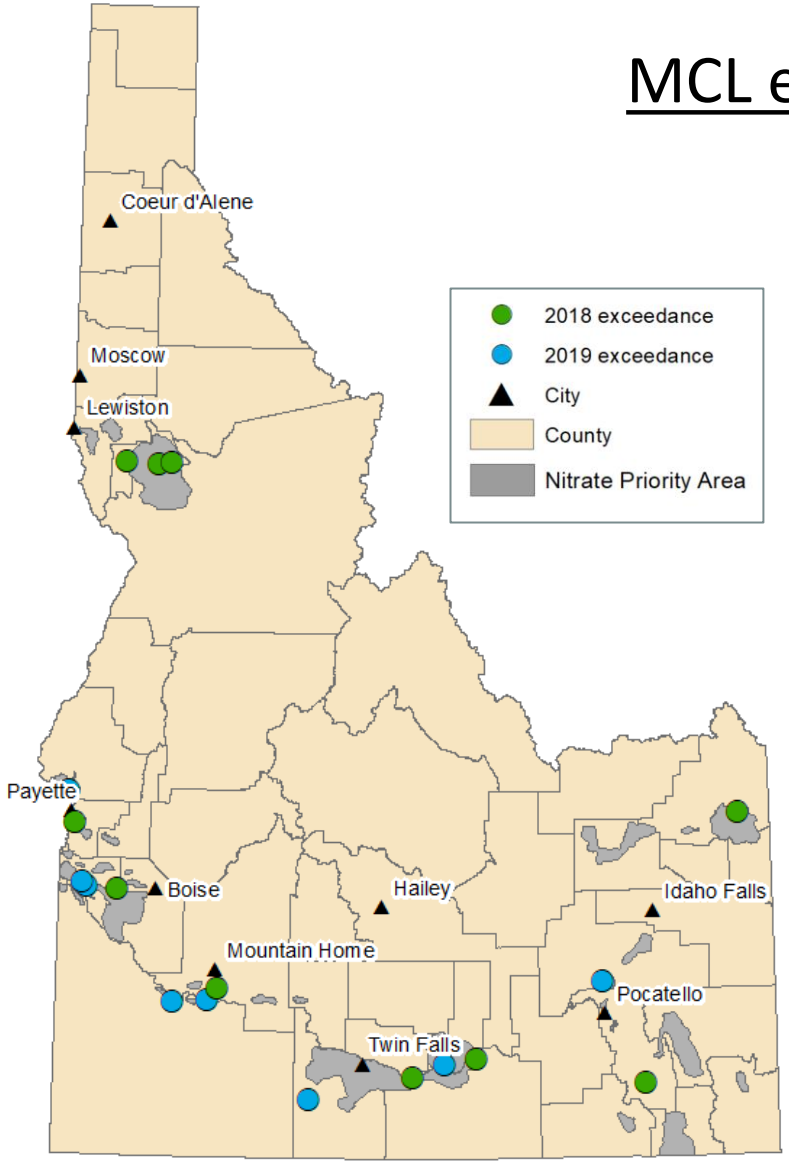
# MCL exceedances - Fluoride




| | 2018 | 2019 |
|---|---|---|
| # wells > MCL | 4 | 2 |
| Max value | 9.85 mg/L | 5.66 mg/L |

Fluoride MCL: 4 mg/L

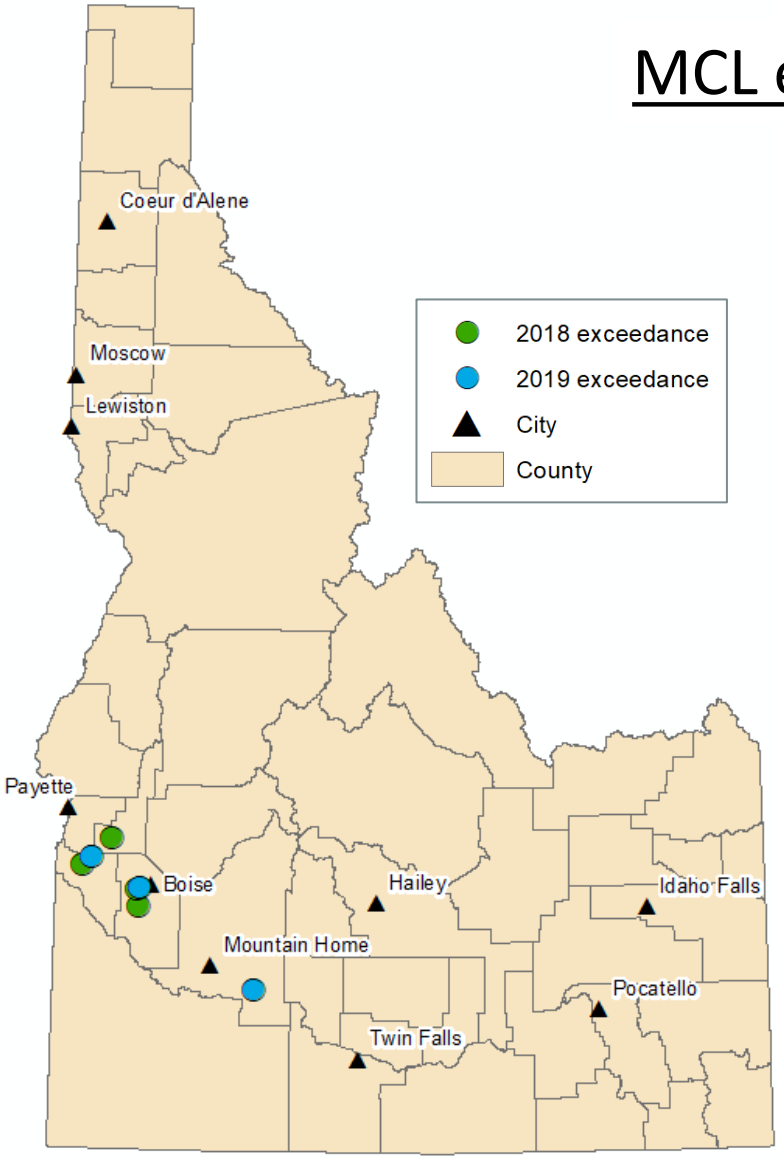
# MCL exceedances - Nitrate




| | 2018 | 2019 |
|---|---|---|
| 0 – 2 mg/L | 153 (71.2%) | 154 (67.5%) |
| 2.1 – 5 mg/L | 33 (15.3%) | 42 (18.4%) |
| 5.1 - 10 mg/L | 19 (8.8%) | 25 (11.0%) |
| > 10 mg/L | 10 (4.7%) | 7 (3.1%) |
| Max value | 54 mg/L | 26 mg/L |

Nitrate MCL: 10 mg/L

# MCL exceedances - Uranium

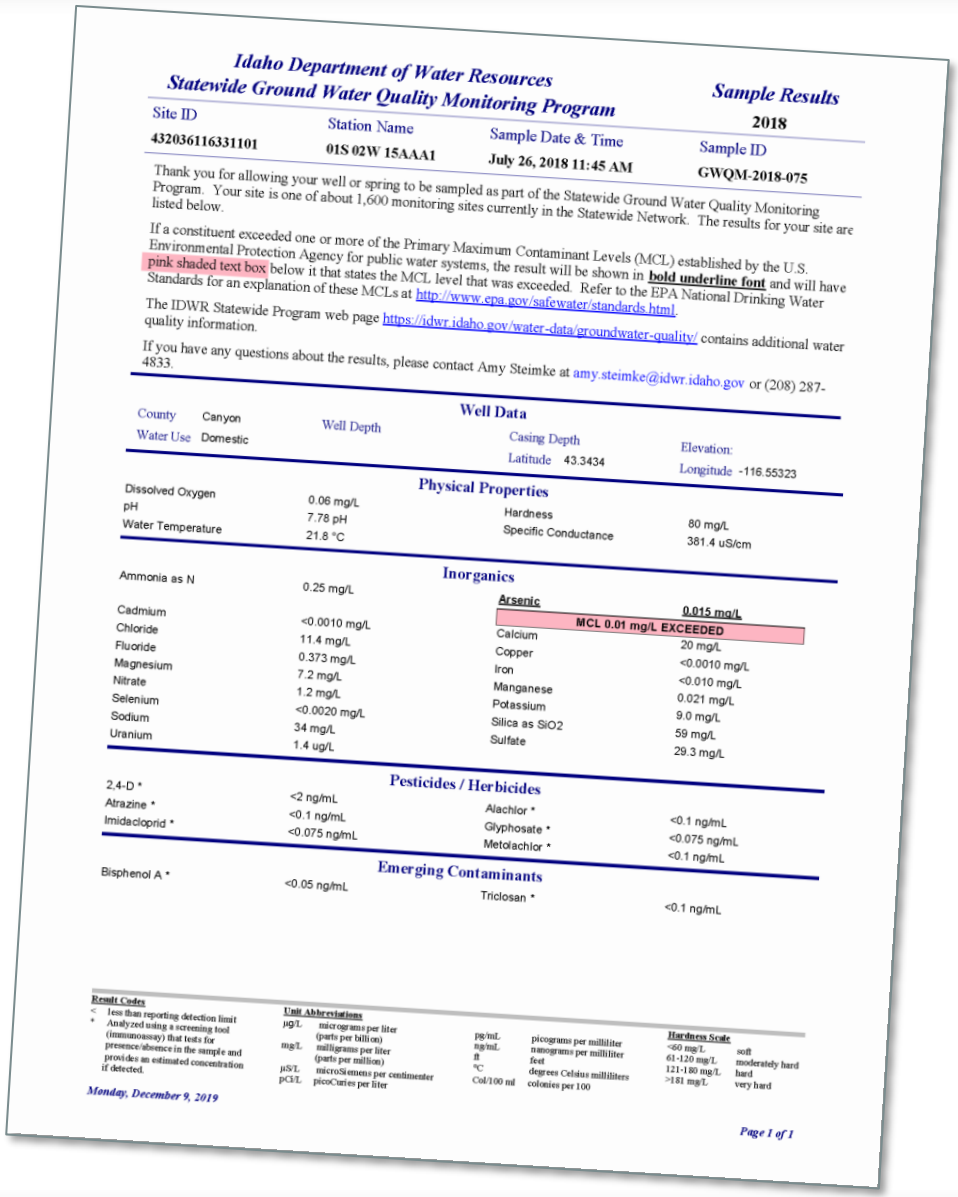



| | 2018 | 2019 |
|---|---|---|
| # wells > MCL | 4 | 3 |
| Max value | 110 µg/L | 98 µg/L |

Uranium MCL: 30 µg/L

COMING SOON

# Communicating results with homeowners

**Idaho Department of Water Resources**
**Statewide Ground Water Quality Monitoring Program**
**Sample Results 2018**

| Site ID | Station Name | Sample Date & Time | Sample ID |
|---|---|---|---|
| 432036116331101 | 01S 02W 15AAA1 | July 26, 2018 11:45 AM | GWQM-2018-075 |

Thank you for allowing your well or spring to be sampled as part of the Statewide Ground Water Quality Monitoring Program. Your site is one of about 1,600 monitoring sites currently in the Statewide Network. The results for your site are listed below.

If a constituent exceeded one or more of the Primary Maximum Contaminant Levels (MCL) established by the U.S. Environmental Protection Agency for public water systems, the result will be shown in **bold underline font** and will have pink shaded text box below it that states the MCL level that was exceeded. Refer to the EPA National Drinking Water Standards for an explanation of these MCLs at http://www.epa.gov/safewater/standards.html.

The IDWR Statewide Program web page https://idwr.idaho.gov/water-data/groundwater-quality/ contains additional water quality information.

If you have any questions about the results, please contact Amy Steimke at amy.steimke@idwr.idaho.gov or (208) 287-4833.

**Well Data**

| | | | |
|---|---|---|---|
| County | Canyon | Well Depth | |
| Water Use | Domestic | Casing Depth | |
| | | Latitude | 43.3434 |
| | | Elevation: | |
| | | Longitude | -116.55323 |

**Physical Properties**

| | | | |
|---|---|---|---|
| Dissolved Oxygen | 0.06 mg/L | Hardness | 80 mg/L |
| pH | 7.78 pH | Specific Conductance | 381.4 uS/cm |
| Water Temperature | 21.8 °C | | |

**Inorganics**

| | | | |
|---|---|---|---|
| Ammonia as N | 0.25 mg/L | | |
| | | **Arsenic** | **0.015 mg/L** |
| | | MCL 0.01 mg/L EXCEEDED | |
| Cadmium | <0.0010 mg/L | Calcium | 20 mg/L |
| Chloride | 11.4 mg/L | Copper | <0.0010 mg/L |
| Fluoride | 0.373 mg/L | Iron | <0.010 mg/L |
| Magnesium | 7.2 mg/L | Manganese | 0.021 mg/L |
| Nitrate | 1.2 mg/L | Potassium | 9.0 mg/L |
| Selenium | <0.0020 mg/L | Silica as SiO2 | 59 mg/L |
| Sodium | 34 mg/L | Sulfate | 29.3 mg/L |
| Uranium | 1.4 ug/L | | |

**Pesticides / Herbicides**

| | | | |
|---|---|---|---|
| 2,4-D * | <2 ng/mL | Alachlor * | <0.1 ng/mL |
| Atrazine * | <0.1 ng/mL | Glyphosate * | <0.075 ng/mL |
| Imidacloprid * | <0.075 ng/mL | Metolachlor * | <0.1 ng/mL |

**Emerging Contaminants**

| | | | |
|---|---|---|---|
| Bisphenol A * | <0.05 ng/mL | Triclosan * | <0.1 ng/mL |

**Result Codes**
< less than reporting detection limit
* Analyzed using a screening tool (immunoassay) that tests for presence/absence in the sample and provides an estimated concentration if detected.

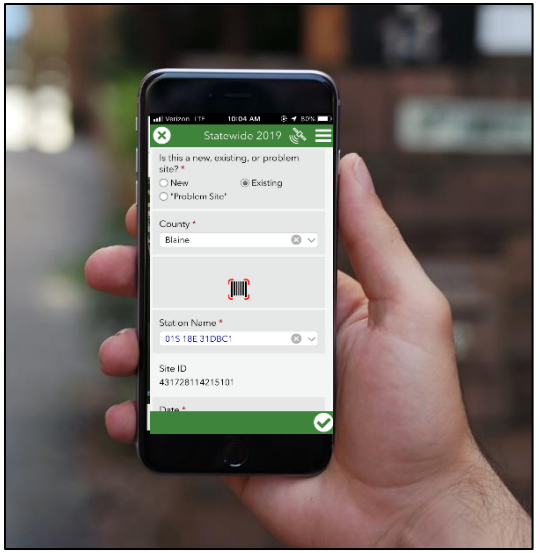
**Unit Abbreviations**
µg/L micrograms per liter (parts per billion)
mg/L milligrams per liter (parts per million)
µS/L microSiemens per centimeter
pCi/L picoCuries per liter
pg/mL picograms per milliliter
ng/mL nanograms per milliliter
ft feet
°C degrees Celsius
Col/100 ml milliliters colonies per 100

**Hardness Scale**
<60 mg/L soft
61-120 mg/L moderately hard
121-180 mg/L hard
>181 mg/L very hard

*Monday, December 9, 2019*

*Page 1 of 1*

# Survey123 for the Statewide Program




ADA
BENEWAH-BINGHAM
CANYON-CASSIA
LATAH-LINCOLN
ADA
CASSIA-CUSTER
BLAINE-BONNER
ADAMS-BEAR LAKE
GEM-JEFFERSON

## Collector

## Survey123


IDAHO Department of Water Resources

**Idaho Department of Water Resources**
**Permission to Sample Ground Water**
**Summer 2019**

**For Office Use Only**
Please route to Amy Steinke, Hydrology Section

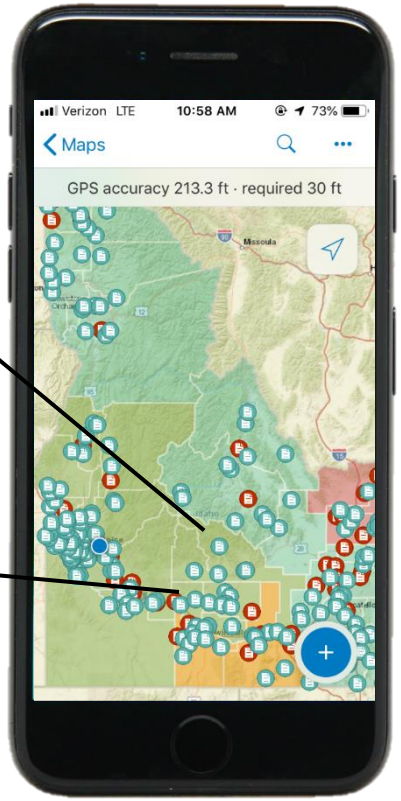
**Site Info**
County: Blaine
Station Name: 015 18E 31DBC1
Site ID: 431728114215101
Metal Tag Number: Permission granted in 04, but not tagged.
Water Use: Domestic
Well Depth (ft): 100
Last Sampled on: 08/06/2014

**Contact Info**
Name:
Organization:
Address: PO Box
City: Hailey, ID

The Idaho Department of Water Resources is requesting permission to sample the water from your well this summer in conjunction with the *Statewide Ground Water Quality Monitoring Program*. Your willingness to participate helps the State of Idaho protect our ground water resources. Please complete the following sections and mail it in the enclosed business reply envelope within two weeks.

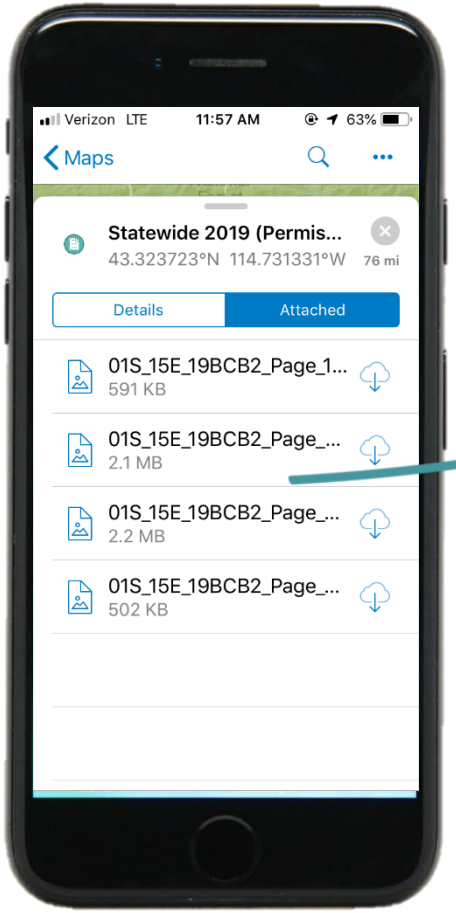
☐ I/We grant permission for a water sample to be collected from our well, even if we are not at home.
☐ I/We grant permission for a water sample to be collected from our well, but call first. ☐ Yes ☐ No
If your well does not have a metal ID tag, is it okay to attach one?
☐ I/We do not want to participate.

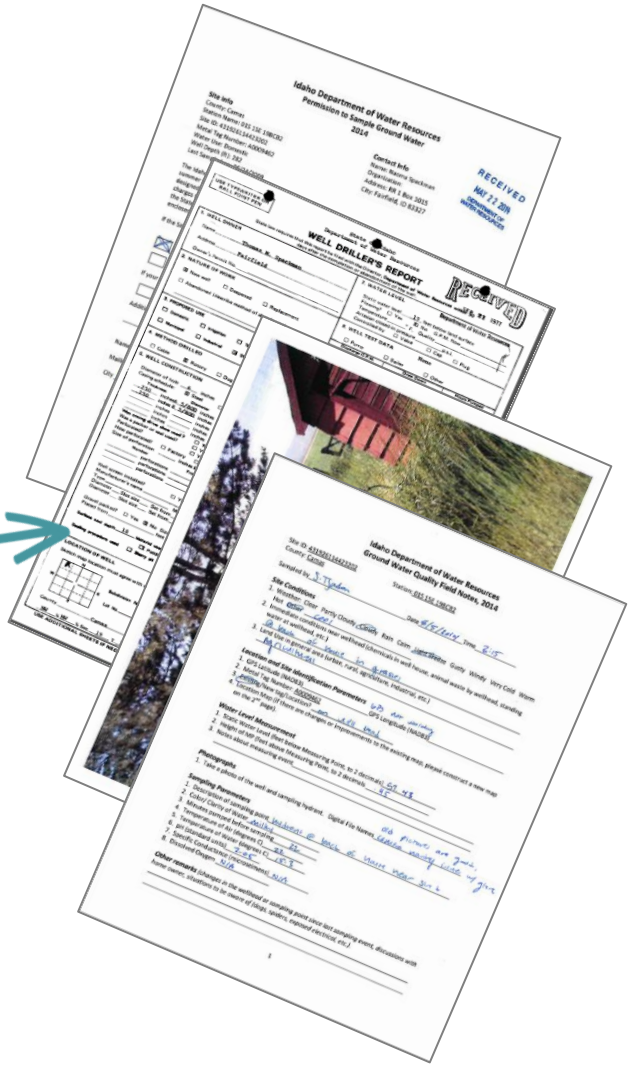
Name(s) Sarah Smith
Mailing Address PO Box 1234
City Hailey Zip Code
Phone number(s) (208) 777-6699
Email Address
Additional Comments Please call at the number above, will need keys to access well.

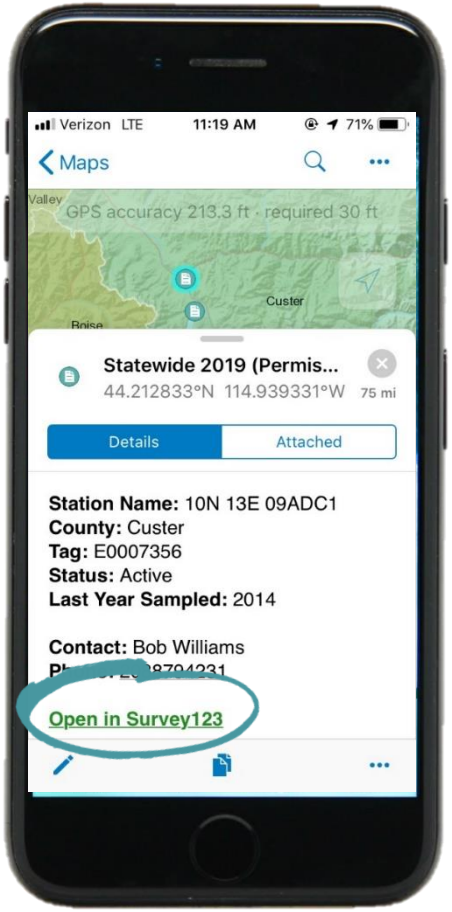



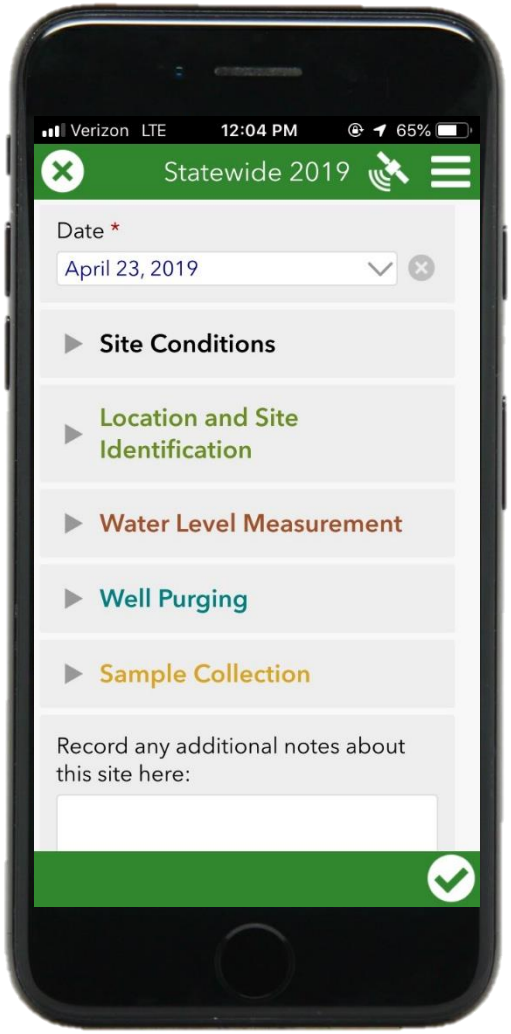

Permission Granted

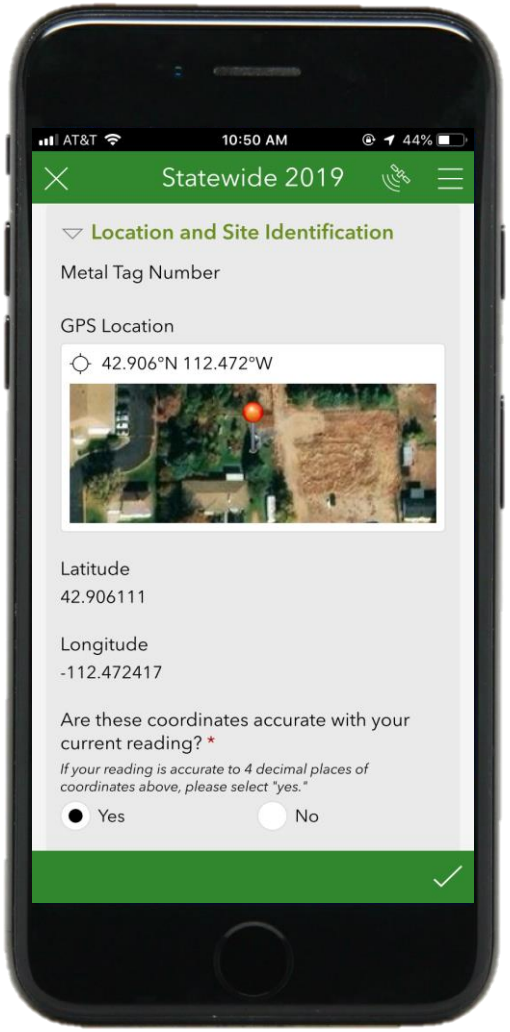
Permission Not Received

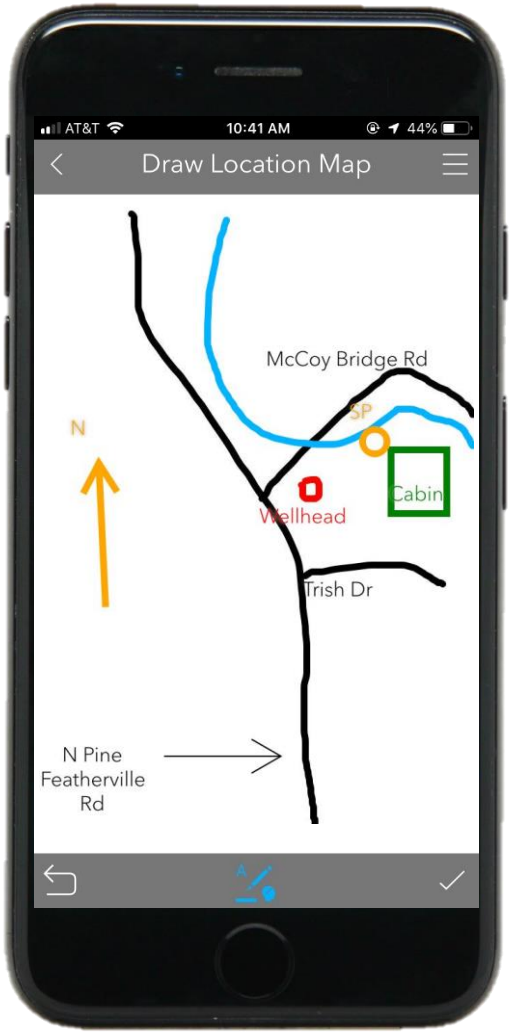

Verizon LTE 11:57 AM 63%
Maps
Statewide 2019 (Permis...
43.323723°N 114.731331°W 76 mi
Details
Attached
01S_15E_19BCB2_Page_1...
591 KB
01S_15E_19BCB2_Page_...
2.1 MB
01S_15E_19BCB2_Page_...
2.2 MB
01S_15E_19BCB2_Page_...
502 KB

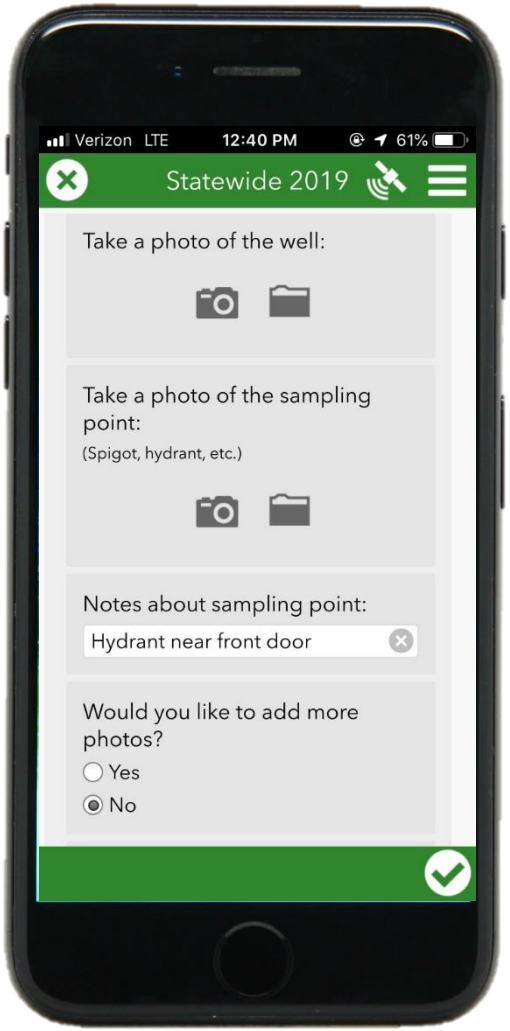

Idaho Department of Water Resources
Permission to Sample Ground Water
2014
WELL DRILLER'S REPORT
RECEIVED
Idaho Department of Water Resources
Ground Water Quality Field Notes, 2014

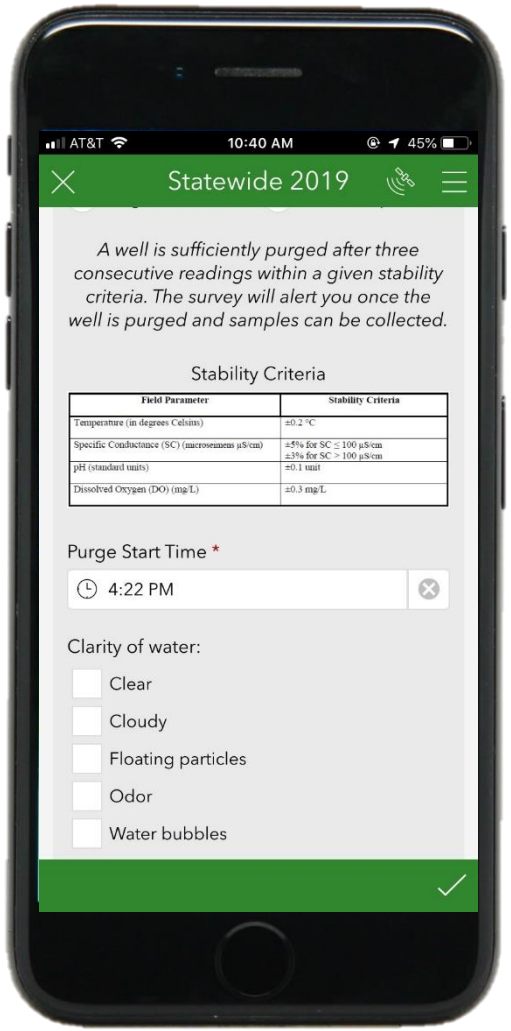

Verizon LTE 11:19 AM 71%
Maps
GPS accuracy 213.3 ft · required 30 ft
Custer
Statewide 2019 (Permis...
44.212833°N 114.939331°W 75 mi
Details
Attached
Station Name: 10N 13E 09ADC1
County: Custer
Tag: E0007356
Status: Active
Last Year Sampled: 2014
Contact: Bob Williams
Open in Survey123

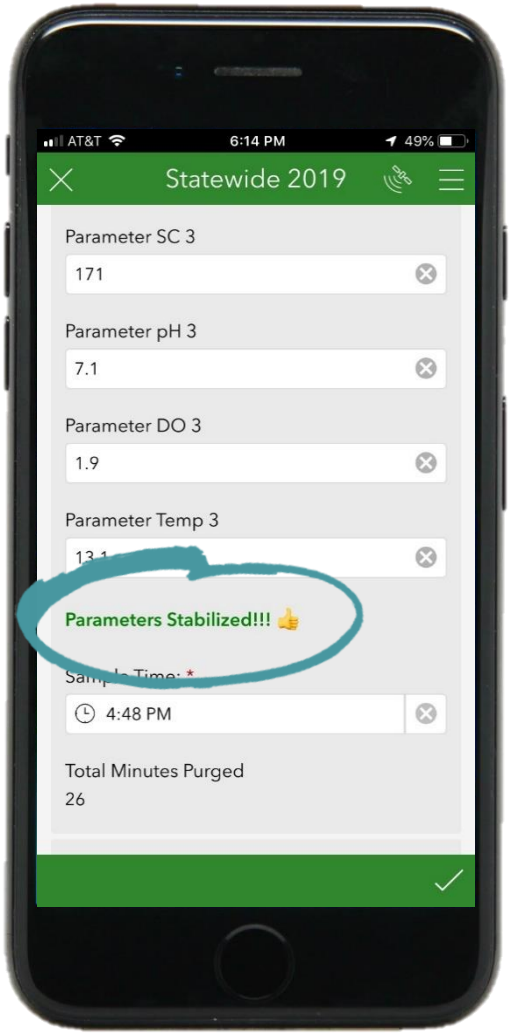

Verizon LTE 12:04 PM 65%
Statewide 2019
Date *
April 23, 2019
Site Conditions
Location and Site Identification
Water Level Measurement
Well Purging
Sample Collection
Record any additional notes about this site here:


AT&T 10:50 AM 44%
Statewide 2019
Location and Site Identification
Metal Tag Number
GPS Location
42.906°N 112.472°W
Latitude
42.906111
Longitude
-112.472417
Are these coordinates accurate with your current reading? *
If your reading is accurate to 4 decimal places of coordinates above, please select "yes."
Yes
No

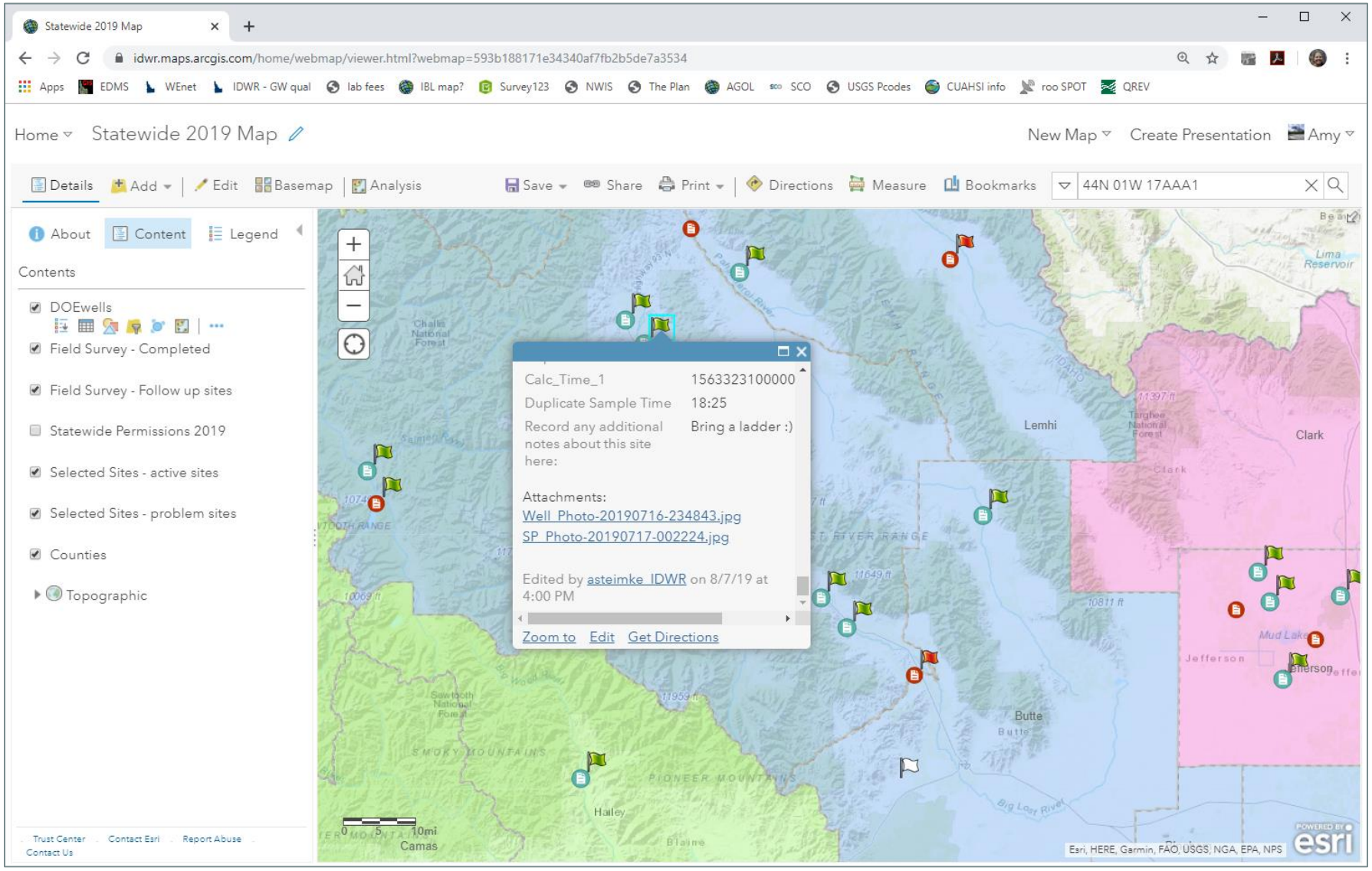

AT&T 10:41 AM 44%
Draw Location Map
McCoy Bridge Rd
SP
N
Cabin
Wellhead
Trish Dr
N Pine Featherville Rd

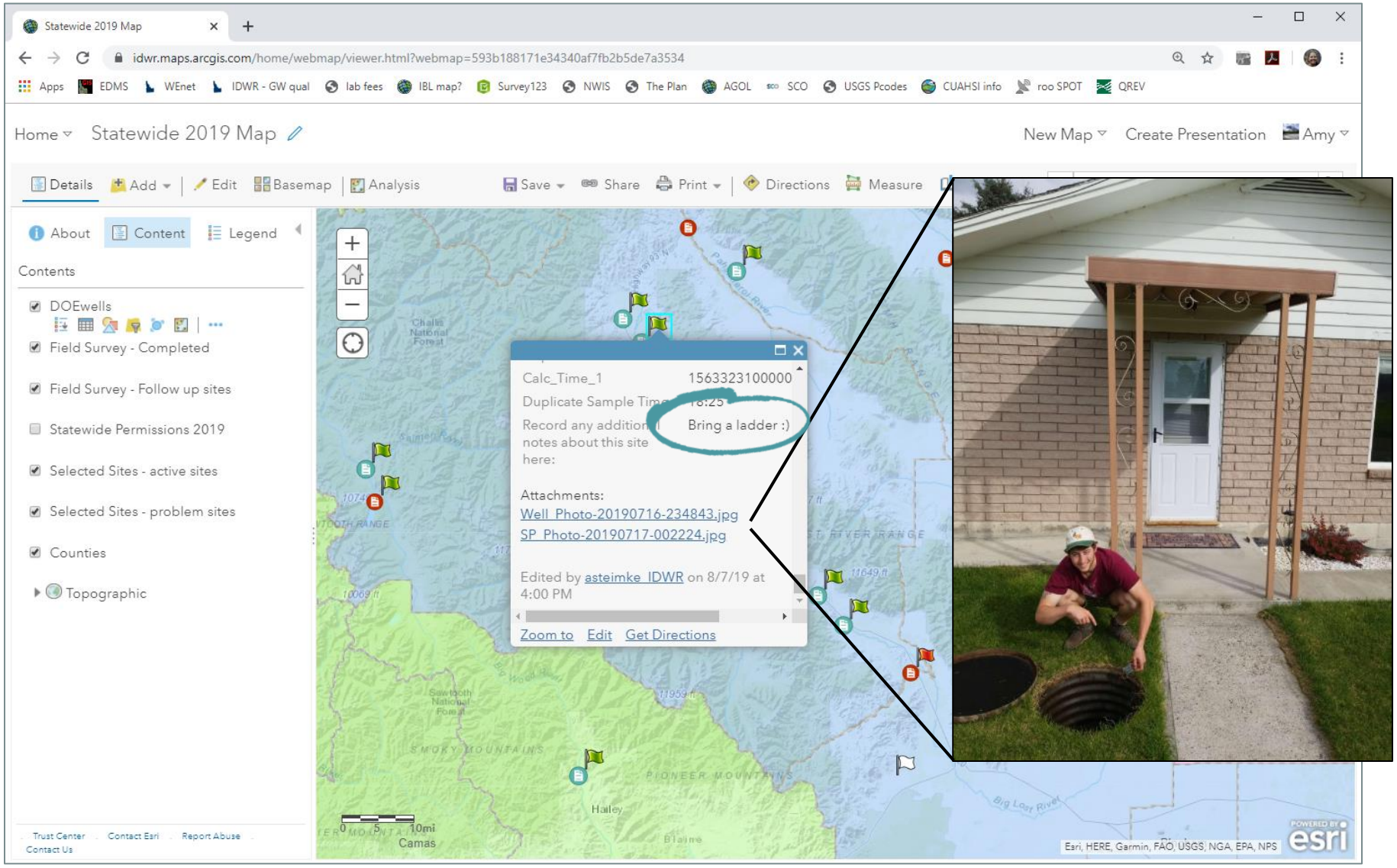

Verizon LTE 12:40 PM 61%
Statewide 2019
Take a photo of the well:
Take a photo of the sampling point:
(Spigot, hydrant, etc.)
Notes about sampling point:
Hydrant near front door
Would you like to add more photos?
Yes
No

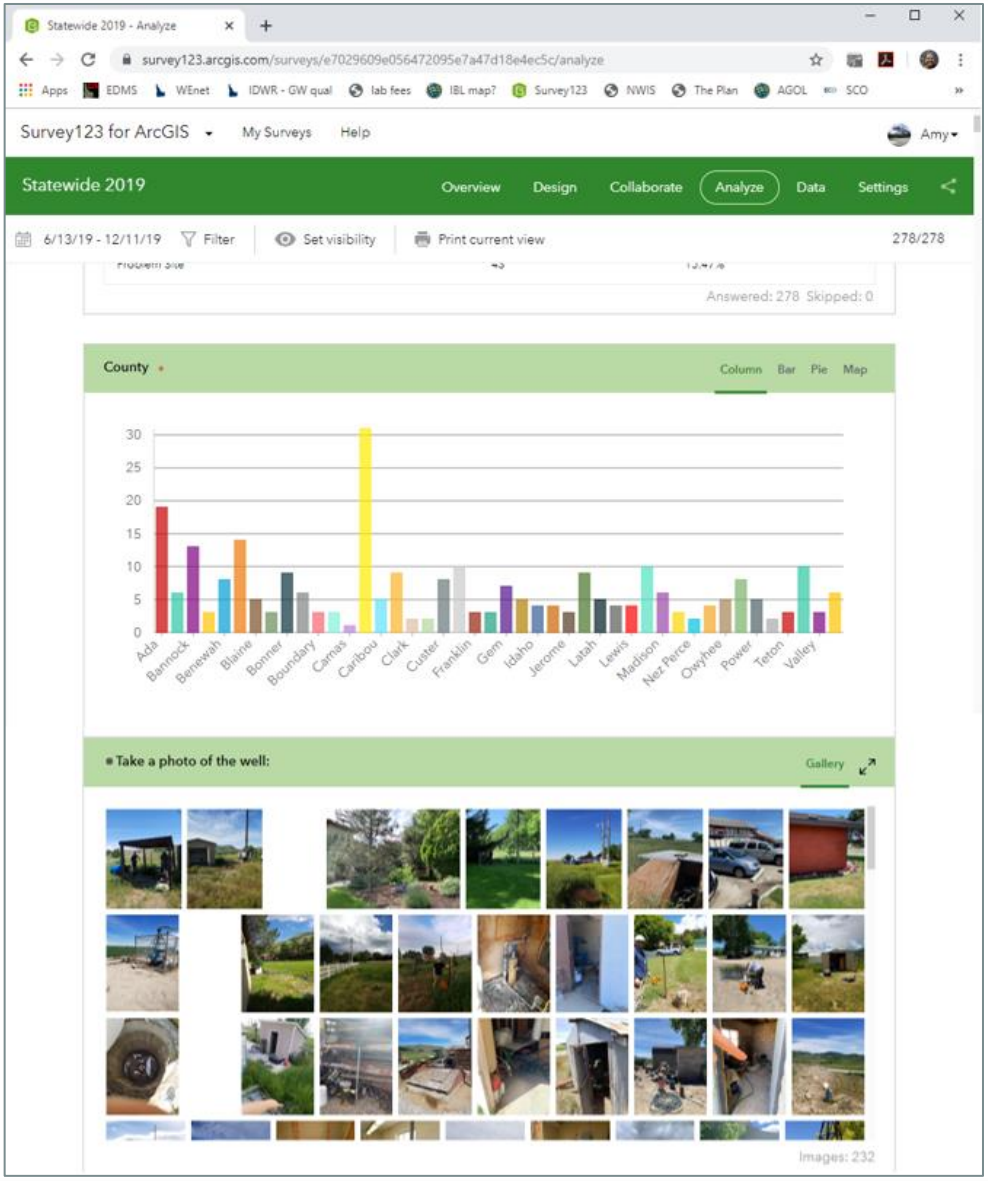

AT&T 10:40 AM 45%
Statewide 2019
A well is sufficiently purged after three consecutive readings within a given stability criteria. The survey will alert you once the well is purged and samples can be collected.
Stability Criteria
Field Parameter
Stability Criteria
Temperature (in degrees Celsius)
±0.2 °C
Specific Conductance (SC) (microsiemens µS/cm)
±5% for SC ≤ 100 µS/cm
±3% for SC > 100 µS/cm
pH (standard units)
±0.1 unit
Dissolved Oxygen (DO) (mg/L)
±0.3 mg/L
Purge Start Time *
4:22 PM
Clarity of water:
Clear
Cloudy
Floating particles
Odor
Water bubbles


AT&T 6:14 PM 49%
Statewide 2019
Parameter SC 3
171
Parameter pH 3
7.1
Parameter DO 3
1.9
Parameter Temp 3
Parameters Stabilized!!! 👍
4:48 PM
Total Minutes Purged
26

IDAHO Department of Water Resources

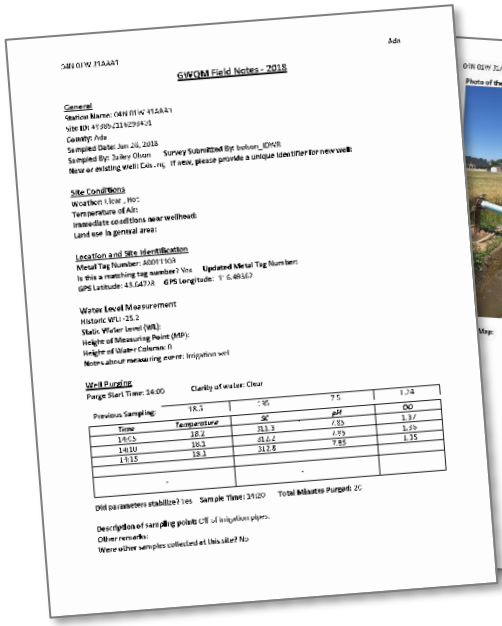


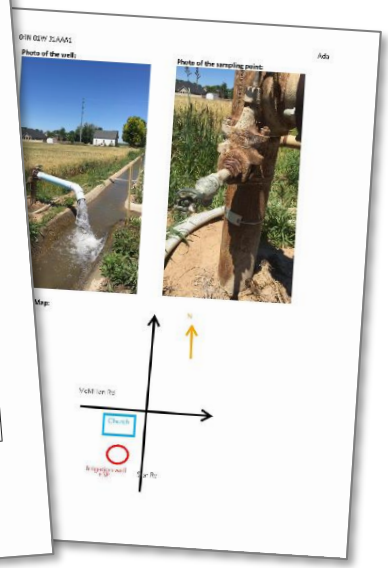

Statewide 2019 Map
idwr.maps.arcgis.com/home/webmap/viewer.html?webmap=593b188171e34340af7fb2b5de7a3534
Home
Statewide 2019 Map
New Map
Create Presentation
Amy
Details
Add
Edit
Basemap
Analysis
Save
Share
Print
Directions
Measure
About
Content
Legend
Contents
DOEwells
Field Survey - Completed
Field Survey - Follow up sites
Statewide Permissions 2019
Selected Sites - active sites
Selected Sites - problem sites
Counties
Topographic
Calc_Time_1
1563323100000
Record any additional notes about this site here:
Bring a ladder :)
Attachments:
Well_Photo-20190716-234843.jpg
SP_Photo-20190717-002224.jpg
Edited by asteimke_IDWR on 8/7/19 at 4:00 PM
Zoom to
Edit
Get Directions
Hailey
Camas
Esri, HERE, Garmin, FAO, USGS, NGA, EPA, NPS




# Viewing/Exporting data





## Benefits

- Limits data entry and errors
- Can see real-time progress of season remotely
- Time savings for field workers
- Ability to store information that can be retrieved/queried from a computer
- Geo-tagged locations allows for better QA/QC of sites
- Free for current ArcGIS online organizations
- Large user group at IDWR

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## Barriers

- Takes time to set up surveys
- Collector App slowed down over season
- Bugs were identified throughout season; requires users to manually update survey
- Doesn’t perform well on all devices (iOS preferred platform)

# Questions?