

A large, blurred sun graphic with a yellow and orange center and a purple and blue outer glow, centered in the background.

# Southwest District Health

GROUND WATER QUALITY PROBLEMS IN  
CANYON AND WASHINGTON COUNTIES

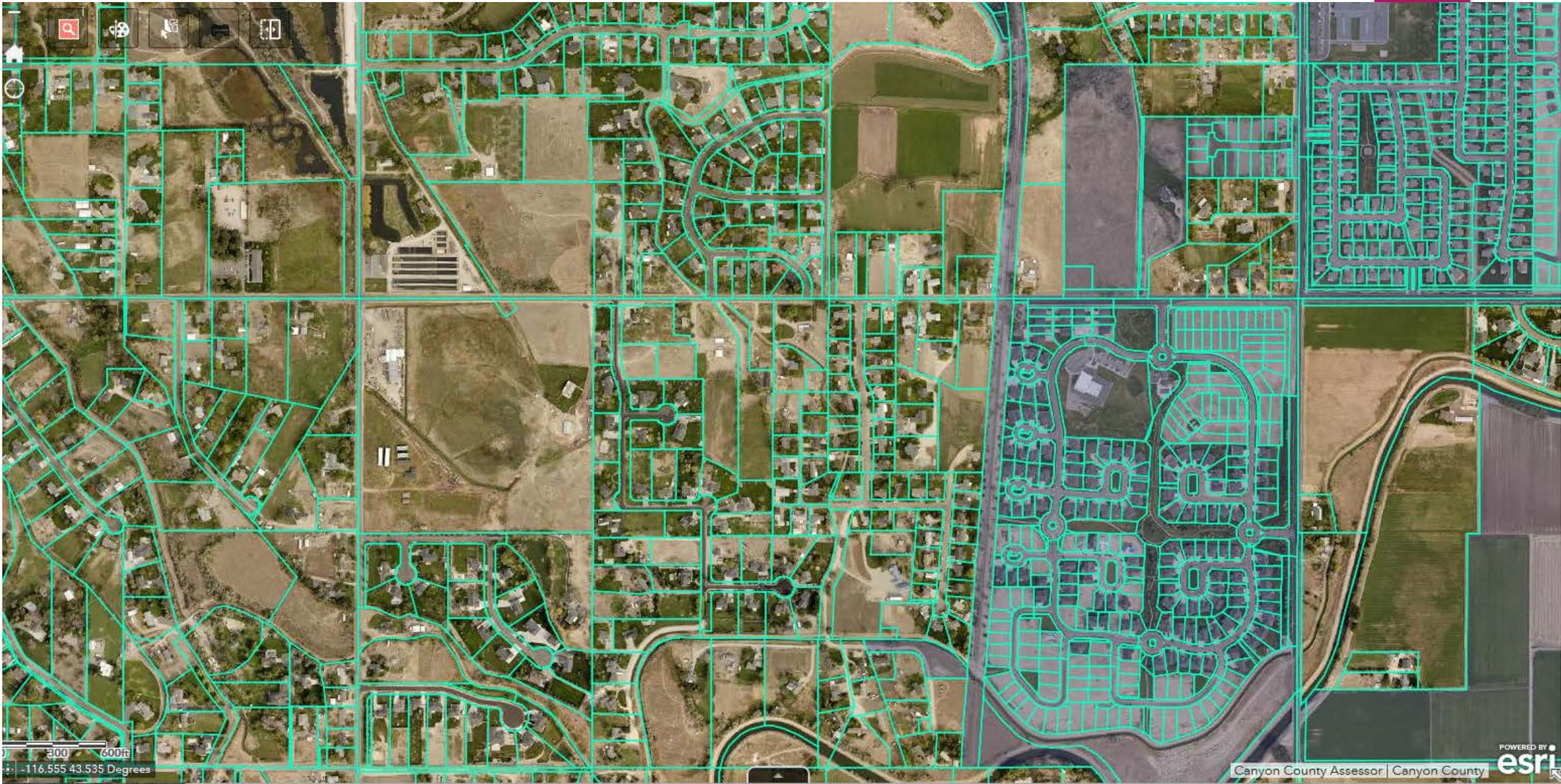
2020 SW IDAHO GW QUALITY FORUM

# Spring-Summer 2016 – Nampa Area (Canyon County)

- ▶ After a report of E coli presence in a private well, SWDH took a closer look in this area.
- ▶ The area has high septic system/private well density plus lava rock with limited soil cover. (This area has had periodic presence of E coli in another well in prior years).
- ▶ Nine wells were tested over the Spring and Summer with 6 wells testing positive for E coli, one with total coliform and two that were absent.
- ▶ September 2016 – DEQ was able to do other testing to try and determine the source of contamination.

| Sept 12, 2016 - samples      | A*                | B*                | C*                | D*                | E*     | F                 | G                | H      | I*                | Canal    |
|------------------------------|-------------------|-------------------|-------------------|-------------------|--------|-------------------|------------------|--------|-------------------|----------|
| F+ Coliphage                 | ND                | ND                | ND                | ND                | ND     | ND                | ND               | ND     | ND                | Detected |
| Triclosan (ng/mL)            | <0.1              | <0.1              | <0.1 (0.026)      | <0.1              | <0.1   | 0.38              | <0.1 (0.038)     | <0.1   | <0.1              | 0.14     |
| 17-Beta Estradiol (pg/mL)    | 0.017             | <0.00000005       | 0.029             | 0.023             | 0.038  | 0.035             | 0.022            | 0.014  | 0.021             | 0.026    |
| Caffeine (ng/mL)             | <0.175            | <0.175            | <0.175            | <0.175            | <0.175 | <0.175            | <0.175           | <0.175 | <0.175            | 0.065    |
| Bisphenol A (ng/mL)          | 0.004             | 0.011             | 0.007             | 0.17              | 0.039  | 0.002             | 0.003            | 0.011  | 0.004             | 0.035    |
| Chloride (mg/L)              | 7.38              | 7.77              | 8.18              | 8.43              | 8.96   | 9.58              | 29.8             | 9.32   | 28.5              | 3.24     |
| Nitrogen, NO3-NO2 (mg/L)     | 3.7               | 4.1               | 4.2               | 4                 | 4.5    | 4.4               | 6.9              | 2.5    | 7.4               | 1.4      |
| Ammonia as N (mg/L)          | <0.010 (0.004025) | <0.010 (0.009209) | <0.010 (0.005524) | <0.010 (0.003721) | <0.010 | <0.010 (0.004992) | <0.010 (0.00369) | 0.01   | <0.010 (0.005986) | 0.013    |
| Sulfate (mg/L)               | 37.3              | 39.9              | 40.5              | 43.7              | 43.8   | 54.2              | 80.7             | 35.7   | 113               | 17.9     |
| Boron (mg/L)                 | 0.075             | 0.08              | 0.081             | 0.084             | 0.09   | 0.11              | 0.14             | 0.09   | 0.24              | 0.3      |
| Total Coliform (MPN/100 mL)  | 461.1             | 275.5             | 50.4              | 11.9              | 24.6   | ND                | 4.1              | 1      | 2                 | >2419.6  |
| E coli (MPN/100 mL)          | 5.2               | 1                 | 2                 | ND                | 1      | ND                | ND               | ND     | ND                | 325.5    |
| Temperature (°C)             | 15.9              | 15.2              | 15                | 14.8              | 15.3   | 15                | 14.7             | 14.8   | 14.8              | 15.2     |
| pH                           | 6.61              | 6.5               | 6.72              | 6                 | 6.2    | 6.78              | 6.76             | 6.79   | 6.68              | 6.72     |
| Specific Conductance (mS/cm) | 0.381             | 0.404             | 0.417             | 0.413             | 0.438  | 0.465             | 0.712            | 0.506  | 0.95              | 0.19     |
| Dissolved Oxygen (mg/L)      | 6.86              | 7.04              | 6.72              | 7.76              | 6.98   | 6.32              | 6.98             | 6.76   | 6.51              | 9.21     |





300 600ft  
-116.555 43.535 Degrees

Canyon County Assessor | Canyon County  
POWERED BY esri

# Conclusions and features of note

- ▶ The septic system density is approximately 1 system for every 0.8 acre of land.
- ▶ The wells depths are between 68 to 130 feet deep, with casings that are only 18 to 90 feet deep. If water flows through a lava crack that intersects with one of these wells, it can deliver contaminated water directly to the ground water.
- ▶ The depth of the lava rock in this area extends 500 feet below the ground surface.
- ▶ The canal water indicated that raw sewage was being drained into the canal upstream of this area.
- ▶ Hydrologic examination of the area showed that the canal was not the source of the contamination, but can effect the water table levels. When the canal fills up each spring, it starts to recharge the groundwater in this area through the cracks in the lava rock. This will cause water tables to rise significantly.
- ▶ It was determined that human sewage from septic systems was the actual source of the contamination.

# Winter 2019-Weiser (Washington Co)

- ▶ Near the end of February 2019, we received a call from a resident that was trying to figure out a water quality problem. They initially thought their water softener was not working correctly and had been going back and forth with the installer until they decided to contact HD.
- ▶ Water samples taken by softener installer on 12/28/2018 were forwarded to the HD.

**Date of Collection:** 12/28/2018

**Date Received:** 12/28/2018

**Report Date:** 1/10/2019

**Field pH:**

**Lab pH:**

**PWS#:**

**Field Temp:**

**Temp Rcvd in Lab:**

**PWS Name:**

| <b>Test Requested</b>   | <b>MCL</b> | <b>Analysis Result</b> | <b>Units</b> | <b>MDL</b> | <b>Method</b> | <b>Date Completed</b> | <b>Analyst</b> |
|---|------------|------------------------|--------------|------------|---------------|-----------------------|----------------|
| Arsenic Low<br>Value exceeds MCL of 0.010 mg/L.   | 0.01       | 0.015                  | mg/L         | 0.002      | EPA 200.8     | 12/31/2018            | JMS            |
| Iron, Fe  | UR         | 0.06                   | mg/L         | 0.05       | EPA 200.7     | 1/3/2019              | JMS            |
| Manganese, Mn   | UR         | <0.05                  | mg/L         | 0.05       | EPA 200.7     | 1/3/2019              | JMS            |
| Nitrate (as N)<br>The nitrate value exceeds the EPA maximum contamination level of 10.0 mg/L. You may want to contact your local health department. | 10         | 97.0                   | mg/L         | 0.2        | EPA 300.0     | 12/31/2018            | NC             |
| Hardness  | UR         | 1,390                  | mg/L         | 5.0        | SM 2340-C     | 1/9/2019              | TG             |
| Tannin & Lignin   |            | <0.1                   | mg/L         | 0.1        | SM 5550B      | 1/3/2019              | MDM            |

Matrix: Drinking Water (Potable)

Date Reported: 3/7/2019 09:28

Sample Comment: Check for high nitrate

### RESULTS

| Analyte                               | Results    | MRL  | MDL    | MCL | Date Analyzed | Analyst | Qualifier |
|---------------------------------------|------------|------|--------|-----|---------------|---------|-----------|
| ---- General Chemistry ---- EPA 300.0 |            |      |        |     |               |         |           |
| Chloride                              | 587 mg/L   | 0.40 | 0.042  |     | 3/4/2019      | HH      |           |
| Nitrite as N                          | <0.30 mg/L | 0.30 | 0.0090 | 1   | 3/1/2019      | DS      |           |
| Nitrate as N                          | 90.0 mg/L  | 0.18 | 0.013  | 10  | 3/4/2019      | HH      |           |
| Sulfate                               | 1200 mg/L  | 0.80 | 0.063  |     | 3/4/2019      | HH      |           |

## RESULTS

| Analyte                    | Results   | MRL  | MDL | MCL | Date Analyzed | Analyst | Qualifier |
|----------------------------|-----------|------|-----|-----|---------------|---------|-----------|
| ---- Metals ---- EPA 200.7 |           |      |     |     |               |         |           |
| Calcium                    | 300 mg/L  | 0.10 |     |     | 3/19/2019     | VW      | *         |
| Total Hardness             | 1300 mg/L | 1.0  |     |     | 3/19/2019     | VW      |           |
| Magnesium                  | 140 mg/L  | 0.10 |     |     | 3/19/2019     | VW      | **        |
| Potassium                  | 22 mg/L   | 0.10 |     |     | 3/19/2019     | VW      |           |
| Sodium                     | 830 mg/L  | 0.10 |     |     | 3/19/2019     | VW      | ***       |

| Analyte                    | Results    | MRL    | MDL      | MCL  | Date Analyzed | Analyst | Qualifier |
|----------------------------|------------|--------|----------|------|---------------|---------|-----------|
| ---- Metals ---- EPA 200.8 |            |        |          |      |               |         |           |
| Arsenic                    | 0.015 mg/L | 0.0020 | 0.000018 | 0.01 | 3/7/2019      | HH      | ****      |

| Analyte                               | Results     | MRL   | MDL   | MCL | Date Analyzed | Analyst | Qualifier |
|---------------------------------------|-------------|-------|-------|-----|---------------|---------|-----------|
| ---- General Chemistry ---- EPA 350.1 |             |       |       |     |               |         |           |
| Ammonia as N                          | <0.050 mg/L | 0.050 | 0.012 |     | 3/29/2019     | VW      |           |

| Analyte                               | Results   | MRL    | MDL    | MCL | Date Analyzed | Analyst | Qualifier |
|---------------------------------------|-----------|--------|--------|-----|---------------|---------|-----------|
| ---- General Chemistry ---- EPA 365.1 |           |        |        |     |               |         |           |
| Total Phosphorus                      | 0.13 mg/L | 0.0050 | 0.0012 |     | 3/25/2019     | VW      |           |

MRL: Minimum Reporting Limit. Lowest limit the lab reports data.

MDL: Method Detection Limit. A calculated minimum concentration that can be measured with 99% confidence that the result is greater than zero.

MCL: Maximum Contamination Level. The highest level of a contaminant that is allowed in drinking water.

## FINAL LABORATORY TEST REPORT

\* This value was obtained by a 1:50 dilution.

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\*\*\*\* 100 ug/L of uranium was detected in this sample. The uranium maximum contamination level is 30ug/L for drinking water.

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# Other tests and concerns

- ▶ Volatile Organic Compounds were all non-detect.
- ▶ A test of the water softener showed hardness at 28 mg/L; so softener was working.
- ▶ Residents noted that during 2018, that they had a great deal of difficulty in plant survival, including some bushes and trees they had started.
  - ▶ Irrigation recommendations for chlorides is less than 100 mg/L
- ▶ They were already in the habit of not drinking the water due to the past high nitrate levels so health effects were not noted.
  - ▶ Sulfates & Magnesium levels could cause laxative effects.
  - ▶ Sodium & Chlorides levels would be a concern for people with heart & kidney diseases.



# October 2019

Sample Comment: Chloride= 560mg/L

Sulfate= 1100mg/L

## RESULTS

| Analyte                               | Results  | MRL | MDL  | MCL | Date Analyzed | Analyst | Qualifier |
|---------------------------------------|----------|-----|------|-----|---------------|---------|-----------|
| ---- General Chemistry ---- EPA 300.0 |          |     |      |     |               |         |           |
| Nitrate as N                          | 121 mg/L | 3.6 | 0.26 | 10  | 10/10/2019    | DS      |           |

# Sources

- ▶ Sources of contamination are still unknown.
- ▶ Well-known area for ground water contamination in the past (studies available concerning an old CAFO and cull onion applications).
- ▶ What factors could cause the sudden increase?
  - ▶ Theories include problems with 2017 snow pack, septic systems, water softener waste (sodium/chloride levels), land application, some other unknown factor.